

CANNELTON POOL: OHIO RIVER, 2004

2004 Fish Management Report

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## EXECUTIVE SUMMARY

- Twelve sites were established within the Cannelton Pool of the Ohio River, which extends from Cannelton Locks (720.7) and Dam to McAlpine Locks and Dam (604.6). Each site was approximately 1 mile in length, except for IN 605.0, which was only 0.5 mile. The Indiana bank was sampled except on site names beginning with KY, with 1 hour of effort during July and August of 2004. Two sites were sampled both during the day and night. Water quality, fish, and habitat data were collected at each site.
- The water quality data suggests that all parameters were within the range to maintain adequate living conditions for fish survival. The QHEI scores ranged from 35.5 to 79.0 and averaged 57.4 for all reaches.
- The fish sampling efforts yielded 5,072 fish weighing a total of 1,284.53 lbs. Thirty-six species and two hybrids were collected, representing 11 families. Sportfish comprised 13% of the total sample by number and 45% of the sample by weight.
- The most abundant species by number in this collection was emerald shiner (66%), followed by gizzard shad (13%), and channel catfish (6%). All other species comprised less than 5% of the sample. Channel catfish were the most abundant species collected by weight (25%), followed by river carpsucker (12%), gizzard shad (10%), longnose gar (9%), and smallmouth buffalo (6%).
- Based on the von Bertalanffy model, the channel catfish population in Cannelton Pool grew at a similar rate to those in the East Fork White River, the Wabash River non-commercial fishing reach, and the portion of the Wabash River that is fished by only Indiana commercial fishers.
- Continue to survey each pool at a regular interval, to assess the Ohio River fishery and manage the populations so that sport and commercial fishing are sustainable throughout the Ohio River.
- Evaluate the need for channel catfish regulations on the Ohio River and determine whether the current lack of regulations is sufficient to sustain current commercial fishing pressure.

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## INTRODUCTION

The Ohio River is one of the major tributaries of the Mississippi River. It is formed from the confluence of the Allegheny and Monongahela Rivers in Pittsburg, Pennsylvania and flows along the southern borders of Ohio, Indiana, and Illinois, where it joins the Mississippi River at Cairo, Illinois. The U.S. Army Corps of Engineers maintains a 9 ft navigation channel for the entire 981 mile length through a system of 20 locks and dams. Each lock and dam has transformed the once free-flowing river into a series of impoundments, which has altered fish community structure (Pearson and Krumholz 1984). These impoundments have led to the reduction in some riverine species and allowed increased abundance of those species suited for more lentic environments and invasive species (Pearson and Krumholz 1984). Both commercial and sport fishing are allowed on the entire Indiana portion of the Ohio River.

Indiana shares 87,014 acres of the Ohio River with Kentucky, which includes five locks and dams. The Cannelton and McAlpine Locks and Dam create a 116.1 mile long impoundment, making Cannelton Pool the largest impoundment in the Indiana stretch of the Ohio River. However, Indiana has never characterized the fish population of the Ohio River. Each pool of the Ohio River is a vast resource and the lack of baseline information limits our ability to maintain and improve fishing opportunities and evaluate current fishing regulations.

## METHODS

Twelve sites were established within the Cannelton Pool of the Ohio River, which extends from Cannelton Locks and Dam (RM 720.7) to McAlpine Locks and Dam (RM 604.6) (Figure 1; Table 1). Collection locations are identified by the shore sampled (IN or KY), the river mile, and whether the site was sampled during the day (D) or night (N). Each site was approximately 1 mile in length, except for IN 605.0, which was only 0.5 mile. The Indiana bank was sampled unless the site name begins with KY, with 1 hour of effort from July 15 through August 17, 2004. Also two of the sites were sampled both during the day and night, represented with either N or D at the end of the site code. Water chemistry data was collected at each site according to the Manual of Fisheries Survey Methods (Shipman 2001). Habitat data was collected and scored at each site according to the Qualitative Habitat Evaluation Index (QHEI) (Rankin 1989). Fish were sampled using boat-mounted DC electrofishing gear with two dip netters. All fish were measured to the nearest 0.1 inch in total length. Fish weights were

measured and recorded to the nearest 0.01 pound. Scales were collect from all sportfish species and pectoral spines were collected from all catfish species.

## RESULTS

### Water chemistry and fish habitat

The water quality data suggests that all parameters were within the range of adequate living conditions to maintain fish survival (Table 2). Secchi disk measurements ranged from 14.0 to 34.0 in. The water temperature at the time of sampling varied from 77.0 to 84.6 °F. Dissolved oxygen remained within the limits of fish survival at all sites, with a range of 7 to 9 parts per million. Water conductivity measurements ranged from 384 to 447 µS.

The QHEI scores ranged from 35.5 to 79.0 and averaged 57.4 for all reaches (Table 3). The highest score was determined from the site located at RM IN 605.0 N and the site located at RM IN 625.0 D and N had the lowest score.

### Fish survey data

The fish sampling efforts yielded 5,072 fish weighing a total of 1,284.53 lbs. Thirty-six species and two hybrids were collected, representing 11 families. The most abundant species by number in this collection was emerald shiner (66%), followed by gizzard shad (13%), and channel catfish (6%). All other species comprised less than 5% of the sample. Channel catfish were the most abundant species collected by weight (25%), followed by river carpsucker (12%), gizzard shad (10%), longnose gar (9%), and smallmouth buffalo (6%). RM IN 665.0 N yielded the most diverse collection with 22 species, while the least diverse site was RM IN 615.7 N with only 12 species collected. Sportfish collected during this survey included, channel catfish, flathead catfish, blue catfish, sauger, freshwater drum, bluegill, redear sunfish, white crappie, striped bass, white bass, hybrid striped bass, largemouth bass, smallmouth bass, and spotted bass. Sportfish comprised 13% of the total sample by number and 45% of the sample by weight.

### Carp and minnow family (Cyprinidae)

Members of the Cyprinidae family comprised 66% of the total fish collected, but only 8% of total weight. There were a total of seven species collected in this family, with emerald shiner being the most abundant, followed by common carp and silver chub.

### Herring family (Clupeidae)

Gizzard shad and skipjack herring were the only members of the Clupeidae family collected however they were 13% of the total sample by number and 10% by weight. All but two of the fish collected in this family were gizzard shad.

### Bullhead catfish family (Ictaluridae)

Three species of the Ictaluridae family were collected, accounting for 6% of the total number and 29% of the total weight collected. The most abundant catfish species was channel catfish, representing 6% of the total sample by number and 25% by weight. Channel catfish were collected at all sampling sites and total length ranged from 2.1 to 21.5 in. The PSD was 36, but no fish were collected in the preferred or memorable length class. A von Bertalanffy model from Fishery Analysis and Stimulation Tool (FAST; Slipke and Maceina 2000) was used to estimate growth for the channel catfish population in Cannelton Pool. Based on the von Bertalanffy model the Ohio River population in Cannelton Pool is growing at a similar rate ( $K = 0.163$ ) to the East Fork White River ( $K = 0.165$ ; Hoffman 2006), the Wabash River in the non-commercial fishing reach ( $K = 0.167$ ; Colombo et al. 2005) and the portion of the Wabash River that is fished by only Indiana commercial fishers with a 10 in minimum size limit ( $K = 0.172$ ; Colombo et al. 2005).

Flathead catfish was the next most abundant catfish species, representing less than 1% of the total catch by number, but a little over 3% of the total weight. Flathead catfish were collected at all but four sites. The total length of flathead catfish ranged from 10.5 to 29.2 in. Sample sizes were too small to analyze growth or mortality, however the fish that were collected ranged from two to nine years in age.

The only blue catfish collected was caught at RM IN 705.4 N, accounting for less than 1% of the total sample in both number and weight.

### Sucker family (Catostomidae)

The Catostomidae family was one of the most diverse with 8 species collected. Only 5% of the total fish collected were in the sucker family; however they did represent 24% of the total weight. Some of the most abundant species of this family collected were river carpsucker, shorthead redhorse, smallmouth buffalo, golden redhorse, and quillback.

### Sunfish family (Centrarchidae)

With seven species and one hybrid collected in the Centrarchidae family, it was also one of the most diverse families. The Centrarchidae family represented 3% of the total collection by both number and weight. Longear sunfish were collected at 10 of the 14 sites and was the most abundant sunfish species, with total length ranging from 3.2 to 5.8 in.

Bluegill was the next most common Centrarchidae species, although they comprised less than 1% of the total sample both by weight and number. The largest bluegill collected was 8.4 in TL.

White crappie accounted for less than 1% of the total sample, but were collected at six of the sampling locations. White crappie ranged from 5.5 to 9.8 in TL.

Smallmouth bass were collected at eight of the sampling locations and accounted for less than 1% of the total sample. Smallmouth bass ranged from 1.7 to 16.9 in TL.

Largemouth bass were collected at four sampling locations. Largemouth bass were collected up to 20.9 in TL.

Spotted bass were collected at five sampling sites, and ranged from 1.9 to 12.1 TL.

Redear sunfish and hybrid sunfish were collected in small numbers. Redear sunfish were collected up to 9.5 in TL and hybrids were collected up to 6.2 in TL.

### Perch family (Percidae)

Sauger was the most abundant species in the Percidae family, accounting for a little over 2% of the total sample by number and almost 3% by weight. Sauger were collected at twelve sites and ranged from 3.2 to 17.2 in TL. The PSD was 47, and the PSD-P was 13.

Logperch were also collected at four sampling locations.

### Drum family (Sciaenidae)

Freshwater drum is the only freshwater member of this family found in North America. Freshwater drum accounted for 2% of the total sample by number and over 4% of the total weight. Freshwater drum were collected at all sampling locations and ranged from 1.1 to 20.6 in TL. The PSD was 62, the PSD-P was 40, and the PSD-M was 5.

### Gar family (Lepisosteidae)

Two species of this family were collected, the longnose and shortnose gar, with longnose gar most abundant. The Lepisosteidae family accounted for only 1% of the total sample by number and 10% by weight.

### Temperate bass family (Moronidae)

The Moronidae family was represented by two species and a hybrid in the collection, accounting for 1% of the total number and over 6% of the total weight. Hybrid striped bass were the most abundant member of the Moronidae family. They were collected at seven sampling locations and ranged from 7.5 to 26.0 in TL.

Striped bass were the next most abundant Morone species, and were collected from nine sampling sites. Striped bass ranged from 2.5 to 31.0 in TL.

White bass composed less than 1% of the total sample by number and weight, although they were collected from five sampling locations. White bass were collected up to 13.2 in TL.

### Mooneye family (Hiodontidae)

Goldeye were the only member of the Hiodontidae family collected, representing less than 1% of the sample both by total number and weight.

### Paddlefish family (Polyodontidae)

Paddlefish were collected at two sites and comprised less than 1% of the total sample by number and a little over 3% of the total weight. Paddlefish ranged in eye fork length from 27.9 to 33.4 in.

## DISCUSSION

The goal of this project was to create a baseline data set that would include water quality, fish habitat, and fisheries data, to better understand and manage the Ohio River fisheries resources. By building on this data set with continued sampling at regular intervals, the Department of Natural Resources will be able to evaluate current commercial and sport fishing regulations and make necessary changes to promote viable populations that will support fishing.

There was no relationship between QHEI scores and number of species collected at each site. At the site with the lowest QHEI score 18 species were collected and 19 species collected at the station with the highest QHEI score. A total of 36 species and two hybrids were collected at all sites. Since only one method of collection (electrofishing) was used, it is probable that many species were missed in the sample. There appeared to be no difference in species composition throughout the pool, both up and downstream sites had similar numbers of both species and total abundance. However with two sites sampled in the daytime, we could compare the efficiency of daytime shocking versus nighttime shocking. There was no statistical difference in total abundance numbers, due to a large amount of variance in the night sampling abundance. However, the average catch rate was 418 fish/h for the night electrofishing and 74 fish/h for day electrofishing. The number of species collected was much higher when nighttime shocking was employed with an average of 17 species, while day electrofishing only averaging 10.5 species.

Fourteen sportfish species were collected, which comprised 13% of the sample by number and 45% by weight. Channel catfish, sauger, and freshwater drum were the most abundant sportfish species, but most sportfish were collected in low numbers relative to other non-game species, which is expected. The larger sample size of channel catfish allowed us to look at age and growth characteristics of the Ohio River population, and it appears that they are similar to both commercially fished and non-commercial portions of the Wabash River, as well as the East Fork White River populations. However, other studies (Colombo et al. 2005, Hoffman 2006) have shown that if exploitation were to increase, growth overfishing will occur in these populations with a 10 in minimum length limit. Both studies suggest that a larger minimum length limit (13 to 15 in) would increase both mean length and sustainable harvest. Since there are currently no regulations on catfish harvest for the Ohio River, it is probable that growth overfishing will occur. Without a minimum size limit, individuals can be harvested from the population before they can contribute to the population through reproduction. In order to prevent growth overfishing it is important to impose a minimum limit that will allow individuals to reproduce before being harvested (13 to 15 in, Colombo et al 2005 and Hoffman 2006). This will allow the population to withstand moderate harvest and also population growth.

## RECOMMENDATIONS

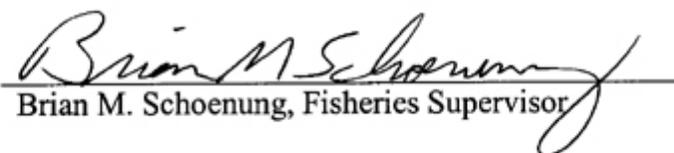
- Continue to survey each pool at a regular intervals so that the Ohio River fishery can be assessed and manage the populations for sustainable sport and commercial fishing throughout the Ohio River.
- Evaluate the need for channel catfish regulations on the Ohio River and determine whether the current lack of regulations is sufficient to sustain current commercial fishing pressure.

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Table 1. Station location, average width, gradient, and GPS coordinates for the Ohio River, Cannelton Pool, 2004.

River Mile	County	Nearest Town	Width (ft)	Gradient (ft)	GPS Coordinates
IN 605.0	Clark	Clarksville	388	0.56	42 00 225 N; 5 42 596 E
IN 615.7	Floyd	New Albany	1450	0.56	42 28 283 N; 5 97 495 E
IN 625.0	Harrison	West Point, KY	1638	0.56	42 13 781 N; 5 95 075 E
IN 634.6	Harrison	New Boston	1275	0.56	42 05 190 N; 5 84 923 E
IN 643.3	Harrison	Brandenburg, KY	1475	0.56	42 08 005 N; 5 76 978 E
IN 654.1	Harrison	New Amsterdam	1775	0.56	42 14 644 N; 5 63 476 E
IN 665.0	Crawford	Leavenworth	1425	0.56	42 07 966 N; 5 75 847 E
IN 675.4	Crawford	Alton	1400	0.56	42 20 187 N; 5 54 137 E
KY 684.9	Perry	Magnet	1325	0.56	42 15 397 N; 5 50 189 E
IN 696.8	Perry	Derby	2125	0.56	42 01 892 N; 5 41 668 E
IN 705.4	Perry	Rome	1425	0.56	42 00 225 N; 5 42 596 E
IN 717.2	Perry	Cannelton	2075	0.56	41 95 704 N; 5 31 098 E

Table 2. Station water chemistry information, Ohio River, Cannelton Pool, 2004.

River Mile	Secchi Disk (in.)	Air Temperature (°F)	Water Temperature (°F)	Dissolved Oxygen (ppm)	Conductivity (µS)
IN 605.0 N	20.5	91.8	80.2	7	434
IN 615.7 N	34.0	72.1	77.0	9	411
IN 625.0 D	14.0	90.5	84.6	8	384
IN 625.0 N	18.0	75.7	81.7	9	396
IN 634.6 D	19.0	80.4	82.4	9	389
IN 634.6 N	18.0	75.7	81.7	9	396
IN 643.3 N	18.5	82.8	83.7	8	402
IN 654.1 N	18.5	82.8	83.7	8	402
IN 665.0 N	19.0	71.4	79.5	7	417
IN 675.4 N	19.0	71.4	79.5	7	417
KY 684.9 N	34.0	78.4	79.5	7	410
IN 696.8 N	34.0	78.4	79.5	7	410
IN 705.4 N	17.0	78.6	80.6	7	447
IN 717.2 N	23.0	64.2	79.7	8	413

Table 3. Station Qualitative Habitat Evaluation Index (QHEI) metric component scores, Ohio River, Cannelton, Pool, 2004.

River Mile	Substrate Max. 20	Cover Max. 20	Channel Max. 20	Riparian Max. 10	Pool Max. 12	Riffle Max. 8	Gradient Max. 10	Total 100	Percent Pool	Percent Run	Percent Riffle
IN 605.0 N	20	12	12	9	12	6	8	79.0	40	50	10
IN 615.7 N	0	4	11	5	11	0	8	39.0	20	80	0
IN 625.0 D	0	5	8	4.5	10	0	8	35.5	20	80	0
IN 625.0 N	0	5	8	4.5	10	0	8	35.5	20	80	0
IN 634.6 D	20	13	11	7.5	10	0	8	69.5	20	80	0
IN 634.6 N	20	13	11	7.5	10	0	8	69.5	20	80	0
IN 643.3 N	20	8	11	7.5	11	0	8	65.5	20	80	0
IN 654.1 N	2	5	11	7.5	11	0	8	44.5	20	80	0
IN 665.0 N	20	10	11	8	10	0	8	67.0	20	80	0
IN 675.4 N	20	12	11	8	10	0	8	69.0	20	80	0
KY 684.9 N	20	8	11	7.5	10	0	8	64.5	20	80	0
IN 696.8 N	0	8	11	6	10	0	8	43.0	20	80	0
IN 705.4 N	20	8	11	8	10	0	8	65.0	20	80	0
IN 717.2 N	12	8	11	7.5	10	0	8	56.5	20	80	0

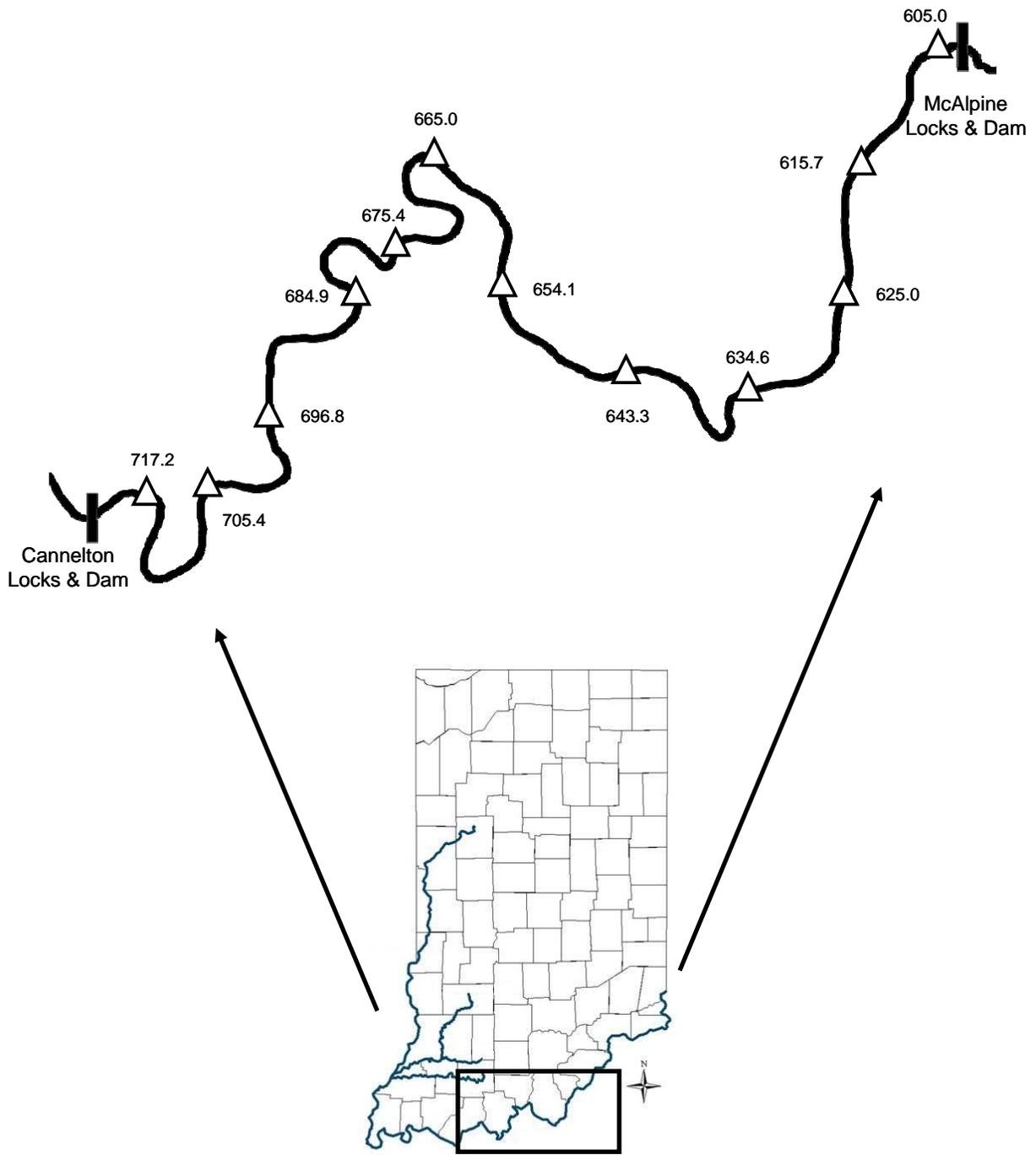


Figure 1. Sampling sites in Cannelton Pool, Ohio River, 2004.

APPENDIX A

NAME, NUMBER, PERCENTAGE, SIZE, WEIGHT, AND OCCURRENCE INDEX OF  
FISHES COLLECTED, CANNELTON POOL, OHIO RIVER, JULY AND AUGUST, 2004

Appendix A. Name, number, percent, size, weight, and occurrence index of fish collected, Cannelton Pool, Ohio River, July and August, 2004.

Common Name	Scientific Name	Total Number	% by Number	Min. Length (in)	Max. Length (in)	Total Weight (lb)	% by Weight	Occurrence Index
Emerald shiner	<i>Notropis atherinoides</i>	3,341	65.9	0.6	4.1	2.05	0.2	14
Gizzard shad	<i>Dorosoma cepedianum</i>	638	12.6	1.3	15.9	123.07	9.6	14
Channel catfish	<i>Ictalurus punctatus</i>	300	5.9	2.1	21.5	328.16	25.5	14
River carpsucker	<i>Carpiodes carpio</i>	155	3.1	6.6	19.4	157.96	12.3	12
Sauger	<i>Sander canadense</i>	112	2.2	3.2	17.2	37.34	2.9	12
Freshwater drum	<i>Aplodinotus grunniens</i>	103	2.0	1.1	20.6	57.88	4.5	14
Longnose gar	<i>Lepisosteus osseus</i>	54	1.1	15.6	46.4	120.20	9.4	13
Longear sunfish	<i>Lepomis megalotis</i>	49	1.0	3.2	5.8	4.72	0.4	10
Shorthead redhorse	<i>Moxostoma macrolepidotum</i>	49	1.0	8.8	16.0	40.78	3.2	5
Bluegill	<i>Lepomis macrochirus</i>	39	0.8	3.0	8.4	6.15	0.5	7
Hybrid striped bass	<i>Morone sp. x Morone sp.</i>	24	0.5	7.5	26.0	51.04	4.0	7
Striped bass	<i>Morone saxatilis</i>	23	0.5	2.5	31.0	26.36	2.1	9
Flathead catfish	<i>Pylodictis olivaris</i>	23	0.5	10.5	29.2	42.29	3.3	10
White crappie	<i>Pomoxis annularis</i>	21	0.4	5.5	9.8	4.98	0.4	6
Smallmouth buffalo	<i>Ictiobus bubalus</i>	19	0.4	15.1	25.9	71.95	5.6	9
Golden redhorse	<i>Moxostoma erythrurum</i>	17	0.3	9.3	14.9	16.87	1.3	5
Smallmouth bass	<i>Micropterus dolomieu</i>	15	0.3	1.7	16.9	4.92	0.4	8
Largemouth bass	<i>Micropterus salmoides</i>	11	0.2	9.1	20.9	13.22	1.0	4
Spotted bass	<i>Micropterus punctulatus</i>	11	0.2	1.9	12.1	3.96	0.3	5
White bass	<i>Morone chrysops</i>	9	0.2	8.1	13.2	4.23	0.3	5
Logperch	<i>Percina caprodes</i>	9	0.2	2.5	11.5	0.26	*	4
Quillback	<i>Carpiodes cyprinus</i>	9	0.2	3.2	15.9	9.39	0.7	5
Common carp	<i>Cyprinus carpio</i>	8	0.2	11.1	25.5	37.95	3.0	4
Silver chub	<i>Macrhybopsis storeriana</i>	7	0.1	4.1	4.6	0.19	*	3
Shortnose gar	<i>Lepisosteus platostomus</i>	4	0.1	22.2	25.5	5.66	0.4	3
Goldeye	<i>Hiodon alosoides</i>	3	0.1	10.2	13.1	1.88	0.1	3
Paddlefish	<i>Polyodon spathula</i>	3	0.1	27.9	33.4	40.75	3.2	2
Redear sunfish	<i>Lepomis microlophus</i>	3	0.1	6.0	9.5	1.14	0.1	2
Silver carp	<i>Hypophthalmichthys molitrix</i>	2	*	28.5	32.1	22.00	1.7	2
Hybrid sunfish	<i>Lepomis sp. x Lepomis sp.</i>	2	*	5.2	6.2	0.29	*	1
Skipjack herring	<i>Alosa chrysochloris</i>	2	*	1.9	6.2	0.08	*	2
Blue sucker	<i>Cycleptus elongatus</i>	1	*	21.7	21.7	3.00	0.2	1
Bighead carp	<i>Hypophthalmichthys nobilis</i>	1	*	44.6	44.6	35.00	2.7	1
Bigmouth buffalo	<i>Ictiobus cyprinellus</i>	1	*	22.0	22.0	5.60	0.4	1
Black redhorse	<i>Moxostoma duquesnei</i>	1	*	18.1	18.1	2.25	0.2	1
Blue catfish	<i>Ictalurus furcatus</i>	1	*	13.7	13.7	0.86	0.1	1
Bluntnose minnow	<i>Pimephales notatus</i>	1	*	3.1	3.1	0.01	*	1
Golden shiner	<i>Notemigonus crysoleucas</i>	1	*	8.8	8.8	0.09	*	1
<b>TOTALS</b>		<b>5,072</b>				<b>1,284.53</b>		

36 Species & 2 Hybrid

\*=Less than 0.1% or less than 0.01 lbs.

APPENDIX B

SPECIES, NUMBER, AND WEIGHT OF FAMILIES COLLECTED, CANNELTON POOL,  
OHIO RIVER, JULY AND AUGUST, 2004

Appendix B. Species, number, and weight of families collected Cannelton Pool, Ohio River,  
July and August, 2004.

Family	Total Number	% by Number	Total Weight (lb)	% by Weight
<u>Cyprinidae - Carps and Minnows</u>	3,361	66.2	97.29	7.6
Emerald shiner				
Common carp				
Silver chub				
Silver carp				
<u>Clupeidae - Herrings</u>	640	12.6	123.15	9.6
Gizzard shad				
<u>Ictaluridae - Bullhead catfish</u>	324	6.4	371.31	28.9
Channel catfish				
Flathead catfish				
<u>Catostomidae - Suckers</u>	252	4.9	307.80	24.0
River carpsucker				
Shorthead redhorse				
Smallmouth buffalo				
Golden redhorse				
<u>Centrarchidae - Sunfishes</u>	151	2.9	39.38	3.0
Longear sunfish				
Bluegill				
White crappie				
Smallmouth bass				
<u>Percidae - Perches</u>	121	2.4	37.60	2.9
Sauger				
<u>Sciaenidae - Drums</u>	103	2.0	57.88	4.5
Freshwater drum				
<u>Lepisosteidae - Gars</u>	58	1.1	125.86	9.8
Longnose gar				
<u>Moronidae - Temperate Bass</u>	56	1.1	81.63	6.4
Hybrid striped bass				
Striped bass				
<u>Hiodontidae - Mooneyes</u>				
Goldeye	3	0.1	1.88	0.1
<u>Polyodontidae - Paddlefish</u>				
Paddlefish	3	0.1	40.75	3.2
<b>TOTALS</b>	<b>5,072</b>		<b>1,284.53</b>	

36 Species & 2 Hybrid

\*=Less than 0.1%

APPENDIX C

NUMBER OF FISH SPECIES COLLECTED PER STATION, CANNELTON POOL,  
OHIO RIVER, 2004

Appendix C. Number of fish species collected per station, Cannelton Pool, Ohio River, 2004.

COMMON NAME	RIVER MILE														Total
	IN 605.0 N	IN 615.7 N	IN 625.0 D	IN 625.0 N	IN 634.6 D	IN 634.6 N	IN 643.3 N	IN 654.1 N	IN 665.0 N	IN 675.4 N	KY 684.9 N	IN 696.8 N	IN 705.4 N	IN 717.2 N	
Emerald shiner	16	41	14	11	22	5	6	2	137	140	2,610	191	130	16	3,341
Gizzard shad	110	107	50	14	31	140	32	6	5	45	58	4	4	32	638
Channel catfish	25	9	2	41	8	53	19	5	42	10	12	41	15	18	300
River carpsucker	12	1		21		29	10	19	4	6	8	24	17	4	155
Sauger	4	8		9		16	20	8	18	2	7	6	9	5	112
Freshwater drum	22	20	1	3	3	1	1	5	2	5	2	11	19	8	103
Longnose gar	25		4	3	1	2	2	8	1	2	3	1	1	1	54
Longear sunfish	2	1				1	2		4	1	15	6	5	12	49
Shorthead redhorse				5	1	18	23		2						49
Bluegill		2				6			7		2	6	2	14	39
Hybrid striped bass	17			1	1		1				1	2		1	24
Striped bass	6	4		2				1	3		3	1	1	2	23
Flathead catfish	5					1	1	1	4	1	4	1	3	2	23
White crappie	3					1	1				4	5		7	21
Smallmouth buffalo	3		1	1			1	1	3	1		3		5	19
Golden redhorse				2	1	11	2		1						17
Smallmouth bass	1	2			1	3			3	1	2			2	15
Largemouth bass					1						2	6		2	11
Spotted bass					1	1		4	4				1		11
White bass	2						3	1	1	2					9
Logperch						5	2		1			1			9
Quillback									2	2	2		2	1	9
Common carp				3				2				1		2	8
Silver chub											1	2	4		7
Shortnose gar				1							1				4
Goldeye	1		1											1	3
Paddlefish			1				2								3
Redear sunfish												2	1		3
Silver carp	1		1												2
Hybrid sunfish											2				2
Skipjack herring													1	1	2
Blue sucker	1														1
Bighead carp		1													1
Bigmouth buffalo					1										1
Black redhorse								1							1
Blue catfish													1		1
Bluntnose minnow													1		1
Golden shiner													1		1
Total # Collected	258	196	75	117	72	293	128	64	244	218	2,739	314	218	136	5,072
# of Species/Hybrids	19	11	9	14	12	16	17	14	19	13	19	19	19	20	38

APPENDIX D

NAME, NUMBER, PERCENT, SIZE, AND WEIGHT OF FISH COLLECTED  
AT EACH STATION







DATE:7/20/04

STATION: RM IN 625.0 Night

NAME OF STREAM: Ohio River

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENTAGE	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)	PERCENTAGE
Channel catfish	41	33.6	12.1 - 19.8	49.07	46.2
River carpsucker	21	17.2	7.1 - 18.3	21.00	19.8
Gizzard shad	14	11.5	3.0 - 11.1	1.20	1.1
Emerald shiner	11	9.0	1.4 - 2.9	0.04	0.0
Sauger	9	7.4	3.2 - 14.6	3.31	3.1
Shorthead redhorse	5	4.1	9.6 - 14.8	4.26	4.0
Common carp	3	2.5	11.1 - 23.9	11.88	11.2
Freshwater drum	3	2.5	8.7 - 15.5	2.75	2.6
Longnose gar	3	2.5	17.6 - 31.6	3.96	3.7
Channel shiner	2	1.6	2.0 - 2.2	*	0.0
Golden redhorse	2	1.6	11.2 - 14.1	1.80	1.7
Striped bass	2	1.6	9.6 - 11.4	0.88	0.8
Hybrid striped bass	1	0.8	14.0	1.16	1.1
Largemouth bass	1	0.8	1.8	*	0.0
Mimic shiner	1	0.8	2.3	*	0.0
Mooneye	1	0.8	3.7	0.01	0.0
Shortnose gar	1	0.8	22.2	0.90	0.8
Smallmouth buffalo	1	0.8	19.2	4.00	3.8
<b>Total - Species 18</b>	122	100.0		106.22	100.0

\*=less than 0.01 lbs.









DATE:7/27/04

STATION: IN RM 665.0 Night

NAME OF STREAM: Ohio River

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENTAGE	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)	PERCENTAGE
Emerald shiner	138	55.2	0.8 - 2.0	0.06	0.1
Channel catfish	42	16.8	8.8 - 19.8	47.92	59.3
Sauger	18	7.2	3.8 - 14.6	2.98	3.7
Bluegill	7	2.8	5.0 - 6.1	0.96	1.2
Gizzard shad	5	2.0	6.5 - 11.1	1.30	1.6
Flathead catfish	4	1.6	12.2 - 19.2	6.19	7.7
Longear sunfish	4	1.6	3.2 - 5.1	0.31	0.4
River carpsucker	4	1.6	9.2 - 17.1	5.59	6.9
Spotted bass	4	1.6	1.9 - 11.6	0.89	1.1
Smallmouth bass	3	1.2	2.9 - 12.5	0.97	1.2
Smallmouth buffalo	3	1.2	17.9 - 19.2	9.47	11.7
Striped bass	3	1.2	3.1 - 4.3	0.07	0.1
Freshwater drum	2	0.8	2.4 - 2.5	0.01	0.0
Mimic shiner	2	0.8	1.9 - 2.1	*	0.0
Quillback	2	0.8	3.2 - 9.0	0.44	0.5
Shorthead redhorse	2	0.8	9.8 - 10.1	0.83	1.0
Silver chub	2	0.8	4.0 - 4.6	0.04	0.0
Golden redhorse	1	0.4	14.7	1.37	1.7
Logperch	1	0.4	2.5	0.05	0.1
Longnose gar	1	0.4	24.8	0.88	1.1
River darter	1	0.4	2.3	*	0.0
White bass	1	0.4	9.9	0.44	0.5
<b>Total - Species 22</b>	250	100.0		80.77	100.0

\*=less than 0.01 lbs.



DATE:7/28/04

STATION: RM KY 684.9 Night

NAME OF STREAM: Ohio River

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENTAGE	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)	PERCENTAGE
Emerald shiner	2639	95.3	0.7 - 1.9	0.79	1.2
Gizzard shad	58	2.1	4.2 - 15.9	17.84	26.0
Longear sunfish	15	0.5	3.7 - 5.7	1.63	2.4
Channel catfish	12	0.4	8.0 - 16.0	10.90	15.9
River carpsucker	8	0.3	9.5 - 17.2	12.26	17.9
Sauger	7	0.3	4.0 - 15.3	2.25	3.3
Flathead catfish	4	0.1	10.5 - 29.2	8.66	12.6
White crappie	4	0.1	6.9 - 7.2	0.63	0.9
Longnose gar	3	0.1	26.1 - 31.9	5.87	8.6
Striped bass	3	0.1	2.5 - 4.0	0.04	0.1
Bluegill	2	0.1	5.8 - 8.1	0.51	0.7
Freshwater drum	2	0.1	3.0 - 8.7	0.27	0.4
Hybrid sunfish	2	0.1	5.2 - 6.2	0.29	0.4
Largemouth bass	2	0.1	9.8 - 10.8	1.14	1.7
Quillback	2	0.1	12.6 - 14.3	2.68	3.9
Smallmouth bass	2	0.1	1.7 - 10.3	0.56	0.8
Hybrid striped bass	1	0.0	8.3	0.27	0.4
Mimic shiner	1	0.0	2.1	*	0.0
Shortnose gar	1	0.0	25.5	1.98	2.9
Silver chub	1	0.0	4.3	0.02	0.0
<b>Total - Species 19+</b>	2769	100.0		68.59	100.0



DATE:8/03/04

STATION: RM IN 705.4 Night

NAME OF STREAM: Ohio River

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENTAGE	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)	PERCENTAGE
Emerald shiner	130	59.4	0.7 - 3.5	0.17	0.3
Freshwater drum	19	8.7	1.1 - 18.6	8.33	16.5
River carpsucker	17	7.8	9.4 - 19.4	21.22	41.9
Channel catfish	15	6.8	2.1 - 15.8	7.02	13.9
Sauger	9	4.1	4.6 - 15.3	4.58	9.1
Longear sunfish	5	2.3	4.1 - 4.7	0.40	0.8
Silver chub	5	2.3	2.8 - 4.6	0.13	0.3
Gizzard shad	4	1.8	3.6 - 8.3	0.24	0.5
Flathead catfish	3	1.4	11.8 - 13.5	2.03	4.0
Bluegill	2	0.9	6.2 - 6.3	0.36	0.7
Quillback	2	0.9	9.2 - 13.7	1.60	3.2
Blue catfish	1	0.5	13.7	0.86	1.7
Bluntnose minnow	1	0.5	3.1	0.01	0.0
Golden shiner	1	0.5	8.8	0.09	0.2
Longnose gar	1	0.5	27.7	2.60	5.1
Redear sunfish	1	0.5	6.0	0.15	0.3
Skipjack herring	1	0.5	1.9	*	0.0
Spotted bass	1	0.5	8.8	0.36	0.7
Striped bass	1	0.5	9.9	0.44	0.9
<b>Total - Species 19</b>	219	100.0		50.59	100.0

\*=less than 0.01 lbs.

DATE:8/11/04

STATION: RM IN 717.2 Night

NAME OF STREAM: Ohio River

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENTAGE	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)	PERCENTAGE
Gizzard shad	32	23.5	3.8 - 13.0	6.00	6.4
Channel catfish	18	13.2	12.5 - 21.3	22.00	23.4
Emerald shiner	16	11.8	1.0 - 2.6	0.02	0.0
Bluegill	14	10.3	3.0 - 7.4	1.98	2.1
Longear sunfish	12	8.8	3.6 - 5.4	1.18	1.3
Freshwater drum	8	5.9	3.0 - 20.5	12.01	12.8
White crappie	7	5.1	5.5 - 9.3	1.35	1.4
Sauger	5	3.7	4.5 - 14.1	0.92	1.0
Smallmouth buffalo	5	3.7	17.8 - 21.1	19.52	20.8
River carpsucker	4	2.9	11.8 - 19.1	6.95	7.4
Common carp	2	1.5	21.3 - 25.5	12.30	13.1
Flathead catfish	2	1.5	13.2 - 15.5	2.13	2.3
Largemouth bass	2	1.5	13.6 - 14.5	2.70	2.9
Smallmouth bass	2	1.5	2.2 - 4.0	0.04	0.0
Striped bass	2	1.5	4.6 - 9.5	0.42	0.4
Goldeye	1	0.7	10.2	0.40	0.4
Hybrid striped bass	1	0.7	14.1	1.21	1.3
Longnose gar	1	0.7	21.1	0.79	0.8
Quillback	1	0.7	15.9	2.04	2.2
Skipjack herring	1	0.7	6.2	0.08	0.1
<b>Total - Species 20</b>	136	100.0		94.04	100.0

APPENDIX E

STREAM HABITAT EVALUATION FORMS FOR EACH SITE, CANNELTON POOL,  
OHIO RIVER, 2004

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

STREAM: Ohio River RIVER MILE: IN 605.0 Night  
 NEAREST TOWN: Clarksville, IN COUNTY: Clark  
 QUADRANGLE: New Albany, IN-KY TWP: 3S RNG: 6E SEC: 18  
 LATITUDE: upstream 42 00 225 N LONGITUDE: 5 42 596 E  
 LATITUDE: \_\_\_\_\_ LONGITUDE: \_\_\_\_\_  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) No IF NOT, WHY? Falls

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at Falls Ohio SP ramp. Electrofished upper fossil beds for 1 hour, approximately 1/2 mile long reach.

**COLLECTION SUMMARY**

DATE: 8/10/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, Schoenung, King  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 20.5  
 AIR TEMP (F): 91.8 WATER TEMP (F): 80.2 D.O. (ppm): 7  
 CONDUCTIVITY: 433.7 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 387.5 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately 1/2 mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
500			
312.5			
375			
500			
250			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Only electrofished upstream riffle area for 12 minutes. All large STB and most large hybrid striped bass collected in riffle. Great habitat.

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

STREAM: Ohio River RIVER MILE: IN 615.7 Night  
 NEAREST TOWN: New Albany, IN COUNTY: Floyd  
 QUADRANGLE: Lanesville, IN-KY TWP: 3S/4S RNG: 5E SEC: 31,6  
 LATITUDE: upstream 42 28 283 N LONGITUDE: upstream 165 97 495 E  
 LATITUDE: \_\_\_\_\_ LONGITUDE: \_\_\_\_\_  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at COE Middle Creek ramp. Electrofished IN bank starting at COE green light at RM IN 615.7. Station extended approximately one mile downstream to just upstream of the Ceasar's Riverboat.

**COLLECTION SUMMARY**

DATE: 8/17/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, Doll, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 34  
 AIR TEMP (F): 72.1 WATER TEMP (F): 77.0 D.O. (ppm): 9  
 CONDUCTIVITY: 411 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1450 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1500			
1500			
1500			
1375			
1375			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Soft bottom site. Poor habitat. Possibly impacted by numerous power plant and other discharges.

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

STREAM: Ohio River RIVER MILE: IN 625.0 Day  
 NEAREST TOWN: West Point, KY COUNTY: Harrison  
 QUADRANGLE: Kosmosdale, KY-IN TWP: 5S RNG: 5E SEC: 24,25  
 LATITUDE: upstream 42 13 781 N LONGITUDE: upstream 5 95 075 E  
 LATITUDE: downstream 42 13 759 N LONGITUDE: downstream 5 95 086 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at West Point, KY. Site approximately 5 miles upstream. Electrofished IN bank starting at IN RM 625.0, across from power plant discharge creek.

**COLLECTION SUMMARY**

DATE: 7/15/2004 GEAR: DC boat ef EFFORT: one hour  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 14  
 AIR TEMP (F): 90.5 WATER TEMP (F): 84.6 D.O. (ppm): 8  
 CONDUCTIVITY: 384 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1637.5 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1625			
1687.5			
1625			
1625			
1625			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 13 759 N  
middlestream lon. 5 95 086 E

Soft bottom site. Poor habitat.

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

STREAM: Ohio River RIVER MILE: IN 625.0 Night  
 NEAREST TOWN: West Point, KY COUNTY: Harrison  
 QUADRANGLE: Kosmosdale, KY-IN TWP: 5S RNG: 5E SEC: 24,25  
 LATITUDE: upstream 42 13 781 N LONGITUDE: upstream 5 95 075 E  
 LATITUDE: downstream 42 13 759 N LONGITUDE: downstream 5 95 086 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at West Point, KY. Site approximately 5 miles upstream of ramp. Electrofished IN bank starting at IN RM 625.0, across from powerplant discharge creek.

**COLLECTION SUMMARY**

DATE: 7/20/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 18  
 AIR TEMP (F): 75.7 WATER TEMP (F): 81.7 D.O. (ppm): 9  
 CONDUCTIVITY: 396 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1637.5 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1625			
1687.5			
1625			
1625			
1625			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 13 759 N  
middlestream lon. 5 95 086 E

Soft bottom site. Poor habitat.

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

STREAM: Ohio River RIVER MILE: IN 634.6 Day  
 NEAREST TOWN: New Boston, IN COUNTY: Harrison  
 QUADRANGLE: Rock Haven, IN-KY TWP: 6 S RNG: 4 E SEC: 14  
 LATITUDE: upstream 42 05 190 N LONGITUDE: upstream 5 84 923 E  
 LATITUDE: downstream 42 03 450 N LONGITUDE: downstream 5 84 791 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at West Point, KY. Station was approximately five miles downstream from ramp. Electrofished IN bank starting at COE green light at RM IN 634.6. Station ended approximately one mile downstream.

**COLLECTION SUMMARY**

DATE: 7/15/2004 GEAR: DC boat ef EFFORT: one hour day  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 19  
 AIR TEMP (F): 80.4 WATER TEMP (F): 82.4 D.O. (ppm): 9  
 CONDUCTIVITY: 389 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1275 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1437.5			
1187.5			
1250			
1250			
1250			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 04 391 N  
middlestream lon. 5 84 663 E

Hard bottom (boulder, bedrock bluff) shoreline. Good habitat.

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

STREAM: Ohio River RIVER MILE: IN 634.6 Night  
 NEAREST TOWN: New Boston, IN COUNTY: Harrison  
 QUADRANGLE: Rock Haven, IN-KY TWP: 6S RNG: 4E SEC: 14  
 LATITUDE: upstream 42 05 190 N LONGITUDE: upstream 5 84 923 E  
 LATITUDE: downstream 42 03 450 N LONGITUDE: downstream 5 84 791 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at West Point, KY. Station was approximately five miles downstream from ramp. Electrofished IN bank starting at COE green light at RM IN 634.6. Station ended approximately one mile downstream.

**COLLECTION SUMMARY**

DATE: 7/15/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 18  
 AIR TEMP (F): 75.7 WATER TEMP (F): 81.7 D.O. (ppm): 9  
 CONDUCTIVITY: 396 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1275 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1437.5			
1187.5			
1250			
1250			
1250			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 04 391 N  
middlestream lon. 5 84 663 E

Hard bottom (boulder, bedrock bluff) shoreline. Good habitat.

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

STREAM: Ohio River RIVER MILE: IN 643.3 Night  
 NEAREST TOWN: Brandenburg, KY COUNTY: Harrison  
 QUADRANGLE: Laconia, IN-KY TWP: 6S RNG: 4E SEC: 6  
 LATITUDE: upstream 42 08 005 N LONGITUDE: upstream 57 69 78 E  
 LATITUDE: downstream 42 07 992 N LONGITUDE: downstream 57 52 23 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at private ramp in Mauckport, IN. Station approximately five miles upstream from ramp. Started electrofishing IN bank at IN RM 643.3, across from upstream most well.

**COLLECTION SUMMARY**

DATE: 7/21/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 18.5  
 AIR TEMP (F): 82.8 WATER TEMP (F): 83.7 D.O. (ppm): 8  
 CONDUCTIVITY: 402 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1475 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1375			
1375			
1500			
1562.5			
1562.5			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 07 965 N  
middlestream lon. 575 840 E Hard bottom (boulder, slate, rock bluff)  
site but not as good as IN RM 634.6 due too more slab, bluff habitat vs less boulder/rock.

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

STREAM: Ohio River RIVER MILE: IN 654.1 Night  
 NEAREST TOWN: New Amsterdam, IN COUNTY: Harrison  
 QUADRANGLE: New Amsterdam, KY-IN TWP: 5S RNG: 2E SEC: 14  
 LATITUDE: upstream 42 14 644 N LONGITUDE: upstream 56 34 76 E  
 LATITUDE: downstream 42 16 68 N LONGITUDE: downstream 56 32 91 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at private ramp in Mauckport, IN. Station  
located approximately six miles downstream of ramp. Electrofished IN bank starting across from conveyor on KY  
bank.

**COLLECTION SUMMARY**

DATE: 7/21/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 18.5  
 AIR TEMP (F): 82.8 WATER TEMP (F): 83.7 D.O. (ppm): 8  
 CONDUCTIVITY: 402 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1775 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1625			
1750			
1750			
1875			
1875			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 16 193 N  
middlestream lon. 56 33 04 E

Soft bottom station. Poor fish habitat.

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

STREAM: Ohio River RIVER MILE: IN 665.0 Night  
 NEAREST TOWN: Leavenworth, IN COUNTY: Crawford  
 QUADRANGLE: Leavenworth, IN-KY TWP: 4S RNG: 1E SEC: 1,2  
 LATITUDE: upstream 42 07 966 N LONGITUDE: upstream 575 847 E  
 LATITUDE: downstream 42 27 323 N LONGITUDE: downstream 55 47 00 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at private marina in Leavenworth. Station approximately 1/2 mile downstream of ramp. Electrofished IN bank starting at COE green light at IN RM 665.0.

**COLLECTION SUMMARY**

DATE: 7/27/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 19  
 AIR TEMP (F): 71.4 WATER TEMP (F): 79.5 D.O. (ppm): 7  
 CONDUCTIVITY: 417 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1425 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1750			
1500			
1250			
1250			
1375			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 27 535 N  
middlestream lon. 55 48 91 E

Hard bottom (bluff, boulder) station. Good habitat.

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

STREAM: Ohio River RIVER MILE: IN 675.4 Night  
 NEAREST TOWN: Alton, IN COUNTY: Crawford  
 QUADRANGLE: Alton, KY-IN TWP: 4S RNG: 1E SEC: 35  
 LATITUDE: upstream 422 01 87 N LONGITUDE: upstream 554 01 37 E  
 LATITUDE: downstream 422 20 176 N LONGITUDE: downstream 554 020 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at private ramp in Leavenworth and motored approximately ten miles downstream to site. Station is only 3.5 miles upstream from IDFW's Alton ramp. Electrofished IN bank starting at COE green light at RM IN 675.4.

**COLLECTION SUMMARY**

DATE: 7/27/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 19  
 AIR TEMP (F): 71.4 WATER TEMP (F): 79.5 D.O. (ppm): 7  
 CONDUCTIVITY: 417 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1400 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1500			
1500			
1500			
1250			
1250			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 19 785 N  
middlestream lon. 55 36 39 E

Good hard bottom (boulder, slate, bedrock) habitat.

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

STREAM: Ohio River RIVER MILE: KY 684.9 Night  
 NEAREST TOWN: Magnet, IN COUNTY: Perry  
 QUADRANGLE: Alton, KY-IN TWP: 5S RNG: 1E SEC: 17  
 LATITUDE: upstream 42 15 397 LONGITUDE: upstream 550 189 E  
 LATITUDE: \_\_\_\_\_ LONGITUDE: \_\_\_\_\_  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at USFW ramp at Mano Point (upstream of Derby) and motored 6.5 miles upstream to station. Electrofished KY bank starting at COE red light at RM KY 684.9.

**COLLECTION SUMMARY**

DATE: 7/28/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 34  
 AIR TEMP (F): 78.4 WATER TEMP (F): 79.5 D.O. (ppm): 7  
 CONDUCTIVITY: 410 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1325 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1250			
1250			
1312.5			
1437.5			
1375			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Good hard bottom (boulder, slate, bedrock) habitat.

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

STREAM: Ohio River RIVER MILE: IN 696.8 Night  
 NEAREST TOWN: Derby, IN COUNTY: Perry  
 QUADRANGLE: Rome, IN-KY TWP: 6S RNG: 1W SEC: 16  
 LATITUDE: upstream 420 18 92 N LONGITUDE: upstream 541 668 E  
 LATITUDE: downstream 42 01 819 N LONGITUDE: downstream 541 767 E  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at USFWS Mano Point ramp  
 (just upstream from Derby) and motored three miles downstream. Electrofished IN bank starting at COE green  
 light at IN RM 696.8.

**COLLECTION SUMMARY**

DATE: 7/28/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 34  
 AIR TEMP (F): 78.4 WATER TEMP (F): 79.5 D.O. (ppm): 7  
 CONDUCTIVITY: 410 pH: 9 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 2125 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
2125			
2125			
2125			
2125			
2125			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: middlestream lat. 42 00 225 N; middlestream lon. 54 25 96 E  
Soft bottom site with extensive submerged timber line in 4-8 ft. water.

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

STREAM: Ohio River RIVER MILE: IN 705.4 Night  
 NEAREST TOWN: Rome, IN COUNTY: Perry  
 QUADRANGLE: Rome, IN-KY TWP: 7S RNG: 2W SEC: 14  
 LATITUDE: upstream 42 00 225 N LONGITUDE: 54 25 96 E  
 LATITUDE: \_\_\_\_\_ LONGITUDE: \_\_\_\_\_  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at Rocky Point and motored 13 miles upstream.  
Electrofished IN bank starting at COE green light at RM IN 705.4.

**COLLECTION SUMMARY**

DATE: 8/3/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 17  
 AIR TEMP (F): 78.6 WATER TEMP (F): 80.6 D.O. (ppm): 7  
 CONDUCTIVITY: 447 pH: 7 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 1425 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
1500			
1500			
1375			
1375			
1375			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Hard bottom (boulder, slate, bedrock). \*Catch probably influenced by rising river and turbidity.

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

STREAM: Ohio River RIVER MILE: IN 717.2 Night  
 NEAREST TOWN: Cannelton, IN COUNTY: Perry  
 QUADRANGLE: Cannelton, IN-KY TWP: 7S RNG: 2W SEC: 17,8  
 LATITUDE: upstream 419 57 04 N LONGITUDE: upstream 53 10 98 E  
 LATITUDE: \_\_\_\_\_ LONGITUDE: \_\_\_\_\_  
 U.S.G.S. GAUGING STATION LOCATION: NA AVG. DISCHARGE (cfs): \_\_\_\_\_  
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Yes IF NOT, WHY? \_\_\_\_\_

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at Rocky Point and motored 1.5 miles upstream. Electrofished IN bank starting at COE green light at RM 717.2.

**COLLECTION SUMMARY**

DATE: 8/11/2004 GEAR: DC boat ef EFFORT: one hour night  
 CREW: Stefanavage, King, Ferguson  
 OTHER GEAR/EFFORT: \_\_\_\_\_ WATER STAGE: \_\_\_\_\_  
 CANOPY (%OPEN): 100% PHOTOS (Y/N): No SECCHI DISK (inches): 23  
 AIR TEMP (F): 64.2 WATER TEMP (F): 79.7 D.O. (ppm): 8  
 CONDUCTIVITY: 413 pH: 8.5 ALKALINITY: \_\_\_\_\_  
 TDS: \_\_\_\_\_  
 STREAM MEASUREMENTS AVG. WIDTH: 2075 ft. AVG. DEPTH: \_\_\_\_\_ MAX DEPTH: \_\_\_\_\_  
 STATION LENGTH: (1st date) approximately one mile (2nd date) \_\_\_\_\_

WIDTH (ft)	DEPTH (in)		
2750			
2500			
2000			
1625			
1500			

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

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Soft bottom then huge boulders in 8ft water; mixed with shallow timber.

APPENDIX F

QHEI FORMS FOR EACH SITE, CANNELTON POOL, OHIO RIVER, 2004

STREAM: Ohio River RIVER MILE IN 605.0 Night DATE: 8/10/2004 QHEI SCORE **79**

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

TYPE		POOL		RIFFLE		SUBSTRATE ORIGIN (all)		SILT COVER (one)	
<input checked="" type="checkbox"/>	BLDER/SLAB(10)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	LIMESTONE(1)	<input type="checkbox"/>	SILT-HEAVY(-2)
<input type="checkbox"/>	BOULDER(9)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SANDSTONE(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"/>	SHALE(-1)	<input type="checkbox"/>	EXTENSIVE(-2)
<input type="checkbox"/>	MUCK/SILT(2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	COAL FINES(-2)	<input checked="" type="checkbox"/>	LOW(0)
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 **12**

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)		
<input type="checkbox"/>	UNDERCUT BANKS(1)	<input checked="" type="checkbox"/>	DEEP POOLS(2)	<input type="checkbox"/>	EXTENSIVE >75%(11)
<input type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(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 type="checkbox"/>	SPARSE 5-25%(3)
		<input type="checkbox"/>	OXBOWS(1)	<input type="checkbox"/>	NEARLY ABSENT <5%(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) CHANNEL SCORE **12**

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER	
<input type="checkbox"/>	EXCELLENT(7)	<input checked="" type="checkbox"/>	HIGH(3)	<input type="checkbox"/>	SNAGGING
<input type="checkbox"/>	GOOD(5)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION
<input checked="" type="checkbox"/>	FAIR(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL
<input type="checkbox"/>	POOR(1)	<input type="checkbox"/>		<input type="checkbox"/>	DREDGING
		<input type="checkbox"/>		<input type="checkbox"/>	ONE SIDE CHANNEL MODIFICATION
		<input type="checkbox"/>		<input type="checkbox"/>	IMPOUND
		<input type="checkbox"/>		<input type="checkbox"/>	ISLAND
		<input type="checkbox"/>		<input type="checkbox"/>	LEVEED
		<input type="checkbox"/>		<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 **9**

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input type="checkbox"/>	WIDE>150ft.(4)
<input checked="" type="checkbox"/>	MODERATE 30-150 ft.(3)
<input type="checkbox"/>	NARROW 15-30 ft.(2)
<input type="checkbox"/>	VERY NARROW 3-15 ft.(1)
<input type="checkbox"/>	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input checked="" type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)

BANK EROSION

L	R (per bank)
<input checked="" type="checkbox"/>	NONE OR LITTLE(3)
<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

MAX. DEPTH (Check 1)

<input checked="" type="checkbox"/>	>4 ft.(6)
<input type="checkbox"/>	2.4-4 ft.(4)
<input type="checkbox"/>	1.2-2.4 ft.(2)
<input type="checkbox"/>	<1.2 ft.(1)
<input type="checkbox"/>	<0.6 ft.(Pool=0)(0)

MORPHOLOGY (Check 1)

<input checked="" type="checkbox"/>	POOL WIDTH>RIFFLE WIDTH(2)
<input type="checkbox"/>	POOL WIDTH=RIFFLE WIDTH(1)
<input type="checkbox"/>	POOL WIDTH<RIFFLE WIDTH(0)

POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)

<input type="checkbox"/>	TORRENTIAL(-1)	<input checked="" type="checkbox"/>	EDDIES(1)
<input checked="" type="checkbox"/>	FAST(1)	<input type="checkbox"/>	INTERSTITIAL(-1)
<input checked="" type="checkbox"/>	MODERATE(1)	<input type="checkbox"/>	INTERMITTENT(-2)
<input checked="" type="checkbox"/>	SLOW(1)		

COMMENTS: \_\_\_\_\_

RIFFLE SCORE **6**

RIFFLE/RUN DEPTH

<input checked="" type="checkbox"/>	GENERALLY >4 in. MAX.>20 in.(4)
<input type="checkbox"/>	GENERALLY >4 in. MAX.<20 in.(3)
<input type="checkbox"/>	GENERALLY 2-4 in.(1)
<input type="checkbox"/>	GENERALLY <2 in.(Riffle=0)(0)

RIFFLE/RUN SUBSTRATE

<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)

RIFFLE/RUN EMBEDDEDNESS

<input type="checkbox"/>	EXTENSIVE(-1)	<input type="checkbox"/>	NONE(2)
<input checked="" type="checkbox"/>	MODERATE(0)	<input type="checkbox"/>	NO RIFFLE(0)
<input type="checkbox"/>	LOW(1)		

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 40 % RIFFLE 10 % RUN 50 GRADIENT SCORE **8**

STREAM: Ohio River RIVER MILE IN 615.7 Night DATE: 8/17/2004 QHEI SCORE **39**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **0**

TYPE		POOL	RIFFLE	POOL	RIFFLE	SUBSTRATE ORIGIN (all)		SILT COVER (one)						
<input type="checkbox"/>	BLDER/SLAB(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LIMESTONE(1)	<input type="checkbox"/>	RIP/RAP(0)	<input checked="" type="checkbox"/>	SILT-HEAVY(-2)	<input type="checkbox"/>	SILT-MOD(-1)	
<input type="checkbox"/>	BOULDER(9)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SAND(6)	<input checked="" type="checkbox"/>	HARDPAN(0)	<input type="checkbox"/>	SILT-NORM(0)	<input type="checkbox"/>	SILT-FREE(1)	
<input type="checkbox"/>	COBBLE(8)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BEDROCK(5)	<input type="checkbox"/>		<input type="checkbox"/>	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"/>	DETritus(3)	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	EXTENSIVE(-2)	<input type="checkbox"/>	MODERATE(-1)
<input checked="" type="checkbox"/>	MUCK/SILT(2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ARTIFIC(0)	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	LOW(0)	<input type="checkbox"/>	NONE(1)
TOTAL NUMBER OF SUBSTRATE TYPES:		<input 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 **4**

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER			
<input type="checkbox"/>	EXCELLENT(7)	<input checked="" type="checkbox"/>	HIGH(3)	<input type="checkbox"/>	SNAGGING	<input type="checkbox"/>	IMPOUND
<input type="checkbox"/>	GOOD(5)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	FAIR(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL	<input type="checkbox"/>	LEVEED
<input checked="" type="checkbox"/>	POOR(1)	<input type="checkbox"/>		<input type="checkbox"/>	DREDGING	<input type="checkbox"/>	BANK SHAPING
		<input type="checkbox"/>		<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 **5**

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input type="checkbox"/>	WIDE >150ft.(4)
<input type="checkbox"/>	MODERATE 30-150 ft.(3)
<input checked="" type="checkbox"/>	NARROW 15-30 ft.(2)
<input type="checkbox"/>	VERY NARROW 3-15 ft.(1)
<input type="checkbox"/>	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input checked="" type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)

BANK EROSION

L	R (per bank)
<input type="checkbox"/>	NONE OR LITTLE(3)
<input checked="" type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

MAX. DEPTH (Check 1)	MORPHOLOGY (Check 1)	POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)	
<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 SCORE **0**

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

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE **8**

STREAM: Ohio River RIVER MILE IN 625.0 Day DATE: 7/15/2004 QHEI SCORE **35.5**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **0**

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

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)		
<input type="checkbox"/>	UNDERCUT BANKS(1)	<input checked="" type="checkbox"/>	DEEP POOLS(2)	<input type="checkbox"/>	EXTENSIVE >75%(11)
<input type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(1)	<input type="checkbox"/>	MODERATE 25-75%(7)
<input checked="" type="checkbox"/>	SHALLOWS (IN SLOW WATER)(1)	<input type="checkbox"/>	BOULDERS(1)	<input checked="" type="checkbox"/>	NEARLY ABSENT <5%(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) CHANNEL SCORE **8**

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER					
<input type="checkbox"/>	HIGH(4)	<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"/>	RECOVERED(4)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	LOW(2)	<input type="checkbox"/>	RECOVERING(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL	<input type="checkbox"/>	LEVEED
<input checked="" type="checkbox"/>	NONE(1)	<input checked="" type="checkbox"/>	POOR(1)	<input type="checkbox"/>		<input type="checkbox"/>	DREDGING	<input type="checkbox"/>	BANK SHAPING
		<input type="checkbox"/>	RECENT OR NO RECOVERY(1)			<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 **4.5**

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input type="checkbox"/>	WIDE >150ft.(4)
<input type="checkbox"/>	MODERATE 30-150 ft.(3)
<input type="checkbox"/>	NARROW 15-30 ft.(2)
<input checked="" type="checkbox"/>	VERY NARROW 3-15 ft.(1)
<input type="checkbox"/>	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input checked="" type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)

BANK EROSION

L	R (per bank)
<input checked="" type="checkbox"/>	NONE OR LITTLE(3)
<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

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

COMMENTS: \_\_\_\_\_

RIFFLE SCORE **0**

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

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE **8**

STREAM: Ohio River RIVER MILE IN 625.0 Night DATE: 7/20/2004 QHEI SCORE 35.5

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE 0

TYPE		POOL	RIFFLE	POOL		RIFFLE	SUBSTRATE ORIGIN (all)		SILT COVER (one)					
<input type="checkbox"/>	BLDER/SLAB(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LIMESTONE(1)	<input type="checkbox"/>	RIP/RAP(0)	<input checked="" type="checkbox"/>	SILT-HEAVY(-2)	<input type="checkbox"/>	SILT-MOD(-1)
<input type="checkbox"/>	BOULDER(9)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TILLS(1)	<input type="checkbox"/>	HARDPAN(0)	<input type="checkbox"/>	SILT-NORM(0)	<input type="checkbox"/>	SILT-FREE(1)
<input type="checkbox"/>	COBBLE(8)	<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"/>	HARDPAN(4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SHALE(-1)						
<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"/>	COAL FINES(-2)	<input checked="" type="checkbox"/>	EXTENSIVE(-2)	<input type="checkbox"/>	MODERATE(-1)	<input type="checkbox"/>	NONE(1)
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 5

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)		
<input type="checkbox"/>	UNDERCUT BANKS(1)	<input checked="" type="checkbox"/>	DEEP POOLS(2)	<input type="checkbox"/>	EXTENSIVE >75%(11)
<input type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(1)	<input type="checkbox"/>	MODERATE 25-75%(7)
<input checked="" type="checkbox"/>	SHALLOWS (IN SLOW WATER)(1)	<input type="checkbox"/>	BOULDERS(1)	<input checked="" type="checkbox"/>	SPARSE 5-25%(3)
		<input type="checkbox"/>	OXBOWS(1)	<input type="checkbox"/>	NEARLY ABSENT <5%(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) CHANNEL SCORE 8

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER					
<input type="checkbox"/>	HIGH(4)	<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"/>	RECOVERED(4)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	LOW(2)	<input type="checkbox"/>	RECOVERING(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL	<input type="checkbox"/>	LEVEED
<input checked="" type="checkbox"/>	NONE(1)	<input checked="" type="checkbox"/>	POOR(1)	<input type="checkbox"/>		<input type="checkbox"/>	DREDGING	<input type="checkbox"/>	BANK SHAPING
		<input type="checkbox"/>	RECENT OR NO RECOVERY(1)			<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 4.5

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input type="checkbox"/>	WIDE >150ft.(4)
<input type="checkbox"/>	MODERATE 30-150 ft.(3)
<input type="checkbox"/>	NARROW 15-30 ft.(2)
<input checked="" type="checkbox"/>	VERY NARROW 3-15 ft.(1)
<input type="checkbox"/>	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input checked="" type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)

BANK EROSION

L	R (per bank)
<input checked="" type="checkbox"/>	NONE OR LITTLE(3)
<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

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

COMMENTS: \_\_\_\_\_

RIFFLE SCORE 0

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

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE 8

STREAM: Ohio River RIVER MILE IN 634.6 Day DATE: 7/15/2004 QHEI SCORE 69.5

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

TYPE		POOL	RIFFLE	POOL	RIFFLE	SUBSTRATE ORIGIN (all)		SILT COVER (one)					
<input checked="" type="checkbox"/>	BLDER/SLAB(10)	<input checked="" type="checkbox"/>				<input checked="" 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 checked="" type="checkbox"/>				<input 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"/>	COBBLE(8)	<input checked="" type="checkbox"/>				<input type="checkbox"/>	SANDSTONE(0)	Extent of Embeddedness (check one)					
<input type="checkbox"/>	HARDPAN(4)					<input type="checkbox"/>	SHALE(-1)						
<input type="checkbox"/>	MUCK/SILT(2)	<input checked="" type="checkbox"/>				<input type="checkbox"/>	COAL FINES(-2)	<input type="checkbox"/>	EXTENSIVE(-2)	<input checked="" type="checkbox"/>	MODERATE(-1)	<input type="checkbox"/>	NONE(1)
TOTAL NUMBER OF SUBSTRATE TYPES:		<input 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 13

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)				
<input checked="" type="checkbox"/>	UNDERCUT BANKS(1)	<input checked="" type="checkbox"/>	DEEP POOLS(2)	<input type="checkbox"/>	EXTENSIVE >75%(11)		
<input type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(1)	<input type="checkbox"/>	<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: \_\_\_\_\_

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER					
<input type="checkbox"/>	HIGH(4)	<input checked="" type="checkbox"/>	NONE(6)	<input checked="" type="checkbox"/>	HIGH(3)	<input type="checkbox"/>	SNAGGING	<input type="checkbox"/>	IMPOUND
<input type="checkbox"/>	MODERATE(3)	<input type="checkbox"/>	RECOVERED(4)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	LOW(2)	<input type="checkbox"/>	RECOVERING(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL	<input type="checkbox"/>	LEVEED
<input checked="" 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"/>	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 7.5

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)	
<input checked="" type="checkbox"/>	WIDE >150ft.(4)	
<input type="checkbox"/>	MODERATE 30-150 ft.(3)	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	NARROW 15-30 ft.(2)
<input type="checkbox"/>	VERY NARROW 3-15 ft.(1)	
<input type="checkbox"/>	NONE(0)	

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)	
<input checked="" type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input type="checkbox"/>	CONSERV. TILLAGE(1)	
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)	

BANK EROSION

L	R (per bank)	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NONE OR LITTLE(3)
<input type="checkbox"/>	<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

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 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 checked="" type="checkbox"/>	MODERATE(1)	<input type="checkbox"/>	INTERMITTENT(-2)
<input type="checkbox"/>	<1.2 ft.(1)						
<input type="checkbox"/>	<0.6 ft.(Pool=0)(0)	<input checked="" type="checkbox"/>	SLOW(1)				

COMMENTS: \_\_\_\_\_

RIFFLE SCORE 0

RIFFLE/RUN DEPTH

<input type="checkbox"/>	GENERALLY >4 in. MAX.>20 in.(4)
<input type="checkbox"/>	GENERALLY >4 in. MAX.<20 in.(3)
<input type="checkbox"/>	GENERALLY 2-4 in.(1)
<input type="checkbox"/>	GENERALLY <2 in.(Riffle=0)(0)

RIFFLE/RUN SUBSTRATE

<input 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 checked="" type="checkbox"/>	NO RIFFLE(0)

RIFFLE/RUN EMBEDDEDNESS

<input type="checkbox"/>	EXTENSIVE(-1)	<input type="checkbox"/>	NONE(2)
<input type="checkbox"/>	MODERATE(0)	<input checked="" type="checkbox"/>	NO RIFFLE(0)
<input type="checkbox"/>	LOW(1)		

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE 8

STREAM: Ohio River RIVER MILE IN 634.6 Night DATE: 7/20/2004 QHEI SCORE **69.5**

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

TYPE		POOL	RIFFLE	POOL	RIFFLE	SUBSTRATE ORIGIN (all)		SILT COVER (one)					
<input checked="" type="checkbox"/>	BLDER/SLAB(10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	COBBLE(8)	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	SHALE(-1)						
<input type="checkbox"/>	MUCK/SILT(2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ARTIFIC(0)	<input type="checkbox"/>	COAL FINES(-2)	<input type="checkbox"/>	EXTENSIVE(-2)	<input checked="" type="checkbox"/>	MODERATE(-1)
				<input type="checkbox"/>	>4(2)	<input type="checkbox"/>	<4(0)			<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: \_\_\_\_\_

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

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)				
<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 type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(1)	<input 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: \_\_\_\_\_

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER					
<input type="checkbox"/>	HIGH(4)	<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"/>	RECOVERED(4)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	LOW(2)	<input type="checkbox"/>	RECOVERING(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL	<input type="checkbox"/>	LEVEED
<input checked="" 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"/>	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 **7.5**

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input checked="" type="checkbox"/>	WIDE >150ft.(4)
<input type="checkbox"/>	MODERATE 30-150 ft.(3)
<input type="checkbox"/>	NARROW 15-30 ft.(2)
<input type="checkbox"/>	VERY NARROW 3-15 ft.(1)
<input type="checkbox"/>	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input checked="" type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)

BANK EROSION

L	R (per bank)
<input checked="" type="checkbox"/>	NONE OR LITTLE(3)
<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

MAX. DEPTH (Check 1)

<input checked="" type="checkbox"/>	>4 ft.(6)
<input type="checkbox"/>	2.4-4 ft.(4)
<input type="checkbox"/>	1.2-2.4 ft.(2)
<input type="checkbox"/>	<1.2 ft.(1)
<input type="checkbox"/>	<0.6 ft.(Pool=0)(0)

MORPHOLOGY (Check 1)

<input checked="" type="checkbox"/>	POOL WIDTH>RIFFLE WIDTH(2)
<input type="checkbox"/>	POOL WIDTH=RIFFLE WIDTH(1)
<input type="checkbox"/>	POOL WIDTH<RIFFLE WIDTH(0)

POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)

<input type="checkbox"/>	TORRENTIAL(-1)	<input type="checkbox"/>	EDDIES(1)
<input type="checkbox"/>	FAST(1)	<input type="checkbox"/>	INTERSTITIAL(-1)
<input checked="" type="checkbox"/>	MODERATE(1)	<input type="checkbox"/>	INTERMITTENT(-2)
<input checked="" type="checkbox"/>	SLOW(1)		

COMMENTS: \_\_\_\_\_

RIFFLE SCORE **0**

RIFFLE/RUN DEPTH

<input type="checkbox"/>	GENERALLY >4 in. MAX.>20 in.(4)
<input type="checkbox"/>	GENERALLY >4 in. MAX.<20 in.(3)
<input type="checkbox"/>	GENERALLY 2-4 in.(1)
<input type="checkbox"/>	GENERALLY <2 in.(Riffle=0)(0)

RIFFLE/RUN SUBSTRATE

<input 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 checked="" type="checkbox"/>	NO RIFFLE(0)

RIFFLE/RUN EMBEDDEDNESS

<input type="checkbox"/>	EXTENSIVE(-1)	<input type="checkbox"/>	NONE(2)
<input type="checkbox"/>	MODERATE(0)	<input checked="" type="checkbox"/> NO RIFFLE(0)	
<input type="checkbox"/>	LOW(1)		

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE **8**



STREAM: Ohio River RIVER MILE IN 654.1 Night DATE: 7/21/2004 QHEI SCORE **44.5**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **2**

TYPE		POOL	RIFFLE	SUBSTRATE ORIGIN (all)		SILT COVER (one)	
<input type="checkbox"/>	BLDER/SLAB(10)	<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 type="checkbox"/>	<input type="checkbox"/>	TILLS(1)	<input checked="" type="checkbox"/>	SILT-NORM(0)
<input type="checkbox"/>	COBBLE(8)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SANDSTONE(0)	<input type="checkbox"/>	SILT-FREE(1)
<input type="checkbox"/>	HARDPAN(4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SHALE(-1)	Extent of Embeddedness (check one)	
<input checked="" type="checkbox"/>	MUCK/SILT(2)	<input type="checkbox"/>	<input type="checkbox"/>	<input 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 **5**

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

COMMENTS: \_\_\_\_\_

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER			
<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 checked="" type="checkbox"/>	HIGH(3)	<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	LOW(2)	<input type="checkbox"/>	RECOVERING(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	RELOCATION
<input checked="" type="checkbox"/>	NONE(1)	<input type="checkbox"/>	RECENT OR NO RECOVERY(1)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	DREDGING
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	ONE SIDE CHANNEL MODIFICATION
		<input type="checkbox"/>		<input type="checkbox"/>		<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

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>
	WIDE >150ft.(4)
	MODERATE 30-150 ft.(3)
	NARROW 15-30 ft.(2)
<input checked="" type="checkbox"/>	<input type="checkbox"/>
	VERY NARROW 3-15 ft.(1)
	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	FOREST, SWAMP(3)		URBAN OR INDUSTRIAL(0)
	OPEN PASTURE/ROW CROP(0)		SHURB OR OLD FIELD(2)
	RESID.,PARK,NEW FIELD(1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	FENCED PASTURE(1)		CONSERV. TILLAGE(1)
			MINING/CONSTRUCTION(0)

BANK EROSION

L	R (per bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	NONE OR LITTLE(3)
	MODERATE(2)
	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

MAX. DEPTH (Check 1)

<input checked="" type="checkbox"/>	>4 ft.(6)
<input type="checkbox"/>	2.4-4 ft.(4)
<input type="checkbox"/>	1.2-2.4 ft.(2)
<input type="checkbox"/>	<1.2 ft.(1)
<input type="checkbox"/>	<0.6 ft.(Pool=0)(0)

MORPHOLOGY (Check 1)

<input checked="" type="checkbox"/>	POOL WIDTH>RIFFLE WIDTH(2)
<input type="checkbox"/>	POOL WIDTH=RIFFLE WIDTH(1)
<input type="checkbox"/>	POOL WIDTH<RIFFLE WIDTH(0)

POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)

<input type="checkbox"/>	TORRENTIAL(-1)	<input checked="" type="checkbox"/>	EDDIES(1)
<input type="checkbox"/>	FAST(1)	<input type="checkbox"/>	INTERSTITIAL(-1)
<input checked="" type="checkbox"/>	MODERATE(1)	<input type="checkbox"/>	INTERMITTENT(-2)
<input checked="" type="checkbox"/>	SLOW(1)		

COMMENTS: \_\_\_\_\_

RIFFLE SCORE **0**

RIFFLE/RUN DEPTH

<input type="checkbox"/>	GENERALLY >4 in. MAX.>20 in.(4)
<input type="checkbox"/>	GENERALLY >4 in. MAX.<20 in.(3)
<input type="checkbox"/>	GENERALLY 2-4 in.(1)
<input type="checkbox"/>	GENERALLY <2 in.(Riffle=0)(0)

RIFFLE/RUN SUBSTRATE

<input 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)

RIFFLE/RUN EMBEDDEDNESS

<input type="checkbox"/>	EXTENSIVE(-1)	<input type="checkbox"/>	NONE(2)
<input type="checkbox"/>	MODERATE(0)	<input checked="" type="checkbox"/>	NO RIFFLE(0)
<input type="checkbox"/>	LOW(1)		

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE **8**

STREAM: Ohio River RIVER MILE IN 665.0 Night DATE: 7/27/2004 QHEI SCORE **67**

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

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

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)					
<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 type="checkbox"/>	OVERHANGING VEGETATION(1)	<input checked="" type="checkbox"/>	ROOTWADS(1)	<input type="checkbox"/>	AQUATIC MACROPHYTES(1)	<input 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 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) CHANNEL SCORE **11**

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER					
<input type="checkbox"/>	HIGH(4)	<input checked="" type="checkbox"/>	NONE(6)	<input checked="" type="checkbox"/>	HIGH(3)	<input type="checkbox"/>	SNAGGING	<input type="checkbox"/>	IMPOUND
<input type="checkbox"/>	MODERATE(3)	<input type="checkbox"/>	RECOVERED(4)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	LOW(2)	<input type="checkbox"/>	RECOVERING(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL	<input type="checkbox"/>	LEVEED
<input checked="" 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"/>	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 **8**

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input checked="" type="checkbox"/>	WIDE >150ft.(4)
<input type="checkbox"/>	MODERATE 30-150 ft.(3)
<input type="checkbox"/>	NARROW 15-30 ft.(2)
<input type="checkbox"/>	VERY NARROW 3-15 ft.(1)
<input type="checkbox"/>	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input checked="" type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	RESID., PARK, NEW FIELD(1)	<input type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)

BANK EROSION

L	R (per bank)
<input checked="" type="checkbox"/>	NONE OR LITTLE(3)
<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

MAX. DEPTH (Check 1)	MORPHOLOGY (Check 1)	POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)			
<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 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/RUN DEPTH RIFFLE/RUN SUBSTRATE RIFFLE/RUN EMBEDDEDNESS RIFFLE SCORE **0**

RIFFLE/RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS			
<input 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 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"/>	NO RIFFLE(0)		

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE **8**

STREAM: Ohio River RIVER MILE IN 675.4 Night DATE: 7/27/2004 QHEI SCORE **69**

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

TYPE		POOL	RIFFLE	POOL	RIFFLE	SUBSTRATE ORIGIN (all)		SILT COVER (one)							
<input checked="" type="checkbox"/>	BLDER/SLAB(10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	COBBLE(8)	<input checked="" type="checkbox"/>	<input 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"/>	SHALE(-1)									
<input type="checkbox"/>	MUCK/SILT(2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ARTIFIC(0)	COAL FINES(-2)	<input type="checkbox"/>	EXTENSIVE(-2)	<input type="checkbox"/>	MODERATE(-1)	<input checked="" type="checkbox"/>	LOW(0)	<input type="checkbox"/>	NONE(1)
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 **12**

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)				
<input type="checkbox"/>	UNDERCUT BANKS(1)	<input checked="" type="checkbox"/>	DEEP POOLS(2)	<input type="checkbox"/>	EXTENSIVE >75%(11)		
<input type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(1)	<input type="checkbox"/>	<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: \_\_\_\_\_

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER					
<input type="checkbox"/>	HIGH(4)	<input checked="" type="checkbox"/>	NONE(6)	<input checked="" type="checkbox"/>	HIGH(3)	<input type="checkbox"/>	SNAGGING	<input type="checkbox"/>	IMPOUND
<input type="checkbox"/>	MODERATE(3)	<input type="checkbox"/>	RECOVERED(4)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	LOW(2)	<input type="checkbox"/>	RECOVERING(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL	<input type="checkbox"/>	LEVEED
<input checked="" 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"/>	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 **8**

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)	
<input checked="" type="checkbox"/>	WIDE >150ft.(4)	
<input type="checkbox"/>	MODERATE 30-150 ft.(3)	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	NARROW 15-30 ft.(2)
<input type="checkbox"/>	VERY NARROW 3-15 ft.(1)	
<input type="checkbox"/>	NONE(0)	

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)	
<input checked="" type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)	
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)	
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)	

BANK EROSION

L	R (per bank)	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NONE OR LITTLE(3)
<input type="checkbox"/>	<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

MAX. DEPTH (Check 1)

<input checked="" type="checkbox"/>	>4 ft.(6)
<input type="checkbox"/>	2.4-4 ft.(4)
<input type="checkbox"/>	1.2-2.4 ft.(2)
<input type="checkbox"/>	<1.2 ft.(1)
<input type="checkbox"/>	<0.6 ft.(Pool=0)(0)

MORPHOLOGY (Check 1)

<input checked="" type="checkbox"/>	POOL WIDTH>RIFFLE WIDTH(2)
<input type="checkbox"/>	POOL WIDTH=RIFFLE WIDTH(1)
<input type="checkbox"/>	POOL WIDTH<RIFFLE WIDTH(0)

POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)

<input type="checkbox"/>	TORRENTIAL(-1)	<input type="checkbox"/>	EDDIES(1)
<input type="checkbox"/>	FAST(1)	<input type="checkbox"/>	INTERSTITIAL(-1)
<input checked="" type="checkbox"/>	MODERATE(1)	<input type="checkbox"/>	INTERMITTENT(-2)
<input checked="" type="checkbox"/>	SLOW(1)		

COMMENTS: \_\_\_\_\_

RIFFLE SCORE **0**

RIFFLE/RUN DEPTH

<input type="checkbox"/>	GENERALLY >4 in. MAX.>20 in.(4)
<input type="checkbox"/>	GENERALLY >4 in. MAX.<20 in.(3)
<input type="checkbox"/>	GENERALLY 2-4 in.(1)
<input type="checkbox"/>	GENERALLY <2 in.(Riffle=0)(0)

RIFFLE/RUN SUBSTRATE

<input 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)

RIFFLE/RUN EMBEDDEDNESS

<input type="checkbox"/>	EXTENSIVE(-1)	<input type="checkbox"/>	NONE(2)
<input type="checkbox"/>	MODERATE(0)	<input checked="" type="checkbox"/>	NO RIFFLE(0)
<input type="checkbox"/>	LOW(1)		

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE **8**

STREAM: Ohio River RIVER MILE KY 684.9 Night DATE: 7/28/2004 QHEI SCORE 64.5

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

TYPE		POOL	RIFFLE	POOL	RIFFLE	SUBSTRATE ORIGIN (all)		SILT COVER (one)					
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BLDER/SLAB(10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>	<input type="checkbox"/>	BOULDER(9)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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 type="checkbox"/>	COBBLE(8)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SANDSTONE(0)	Extent of Embeddedness (check one)					
<input type="checkbox"/>	<input type="checkbox"/>	HARDPAN(4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SHALE(-1)	<input type="checkbox"/>	EXTENSIVE(-2)	<input type="checkbox"/>	MODERATE(-1)		
<input type="checkbox"/>	<input type="checkbox"/>	MUCK/SILT(2)	<input checked="" type="checkbox"/>	<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:		<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 8

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)		
<input type="checkbox"/>	UNDERCUT BANKS(1)	<input checked="" type="checkbox"/>	DEEP POOLS(2)	<input type="checkbox"/>	EXTENSIVE >75%(11)
<input type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(1)	<input 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"/>	SPARSE 5-25%(3)
		<input type="checkbox"/>	OXBOWS(1)	<input type="checkbox"/>	NEARLY ABSENT <5%(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) CHANNEL SCORE 11

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER			
<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 checked="" type="checkbox"/>	HIGH(3)	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	LOW(2)	<input type="checkbox"/>	RECOVERING(3)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	LEVEED
<input checked="" type="checkbox"/>	NONE(1)	<input checked="" type="checkbox"/>	POOR(1)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	BANK SHAPING
		<input type="checkbox"/>	RECENT OR NO RECOVERY(1)	<input type="checkbox"/>		<input type="checkbox"/>	ONE SIDE CHANNEL MODIFICATION
				<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 7.5

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>
	WIDE >150ft.(4)
<input type="checkbox"/>	MODERATE 30-150 ft.(3)
<input checked="" type="checkbox"/>	NARROW 15-30 ft.(2)
<input type="checkbox"/>	VERY NARROW 3-15 ft.(1)
<input type="checkbox"/>	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)
	FOREST, SWAMP(3)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input checked="" type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)
<input type="checkbox"/>	FENCED PASTURE(1)		

BANK EROSION

L	R (per bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	NONE OR LITTLE(3)
<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

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

COMMENTS: \_\_\_\_\_

RIFFLE SCORE 0

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

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE 8

STREAM: Ohio River RIVER MILE IN 696.8 Night DATE: 7/28/2004 QHEI SCORE 43

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE 0

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 checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	BLDER/SLAB(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	GRAVEL(7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LIMESTONE(1)	<input type="checkbox"/>	RIP/RAP(0)
<input type="checkbox"/>	BOULDER(9)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SAND(6)	<input 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"/>	BEDROCK(5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SANDSTONE(0)	<input type="checkbox"/>	SILT HEAVY(-2)
<input type="checkbox"/>	HARDPAN(4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DETRITUS(3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SHALE(-1)	<input checked="" type="checkbox"/>	SILT-NORM(0)
<input checked="" 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 type="checkbox"/>	EXTENSIVE(-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: \_\_\_\_\_

2) INSTREAM COVER: (20) COVER SCORE 8

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

COMMENTS: \_\_\_\_\_

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

<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 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"/>	EXCELLENT(7)	<input type="checkbox"/>		<input type="checkbox"/>	ONE SIDE CHANNEL MODIFICATION
<input type="checkbox"/>	GOOD(5)	<input type="checkbox"/>		<input type="checkbox"/>	IMPOUND
<input type="checkbox"/>	FAIR(3)	<input type="checkbox"/>		<input type="checkbox"/>	ISLAND
<input checked="" type="checkbox"/>	POOR(1)	<input type="checkbox"/>		<input type="checkbox"/>	LEVEED
		<input type="checkbox"/>		<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

<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)	
<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 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"/>	<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 checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input 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 checked="" 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): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE 8

STREAM: Ohio River RIVER MILE IN 705.4 Night DATE: 8/3/2004 QHEI SCORE **65**

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

TYPE		POOL	RIFFLE			POOL	RIFFLE	SUBSTRATE ORIGIN (all)		SILT COVER (one)					
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BLDER/SLAB(10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	GRAVEL(7)	<input type="checkbox"/>	<input checked="" 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"/>	<input type="checkbox"/>	BOULDER(9)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SAND(6)	<input type="checkbox"/>	<input 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 type="checkbox"/>	COBBLE(8)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BEDROCK(5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SANDSTONE(0)	Extent of Embeddedness (check one)					
<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 type="checkbox"/>	MODERATE(-1)	<input type="checkbox"/>	NONE(1)
<input type="checkbox"/>	<input type="checkbox"/>	MUCK/SILT(2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ARTIFIC(0)	<input type="checkbox"/>	<input type="checkbox"/>	COAL FINES(-2)	<input checked="" type="checkbox"/>	LOW(0)				

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 **8**

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)		
<input type="checkbox"/>	UNDERCUT BANKS(1)	<input checked="" type="checkbox"/>	DEEP POOLS(2)	<input type="checkbox"/>	EXTENSIVE >75%(11)
<input type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(1)	<input 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"/>	SPARSE 5-25%(3)
		<input type="checkbox"/>	OXBOWS(1)	<input type="checkbox"/>	NEARLY ABSENT <5%(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) CHANNEL SCORE **11**

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

COMMENTS: \_\_\_\_\_

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 checked="" type="checkbox"/>	WIDE >150ft.(4)	<input checked="" type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)	<input checked="" 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 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 **10**

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

COMMENTS: \_\_\_\_\_

RIFFLE SCORE **0**

RIFFLE/RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS			
<input 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 type="checkbox"/>	LOW(1)		
<input type="checkbox"/>	GENERALLY <2 in. (Riffle=0)(0)				

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE **8**

STREAM: Ohio River RIVER MILE IN 717.2 Night DATE: 8/11/2004 QHEI SCORE 56.5

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE 12

TYPE		POOL	RIFFLE			POOL		RIFFLE		SUBSTRATE ORIGIN (all)		SILT COVER (one)	
<input checked="" type="checkbox"/>	BLDER/SLAB(10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
<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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<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"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<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"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<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"/>	<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 8

TYPE (Check all that apply)			AMOUNT (Check only one or Check 2 and AVERAGE)		
<input type="checkbox"/>	UNDERCUT BANKS(1)	<input checked="" type="checkbox"/>	DEEP POOLS(2)	<input type="checkbox"/>	EXTENSIVE >75%(11)
<input type="checkbox"/>	OVERHANGING VEGETATION(1)	<input type="checkbox"/>	ROOTWADS(1)	<input 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"/>	SPARSE 5-25%(3)
		<input type="checkbox"/>	OXBOWS(1)	<input type="checkbox"/>	NEARLY ABSENT <5%(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) CHANNEL SCORE 11

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATION/OTHER			
<input type="checkbox"/>	HIGH(4)	<input checked="" type="checkbox"/>	HIGH(3)	<input type="checkbox"/>	SNAGGING	<input type="checkbox"/>	IMPOUND
<input type="checkbox"/>	GOOD(5)	<input type="checkbox"/>	MODERATE(2)	<input type="checkbox"/>	RELOCATION	<input type="checkbox"/>	ISLAND
<input type="checkbox"/>	FAIR(3)	<input type="checkbox"/>	LOW(1)	<input type="checkbox"/>	CANOPY REMOVAL	<input type="checkbox"/>	LEVEED
<input checked="" type="checkbox"/>	POOR(1)	<input type="checkbox"/>		<input type="checkbox"/>	DREDGING	<input type="checkbox"/>	BANK SHAPING
		<input type="checkbox"/>		<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 7.5

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R (per bank)
<input checked="" type="checkbox"/>	WIDE >150ft.(4)
<input type="checkbox"/>	MODERATE 30-150 ft.(3)
<input type="checkbox"/>	NARROW 15-30 ft.(2)
<input type="checkbox"/>	VERY NARROW 3-15 ft.(1)
<input type="checkbox"/>	NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R (most predominant per bank)	L	R (per bank)
<input checked="" type="checkbox"/>	FOREST, SWAMP(3)	<input type="checkbox"/>	URBAN OR INDUSTRIAL(0)
<input type="checkbox"/>	OPEN PASTURE/ROW CROP(0)	<input type="checkbox"/>	SHURB OR OLD FIELD(2)
<input type="checkbox"/>	RESID.,PARK,NEW FIELD(1)	<input type="checkbox"/>	CONSERV. TILLAGE(1)
<input type="checkbox"/>	FENCED PASTURE(1)	<input type="checkbox"/>	MINING/CONSTRUCTION(0)

BANK EROSION

L	R (per bank)
<input checked="" type="checkbox"/>	NONE OR LITTLE(3)
<input type="checkbox"/>	MODERATE(2)
<input type="checkbox"/>	HEAVY OR SEVERE(1)

COMMENTS: \_\_\_\_\_

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

MAX. DEPTH (Check 1)	MORPHOLOGY (Check 1)	POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)	
<input checked="" type="checkbox"/>	POOL WIDTH > RIFFLE WIDTH(2)	<input type="checkbox"/>	EDDIES(1)
<input type="checkbox"/>	POOL WIDTH = RIFFLE WIDTH(1)	<input type="checkbox"/>	INTERSTITIAL(-1)
<input type="checkbox"/>	POOL WIDTH < RIFFLE WIDTH(0)	<input checked="" type="checkbox"/>	INTERMITTENT(-2)
<input type="checkbox"/>		<input checked="" type="checkbox"/>	
<input type="checkbox"/>		<input type="checkbox"/>	
<input type="checkbox"/>		<input type="checkbox"/>	

COMMENTS: \_\_\_\_\_

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

RIFFLE/RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS	
<input type="checkbox"/>	STABLE (e.g., Cobble, Boulder)(2)	<input type="checkbox"/>	NONE(2)
<input type="checkbox"/>	MOD. STABLE (e.g., Pea Gravel)(1)	<input type="checkbox"/>	NO RIFFLE(0)
<input type="checkbox"/>	UNSTABLE (Gravel, Sand)(0)	<input type="checkbox"/>	
<input type="checkbox"/>	NO RIFFLE(0)	<input type="checkbox"/>	

COMMENTS: \_\_\_\_\_

6) GRADIENT (FEET/MILE)(10): 0.56 % POOL 20 % RIFFLE \_\_\_\_\_ % RUN 80 GRADIENT SCORE 8