

UPPER OHIO NAVIGATION STUDY, PA FINAL FEASIBILITY REPORT AND INTEGRATED ENVIRONMENTAL IMPACT STATEMENT

COMMUNICATION

FROM

THE ASSISTANT SECRETARY OF THE ARMY,
CIVIL WORKS, DEPARTMENT OF DEFENSE

TRANSMITTING

THE CORPS' UPPER OHIO NAVIGATION STUDY, PA FINAL FEASIBILITY REPORT AND INTEGRATED ENVIRONMENTAL IMPACT STATEMENT FOR OCTOBER 2014 (REVISED AUGUST 2016), PURSUANT TO 33 U.S.C. 549a; PUBLIC LAW 91-611, SEC. 216; (84 STAT. 1830)

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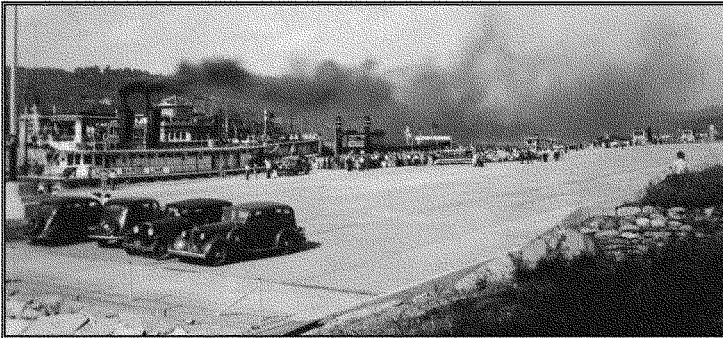
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**US Army Corps
of Engineers®**
Pittsburgh District

October 2014
(Revised October 2016)

Upper Ohio Navigation Study, Pennsylvania Volume 4



Opening celebration at Montgomery Locks and Dam - 1936

Emsworth, Dashields, and Montgomery Locks and Dams

UPPER OHIO NAVIGATION STUDY, PENNSYLVANIA ENVIRONMENTAL APPENDIX

Larval Fish Survey

Larval and Young of Year Fish Survey of the Upper Ohio River System, PA August 2010

Note to Reader:

An important natural resource for which little data previously existed for the Upper Ohio River is larval and Young-of-Year (YOY) fishes. Spawning and early life stages of fish are particularly vulnerable to the variability of river conditions, habitat availability, and water quality; all of which are influenced by the presence of navigation facilities and the effects of the commercial navigation such facilities support. Developing information on fish spawning and nursery areas within the Upper Ohio is important to evaluate the influence of existing and future navigation facilities, and commercial navigation. The study was conducted through the U.S. Geological Survey's Pennsylvania Cooperative Fish and Wildlife Research Unit Program, under the direction of Dr. Jay R. Stauffer, Jr., Distinguished Professor of Ichthyology, Pennsylvania State University.

The primary purpose of this study was to gather and assess information on the presence and distribution of larval and YOY fishes within certain general habitat types found within the study area. The study area ranged between Ohio River mile 40.0 (Pennsylvania–Ohio state line) and the first navigation structures on the Allegheny and Monongahela rivers. Within this study area, certain representative aquatic habitats, including those found around islands, their associated backchannels, tributary mouths, and an embayment just above Montgomery Dam were sampled. Initial sampling was conducted in 2008, with periodic sampling continuing through 2009.

Survey results included species descriptions, keys, and colored images of captured individuals, including eight current or candidate Species of Special Concern within Pennsylvania, 11 sport fish species, and 37 other species, totaling 56 species; along with their relative abundance, and spatial and temporal distribution. Species were discussed in light of prior knowledge and research, and how navigation facility improvements might impact species' populations (e.g., the demersal adhesive eggs of darters [*Etheostoma*, *Percina*] often deposited directly below dams could be vulnerable to increased sedimentation). Recommendations were offered for improvements (e.g., addition of artificial spawning structures) and further work associated with collecting early life-stage fishes (e.g., additional surveys using improved collection techniques).



FINAL REPORT

Submitted to: Tom Maier

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Date: August, 2010

Larval and Young of Year Fish Survey of the Upper Ohio River System, PA

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EXECUTIVE SUMMARY

A feasibility level study was designed by the US Army Corps of Engineers to determine possible impacts of lock and dam improvements on fish reproduction in the Ohio River near Pittsburgh. The study was designed to answer the following questions:

- 1) Which fish species are reproducing in the study area, and what is the relative abundance of the larvae and young-of-year?
- 2) What types of habitat (i.e., embayment, tributary mouths, island back-channels, mid-channels, channel borders, littoral zones) are used for spawning and nursery areas seasonally?
- 3) What may determine habitat for successful reproduction and nursery areas (e.g., substrate, flow, temperature, water quality, and depth)?
- 4) What factors may restrict survival and recovery of threatened or endangered fish species?
- 5) What habitat restoration opportunities might address limiting factors identified by this study or existing literature?

To answer these questions the following goals were established: to describe species presence, composition, and relative abundance; to describe their spatial and temporal distribution; to evaluate study findings in light of prior knowledge and research; and to make recommendations for further work associated with the interpretation of such data, and how navigation facility improvements might impact species' populations.

We sampled between Ohio River mile 40.0 (Pennsylvania-Ohio state line) upstream to the first navigation structures on the Allegheny and Monongahela rivers. We gathered information on the presence and distribution of larval and young of the year (YOY) fishes within certain general habitat types found within the study area.

We sampled fishes with electric trawls, meter nets, light traps, and seines. During August/September, 2008, March/April, 2009, June/July, 2009, August/September, 2009, and October, 2009 we collected and identified 34,754 individuals distributed among 56 species. We collected 13,279 individuals in Emsworth Pool, 3,978 individuals in Dashields Pool, 9,623 individuals in Montgomery Pool, and 7,874 individuals in New Cumberland Pool.

The Silver Chub, *Macrhybopsis storeriana*, is the only species captured in the survey that is listed as endangered by the Pennsylvania Fish and Boat Commission (<http://www.pacode.com/secure/data/058/chapter75/chap75toc.html>). We found this species widely distributed throughout all the pools and captured young-of-year/larvae in all of the pools. Because they are broadcast spawners, we doubt that disturbance of the substrate will smother eggs; however, increased turbidity may affect the ability of larvae to feed and survive.

We collected five species listed by the Pennsylvania Fish and Boat Commission as threatened, including the Mooneye (*Hiodon alosoides*), Goldeye (*Hiodon tergisus*), Skipjack Herring (*Alosa chrysochloris*), Bluebreast Darter (*Etheostoma camurum*), and the Tippecanoe Darter (*Etheostoma tippecanoe*). Additionally, we collected the River Darter (*Percina shumardi*), which is not listed by the Pennsylvania Fish and Boat Commission, but is a recent record for the Commonwealth; thus we anticipate that it will be listed in the near future. Finally, we collected one candidate species, the Bowfin (*Amia calva*). We concluded that all of the above species spawn within the study area.

Identification keys are provided for larvae/juveniles/adults for all fish species collected in our surveys. These keys are based on external characters.

Based on the data we collected, we predict that the listed species most vulnerable to proposed navigational facility improvements would be the darters (i.e., genera *Etheostoma*, *Percina*). These species spawn primarily in the shallow swift moving water found directly below the dams in the study area during the spring/early summer. They deposit demersal adhesive eggs, thus their spawn would be more vulnerable to increased sedimentation than the other species, which are primarily pelagic spawners.

We demonstrated that a variety of gears were needed to adequately sample the larval and young-of-year fishes. We captured many more fishes with the benthic electrified trawl than with the other gears used; however, the only Bowfin collected was with a surface meter net. Additionally, we concluded that seines were much more effective in collecting larval and young-of-year fishes than light traps within our study area. We believed that the barge traffic within the pools created wave surges along the shoreline that disrupt the effectiveness of the light traps to collect and hold larval fishes.

Since the mid 1900's, the use of artificial structures has been used in freshwater habitats to provide spawning areas to increase natural production, provide cover for survival of juvenile fishes, and increase catch per unit effort of anglers. It is therefore recommended that the Army Corps of Engineers (ACE) implement the use of artificial structures to increase production and survival of selected fish species (e.g., species of special concern and game fishes).

Research was conducted through the support of the US ACE Pittsburg district.

INTRODUCTION

The U.S. Army Corps of Engineers, Pittsburgh District, is conducting a feasibility-level study examining modernization of the three locks and dams on the Ohio River in Pennsylvania (Emsworth, Dashiels, and Montgomery locks & dams). The congressionally designated title of this study is, "Upper Ohio Navigation Study, Pennsylvania." Of primary concern is the deteriorating structural condition of these three oldest navigation facilities on the Ohio River, dating from 1922. Adequacy of lock chamber capacity to accommodate future commercial navigation needs is a secondary concern. As part of the feasibility study, the Pittsburgh District will also investigate opportunities for ecosystem restoration projects in association with, or independent of, any proposed navigation improvements. The formulation process will entail compliance with federal environmental laws and executive orders.

To support both compliance and ecosystem restoration planning, the Pittsburgh District is compiling known information on the status and condition of biological and physical resources in the study area. Where data gaps exist, the District will assess the need for studies to collect data. Little data currently exists for larval and young-of-year (YOY) fishes resident in the Upper Ohio River. Environmental scoping discussions indicate that spawning and early life stages are particularly vulnerable to habitat availability and variability of river conditions, which navigation facilities and commercial navigation influence. Development of information on fish spawning and nursery areas within the Upper Ohio River is important in evaluating the influence of existing and future navigation facilities and commercial navigation.

Information about the early life history of fishes is necessary to understand the potential sources of recruitment into adult populations (Gulland 1982, Quist et al. 2004a,b). The larval stages of most fishes are considered to be the most vulnerable and sensitive portion of the life history to anthropogenic changes. Documenting changes in abundance and distribution provide insight into location of spawning from which inferences of the sources of recruitment in addition to the severity of anthropogenic disturbances (Parker and Franzin 1991, Donald 1997) can be made.

To date, little information is available on the abundance and distribution of larval fishes in the Allegheny, Monongahela, and Ohio rivers near Pittsburgh. Comprehensive volumes have been prepared, however that aid in the identification of larval Acipenseridae through Esocidae (Wallus et al. 1990), Catostomidae (Kay et al. 1994), Ictaluridae (Simon and Wallus (2004), Percidae (Simon and Wallus 2006), Aphredoderidae through Cottidae, Moronidae, and Sciaenidae (Wallus and Simon 2006), and Elasmobranchidae and Centrarchidae (Wallus and Simon 2008).

The Pittsburgh District of the Army Corps of Engineers designed a study to answer the following questions:

- 1) Which fish species are reproducing in the study area, and what is the relative abundance of the larvae and young-of-year?
- 2) What types of habitat (i.e., embayment, tributary mouths, island back-channels, mid-channels, channel borders, littoral zones) are used for spawning and nursery areas seasonally?
- 3) What may determine habitat for successful reproduction and nursery areas (e.g., substrate, flow, temperature, water quality, and depth)?
- 4) What factors may restrict survival and recovery of threatened or endangered fish species?
- 5) What habitat restoration opportunities might address limiting factors identified by this study or existing literature?

The goals defined in the Research Work Order to answer these questions were:

- 1) Describe species presence, composition, and relative abundance
- 2) Describe their spatial and temporal distribution
- 3) Evaluate study findings in light of prior knowledge and research
- 4) Make recommendations for further work associated with the interpretation of such data, and how navigation facility improvements might impact species' populations.

To address the goals and in turn answer the research questions, we gathered and assessed information on the presence and distribution of larval and young of the year (YOY) fishes within certain general habitat types found within the study area. We documented species presence, composition, and relative abundance, and in so doing described their spatial and temporal distribution, evaluated study findings in light of prior knowledge and research, and made recommendations for further work associated with the interpretation of such data.

We sampled between Ohio River mile 40.0 (Pennsylvania-Ohio state line) upstream to the first navigation structures on the Allegheny and Monongahela rivers. The study area included a number of islands, associated backchannels, tributary mouths, and an embayment just above Montgomery Dam. We collected fish samples in each of these habitat types; however, the lock chambers and the "Restricted Areas" in the immediate vicinity of each of the navigation structures were off-limits for sampling, with the exception of the Montgomery Embayment, after approval of the lockmaster was obtained.

We developed information that would be compatible with the District's Geographical Information System (GIS) database of the study area, so that the results of the field sampling could be incorporated into the database. The field tasks were conducted using differential Global Positioning System (dGPS) or comparable augmented equipment for spatial determination of the beginning and ending points of transects and other sampling points.

METHODS

We collected fishes at 29 stations in the New Cumberland Pool, Emsworth Pool, Dashields Pool, and Montgomery Pool (Fig. 1; Appendix I).

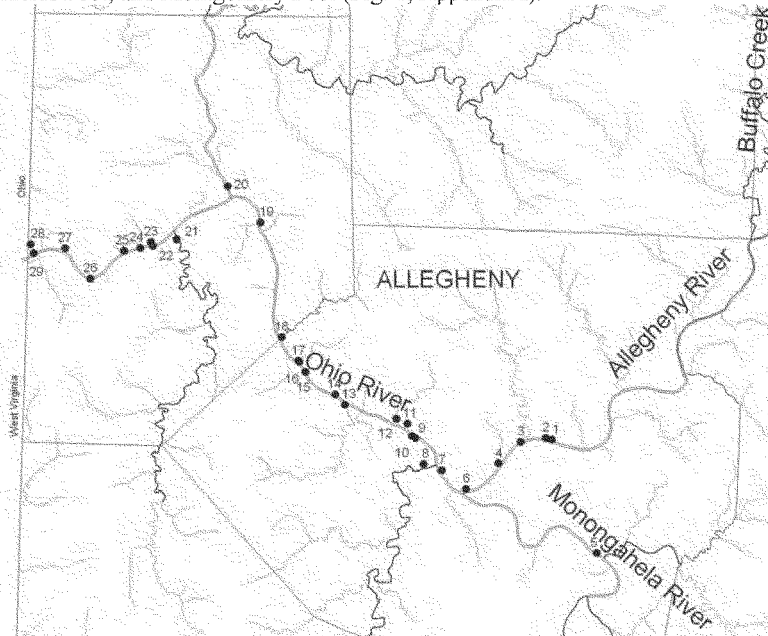


Figure 1. Larval fish collection stations. Detailed maps included in Appendix I.

In order to determine from where YOY were being recruited we sampled from the following general habitat types: below dams, above dams, mid-pool, island back channels, tributaries, and embayments. At all stations we sampled littoral zones and channels when present.

For habitat types below dams, above dams, and mid-pool within the main river, we sampled the right descending bank (RDB), right channel (RC), left channel (LC), and left descending bank (LDB). For the other three general habitat types we attempted to use the same methodology. However the methodology occasionally needed to be modified because of the specifics of the station. For instance MC was used to code for sampling within the mid-channel particularly where the channel was narrow or when sampling either RC or LC was not possible (boat/ barge traffic, debris, etc. prevented sampling). Attempts were made to sample all zones of interest found within the station and collections were coded accordingly.

Attempts were made to use the same methodology for island back channels as for main river stations. However most were narrow and shallow and some contained debris that required modification to the protocol. Attempts were made to sample all zones of interest found within the station and collections were coded accordingly.

Tributaries fit into one of two categories navigable and non-navigable. Navigable tributaries were sampled just below the first riffle. Again attempts were made to sample all zones of interest that were present at the station and coded accordingly. The only navigable tributary that fit the main river mold was the Beaver River. The other navigable tributaries Chartiers Creek, Raccoon Creek, and Beaver Creek are all small and shallow and do not contain all of the zones of interest that are contained in the main river. Different researchers coded differently for the three small navigable tributaries listed. This does not affect the study results. These stations resembled the littoral zones (RDB and LDB) of the main river and data was analyzed as such. The non-navigable tributaries were sampled across their mouths. This often led to two littoral zone collections and one channel collection at the station.

Littoral zones were sampled using the following gear seines, dip-nets, light-traps, meter-nets, and trawls. Collections within the littoral zone were coded as either RDB or LDB.

Benthic-trawl, surface-trawl, and meter-net sampling consisted of three or four collections at each station depending on station specific characteristics. The data tables in the text and appendices only include collections that produced fish. Almost without exception, the absence of a littoral or channel collection column indicates no fish were captured within that zone of interest. To include collections that produced no fish in the tables would lead to cumbersome and confusing tables.

All fish captured were preserved in 10% buffered formalin solution. After rinsing specimens were transferred to ethanol for permanent storage. Laboratory work included identification and verification of preserved specimens.

Identifications were conducted by graduate students familiar with fishes native to PA. Two of the graduate students responsible for identification have taught PSU's PA fish identification class. As stated previously volumes of larval and YOY fish keys are available and were consulted. Any questionable ID's were shown to and verified by Dr. Stauffer. Additionally we conducted sampling outside the scope of the project in October 2009 to aid in identification. Fish captured during October had one full growing season to develop. We were able to use these more developed fish to work backwards through less developed fish to allow/confirm identification of less developed specimens.

During August/September, 2008, we tested the efficacy of the modified trawl to sample larval fishes, familiarized the researchers with the collection stations, compiled a list of resident fish species, tested the use of the light traps, and modified collection methods. The comparison of the meter nets and the trawls in the surface and mid-water habitats began in March 2009.

We constructed Plexiglas light traps and collected fishes at selected stations using 12 hour yellow chemical light-sticks (<http://el.erdc.usace.army.mil/elpubs/pdf/fwev3-1.pdf>). We compared the number and species of fishes collected with the light traps and those collected with seines lined with 800 μ m netting.

We recorded GPS coordinates for the locations of each sample taken at each sampling point. For trawls, we recorded GPS coordinates at start and finish of each trawl. We also recorded date, time, tow duration, tow-line length, and average river depth. GPS data is available upon request.

We used a variety of gears for all samples taken in 2009 (Table 1).

Table 1. Gear for Larval and young-of-year surveys.

Boats	Fishing Gear
20' Boston Whaler with 150 hp	2 electric benthic trawls 8' - 800 μ m mesh
20' jon boat with 90 hp	2 electric surface trawls 8' - 800 μ m mesh
16' jon boat with 25 hp	2 replacement trawls 8' - 800 μ m mesh
Electro-fishers and generators	2 meter net units with replacement nets
2 Smith-Root Type VI	4 General Oceanics flow-meters
3500 watt Honda generator	40 light traps
6500 watt Honda generator	2 20' seines with 800 μ m mesh
Sonar systems and GPS	Several aquarium dip nets
Hummingbird 787 with GPS, temp	Safety Gear
Hummingbird 797 with GPS, temp, side-scan	2 Standard Horizon HX850S radios
DeLorme Earthmate PN 20	Fire extinguishers for each boat
DeLorme Topo 7	First-aid kits for each boat
Water quality instruments	Life-jackets
Secchi disks	
2 YSI pro series meters	
Aquatic Eco-systems pH Tester 2	

We identified fishes to the lowest practical taxon; counted the number of individuals and species from each sample, and entered all data into Microsoft Excel (2003 ver.) format for access by the District. After analyzing data collected in August/September, 2008, we met with District personnel in April, 2009, and revised the methods as follows.

Revised Methods

We used light traps, metered plankton nets, seines and trawls (benthic, mid-water, and surface water) to determine the presence of fishes, particularly fish larvae and young-of-year (YOY) as described below.

Light traps. Collections were made using floating light traps in very shallow littoral areas (Figure 2). We used light traps to collect fishes in the Montgomery Embayment and at the launch station in each pool except the Emsworth Pool. In the Emsworth Pool we set light traps in the back channel of Herrs Island to minimize the risk of tampering.



Figure 2. Collecting fish from light traps. Traps were lifted from water in a bag of 800 micron seine material to capture fish flushed from the trap by escaping water.

Benthic PSU (electric) Trawls. We used Benthic PSU (electrified) trawls at each station to collect fishes (Figure 3). We previously determined that it was not possible to retrofit trawls with flow meters to determine volume of water passing through the trawl. We attempted to trawl for 5 minutes at each station, but bottom structures reduced trawl-time to 2 minutes on occasion. We trawled on the right and left descending banks and at least one in the mid-channel (LC and RC if possible) directly below the upstream dam and above the downstream dam. Additionally, at the island and tributary sites, we attempted to do at least three trawls.

Metered Plankton Nets, Mid-water, and Surface Water PSU Trawls. We used metered plankton nets (Figure 4) and surface water trawls (Figure 5) at each station. We retrofitted plankton nets with flow meters to determine the volume of water surveyed. Duration of each survey was 5 minutes. Additionally, we sampled with mid-water trawls, when water depths were greater than 10 m. We did at least three collections with each gear type at each station.

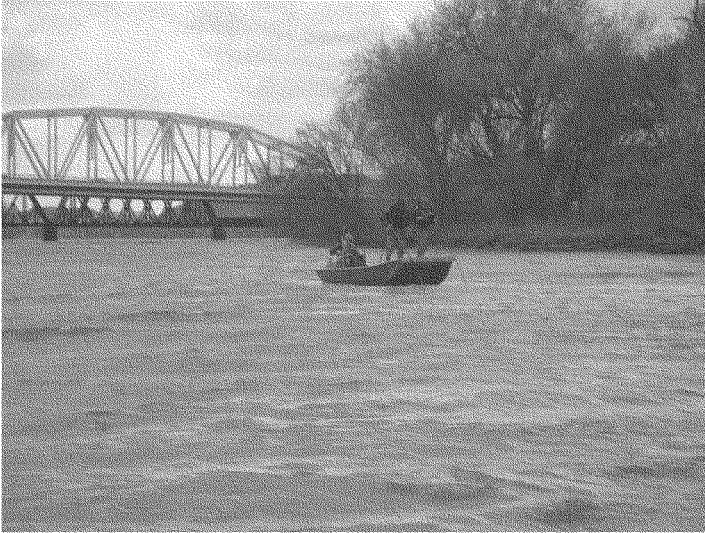


Figure 3. Collecting with the Benthic Electric Trawl. Trawl net is towed along the bottom to capture benthic fishes in deepwater habitats that otherwise are inaccessible.

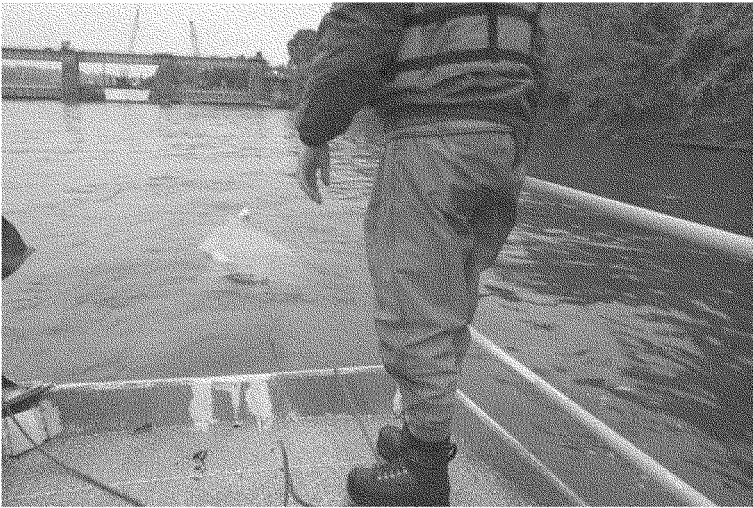


Figure 4. Collecting surface waters with the meter nets. Meter nets contain a flow meter mounted inside the net to determine the volume of water passing through and are used to capture fishes swimming on or near the surface.

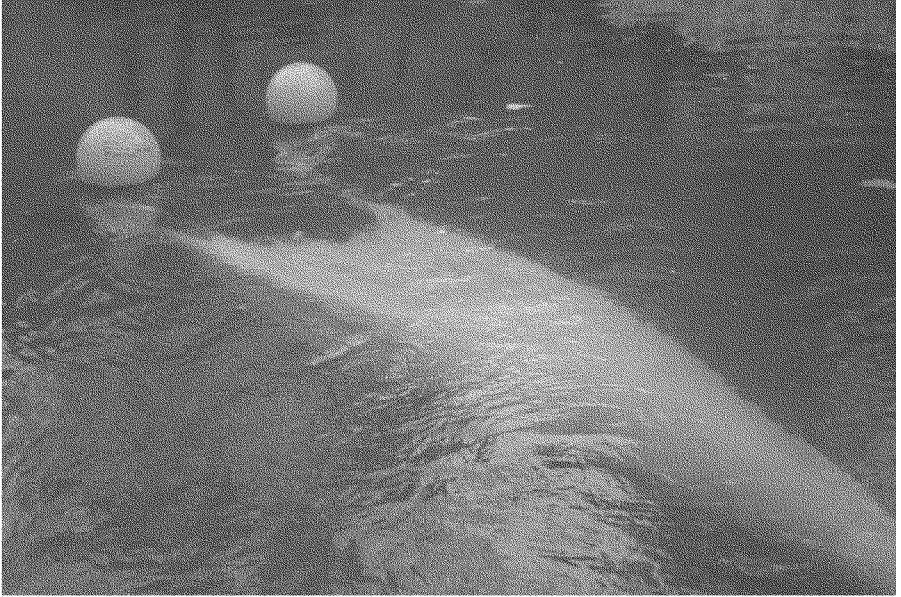


Figure 5. Suspending the surface trawl with floats. The benthic trawl has been modified to allow electrified sampling of fishes swimming on or near the surface.

RESULTS

During 2008, March/April, June/July, August/September, and October 2009 we collected and identified 34,754 individuals distributed among 56 species. We collected 13,279 individuals in the Emsworth Pool (Table 2), 3978 individuals in the Dashiels Pool (Table 3), 9623 individuals in Montgomery Pool (Table 4), and 7874 individuals in New Cumberland Pool (Table 5). We developed identification keys for the larvae, juvenile, and adult fishes (Appendix II).

Table 2. Total number of fishes collected by all gear types in the Emsworth Pool.

	August 2008			September 2008			March 2009			June 2009			August 2009			October 2009		
	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals
Dip Net	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light Trap	0	0	0	0	2	2	2	2	0	0	1	1	1	1	0	0	0	0
Meter Net					0	0	0	0	4	10	3	12						
Surface Trawl	0	0	0	0	1	1	1	1	4	22	3	54						
Benthic Trawl	10	609	13	1063	20	630	26	2706	21	2328	13	700						
Seine					7	80	14	1423	19	2752	4	882						
Total # of Taxa	10			13		22		19		29		13						
Total # of Individuals	609			1063		713		4161		5147		1586						

Table 3. Total number of fishes collected by all gear types in the Dashields Pool.

	August 2008			September 2008			March 2009			June 2009			August 2009			October 2009		
	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals
Dip Net	3	248	0	0	1	1	1	1	3	11	0	0	0	0	0	0	0	0
Light Trap	0	0	0	0	3	17	3	34	2	2	2	2	2	2	0	0	0	0
Meter Net					0	0	1	8	4	8								
Surface Trawl	0	0	0	0	1	1	0	0	1	3	0	0						
Benthic Trawl	7	160	13	1010	4	42	12	119	18	495	8	153						
Seine					3	218	9	700	9	371	4	377						
Total # of Taxa	8			13		7		10		25		11						
Total # of Individuals	408			1010		279		872		879		530						

Table 4. Total number of fishes collected by all gear types in the Montgomery Pool.

	August 2008		September 2008		March 2009		June 2009		August 2009		October 2009	
	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals
Dip Net	1	17	0	0	0	0	1	7	0	0	0	0
Light Trap	0	0	0	0	2	27	8	26	4	40	0	0
Meter Net					0	0	1	1	4	52	1	1
Surface Trawl	0	0	0	0	1	1	10	114	9	60	0	0
Benthic Trawl	0	0	19	744	11	366	20	337	26	899	15	238
Seine					10	2222	18	725	20	1684	9	2062
Total # of Taxa	1		19		18		19		36		19	
Total # of Individuals	17		744		2616		1210		2735		2301	

Table 5. Total number of fishes collected by all gear types in the New Cumberland Pool.

	August 2008		September 2008		March 2009		June 2009		August 2009		October 2009	
	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals	# of Taxa	# of Individuals
Dip Net	1	49	2	8	1	1	0	0	0	0	0	0
Light Trap	3	15	0	0	4	15	2	4	1	2	0	0
Meter Net					2	29	0	0	2	13	0	0
Surface Trawl	0	0	0	0	1	4	0	0	2	2	1	1
Benthic Trawl	11	270	16	778	10	102	14	238	20	765	7	259
Seine					8	172	20	1264	13	1281	5	2602
Total # of Taxa	12		17		13		22		24		10	
Total # of Individuals	334		786		323		1506		2063		2862	

Electrified trawls (benthic and surface). We collected 4,634 fishes represented by 29 species during 2008. We collected 609 individuals represented by 10 species in the Emsworth Pool on 18 August, 2008 (Appendix III; Table 1) and 1,063 individuals represented by 13 species in September and October 2008 (Appendix III; Table 2). We collected 160 individuals represented by 7 species in Dashields Pool on 17 August, 2008 (Appendix III; Table 3) and 1,010 individuals represented by 13 species on 25 September, 2008 (Appendix III; Table 4). (Collections in August in the Montgomery Pool were not possible because heavy boat traffic interfered with our collecting regime; thus the following data were obtained in September.) We collected 744 fish represented by 19 species in Montgomery Pool on 26 September, 2008 (Appendix III; Table 5). In the New Cumberland Pool, we collected 270 individuals represented by 11 species on 11-13 August, 2008 (Appendix III; Table 6) and 778 fish represented by 16 species on 11 September (Appendix III; Table 7).

During March and April, 2009, we collected 1,147 fishes represented by 25 species. We collected 631 individuals and 20 species in the Emsworth Pool (Appendix IV; Table 1), 43 individuals and 4 species in the Dashields Pool (Appendix IV; Table 2), 367 individuals and 11 species in the Montgomery Pool (Appendix IV; Table 3), and 106 individuals and 10 species in the New Cumberland Pool (Appendix IV; Table 4).

We collected 3,536 fishes represented by 33 species during June, 2009. We collected 2,728 individuals and 26 species in the Emsworth Pool (Appendix V; Table 1), 119 individuals and 12 species in the Dashields Pool (Appendix V; Table 2), 451 individuals and 22 species in the Montgomery Pool (Appendix V; Table 3), and 238 individuals and 14 species in the New Cumberland Pool (Appendix V; Table 4).

We collected 4,606 fishes distributed among 38 taxa during August, 2009. We collected 2,382 individuals and 22 species in the Emsworth Pool (Appendix VI; Table 1), 498 individuals and 18 species in the Dashields Pool (Appendix VI; Table 2), 959 individuals and 28 taxa in the Montgomery Pool (Appendix VI; Table 3), and 767 individuals and 21 species in the New Cumberland Pool (Appendix VI; Table 4).

We collected 1,355 fishes distributed among 19 taxa during October, 2009. We collected 704 individuals and 13 species in the Emsworth Pool (Appendix VII; Table 1), 153 individuals and 8 species in the Dashields Pool (Appendix VII; Table 2), 238 individuals and 15 species in the Montgomery Pool (Appendix VII; Table 3), and 260 individuals and 7 species in the New Cumberland Pool (Appendix VII; Table 4).

The trawls and meter nets yielded no larval or YOY fishes in March/April; however, we collected spawning suckers (*Castostomidae*) in the riffles that occur just below the dams. Just downstream of the suckers we captured catfish that were possibly feeding on sucker eggs. Additionally, several female darters were captured that were ripe with eggs. Sampling in June and August, 2009 yielded larval fishes at all stations (Appendix V; Appendix VI).

Light traps vs. seines and dip nets. We collected no larval fish in light traps, dip nets, and seines in March, 2009. From June through October 2009, we collected total of 109 individuals represented by 13 species in light traps, 20 individuals represented by 3 species in dip nets, and 18,815 individuals represented by 35 species in seines (Tables 6, 7, and 8).

During June and July 2009, we captured 64 individuals in light traps, 18 individuals in dip nets, and 4112 individuals in seines (Table 6). In August 2009, we captured 45 individuals in light traps, no individuals in dip nets, and 6,088 individuals in seines (Table 7). In October 2009, we captured no individuals in light traps, no individuals in dip nets, and 5,923 individuals in seines (Table 8).

Table 6. Fish caught in Light Traps, Dip Nets, and Seines, June, 2009.

Genus	Species	Emauworth			Dustiech			Montgomery			New Cumberland		
		LT	DN	S	LT	DN	S	LT	DN	S	LT	DN	S
		1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY
Lepisosteus	osseus			4									19
Clupeidae	sp			1									
Esocidae	sp												2
Campostoma	anomalum			1			3			7			
Cyprinella	spiloptera			20	12		68	19	2	114			69
Macerhybopsis	storenana			1									
Notropis	altierincides			12	33	3	86			185	3		28
Notropis	haslouxi												1
Notropis	rubellus									7			1
Notropis	sternisima			2			9			19			7
Notropis	velutellus			63			15	27		68			28
Pimephales	notatus			5		1	3	1		21	21		139
Rhinichthys	obtus			2			1	3			2		1
Cyprinidae	sp									4			10
Carpodex	sp			10						43			402
Hypentelium	nigricans			3			1			1	10		2
Ictiobus	sp			428			106			1			5
Moxostoma	sp			49			95			20			53
Catostomidae	sp			778	19	9	261	1	7	118			418
Fundulus	diaphanus									1			
Moroneidae	sp												
Micropterus	dolomieu			4		1							1
Etheostoma	bairdioides			1									2

Table 7. Fish caught in Light Traps, Dip Nets, and Seines, August, 2009.

		Emsworth			Dunfield			Montgomery			New Cumberland		
		LT	DN	S	LT	DN	S	LT	DN	S	LT	DN	S
		1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY	1+ YOY
<i>Alosa</i>	<i>chrysochloris</i>							1					
<i>Dorosoma</i>	<i>cepedianum</i>			802			1			4			3 6
<i>Cimpostoma</i>	<i>anomalous</i>									1			
<i>Cyprinella</i>	<i>spioptera</i>			7 100			1			39 4			5 108
<i>Notropis</i>	<i>atherinoides</i>			104 35			305 25 1 33			863 103			1063 23
<i>Notropis</i>	<i>hudsonius</i>			1									
<i>Notropis</i>	<i>volucellus</i>			85 1553			15 1			98 22			11 36
<i>Pimephales</i>	<i>notatus</i>			3 127			13 1			214 217			9
<i>Cyprinidae</i>	<i>spisapp</i>			248									
<i>Carpodacus</i>	<i>cyrenus</i>									3			
<i>Hypentelium</i>	<i>nigriscans</i>			1						12			4
<i>Moxostoma</i>	<i>anizurum</i>									2			
<i>Moxostoma</i>	<i>carinatum</i>									1			
<i>Moxostoma</i>	<i>arythrum</i>									4			1
<i>Moxostoma</i>	<i>sp</i>			5									
<i>Ictalurus</i>	<i>punctatus</i>			1									
<i>Fundulus</i>	<i>diaphanus</i>									1			
<i>Labidesthes</i>	<i>sticculus</i>									40 15			
<i>Ambloplites</i>	<i>rupestris</i>	1											
<i>Lepomis</i>	<i>macrochirus</i>			3				4		3 18			
<i>Micropterus</i>	<i>dolomieu</i>			4			1 1			6			4
<i>Micropterus</i>	<i>punctulatus</i>						7			1			1

Table 8. Fish captured in Seines October 2009. No fish were captured in Light Traps or Dip Nets in October 2009.

Genus	Species	Emsworth		Dashields		Montgomery		New Cumberland	
		1+	YOY	1+	YOY	1+	YOY	1+	YOY
Lepisosteus	osseus								
Clupeidae	sp								
Esocidae	sp								
Campostoma	anomalum								
Cyprinella	spiloptera	12	4	45	98	16	26	86	56
Macrhybopsis	storeriana								
Notropis	atherinoides	785	16	119	8	1813	146	2190	3
Notropis	hudsonius								
Notropis	rubellus								
Notropis	stramineus								
Notropis	volucellus	57	0	23	72	32	4	164	91
Pimephales	notatus	7	0	12	0	5	1	9	0
Rhinichthys	obtusum								
Cyprinidae	sp								
Carpionidae	sp								
Hypentelium	nigricans								
Ictiobus	sp								
Moxostoma	sp								
Catostomidae	sp								
Fundulus	diaphanus					2	0		
Labidesthes	sicculus					12	0		
Moroneidae	sp								
Lepomis	macrochirus					0	1		
Micropterus	dolomieu								
Etheostoma	blennioides								
Etheostoma	caeruleum	1	0			1	0		
Etheostoma	zonale					1	0		

Seines vs. Light-traps.

During the sampling season of 2009 we conducted a comparison of seines to light traps. During the comparison light-traps were fished over night. In the morning four seine hauls were conducted in close proximity to the light-trap sets.

March and April 2009. A total of 789 individuals were captured in seines and 61 individuals in light-traps at corresponding stations in March and April. We captured a total of 6 species in seines (*C. spiloptera*, *N. atherinoides*, *N. stramineus*, *N. volucellus*, *P. notatus*, and *R. obtuses*). Only 4 species were captured in light-traps (*C. spiloptera*, *N. atherinoides*, *N. volucellus*, and *P. notatus*). No fish were captured in seines in the Montgomery Embayment however 19 *N. atherinoides* and 7 *N. volucellus* were captured in light-traps.

June 2009. In June 586 individuals were captured in seines and 64 individuals in light-traps at the same stations. In seines we captured at least 15 species (*C. anomalum*, *C. spiloptera*, *E. caeruleum*, *E. nigrum*, *F. diaphanus*, *H. nigricans*, *L. osseus*, *N. atherinoides*, *N. stramineus*, *N. volucellus*, *P. caprodes*, *P. copelandi*, *P. shumardi*, *P. notatus*, and *R. obtuses*). In addition individuals of the genera *Carpodides*, *Ictiobus*, and *Moxostoma* were also captured in seines. In light traps we captured at least 7 species (*C. spiloptera*, *E. caeruleum*, *E. nigrum*, *N. atherinoides*, *P. caprodes*, *P. copelandi*, and *P. shumardi*). Additionally individuals of the genera *Morone*, and *Sander* were captured in light-traps. No fish were captured in light-traps at Station 4 however *L. osseus* was captured in seines at Station 4.

August 2009. In seines 750 individuals and in light traps 43 individuals were captured in August at identical stations. We captured individuals from 16 species in seines (*C. anomalum*, *C. spiloptera*, *D. cepedianum*, *E. nigrum*, *F. diaphanus*, *H. nigricans*, *L. sicculus*, *L. macrochirus*, *M. dolomieu*, *M. punctulatus*, *M. salmoides*, *M. anisurum*, *M. erythrurum*, *N. atherinoides*, *N. volucellus*, *P. notatus*). Only 7 species were captured in light-traps (*A. rupestris*, *L. macrochirus*, *M. dolomieu*, *M. salmoides*, *N. atherinoides*, *N. volucellus*, *P. copelandi*). In August now fish were caught in the seines at Station 4 but *A. rupestris* was captured in the light-traps. Also in August no fish were captured in the light-traps at Station 28 but *C. spiloptera*, *H. nigricans*, *M. dolomieu*, *M. punctulatus*, *M. erythrurum*, *N. atherinoides*, *N. volucellus*, and *P. notatus* were captured in seines.

October 2009. Though both light-traps and seines were fished at the Monaca boat launch in October no fish were caught in the light-traps. In the seines 1206 individuals were caught. *C. spiloptera*, *E. caeruleum*, *N. atherinoides*, and *N. volucellus* were captured in close proximity to the light-trap sets but no fish were caught in them.

We also compared light-traps set with 1 light stick to light-traps set with 3 light sticks. Based on a sample of 50 light traps with 1 stick and 50 light traps with 3 sticks there was no significant difference between the two means Table9.

Table 9. T-test to Test the Significance of the Difference between the Mean Number of Fish Captured in Light-traps with 1 Stick and Light-traps with 3 Sticks.

	1 stick	3 sticks
Mean	0.46	0.52
SD	0.93	1.20
N	50	50

Two-tailed p-value = 0.784



Figure 6. Using seine lined with 800 μ m mesh lining.

Meter nets and surface trawls. No larval fishes were captured in the surface trawls and the meter nets in March/April. We captured 18 YOY in the meter nets (Table 10) and 135 in the surface trawls (App V) during June, 2009. Both Mooneye and Goldeye, which are both of Special Concern by the PFBC, were collected in the surface gears. We captured a total of 57 larvae/young-of-year in the meter nets (Table 11) and 107 young-of-year in the surface trawls (App VI) during August, 2009. We captured a larval Bowfin, which is listed as a candidate species by the PFBC, with a meter net in the Emsworth Pool in August 2009. During October, 2009, we captured 1 individual in the meter nets and 5 in surface trawls (Table 12 and App VII). None of the individuals captured in October are from species listed by PFBC.

Table 10. Fish Captured in Meter Nets, June 2009.

Date	Station	Genus	Species	1+	YOY
6/16/2009	8	Catostomidae		0	5
6/16/2009	8	<i>Hiodon</i>	<i>alosooides</i>	0	1
6/16/2009	8	<i>Labidesthes</i>	<i>sicculus</i>	0	1
6/16/2009	8	<i>Sander</i>	<i>vitreus</i>	0	1
6/17/2009	9	Unknown		0	1
6/17/2009	10	Unknown		0	1
6/16/2009	12	Cyprinidae		0	8
6/16/2009	21	<i>Cyprinella</i>	<i>spiloptera</i>	1	0
				1	18

Table 11. Fish Captured in Meter Nets, August 2009.

Date	Station	Genus	Species	1+	YOY
8/6/2009	2	<i>Notropis</i>	<i>volucellus</i>	0	2
8/6/2009	3	Unidentifiable	sp	0	1
8/5/2009	7	<i>Notropis</i>	<i>atherinoides</i>	0	2
8/5/2009	7	<i>Notropis</i>	<i>atherinoides</i>	0	2
8/5/2009	8	<i>Amia</i>	<i>calva</i>	0	1
8/5/2009	8	<i>Notropis</i>	<i>atherinoides</i>	0	2
8/5/2009	8	<i>Notropis</i>	<i>volucellus</i>	0	2
8/5/2009	13	<i>Lepomis</i>	<i>macrochirus</i>	0	1
8/5/2009	13	<i>Notropis</i>	<i>atherinoides</i>	0	1
8/5/2009	14	Percidae	sp/spp	0	2
8/5/2009	15	<i>Dorosoma</i>	<i>cepedianum</i>	0	1
8/5/2009	15	<i>Lepomis</i>	<i>macrochirus</i>	0	1
8/5/2009	15	<i>Notropis</i>	<i>atherinoides</i>	0	2
8/3/2009	16	<i>Cyprinella</i>	<i>spiloptera</i>	1	0
8/3/2009	16	<i>Notropis</i>	<i>atherinoides</i>	2	2
8/4/2009	17	<i>Notropis</i>	<i>atherinoides</i>	0	1
8/3/2009	17	<i>Notropis</i>	<i>atherinoides</i>	0	1
8/3/2009	17	Unidentifiable	sp	0	1
8/3/2009	18	Unidentifiable	sp/spp	0	2
8/3/2009	19	<i>Labidesthes</i>	<i>sicculus</i>	0	4
8/3/2009	19	<i>Lepomis</i>	<i>macrochirus</i>	0	1
8/3/2009	20	<i>Notropis</i>	<i>atherinoides</i>	6	0
8/3/2009	20	<i>Notropis</i>	<i>atherinoides</i>	7	0
8/3/2009	20	<i>Notropis</i>	<i>atherinoides</i>	3	0
8/3/2009	21	<i>Cyprinella</i>	<i>spiloptera</i>	1	0
8/3/2009	21	<i>Labidesthes</i>	<i>sicculus</i>	0	17
8/3/2009	21	<i>Notropis</i>	<i>atherinoides</i>	0	3
8/4/2009	24	<i>Dorosoma</i>	<i>cepedianum</i>	0	1

8/4/2009	24	<i>Notropis</i>	<i>atherinoides</i>	8	0
8/4/2009	24	<i>Notropis</i>	<i>atherinoides</i>	0	1
8/4/2009	25	<i>Notropis</i>	<i>atherinoides</i>	0	1
8/4/2009	27	<i>Dorosoma</i>	<i>cepedianum</i>	0	1
8/4/2009	29	<i>Dorosoma</i>	<i>cepedianum</i>	0	1
Totals				28	57

Table 12. Fish Captured in Meter Nets, October 2009.

Date	Station	Genus	Species	1+	YOY
10/17/2009	21	<i>Notropis</i>	<i>volucellus</i>	1	0

Collection of benthic fishes. We collected larval darters in all four pools (Table 14) – larvae of 8 species of darters in Dashields Pool, 11 in Emsworth Pool, 9 in Montgomery Pool, 8 in New Cumberland Pool. For the most part, adult darters were present in the swifter flowing sections of the pools and the larvae were more abundant in the more shallow reaches. We found the Longhead Darter, *Percina macrocephala*, young-of-year only in Emsworth Pool. We collected larvae of the Tippecanoe Darter, *Etheostoma tippecanoe*, only in August in both the Emsworth and New Cumberland pools. We collected River Darter, *Percina shumardi* larvae only in Montgomery and New Cumberland pools. Freedman et al. (2009) recently recorded River Darter for the first time in Pennsylvania, and it may be that as water quality continues to improve, this species will move into the upper two pools. The PFBC recently removed *Percina copelandi* from its list of fishes of Special Concern. This species is reproducing throughout the study area. Other species, such as *E. nigrum*, which is one of the few species of darters that prefer lentic habitats, are locally abundant as evidenced by the capture of over 1000 individuals at a single station in the Emsworth Pool.

Table 13. Number of young-of year darters collected in June and August, 2009.

Pool	Genus	Species	June	August
Dashields	<i>Etheostoma</i>	<i>blennioides</i>	20	1
	<i>Etheostoma</i>	<i>caeruleum</i>	8	2
	<i>Etheostoma</i>	<i>camurum</i>	0	1
	<i>Etheostoma</i>	<i>flabellare</i>	2	0
	<i>Etheostoma</i>	<i>nigrum</i>	10	0
	<i>Etheostoma</i>	<i>tippecanoe</i>	0	3
	<i>Etheostoma</i>	<i>zonale</i>	4	3
	<i>Percina</i>	<i>caprodes</i>	0	1
	<i>Percina</i>	<i>copelandi</i>	50	16
Emsworth	<i>Etheostoma</i>	<i>blennioides</i>	11	0
	<i>Etheostoma</i>	<i>caeruleum</i>	107	1
	<i>Etheostoma</i>	<i>camurum</i>	2	4
	<i>Etheostoma</i>	<i>flabellare</i>	23	3
	<i>Etheostoma</i>	<i>nigrum</i>	1544	9
	<i>Etheostoma</i>	<i>tippecanoe</i>	0	2
	<i>Etheostoma</i>	<i>zonale</i>	20	12

Montgomery	<i>Percina</i>	<i>caprodes</i>	168	12
	<i>Percina</i>	<i>copelandi</i>	301	204
	<i>Percina</i>	<i>evides</i>	0	3
	<i>Percina</i>	<i>macrocephala</i>	12	
	<i>Etheostoma</i>	<i>blennioides</i>	3	0
	<i>Etheostoma</i>	<i>caeruleum</i>	18	1
	<i>Etheostoma</i>	<i>camurum</i>	0	1
	<i>Etheostoma</i>	<i>flabellare</i>	1	0
	<i>Etheostoma</i>	<i>nigrum</i>	67	2
	<i>Etheostoma</i>	<i>zonale</i>	3	6
New Cumberland	<i>Percina</i>	<i>caprodes</i>	51	13
	<i>Percina</i>	<i>copelandi</i>	63	53
	<i>Percina</i>	<i>shumardi</i>	2	0
	<i>Etheostoma</i>	<i>blennioides</i>	28	0
	<i>Etheostoma</i>	<i>caeruleum</i>	32	2
	<i>Etheostoma</i>	<i>nigrum</i>	5	0
	<i>Etheostoma</i>	<i>tippecanoe</i>		1
	<i>Etheostoma</i>	<i>zonale</i>	1	15
	<i>Percina</i>	<i>caprodes</i>	20	8
	<i>Percina</i>	<i>copelandi</i>	17	81
	<i>Percina</i>	<i>shumardi</i>	50	0

Water quality data. Water quality data are provided in Tables 15-18. Temperature ranged between 9.3-11.5°C in April, 21.0-24.4°C in June, and 22.2-25.5°C in August 2009 in all of the pools. Dissolved oxygen (DO) was near or above saturation at all stations. Conductivity was similar at all stations, except at station 8 in the Emsworth Pool where it peaked at 1310 uS/cm in August and 786 uS/cm in March and at station 20 in Montgomery Pool where it peaked at 1153 uS/cm in March. Station 8 is at the mouth of Chartiers Creek and at the Monaca Boat Launch in the small unnamed tributary in Montgomery Pool. The pH was at or above 7 at all stations during all sampling events. Secchi disk readings were generally higher in March (0.4-2.4 m) and June (0.5-2.7 m), than in August (0.5-1.25 m). The lowest readings were in the Montgomery Pool.

Table 14. Water quality data collected during the April, 2009 sampling.

Pool	Station	Date	Temp F	Temp C	DO %	DO mg/l	Con uS/cm	pH	Secchi Disk (m)
Ensworth	1	4/23/09		11.3	118.4	13	198.7	7	2.4
	2	4/23/09	51.6	11.7	124	13.44	198.5	7.5	2.3
	3	4/23/09	51.7	12.3	121.2	12.99	6.5	7.5	
	4	4/23/09	50.3	10.7	102.8	11.24	204.3	7	1.75
	5	4/22/09	51.1	10.6	107.4	11.6	205.7	7	1
	8	4/22/09	51.2	11.9	131.6	13.97	786	8	1.1
	9	4/22/09	51.1	11.7	110.2	11.82	214.3	7.5	1
	10	4/22/09	51.2	11.5	108.5	11.83	91.3	7	1.1
	11	4/22/09	50.9	11.3	122.1	13.08	219.2	7.5	1.5
Dashields									
	14	4/24/09	51.7	11.5	120.4	12.95	214.3	7.5	1.6
	15	4/24/09	51.9	11.8	115.7	12.45	197.3	7.5	1.1
	15	4/24/09	51.6	11.9	117.7	12.71	214.5	7.75	1.9
Montgomery	16	4/19/09	50.6	11.7	113.6	12.23	206.6	7	
	17	4/19/09	50.4	11.1	110.4	10.35	196.6	7	1.45
	18	4/20/09	50.4	11	116.4	12.79	197.3	7	1
	19	4/20/09	51.1	11.5	110.2	11.76	253.9	7	1
	MBL	4/12/09		8.3	95.2	11.24	1153		
	20	4/12/09	48.8	10	116.3	13.14	311		1.5
	21	4/12/09	50.3	10.4	124.6	13.79	478.2		1.7
	22	4/12/09	49.7	11.7	125.9	13.45	233.9		
	23	4/20/09	54.2	12	110.7	11.7	243.2	7.5	0.4
New Cumberland	24	4/21/09	50.9	11.6	119.9	13.1	245.4	7	1.5
	25	4/21/09		11.6	2	0.21	232.9	7	1.1
	26	4/21/09		11.9	122.4	13.13	210	7	1.1

27	4/21/09	51.2	11.8	116.5	12.66	228.6	7.5	1.1
28	4/21/09		9.8	97.2	10.96	315	7.5	0.5
29	4/21/09	51.1	11.3	117.2	12.7	267.9	7	

Table 15 Water quality data collected during the June, 2009 sampling.

Pool	Station	Date	Temp F	Temp C	DO %	DO mg/l	Con uS/cm	pH	Secchi Disk (m)
Emsworth	1	6/17/09	72.2	23	107.7	9.42	306.1	7.6	2
	2								
	3	6/17/09	71.9	22	96	7.64	344.6	7.9	2.75
	4	6/17/09	71.9	22.4	101.4	8.9	308.2	8.3	2
	5	6/16/09	72.6	22.7	108.4	9.54	314.9	7.4	1.1
	6	6/17/09	72.6	23	103.8	9.01	309.9	7.2	1.75
	7	6/17/09	71.9	22.4	100.6	8.79	282.6	7.1	1.75
	8	6/16/09	72.2	23.6	128.4	11.12	1260	8	0.75
	9	6/17/09	71.1	22.2	96.4	8.57	321.5	7.1	2
	10	6/17/09	70.8	22.1	101.5	8.99	319.5	7.3	2.1
	11	6/17/09	71.3	22.2	101.4	8.98	308.7	7.3	1.75
Dashields	12	6/16/09	70.2	21.7	104.3	9.29	293.4	7.4	2
	13	6/16/09	70.5	22.1	109.2	9.66	297.2	7.2	1.75
	14	6/16/09	70.8	22	107.9	9.6	287	7.3	1.75
	15	6/16/09	70.7	21.9	108	9.52	296.1	7.4	2.1
Montgomery	16	6/15/09	69.7	21.4	116.7	10.54	292.8	7.4	1.67
	17	6/15/09	69.5	22	110.4	9.78	307.5	7.6	2
	18	6/15/09	70.5	22.4	119.7	10.54	308.8	7.4	2
	19	6/15/09	71.8	22.8	68.5	6.1	319.1	7.6	0.5
	20	6/14/09		21.9	99.3	8.76	321.8	8.6	1
	20	6/15/09		18.7	107.3	9.48	310.7	8.6	1.75
	20	6/15/09	70.8	22.7	157	11.75	578	8.2	0.5
	21	6/15/09	73.8	21.4	86.9	7.63	1076	7.6	1
	22	6/15/09	72.1	22.9	130	10.31	335.4	7.8	1.5
	23	6/14/09	74.7	24.4	141.3	12.01	349.7	8.9	0.5
	24	6/9/09		21.2	109	10.19	382.2	7.3	1.67

New Cumberland	24	6/10/09	69.2	21.4	115	10.4	353	7.1	
	25	6/9/09		21	104	9.59	384.4	7.1	1.5
	25	6/10/09	69.2	21.4	108	9.8	366	7.1	1.33
	26	6/9/09		21.9	104	21.9	403.5	7.2	1.3
	26	6/10/09	70.6	21.5	109	9.95	382	7	1.2
	27	6/9/09	69.5	24.1	78.4	6.6	419.3	7	1.5
	27	6/10/09	69.4	21.3	110	9.8	385.6	7.1	1.75
	28	6/9/09		23.5	127	10.7		8.2	1
	28	6/10/09	71.1	21.8	69.9	6.29	621	7.8	1
	29	6/9/09		21.7	111	9.95	412	7.2	1.7
	29	6/10/09	69.4	21.5	103.9	9.37	210	7.2	1.3

Table 16. Water quality data collected during the August, 2009 sampling.

Pool	Station	Date	Temp F	Temp C	DO %	DO mg/l	Con uS/cm	pH	Secchi Disk (m)
Emsworth	1	8/6/09	71	22.2	115.4	10.014	192.9	7.46	1.3
	2	8/6/09	71.3	22.4	115.9	10	198	7.54	1.25
	3	8/6/09	71.6	22.5	110.4	9.62	242.5	7.45	1.25
	4	8/6/09	70.5	22.1	99.8	8.64	209.4	7.49	1
	5	8/5/09	77.2	25.4	98.4	8.06	522	7.5	0.75
	6	8/5/09	75.8	25.3	100.9	8.47	484.2	7.51	0.8
	7	8/5/09	73.8	23.7	109.1	9.28	328.2	7.57	0.75
	8	8/5/09	72.2	23	111.3	9.52	1310	8.31	0.8
	9	8/6/09	74.3	23.9	102.3	8.61	333.1	7.5	1
	10	8/6/09	73.8	23.8	101.1	8.55	335.7	7.46	1.25
	11	8/6/09	76	25.5	101.7	8.33	212.1	7.54	1.4
Dashields	12	8/5/09	74.3	24	103.8	8.7	450.6	7.62	1.1
	13	8/5/09	74.3	23.9	107.9	9.03	434.4	7.53	0.33
	14	8/5/09	74	23.8	108.7	9.18	315	7.54	0.8
	15	8/5/09	74	29	102.7	8.65	437.3	7.52	1
Montgomery	16	8/3/09	74.2	24.5	109.7	9.18	359	7.62	0.75
	16	8/3/09	74.3	24.2	110.1	9.21	349.7	7.54	0.75
	17	8/3/09	74.5	24.1	115.7	9.71	352	7.45	0.75
	18	8/3/09	75	24.2	114	9.55	352.3	7.49	0.75
	19	8/3/09	74.7	24.3	111.9	9.3	14.2	7.48	0.75
	20	8/2/09		24.1	100.4	8.45	329.9	7.62	0.5
	21	8/3/09	75.5	22.1	101.5	8.84	754	7.88	1
	22	8/2/09	75	24.5	104.9	8.72	331.3	7.51	0.5
	23	8/2/09	76.6	24.7	104.1	8.55	316.5	7.91	0.5
New Cumberland	23	8/2/09		24.7	100.2	8.29	331.7	7.67	0.75
	24	8/4/09	74.5	24	116.4	9.81	349	7.6	0.75

25	8/4/09	74.2	24.1	114.1	9.58	356.9	7.59	0.75
26	8/4/09	74.8	24.6	110.1	9.02	367.1	7.57	0.5
27	8/4/09	75	24.4	118.4	9.84	361	7.56	0.33
28	8/4/09		22.3	81.2	7.04	497.1	8.3	1
29	8/4/09	74.7	24.1	114	9.56	349	7.61	0.9

Table 17. Water quality data collected during the October, 2009 sampling.

Pool	Station	Date	Temp F	Temp C	DO %	DO mg/l	Con uS/cm	pH	Secchi Disk (m)
Emsworth	1	10/15/09	53.7	12.9	106.8	11.41	260.7	7.94	2.7
	2	10/15/09	53.4	12.8	105.5	11.28	255.8	7.82	2
	3	10/15/09	53.5	12.6	105.2	11.15	270.4	7.93	2.5
	4	10/15/09	53.1	12.5	105.5	11.17	250.2	8.12	2
Dashields	11	10/15/09	55.7	13.8	98.1	10.25	318.6	7.75	1.9
	12	10/16/09	53.9	13.4	96.9	10.08	325.2	7.86	1.9
	12	10/16/09	53.9	13.1	102.7	10.6	304.5	7.89	1.8
	15	10/16/09	54.4	13.2	97.1	10.16	313.5	7.82	2
Montgomery	16	10/17/09	53.4	12.6	103.9	11.04	332.7	7.81	2.1
	18	10/17/09	53.4	12.6	102.4	10.87	337.3	7.82	1.8
New Cumberland	21	10/17/09	43.8	7.3	100.9	11.63	724	8.16	2
	22	10/17/09	54.7	13.5	98.9	10.28	304.8	7.88	1.1
	23	10/17/09	48.1	10.4	90.9	10.12	294.8	8.03	.5
	24	10/16/09	54.8	13.6	107.6	11.19	320.1	7.87	1

26	10/16/09	55.3	13.7	103.7	10.67	337	7.91	1.75
28	10/16/09	46.4	8.1	101.8	12	455.8	8.6	3+

Specifics of Captures and Abundance of YOY for Species of Special Concern

Following are tables summarizing where and when the benthic PA Species of Special Concern *Etheostoma camurum*, *Etheostoma tippecanoe*, *Percina shumardi*, and *Macrhybopsis storeriana* were captured (Tables 19 through 30). Tables 19 through 22, summarize habitat usage and abundance for the June sampling. Tables 23 through 26 are for August. Abundance and habitat usage for October is addressed in Tables 27 through 30. Included in the tables are status (Threatened, Candidate, and Endangered). The tables show the general habitat type of the station as outlined in the methods. The tables include whether the fish were caught in surface or benthic gear. The channel location is given as described in the methods section. Keep in mind that channel does not necessarily mean main navigation channel. For island or navigable tributary stations we sampled the back channel or tributary channel respectively. NS in the channel location column means shallow near shore. These tables give abundance of YOY with respect to fish of the same species that are not cohorts.

Table 18. Specifics of Capture Locations of *Etheostoma camurum* During June 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat Type
						1+	YOY			
6/17/2009	Emsworth	1	Threat	<i>Etheostoma</i>	<i>camurum</i>	0	2	rdB	Bottom	Below Dam
6/17/2009	Emsworth	3	Threat	<i>Etheostoma</i>	<i>camurum</i>	2	0	rc	Bottom	Non-nav Tributary
6/16/2009	Dashields	12	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	0	rc	Bottom	Below Dam
6/15/2009	Montgomery	16	Threat	<i>Etheostoma</i>	<i>camurum</i>	2	0	rdB	Bottom	Below Dam
6/15/2009	Montgomery	16	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	0	ldB	Bottom	Below Dam

Table 19. Specifics of Capture Locations of *Etheostoma tippecanoe* During June 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat Type
						1+	YOY			
6/17/2009	Emsworth	1	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	1	0	ldB	Bottom	Below Dam
6/17/2009	Emsworth	2	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	1	0	mc	Bottom	Island
6/15/2009	Montgomery	16	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	2	0	rdB	Bottom	Below Dam
6/15/2009	Montgomery	16	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	3	0	lc	Bottom	Below Dam
6/9/2009	N. Cumberland	24	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	1	0	rc	Bottom	Below Dam

Table 20. Specifics of Capture Locations of *Percina shumardi* During June 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat Type
						1+	YOY			
6/15/2009	Montgomery	16	Cand	<i>Percina</i>	<i>shumardi</i>	1	0	rmc	Bottom	Below Dam
6/15/2009	Montgomery	17	Cand	<i>Percina</i>	<i>shumardi</i>	1	0	rdB	Bottom	Non-nav Tributary
6/15/2009	Montgomery	22	Cand	<i>Percina</i>	<i>shumardi</i>	0	2	rdB	Bottom	Above Dam
6/14/2005	Montgomery	23	Cand	<i>Percina</i>	<i>shumardi</i>	0	1	NS		M. Embayment
6/16/2009	Montgomery	23	Cand	<i>Percina</i>	<i>shumardi</i>	2	0	NS		M. Embayment
6/9/2009	N. Cumberland	24	Cand	<i>Percina</i>	<i>shumardi</i>	0	1	NS		Below Dam
6/9/2009	N. Cumberland	24	Cand	<i>Percina</i>	<i>shumardi</i>	5	0	lc	Bottom	Below Dam
6/9/2009	N. Cumberland	24	Cand	<i>Percina</i>	<i>shumardi</i>	4	4	rc	Bottom	Below Dam
6/9/2009	N. Cumberland	24	Cand	<i>Percina</i>	<i>shumardi</i>	1	29	rdB	Bottom	Below Dam
6/9/2009	N. Cumberland	25	Cand	<i>Percina</i>	<i>shumardi</i>	2	15	rdB	Bottom	Non-nav Tributary

Table 21. Specifics of Capture Locations of *Machyobopsis storeriana* During June 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat Type
						1+	YOY			
6/16/2009	Emsworth	8	End	<i>Machyobopsis</i>	<i>storeriana</i>	1	0			Navigable Tributary
6/17/2009	Emsworth	11	Ende	<i>Machyobopsis</i>	<i>storeriana</i>	3	0	ldb	b	Above Dam
6/15/2009	Montgomery	17	Ende	<i>Machyobopsis</i>	<i>storeriana</i>	1	0	rdB	b	Non-Nav Tributary

Table 22. Specifics of Capture Locations of *Etheostoma camurum* During August 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat Type
						1+	YOY			
8/6/2009	Emsworth	1	Threat	<i>Etheostoma</i>	<i>camurum</i>	2	0	lc	Bottom	Below Dam
8/6/2009	Emsworth	3	Threat	<i>Etheostoma</i>	<i>camurum</i>	0	2	rdB	Bottom	Non-nav Tributary
8/6/2009	Emsworth	3	Threat	<i>Etheostoma</i>	<i>camurum</i>	0	1	mc	Bottom	Non-nav Tributary
8/6/2009	Emsworth	4	Threat	<i>Etheostoma</i>	<i>camurum</i>	0	1	mc	Bottom	Island

8/6/2009	Emsworth	4	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	0	mc	Bottom	Island
8/6/2009	Emsworth	10	Threat	<i>Etheostoma</i>	<i>camurum</i>	2	0	rd	Bottom	Island
8/5/2009	Dashields	12	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	0	lc	Bottom	Below Dam
8/5/2009	Dashields	12	Threat	<i>Etheostoma</i>	<i>camurum</i>	2	0	rc	Bottom	Below Dam
8/5/2009	Dashields	13	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	1	ldb	Bottom	Island
8/5/2009	Dashields	13	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	0	rd	Bottom	Island
8/3/2009	Montgomery	16	Threat	<i>Etheostoma</i>	<i>camurum</i>	3	1	rc	Bottom	Below Dam
8/3/2009	Montgomery	16	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	0	lc	Bottom	Below Dam
8/3/2009	Montgomery	18	Threat	<i>Etheostoma</i>	<i>camurum</i>	3	0	rd	Bottom	Non-nav Tributary
8/3/2009	Montgomery	18	Threat	<i>Etheostoma</i>	<i>camurum</i>	2	0	rd	Bottom	Non-nav Tributary
8/4/2009	N. Cumberland	25	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	0	mc	Bottom	Non-nav Tributary
8/4/2009	N. Cumberland	29	Threat	<i>Etheostoma</i>	<i>camurum</i>	1	0	mc	Bottom	Mid-pool

Table 23. Specifics of Capture Locations of *Etheostoma tippecanoe* During August 2009.

Date	Pool	Station	Status	Genus	Species	Number 1+	Number YOY	Channel Location	Depth	General Habitat Type
8/6/2009	Emsworth	1	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	1	0	rc	Bottom	Below Dam
8/6/2009	Emsworth	1	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	0	1	lc	Bottom	Below Dam
8/6/2009	Emsworth	2	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	0	1	mc	Bottom	Island
8/5/2009	Emsworth	5	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	1	0	rc	Bottom	Below Dam
8/5/2009	Dashields	12	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	2	2	lc	Bottom	Below Dam
8/5/2009	Dashields	12	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	0	1	rc	Bottom	Below Dam
8/5/2009	Dashields	13	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	1	0	ldb	Bottom	Island
8/4/2009	N. Cumberland	24	Threat	<i>Etheostoma</i>	<i>tippecanoe</i>	6	1	rc	Bottom	Below Dam

Table 24. Specifics of Capture Locations of *Percina shumardi* During August 2009.

Date	Pool	Station	Status	Genus	Species	Number 1+	Number YOY	Channel Location	Depth	General Habitat Type
8/3/2009	Montgomery	16	Cand	<i>Percina</i>	<i>shumardi</i>	3	0	lc	Bottom	Below Dam

8/3/2009	Montgomery	16	Cand	<i>Percina shumardi</i>	2	0	ldb	Bottom	Below Dam
8/3/2009	Montgomery	17	Cand	<i>Percina shumardi</i>	3	0	rdp	Bottom	Non-nav Tributary
8/3/2009	Montgomery	17	Cand	<i>Percina shumardi</i>	1	0	mc	Bottom	Non-nav Tributary
8/3/2009	Montgomery	18	Cand	<i>Percina shumardi</i>	4	0	rdp	Bottom	Non-nav Tributary
8/3/2009	Montgomery	18	Cand	<i>Percina shumardi</i>	3	0	rdp	Bottom	Non-nav Tributary
8/3/2009	Montgomery	19	Cand	<i>Percina shumardi</i>	2	0	ldb	Bottom	Non-nav Tributary
8/3/2009	Montgomery	21	Cand	<i>Percina shumardi</i>	1	0	mc	Bottom	Navigable Tributary
8/3/2009	Montgomery	21	Cand	<i>Percina shumardi</i>	2	0	mc	Bottom	Navigable Tributary
8/3/2009	Montgomery	22	Cand	<i>Percina shumardi</i>	1	0	ldb	Bottom	Above Dam
8/4/2009	N. Cumberland	24	Cand	<i>Percina shumardi</i>	13	0	rdp	Bottom	Below Dam
8/4/2009	N. Cumberland	24	Cand	<i>Percina shumardi</i>	21	0	rc	Bottom	Below Dam
8/4/2009	N. Cumberland	24	Cand	<i>Percina shumardi</i>	2	0	lc	Bottom	Below Dam
8/4/2009	N. Cumberland	24	Cand	<i>Percina shumardi</i>	11	0	ldb	Bottom	Below Dam
8/4/2009	N. Cumberland	25	Cand	<i>Percina shumardi</i>	1	0	rdp	Bottom	Non-nav Tributary
8/4/2009	N. Cumberland	25	Cand	<i>Percina shumardi</i>	3	0	mc	Bottom	Non-nav Tributary
8/4/2009	N. Cumberland	25	Cand	<i>Percina shumardi</i>	4	0	mc	Bottom	Non-nav Tributary
8/4/2009	N. Cumberland	26	Cand	<i>Percina shumardi</i>	3	0	mc	Bottom	Island
8/4/2009	N. Cumberland	29	Cand	<i>Percina shumardi</i>	6	0	rdp	Bottom	Mid-pool
8/4/2009	N. Cumberland	29	Cand	<i>Percina shumardi</i>	3	0	mc	Bottom	Mid-pool

Table 25. Specifics of Capture Locations of *Macrhybopsis storeriana* During August 2009.

Date	Pool	Station	Status	Genus	Species	Number 1+	Number YOY	Channel location	Depth	General Habitat Type
8/5/2009	Emsworth	5	End	<i>Macrhybopsis</i>	<i>storeriana</i>	1	0	ldb	Bottom	Below Dam
8/5/2009	Emsworth	7	End	<i>Macrhybopsis</i>	<i>storeriana</i>	0	1	rdp	Bottom	Island
8/5/2009	Emsworth	7	End	<i>Macrhybopsis</i>	<i>storeriana</i>	1	0	mc	Bottom	Island
8/5/2009	Emsworth	7	End	<i>Macrhybopsis</i>	<i>storeriana</i>	1	0	ldb	Bottom	Island
8/5/2009	Dashields	13	End	<i>Macrhybopsis</i>	<i>storeriana</i>	1	0	mc	Bottom	Island
8/5/2009	Dashields	15	End	<i>Macrhybopsis</i>	<i>storeriana</i>	0	1	ldb	Bottom	Above Dam
8/5/2009	Dashields	15	End	<i>Macrhybopsis</i>	<i>storeriana</i>	0	4	rdp	Bottom	Above Dam

8/3/2009	Montgomery	17	End	<i>Macrhybopsis</i>	<i>storeriana</i>	1	0	rdB	Bottom	Non-nav Tributary
8/3/2009	Montgomery	19	End	<i>Macrhybopsis</i>	<i>storeriana</i>	3	0	ldB	Bottom	Non-nav Tributary
8/3/2009	Montgomery	19	End	<i>Macrhybopsis</i>	<i>storeriana</i>	0	24	ldB	Bottom	Non-nav Tributary
8/3/2009	Montgomery	21	End	<i>Macrhybopsis</i>	<i>storeriana</i>	0	1	mc	Bottom	Navigable Tributary
8/3/2009	Montgomery	22	End	<i>Macrhybopsis</i>	<i>storeriana</i>	0	10	ldB	Bottom	Above Dam
8/3/2009	Montgomery	22	End	<i>Macrhybopsis</i>	<i>storeriana</i>	0	5	mc	Bottom	Above Dam
8/4/2009	N. Cumberland	28	End	<i>Macrhybopsis</i>	<i>storeriana</i>	1	0	mc	Bottom	Navigable Tributary

Table 26. Specifics of Capture Locations of *Etheostoma camurum* During October 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat
						1+	YOY			
10/15/2009	Emsworth	1	Threat	<i>E.</i>	<i>camurum</i>	2	0	RDB	Bottom	Below Dam
10/15/2009	Emsworth	1	Threat	<i>E.</i>	<i>camurum</i>	1	0	LDB	Top	Below Dam
10/15/2009	Emsworth	1	Threat	<i>E.</i>	<i>camurum</i>	1	0	MC	Top	Below Dam
10/15/2009	Emsworth	1	Threat	<i>E.</i>	<i>camurum</i>	1	0	RDB	Top	Below Dam
10/16/2009	Emsworth	11	Threat	<i>E.</i>	<i>camurum</i>	1	0	RDB	Bottom	Above Dam
10/15/2009	Dashields	13	Threat	<i>E.</i>	<i>camurum</i>	1	0	RDB	Top	Island
10/16/2009	Montgomery	16	Threat	<i>E.</i>	<i>camurum</i>	4	0	MC	Bottom	Below Dam
10/16/2009	Montgomery	16	Threat	<i>E.</i>	<i>camurum</i>	5	0	RDB	Bottom	Below Dam
10/17/2009	Montgomery	18	Threat	<i>E.</i>	<i>camurum</i>	1	0	RDB	Bottom	Non-nav Tributary
10/17/2009	Montgomery	18	Threat	<i>E.</i>	<i>camurum</i>	1	0	MC	Bottom	Non-nav Tributary

Table 27. Specifics of Capture Locations of *Etheostoma tippecanoe* During October 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat
						1+	YOY			
10/16/2009	Emsworth	11	Threat	<i>E.</i>	<i>tippecanoe</i>	3	0	MC	Bottom	Above Dam
10/16/2009	Dashields	16	Threat	<i>E.</i>	<i>tippecanoe</i>	1	0	MC	Bottom	Below Dam
10/16/2009	N. Cumberland	24	Threat	<i>E.</i>	<i>tippecanoe</i>	1	0	LDB	Bottom	Below Dam

Table 28. Specifics of Capture Locations of *Percina shumardi* During October 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat
						1+	YOY			
10/16/2009	Montgomery	16	Cand	<i>P.</i>	<i>shumardi</i>	1	0	RDB	Bottom	Below Dam
10/17/2009	Montgomery	22	Cand	<i>P.</i>	<i>shumardi</i>	1	0	RDB	Bottom	Above Dam
10/16/2009	N. Cumberland	24	Cand	<i>P.</i>	<i>shumardi</i>	2	0	RDB	Bottom	Below Dam
10/16/2009	N. Cumberland	26	Cand	<i>P.</i>	<i>shumardi</i>	2	0	RDB	Bottom	Island

Table 29. Specifics of Capture Locations of *Macrhybopsis storeriana* During October 2009.

Date	Pool	Station	Status	Genus	Species	Number	Number	Channel	Depth	General Habitat
						1+	YOY			
10/17/2009	Montgomery	21	End	<i>M.</i>	<i>storeriana</i>	1	0	MC	Bottom	Navigable Tributary
10/17/2009	Montgomery	22	End	<i>M.</i>	<i>storeriana</i>	3	0	MC	Bottom	Above Dam
10/17/2009	Montgomery	22	End	<i>M.</i>	<i>storeriana</i>	2	6	RDB	Bottom	Above Dam

SPECIES ACCOUNTS

Species of Special Concern. Seven species, which are listed by the Pennsylvania Fish and Boat Commission as Threatened, Rare, or Candidate species include: Mooneye (*Hiodon alosoides*), Goldeye (*Hiodon tergisus*), Bowfin (*Amia calva*), Skipjack Herring (*Alosa chrysochloris*), Silver Chub (*Macrhybopsis storeriana*), Bluebreast Darter (*Etheostoma camurum*), and Tippecanoe Darter (*Etheostoma tippecanoe*). Additionally, we collected the River Darter, *Percina shumardi*, which was recently reported in Pennsylvania waters (Freedman et al. 2009) and will very likely be listed in the near future.

Hiodon alosoides. Male Goldeyes reach sexual maturity at age 7 and females at age 8, with large females producing greater than 20,000 eggs (Donald 1997). They spawn annually at temperatures between 10-13°C (Stauffer et al. 1995). Post larval fish feed on zooplankton. Eggs and larvae are vulnerable because they are semibouyant and have a well developed yolk sac (Donald 1997, Stauffer et al. 1995). We did not collect any specimens in 2008. In 2009, we collected two larvae in the Montgomery Pool at Elkhorn Creek during the July sampling (Figure 7). One larval Goldeye was captured in the Emsworth Pool at Chartiers Creek in June 2009.



Figure 7. Larval Goldeye.

Hiodon tergisus. Female Mooneyes reach sexual maturity in 3-5 years (Wallus and Buchanan 1989). Peak spawning occurs between May-June at temperatures of 10-13°C. They often migrate up clear streams to spawn and the eggs drift downstream (Page and Burr 1991). The young-of-year are approximately 7mm upon hatching, feed on immature caddisflies, mayflies, midges, corixids, and plecopterans, and are concentrated in the upper 1/2-1/3 of the water column (Wallus and Buchanan 1989, Stauffer et al. 1995). We collected adults and one larva (Figure 8) in the Montgomery Pool during the June sampling.

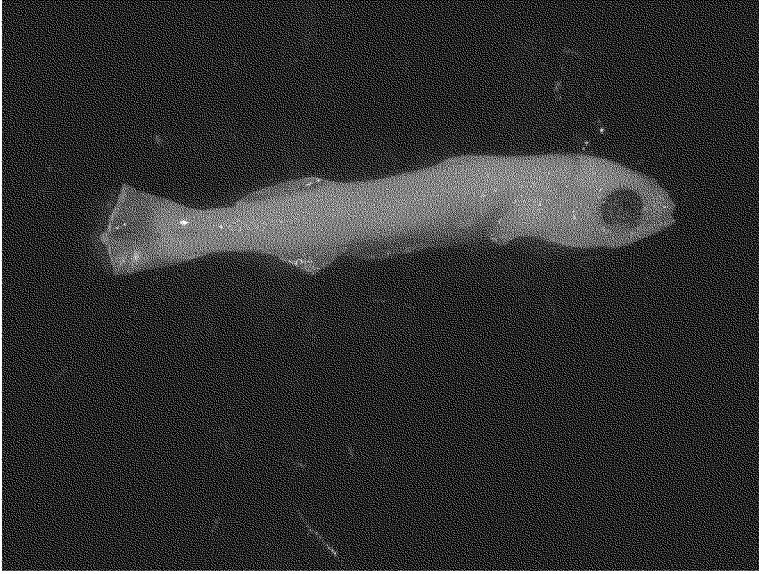


Figure 8. Larval Mooneye.

Amia calva. The Bowfin breeds in the spring when water temperatures approach 15°C (Breder and Rosen 1966, Scott and Crossman 1973). Eggs are slightly elliptical and hatch in about 180 hours. A single female can produce as many as 64,000 eggs, but most nests contain 2,000-5,000 eggs (Breder and Rosen 1966). We collected one larvae (Figure 9) in August, 2009.

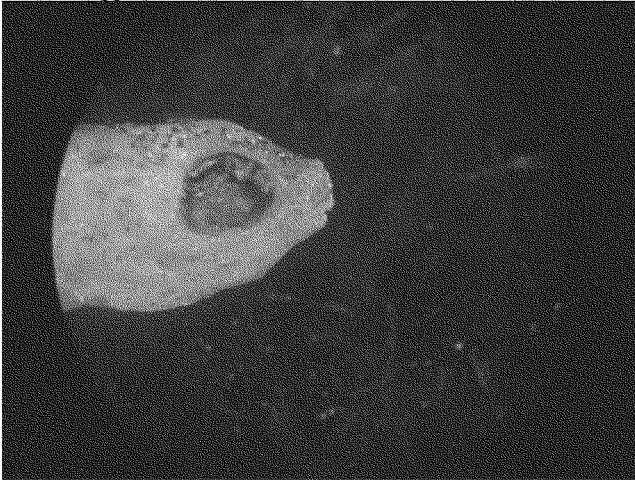


Figure 9. Larval Bowfin.

Alosa chrysochloris. The Skipjack Herring spawns from April-June in small aggregations (Coker 1930, Smith 1979).

We collected one young-of-year in Montgomery Pool (Figure 10) in June/July, 2009 and two young-of-year in Dashields Pool in August, 2009.



Figure 10. Larval Skipjack Herring.

Macrhybopsis storeriana. Both males and females of the Silver Chub reach sexual maturity at 2+ years. They generally spawn after migrating from deeper water to the shoreline at temperatures between 20.8-22.7°C. They are probably open-water broadcast spawners (Stauffer et al. 1995).

During the 2008 sampling period, *M. storeriana* was present throughout the Emsworth, Montgomery, and New Cumberland pools, but absent from the Dashields Pool. Both young-of-year and adults were taken in the bottom trawls, but absent in the surface samples. During the March/April, 2009 sampling, we captured adults throughout all of the pools. We collected three adults in the Emsworth Pool and one in the Montgomery Pool with the bottom trawls. In August, 2009, we captured adults in every pool and young-of-year (Figure 11) in Emsworth, Dashields, and Montgomery pools, but in October 2008 we found them only in the Montgomery Pool.



Figure 11. Larval Silver Chub.

Etheostoma caeruleum. The Bluebreast Darter spawns three times per year at temperatures ranging between 10-24°C (Mount 1959, Stauffer et al. 1995). The eggs are between 1.6-2.2 mm in diameter, transparent, spherical, demersal, and adhesive with narrow perivitelline spaces, uncolored yolk, and unpigmented chorion; hatching occurs in 168-240 hrs. at 22°C (Page and Simon 1988).

In the fall of 2008, we collected adults in all of the pools. In the Emsworth, Dashields, and Montgomery pools, we found them only in the two most upstream stations, while in the New Cumberland Pool we collected them only in the three most downstream stations. In April, we collected specimens from Montgomery and Emsworth pools. In June/July, we collected 9 adults distributed among the four pools. We captured two larvae at the most upstream station in the Emsworth Pool. In August, 2009, we collected adults in all of the pools and young-of-year (Figure 12) were collected in all pools, except New Cumberland Pool. In October, 2008 we collected them in both the Montgomery and Emsworth pools.

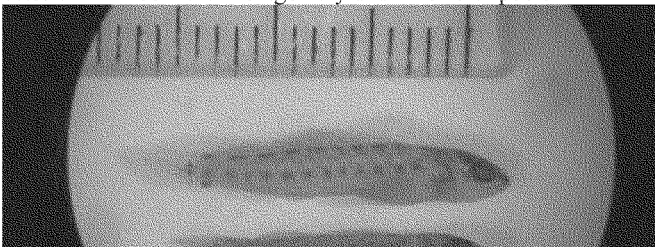


Figure 12. Juvenile Bluebreast Darter.

Etheostoma tippecanoe. Breeding males of the Tippecanoe Darter are bright gold and females are brown with dark brown vertical bars (Stauffer et al. 1995). Tippecanoe darters breed in water temperatures ranging between 22-27.5° at 12 months of age (Warren et al. 1986; Page and Simon 1988). Gravid females and brightly colored males are found in deep runs over gravel, pebbles, and cobble. Females completely bury the eggs under gravel and they hatch in 144-168 hrs. (Page and Simon, 1988). The eggs are 1.3-1.4 mm diameter, transparent, spherical, demersal, adhesive, with a narrow perivitelline spaces, amber yolk, and unpigmented chorion (Page and Simon, 1988). Males guard the eggs (Trautman 1957).

We collected one specimen in Dashields Pool, three in Montgomery Pool, and one in the New Cumberland Pool during the fall of 2008. We collected adults in Emsworth Pool in March/April, 2009, and a total of eight adults in the Emsworth, Montgomery, and New Cumberland pools in June, 2009. In August, we collected adults and larvae (Figure 13) in all pools except Montgomery Pool. In October we collected them in Emsworth, Montgomery, and New Cumberland pools.

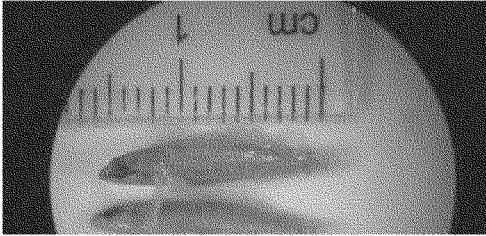


Figure 13. Juvenile Tippecanoe darters.

Percina shumardi. The River Darter spawns in April and May (Page 1983) in areas with a strong current over scattered rubble and associated clean gravel (Kuehne and Barbour 1983). Fish mature at 1+ years and may live to 4 years (Smith 1979).

We collected 19 adults in the lower end of the study reach the New Cumberland Pool and one in the upstream portion of Montgomery Pool in 2008. In March/April, 2009, we collected an additional two adults in the Montgomery Pool and two in New Cumberland Pool. We collected four adults in Montgomery Pool and 12 in New Cumberland Pool in June/July, 2009. Finally, we collected a total of three larvae (Figure 14) in Montgomery Pool and 48 larvae in New Cumberland Pool. In August, we collected adults in Montgomery and New Cumberland pools.

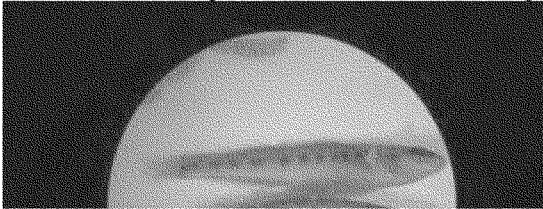


Figure 14. Juvenile River Darter.

Sport fishes. All of the pools sampled are important recreational resources and many people fish throughout the area studied. We captured 11 species of sport fishes in the system, including: Northern Pike (*Esox lucius*), Flathead Catfish (*Pylodictis olivaris*), Channel Catfish (*Ictalurus*

punctatus), Rock Bass (*Ambloplites rupestris*), Bluegill Sunfish (*Lepomis macrochirus*), Smallmouth Bass (*Micropterus dolomieu*), Spotted Bass (*Micropterus punctulatus*), Largemouth Bass (*Micropterus salmoides*), White Crappie (*Pomoxis annularis*), Sauger (*Sander canadensis*), and Walleye (*Sander vitreus*).

Esox lucius. Northern Pike are common throughout the northern United States and Canada with the southwestern edge of their natural range extending south to north-central Nebraska. Northern pike is a mesothermal cool-water species that flourishes in shallow, productive environments. Populations typically thrive in lakes with adequate flooded vegetation for spawning and recruitment and cool-water habitats for thermal refuge. Optimal water temperatures for adult pike growth (8–18 °C) and juveniles (19–25 °C) (Paukert and Willis 2003) are often exceeded in lakes in the southern portion of the Northern Pike's natural range. In addition, lakes with greater depth, which are associated with thermal refuges or more appropriate prey, typically produce larger Northern Pike (Paukert and Willis, 2003).

Quite generally, Northern Pike spawn in shallow water over vegetation in spring shortly after ice-out, when these shallows have warmed to 8–12 °C. The fish tend to migrate to tributaries, flooded marshes and wetlands, or shallow shoreline inundations to spawn. Optimal spawning substrate is flooded vegetation in a shallow, sheltered area. Grasses and sedges are preferred, but other vegetation may be used. The vegetative hummocks and mats should be adequate to entrap the eggs and suspend them above the substrate, where anoxic conditions can develop. Spawning success has been linked to water-level changes. High water levels at time of spawning with stable levels after the incubation period are associated with large year-classes of northern pike. High water levels increase nutrient concentrations and primary and secondary production in inundated areas. Widely fluctuating water levels can inhibit the development of near shore vegetation; as well, very consistent annual levels are less productive, with low levels being least productive (Casselman and Lewis 1996).

Northern Pike typically require adequate flooded vegetation for spawning activity and subsequent recruitment. Northern pike year-class strength has been positively correlated with air temperature and water levels. Depth of nursery habitat is positively correlated with fish size and age in the Great Lakes Basin. Water temperature and level may affect vegetation growth and cover, thus indirectly affecting recruitment. In addition, optimum growth for age-0 Northern Pike occurs at 22 ° - 23 °C while optimal temperature is slightly slower (19 °C) for sub adults and adults (Rydell et al. 2008).

We collected one adult Northern Pike in the Montgomery Pool in March/April and we seined one larval esocid, which we presumed to be Northern Pike in June/July, 2009.

Pylodictis olivaris. The Flathead Catfish inhabits medium to large rivers, lakes, and reservoirs where it feeds by lunging and seizing prey (Brown et al. 2005). It is typically less active during daylight hours and is closely associated with structure such as brush piles, undercut banks, and log jams. The flathead catfish can attain sizes greater than 1000 mm total length (TL), weights can exceed 50 kg, and it is regarded by many anglers as a big-game fish. Life span can exceed 19 years, with recent maximum estimates of riverine fish spanning up to 28 years. Males mature in 3–4 years and females mature in 4–5 years (Minckley and Deacon 1959, Munger et al. 1994). Juveniles are found in shallow areas and feed primarily on aquatic insects, but when they reach approximately 100 mm or greater, they become almost exclusively piscivorous, with large crustaceans also consumed (Brown et al. 2005).

We collected one young-of-year in the Dashields Pool and one young-of-year in the New Cumberland Pool during the fall of 2008. In August, 2009, we collected one young-of-year in Montgomery Pool, two in Emsworth Pool, and two in Dashields Pool.

Ictalurus punctatus. The natural habitat of this species is moderate- to swift-flowing streams; however, they are found in slow-moving rivers. They are tolerant of turbid water, but generally prefer clear water. Young fish feed in shallow areas, while adults feed in deeper waters. Channel Catfish generally reach sexual maturity at 3 years of age but the period to maturity may vary from 2 to 5 years. Channel catfish are cavity spawners in that they spawn in secluded, semi dark areas in nature, such as holes, hollow logs, or undercut banks. Spawning occurs when water temperatures are between 25-29°C. The male prepares the spawning site, fertilizes the eggs laid by the female, and cares for the eggs after fertilization. A newly hatched catfish is a replicate of the adult; that is, there are no free-swimming larval stages of development (Tucker and Robinson 1990).

We collected 10 young-of-year in Dashields, Emsworth and New Cumberland pools and one adult in Montgomery Pool. We collected one adult in the Dashields Pool, one in Emsworth Pool, and one in New Cumberland Pool during March/April, 2009. In August, 2009, we captured young-of-year in all pools (Dashields Pool – 52, Emsworth Pool – 86; Montgomery Pool – 4; New Cumberland Pool – 20).

Ambloplites rupestris. The Rock Bass is a common centrarchid fish native to east-central North America (Noltie 1998), where it is found in relatively shallow waters of lakes, ponds, clear gravelly rivers, creeks and clear rocky streams of moderate gradients. Nesting activity is triggered at 12.8-15.6 °C and spawning occurs at 15.6-21.1 °C. Growth of young Rock Bass varies with age, latitude, and water characteristics. Most feeding occurs during the day, especially during late evening (Simon and Conner 2008).

We collected one adult in the Montgomery Pool during September 2008. We captured one young-of-year in August, 2009 from the Emsworth Pool.

Lepomis macrochirus. Bluegill spawning activity creates disturbances in the littoral zone of ponds and lakes. Males construct nests in shallow water by vigorously displacing large amounts of sediment and debris leaving circular depressions. Nests are located in tightly packed clusters (referred to as colonies), which may contain from several hundred nests. Actual spawning periods are brief and highly synchronized within colonies, but males occupy nests for several days afterwards to guard eggs and larvae. This sequence is repeated several times during the breeding season, which lasts from 1 to 3 months during the spring and summer (Pierce et al. 1987).

Parental males construct bowl-shaped nests in water between 0.1-1.5m deep. Following nest construction, these males exhibit territorial defense behaviors (e.g., display, thrust, swipe, chase or nip) and courtship behaviors (e.g., rim circling) above and slightly beyond the nest boundary. Parental care of offspring is left entirely to the male Bluegill, which fan and guard the eggs and fry. A brood-guarding period of up to 10 days typically passes between egg deposition and fry departure, after which parental male Bluegill abandon their nests. Because of the energetic demands of this reproductive activity, physiological trade-offs in available energy often result in decreased (or cessation of) growth of mature fish. Further, fecundity is often directly related to body size (Aday et al. 2002).

Males are characterized by a discrete polymorphism in life histories termed 'parental' and 'cuckolder'. In Lake Opinicon (Ontario, Canada), parentals mature at age 7 and construct nests in a colony during the breeding season. Nesting parentals court and spawn with multiple females

over the course of a single day and then provide sole care for the developing young in their nests. Parental care involves fanning and defending eggs (which can number in the tens of thousands) until they hatch (2–3 days) and then defending developing fry from predators until the young leave the nest (5–7 days).

We captured over 200 young-of-year in all pools in 2008. We did not capture any adults or young-of-year in March/April and June/July in 2009. The absences of Bluegills in these collections suggest that they did not move into the littoral portions and had not yet begun spawning. In August, 2009, we captured young-of-year in Dashields, Emsworth, and Montgomery pools and adults in Montgomery Pool.

Micropterus dolomieu. Smallmouth bass spawn in the spring or the early summer in most northern waters, when the water temperature is between 14–18°C. The male builds a nest in waters that ranges from 0.5–4m deep, depending on the environment. The nest site is often over a gravel or rock bottom but may be over a sandy bottom in lakes, and it is usually near the protection of a log or a boulder. These highly carnivorous and predatory fish will eat whatever is available, but they have a clear preference for crayfish and small fish (Schultz, 2003).

We collected adults in the Emsworth Pool in 2008 and in March/April, 2009. During this time, they were probably seeking refuge in the deeper pools as evidenced by the capture of 163 young-of-year from Dashields, Emsworth, and Montgomery pools in June/July. In August, 2009, we captured young-of-year in all pools.

Micropterus punctulatus. Spotted Bass spawn in the spring at water temperatures of 16–20°C. Males sweep away silt from a gravel or rock bottom to make nests, generally near brush, logs or other heavy cover. The males guard the eggs and then guard the fry after they leave the nests. Fry are extremely active, much more than those of either the Largemouth Bass or the Smallmouth Bass. The fish tend to school more than any other member of the black bass family and are often encountered chasing shad in open waters. Juveniles feed on small crustaceans and midge larvae, whereas adults eat insects, larger crustaceans, minnows, frogs, worms, grubs and small fish. Crayfish are usually the most important item in the diet, followed by small fish and larval and adult insects (Schultz, 2003).

Spotted Bass population characteristics and habitat use are strongly associated with large woody debris (LWD), natural rootwads, and undercut banks. Natural cover structure use is non-random and Spotted Bass uses LWD, natural rootwads, and undercut banks significantly more than open water and overhanging vegetation. Habitat improvement is a common method used to enhance fish populations and usually is accomplished by installing habitat enhancement structures that alter habitat characteristics such as stream velocity, overhead cover, depth, and substrate (Proboszcz and Guy, 2006).

We captured three young-of-year in the Emsworth Pool during 2008. We collected one young-of-year in Emsworth Pool in June/July, 2009. In August, 2009, we collected young-of-year in all pools.

Micropterus salmoides. Vegetation coverage of lakes plays a vital role in the population dynamics of Largemouth Bass. In impoundments, relative abundance of Largemouth Bass increased with increasing submerged vegetation coverage. Excessive vegetation coverage provides cover for Largemouth Bass prey and too little coverage apparently is linked to low recruitment in some waters. Growth has also been linked to submerged vegetation coverage. Reduced vegetation abundance resulted in increased growth of smaller Largemouth Bass because, after all submerged vegetation was removed, the bass became piscivorous at smaller sizes, thus increasing growth (Paukert and Wills 2004).

Largemouth Bass strongly interacted with walleyes: (1) indices of Largemouth Bass and walleye population abundance were inversely related in lakes with self-sustaining walleye populations; (2) the diet of Largemouth Bass included juvenile walleyes; (3) walleye growth was positively related to indices of Largemouth Bass abundance; and (4) survival of stocked walleyes was negatively related to indices of Largemouth Bass abundance, and indices of Largemouth Bass abundances increased as an index of walleye stocking intensity increased (Fayram et al. 2005).

We did not collect any Largemouth Bass in 2008. In 2009, we collected one adult in the Emsworth Pool during the June/July sampling. In August, we captured 2 young-of-year in Montgomery and adults in Dashields Pool.

Pomoxis nigromaculatus. Spawning occurs early in the spring and summer in water temperatures between 17-20°C, and during that time males grow dark on the sides of its head, lower jaw, and breast. Spawning takes place in sandy, muddy, and weedy areas, and the fish nests in colonies. The eggs incubate for 2 to 4 days, and the young Black Crappie mature in 2 to 4 years. Black crappie feed on small crustaceans, zooplankton, insects and insect larvae, minnows, young shad, small sunfish, and other small fishes. Small minnows of many species are probably the most common food item for adults (Schultz 2003).

We collected one adult in Montgomery Pool in March/April, 2009.

Morone chrysops. The White Bass spawn in late spring. Young-of-year feed primarily prior to sunset (Voigtlander and Wissing 1974). We captured adults in March/April, 2009 in Montgomery Pool, adults in June/July in New Cumberland Pool, and two young-of-year in August from Montgomery Pool.

Morone saxatilis. Striped Bass spawn from April-June and the eggs are semibouyant (Merriman 1937). Eggs drift in the current and hatch in approximately 74 hours at 12°C (Merriman 1937, Cooper 1983). During August, we collected adults and 2 young-of-year in Montgomery Pool and 1 young-of-year in New Cumberland Pool.

Perca flavescens. Yellow Perch usually spawn in early spring when the water temperature is between 8°-10°C. Eggs are deposited in the shallow areas of lakes or tributary streams in gelatinous ribbons by an adult female and are fertilized by as many as a dozen males in weedy areas several feet deep. The ribbons, which may be up to 2 m long and several cm wide, attach to vegetation until one-quarter to one-half of the 10,000 to 48,000 eggs hatch into fry in 10 days to 3 weeks after spawning. Young perch feed on zooplankton until they have grown to several cm in length and then feed on larger zooplankton, insects, young crayfish, snails, aquatic insects, fish eggs, and small fish, including the young of their own species (Schultz, 2003).

Yellow Perch populations commonly exhibit variable recruitment, which has been correlated with the abundance of aquatic macrophytes. Erratic Yellow Perch recruitment tends to occur in shallow lakes lacking submerged macrophytes, while perch populations demonstrating more consistent recruitment occur in deeper lakes with substantial amounts of submersed macrophytes (Hanchin et al. 2003).

Yellow Perch eggs are embedded in a gelatinous, accordion-like matrix, and spawners prefer to entangle egg strands on substrates such as woody debris, submerged macrophytes, and other structures. The duration of the spawning period is variable and can last from 1 to 4 weeks. Yellow Perch is a cool water fish with a preferred temperature range of 20–25 °C as adults. They are annual spawners with synchronous oocyte growth during fall through winter, and spawning occurs in spring, when thermal stratification is common in temperate lakes (Huff et al. 2004).

We captured one larval Yellow Perch in the Emsworth Pool and one in the Montgomery Pool in June, 2009. We captured an additional 4 young-of-year in August, 2009 from Montgomery Pool.

Sander canadensis. This species has a general distribution in mid-central North America from Quebec to Tennessee and Arkansas, and north westerly through Montana to about central Alberta. Habitat preference of the sauger is large, turbid, shallow lakes and large, silty, slow-flowing rivers (Schultz, 2003).

Widespread declines in sauger populations have been reported during the last several decades in the Great Lakes, the Missouri and Yellowstone rivers, the Missouri River in Nebraska, the Tennessee River, and Wyoming streams. These extensive declines have prompted researchers to classify sauger as a 'species of concern' across portions of its range. Loss of spawning habitat either through river channel alteration (e.g. impoundments) or barriers to migration is a commonly identified factor in these studies contributing to declining sauger populations (Graeb et al. 2009).

We collected 27 *Sander* spp. larvae in June/July, 2009 from Montgomery Pool, one young-of-year in Emsworth Pool, and two from Dashields Pool, but we could not distinguish between *S. canadensis* and *S. vitreus*. We collected young-of-year from all pools in August, 2009.

Sander vitreus. Walleyes from northern latitudes generally exhibit slower growth, lower natural mortality, and increased longevity compared to southern populations. Although temperature and length of the growing season undoubtedly influence latitudinal trends in walleye growth, large-scale growth trends are often confounded with changes in fish assemblage structure and prey availability. For example, most aquatic systems from southern latitudes have higher species diversity, thereby increasing the number of potential prey species for walleyes in Midwestern and southern systems. Most of these systems also contain Gizzard Shad, *Dorosoma cepedianum*, which are often selected by walleyes over other available prey species. The presence of gizzard shad coupled with long growing seasons leads to fast growth of walleyes, especially during the first year (Quist and Guy, 2003).

Walleyes must pass through a planktivorous feeding stage before they can consume fish. Quist et al (2004a, b), however found that zooplankton densities did not appear to influence survival of larval walleyes, because even though zooplankton densities were similar among years, recruitment of walleyes was variable. Spring temperatures and interactions with larval gizzard shad appeared to have the greatest influence on larval walleye survival.

Larval and yearling walleye switch at an early age from eating zooplankton and benthic invertebrates to fishes. Adults will feed on benthic invertebrates in the spring, and then prey on fishes later in the year (Henderson et al 2004).

Northern pike and walleyes have similar diets so may compete for food resources. Walleyes also prey on northern pike, thus, abundances of these two species may be negatively related (Fayram et al. 2005).

Smallmouth bass prey on walleyes and have been suggested as a cause of the inverse relationship between abundances of these two species (Fayram et al. 2005).

We collected adults in March/April 2009 in Montgomery and Emsworth pools. We collected one larvae in Emsworth Pool and four in Montgomery Pool in the meter nets that we could identify as *S. vitreus*. We collected 27 *Sander* spp. larvae in June/July, 2009 from Montgomery Pool, one young-of-year in Emsworth Pool, and two from Dashields Pool, but we could not distinguish between *S. canadensis* and *S. vitreus*. We collected young-of-year from all pools in August, 2009.

Other fishes. The remaining fishes that we captured are documented below.

Lepisosteus osseus. The Longnose Gar spawns from the end of April through June (Breder and Rosen 1966, Stauffer et al. 1995). A single female may produce as many as 36,000 eggs and deposits them in vegetated shallow waters and under banks (Tyler and Granger 1984). We collected Longnose Gar larvae in the New Cumberland, Dashiels, and Emsworth pools in June, 2009.

Dorosoma cepedianum. The Gizzard Shad produce demersal adhesive eggs at water temperatures ranging between 10-29°C (Paller and Saul 1996). Fecundities were greater than 70,000 (Kilambi and Baglin 1969) and the majority were mature at age 3 (Breder and Rosen 1966). We collected adults in 2008 from Montgomery Pool.

We collected adults in the Emsworth Pool in March/April, 2009. In August, we collected young-of-year from all pools and adults from New Cumberland Pool.

Camptostoma anomalum. The Central Stoneroller migrate up streams to spawn from March-June at temperatures between 14-22°C (Hankinson 1920). Males construct the nest by moving pebbles in their mouth.

We collected adults in June/July from Emsworth Pool and both juveniles and adults were collected in August from Montgomery Pool.

Cyprinella spiloptera. The Spotfin Shiner spawns in late spring and early summer in rock crevices (Miller and Robison 2004). In June/July we collected both adults and young-of-year in Emsworth Pool. In August, adults were found in all pools and young-of-year were found in all pools except Dashiels Pool.

Cyprinus carpio. The European Carp spawns from late spring through August at temperatures above 17°C (Smith 1985). Females can spawn two times per season and fecundities range is size dependent and larger fish will contain over 2×10^6 eggs. Females mature in 4-5 years and males in 3-4 years (Smith 1985).

We collected adult European Carp in the New Cumberland Pool in March/April, 2009, but expect that it inhabits and spawns in all of the pools we sampled.

Erimystax dissimilis. The Streamline Chub spawns in May-June and each female produces approximately 400 eggs (Harris 1980). During August, 2009 we collected adults in the Emsworth Pool.

Hybopsis amblops. The Bigeye Chub spawn in early June, when females deposit eggs in vegetation.

We collected adults in Montgomery Pool in August, 2009.

Notropis atherinoides. The Emerald Shiner spawns at night from July-August (Fuchs 1967, Stauffer et al. 1995) between 20-23°C over rubble, sand, and gravel substrate. Eggs hatch 24-32 hours after fertilization (Flittner 1964).

We collected adults in Dashiels and Emsworth pools in 2008 and young-of-year in Montgomery and New Cumberland pools. In March/April, 2009, adults were collected in all pools. In June/July, we collected adults in Emsworth Pool. In August, 2009, we collected adults and young-of-year in all pools.

Notropis hudsonius. The Spottail Shiner spawns from June through August (Nelson and Paetz 1992).

We collected adults in June/July, 2009 from New Cumberland and Montgomery pools. In August, 2009, we collected adults from Emsworth Pool.

Notropis rubellus. The Rosyface Shiner spawns over gravel and rubble from May through early June (Eddy and Underhill 1976).

We collected one young-of-year from New Cumberland Pool and adults from Montgomery Pool in June/July, 2009.

Notropis stramineus. The Sand Shiner broadcasts demersal/adhesive eggs (Platanía and Atenbach 1998) at temperatures ranging between 21-37°C (Smith 1985).

In June/July, we collected adults in all pools.

Notropis volucellus. The Mimic Shinner spawns at night on aquatic vegetation in early to midsummer (Breder and Rosen 1966, Stauffer et al. 1995). Its adhesive eggs are broadcast at night over aquatic vegetation (Black 1945). They mature in 2 years and females produce approximately 350 eggs. It attaches its adhesive eggs on aquatic vegetation.

In 2008, we collected adults and young-of-year in all pools. In March/April, 2009, we collected adults in all pools. In June/July, 2009, we collected young-of-year and adults from New Cumberland and Montgomery pools and adults in Emsworth Pool. During August, we collected young-of-year and adults from all pools. In particular, Emsworth Pool yielded 1773 young-of-year.

Pimephales notatus. The Bluntnose Minnow spawns in late spring through the summer (Eddy and Underhill 1976). The male builds nests under a variety of objects (e.g., woody debris, stones, etc.) and the female lays adhesive eggs in the nests that are guarded by the male (Phillips et al. 1982).

In 2008, we collected young-of-year in Emsworth Pool and adults in Montgomery Pool. In March/April, we collected adults in Montgomery and Emsworth pools. During June/July, we collected both adults and young-of-year in Emsworth Pool and adults in Montgomery Pool. In August, 2009, young-of-year and adults were collected in all pools, except New Cumberland Pool, where only adults were captured.

Pimephales promelas. The Fathead Minnow spawns from May to late August at temperatures higher than 17°C (Sargent 1989, Stauffer et al. 1995). Eggs are deposited at night and hatch in 4-8 days. A single female produces between 400-700 eggs.

We collected adults in the Emsworth Pool during March/April, 2009.

Rhinichthys obtusus. The Western Blacknose Dace spawns at temperatures 15-20°C over gravel (Schwartz 1958).

We collected the Western Blacknose Dace in Montgomery and Emsworth pools in April and in Emsworth and Dashields pools in June. We captured young-of-year in Montgomery Pool during April, 2008, and in all pools during June/July, 2009.

Carpiodes cyprinus. The Quillback migrates to spawning habitats in April-May, where it deposits eggs of sand (Scott and Crossman 1973).

During August, 2009, we collected three young-of-year in Montgomery Pool.

Hypentelium nigricans. The Northern Hogsucker spawns in mid-March to mid-May (Raney and Lachner 1946, Fuiman 1979) over a gravel substrate (Adams and Hankinson 1928). The eggs hatch in approximately 10 days and young-of-year occupy water greater than 25 cm deep (Buynack and Mohr 1978).

In March/April, 2008, we collected adults in Montgomery and New Cumberland pools. In June/July, we collected young-of-year in all pools except New Cumberland Pool. In August, we collected young-of-year in all pools, except Dashields Pool.

Ictiobus bubalus. The Smallmouth Buffalo spawns in shallow waters and a single female can produce up to 800,000 eggs (Osborn and Self 1965).

In March/April, we collected adults in Emsworth and New Cumberland pools.

Moxostoma anisurum. The Silver Redhorse spawns in the main channel of turbid rivers over a gravel/rubble substrate (Meyer 1962).

During August, 2009, we collected 3 young-of-year from Montgomery Pool and 1 young-of-year from Emsworth Pool.

Moxostoma carinatum. Male River Redhorse build redds in gravel substrate (Cooper 1983).

We collected adults in March/April in Emsworth Pool and 1 young-of-year during August in Montgomery Pool.

Moxostoma breviceps. The Smallmouth Redhorse spawns in clear creeks in late May when temperatures reach 10°C (Nelson and Paetz 1992).

During March/April, 2009 we collected adults in New Cumberland Pool and one young-of-year in Montgomery Pool in August, 2009.

Moxostoma carinatum. We collected River Redhorse adults in March/April from Emsworth Pool and 1 young-of-year during August from Montgomery Pool.

Moxostoma erythrurum. The Golden Redhorse spawns during May at temperatures of 15-21°C (Kwak and Skelly 1992). They spawn primarily over shoals downstream of deep pools. We collected adults in Montgomery Pool during 2008.

We collected adults in Montgomery and New Cumberland pools during March/April, and adults and young-of-year during August, 2009.

Percopsis omiscomaycus. The Trout Perch spawns in the spring and deposits eggs over boulders and gravel (Breder and Rosen 1966). They spawn at night and fecundity is approximately 346 (Muth 1975).

We collected one young-of-year in Emsworth Pool during June/July, 2009.

Fundulus diaphanus. The Banded Killifish deposits approximately 50 eggs per spawning pair in vegetation (Richardson 1939).

We collected one young-of-year during August, 2009, from the Montgomery Pool.

Labidesthes sicculus. The Brook Silverside breeds from late May through early June (Hubbs 1921). Each egg has an adhesive filament, which supports the egg in the water column and is used to anchor the egg to vegetation (Hubbs 1921). Grier et al. (1990) reports that the males have a short genital papilla immediately posterior to the anus, which is used for internal fertilization.

We collected young-of-year in June/July from all pools, except Dashields Pool. Young-of-year and adults were present in August from Montgomery Pool.

Cottus bairdi. The Mottled Sculpin is a spring spawner. Gravid females are found as early as February and March (Grossman et al. 2002). Males guard a nest under rocks, court females to enter the nest, where she attaches on average 66 eggs (Grossman et al. 2002) on the roof of the shelter (Savage 1963). The female leaves the nest after depositing the eggs and the males guard the eggs.

We collected adults in Montgomery Pool during all sampling months except June/July, 2009.

Etheostoma blennioides. The Greenside Darter spawns over algae mats and gravel (Winn 1958a) from April-May (Winn 1958b). Eggs hatch in 18-20 days when temperatures are between 13-15°C (Winn 1958b). We collected one young-of-year and one adult from 2008 in New Cumberland Pool. Young-of-year were collected in all pools in June/July, 2009. Adults were collected in all pools during August, except Dashields Pool, where one young-of-year was collected.

Etheostoma caeruleum. The Rainbow Darter migrates to 25-35 cm deep riffles in late March to commence breeding (Winn 1958a). Each female produces some 880 eggs (Winn

1958b). Adults were collected in all pools during 2008, except from Montgomery Pool and 2 young-of-year were collected from New Cumberland Pool. During March/April, adults were collected from Emsworth Pool. In June/July, young-of-year were present in all pools. During August, adults and young-of-year were collected in all pools.

Etheostoma flabellare. The Fantail Darter spawns in April/May (Winn 1958a, 1958b). A single female can produce some 450 eggs.

In 2008, we collected adults in all pools and three young-of-year were collected in New Cumberland Pool. During March/April, we collected adults in Emsworth Pool. During June/July, young-of-year were collected in all pools, except from New Cumberland Pool. During August, we collected adults from all pools, except New Cumberland Pool, and young-of-year from Emsworth Pool.

Etheostoma nigrum. The Johnny Darter spawns from mid-March to mid-May (Winn 1958a, Parrish et al. 1991). A two-year old female can produce over 1000 eggs (Winn 1958b).

In 2008, we collected adults from all pools. In March/April, we collected adults from Emsworth Pool. During June/July, we captured young-of-year in all pools, except New Cumberland Pool and adults in Emsworth Pool. During August, we captured adults in all pools and young-of-year in Montgomery and Emsworth pools.

Etheostoma zonale. The Banded Darter begins spawning in late March/early April when water temperatures are between 8-10°C and stops in July when water temperatures exceed 24°C (Barron and Albin 2004). They mature when they are 2 years old, with some precocious males maturing at 1 year old (Lachner et al. 1950).

We collected adults in all pools, except from Montgomery Pool, where we collected one young-of-year during 2008. During March/April, 2009, we collected adults from all pools, except Dashields Pool. During June/July, 2009, we collected young-of-year in Emsworth and Dashields pools and adults from Montgomery and New Cumberland pools. During August, 2009, we collected both adults and young-of-year in Dashields, Emsworth, and Montgomery pools, and young-of-year in New Cumberland Pool.

Percina caprodes. The Logperch migrates from deep water into the shallows in April to June to spawn over a sand substrate (Winn 1958a). Spawning takes place in early morning to early evening. A two year old female will produce approximately 2000 eggs (Winn 1958a).

We collected adults from all pools in 2008. In March/April, 2009, we collected adults from all pools except Dashields Pool. During June/July, 2009, we collected young-of-year in all pools, except Dashields Pools. During August, 2009, we collected adults and young-of-year in all pools.

Percina copelandi. The Channel Darter spawns in late spring through early summer and buries its eggs in gravel (Winn 1958a). A two-year old female can produce some 720 eggs (Winn 1958b). In 2008, we collected adults and young-of-year in all pools, except Montgomery Pool. During March/April, 2009, we collected adults in all pools.

During June/July, 2009 and August, 2009, we collected adults and young-of-year in all pools.

Percina evides. The Gilt Darter spawns in early spring and appear to select deeper microhabitats (Skyfield and Grossman 2008).

During 2008, we collected adults in Montgomery and New Cumberland pools. In August, 2009, we collected young-of-year and adults in Emsworth Pool.

Percina macrocephala. The Longhead Darter spawns in early spring, but little is known about its reproductive habits (Stauffer et al. 1995).

We collected the Longhead Darter in the Emsworth Pool. We collected 12 young-of-year during June/July, 2009 in Emsworth Pool.

Aplodinotus grunniens. The Freshwater Drum spawns in the spring at water temperatures between 18-22°C. Eggs are released over shallow gravel and sandy stretches along the shoreline. The eggs are adhesive and hatch within about two weeks (Schultz 2003). In 2008, young-of-year were collected in all pools.

During March/April, 2009, we collected adults in Emsworth and New Cumberland pools. During June/July, 2009, we collected 73 young-of-year in Montgomery Pool and in August, 2009, young-of-year were collected in all pools.

DISCUSSION

The silver chub is listed as endangered by the Pennsylvania Fish and Boat Commission (<http://www.pacode.com/secure/data/058/chapter75/chap75toc.html>). We captured young-of-year/larvae in all of the pools. Because they are broadcast spawners, we doubt that disturbance of the substrate would smother eggs; however, increased turbidity may affect the ability of larvae to feed and survive.

The Mooneye and Goldeye are listed as threatened by the Pennsylvania Fish and Boat Commission. They breed in late spring and early summer based on both the literature and the fact that we captured them only in our June/July sampling. The fact that the larvae are semibouyant and pelagic suggests that disturbance of the substrate will not adversely affect survival of eggs; however, increased turbidity may affect their ability to feed and survive. Our data show that although extremely rare, these fishes spawn within the study area. Based on the fact that a single female of these species produces thousands of eggs, we predict that should water quality continue to improve these two species may have a rapid recovery.

The Skipjack Herring is listed as threatened by the Pennsylvania Fish and Boat Commission. We collected larvae in both the Montgomery and Dashields pools. Again, this species is a pelagic spawner; thus, disturbance of the substrate will not smother the eggs; however, increased turbidity may affect the ability of larvae and young-of-year to feed and survive.

The Bluebreast Darter is listed as threatened by the Pennsylvania Fish and Boat Commission. It deposits demersal adhesive eggs in riffle areas during the Spring. Because the preferred habitat of young-of-year and adults is the shallow swift-flowing areas immediately below the dams, this species will be vulnerable to dam removal/replacement during the early spring when water temperatures are between 10-24°C.

The Tippecanoe Darter is listed as threatened by the Pennsylvania Fish and Boat Commission. They spawn in deep runs where they bury their eggs in gravel. Because the preferred habitat of young-of-year and adults is the shallow swift-flowing areas immediately below the dams, this species will be vulnerable to dam removal/replacement during the early spring when water temperatures are between 22-27°C.

The Bowfin is listed as a candidate species by the Pennsylvania Fish and Boat Commission. They breed in the spring and we captured one larva in a meter net in August, 2009. Because a single female can produce thousands of eggs, we predict that Bowfin could recover rapidly should populations be adversely affected.

Although the River Darter is not listed by the Pennsylvania Fish and Boat Commission, it has recently been collected in Pennsylvania (Freedman et al. 2009) and will probably be listed in the near future. To date, it is restricted to the Montgomery and New Cumberland pools, but we

predict that it will eventually colonize the other two pools. It spawns over gravel in strong currents; thus, it will be vulnerable to dam removal/replacement during the early spring.

Based on the data we collected, we predict that the listed species most vulnerable to proposed navigational facility improvements would be the darters (i.e., genera *Etheostoma*, *Percina*). These species spawn primarily in the shallow swift moving waters found directly below the dams in the study area during the spring/early summer. They deposit demersal adhesive eggs, thus their spawn would be more vulnerable to increased sedimentation than the other species, which are primarily pelagic spawners. A key to larval and juvenile darters is illustrated in Appendix VI.

We demonstrated that a variety of gears were needed to adequately sample the larval and young-of-year fishes. We captured many more fishes (see Appendices) with the benthic electrified trawl than with meter nets or surface trawls; however, the only Bowfin collected was with a surface meter net. Additionally, we concluded that seines were much more effective in collecting larval and young-of-year fishes than light traps in near shore habitats within our study area. We postulated that the barge traffic within the pools created wave surges along the shoreline that disrupted the effectiveness of the light traps to collect and hold larval fishes.

RECOMMENDATIONS

Specific information on the life history characters of all fishes captured in this study can be found under the heading **SPECIES ACCOUNTS**. As stated above there were seven species collected that are listed by the Pennsylvania Fish and Boat Commission as Threatened, Rare, or Candidate species. Most of these fishes spawn in the shallow, fast-moving water just below the upstream dams. Observations by SCUBA in the deep waters (ca. 6-10m) of the free flowing main channel of the Allegheny River have revealed that these species will also spawn in deep, fast-flowing waters over a sand/gravel/rubble substrate. Additionally, sport fishes and pelagic species of Special Concern were identified.

Since the mid 1900's the use of artificial structures has been used in freshwater habitats to provide spawning areas to increase natural production, provide cover for survival of juvenile fishes, and increase catch per unit effort of anglers (Bolding et al. 2004). It is therefore recommended that the Army Corps of Engineers (ACE) implement the use of artificial structures to increase production and survival of selected fish species.

Increased production of benthic fishes. It is recommended that the ACE suspend artificial substrates within the channel at depths between 8-10m. These substrates should consist of wire bounded baskets 5 x 10 m that are filled with gravel/rubble/boulders. Such structures would provide spawning habitat for those endangered and threatened species (e.g., darters (*Etheostoma*, *Percina*) and minnows (*Macrohybopsis storeriana*). If such structures are suspended in the water column and not placed directly on the bottom of the impoundment, siltation and sedimentation would be reduced. In addition to providing spawning habitat, these artificial substrates would be colonized by adult fishes.

Cover for pelagic spawning fishes. Aggregations of evergreen trees have been used to increase cover for small pelagic fishes after hatching. The many interstitial spaces created by felled evergreen or bound evergreen trees provide many places for these larvae/juvenile fishes to hide. The resulting increased production from epiphytic algae will also provide a food source for juvenile fishes. Additionally, the dense cover will attract a multitude of pan and game fishes, including a variety of sunfish, crappies, and black basses (Johnson and Lynch 1992, White 1996). Finally, they provide effective spawning habitat for Yellow Perch (Day 1983). Johnson and William (1992) reported increased fishing success around submerged evergreen trees and

concluded that their use was cost effective. A major disadvantage to the use of evergreen trees, is that they need replaced approximately every three years, because of their loss of needles and small branches.

Woody debris. Woody debris can consist of downed trees or log cribs. Depending upon the structures used, they provide a multitude of interstitial spaces. If placed in shallow water, they will provide spawning habitat for fishes such as the Brook Silverside and refugia for many larval/juvenile species. Such structures can be bound together with a variety of materials (e.g., polypropylene rope, galvanized wire) and weighted by cement blocks or sand bags (Bolding et al. 2004). Such structures offer the additional advantage of providing environments and nutrients for periphyton and invertebrates upon which many fishes feed.

Vegetation. The mouths of tributaries in the main channel are very productive sites that attract larvae, juvenile, and adult fishes. They further act as a catchment area for the spawn of fishes that migrate upstream in these tributaries to reproduce. It is recommended that either natural vegetation be planted at the mouths of tributaries or artificial mats that simulate aquatic plants be anchored in these areas. Such structures would provide refugia for young fishes and thus, enhance survival.

Placement. The above structures should be anchored in the main channel at depths at which they will not be disturbed by barge traffic or create hazards for recreational users. The channels are defined throughout the system by several islands. The area between the islands and the near shore are usually not utilized by barge traffic and may be an excellent locality to place one or more of the above structures.

Assessment. The lock and dam system in the Ohio River system in Pennsylvania is a varied and unique habitat. It is recommended that a variety of the proposed structures be installed and the benefits, costs, and disadvantages be evaluated over a two year period.

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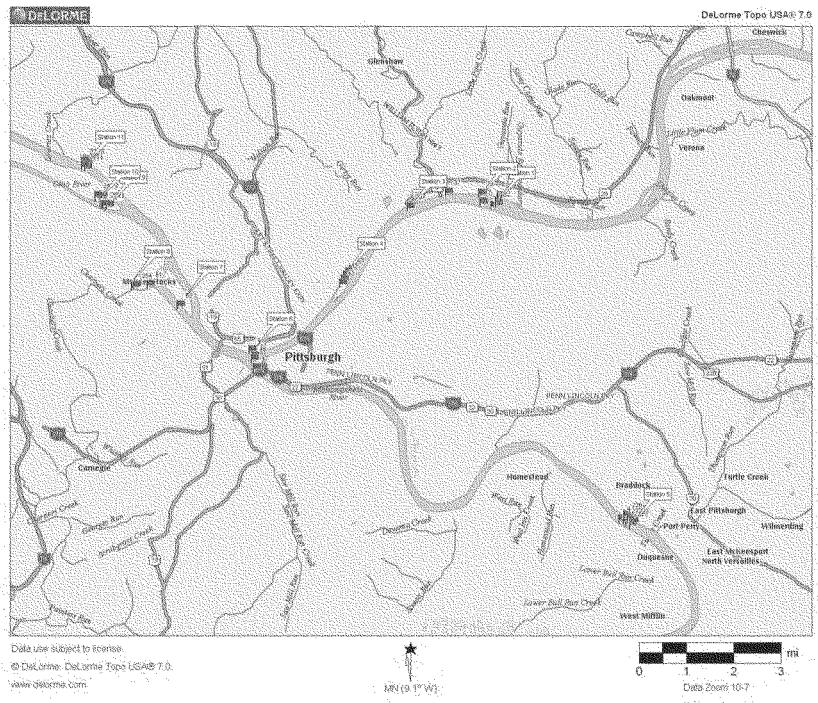
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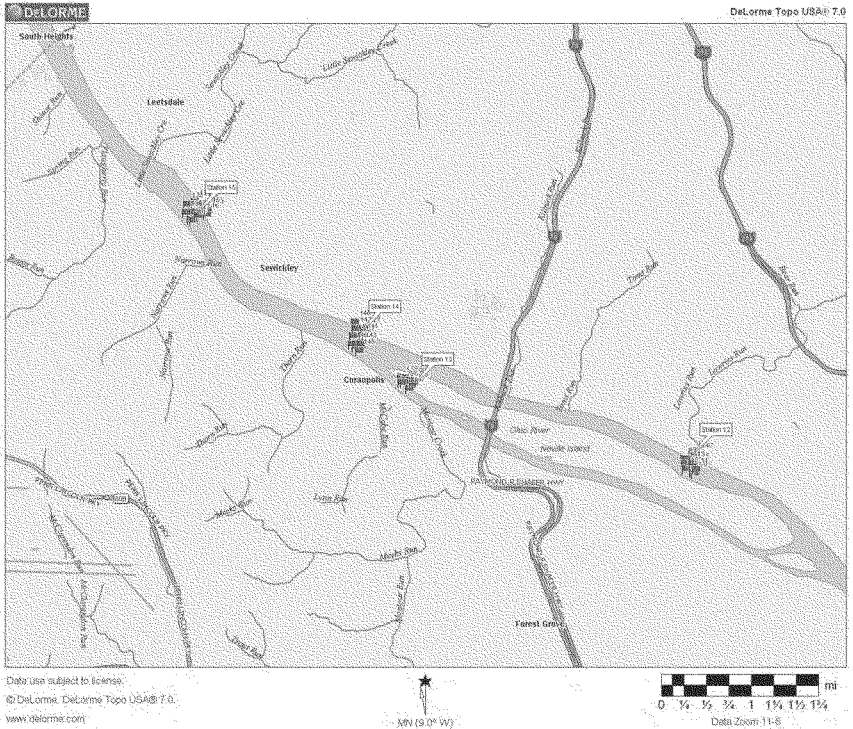
Appendix I

Detailed Maps of the Study Area



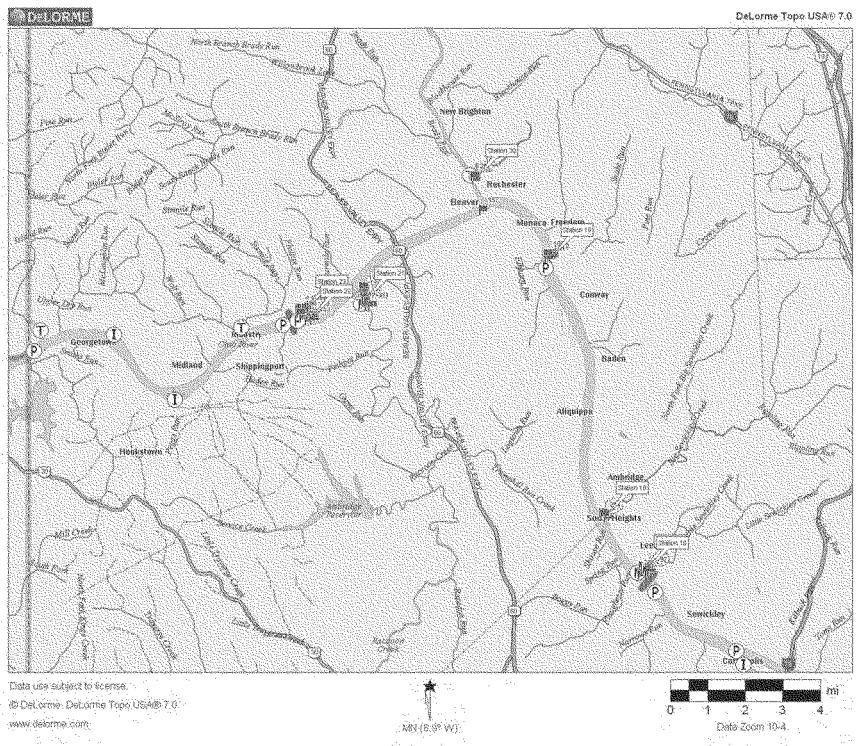
Stations located in the Emsworth Pool.

The Emsworth Pool contained 11 stations: 2 main channel pool stations, 2 back channel island stations, and 3 tributary stations.



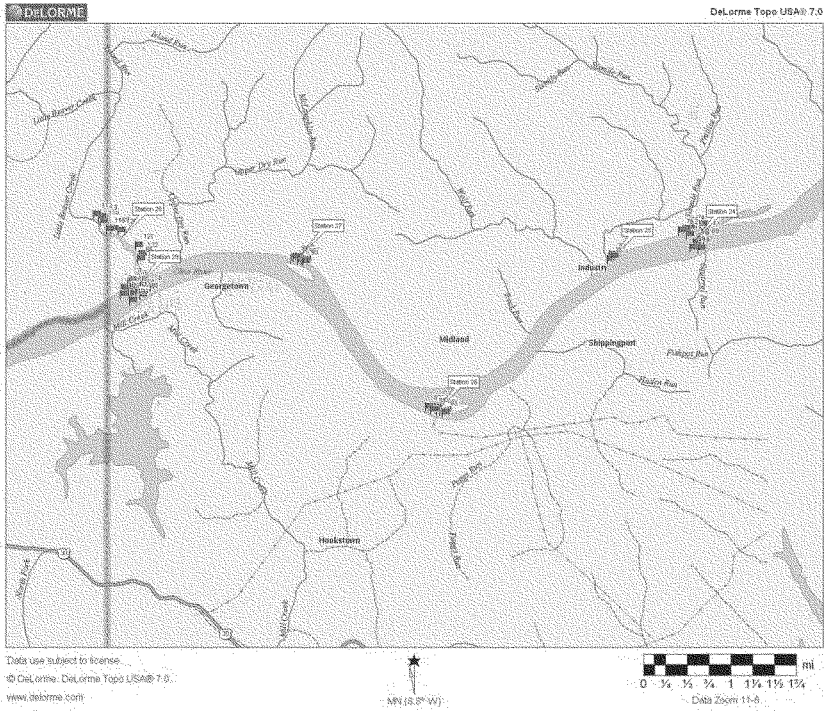
Stations located in the Dashields Pool.

The Dashields Pool contained 4 station; 3 main channel pool station, and 1 back channel island station.



Stations located in the Montgomery Pool.

The Montgomery Pool contained 8 stations; 3 main channel pool stations, 4 tributary stations, and 1 backwater embayment.



Stations located in the New Cumberland Pool.

The New Cumberland Pool contained 7 sites: 2 main channel pool stations, 2 back channel island stations, and 3 tributary stations.

APPENDIX II

Key to YOY Fishes

In order to aid in the identification of YOY fishes in the field we are including keys for identification to the lowest possible taxon of the fishes we captured. These keys are designed to be practical field guides. Therefore they deal with characters that can be seen with the naked eye or under slight magnification. Identification of fish in the initial stages of development needs to be conducted in the laboratory. Good keys for the identification of fishes at the earliest stage can be found in the series Reproductive Biology and Early Life History of Fishes in the Ohio River Drainage.

The following keys deal mainly with juvenile characteristics that have developed to a point that a positive identification to genus or species can be made. Comparing the characteristics of well developed juveniles to less developed individuals can lead to positive identification of progressively younger individuals, Figure 1.

Figure 1. Comparison of progressively less developed *Cyprinella spiloptera*.



The key is comprised of several parts. Initially, is the key to all of the families captured and serves as an overall starting point, Key to Young Upper Ohio River Fishes (KYUOHRF). The design of the KYUOHRF is intended to eliminate most of the smaller families of fish first. Steps 1 through 11 eliminate all families except Clupeidae, Hiodontidae, Cyprinidae, Catostomidae, Moronidae, and Centrarchidae.

Key to Young Upper Ohio River Fishes

Because this is a key to all fish families based on external characters, some characters are shared between splits. When this happens other characters are also provided. Using the characters in concert is necessary for proper identification. Exceptions to the characters listed are also provided.

Early median fin-fold development of larval fishes can make the dorsal and anal fins appear to be long or even continuous with the caudal fin. The stage of development of the fish needs to be taken into account when working through the following key. Once fin rays have begun to develop, this key is most precise, but it is useful for fishes prior to full median fin development. Comparing a fully developed juvenile to a slightly less developed fish can lead to positive ID's of progressively lesser developed individuals, Figure 1.

1A Single dorsal fin, fishes with an adipose fin included herein.

Fish from Centrarchidae and Moronidae may appear to have 2 dorsal fins, but in fact only have a single dorsal fin with a rayed and spinous portion.

Goto 4

1B 2 dorsal fins

Usually not laterally compressed (possible exceptions *E. camurum*, *E. maculatum*, *E. tippecanoe*)

Not including species with adipose fin or deeply notched dorsal fins

L. sicculus, *C. bairdi*, Percidae

Goto 2

2A 2 widely spaced dorsal fins

First dorsal small with insertion above long anal fin

Beak-like snout

Labidesthes. sicculus (Fig. 2)

Figure 2. Juvenile *L. sicculus*.



2B Dorsal fins not as widely spaced

Dorsal fins usually further forward

Do not have beak-like mouth

Cottus bairdi, Percidae

Goto 3

Figure 3. *C. bairdi*.

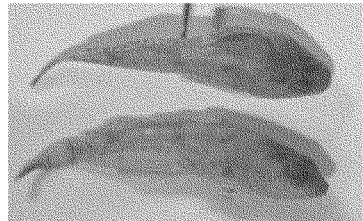
3A Dorsally/ventrally compressed

Large bulbous head

Ventral portion flat

No teeth

Cottus bairdi (Fig. 3)



3B Laterally compressed or rotund

Many darters are flat beneath but lack bulbous head

Most do not have teeth

Sander spp may have teeth early (canines used as key character)

See **Percidae** key (Pg. 78)

4A 0-2 barbels on each side of the mouth

Goto 5

4B More than 2 barbels on each side of the mouth

For family Ictaluridae there is no distinct larval stage

Larvae resemble adults

I. punctatus, *P. olivaris*

Goto 6

5A Long dorsal fin extending over half of the length of the body even when fully developed

Short anal fin

Cylindrical body not compressed

Bulbous head

Teeth visible at an early stage of development

Amia calva

5B Dorsal fin could be relatively long, but shorter than half the length of the body

Anal fins can be long or short

Teeth are sometimes visible

Goto 7

- 6A** Deeply forked caudal fin
 Little or no pigment
Ictalurus punctatus (Fig. 4)

- 6B** Caudal fin is not forked
 Body usually heavily pigmented
 Flat head
Pylodictis olivaris (Fig. 5)

- 7A** Elongate cylindrical shape
 Dorsal fin position above or just anterior to anal fin both posterior to mid point
L. osseus, *Esocidae*, *Fundulus diaphanus*
 Goto 8

- 7B** Not as elongate
 Dorsal fin anterior to anal fin
 Snout not beak-like, duckbill-like superior
 Goto 10

- 8A** Long beak-like snout
Lepisosteus. Osseus (Fig. 6)

- 8B** Shorter snout
 Goto 9

- 9A** Duckbill like snout
Esocidae

- 9B** Small superior mouth
 No lateral line
 Flattened dorsally
Fundulus diaphanous (Fig. 7)

- 10A** Laterally compressed
 High backed
 Flat ventrally
 Long dorsal fin spinous anteriorly as fish develops
 Middle rays of caudal fin longest

Figure 4. Juvenile *I. punctatus*.



Figure 5. Juvenile *P. olivaris*.



Figure 6. *L. osseus*.

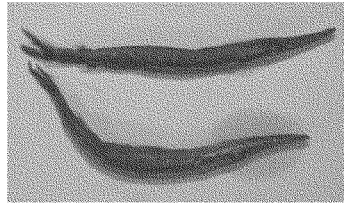


Figure 7. Juvenile *F. diaphanus*.

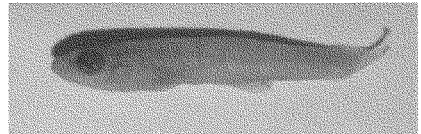


Figure 8. Juvenile *A. grunniens*.



Aplodinotus grunniens (Fig. 8)

10B Fish may be laterally compressed or cylindrically shaped

Fish may have long dorsal fins with spines but not as high backed and flat beneath

Middle rays of caudal fin not longer than others

Goto 11

Figure 9. Juvenile *P. omiscomaycus*.

11A Possesses an adipose fin

No barbells

Percopsis omiscomaycus (Fig. 9)



11B No adipose fin

Have single dorsal fin but may be deeply notched and appear as two

Clupeidae, Hiodontidae, Cyprinidae, Catostomidae, Moronidae, Centrarchidae.

Goto 12

12A Fish are laterally compressed

Dorsal fins are long and may be deeply notched

Developed fish have terminal mouths

Developed fish have spinous dorsal fins anterior to rayed portion

No barbels

Thoracic pelvic fins

Moronidae, Centrarchidae

Goto 13

12B May be laterally compressed

Dorsal fin could be long

Developed fish could have subterminal mouths

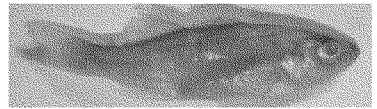
No spines in fins except *C. cyprinus* which possesses barbels

Abdominal pelvic fins

Clupeidae, Hiodontidae, Cyprinidae, Catostomidae

Goto 14

Figure 10. Juvenile Moronidae.



13A Spinous dorsal fin develops secondarily

Spinous and soft dorsal fin may be deeply notched

Larvae with developed mouths have visible teeth

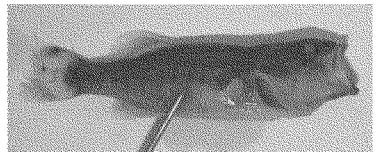
See **Moronidae** key (Fig. 10 & pg. 77)

Figure 11. Juvenile Centrarchidae.

13B Spinous and soft dorsal fin continuous

Larvae have no visible teeth

See **Centrarchidae** key (Fig. 11 & pg. 68)



- 14A** Fish very compressed laterally
 No spines in fins
 May possess a keel of “bony” scutes
 See **Clupeidae/Hiodontidae** key (Fig. 12 & pg. 71)

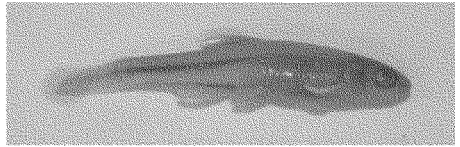
Figure 12. Juvenile Clupeidae.



- 14B** Fish could be compressed laterally
 One species may appear to have spines in fins *C. cyprinus*
 Fish do not possess a keel of “bony” scutes
 Goto 15

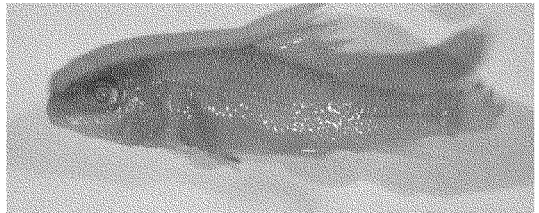
- 15A** *C. cyprinus* is the only species with
 long dorsal but has barbels
 Anal fin positioned apart from caudal fin
 Some have barbels
 See **Cyprinidae** key (Fig. 13 & pg. 73)

Figure 13. Juvenile Cyprinidae.



- 15B** Dorsal fin could be long or short
 Anal fin positioned close to caudal fin
 Have inferior sucker-like mouth
 Early stages with lateral band that starts on caudal peduncle and splits into Y anteriorly
 None have barbels
 See **Catostomidae** key (Fig. 14 & pg. 66)

Figure 14. Juvenile Catostomidae.



Catostomidae Key

Below is a key to YOY sucker species captured during the survey. This key works for post-yolk sac larvae through adults. Identifying suckers is difficult. Looking at many young fish is the best way to learn to identify young Catostomids. Differences in the key characteristics are subtle.

- 1A long dorsal fin ≥ 18 rays

Ictiobus spp, *Carpiodes* spp

Goto 2

- 1B dorsal fin < 18 rays

Hypentelium nigricans, *Moxostoma* spp

Goto 3

- 2A No pigment in pelvic and anal fins

Sub-triangular sub-opercle

Carpiodes spp (Fig. 15)

- 2B Scattered pigment in anal and pelvic fins

Semi-circular sub-opercle

Ictiobus spp. (Fig. 16)

- 3A Large fleshy papillose lips

3-5 dark saddles

Hypentelium nigricans (Fig. 17)

- 3B No papillae on lips

Moxostoma spp. (Fig. 18)

Figure 15. Juvenile *Carpiodes*.

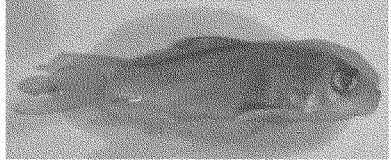


Figure 16 Juvenile *Ictiobus*.

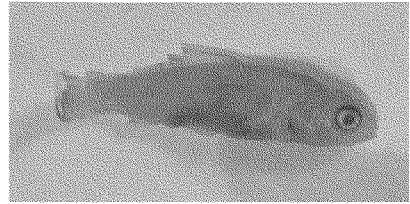


Figure 17. Juvenile *H. nigricans*.

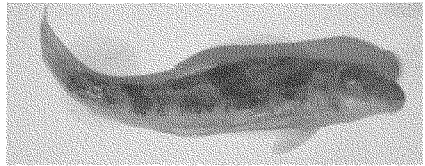
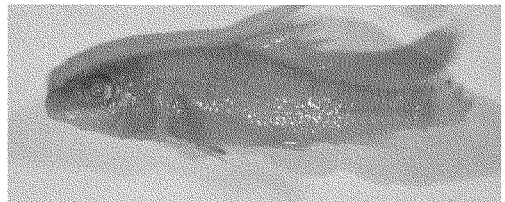


Figure 18. Juvenile *Moxostoma*.



Centrarchidae Key

Below is a key to YOY sunfish species captured during the survey. This key works for post-yolk sac larvae through adults. Identifying young sunfish is difficult. Looking at many young fish is the best way to learn to identify young centrarchids. Differences in the key characteristics are subtle.

1A Number of anal-fin spines 3

Pigmentation forming many vertical bars, uniform throughout, forming a lateral stripe, or row of lateral blotches

Lepomis, *Micropterus*

Goto 2

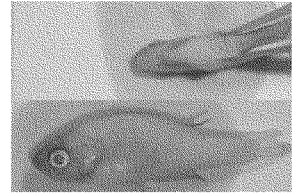
Figure 19. Juvenile *L. macrochirus*.

1B Number of anal-fin spines 6

Heavily pigmented or pigmentation forming vertical bars

Ambloplites, *Pomoxis*

Goto 6



2A Pigmentation forming many vertical bars

From early stage have several spots of pigment in a distinct line along median of breast -- these are lost as fish develops

Lepomis macrochirus (Fig. 19)

2B Pigment usually uniform (possibly with bars), forming a lateral stripe, or row of lateral blotches

Do not have a line of spots along median of breast

Micropterus

Goto 3

Figure 20. Juvenile *M. dolomieu*.

3A Uniform pigmentation developing into bars

Pigmentation bar in caudal fin

No lateral stripe or row of blotches

Micropterus dolomieu (Fig. 20)



3B Pigmentation forming a lateral stripe or row of blotches

M. punctulatus, *M. salmoides*

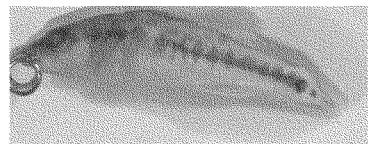
Goto 4

4A Pigmentation forming a lateral stripe or row of blotches

Pigmentation bar of caudal fin darker at lobes than in center

Micropterus punctulatus (Fig. 21)

Figure 21. Juvenile *M. punctulatus*.

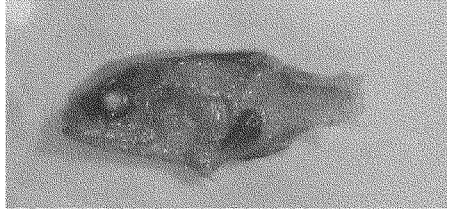


- 5A** Pigmentation forming a lateral stripe or row of blotches
 No pigmentation bar in caudal fin
Micropterus salmoides

- 6A** Heavy mottled pigment on body from early in development forming 4 dorso-lateral bars
Ambloplites rupestris (Fig. 22)

- 6B** Narrow bars of pigment
Pomoxis nigromaculatus

Figure 22. Juvenile *A. rupestris*.



Clupeidae/Hiodontidae Key

Below is a key to YOY shad and mooneye species captured during the survey. This key works for post-yolk sac larvae through adults. Identifying young shad and mooneye is difficult. Looking at many young fish is the best way to learn to identify young clupeids and hiodontids. Differences in the key characteristics are subtle.

- 1A** Anal fin posterior to dorsal fin
Scutes develop at 28 to 30mm
A. chrysochloris, *D. cepedianum*
Goto 2

Figure 23. Juvenile *D. cepedianum*.

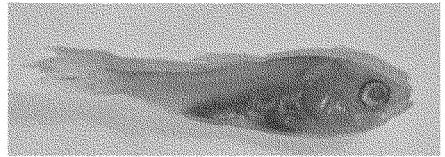


- 1B** Dorsal fin over anal fin
No scutes
H. alosoides, *H. tergisus*
Goto 3

- 2A** Pigment uniformly dispersed in the dorsal and caudal fins with more in the caudal fin
Last rays of dorsal fin elongated
Dorosoma cepedianum (Fig. 23)

- 2B** Little pigment in dorsal and caudal fins
Pigment of dorsal and caudal fin outlines rays
No elongate rays of dorsal fin
Alosa chrysochloris (Fig. 24)

Figure 24. Juvenile *A. chrysochloris*.



- 3A** Dorsal-fin insertion even with or behind anal fin origin
Hiodon alosoides

- 3B** Dorsal-fin insertion in front of anal fin insertion
Hiodon tergisus (Fig. 25)

Figure 25. Juvenile *Hiodon tergisus*.



Cyprinidae Key

Below is a key to YOY minnow species captured during the survey. This key works for post-yolk sac larvae through adults. Identifying young minnows is very difficult. Looking at many young fish is the best way to learn to identify young cyprinids. Differences in the key characteristics are very subtle.

1A Terminal mouth

C. spiloptera, *N. atherionoides*, *N. rubellus*
Goto 2

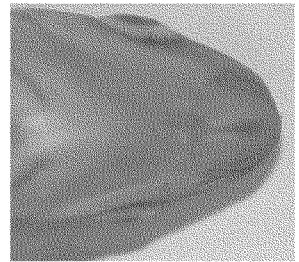
1B Subterminal or inferior mouth

C. anomalum, *C. carpio*, *E. dissimilis*, *H. amblops*, *M. storeriana*, *N. hudsonius*, *N. stramineus*, *N. volucellus*, *P. notatus*, *P. promelas*, *R. obtusus*
Goto 4

2A Mouth horizontal and body laterally compressed

Scales darkly outlined and diamond shaped
Dorsal-fin insertion at or slightly behind pelvic-fin insertion
8 anal-fin rays
Pigment spot in rear part of dorsal fin
Underside of lower lip horseshoe-shaped
Pigment starts behind lower lip
Continues median to sides of lower jaw
Pigment line overlapped by sides of jaw (Fig. 26)
Cyprinella spiloptera (Fig. 27)

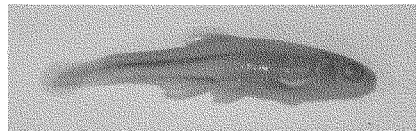
Figure 26. Chin shape and pigment, *C. spiloptera*.



2B Mouth more upturned

Scales not as darkly outlined, less uniform, and not diamond shaped
Dorsal-fin insertion usually well behind pelvic-fin insertion
>9 anal-fin rays
N. atherionoides, *N. rubellus*
Goto 3

Figure 27. Juvenile *C. spiloptera*.



3A Snout pointed

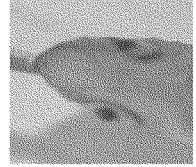
Dorsal-fin insertion well behind pelvic-fin insertion

10-12 anal-fin rays

From beneath, chin appears to come to a point

Lower lip pigmented and forms a widow's peak under the chin

Pigment appears "on top" not overlapped by sides of jaw (Fig. 29)

Notropis atherinoides (Fig. 28)Figure 29. Chin pointed and widow's peak, *N. atherinoides*.**3B** Snout longer and pointed

Dorsal-fin insertion may be further behind pelvic fin insertion

9-11 anal-fin rays

No widow's peak

*Notropis rubellus*Figure 28. Juvenile *N. atherinoides*.**4A** Fish with at least 1 barbel on each side of upper jaw*C. carpio*, *E. dissimilis*, *H. amblops*, *M. storeriana*, *R. obtusus*

Goto 5

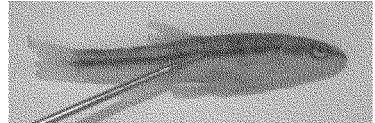
4b Fish lacks barbels*C. anomalum*, *N. hudsonius*, *N. stramineus*, *N. volucellus*, *P. notatus*, *P. promelas*Breeding male *P. promelas* contain tubercle in corner of the mouth, which may resemble barble at first glance.

Goto 9

5A Many small scales or appears un-scaled

Cylindrically shaped

Dark lateral band

Rhinichthys obtusus (Fig. 30)Figure 30. Juvenile *R. obtusus*.**5B** Larger scales

More laterally compressed

C. carpio, *E. dissimilis*, *H. amblops*, *M. storeriana*

Goto 6

6A 2 barbels on each side of upper jaw

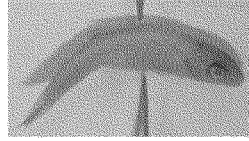
Long dorsal fin 17-21 rays

Laterally compressed

Cyprinus carpio

- 6B** 1 barbel
 Dorsal fin with < 10 rays
 Less compressed laterally
E. dissimilis, *H. amblops*, *M. storeriana*
 Goto 7

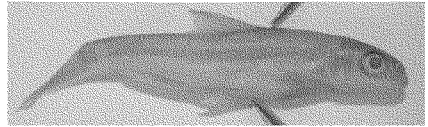
Figure 31. Juvenile *H. amblops* showing fin



- 7A** Dorsal-fin origin above or behind the pelvic-fin insertion
Hybopsis amblops (Fig. 31)

- 7B** Dorsal-fin origin in front of pelvic-fin origin
E. dissimilis, *M. storeriana*
 Goto 8

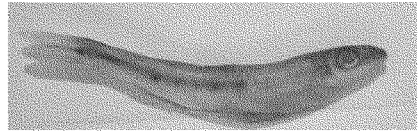
Figure 32. Juvenile *M. storeriana*.



- 8A** Slender fairly compressed body
 8 anal-fin rays
 White edge on caudal fin of adults may be visible in juveniles
Macrhybopsis storeriana (Fig. 32)

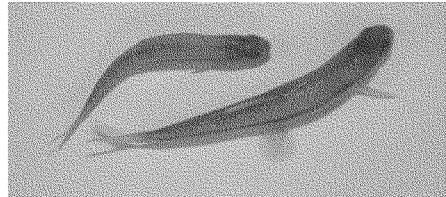
Figure 33. Juvenile *E. dissimilis*.

- 8B** Long slender body deepest at nape
 7 anal-fin rays
 7-15 blotches along side
Erimystax dissimilis (Fig. 33)



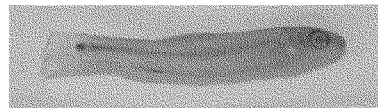
- 9A** Scales crowded on nape (Fig. 34)
P. notatus, *P. promelas*
 Goto 10

Figure 34. Scale crowding on nape.



- 9B** Scales uniform in size on nape
C. anomalum, *N. hudsonius*, *N. stramineus*,
N. volucellus
 Goto 11

Figure 35 Juvenile *P. notatus*.



- 10A** Usually a dark caudal spot
 Subterminal and horizontal mouth
 Cylindrically shaped
Pimephales notatus (Fig. 35)

- 10B** May have a light caudal spot

Subterminal mouth slanted upwards slightly

Pimephales promelas

11A Continuous lateral line

Cartilaginous lower lip, may not be developed in juveniles

Campostoma anomalum

11B Punctuate lateral line at front

No cartilaginous lower lip

N. hudsonius, *N. stramineus*, *N. volucellus*

Goto 12

12A 7 anal-fin rays

Scales along sides as wide as tall

Notropis stramineus (Fig. 36)

12B 8 anal-fin rays

N. hudsonius, *N. volucellus*

Goto 13

13A Scales along the side are taller than wide

Notropis volucellus (Fig. 37)

13B Scales along the side are as wide as tall

Notropis hudsonius

Figure 36. *Notropis stramineus*.

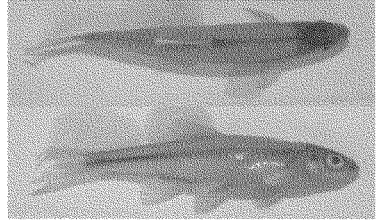
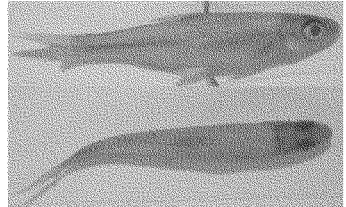


Figure 37. *Notropis volucellus*.



Moronidae Key

Below is a key to YOY temperate bass species captured during the survey. This key works for post-yolk sac larvae through adults. Identifying young *Morone* is difficult. Looking at many young fish is the best way to learn to identify young moronids. Differences in the key characteristics are subtle.

- 1A** Some pigmentation dorsally
 Pigmentation forming 6 to 10 vertical bars
 Fins have some pigmentation
Morone saxatilis (Fig. 38)
- 1B** little or no pigmentation dorsally
 Pigmentation does not form vertical stripes
 Almost no pigmentation in the fins
Morone chrysops (Fig. 39)

Figure 38. Juvenile *M. saxatilis*.

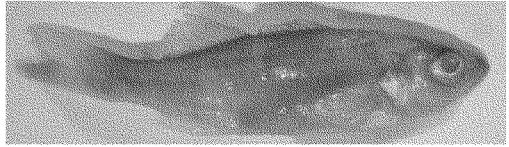
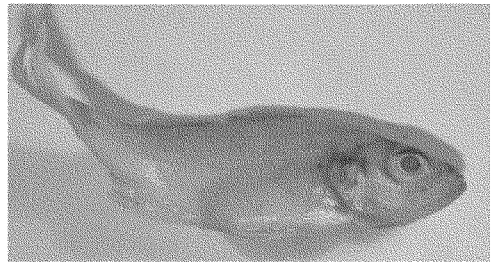


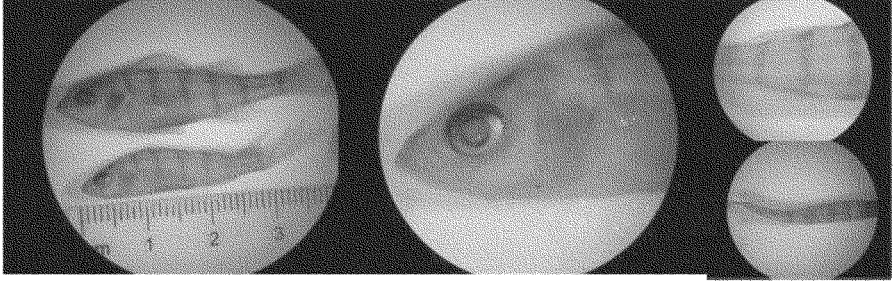
Figure 39. Juvenile *M. chrysops*.



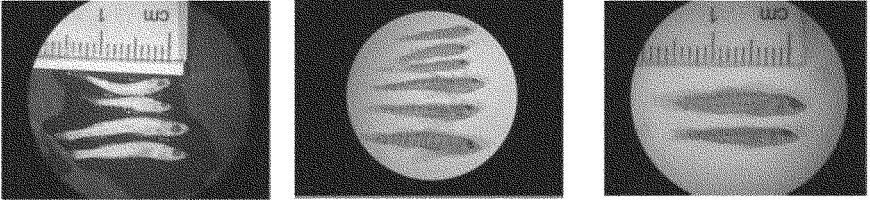
Percidae Key

Below is a key to YOY Percidae species captured during the survey. This key works for post-yolk sac larvae through adults. Identifying perches is difficult. Looking at many young fish is the best way to learn to identify young percids.

1.
a. slab-sided body 5-8 lateral bars joining dorsally and forming point on lower half of body..... *Perca flavescens*

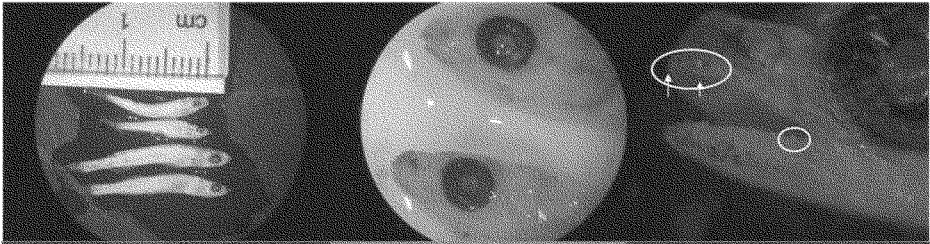


b. elongate body.....2



2.

b. large eye, large jaw (reaching well under eye), visible canine teeth.....*Sander spp.*.....3



b. Canine teeth lacking (may have serrated teeth).....4

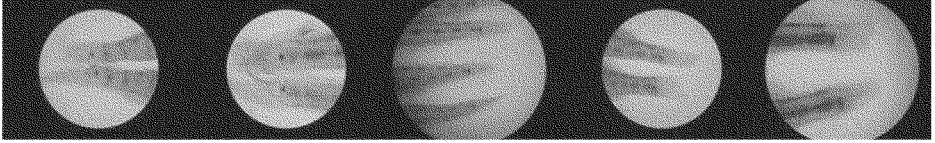
3.

a. 42-43 total myomeres (larvae). (Simon and Wallus, 2006). crescents/spots present in spinous dorsal membrane (juv./adults).....*Sander canadensis*

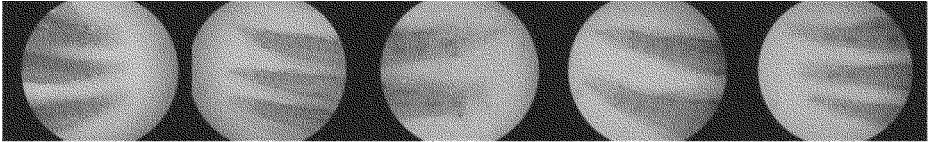
b. 45-46 total myomeres (larvae). (Simon and Wallus, 2006), dusky spinous dorsal membrane with dark blotch on posterior edge (juv./adults).....*Sander vitreus*

4.

a. Prominent caudal spot present that is darker than most other body pigmentation..... 5

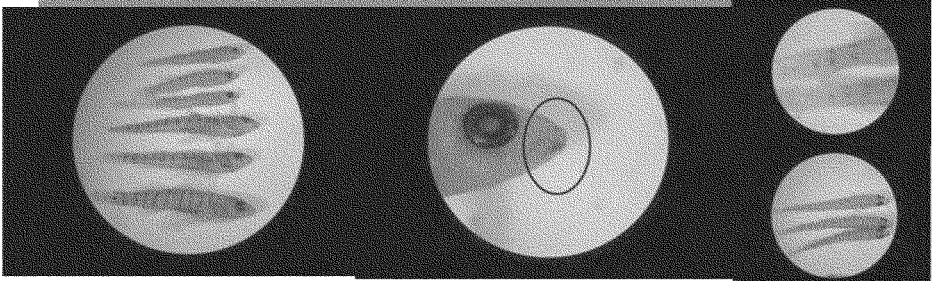


b. Caudal spot may appear as a blotch, light spot, or other pigment similar in shade to other body pigmentation..... 6



5.

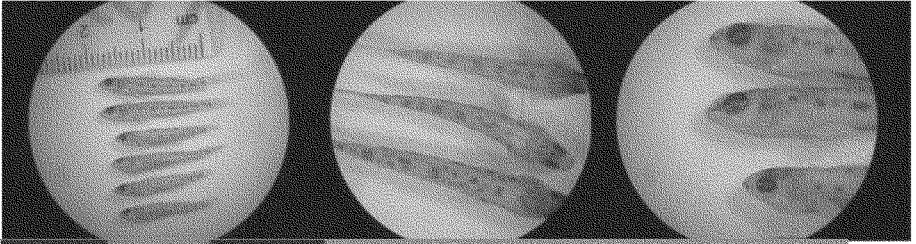
a. Tiger-like lateral bars may or may not join dorsally. fairly pointed snout typically containing dark pigment..... *Ferocia caprodes*



b. Body pigmentation consisting of lateral blotches and saddles..... 6

6.

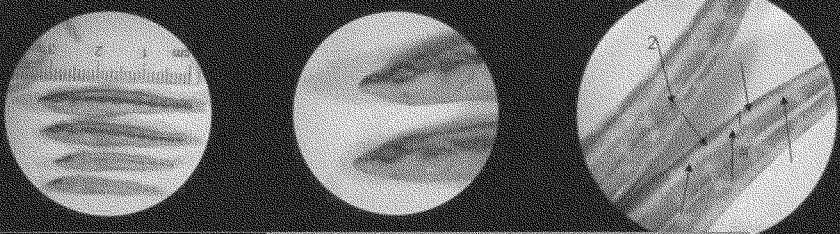
a. Blotches wider than tall, dorsal saddles (6-8) intermixed with crosshatches, snout stubbier and snout more subterminal than other species with caudal spot.....*Percina copelandi*



b. Snout pointer with more terminal mouth, blotches larger and usually as tall as wide.....7

7.

a. Long snout, blotches wide usually forming wide lateral stripe, light unpigmented line between lateral markings and dorsal saddles(1), usually spot at anterior base of soft dorsal fin(2).....*P. macrocephala*

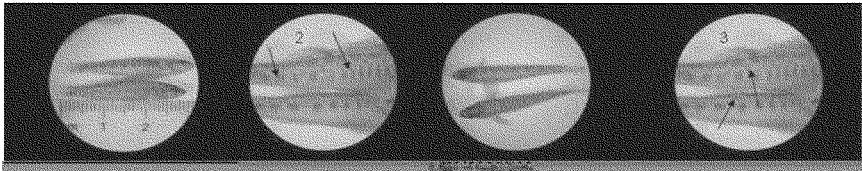


b. Blotches separate, no light line on dorsolateral surface.....8

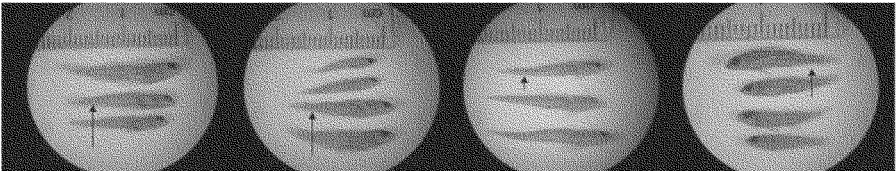
8. a. Caudal spot extending downward into a bar, light spot above caudal spot, usually 7 lateral blotches in line with saddle(s) 1; prominent teardrop typical. *Pterois evotis*



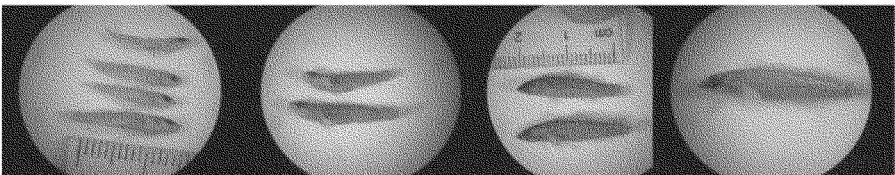
- b. Both wide (posterior) and narrow (anterior) lateral blotches (2); dorsal saddles may be offset, and blotches may be present between lateral blotches and saddles (3) *Pterois shumardii*



9. a. Body tapering at caudal peduncle and expanding slightly towards hypural plate (somewhat long, spindly caudal peduncle) 10

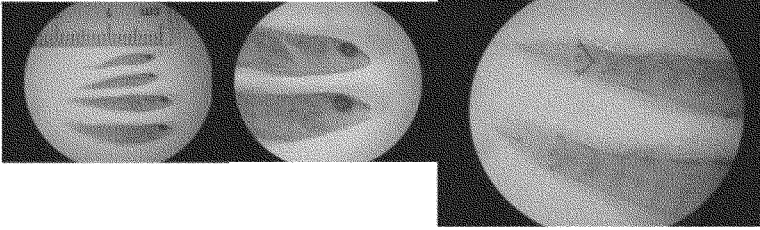


- b. Body depth consistent to hypural plate (short stubby caudal peduncle) 11

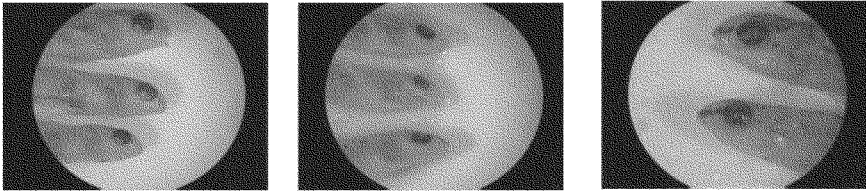


10.

a. Terminal mouth, posterior blotches forming elevated base, most posterior blotch extends to hypural plate forming a reverse triangle.....*Stenotomus zosteromus*

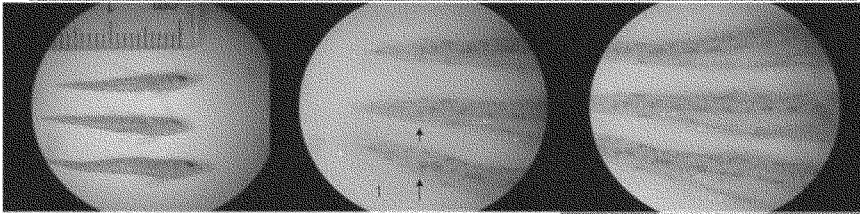


b. Snub snout, somewhat subterminal mouth.....11

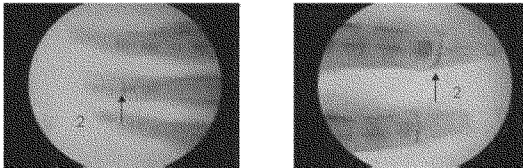


11.

a. Markings along lateral line forming crosshatched x and y markings appearing as thin lines, caudal fin bevelated, usually a thin dusky precaudal bar not reaching to dorsal and ventral surface(1).....*Stenotomus zosteromus*

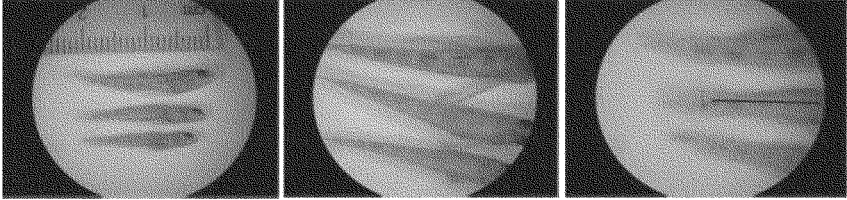


b. Lateral line markings appearing as blotches, precaudal thin dusky bar usually reaching to dorsal, and/or ventral surface(2).....12

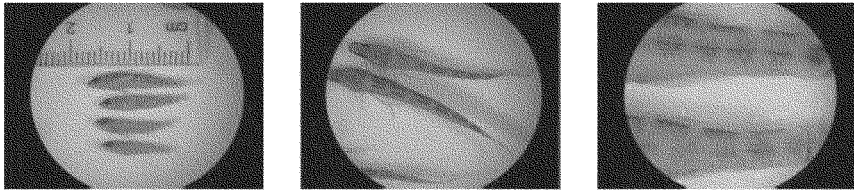


12.

- a. Lateral blotches not reaching above lateral line and forming w- and u-shaped markings in larger individuals, saddles containing moderate gaps
.....*Etheostoma blennioides*

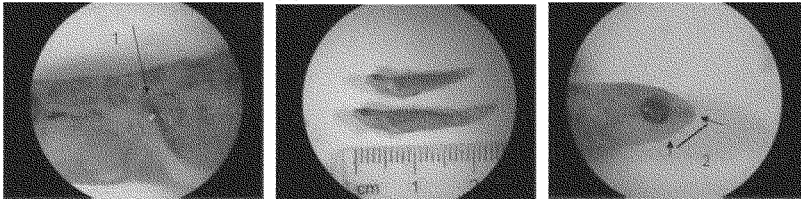


- b. Lateral blotches containing pigment above and below lateral line, wide dark saddles with thin gap.....*Etheostoma zonale*

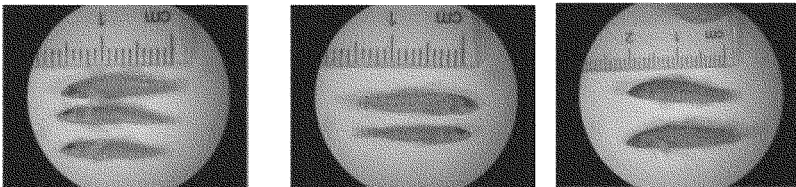


13.

- a. Dark spot at rear upper edge of opercle(1), terminal slightly upturned mouth when closed(2).....*Etheostoma flabellare*

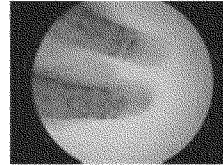
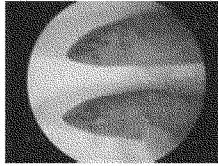
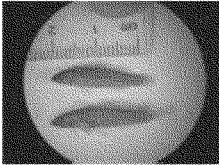


- b. No dark spot at rear edge of opercle and more terminal horizontal mouth.....14

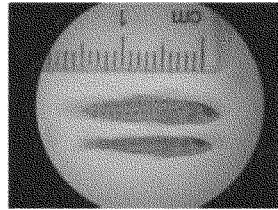
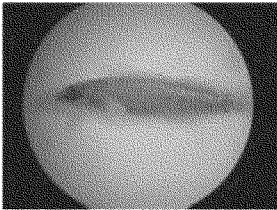


14.

- a. Long pointed snout, pre-, post-, and suborbital bars appear as dusky blotches, body pigment checkered, precaudal markings appear as a line of 4 dots with a light line preceding them.....*Etheostoma maculatum*

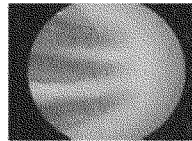
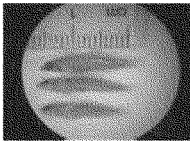


- b. Snout less pointed, pre-, post-, and suborbital bars distinct or lacking, body pigment midlateral blotches and saddles or consistently pigmented throughout15

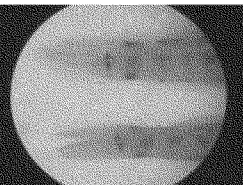
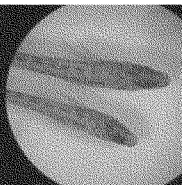
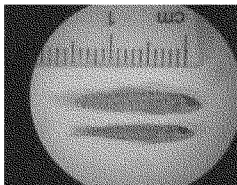


15.

- a. Body consistently pigmented throughout, may appear to be banded posteriorly, spot on dorsal and ventral surface of caudal peduncle will join to form ring as individuals grow.....*Etheostoma tippecanoe*



- b. 9-13 midlateral blotches and saddles, fairly broad rounded snout, pigment carried through to precaudal markings.....*Etheostoma camurum*



APPENDIX III

Fishes collected by trawls in 2008

Table 1. Fishes collected by trawls at Station 1 (Emsworth Pool) on 18 August, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		1						
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
Cyprinidae	sp/spp								
<i>Cariodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Cariodes</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olvaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								
<i>Lepomis</i>	<i>macrochirus</i>			1					

<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>	1	2		7		2		3
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
<i>UNKNOWN</i>									

Table 1. Fishes collected by trawls at Station 2 (Emsworth Pool) on 18 August, 2008.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Camptostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>	2	
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>	4	
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusius</i>		
Cyprinidae	sp/spp		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>	23	
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>	2	
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 3 (Emsworth Pool) on 18 August, 2008.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Camptostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusus</i>		
Cyprinidae	sp/spp		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>alivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>	2	
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 4 (Emsworth Pool) on 18 August, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		3		1				
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
Cyprinidae	sp/spp								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omismomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	9		167		92		24	
<i>Micropterus</i>	<i>dolomieu</i>		1						
<i>Micropterus</i>	<i>punctulatus</i>					1		2	
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>		2		1				
<i>Percina</i>	<i>copelandi</i>		1						
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 1. Fishes collected by trawls at Station 5 (Emsworth Pool) on 18 August, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chryschloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	33	11			19	2		3
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
Cyprinidae	sp/spp								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>					1		1	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>					1	9		10
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 1. Fishes collected by trawls at Station 6 (Emsworth Pool) on 18 August, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>allosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>				1				
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>							1	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
Cyprinidae	sp/spp								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>							1	
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omismomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	8		1			1	
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>blennioides</i>							
<i>Etheostoma</i>	<i>caeruleum</i>							
<i>Etheostoma</i>	<i>camurum</i>							
<i>Etheostoma</i>	<i>flabellare</i>							
<i>Etheostoma</i>	<i>nigrum</i>							
<i>Etheostoma</i>	<i>tippecanoe</i>							
<i>Etheostoma</i>	<i>zonale</i>							
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>							
<i>Percina</i>	<i>copelandi</i>							
<i>Percina</i>	<i>evides</i>							
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>							
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>			1	4		7	
UNKNOWN								

Table 1. Fishes collected by trawls at Station 7 (Emsworth Pool) on 18 August, 2008.

		RDB		RC		LC		LDB	
		Bot		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>aioisoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeiana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	3	33	4	13				
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
Cyprinidae	sp/spp								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omismomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	2				4		1	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>	1							
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>	1						3	
UNKNOWN									

Table 1. Fishes collected by trawls at Station 8 (Emsworth Pool) on 19 August, 2008.

<i>Lepisosteus</i>	<i>osseus</i>
<i>Amia</i>	<i>calva</i>
<i>Alosa</i>	<i>chrysochloris</i>
<i>Dorosoma</i>	<i>cepedianum</i>
Clupeidae	sp/spp
<i>Hiodon</i>	<i>alosoides</i>
<i>Hiodon</i>	<i>tergisus</i>
Esocidae	sp/spp
<i>Camptostoma</i>	<i>anomalum</i>
<i>Cyprinella</i>	<i>spiloptera</i>
<i>Cyprinus</i>	<i>carpio</i>
<i>Erimystax</i>	<i>dissimilis</i>
<i>Hybopsis</i>	<i>amblops</i>
<i>Macrhybopsis</i>	<i>storeriana</i>
<i>Notropis</i>	<i>atherinoides</i>
<i>Notropis</i>	<i>hudsonius</i>
<i>Notropis</i>	<i>rubellus</i>
<i>Notropis</i>	<i>stramineus</i>
<i>Notropis</i>	<i>volucellus</i>
<i>Pimephales</i>	<i>notatus</i>
<i>Pimephales</i>	<i>promelas</i>
<i>Rhinichthys</i>	<i>obtusum</i>
Cyprinidae	sp/spp
<i>Carpiodes</i>	<i>cyprinus</i>
<i>Hypentelium</i>	<i>nigricans</i>
<i>Ictiobus</i>	<i>bubalus</i>
<i>Moxostoma</i>	<i>anisurum</i>
<i>Moxostoma</i>	<i>breviceps</i>
<i>Moxostoma</i>	<i>carinatum</i>
<i>Moxostoma</i>	<i>erythrurum</i>
<i>Carpiodes</i>	sp/spp
<i>Ictiobus</i>	sp/spp
<i>Moxostoma</i>	sp/spp
Catostomidae	sp/spp
<i>Ictalurus</i>	<i>punctatus</i>
<i>Pylodictis</i>	<i>olivaris</i>
<i>Percopsis</i>	<i>omiscomaycus</i>
<i>Fundulus</i>	<i>diaphinus</i>
<i>Labidesthes</i>	<i>sicculus</i>
<i>Cottus</i>	<i>bairdi</i>
<i>Morone</i>	<i>chrysops</i>
<i>Morone</i>	<i>saxatilis</i>
Moronidae	sp/spp
<i>Ambloplites</i>	<i>rupestris</i>
<i>Lepomis</i>	<i>macrochirus</i>

<i>Micropterus</i>	<i>dolomieu</i>
<i>Micropterus</i>	<i>punctulatus</i>
<i>Micropterus</i>	<i>salmoides</i>
<i>Pomoxis</i>	<i>nigromaculatus</i>
<i>Etheostoma</i>	<i>blennioides</i>
<i>Etheostoma</i>	<i>caeruleum</i>
<i>Etheostoma</i>	<i>camurum</i>
<i>Etheostoma</i>	<i>flabellare</i>
<i>Etheostoma</i>	<i>nigrum</i>
<i>Etheostoma</i>	<i>tippecanoe</i>
<i>Etheostoma</i>	<i>zonale</i>
<i>Perca</i>	<i>flavescens</i>
<i>Percina</i>	<i>caprodes</i>
<i>Percina</i>	<i>copelandi</i>
<i>Percina</i>	<i>evides</i>
<i>Percina</i>	<i>macrocephala</i>
<i>Percina</i>	<i>shumardi</i>
<i>Sander</i>	<i>vitreus</i>
<i>Sander</i>	<i>sp/spp</i>
<i>Percidae</i>	<i>sp/spp</i>
<i>Aplodinotus</i>	<i>grunniens</i>
UNKNOWN	

Table 1. Fishes collected by trawls at Station 9 (Emsworth Pool) on 19 August, 2008.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>aliosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		1
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusius</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 10 (Emsworth Pool) on 19 August, 2008.

		RDB Bot		LC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chryschloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		1		2
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>				
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 11 (Emsworth Pool) on 18 August, 2008.

		RDB Bot		RC Bot		LC Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chryschloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>aliosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>	4					
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>	53		4		3	
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>						
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>	1					
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>	6					
UNKNOWN							

Table 2. Fishes collected by trawls at Station 1 (Emsworth Pool) on 27 September, 2008.

<i>Lepisosteus</i>	<i>osseus</i>
<i>Amia</i>	<i>calva</i>
<i>Alosa</i>	<i>chrysochloris</i>
<i>Dorosoma</i>	<i>cepedianum</i>
Clupeidae	sp/spp
<i>Hiodon</i>	<i>alosoides</i>
<i>Hiodon</i>	<i>tergisus</i>
Esocidae	sp/spp
<i>Campostoma</i>	<i>anomalum</i>
<i>Cyprinella</i>	<i>spiloptera</i>
<i>Cyprinus</i>	<i>carpio</i>
<i>Erimystax</i>	<i>dissimilis</i>
<i>Hybopsis</i>	<i>amblops</i>
<i>Macrhybopsis</i>	<i>storeriana</i>
<i>Notropis</i>	<i>atherinoides</i>
<i>Notropis</i>	<i>hudsonius</i>
<i>Notropis</i>	<i>rubellus</i>
<i>Notropis</i>	<i>stramineus</i>
<i>Notropis</i>	<i>volucellus</i>
<i>Pimephales</i>	<i>notatus</i>
<i>Pimephales</i>	<i>promelas</i>
<i>Rhinichthys</i>	<i>obtusum</i>
Cyprinidae	sp/spp
<i>Carpiodes</i>	<i>cyprinus</i>
<i>Hypentelium</i>	<i>nigricans</i>
<i>Ictiobus</i>	<i>bubalus</i>
<i>Moxostoma</i>	<i>anisurum</i>
<i>Moxostoma</i>	<i>breviceps</i>
<i>Moxostoma</i>	<i>carinatum</i>
<i>Moxostoma</i>	<i>erythrurum</i>
<i>Carpiodes</i>	sp/spp
<i>Ictiobus</i>	sp/spp
<i>Moxostoma</i>	sp/spp
Catostomidae	sp/spp
<i>Ictalurus</i>	<i>punctatus</i>
<i>Pylodictis</i>	<i>olivaris</i>
<i>Percopsis</i>	<i>omiscomaycus</i>
<i>Fundulus</i>	<i>diaphinus</i>
<i>Labidesthes</i>	<i>sicculus</i>
<i>Cottus</i>	<i>bairdi</i>
<i>Morone</i>	<i>chrysops</i>
<i>Morone</i>	<i>saxatilis</i>
Moronidae	sp/spp
<i>Ambloplites</i>	<i>rupestris</i>
<i>Lepomis</i>	<i>macrochirus</i>

<i>Micropterus</i>	<i>dolomieu</i>
<i>Micropterus</i>	<i>punctulatus</i>
<i>Micropterus</i>	<i>salmoides</i>
<i>Pomoxis</i>	<i>nigromaculatus</i>
<i>Etheostoma</i>	<i>blennioides</i>
<i>Etheostoma</i>	<i>caeruleum</i>
<i>Etheostoma</i>	<i>camurum</i>
<i>Etheostoma</i>	<i>flabellare</i>
<i>Etheostoma</i>	<i>nigrum</i>
<i>Etheostoma</i>	<i>tippecanoe</i>
<i>Etheostoma</i>	<i>zonale</i>
<i>Perca</i>	<i>flavescens</i>
<i>Percina</i>	<i>caprodes</i>
<i>Percina</i>	<i>copelandi</i>
<i>Percina</i>	<i>evides</i>
<i>Percina</i>	<i>macrocephala</i>
<i>Percina</i>	<i>shumardi</i>
<i>Sander</i>	<i>vitreus</i>
<i>Sander</i>	<i>sp/spp</i>
<i>Percidae</i>	<i>sp/spp</i>
<i>Aplodinotus</i>	<i>grunniens</i>
UNKNOWN	

Table 2. Fishes collected by trawls at Station 2 (Emsworth Pool) on 27 September, 2008.

<i>Lepisosteus</i>	<i>osseus</i>
<i>Amia</i>	<i>calva</i>
<i>Alosa</i>	<i>chrysochloris</i>
<i>Dorosoma</i>	<i>cepedianum</i>
Clupeidae	sp/spp
<i>Hiodon</i>	<i>alosoides</i>
<i>Hiodon</i>	<i>tergisus</i>
Esocidae	sp/spp
<i>Camptostoma</i>	<i>anomalum</i>
<i>Cyprinella</i>	<i>spiloptera</i>
<i>Cyprinus</i>	<i>carpio</i>
<i>Erimystax</i>	<i>dissimilis</i>
<i>Hybopsis</i>	<i>amblops</i>
<i>Macrhybopsis</i>	<i>storeriana</i>
<i>Notropis</i>	<i>atherinoides</i>
<i>Notropis</i>	<i>hudsonius</i>
<i>Notropis</i>	<i>rubellus</i>
<i>Notropis</i>	<i>stramineus</i>
<i>Notropis</i>	<i>volucellus</i>
<i>Pimephales</i>	<i>notatus</i>
<i>Pimephales</i>	<i>promelas</i>
<i>Rhinichthys</i>	<i>obtusum</i>
Cyprinidae	sp/spp
<i>Carpiodes</i>	<i>cyprinus</i>
<i>Hypentelium</i>	<i>nigricans</i>
<i>Ictiobus</i>	<i>bubalus</i>
<i>Moxostoma</i>	<i>anisurum</i>
<i>Moxostoma</i>	<i>breviceps</i>
<i>Moxostoma</i>	<i>carinatum</i>
<i>Moxostoma</i>	<i>erythrurum</i>
<i>Carpiodes</i>	sp/spp
<i>Ictiobus</i>	sp/spp
<i>Moxostoma</i>	sp/spp
Catostomidae	sp/spp
<i>Ictalurus</i>	<i>punctatus</i>
<i>Pylodictis</i>	<i>olivaris</i>
<i>Percopsis</i>	<i>omiscomaycus</i>
<i>Fundulus</i>	<i>diaphinus</i>
<i>Labidesthes</i>	<i>sicculus</i>
<i>Cottus</i>	<i>bairdi</i>
<i>Morone</i>	<i>chrysops</i>
<i>Morone</i>	<i>saxatilis</i>
Moronidae	sp/spp
<i>Ambloplites</i>	<i>rupestris</i>
<i>Lepomis</i>	<i>macrochirus</i>

<i>Micropterus</i>	<i>dolomieu</i>
<i>Micropterus</i>	<i>punctulatus</i>
<i>Micropterus</i>	<i>salmoides</i>
<i>Pomoxis</i>	<i>nigromaculatus</i>
<i>Etheostoma</i>	<i>blennioides</i>
<i>Etheostoma</i>	<i>caeruleum</i>
<i>Etheostoma</i>	<i>camurum</i>
<i>Etheostoma</i>	<i>flabellare</i>
<i>Etheostoma</i>	<i>nigrum</i>
<i>Etheostoma</i>	<i>tippecanoe</i>
<i>Etheostoma</i>	<i>zonale</i>
<i>Perca</i>	<i>flavescens</i>
<i>Percina</i>	<i>caprodes</i>
<i>Percina</i>	<i>copelandi</i>
<i>Percina</i>	<i>evides</i>
<i>Percina</i>	<i>macrocephala</i>
<i>Percina</i>	<i>shumardi</i>
<i>Sander</i>	<i>vitreus</i>
<i>Sander</i>	<i>sp/spp</i>
<i>Percidae</i>	<i>sp/spp</i>
<i>Aplodinotus</i>	<i>grunniens</i>
UNKNOWN	

Table 2. Fishes collected by trawls at Station 3 (Emsworth Pool) on 27 September, 2008.

<i>Lepisosteus</i>	<i>osseus</i>
<i>Amia</i>	<i>calva</i>
<i>Alosa</i>	<i>chrysochloris</i>
<i>Dorosoma</i>	<i>cepedianum</i>
Clupeidae	sp/spp
<i>Hiodon</i>	<i>alosoides</i>
<i>Hiodon</i>	<i>tergisus</i>
Esocidae	sp/spp
<i>Camptostoma</i>	<i>anomalum</i>
<i>Cyprinella</i>	<i>spiloptera</i>
<i>Cyprinus</i>	<i>carpio</i>
<i>Erimystax</i>	<i>dissimilis</i>
<i>Hybopsis</i>	<i>amblops</i>
<i>Macrhybopsis</i>	<i>storeriana</i>
<i>Notropis</i>	<i>atherinoides</i>
<i>Notropis</i>	<i>hudsonius</i>
<i>Notropis</i>	<i>rubellus</i>
<i>Notropis</i>	<i>stramineus</i>
<i>Notropis</i>	<i>volucellus</i>
<i>Pimephales</i>	<i>notatus</i>
<i>Pimephales</i>	<i>promelas</i>
<i>Rhinichthys</i>	<i>obtusum</i>
Cyprinidae	sp/spp
<i>Carpiodes</i>	<i>cyprinus</i>
<i>Hypentelium</i>	<i>nigricans</i>
<i>Ictiobus</i>	<i>bubalus</i>
<i>Moxostoma</i>	<i>anisurum</i>
<i>Moxostoma</i>	<i>breviceps</i>
<i>Moxostoma</i>	<i>carinatum</i>
<i>Moxostoma</i>	<i>erythrurum</i>
<i>Carpiodes</i>	sp/spp
<i>Ictiobus</i>	sp/spp
<i>Moxostoma</i>	sp/spp
Catostomidae	sp/spp
<i>Ictalurus</i>	<i>punctatus</i>
<i>Pylodictis</i>	<i>olivaris</i>
<i>Percopsis</i>	<i>omiscomaycus</i>
<i>Fundulus</i>	<i>diaphinus</i>
<i>Labidesthes</i>	<i>sicculus</i>
<i>Cottus</i>	<i>bairdi</i>
<i>Morone</i>	<i>chrysops</i>
<i>Morone</i>	<i>saxatilis</i>
Moronidae	sp/spp
<i>Ambloplites</i>	<i>rupestris</i>
<i>Lepomis</i>	<i>macrochirus</i>

<i>Micropterus</i>	<i>dolomieu</i>
<i>Micropterus</i>	<i>punctulatus</i>
<i>Micropterus</i>	<i>salmoides</i>
<i>Pomoxis</i>	<i>nigromaculatus</i>
<i>Etheostoma</i>	<i>blennioides</i>
<i>Etheostoma</i>	<i>caeruleum</i>
<i>Etheostoma</i>	<i>camurum</i>
<i>Etheostoma</i>	<i>flabellare</i>
<i>Etheostoma</i>	<i>nigrum</i>
<i>Etheostoma</i>	<i>tippecanoe</i>
<i>Etheostoma</i>	<i>zonale</i>
<i>Perca</i>	<i>flavescens</i>
<i>Percina</i>	<i>caprodes</i>
<i>Percina</i>	<i>copelandi</i>
<i>Percina</i>	<i>evides</i>
<i>Percina</i>	<i>macrocephala</i>
<i>Percina</i>	<i>shumardi</i>
<i>Sander</i>	<i>vitreus</i>
<i>Sander</i>	<i>sp/spp</i>
<i>Percidae</i>	<i>sp/spp</i>
<i>Aplodinotus</i>	<i>grunniens</i>
UNKNOWN	

Table 2. Fishes collected by trawls at Station 4 (Emsworth Pool) on 27 September, 2008.

<i>Lepisosteus</i>	<i>osseus</i>
<i>Amia</i>	<i>calva</i>
<i>Alosa</i>	<i>chrysochloris</i>
<i>Dorosoma</i>	<i>cepedianum</i>
Clupeidae	sp/spp
<i>Hiodon</i>	<i>alosoides</i>
<i>Hiodon</i>	<i>tergisus</i>
Esocidae	sp/spp
<i>Campostoma</i>	<i>anomalum</i>
<i>Cyprinella</i>	<i>spiloptera</i>
<i>Cyprinus</i>	<i>carpio</i>
<i>Erimystax</i>	<i>dissimilis</i>
<i>Hybopsis</i>	<i>amblops</i>
<i>Macrhybopsis</i>	<i>storeriana</i>
<i>Notropis</i>	<i>atherinoides</i>
<i>Notropis</i>	<i>hudsonius</i>
<i>Notropis</i>	<i>rubellus</i>
<i>Notropis</i>	<i>stramineus</i>
<i>Notropis</i>	<i>volucellus</i>
<i>Pimephales</i>	<i>notatus</i>
<i>Pimephales</i>	<i>promelas</i>
<i>Rhinichthys</i>	<i>obtusum</i>
Cyprinidae	sp/spp
<i>Carpiodes</i>	<i>cyprinus</i>
<i>Hypentelium</i>	<i>nigricans</i>
<i>Ictiobus</i>	<i>bubalus</i>
<i>Moxostoma</i>	<i>anisurum</i>
<i>Moxostoma</i>	<i>breviceps</i>
<i>Moxostoma</i>	<i>carinatum</i>
<i>Moxostoma</i>	<i>erythrurum</i>
<i>Carpiodes</i>	sp/spp
<i>Ictiobus</i>	sp/spp
<i>Moxostoma</i>	sp/spp
Catostomidae	sp/spp
<i>Ictalurus</i>	<i>punctatus</i>
<i>Pylodictis</i>	<i>olivaris</i>
<i>Percopsis</i>	<i>omiscomaycus</i>
<i>Fundulus</i>	<i>diaphinus</i>
<i>Labidesthes</i>	<i>sicculus</i>
<i>Cottus</i>	<i>bairdi</i>
<i>Morone</i>	<i>chrysops</i>
<i>Morone</i>	<i>saxatilis</i>
Moronidae	sp/spp
<i>Ambloplites</i>	<i>rupestris</i>
<i>Lepomis</i>	<i>macrochirus</i>

<i>Micropterus</i>	<i>dolomieu</i>
<i>Micropterus</i>	<i>punctulatus</i>
<i>Micropterus</i>	<i>salmoides</i>
<i>Pomoxis</i>	<i>nigromaculatus</i>
<i>Etheostoma</i>	<i>blennioides</i>
<i>Etheostoma</i>	<i>caeruleum</i>
<i>Etheostoma</i>	<i>camurum</i>
<i>Etheostoma</i>	<i>flabellare</i>
<i>Etheostoma</i>	<i>nigrum</i>
<i>Etheostoma</i>	<i>tippecanoe</i>
<i>Etheostoma</i>	<i>zonale</i>
<i>Perca</i>	<i>flavescens</i>
<i>Percina</i>	<i>caprodes</i>
<i>Percina</i>	<i>copelandi</i>
<i>Percina</i>	<i>evides</i>
<i>Percina</i>	<i>macrocephala</i>
<i>Percina</i>	<i>shumardi</i>
<i>Sander</i>	<i>vitreus</i>
<i>Sander</i>	<i>sp/spp</i>
<i>Percidae</i>	<i>sp/spp</i>
<i>Aplodinotus</i>	<i>grunniens</i>
UNKNOWN	

Table 2. Fishes collected by trawls at Station 5 (Emsworth Pool) on 27 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>		1						
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	16	189	10	101	29	147		
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>			1					
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>			1				3	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>							1	
<i>Etheostoma</i>	<i>camurum</i>							1	
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>							4	
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>	3	87	5	64		39	1	116
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								1
UNKNOWN									

Table 2. Fishes collected by trawls at Station 6 (Emsworth Pool) on 27 September, 2008.

		RDB Bot		RC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chryschloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>aliosides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Carpodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>biennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		2		2
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 2. Fishes collected by trawls at Station 7 (Emsworth Pool) on 27 September, 2008.

		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>allosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscoycaus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>	2			1	
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					1
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					2
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>					3
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>	1			2	
UNKNOWN						

Table 2. Fishes collected by trawls at Station 8 (Emsworth Pool) on 27 September, 2008.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alasa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusius</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>biennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		1
UNKNOWN			

Table 2. Fishes collected by trawls at Station 9 (Emsworth Pool) on 27 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>		1			1			
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		1					1	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>							1	
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	1		4	1		1		
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>		2						1
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>					1			1
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 2. Fishes collected by trawls at Station 10 (Emsworth Pool) on 27 September, 2008.

		RDB		RC		LC		LDB	
		Bot		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								2
<i>Notropis</i>	<i>atherinoides</i>								1
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	2	2	4	58	1	15		1
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
Cyprinidae	sp/spp								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>	1							1
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	1		6		8		10	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>		1						
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>		4		5		1		
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>					2		3	
UNKNOWN									

Table 2. Fishes collected by trawls at Station 11 (Emsworth Pool) on 27 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>					4		5	
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
Cyprinidae	sp/spp								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	2		2		19		30	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>				1				
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>				1				
<i>Percina</i>	<i>copelandi</i>		7		2		1		
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>					5		3	
UNKNOWN									

Table 3. Fishes collected by trawls at Station 13 (Dashields Pool) on 8 August, 2008.

		RDB		RC		LC		LDB	
		Bot		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chryschloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	2	1	2	8	1	1	6	12
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>							1	
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omismomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>					3		14	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								1
<i>Percina</i>	<i>copelandi</i>								4
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 3. Fishes collected by trawls at Station 14 (Dashields Pool) on 17 August, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alasa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	3		1		1		1	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>	1							
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	12		1		1		1	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>	1							
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>	1							
UNKNOWN									

Table 3. Fishes collected by trawls at Station 15 (Dashields Pool) on 17 August, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alasa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	1	5	1	1			1	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>							1	
<i>Percopsis</i>	<i>omiscamaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	17		25		3		1	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>	1		2					
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>	3				1			
UNKNOWN									

Table 4. Fishes collected by trawls at Station 12 (Dashields Pool) on 25 September, 2008.

		RDB		RC		LC		LDB	
		Bot		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	1		21		3			
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>			1				
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>blennioides</i>							
<i>Etheostoma</i>	<i>caeruleum</i>			14		2		1
<i>Etheostoma</i>	<i>camurum</i>			4		9		4
<i>Etheostoma</i>	<i>flabellare</i>							
<i>Etheostoma</i>	<i>nigrum</i>			3				
<i>Etheostoma</i>	<i>tippecanoe</i>			1				
<i>Etheostoma</i>	<i>zonale</i>							
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>			2				
<i>Percina</i>	<i>copelandi</i>	34		459		37		46
<i>Percina</i>	<i>evides</i>							
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>							
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>							
UNKNOWN								

Table 4. Fishes collected by trawls at Station 13 (Dashields Pool) on 25 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>			5		21		231	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	1						
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>biennioides</i>							
<i>Etheostoma</i>	<i>caeruleum</i>							1
<i>Etheostoma</i>	<i>camurum</i>							
<i>Etheostoma</i>	<i>flabellare</i>					1		
<i>Etheostoma</i>	<i>nigrum</i>							1
<i>Etheostoma</i>	<i>tippecanoe</i>							
<i>Etheostoma</i>	<i>zonale</i>							1
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>							
<i>Percina</i>	<i>copelandi</i>	7		10		14		27
<i>Percina</i>	<i>evides</i>							
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>							
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>							
UNKNOWN								

Table 4. Fishes collected by trawls at Station 14 (Dashields Pool) on 25 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>						4	1	8
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>				1				
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>						1		
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>				1				
<i>Percina</i>	<i>copelandi</i>		10		1				
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 4. Fishes collected by trawls at Station 15 (Dashields Pool) on 25 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>		1		6				1
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>							2	
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	1		1	1				
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>	1							
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>			5	2				
UNKNOWN									

Table 5. Fishes collected by trawls at Station 16 (Montgomery Pool) on 26 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alasa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>		4						
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		12	18		30		154	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olvaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	6						
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>blennioides</i>							
<i>Etheostoma</i>	<i>caeruleum</i>							
<i>Etheostoma</i>	<i>camurum</i>			2		7		1
<i>Etheostoma</i>	<i>flabellare</i>							
<i>Etheostoma</i>	<i>nigrum</i>					1		
<i>Etheostoma</i>	<i>tippecanoe</i>					3		1
<i>Etheostoma</i>	<i>zonale</i>				1			
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>	3		1		2		1
<i>Percina</i>	<i>copelandi</i>	9		44		65		54
<i>Percina</i>	<i>evides</i>			1		1		
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>	1		1		3		
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>		3					
UNKNOWN								

Table 5. Fishes collected by trawls at Station 16 (Montgomery Pool) on 26 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>		4						
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		12	18		30		154	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olvaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	6						
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>biennioides</i>							
<i>Etheostoma</i>	<i>caeruleum</i>							
<i>Etheostoma</i>	<i>camurum</i>			2		7		1
<i>Etheostoma</i>	<i>flabellare</i>							
<i>Etheostoma</i>	<i>nigrum</i>					1		
<i>Etheostoma</i>	<i>tippecanoe</i>					3		1
<i>Etheostoma</i>	<i>zonale</i>				1			
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>	3		1		2		1
<i>Percina</i>	<i>copelandi</i>	9		44		65		54
<i>Percina</i>	<i>evides</i>			1		1		
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>	1		1		3		
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>	3						
UNKNOWN								

Table 5. Fishes collected by trawls at Station17 (Montgomery Pool) on 26 September,2008.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>allosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		10
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusius</i>		
Cyprinidae	sp/spp		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omismomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		7
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 5. Fishes collected by trawls at Station 18 (MONTgomery Pool) on 26 September, 2008.

		RDB Bot		RC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>		5		
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		30	9	59
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olvaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>	11			
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>		1		
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		2		7
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>		1		
UNKNOWN					

Table 5. Fishes collected by trawls at Station 19 (Montgomery Pool) on 26 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								1
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	3							1
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>			1					
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								1
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>							3	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>							1	
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>							5	
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>	1		1	3				1
UNKNOWN									

Table 5. Fishes collected by trawls at Station 20 (Montgomery Pool) on 26 September, 2008.

		RDB Bot		RC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alasa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		20		7
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>		1		
<i>Carpoides</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>		1		
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>				
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>		1		
UNKNOWN					

Table 5. Fishes collected by trawls at Station 21 (Montgomery Pool) on 26 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>					3		1	
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>		4	3		5		1	
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	2		12		4	24		19
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>			1					

<i>Lepomis</i>	<i>macrochirus</i>	2		5		4		4	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>			1		1			
<i>Percina</i>	<i>copelandi</i>								
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aploidinotus</i>	<i>grunniens</i>		1		2		4		
UNKNOWN									

Table 5. Fishes collected by trawls at Station 22 (Montgomery Pool) on 26 September, 2008.

		LC		LDB	
		Mid		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				1
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	1		3	
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>			1	
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		1		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 5. Fishes collected by trawls at Station 23 (Montgomery Pool) on 26 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>					1			
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		1						
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	1				3		1	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>								
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>		1						1
UNKNOWN									

Table 6. Fishes collected by trawls at Station 24 (New Cumberland Pool) on 12 August, 2008.

		RDB Bot		RC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chryschloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		5		3		8
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>	1					
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>	12			2	
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>	1				
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>	5				
<i>Percina</i>	<i>copelandi</i>	42		7	1	85
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>	11		5		1
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 6. Fishes collected by trawls at Station 25 (New Cumberland Pool) on 12 August, 2008.

<i>Lepisosteus</i>	<i>osseus</i>
<i>Amia</i>	<i>calva</i>
<i>Alosa</i>	<i>chrysochloris</i>
<i>Dorosoma</i>	<i>cepedianum</i>
Clupeidae	sp/spp
<i>Hiodon</i>	<i>alosoides</i>
<i>Hiodon</i>	<i>tergisus</i>
Esocidae	sp/spp
<i>Camptostoma</i>	<i>anomalum</i>
<i>Cyprinella</i>	<i>spiloptera</i>
<i>Cyprinus</i>	<i>carpio</i>
<i>Erimystax</i>	<i>dissimilis</i>
<i>Hybopsis</i>	<i>amblops</i>
<i>Macrhybopsis</i>	<i>storeriana</i>
<i>Notropis</i>	<i>atherinoides</i>
<i>Notropis</i>	<i>hudsonius</i>
<i>Notropis</i>	<i>rubellus</i>
<i>Notropis</i>	<i>stramineus</i>
<i>Notropis</i>	<i>volucellus</i>
<i>Pimephales</i>	<i>notatus</i>
<i>Pimephales</i>	<i>promelas</i>
<i>Rhinichthys</i>	<i>obtusum</i>
Cyprinidae	sp/spp
<i>Carpiodes</i>	<i>cyprinus</i>
<i>Hypentelium</i>	<i>nigricans</i>
<i>Ictiobus</i>	<i>bubalus</i>
<i>Moxostoma</i>	<i>anisurum</i>
<i>Moxostoma</i>	<i>breviceps</i>
<i>Moxostoma</i>	<i>carinatum</i>
<i>Moxostoma</i>	<i>erythrurum</i>
<i>Carpiodes</i>	sp/spp
<i>Ictiobus</i>	sp/spp
<i>Moxostoma</i>	sp/spp
Catostomidae	sp/spp
<i>Ictalurus</i>	<i>punctatus</i>
<i>Pylodictis</i>	<i>olivaris</i>
<i>Percopsis</i>	<i>omiscomaycus</i>
<i>Fundulus</i>	<i>diaphinus</i>
<i>Labidesthes</i>	<i>sicculus</i>
<i>Cottus</i>	<i>bairdi</i>
<i>Morone</i>	<i>chrysops</i>
<i>Morone</i>	<i>saxatilis</i>
Moronidae	sp/spp
<i>Ambloplites</i>	<i>rupestris</i>
<i>Lepomis</i>	<i>macrochirus</i>

<i>Micropterus</i>	<i>dolomieu</i>
<i>Micropterus</i>	<i>punctulatus</i>
<i>Micropterus</i>	<i>salmoides</i>
<i>Pomoxis</i>	<i>nigromaculatus</i>
<i>Etheostoma</i>	<i>blennioides</i>
<i>Etheostoma</i>	<i>caeruleum</i>
<i>Etheostoma</i>	<i>camurum</i>
<i>Etheostoma</i>	<i>flabellare</i>
<i>Etheostoma</i>	<i>nigrum</i>
<i>Etheostoma</i>	<i>tippecanoe</i>
<i>Etheostoma</i>	<i>zonale</i>
<i>Perca</i>	<i>flavescens</i>
<i>Percina</i>	<i>caprodes</i>
<i>Percina</i>	<i>copelandi</i>
<i>Percina</i>	<i>evides</i>
<i>Percina</i>	<i>macrocephala</i>
<i>Percina</i>	<i>shumardi</i>
<i>Sander</i>	<i>vitreus</i>
<i>Sander</i>	<i>sp/spp</i>
<i>Percidae</i>	<i>sp/spp</i>
<i>Aplodinotus</i>	<i>grunniens</i>
UNKNOWN	

Table 6. Fishes collected by trawls at Station 26 (New Cumberland Pool) on 13 August, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		1		5		2		
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>								1
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 6. Fishes collected by trawls at Station 27 (New Cumberland Pool) on 13 August, 2008.

		RC		LC				LDB	
		Mid		Bot		Mid		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								1
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>							2	4
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
Cyprinidae	sp/spp								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>			4			18	
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>biennioides</i>						1	
<i>Etheostoma</i>	<i>caeruleum</i>							
<i>Etheostoma</i>	<i>camurum</i>							
<i>Etheostoma</i>	<i>flabellare</i>							
<i>Etheostoma</i>	<i>nigrum</i>							
<i>Etheostoma</i>	<i>tippecanoe</i>							
<i>Etheostoma</i>	<i>zonale</i>							
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>							
<i>Percina</i>	<i>copelandi</i>		1		1		1	3
<i>Percina</i>	<i>evides</i>							
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>							
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>							
UNKNOWN								

Table 6. Fishes collected by trawls at Station 28 (New Cumberland Pool) on 13 August, 2008.

		RDB		LC	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>aiosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>		5		
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	5	1		
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>	4			
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				1
<i>Etheostoma</i>	<i>caeruleum</i>				1
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				1
<i>Percina</i>	<i>copelandi</i>				
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 6. Fishes collected by trawls at Station 29 (New Cumberland Pool) on 11 August, 2008.

		Mid		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chryschloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>aliosides</i>				
<i>Hiodon</i>	<i>tergus</i>				
Esocidae	sp/spp				
<i>Camptostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
Cyprinidae	sp/spp				
<i>Carpodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>biennioides</i>		2		1
<i>Etheostoma</i>	<i>caeruleum</i>			1	
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>				
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 6. Fishes collected by trawls at Station 29 (New Cumberland Pool) on 12 August, 2008.

		RDB		RC		LC			
		Bot		Bot		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>		5						
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		3				1		
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								1
<i>Etheostoma</i>	<i>caeruleum</i>							1	
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>							1	
<i>Percina</i>	<i>copelandi</i>				1				
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>		1						
UNKNOWN									

Table 7. Fishes collected by trawls at Station 24 (New Cumberland Pool) on 11 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	1	3	7	10	2	1	41	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscamaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>			1				1	
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>			5					
<i>Percina</i>	<i>copelandi</i>		98		21		7		43
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>		4						3
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>			1		2			1
UNKNOWN									

Table 7. Fishes collected by trawls at Station 24 (New Cumberland Pool) on 11 September, 2008.

		RDB		RC	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				2
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		27		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>		1		
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>		1		
UNKNOWN					

Table 7. Fishes collected by trawls at Station 26 (New Cumberland Pool) on 11 September, 2008.

		RDB Bot.		RC Bot.		LC Bot.		LDB Bot.	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>				1				
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>				2				1
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>			1				
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>biennioides</i>							
<i>Etheostoma</i>	<i>caeruleum</i>							
<i>Etheostoma</i>	<i>camurum</i>		1					1
<i>Etheostoma</i>	<i>flabellare</i>							
<i>Etheostoma</i>	<i>nigrum</i>		2		1		2	1
<i>Etheostoma</i>	<i>tippecanoe</i>							
<i>Etheostoma</i>	<i>zonale</i>					1		1
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>					1		
<i>Percina</i>	<i>copelandi</i>		100		56		15	9
<i>Percina</i>	<i>evides</i>							
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>		3					
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>							
UNKNOWN								

Table 7. Fishes collected by trawls at Station 27 (New Cumberland Pool) on 11 September, 2008.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>			1		1		1	
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>			2					
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>					1			
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>		1						
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>		1						
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>		8		13		3		
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>		1		1		1		
UNKNOWN									

Table 7. Fishes collected by trawls at Station 28 (New Cumberland Pool) on 11 September, 2008.

		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>			28			
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusum</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscumaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>			1			
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						2
<i>Etheostoma</i>	<i>camurum</i>		1		12		15
<i>Etheostoma</i>	<i>flabellare</i>		2			3	5
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>				1		
<i>Etheostoma</i>	<i>zonale</i>						1
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>				1		
<i>Percina</i>	<i>copelandi</i>						
<i>Percina</i>	<i>evides</i>				1		3
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN							

Table 7. Fishes collected by trawls at Station 29 (New Cumberland Pool) on 11 September, 2008.

		RDB		RC		LC		LDB	
		Bot		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>			1	7		29	4	26
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>							1	
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>		2	1					
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>		1						
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>		2	1					
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>						3		
<i>Percina</i>	<i>copelandi</i>		5	22		6			
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>						73	1	
UNKNOWN									

Appendix IV

Fishes collected by trawl in March/April, 2009

Table 1. Fishes collected by trawls at Station 1 (Emsworth Pool) on 7 March, 2009.

		LC Bot		LDB Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyropsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				1
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				
<i>Lepomis</i>	<i>macrochirus</i>				

<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>fiabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				1
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		1		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 2 (Emsworth Pool) on 23 April, 2009.

		RDB		MC				LDB	
		Surf		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aloides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Machyropsis</i>	<i>storeriana</i>								2
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusum</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscumaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>				1				
<i>Etheostoma</i>	<i>camurum</i>				2				
<i>Etheostoma</i>	<i>flabellare</i>				1				
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>				11				
<i>Etheostoma</i>	<i>zonale</i>				1				
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>		1		1		1		
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 1. Fishes collected by trawls at Station 3 (Emsworth Pool) on 7 March, 2009.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>aliosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtus</i>		
Cyprinidae	sp/spp		
<i>Cariodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Cariodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		1
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 4 (Emsworth Pool) on 7 March, 2009.

		RDB Bot		MC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chryschloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>		1				4
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>				15		14
<i>Pimephales</i>	<i>notatus</i>						1
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Cariodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Cariodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>						
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>		1				
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN							

Table 1. Fishes collected by trawls at Station 5 (Emsworth Pool) on 7 March, 2009.

		RDB		LC	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyropsis</i>	<i>storeriana</i>				5
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				2
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Cariodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Cariodes</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		3		2
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 5 (Emsworth Pool) on 22 April, 2009.

		RDB Bot		MC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>				2		
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						2
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>			1		
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>			1		2
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>			1		
<i>Percina</i>	<i>copelandi</i>	59		35		6
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 1. Fishes collected by trawls at Station 6 (Emsworth Pool) on 8 March, 2009.

		RDB	
		Surf	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		1
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Machyropsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtus</i>		
Cyprinidae	sp/spp		
<i>Carpodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 10 (Emsworth Pool) on 22 April, 2009.

		MC Bot		LDB Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Camptostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyropsis</i>	<i>storeriana</i>		1		1
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Cariodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Cariodes</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>		1		
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>				
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 11 (Emsworth Pool) on 22 April, 2009.

		LDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>aioosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		3
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		5
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtus</i>		
Cyprinidae	sp/spp		
<i>Cariodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Cariodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 2. Fishes collected by trawls at Station 12 (Dashields Pool) on 9 March, 2009.

		RDB		LC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>		2		1		1
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		2				3
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						1
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>		5		2	
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 2. Fishes collected by trawls at Station 13 (Dashields Pool) on 24 April, 2009.

		RDB		MC		LDB	
		Bot		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chryschloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>aiosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machrybopsis</i>	<i>storeriana</i>		1		1		
<i>Notropis</i>	<i>atherinoides</i>						1
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscamaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>biennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>						
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>			1			
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN							

Table 2. Fishes collected by trawls at Station 14 (Dashields Pool) on 23 April, 2009.

		RC	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>aliosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Machyropsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		3
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtus</i>		
Cyprinidae	sp/spp		
<i>Carpodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 2. Fishes collected by trawls at Station 15 (Dashields Pool) on 23 April, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		11				
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>		1		1	6
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 3. Fishes collected by trawls at Station 16 (Montgomery Pool) on 10 April, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
Clupeidae	sp/spp						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
Esocidae	sp/spp						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>				2		2
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		2		14		30
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
Cyprinidae	sp/spp						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	sp/spp						
<i>Ictiobus</i>	sp/spp						
<i>Moxostoma</i>	sp/spp						
Catostomidae	sp/spp						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
Moronidae	sp/spp						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>			2		
<i>Percina</i>	<i>copelandi</i>			9		
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>			2		
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 3. Fishes collected by trawls at Station 17 (Montgomery Pool) on 19 April, 2009.

		RDB		LDB	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Camptostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		3		21
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Cariodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Cariodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>		1		
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		1		1
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 3. Fishes collected by trawls at Station 18 (Montgomery Pool) on 20 April, 2009.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Machyrops</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		183
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusius</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		1
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		1
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 3. Fishes collected by trawls at Station 19 (Montgomery Pool) on 20 April, 2009.

		RDB		LDB			
		Bot		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		6		2		
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						1
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>biennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>		1			
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 3. Fishes collected by trawls at Station 20 (Montgomery Pool) on 11 April, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
Clupeidae	sp/spp						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
Esocidae	sp/spp						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>				4		5
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		3		22		35
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
Cyprinidae	sp/spp						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>		1				
<i>Carpiodes</i>	sp/spp						
<i>Ictiobus</i>	sp/spp						
<i>Moxostoma</i>	sp/spp						
Catostomidae	sp/spp						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscornaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						1
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
Moronidae	sp/spp						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>						
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>			1			
<i>Percina</i>	<i>copelandi</i>						
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN							

Table 3. Fishes collected by trawls at Station 21 (Montgomery Pool) on 12 April, 2009.

		RDB Bot		MC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyropsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				2
<i>Pimephales</i>	<i>notatus</i>		5		
<i>Pimephales</i>	<i>promelas</i>		3		
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Cariodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>		1		
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Cariodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>biennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>		5		4
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				2
<i>Percina</i>	<i>copelandi</i>		4		5
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 3. Fishes collected by trawls at Station 22 (Montgomery Pool) on 12 April, 2009.

		LDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Camptostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Machyhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		1
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusis</i>		
Cyprinidae	sp/spp		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 4. Fishes collected by trawls at Station 24 (New Cumberland Pool) on 21 April, 2009.

		RDB Bot		RC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Camptostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				1
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusum</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>biennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>		1		
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>		4		
<i>Percina</i>	<i>copelandi</i>		3		6
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 4. Fishes collected by trawls at Station 25 (New Cumberland Pool) on 21 April, 2009.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Machyropsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		1
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusius</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 4. Fishes collected by trawls at Station 26 (New Cumberland Pool) on 21 April, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anormale</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyrops</i>	<i>storeriana</i>				5		4
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		2		14		1
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusum</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Cariodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrum</i>				1		
<i>Cariodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>alvaris</i>						
<i>Percopsis</i>	<i>omismaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>		1		1	1
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>			1		
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 4. Fishes collected by trawls at Station 27 (New Cumberland Pool) on 21 April, 2009.

		MC Bot		LDB Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergus</i>				
Esocidae	sp/spp				
<i>Camptostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyhybopsis</i>	<i>storeriana</i>		1		
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		1		6
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
Cyprinidae	sp/spp				
<i>Cariodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Cariodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>biennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		1		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 4. Fishes collected by trawls at Station 28 (New Cumberland Pool) on 29 March, 2009.

		RDB				RC	
		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
Clupeidae	sp/spp						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
Esocidae	sp/spp						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
Cyprinidae	sp/spp						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	sp/spp						
<i>Ictiobus</i>	sp/spp						
<i>Moxostoma</i>	sp/spp						
Catostomidae	sp/spp						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
Moronidae	sp/spp						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>biennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>		1		1	1
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>					
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 4. Fishes collected by trawls at Station 28 (New Cumberland Pool) on 21 April, 2009.

		MC	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Camptostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		4
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Machyropsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtus</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		2
<i>Ictiobus</i>	<i>bubalus</i>		8
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		1
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		1
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		1
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		1
UNKNOWN			

Table 4. Fishes collected by trawls at Station 29 (New Cumberland Pool) on 30 March, 2009.

		RDB				RC		LC	
		Bot		Surf		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Machyropsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>			4					
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								3
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
Cyprinidae	sp/spp								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>					1			
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Iabidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>								
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>		1						
UNKNOWN									

Table 4. Fishes collected by trawls at Station 29 (New Cumberland Pool) on 21 April, 2009.

		RDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusum</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		2
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		1
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Appendix V

Fishes collected by trawl in June/July, 2009

Table 1. Fishes collected by trawls at Station 1 (Emsworth Pool) on 17 June, 2009.

		RDB		RC		LC		LDB	
		Bot		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chryschloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>			3					
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>							2	
<i>Etheostoma</i>	<i>caeruleum</i>	1		1					
<i>Etheostoma</i>	<i>camurum</i>	2							
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>		1					1	
<i>Etheostoma</i>	<i>tippecanoe</i>								1
<i>Etheostoma</i>	<i>zonale</i>	1		1		6			
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>	10		1				1	1
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>					12		11	
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 1. Fishes collected by trawls at Station 2 (Emsworth Pool) on 17 June, 2009.

		RDB				MC				LDB	
		Bot		Mid		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>										
<i>Amia</i>	<i>calva</i>										
<i>Alosa</i>	<i>chrysochloris</i>										
<i>Dorosoma</i>	<i>cepedianum</i>										
<i>Clupeidae</i>	<i>sp/spp</i>										
<i>Hiodon</i>	<i>alosoides</i>										
<i>Hiodon</i>	<i>tergisus</i>										
<i>Esocidae</i>	<i>sp/spp</i>										
<i>Campostoma</i>	<i>anomalum</i>										
<i>Cyprinella</i>	<i>spiloptera</i>										
<i>Cyprinus</i>	<i>carpio</i>										
<i>Erimystax</i>	<i>dissimilis</i>										
<i>Hybopsis</i>	<i>amblops</i>										
<i>Macrhybopsis</i>	<i>storeiana</i>										
<i>Notropis</i>	<i>atherinoides</i>										
<i>Notropis</i>	<i>hudsonius</i>										
<i>Notropis</i>	<i>rubellus</i>										
<i>Notropis</i>	<i>stramineus</i>										
<i>Notropis</i>	<i>volucellus</i>										
<i>Pimephales</i>	<i>notatus</i>	59									
<i>Pimephales</i>	<i>promelas</i>										
<i>Rhinichthys</i>	<i>obtusius</i>										
<i>Cyprinidae</i>	<i>sp/spp</i>										
<i>Carpiodes</i>	<i>cyprinus</i>										
<i>Hypentelium</i>	<i>nigricans</i>					1					
<i>Ictiobus</i>	<i>bubalus</i>										
<i>Moxostoma</i>	<i>anisurum</i>										
<i>Moxostoma</i>	<i>breviceps</i>										
<i>Moxostoma</i>	<i>carinatum</i>										
<i>Moxostoma</i>	<i>erythrum</i>										
<i>Carpiodes</i>	<i>sp/spp</i>										
<i>Ictiobus</i>	<i>sp/spp</i>										
<i>Moxostoma</i>	<i>sp/spp</i>										
<i>Catostomidae</i>	<i>sp/spp</i>	1									
<i>Ictalurus</i>	<i>punctatus</i>										
<i>Pylodictis</i>	<i>olivaris</i>										
<i>Percopsis</i>	<i>omiscomaycus</i>										
<i>Fundulus</i>	<i>diaphinus</i>										
<i>Labidesthes</i>	<i>sicculus</i>										
<i>Cottus</i>	<i>bairdi</i>										
<i>Morone</i>	<i>chrysops</i>										
<i>Morone</i>	<i>saxatilis</i>										
<i>Moranidae</i>	<i>sp/spp</i>										
<i>Ambloplites</i>	<i>rupestris</i>										

<i>Lepomis</i>	<i>macrochirus</i>											
<i>Micropterus</i>	<i>dolomieu</i>	34										
<i>Micropterus</i>	<i>punctulatus</i>											
<i>Micropterus</i>	<i>salmoides</i>											
<i>Pomoxis</i>	<i>nigromaculatus</i>											
<i>Etheostoma</i>	<i>blennioides</i>	3			1							
<i>Etheostoma</i>	<i>caeruleum</i>	84										
<i>Etheostoma</i>	<i>camurum</i>											
<i>Etheostoma</i>	<i>flabellare</i>	18			1							
<i>Etheostoma</i>	<i>nigrum</i>	1135		7	42		1					
<i>Etheostoma</i>	<i>tippecanoe</i>					1						
<i>Etheostoma</i>	<i>zonale</i>	2			1							
<i>Perca</i>	<i>flavescens</i>											
<i>Percina</i>	<i>caprodes</i>	5										
<i>Percina</i>	<i>copelandi</i>	28			3					1		
<i>Percina</i>	<i>evides</i>											
<i>Percina</i>	<i>macrocephala</i>	3										
<i>Percina</i>	<i>shumardi</i>											
<i>Sander</i>	<i>vitreus</i>											
<i>Sander</i>	<i>sp/spp</i>											
<i>Percidae</i>	<i>sp/spp</i>											
<i>Aplodinotus</i>	<i>grunniens</i>											
UNKNOWN												

Table 1. Fishes collected by trawls at Station 3 (Emsworth Pool) on 17 June, 2009.

		RDB				RC	
		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alasa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		6		1		
<i>Pimephales</i>	<i>notatus</i>	12				6	
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>	1					
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>	14				1	
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>biennioides</i>					1	
<i>Etheostoma</i>	<i>caeruleum</i>	9	1	2		1	
<i>Etheostoma</i>	<i>camurum</i>						2
<i>Etheostoma</i>	<i>flabellare</i>	2					
<i>Etheostoma</i>	<i>nigrum</i>	55	1			15	1
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>	3					
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>	1					
<i>Percina</i>	<i>copelandi</i>	8	3				19
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>	2					
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN							

Table 1. Fishes collected by trawls at Station 4 (Emsworth Pool) on 16 June, 2009.

		RC	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alasa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		1
<i>Cyprinella</i>	<i>spiloptera</i>	1	13
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		3
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		5
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusis</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>	1	
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>	2	
<i>Catostomidae</i>	<i>sp/spp</i>	47	
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>	1	
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>	88	
<i>Micropterus</i>	<i>punctulatus</i>	1	
<i>Micropterus</i>	<i>salmoides</i>	1	
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>	1	
<i>Etheostoma</i>	<i>caeruleum</i>	4	
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>	1	
<i>Etheostoma</i>	<i>nigrum</i>	262	
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>	135	
<i>Percina</i>	<i>copelandi</i>	158	
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>	7	
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 5 (Emsworth Pool) on 16 June, 2009.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		17		4				
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>					1			
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omismomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>			1					
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>				1				
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>						1		
<i>Percina</i>	<i>copelandi</i>		7		8		73		55
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 1. Fishes collected by trawls at Station 6 (Emsworth Pool) on 17 June, 2009.

		LDB	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		3
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusius</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscornaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>	1	
<i>Percina</i>	<i>copelandi</i>	1	1
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>	1	
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 7 (Emsworth Pool) on 17 June, 2009.

		RDB Bot		MC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>		1		1	
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>biennioides</i>	1		1		
<i>Etheostoma</i>	<i>caeruleum</i>		2			
<i>Etheostoma</i>	<i>comurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>	2		5		1
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>				1	
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>	10		34		1
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>	4				1
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 1. Fishes collected by trawls at Station8 (Emsworth Pool) on .17 June, 2009.

		MC	
		Surf	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusius</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpoides</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpoides</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscamaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>	9	
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>	2	
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 10 (Emsworth Pool) on 17 June, 2009.

		RDB Bot		MC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>	4			
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>			2	
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 11 (Emsworth Pool) on 17 June, 2009.

		RDB Bot		MC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chryschloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								3
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscoyca</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>	2		1					
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>			1					
<i>Etheostoma</i>	<i>nigrum</i>	7				2		4	
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>			1					
<i>Percina</i>	<i>caprodes</i>	18				1		6	
<i>Percina</i>	<i>copelandi</i>	31				1	1	10	1
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 2. Fishes collected by trawls at Station 12 (Dashields Pool) on 16 June, 2009.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alasa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>			1					
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscamaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>							
<i>Micropterus</i>	<i>dolomieu</i>	1		2				
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>blennioides</i>	7		3		3		
<i>Etheostoma</i>	<i>caeruleum</i>	1			1			
<i>Etheostoma</i>	<i>camurum</i>				1			
<i>Etheostoma</i>	<i>flabellare</i>						1	
<i>Etheostoma</i>	<i>nigrum</i>					2		
<i>Etheostoma</i>	<i>tippecanoe</i>							
<i>Etheostoma</i>	<i>zonale</i>					1		1
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>							
<i>Percina</i>	<i>copelandi</i>	2		4	1			3 1
<i>Percina</i>	<i>evides</i>							
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>							
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>				2			
<i>Percidae</i>	<i>sp/spp</i>				7			
<i>Aplodinotus</i>	<i>grunniens</i>							
UNKNOWN								

Table 2. Fishes collected by trawls at Station 13 (Dashields Pool) on 16 June, 2009.

		RDB		LDB	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>			1	
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>	1		2	
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 2. Fishes collected by trawls at Station 14 (Dashields Pool) on 16 June, 2009.

		RDB Bot		MC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>	1					
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>biennioides</i>	3		2		2	
<i>Etheostoma</i>	<i>caeruleum</i>					4	
<i>Etheostoma</i>	<i>comurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>					1	
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>					1	
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>					10	
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>			4			
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN							

Table 2. Fishes collected by trawls at Station 15 (Dashields Pool) on 16 June, 2009.

		RDB Bot		MC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>	4					
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>biennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>		1				
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>	8					
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>	1					
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>	24	3		1		
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN							

Table 3. Fishes collected by trawls at Station 16 (Montgomery Pool) on 15 June, 2009.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								81
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>							
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>biennioides</i>							
<i>Etheostoma</i>	<i>caeruleum</i>					1		
<i>Etheostoma</i>	<i>camurum</i>		2					1
<i>Etheostoma</i>	<i>flabellare</i>							
<i>Etheostoma</i>	<i>nigrum</i>							
<i>Etheostoma</i>	<i>tippecanoe</i>		2			3		
<i>Etheostoma</i>	<i>zonale</i>		1		2			1
<i>Perca</i>	<i>flavescens</i>			1				
<i>Percina</i>	<i>caprodes</i>							
<i>Percina</i>	<i>copelandi</i>	1	5			6		1
<i>Percina</i>	<i>evides</i>							
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>				1			
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>							
UNKNOWN		1						

Table 3. Fishes collected by trawls at Station 17 (Montgomery Pool) on 15 June, 2009.

		RDB		RC	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>		1		
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		2		
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>		2		
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>	5		1	
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>	4			
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>	1			
<i>Etheostoma</i>	<i>nigrum</i>	5		1	
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>	35			
<i>Percina</i>	<i>copelandi</i>	22		1	
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>			1	
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>	1			
<i>Percidae</i>	<i>sp/spp</i>	1			
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 3. Fishes collected by trawls at Station 18 (Montgomery Pool) on 15 June, 2009.

		RDB Bot		MC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alasa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		4		
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>	1			
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>	1			
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>solmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>		1		
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>	3			
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>	5		1	
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 3. Fishes collected by trawls at Station 19 (Montgomery Pool) on 15 June, 2009.

		LDB			
		Bot		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>			2	
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		1		
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>			2	
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>	1			
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>	2			
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>	11			
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>	1			
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 3. Fishes collected by trawls at Station 20 (Montgomery Pool) on 15 June, 2009.

		RDB				MC		LDB	
		Bot		Surf		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>				3				8
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpoides</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpoides</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								1
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscoyca</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>			1					
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>	12						26	
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>							3	1
<i>Percina</i>	<i>copelandi</i>								
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>	1					10		
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 3. Fishes collected by trawls at Station 21 (Montgomery Pool) on 15 June, 2009.

		MC			
		Bot		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>			1	
<i>Hiodon</i>	<i>aloscoides</i>				
<i>Hiodon</i>	<i>tergisus</i>		1	1	
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	1	13		
<i>Pimephales</i>	<i>notatus</i>		1		
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>	3			
<i>Etheostoma</i>	<i>caeruleum</i>	3			
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>	2			
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>	12			
<i>Percina</i>	<i>copelandi</i>	7			
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>	18			
<i>Percidae</i>	<i>sp/spp</i>			1	
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table n3 Fishes collected by trawls at Station 22 (Montgomery Pool) on 15 June, 2009.

		RDB		LDB	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				1
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscoycaus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>	1			
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>	1			
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>	1			
<i>Percina</i>	<i>copelandi</i>	4			
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>	2			
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>	7			
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 3. Fishes collected by trawls at Station 23 (Montgomery Pool) on 15 June, 2009.

		MC	
		Surf	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>	1	
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>aloides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		1
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		1
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusis</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpoides</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpoides</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omismomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>	3	
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>		
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN		70	

Table 4. Fishes collected by trawls at Station 24 (New Cumberland Pool) on 9 June, 2009.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		1		6		1		
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>			1					
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>				3		3		
<i>Etheostoma</i>	<i>caeruleum</i>				2				
<i>Etheostoma</i>	<i>camurum</i>			1					
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>			1					
<i>Etheostoma</i>	<i>zonale</i>			1					
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>	2	1		4	5	1		
<i>Percina</i>	<i>copelandi</i>		16		49		10		2
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>	29	1	4	4		5		
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 4. Fishes collected by trawls at Station 25 (New Cumberland Pool) on 9 June, 2009.

		RDB Bot		RC Bot		LC Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>aliosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>	1					
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>		5		3	1
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>	15	2			
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>				2	
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 4. Fishes collected by trawls at Station 26 (New Cumberland Pool) on 9 June, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>				2		
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>	1					
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>			1			
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						1
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>	3			3	
<i>Etheostoma</i>	<i>caeruleum</i>				3	
<i>Etheostoma</i>	<i>camurum</i>		1			
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>	4	1			
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>	1				
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 4. Fishes collected by trawls at Station 27 (New Cumberland Pool) on 9 June, 2009.

		MC		LDB	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alasa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscoycaus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>			1	
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>			1	2
<i>Percina</i>	<i>copelandi</i>	2			
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

APPENDIX VI

Fishes collected by trawls in August, 2009

Table 1. Fishes collected by trawls at Station 1 (Emsworth Pool) on 6 August, 2009.

		RDB Bot		RC Bot		LC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>			2		1		5	
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>			62		13			
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>							
<i>Micropterus</i>	<i>dolomieu</i>							
<i>Micropterus</i>	<i>punctulatus</i>							
<i>Micropterus</i>	<i>salmoides</i>							
<i>Pomoxis</i>	<i>nigromaculatus</i>							
<i>Etheostoma</i>	<i>biennioides</i>			2				
<i>Etheostoma</i>	<i>caeruleum</i>							
<i>Etheostoma</i>	<i>camurum</i>				2			
<i>Etheostoma</i>	<i>flabellare</i>		1		2			
<i>Etheostoma</i>	<i>nigrum</i>	3		4		5	8	9
<i>Etheostoma</i>	<i>tippecanoe</i>			1	1			
<i>Etheostoma</i>	<i>zonale</i>			2	2	1	3	2
<i>Perca</i>	<i>flavescens</i>							
<i>Percina</i>	<i>caprodes</i>			1		1		
<i>Percina</i>	<i>copelandi</i>	4		43		85		104
<i>Percina</i>	<i>evides</i>		2		1	1		
<i>Percina</i>	<i>macrocephala</i>							
<i>Percina</i>	<i>shumardi</i>							
<i>Sander</i>	<i>vitreus</i>							
<i>Sander</i>	<i>sp/spp</i>							
<i>Percidae</i>	<i>sp/spp</i>							
<i>Aplodinotus</i>	<i>grunniens</i>							
UNKNOWN								

Table 1. Fishes collected by trawls at Station 2 (Emsworth Pool) on 6 August, 2009.

		RDB Bot		RC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>		3		2
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyropsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	3			2
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Cariodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Cariodes</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>		1		
<i>Etheostoma</i>	<i>nigrum</i>	1	14		7
<i>Etheostoma</i>	<i>tippecanoe</i>			1	
<i>Etheostoma</i>	<i>zonale</i>	2	1		
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>	1	47		42
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>			1	
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 3 (Emsworth Pool) on 6 August, 2009.

		RDB				MC	
		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>		1				
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>					1	
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		3				
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>	2				1	
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>		8				27
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>					1	2
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>	4	36			3	103
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN					1		

Table 1. Fishes collected by trawls at Station 4 (Emsworth Pool) on 6 August, 2009.

		MC	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alosa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
Clupeidae	sp/spp		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
Esocidae	sp/spp		
<i>Camptostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Machyropsis</i>	<i>storeriana</i>		
<i>Notropis</i>	<i>atherinoides</i>		5
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>	31	20
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusus</i>		
Cyprinidae	sp/spp		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>	1	
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>		
<i>Carpiodes</i>	sp/spp		
<i>Ictiobus</i>	sp/spp		
<i>Moxostoma</i>	sp/spp		
Catostomidae	sp/spp		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
Moronidae	sp/spp		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>	1	
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>	2	
<i>Etheostoma</i>	<i>camurum</i>		1
<i>Etheostoma</i>	<i>flabellare</i>		1
<i>Etheostoma</i>	<i>nigrum</i>		21
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		
<i>Percina</i>	<i>caprodes</i>	2	
<i>Percina</i>	<i>copelandi</i>	48	18
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 1. Fishes collected by trawls at Station 5 (Emsworth Pool) on 6 August, 2009.

		RDB		RC		LC		LDB			
		Bot		Bot		Bot		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>										
<i>Amia</i>	<i>calva</i>										
<i>Alosa</i>	<i>chrysochloris</i>										
<i>Dorosoma</i>	<i>cepedianum</i>										
<i>Clupeidae</i>	<i>sp/spp</i>										
<i>Hiodon</i>	<i>aliosoides</i>										
<i>Hiodon</i>	<i>tergisus</i>										
<i>Esocidae</i>	<i>sp/spp</i>										
<i>Campostoma</i>	<i>anomalum</i>										
<i>Cyprinella</i>	<i>spiloptera</i>										
<i>Cyprinus</i>	<i>carpio</i>										
<i>Erimystax</i>	<i>dissimilis</i>										
<i>Hybopsis</i>	<i>amblops</i>										
<i>Machyropsis</i>	<i>storeriana</i>							1			
<i>Notropis</i>	<i>atherinoides</i>			1						1	
<i>Notropis</i>	<i>hudsonius</i>										
<i>Notropis</i>	<i>rubellus</i>										
<i>Notropis</i>	<i>stramineus</i>										
<i>Notropis</i>	<i>volucellus</i>	6	45	5	122		15	36	52		
<i>Pimephales</i>	<i>notatus</i>										
<i>Pimephales</i>	<i>promelas</i>										
<i>Rhinichthys</i>	<i>obtus</i>										
<i>Cyprinidae</i>	<i>sp/spp</i>										
<i>Cariodes</i>	<i>cyprinus</i>										
<i>Hypentelium</i>	<i>nigricans</i>										
<i>Ictiobus</i>	<i>bubalus</i>										
<i>Moxostoma</i>	<i>anisurum</i>										
<i>Moxostoma</i>	<i>breviceps</i>										
<i>Moxostoma</i>	<i>carinatum</i>										
<i>Moxostoma</i>	<i>erythrurum</i>										
<i>Cariodes</i>	<i>sp/spp</i>										
<i>Ictiobus</i>	<i>sp/spp</i>										
<i>Moxostoma</i>	<i>sp/spp</i>										
<i>Catostomidae</i>	<i>sp/spp</i>										
<i>Ictalurus</i>	<i>punctatus</i>	4						1			
<i>Pylodictis</i>	<i>olivaris</i>										
<i>Percopsis</i>	<i>omiscomaycus</i>										
<i>Fundulus</i>	<i>diaphinus</i>										
<i>Labidesthes</i>	<i>sicculus</i>										
<i>Cottus</i>	<i>bairdi</i>										
<i>Morone</i>	<i>chrysops</i>										
<i>Morone</i>	<i>saxatilis</i>										
<i>Moronidae</i>	<i>sp/spp</i>										
<i>Ambloplites</i>	<i>rupestris</i>										

<i>Lepomis</i>	<i>macrochirus</i>											
<i>Micropterus</i>	<i>dolomieu</i>											
<i>Micropterus</i>	<i>punctulatus</i>											
<i>Micropterus</i>	<i>salmoides</i>											
<i>Pomoxis</i>	<i>nigromaculatus</i>											
<i>Etheostoma</i>	<i>blennioides</i>											
<i>Etheostoma</i>	<i>caeruleum</i>											
<i>Etheostoma</i>	<i>camurum</i>											
<i>Etheostoma</i>	<i>flabellare</i>											
<i>Etheostoma</i>	<i>nigrum</i>						3					
<i>Etheostoma</i>	<i>tippecanoe</i>				1							
<i>Etheostoma</i>	<i>zonale</i>				1							
<i>Perca</i>	<i>flavescens</i>											
<i>Percina</i>	<i>caprodes</i>	4	1		3	4			9			
<i>Percina</i>	<i>copelandi</i>	54	111	12	89	22	116		211			
<i>Percina</i>	<i>evides</i>											
<i>Percina</i>	<i>macrocephala</i>											
<i>Percina</i>	<i>shumardi</i>											
<i>Sander</i>	<i>vitreus</i>											
<i>Sander</i>	<i>sp/spp</i>											
<i>Percidae</i>	<i>sp/spp</i>											
<i>Aplodinotus</i>	<i>grunniens</i>	1							5			
UNKNOWN												

Table 1. Fishes collected by trawls at Station 6 (Emsworth Pool) on 6 August, 2009.

		RDB		RC				LDB	
		Bot		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chryschloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>					1			
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Macrhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>					5			
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>								
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>				2			8	
<i>Pylodictis</i>	<i>olivaris</i>							1	
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>		5	1	1				
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>			5				11	
UNKNOWN									

Table 1. Fishes collected by trawls at Station 7 (Emsworth Pool) on 6 August, 2009.

		RDB		MC		LDB			
		Bot		Bot		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chryschloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>							1	
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Machybopsis</i>	<i>storeiana</i>	1		1		1			
<i>Notropis</i>	<i>atherinoides</i>							5	1
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	60	4	10	5	2			
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>			4		11	2		
<i>Pylodictis</i>	<i>olivaris</i>			1					
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>							2	1
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>		1		2		2		
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>			2	1				
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>		1						
<i>Percina</i>	<i>copelandi</i>		10	19	41		5	2	
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>			5	8		4	5	
UNKNOWN			1						

Table 1. Fishes collected by trawls at Station 8 (Emsworth Pool) on 6 August, 2009.

		RDB		MC	
		Surf		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>			9	
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>aiooides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyropsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>			9	
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
Cyprinidae	sp/spp				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>	3			
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>				
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 9 (Emsworth Pool) on 6 August, 2009.

		RDB				RC				LDB	
		Bot		Surf		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>										
<i>Amia</i>	<i>calva</i>										
<i>Alosa</i>	<i>chrysochloris</i>										
<i>Dorosoma</i>	<i>cepedianum</i>										
<i>Clupeidae</i>	<i>sp/spp</i>										
<i>Hiodon</i>	<i>alosoides</i>										
<i>Hiodon</i>	<i>tergisus</i>										
<i>Esocidae</i>	<i>sp/spp</i>										
<i>Campostoma</i>	<i>anomalum</i>										
<i>Cyprinella</i>	<i>spiloptera</i>										
<i>Cyprinus</i>	<i>carpio</i>										
<i>Erimystax</i>	<i>dissimilis</i>					9	3				
<i>Hybopsis</i>	<i>amblops</i>										
<i>Machyropsis</i>	<i>storeriana</i>										
<i>Notropis</i>	<i>atherinoides</i>			12							
<i>Notropis</i>	<i>hudsonius</i>										
<i>Notropis</i>	<i>rubellus</i>										
<i>Notropis</i>	<i>stramineus</i>										
<i>Notropis</i>	<i>volucellus</i>	3	4							1	
<i>Pimephales</i>	<i>notatus</i>										
<i>Pimephales</i>	<i>promelas</i>										
<i>Rhinichthys</i>	<i>obtus</i>										
<i>Cyprinidae</i>	<i>sp/spp</i>										
<i>Carpiodes</i>	<i>cyprinus</i>										
<i>Hypentelium</i>	<i>nigricans</i>										
<i>Ictiobus</i>	<i>bubalus</i>										
<i>Moxostoma</i>	<i>anisurum</i>										
<i>Moxostoma</i>	<i>breviceps</i>										
<i>Moxostoma</i>	<i>carinatum</i>										
<i>Moxostoma</i>	<i>erythrurum</i>										
<i>Carpiodes</i>	<i>sp/spp</i>										
<i>Ictiobus</i>	<i>sp/spp</i>										
<i>Moxostoma</i>	<i>sp/spp</i>										
<i>Catostomidae</i>	<i>sp/spp</i>										
<i>Ictalurus</i>	<i>punctatus</i>	1				24				19	
<i>Pylodictis</i>	<i>olivaris</i>										
<i>Percopsis</i>	<i>omiscoycaus</i>										
<i>Fundulus</i>	<i>diaphinus</i>										
<i>Labidesthes</i>	<i>sicculus</i>										
<i>Cottus</i>	<i>bairdi</i>										
<i>Morone</i>	<i>chrysops</i>										
<i>Morone</i>	<i>saxatilis</i>										
<i>Moronidae</i>	<i>sp/spp</i>										
<i>Ambloplites</i>	<i>rupestris</i>										

<i>Lepomis</i>	<i>macrochirus</i>						1			
<i>Micropterus</i>	<i>dolomieu</i>									
<i>Micropterus</i>	<i>punctulatus</i>									
<i>Micropterus</i>	<i>salmoides</i>									
<i>Pomoxis</i>	<i>nigromaculatus</i>									
<i>Etheostoma</i>	<i>blennioides</i>									
<i>Etheostoma</i>	<i>caeruleum</i>									
<i>Etheostoma</i>	<i>camurum</i>									
<i>Etheostoma</i>	<i>flabellare</i>									
<i>Etheostoma</i>	<i>nigrum</i>									3
<i>Etheostoma</i>	<i>tippecanoe</i>									
<i>Etheostoma</i>	<i>zonale</i>	1								1
<i>Perca</i>	<i>flavescens</i>									
<i>Percina</i>	<i>caprodes</i>	1								
<i>Percina</i>	<i>copelandi</i>					2				2
<i>Percina</i>	<i>evides</i>									
<i>Percina</i>	<i>macrocephala</i>									
<i>Percina</i>	<i>shumardi</i>									
<i>Sander</i>	<i>vitreus</i>									
<i>Sander</i>	<i>sp/spp</i>									
<i>Percidae</i>	<i>sp/spp</i>									
<i>Aplodinotus</i>	<i>grunniens</i>					1				8
UNKNOWN										

Table 1. Fishes collected by trawls at Station 10 (Emsworth Pool) on 6 August, 2009.

		RDB Bot		RC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisis</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>			3			
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubolus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>					2	
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>		2				
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>		1				
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>		4		1		2
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>		1		2		
<i>Percina</i>	<i>copelandi</i>		6		2	2	1
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>		1				
<i>Aplodinotus</i>	<i>grunniens</i>					1	
UNKNOWN							

Table 1. Fishes collected by trawls at Station 11 (Emsworth Pool) on 6 August, 2009.

		RDB		RC				LDB	
		Bot		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>aliosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>sploptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Machyropsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>					3			
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	53	5	2				4	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>							1	
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	104		3					
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>				1				
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>		3						
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>			1				21	
UNKNOWN									

Table 2. Fishes collected by trawls at Station 12 (Dashields Pool) on 5 August, 2009.

		RDB		RC		LC		LDB	
		Bot		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chryschloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Machybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>					1			
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	84	26	21		1	3	5	14
<i>Pimephales</i>	<i>notatus</i>					1		4	
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusus</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>	1							
<i>Pylodictis</i>	<i>olivaris</i>					1			
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>	3							
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>	1							
<i>Etheostoma</i>	<i>caeruleum</i>	2	2		8		3		2
<i>Etheostoma</i>	<i>camurum</i>				2		1		
<i>Etheostoma</i>	<i>flabellare</i>								1
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>			1		2	2		
<i>Etheostoma</i>	<i>zonale</i>	1			1				
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>	2	3	3	34	2	13		12
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 2. Fishes collected by trawls at Station 13 (Dashields Pool) on 5 August, 2009.

		RDB				MC				LDB	
		Bot		Surf		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>										
<i>Amia</i>	<i>calva</i>										
<i>Alosa</i>	<i>chryschloris</i>										
<i>Dorosoma</i>	<i>cepedianum</i>										
<i>Clupeidae</i>	<i>sp/spp</i>										
<i>Hiodon</i>	<i>allosoides</i>										
<i>Hiodon</i>	<i>tergisus</i>										
<i>Esocidae</i>	<i>sp/spp</i>										
<i>Campostoma</i>	<i>anomalum</i>										
<i>Cyprinella</i>	<i>spiloptera</i>										
<i>Cyprinus</i>	<i>carpio</i>										
<i>Erimystax</i>	<i>dissimilis</i>										
<i>Hybopsis</i>	<i>amblops</i>										
<i>Machybopsis</i>	<i>storeriana</i>					1					
<i>Notropis</i>	<i>atherinoides</i>										
<i>Notropis</i>	<i>hudsonius</i>										
<i>Notropis</i>	<i>rubellus</i>										
<i>Notropis</i>	<i>stramineus</i>										
<i>Notropis</i>	<i>volucellus</i>		2			2				27	
<i>Pimephales</i>	<i>notatus</i>										
<i>Pimephales</i>	<i>promelas</i>										
<i>Rhinichthys</i>	<i>obtusius</i>										
<i>Cyprinidae</i>	<i>sp/spp</i>										
<i>Cariodes</i>	<i>cyprinus</i>										
<i>Hypentelium</i>	<i>nigricans</i>										
<i>Ictiobus</i>	<i>bubalus</i>										
<i>Moxostoma</i>	<i>anisurum</i>										
<i>Moxostoma</i>	<i>breviceps</i>										
<i>Moxostoma</i>	<i>carinatum</i>										
<i>Moxostoma</i>	<i>erythrurum</i>										
<i>Cariodes</i>	<i>sp/spp</i>										
<i>Ictiobus</i>	<i>sp/spp</i>										
<i>Moxostoma</i>	<i>sp/spp</i>										
<i>Catostomidae</i>	<i>sp/spp</i>										
<i>Ictalurus</i>	<i>punctatus</i>										
<i>Pylodictis</i>	<i>olivaris</i>										
<i>Percopsis</i>	<i>omiscamaycus</i>										
<i>Fundulus</i>	<i>diaphinus</i>										
<i>Labidesthes</i>	<i>sicculus</i>										
<i>Cottus</i>	<i>bairdi</i>										
<i>Morone</i>	<i>chrysops</i>										
<i>Morone</i>	<i>saxatilis</i>										
<i>Moronidae</i>	<i>sp/spp</i>										
<i>Ambloplites</i>	<i>rupestris</i>										

<i>Lepomis</i>	<i>macrochirus</i>			1				1			
<i>Micropterus</i>	<i>dolomieu</i>										
<i>Micropterus</i>	<i>punctulatus</i>										
<i>Micropterus</i>	<i>salmoides</i>										
<i>Pomoxis</i>	<i>nigromaculatus</i>										
<i>Etheostoma</i>	<i>blennioides</i>										
<i>Etheostoma</i>	<i>caeruleum</i>										
<i>Etheostoma</i>	<i>camurum</i>		1							1	1
<i>Etheostoma</i>	<i>flabellare</i>					1					
<i>Etheostoma</i>	<i>nigrum</i>										
<i>Etheostoma</i>	<i>tippecanoe</i>										1
<i>Etheostoma</i>	<i>zonale</i>									2	1
<i>Perca</i>	<i>flavescens</i>										
<i>Percina</i>	<i>caprodes</i>										
<i>Percina</i>	<i>copelandi</i>		2								31
<i>Percina</i>	<i>evides</i>										
<i>Percina</i>	<i>macrocephala</i>										
<i>Percina</i>	<i>shumardi</i>										
<i>Sander</i>	<i>vitreus</i>										
<i>Sander</i>	<i>sp/spp</i>									1	
<i>Percidae</i>	<i>sp/spp</i>										
<i>Aplodinotus</i>	<i>grunniens</i>										3
UNKNOWN											

Table 2. Fishes collected by trawls at Station 14 (Dashields Pool) on 5 August, 2009.

		MC				LDB	
		Bot		Surf		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>aliosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		1				
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>	16					
<i>Pylodictis</i>	<i>olivaris</i>					1	
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>		1				
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>		3			1	
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>	1	1				
UNKNOWN				1			

Table2n. Fishes collected by trawls at Station 15 (Dashields Pool) on 5 August, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>			1			
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>aliosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>	4				1	
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		7	1	5	2	15
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>			1			
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>	2		33			
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>		1				3
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>						
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						1
<i>Percina</i>	<i>copelandi</i>	4		1		3	21
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>	2		2		20	
UNKNOWN							

Table 3. Fishes collected by trawls at Station 16 (Montgomery Pool) on 5 August, 2009.

		RDB		RC		LC				LDB			
		Surf		Bot		Bot		Surf		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>												
<i>Amia</i>	<i>calva</i>												
<i>Alosa</i>	<i>chrysochloris</i>												
<i>Dorosoma</i>	<i>cepedianum</i>												
<i>Clupeidae</i>	<i>sp/spp</i>												
<i>Hiodon</i>	<i>aiosoides</i>												
<i>Hiodon</i>	<i>tergisus</i>												
<i>Esocidae</i>	<i>sp/spp</i>												
<i>Campostoma</i>	<i>anomalum</i>												
<i>Cyprinella</i>	<i>spiloptera</i>												
<i>Cyprinus</i>	<i>carpio</i>												
<i>Erimystax</i>	<i>dissimilis</i>												
<i>Hybopsis</i>	<i>amblops</i>												
<i>Machybopsis</i>	<i>storeriana</i>												
<i>Notropis</i>	<i>atherinoides</i>												
<i>Notropis</i>	<i>hudsonius</i>												
<i>Notropis</i>	<i>rubellus</i>												
<i>Notropis</i>	<i>stramineus</i>												
<i>Notropis</i>	<i>volucellus</i>					14				3	34		
<i>Pimephales</i>	<i>notatus</i>												
<i>Pimephales</i>	<i>promelas</i>												
<i>Rhinichthys</i>	<i>obtus</i>												
<i>Cyprinidae</i>	<i>sp/spp</i>			2									
<i>Cariodes</i>	<i>cyprinus</i>												
<i>Hypentelium</i>	<i>nigricans</i>												
<i>Ictiobus</i>	<i>bubalus</i>												
<i>Moxostoma</i>	<i>anisurum</i>												
<i>Moxostoma</i>	<i>breviceps</i>												
<i>Moxostoma</i>	<i>carinatum</i>												
<i>Moxostoma</i>	<i>erythrurum</i>												
<i>Cariodes</i>	<i>sp/spp</i>												
<i>Ictiobus</i>	<i>sp/spp</i>												
<i>Moxostoma</i>	<i>sp/spp</i>												
<i>Catostomidae</i>	<i>sp/spp</i>												
<i>Ictalurus</i>	<i>punctatus</i>												
<i>Pylodictis</i>	<i>olivaris</i>												
<i>Percopsis</i>	<i>omiscomaycus</i>												
<i>Fundulus</i>	<i>diaphinus</i>												
<i>Labidesthes</i>	<i>sicculus</i>	14											
<i>Cottus</i>	<i>bairdi</i>												
<i>Morone</i>	<i>chrysops</i>												
<i>Morone</i>	<i>saxatilis</i>									2			
<i>Moronidae</i>	<i>sp/spp</i>												
<i>Ambloplites</i>	<i>rupestris</i>												

<i>Lepomis</i>	<i>macrochirus</i>	1								1			1
<i>Micropterus</i>	<i>dolomieu</i>												
<i>Micropterus</i>	<i>punctulatus</i>												
<i>Micropterus</i>	<i>salmoides</i>												
<i>Pomoxis</i>	<i>nigromaculatus</i>												
<i>Etheostoma</i>	<i>blennioides</i>												
<i>Etheostoma</i>	<i>caeruleum</i>									10			
<i>Etheostoma</i>	<i>camurum</i>			1	3		1						
<i>Etheostoma</i>	<i>flabellare</i>												
<i>Etheostoma</i>	<i>nigrum</i>									1			
<i>Etheostoma</i>	<i>tippecanoe</i>												
<i>Etheostoma</i>	<i>zonale</i>												
<i>Perca</i>	<i>flavescens</i>												
<i>Percina</i>	<i>caprodes</i>									1			
<i>Percina</i>	<i>copelandi</i>			1		44			7	15			
<i>Percina</i>	<i>evides</i>												
<i>Percina</i>	<i>macrocephala</i>												
<i>Percina</i>	<i>shumardi</i>					3				2			
<i>Sander</i>	<i>vitreus</i>												
<i>Sander</i>	<i>sp/spp</i>												
<i>Percidae</i>	<i>sp/spp</i>												
<i>Aplodinotus</i>	<i>grunniens</i>												
UNKNOWN							1						

Table 3. Fishes collected by trawls at Station 17 (Montgomery Pool) on 3 August, 2009.

		RDB				RC			
		Bot		Surf		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>			1					
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Machyropsis</i>	<i>storeriana</i>	1							
<i>Notropis</i>	<i>atherinoides</i>			1					
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>	42				1	14	1	
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Cariodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Cariodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>					2			
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>			1					
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>								
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>						1		
<i>Percina</i>	<i>copelandi</i>	12	19				5		
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>		3				1		
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>					1			
UNKNOWN									

Table 3. Fishes collected by trawls at Station 18 (Montgomery Pool) on 3 August, 2009.

		RDB			
		Bot		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>			1	
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>	11			
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyropsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	48	142		
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
Cyprinidae	sp/spp				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>	1			
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>	30			
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>		2		
<i>Etheostoma</i>	<i>caeruleum</i>	1			
<i>Etheostoma</i>	<i>camurum</i>		5		
<i>Etheostoma</i>	<i>flabellare</i>		1		
<i>Etheostoma</i>	<i>nigrum</i>	1	3		
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>	2	3		
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>	1	4		
<i>Percina</i>	<i>copelandi</i>	7	99		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>		7		
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>	1			
UNKNOWN					

Table 3. Fishes collected by trawls at Station 19 (Montgomery Pool) on 3 August, 2009.

		LDB			
		Bot		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>		1		
<i>Machyropsis</i>	<i>storeriana</i>	24	3		
<i>Notropis</i>	<i>atherinoides</i>			1	
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	6	17	12	9
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Cariodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Cariodes</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>	1			
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>		3		
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				1
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>	6		7	
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>	1			
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>		1		
<i>Etheostoma</i>	<i>nigrum</i>		1		
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>	2			
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>		1		
<i>Percina</i>	<i>copelandi</i>	17	10	1	
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>		2		
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>	1			
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>	34		3	
UNKNOWN					

Table 3. Fishes collected by trawls at Station 20 (Montgomery Pool) on 3 August, 2009.

		RDB		MC		LDB			
		Bot		Mid		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>								
<i>Clupeidae</i>	<i>sp/spp</i>								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
<i>Esocidae</i>	<i>sp/spp</i>								
<i>Camptostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Machyhybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>								
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>					1			
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusius</i>								
<i>Cyprinidae</i>	<i>sp/spp</i>								
<i>Cariodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>								
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Cariodes</i>	<i>sp/spp</i>								
<i>Ictiobus</i>	<i>sp/spp</i>								
<i>Moxostoma</i>	<i>sp/spp</i>								
<i>Catostomidae</i>	<i>sp/spp</i>								
<i>Ictalurus</i>	<i>punctatus</i>								
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
<i>Moronidae</i>	<i>sp/spp</i>								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>blennioides</i>		1		1				
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>								
<i>Etheostoma</i>	<i>zonale</i>		5		7		1		
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>								
<i>Percina</i>	<i>copelandi</i>								
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>								
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>		1		1		2		1
UNKNOWN									

Table 3. Fishes collected by trawls at Station 21 (Montgomery Pool) on 3 August, 2009.

		MC			
		Bot		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>			1	
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machybopsis</i>	<i>storeriana</i>	1			
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	1			
<i>Pimephales</i>	<i>notatus</i>		1		
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
Cyprinidae	sp/spp				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>	1			
<i>Moxostoma</i>	<i>breviceps</i>	1			
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>	1			
<i>Carpiodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>	1			
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>	2			
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>	1			
<i>Perca</i>	<i>flavescens</i>	4			
<i>Percina</i>	<i>caprodes</i>	12			
<i>Percina</i>	<i>copelandi</i>	1	2		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>		1		
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>	1			
<i>Percidae</i>	<i>sp/spp</i>		2		
<i>Aplodinotus</i>	<i>grunniens</i>	41			
UNKNOWN					

Table 3. Fishes collected by trawls at Station 22 (Montgomery Pool) on 3 August, 2009.

		RDB Bot		RC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
Clupeidae	sp/spp						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
Esocidae	sp/spp						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>		5		10		
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>				1		
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusum</i>						
Cyprinidae	sp/spp						
<i>Carpodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpodes</i>	sp/spp						
<i>Ictiobus</i>	sp/spp						
<i>Moxostoma</i>	sp/spp						
Catostomidae	sp/spp						
<i>Ictalurus</i>	<i>punctatus</i>			1			
<i>Pylodictis</i>	<i>olivaris</i>	1					
<i>Percopsis</i>	<i>omiscumaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
Moronidae	sp/spp						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>biennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>					1	
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>					8	
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						1
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>	10		14		25	
UNKNOWN							

Table 3. Fishes collected by trawls at Station 23 (Montgomery Pool) on 3 August, 2009.

<i>Lepisosteus</i>	<i>osseus</i>
<i>Ambloplites</i>	<i>rupestris</i>
<i>Lepomis</i>	<i>macrochirus</i>
<i>Amia</i>	<i>calva</i>
<i>Alosa</i>	<i>chrysochloris</i>
<i>Dorosoma</i>	<i>cepedianum</i>
<i>Clupeidae</i>	<i>sp/spp</i>
<i>Hiodon</i>	<i>alosoides</i>
<i>Hiodon</i>	<i>tergatus</i>
<i>Esocidae</i>	<i>sp/spp</i>
<i>Campostoma</i>	<i>anomalum</i>
<i>Cyprinella</i>	<i>spiloptera</i>
<i>Cyprinus</i>	<i>carpio</i>
<i>Erimystax</i>	<i>dissimilis</i>
<i>Hybopsis</i>	<i>amblops</i>
<i>Macrhybopsis</i>	<i>storeriana</i>
<i>Notropis</i>	<i>atherinoides</i>
<i>Notropis</i>	<i>hudsonius</i>
<i>Notropis</i>	<i>rubellus</i>
<i>Notropis</i>	<i>stramineus</i>
<i>Notropis</i>	<i>volucellus</i>
<i>Pimephales</i>	<i>notatus</i>
<i>Pimephales</i>	<i>promelas</i>
<i>Rhinichthys</i>	<i>obtusum</i>
<i>Cyprinidae</i>	<i>sp/spp</i>
<i>Carpodes</i>	<i>cyprinus</i>
<i>Hypentelium</i>	<i>nigricans</i>
<i>Ictiobus</i>	<i>bubalus</i>
<i>Moxostoma</i>	<i>anisurum</i>
<i>Moxostoma</i>	<i>breviceps</i>
<i>Moxostoma</i>	<i>carinatum</i>
<i>Moxostoma</i>	<i>erythrurum</i>
<i>Carpodes</i>	<i>sp/spp</i>
<i>Ictiobus</i>	<i>sp/spp</i>
<i>Moxostoma</i>	<i>sp/spp</i>
<i>Catostomidae</i>	<i>sp/spp</i>
<i>Ictalurus</i>	<i>punctatus</i>
<i>Pygocentrus</i>	<i>alvaris</i>
<i>Percopsis</i>	<i>omiscomaycus</i>
<i>Fundulus</i>	<i>diaphinus</i>
<i>Labidesthes</i>	<i>sicculus</i>
<i>Cottus</i>	<i>bairdi</i>
<i>Morone</i>	<i>chrysops</i>
<i>Morone</i>	<i>saxatilis</i>
<i>Moronidae</i>	<i>sp/spp</i>

<i>Micropterus</i>	<i>dolomieu</i>
<i>Micropterus</i>	<i>punctulatus</i>
<i>Micropterus</i>	<i>salmoides</i>
<i>Pomoxis</i>	<i>nigromaculatus</i>
<i>Etheostoma</i>	<i>blennioides</i>
<i>Etheostoma</i>	<i>caeruleum</i>
<i>Etheostoma</i>	<i>camurum</i>
<i>Etheostoma</i>	<i>flabellare</i>
<i>Etheostoma</i>	<i>nigrum</i>
<i>Etheostoma</i>	<i>tippecanoe</i>
<i>Etheostoma</i>	<i>zonale</i>
<i>Perca</i>	<i>flavescens</i>
<i>Percina</i>	<i>caprodes</i>
<i>Percina</i>	<i>copelandi</i>
<i>Percina</i>	<i>evides</i>
<i>Percina</i>	<i>macrocephala</i>
<i>Percina</i>	<i>shumardi</i>
<i>Sander</i>	<i>vitreus</i>
<i>Sander</i>	<i>sp/spp</i>
<i>Percidae</i>	<i>sp/spp</i>
<i>Aplodinotus</i>	<i>grunniens</i>
UNKNOWN	

Table 4. Fishes collected by trawls at Station 24 (New Cumberland Pool) on 4 August, 2009.

		RDB		RC		LC		LDB	
		Bot		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>								
<i>Amia</i>	<i>calva</i>								
<i>Alosa</i>	<i>chrysochloris</i>								
<i>Dorosoma</i>	<i>cepedianum</i>					1			
Clupeidae	sp/spp								
<i>Hiodon</i>	<i>alosoides</i>								
<i>Hiodon</i>	<i>tergisus</i>								
Esocidae	sp/spp								
<i>Campostoma</i>	<i>anomalum</i>								
<i>Cyprinella</i>	<i>spiloptera</i>								
<i>Cyprinus</i>	<i>carpio</i>								
<i>Erimystax</i>	<i>dissimilis</i>								
<i>Hybopsis</i>	<i>amblops</i>								
<i>Machybopsis</i>	<i>storeriana</i>								
<i>Notropis</i>	<i>atherinoides</i>				1				
<i>Notropis</i>	<i>hudsonius</i>								
<i>Notropis</i>	<i>rubellus</i>								
<i>Notropis</i>	<i>stramineus</i>								
<i>Notropis</i>	<i>volucellus</i>		16		2				
<i>Pimephales</i>	<i>notatus</i>								
<i>Pimephales</i>	<i>promelas</i>								
<i>Rhinichthys</i>	<i>obtusus</i>								
Cyprinidae	sp/spp								
<i>Carpiodes</i>	<i>cyprinus</i>								
<i>Hypentelium</i>	<i>nigricans</i>	1							
<i>Ictiobus</i>	<i>bubalus</i>								
<i>Moxostoma</i>	<i>anisurum</i>								
<i>Moxostoma</i>	<i>breviceps</i>								
<i>Moxostoma</i>	<i>carinatum</i>								
<i>Moxostoma</i>	<i>erythrurum</i>								
<i>Carpiodes</i>	sp/spp								
<i>Ictiobus</i>	sp/spp								
<i>Moxostoma</i>	sp/spp								
Catostomidae	sp/spp								
<i>Ictalurus</i>	<i>punctatus</i>			2		14		3	
<i>Pylodictis</i>	<i>olivaris</i>								
<i>Percopsis</i>	<i>omiscomaycus</i>								
<i>Fundulus</i>	<i>diaphinus</i>								
<i>Labidesthes</i>	<i>sicculus</i>								
<i>Cottus</i>	<i>bairdi</i>								
<i>Morone</i>	<i>chrysops</i>								
<i>Morone</i>	<i>saxatilis</i>								
Moronidae	sp/spp								
<i>Ambloplites</i>	<i>rupestris</i>								

<i>Lepomis</i>	<i>macrochirus</i>								
<i>Micropterus</i>	<i>dolomieu</i>								
<i>Micropterus</i>	<i>punctulatus</i>								
<i>Micropterus</i>	<i>salmoides</i>								
<i>Pomoxis</i>	<i>nigromaculatus</i>								
<i>Etheostoma</i>	<i>biennioides</i>								
<i>Etheostoma</i>	<i>caeruleum</i>								
<i>Etheostoma</i>	<i>camurum</i>								
<i>Etheostoma</i>	<i>flabellare</i>								
<i>Etheostoma</i>	<i>nigrum</i>								
<i>Etheostoma</i>	<i>tippecanoe</i>			1	6				
<i>Etheostoma</i>	<i>zonale</i>	3		2					
<i>Perca</i>	<i>flavescens</i>								
<i>Percina</i>	<i>caprodes</i>		1					17	15
<i>Percina</i>	<i>copelandi</i>	8	114	6	139	2	30		15
<i>Percina</i>	<i>evides</i>								
<i>Percina</i>	<i>macrocephala</i>								
<i>Percina</i>	<i>shumardi</i>		13		21		2		11
<i>Sander</i>	<i>vitreus</i>								
<i>Sander</i>	<i>sp/spp</i>								
<i>Percidae</i>	<i>sp/spp</i>								
<i>Aplodinotus</i>	<i>grunniens</i>								
UNKNOWN									

Table 4. Fishes collected by trawls at Station 25 (New Cumberland Pool) on 4 August, 2009.

		RDB		MC	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>			1	
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>				
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
Cyprinidae	sp/spp				
<i>Carpodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				1
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				11
<i>Percina</i>	<i>copelandi</i>				6
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>		1		7
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>	4		3	
UNKNOWN					

Table 4. Fishes collected by trawls at Station 26 (New Cumberland Pool) on 4 August, 2009.

		RDB		RC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
Clupeidae	sp/spp						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
Esocidae	sp/spp						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>	4	12		5		3
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusum</i>						
Cyprinidae	sp/spp						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	sp/spp						
<i>Ictiobus</i>	sp/spp						
<i>Moxostoma</i>	sp/spp						
Catostomidae	sp/spp						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
Moronidae	sp/spp						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>	1				
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>biennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>	1		1		
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>	3		1		3
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>	1		1	1	
<i>Percina</i>	<i>copelandi</i>	10	18	10	11	12
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>			3		
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>	4		1		1
UNKNOWN						

Table 4. Fishes collected by trawls at Station 27 (New Cumberland Pool) on 4 August, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
Clupeidae	sp/spp						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
Esocidae	sp/spp						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>			1			
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						1
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusum</i>						
Cyprinidae	sp/spp						
<i>Cariodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Cariodes</i>	sp/spp						
<i>Ictiobus</i>	sp/spp						
<i>Moxostoma</i>	sp/spp						
Catostomidae	sp/spp						
<i>Ictalurus</i>	<i>punctatus</i>			1			
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
Moronidae	sp/spp						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>						
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>biennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>						
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>	1					
<i>Percina</i>	<i>copelandi</i>	3	6	2		2	
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>			1			
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>	2		11		9	
UNKNOWN							

Table 4. Fishes collected by trawls at Station 28 (New Cumberland Pool) on 4 August, 2009.

		MC			
		Bot		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
Clupeidae	sp/spp				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
Esocidae	sp/spp				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Machyobopsis</i>	<i>storeriana</i>		1		
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		6		
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
Cyprinidae	sp/spp				
<i>Carpiodes</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpiodes</i>	sp/spp				
<i>Ictiobus</i>	sp/spp				
<i>Moxostoma</i>	sp/spp				
Catostomidae	sp/spp				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
Moronidae	sp/spp				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>		2		
<i>Etheostoma</i>	<i>caeruleum</i>	2	6		6
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>		1		
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>	2			
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>	5			
<i>Percina</i>	<i>copelandi</i>	2	16		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>	3			
UNKNOWN					

Table 4. Fishes collected by trawls at Station 29 (New Cumberland Pool) on 4 August, 2009.

		RDB		RC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
Clupeidae	sp/spp						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
Esocidae	sp/spp						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Machyropsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		8		1		
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusis</i>						
Cyprinidae	sp/spp						
<i>Cariodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Cariodes</i>	sp/spp						
<i>Ictiobus</i>	sp/spp						
<i>Moxostoma</i>	sp/spp						
Catostomidae	sp/spp						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>		1				
Moronidae	sp/spp						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>biennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>			1		
<i>Etheostoma</i>	<i>camurum</i>			1		
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>		1			1
<i>Percina</i>	<i>copelandi</i>	17	32	3	8	
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>		6		3	
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>	1			5	
UNKNOWN						

APPENDIX VII

Fishes collected by trawls in October 2009

Table 1. Fishes collected by trawls at Station 1 (Emsworth Pool) on 15 october, 2009.

		RDB				MC				LDB			
		Bot		Surf		Bot		Surf		Bot		Surf	
		YOY	1+	YOY	1+	YOY	1+	YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>												
<i>Amia</i>	<i>calva</i>												
<i>Alasa</i>	<i>chrysochloris</i>												
<i>Dorosoma</i>	<i>cepedianum</i>												
<i>Clupeidae</i>	<i>sp/spp</i>												
<i>Hiodon</i>	<i>alosoides</i>												
<i>Hiodon</i>	<i>tergisus</i>												
<i>Esocidae</i>	<i>sp/spp</i>												
<i>Campostoma</i>	<i>anomalum</i>												
<i>Cyprinella</i>	<i>spiloptera</i>												
<i>Cyprinus</i>	<i>carpio</i>												
<i>Erimystax</i>	<i>dissimilis</i>					1							
<i>Hybopsis</i>	<i>amblops</i>												
<i>Macrhybopsis</i>	<i>storeriana</i>												
<i>Notropis</i>	<i>atherinoides</i>												
<i>Notropis</i>	<i>hudsonius</i>												
<i>Notropis</i>	<i>rubellus</i>												
<i>Notropis</i>	<i>stramineus</i>												
<i>Notropis</i>	<i>volucellus</i>												
<i>Pimephales</i>	<i>notatus</i>												
<i>Pimephales</i>	<i>promelas</i>												
<i>Rhinichthys</i>	<i>obtusius</i>												
<i>Cyprinidae</i>	<i>sp/spp</i>												
<i>Carpiodes</i>	<i>cyprinus</i>												
<i>Hypentelium</i>	<i>nigricans</i>												
<i>Ictiobus</i>	<i>bubalus</i>												
<i>Moxostoma</i>	<i>anisurum</i>												
<i>Moxostoma</i>	<i>breviceps</i>												
<i>Moxostoma</i>	<i>carinatum</i>												
<i>Moxostoma</i>	<i>erythrurum</i>												
<i>Carpiodes</i>	<i>sp/spp</i>												
<i>Ictiobus</i>	<i>sp/spp</i>												
<i>Moxostoma</i>	<i>sp/spp</i>												
<i>Catostomidae</i>	<i>sp/spp</i>												
<i>Ictalurus</i>	<i>punctatus</i>												
<i>Pylodictis</i>	<i>olivaris</i>												
<i>Percopsis</i>	<i>omiscomaycus</i>												
<i>Fundulus</i>	<i>diaphinus</i>												
<i>Labidesthes</i>	<i>sicculus</i>												
<i>Cottus</i>	<i>bairdi</i>												
<i>Morone</i>	<i>chrysops</i>												
<i>Morone</i>	<i>saxatilis</i>												
<i>Moronidae</i>	<i>sp/spp</i>												
<i>Ambloplites</i>	<i>rupestris</i>												
<i>Lepomis</i>	<i>macrochirus</i>												

Table 1. Fishes collected by trawls at Station 2 (Emsworth Pool) on 15 October, 2009.

		RDB		LDB	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>allosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>		1		
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>		1		
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	1		8	13
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>alvaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>biennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				18
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				1
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		15	2	26
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 3 (Emsworth Pool) on 15 October, 2009.

		RDB		Surf		MC	
		Bot				Bot	
		YOY	1+	YO Y	1 +	YO Y	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusum</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						

<i>Ambloplites</i>	<i>rupestris</i>					
<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>			1		
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>	2				5
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					1
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>	18				26
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>	1				
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 1. Fishes collected by trawls at Station 4 (Emsworth Pool) on 15 October, 2009.

		RDB Bot		MC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alasa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>		7		1
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	14	275	4	127
<i>Pimephales</i>	<i>notatus</i>				3
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>		1		
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		9		1
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 1. Fishes collected by trawls at Station 9 (Emsworth Pool) on 15 October, 2009.

		RDB Bot		MC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alasa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		14		4
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscamaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>		1		1
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		1		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table1. Fishes collected by trawls at Station 11 (Emmsworth Pool) on 16 october, 2009.

		RDB Bot		MC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alasa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>	2		1		1	
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>biennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>						
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>						
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>						
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grünniens</i>						
UNKNOWN							

Table1. Fishes collected by trawls at Station 12 (Dashields Pool) on 16 october, 2009.

		RDB Bot		MC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alosa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		18				2
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictalobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictalobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscornaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>biennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>		1			
<i>Etheostoma</i>	<i>flabellare</i>			2		
<i>Etheostoma</i>	<i>nigrum</i>		1			
<i>Etheostoma</i>	<i>tippecanoe</i>			3		
<i>Etheostoma</i>	<i>zonale</i>			1		
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>		1			
<i>Percina</i>	<i>copelandi</i>		36	33		35
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>					
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 2. Fishes collected by trawls at Station 15 (Dashields Pool) on 16 October, 2009.

		RDB Bot		MC Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>aliosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>		1		
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		9		3
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>	1		
<i>Micropterus</i>	<i>dolomieu</i>			1
<i>Micropterus</i>	<i>punctulatus</i>			
<i>Micropterus</i>	<i>salmoides</i>			
<i>Pomoxis</i>	<i>nigromaculatus</i>			
<i>Etheostoma</i>	<i>blennioides</i>			
<i>Etheostoma</i>	<i>caeruleum</i>			
<i>Etheostoma</i>	<i>camurum</i>			
<i>Etheostoma</i>	<i>flabellare</i>			
<i>Etheostoma</i>	<i>nigrum</i>			1
<i>Etheostoma</i>	<i>tippecanoe</i>			
<i>Etheostoma</i>	<i>zonale</i>			
<i>Perca</i>	<i>flavescens</i>			
<i>Percina</i>	<i>caprodes</i>			
<i>Percina</i>	<i>copelandi</i>	8		3
<i>Percina</i>	<i>evides</i>			
<i>Percina</i>	<i>macrocephala</i>			
<i>Percina</i>	<i>shumardi</i>			
<i>Sander</i>	<i>vitreus</i>			
<i>Sander</i>	<i>sp/spp</i>			
<i>Percidae</i>	<i>sp/spp</i>			
<i>Aplodinotus</i>	<i>grunniens</i>			
UNKNOWN				

Table 3. Fishes collected by trawls at Station 16 (Montgomery Pool) on 16 October, 2009.

		RDB Bot		MC Bot		LDB Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alasa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>						
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscornaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>biennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>	5		4		
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>					1
<i>Etheostoma</i>	<i>tippecanoe</i>			1		
<i>Etheostoma</i>	<i>zonale</i>			1		1
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>	24		44		42
<i>Percina</i>	<i>evides</i>			1		
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>	1				
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 23. Fishes collected by trawls at Station 18 (Montgomery Pool) on 17 October, 2009.

		RDB		MC	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alasa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>	2	26		6
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>		1		1
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>		1		1
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		20		6
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aploidinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 3. Fishes collected by trawls at Station 21 (Montgomery Pool) on 17 October, 2009.

		MC	
		Bot	
		YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>		
<i>Amia</i>	<i>calva</i>		
<i>Alasa</i>	<i>chrysochloris</i>		
<i>Dorosoma</i>	<i>cepedianum</i>		
<i>Clupeidae</i>	<i>sp/spp</i>		
<i>Hiodon</i>	<i>alosoides</i>		
<i>Hiodon</i>	<i>tergisus</i>		
<i>Esocidae</i>	<i>sp/spp</i>		
<i>Campostoma</i>	<i>anomalum</i>		
<i>Cyprinella</i>	<i>spiloptera</i>		
<i>Cyprinus</i>	<i>carpio</i>		
<i>Erimystax</i>	<i>dissimilis</i>		
<i>Hybopsis</i>	<i>amblops</i>		
<i>Macrhybopsis</i>	<i>storeriana</i>		1
<i>Notropis</i>	<i>atherinoides</i>		
<i>Notropis</i>	<i>hudsonius</i>		
<i>Notropis</i>	<i>rubellus</i>		
<i>Notropis</i>	<i>stramineus</i>		
<i>Notropis</i>	<i>volucellus</i>		
<i>Pimephales</i>	<i>notatus</i>		
<i>Pimephales</i>	<i>promelas</i>		
<i>Rhinichthys</i>	<i>obtusus</i>		
<i>Cyprinidae</i>	<i>sp/spp</i>		
<i>Carpiodes</i>	<i>cyprinus</i>		
<i>Hypentelium</i>	<i>nigricans</i>		
<i>Ictiobus</i>	<i>bubalus</i>		
<i>Moxostoma</i>	<i>anisurum</i>		
<i>Moxostoma</i>	<i>breviceps</i>		
<i>Moxostoma</i>	<i>carinatum</i>		
<i>Moxostoma</i>	<i>erythrurum</i>	1	
<i>Carpiodes</i>	<i>sp/spp</i>		
<i>Ictiobus</i>	<i>sp/spp</i>		
<i>Moxostoma</i>	<i>sp/spp</i>		
<i>Catostomidae</i>	<i>sp/spp</i>		
<i>Ictalurus</i>	<i>punctatus</i>		
<i>Pylodictis</i>	<i>olivaris</i>		
<i>Percopsis</i>	<i>omiscomaycus</i>		
<i>Fundulus</i>	<i>diaphinus</i>		
<i>Labidesthes</i>	<i>sicculus</i>		
<i>Cottus</i>	<i>bairdi</i>		
<i>Morone</i>	<i>chrysops</i>		
<i>Morone</i>	<i>saxatilis</i>		
<i>Moronidae</i>	<i>sp/spp</i>		
<i>Ambloplites</i>	<i>rupestris</i>		

<i>Lepomis</i>	<i>macrochirus</i>		
<i>Micropterus</i>	<i>dolomieu</i>		
<i>Micropterus</i>	<i>punctulatus</i>		
<i>Micropterus</i>	<i>salmoides</i>		
<i>Pomoxis</i>	<i>nigromaculatus</i>		
<i>Etheostoma</i>	<i>blennioides</i>		
<i>Etheostoma</i>	<i>caeruleum</i>		
<i>Etheostoma</i>	<i>camurum</i>		
<i>Etheostoma</i>	<i>flabellare</i>		
<i>Etheostoma</i>	<i>nigrum</i>		
<i>Etheostoma</i>	<i>tippecanoe</i>		
<i>Etheostoma</i>	<i>zonale</i>		
<i>Perca</i>	<i>flavescens</i>		1
<i>Percina</i>	<i>caprodes</i>		1
<i>Percina</i>	<i>copelandi</i>		
<i>Percina</i>	<i>evides</i>		
<i>Percina</i>	<i>macrocephala</i>		
<i>Percina</i>	<i>shumardi</i>		
<i>Sander</i>	<i>vitreus</i>		
<i>Sander</i>	<i>sp/spp</i>		
<i>Percidae</i>	<i>sp/spp</i>		
<i>Aplodinotus</i>	<i>grunniens</i>		
UNKNOWN			

Table 3. Fishes collected by trawls at Station 22 (Montgomery Pool) on 17 October, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alasa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Camptostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>	6	2	3			
<i>Notropis</i>	<i>atherinoides</i>						1
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>					10	13
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusius</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpoides</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpoides</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>	1					
<i>Micropterus</i>	<i>dolomieu</i>						
<i>Micropterus</i>	<i>punctulatus</i>						
<i>Micropterus</i>	<i>salmoides</i>						
<i>Pomoxis</i>	<i>nigromaculatus</i>						
<i>Etheostoma</i>	<i>blennioides</i>						
<i>Etheostoma</i>	<i>caeruleum</i>						
<i>Etheostoma</i>	<i>camurum</i>						
<i>Etheostoma</i>	<i>flabellare</i>						
<i>Etheostoma</i>	<i>nigrum</i>						
<i>Etheostoma</i>	<i>tippecanoe</i>						
<i>Etheostoma</i>	<i>zonale</i>						
<i>Perca</i>	<i>flavescens</i>						
<i>Percina</i>	<i>caprodes</i>						
<i>Percina</i>	<i>copelandi</i>		2				3
<i>Percina</i>	<i>evides</i>						
<i>Percina</i>	<i>macrocephala</i>						
<i>Percina</i>	<i>shumardi</i>		1				
<i>Sander</i>	<i>vitreus</i>						
<i>Sander</i>	<i>sp/spp</i>						
<i>Percidae</i>	<i>sp/spp</i>						
<i>Aplodinotus</i>	<i>grunniens</i>						
UNKNOWN							

Table 4. Fishes collected by trawls at Station 24 (New Cumberland Pool) on 16 October, 2009.

		RDB		LDB	
		Bot		Bot	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alasa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeriana</i>				
<i>Notropis</i>	<i>atherinoides</i>		1		
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		6		2
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtus</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>				
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				1
<i>Etheostoma</i>	<i>tippecanoe</i>				1
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		105		30
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>		2		
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

Table 4. Fishes collected by trawls at Station 26(New Cumberland Pool) on 16 October, 2009.

		RDB		MC		LDB	
		Bot		Bot		Bot	
		YOY	1+	YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>						
<i>Amia</i>	<i>calva</i>						
<i>Alasa</i>	<i>chrysochloris</i>						
<i>Dorosoma</i>	<i>cepedianum</i>						
<i>Clupeidae</i>	<i>sp/spp</i>						
<i>Hiodon</i>	<i>alosoides</i>						
<i>Hiodon</i>	<i>tergisus</i>						
<i>Esocidae</i>	<i>sp/spp</i>						
<i>Campostoma</i>	<i>anomalum</i>						
<i>Cyprinella</i>	<i>spiloptera</i>						
<i>Cyprinus</i>	<i>carpio</i>						
<i>Erimystax</i>	<i>dissimilis</i>						
<i>Hybopsis</i>	<i>amblops</i>						
<i>Macrhybopsis</i>	<i>storeriana</i>						
<i>Notropis</i>	<i>atherinoides</i>						
<i>Notropis</i>	<i>hudsonius</i>						
<i>Notropis</i>	<i>rubellus</i>						
<i>Notropis</i>	<i>stramineus</i>						
<i>Notropis</i>	<i>volucellus</i>		3		5		5
<i>Pimephales</i>	<i>notatus</i>						
<i>Pimephales</i>	<i>promelas</i>						
<i>Rhinichthys</i>	<i>obtusus</i>						
<i>Cyprinidae</i>	<i>sp/spp</i>						
<i>Carpiodes</i>	<i>cyprinus</i>						
<i>Hypentelium</i>	<i>nigricans</i>						
<i>Ictiobus</i>	<i>bubalus</i>						
<i>Moxostoma</i>	<i>anisurum</i>						
<i>Moxostoma</i>	<i>breviceps</i>						
<i>Moxostoma</i>	<i>carinatum</i>						
<i>Moxostoma</i>	<i>erythrurum</i>						
<i>Carpiodes</i>	<i>sp/spp</i>						
<i>Ictiobus</i>	<i>sp/spp</i>						
<i>Moxostoma</i>	<i>sp/spp</i>						
<i>Catostomidae</i>	<i>sp/spp</i>						
<i>Ictalurus</i>	<i>punctatus</i>						
<i>Pylodictis</i>	<i>olivaris</i>						
<i>Percopsis</i>	<i>omiscomaycus</i>						
<i>Fundulus</i>	<i>diaphinus</i>						
<i>Labidesthes</i>	<i>sicculus</i>						
<i>Cottus</i>	<i>bairdi</i>						
<i>Morone</i>	<i>chrysops</i>						
<i>Morone</i>	<i>saxatilis</i>						
<i>Moronidae</i>	<i>sp/spp</i>						
<i>Ambloplites</i>	<i>rupestris</i>						

<i>Lepomis</i>	<i>macrochirus</i>					
<i>Micropterus</i>	<i>dolomieu</i>					
<i>Micropterus</i>	<i>punctulatus</i>					
<i>Micropterus</i>	<i>salmoides</i>					
<i>Pomoxis</i>	<i>nigromaculatus</i>					
<i>Etheostoma</i>	<i>blennioides</i>					
<i>Etheostoma</i>	<i>caeruleum</i>					
<i>Etheostoma</i>	<i>camurum</i>					
<i>Etheostoma</i>	<i>flabellare</i>					
<i>Etheostoma</i>	<i>nigrum</i>		1			1
<i>Etheostoma</i>	<i>tippecanoe</i>					
<i>Etheostoma</i>	<i>zonale</i>					
<i>Perca</i>	<i>flavescens</i>					
<i>Percina</i>	<i>caprodes</i>					
<i>Percina</i>	<i>copelandi</i>		65		2	2
<i>Percina</i>	<i>evides</i>					
<i>Percina</i>	<i>macrocephala</i>					
<i>Percina</i>	<i>shumardi</i>		2			
<i>Sander</i>	<i>vitreus</i>					
<i>Sander</i>	<i>sp/spp</i>					
<i>Percidae</i>	<i>sp/spp</i>					
<i>Aplodinotus</i>	<i>grunniens</i>					
UNKNOWN						

Table 4. Fishes collected by trawls at Station 28 (New Cumberland Pool) on 16 October, 2009.

		MC			
		Bot		Surf	
		YOY	1+	YOY	1+
<i>Lepisosteus</i>	<i>osseus</i>				
<i>Amia</i>	<i>calva</i>				
<i>Alosa</i>	<i>chrysochloris</i>				
<i>Dorosoma</i>	<i>cepedianum</i>				
<i>Clupeidae</i>	<i>sp/spp</i>				
<i>Hiodon</i>	<i>alosoides</i>				
<i>Hiodon</i>	<i>tergisus</i>				
<i>Esocidae</i>	<i>sp/spp</i>				
<i>Campostoma</i>	<i>anomalum</i>				
<i>Cyprinella</i>	<i>spiloptera</i>				
<i>Cyprinus</i>	<i>carpio</i>				
<i>Erimystax</i>	<i>dissimilis</i>				
<i>Hybopsis</i>	<i>amblops</i>				
<i>Macrhybopsis</i>	<i>storeiana</i>				
<i>Notropis</i>	<i>atherinoides</i>				
<i>Notropis</i>	<i>hudsonius</i>				
<i>Notropis</i>	<i>rubellus</i>				
<i>Notropis</i>	<i>stramineus</i>				
<i>Notropis</i>	<i>volucellus</i>		21		1
<i>Pimephales</i>	<i>notatus</i>				
<i>Pimephales</i>	<i>promelas</i>				
<i>Rhinichthys</i>	<i>obtusius</i>				
<i>Cyprinidae</i>	<i>sp/spp</i>				
<i>Carpoides</i>	<i>cyprinus</i>				
<i>Hypentelium</i>	<i>nigricans</i>				
<i>Ictiobus</i>	<i>bubalus</i>				
<i>Moxostoma</i>	<i>anisurum</i>				
<i>Moxostoma</i>	<i>breviceps</i>				
<i>Moxostoma</i>	<i>carinatum</i>				
<i>Moxostoma</i>	<i>erythrurum</i>	1			
<i>Carpoides</i>	<i>sp/spp</i>				
<i>Ictiobus</i>	<i>sp/spp</i>				
<i>Moxostoma</i>	<i>sp/spp</i>				
<i>Catostomidae</i>	<i>sp/spp</i>				
<i>Ictalurus</i>	<i>punctatus</i>				
<i>Pylodictis</i>	<i>olivaris</i>				
<i>Percopsis</i>	<i>omiscomaycus</i>				
<i>Fundulus</i>	<i>diaphinus</i>				
<i>Labidesthes</i>	<i>sicculus</i>				
<i>Cottus</i>	<i>bairdi</i>				
<i>Morone</i>	<i>chrysops</i>				
<i>Morone</i>	<i>saxatilis</i>				
<i>Moronidae</i>	<i>sp/spp</i>				
<i>Ambloplites</i>	<i>rupestris</i>				

<i>Lepomis</i>	<i>macrochirus</i>				
<i>Micropterus</i>	<i>dolomieu</i>				
<i>Micropterus</i>	<i>punctulatus</i>				
<i>Micropterus</i>	<i>salmoides</i>				
<i>Pomoxis</i>	<i>nigromaculatus</i>				
<i>Etheostoma</i>	<i>blennioides</i>				
<i>Etheostoma</i>	<i>caeruleum</i>				
<i>Etheostoma</i>	<i>camurum</i>				
<i>Etheostoma</i>	<i>flabellare</i>				
<i>Etheostoma</i>	<i>nigrum</i>				
<i>Etheostoma</i>	<i>tippecanoe</i>				
<i>Etheostoma</i>	<i>zonale</i>				
<i>Perca</i>	<i>flavescens</i>				
<i>Percina</i>	<i>caprodes</i>				
<i>Percina</i>	<i>copelandi</i>		4		
<i>Percina</i>	<i>evides</i>				
<i>Percina</i>	<i>macrocephala</i>				
<i>Percina</i>	<i>shumardi</i>				
<i>Sander</i>	<i>vitreus</i>				
<i>Sander</i>	<i>sp/spp</i>				
<i>Percidae</i>	<i>sp/spp</i>				
<i>Aplodinotus</i>	<i>grunniens</i>				
UNKNOWN					

UPPER OHIO NAVIGATION STUDY, PENNSYLVANIA ENVIRONMENTAL APPENDIX

Mussel Survey

Native Mussel Screening Survey Upper Ohio River Navigation Study January 2009

Note to Reader:

Freshwater mussels, though distributed worldwide, reach their greatest diversity in North America, east of the Mississippi River. U.S. mussel populations have been in decline since the late 1800s, most precipitously over the last 30 years. Of the variety of threats to native species, the single most important is considered to be habitat destruction¹. Currently, three-quarters of North America's native freshwater mussel species are considered endangered, threatened, or species-of-special-concern, and an appreciable number of species are now known to be extinct².

Native mussels are valuable components of ecosystems; they improve water quality by filtering large volumes of water, and they often provide information on pollutant types, levels, and timing. Current or systematically-collected data regarding native mussels on the Upper Ohio, however, has been lacking. As such, the goal of these surveys was to qualitatively assess the presence, diversity, and distribution of mussels throughout the project area to define baseline conditions.

In order to develop baseline knowledge regarding mussel resources and their distribution in the upper Ohio River, the District contracted for diving and habitat surveys between August 19 and September 4, 2008. Surveys were performed at a total of 35 non-random locations between Ohio River navigation mile 1.7 and 34.4, with six sites in the Emsworth Pool, 12 sites in the Dashields Pool, 13 sites in the Montgomery Pool, and four sites in the New Cumberland Pool.

A total of 110 live mussels, representing six species, were collected using transect searches, timed spot dives, and shoreline searches. Pink heel-splitters (*Potamilus alatus*), mapleleaf (*Quadrula quadrula*), and threehorn warty back (*Obliquaria reflexa*) comprised over 96% of all mussels. The three other species with live specimens were fluted shell (*Lasmigona costata*), fatmucket (*Lampsilis siliquoidea*), and fawnsfoot (*Truncilla donaciformis*). Two additional species, fragile papershell (*Leptodea fragilis*) and deertoe (*T. truncata*), were only collected as fresh-dead shell material. No evidence of federal or state endangered or federal candidate species was detected; however, several species encountered are proposed for special state status in PA.

¹ **Conservation Status of Freshwater Mussels of the United States...** Williams et al., *Fisheries* 18(9), 1993.

² **Native Freshwater Mussels**, NCRS Fish and Wildlife Habitat Management Leaflet, No. 46, January 2007.

Most mussels (78%) were found in 15 feet of water or shallower. Suitable mussel habitat was found to be widely available at many sites, but largely unoccupied. Mussel communities within the study area were considered to be “poor” (Emsworth Pool), “marginal” (Montgomery Pool), and “fair” (Dashields and New Cumberland pools), tentatively based on a combination of physical conditions, presence/absence of live mussels, and species diversity/composition.

Native Mussel Screening Survey Upper Ohio River Navigation Study

Contract W911WN-08-D-0001

Task Order No. 0009

ES Project No. 1276-2657

Presented to:

D'Appolonia

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Monroeville, PA 15146

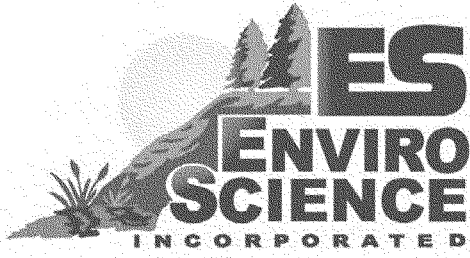
and



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January 13, 2009

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ACKNOWLEDGMENTS

The U. S. Army Corps of Engineers Pittsburgh District (District) provided funding for this project, while D'Appolonia administered it. Ms. Jenny Crock was the District's primary point-of-contact and technical point-of-contact, and Mr. Tom Maier (District) assisted as a biologist. Mr. Gary Householder was the District Diving Coordinator and Mr. Charley Weight (District) approved diving operations in the field. Mr. Alan Halperin and Mr. Chris Lewis were the primary points of contact for D'Appolonia. Mr. Jason Harkcom was the Supervisory Biologist for Skelly and Loy, Inc. (Skelly and Loy). Mr. Daniel Lakamp was Dive Supervisor for EnviroScience, Inc. (ES) and Mr. Timothy Willaman was the ES Field Safety Officer and a tender. Mr. Matthew Walsh (ES), Mr. James Hartman (ES), Mr. Mike Hanway (ES), and Mr. Daniel Lakamp were the divers for this project. Mr. Greg Zimmerman was the ES Project Manager, malacologist, and GPS/GIS specialist. Dr. Marty Huehner (ES) was a field malacologist, provided QA/QC of data, and served as the field manager in any absence of Mr. Greg Zimmerman. The report was written by Mr. Greg Zimmerman and edited by Mr. Jason Harkcom (Skelly and Loy), Ms. Jennifer Davis (ES), and Dr. Marty Huehner. Large portions of the Introduction and Methods sections of this report were taken directly from the District's scope of work.

EXECUTIVE SUMMARY

The Pittsburgh District of the U.S. Army Corps of Engineers is evaluating the feasibility of modernizing the three oldest locks and dams on the Ohio River Navigation (Emsworth, Dashields, and Montgomery Locks and Dams) as part of the Upper Ohio River Navigation Study, Pennsylvania. These three facilities, the earliest of which was built in 1922, are deteriorating structurally and may be in need of updates that will better accommodate future commercial navigation needs. Data regarding the status, condition, and distribution of biological and physical resources within the study area are required to evaluate various alternatives for modernization of these facilities

EnviroScience, Inc. (ES) was contracted under D'Appolonia and in association with Skelly and Loy, Inc. to provide freshwater mussel and habitat services to the District in support of this project. Diving and habitat surveys were completed between August 19 and September 4, 2008, under optimal field conditions. A total of 35 non-random locations in Pennsylvania were evaluated between Ohio River navigation mile 1.7 and 34.4: six sites in the Emsworth Pool, 12 sites in the Dashields Pool, 13 sites in the Montgomery Pool, and four sites in the New Cumberland Pool.

Overall, a total of 110 live mussel specimens were collected using transect searches, timed spot dives, and shoreline searches. Recent evidence of eight species was collected; two species were collected only as fresh dead shell material. No evidence of federal or state endangered or federal candidate species was detected. Of the mussel species encountered, the threehorn wartyback (*Obliquaria reflexa*) and the deertoe (*Truncilla truncata*) are suggested as sensitive indicator species by the U.S. Fish and Wildlife Service and several of the species encountered have been proposed for special state status by the State of Pennsylvania. The deertoe has a proposed state status of "extirpated" and the fawnsfoot (*Truncilla donaciformis*) is currently proposed as status "unknown". Most mussels (78%) were found in 15ft of water or less. Suitable mussel habitat was found to be widely available at many sites but largely unoccupied.

Mussel communities within the study area were considered to be "poor" (Emsworth Pool), "marginal" (Montgomery Pool), or "fair" (Dashields and New Cumberland pools), tentatively based on a combination of physical conditions, presence/absence of live mussels, and species diversity / composition.

While the present study improved our baseline understanding of mussel resources and their distribution within the upper Ohio River, additional survey work will likely be necessary as the District continues its analysis. The data gathered in this study, along with the GIS files generated using these data, should be a useful asset to the Upper Ohio River Navigation Study and to the District as it further refines the data needs and proceeds with analysis of modernization alternatives for these facilities.

INTRODUCTION

Background

The U.S. Army Corps of Engineers, Pittsburgh District (District) is conducting a feasibility-level study for modernization of the three locks and dams on the Ohio River in Pennsylvania (Emsworth, Dashields, and Montgomery Locks and Dams). The congressionally designated title of this study is, "Upper Ohio River Navigation Study, Pennsylvania." Of primary concern is the deteriorating structural condition of these three oldest navigation facilities on the Ohio River, dating from 1922. Adequacy of lock chamber capacity to accommodate future commercial navigation needs is a secondary concern to be evaluated. As part of the feasibility study, the District will also investigate opportunities for ecosystem restoration projects in association with, or independent of, any proposed navigation improvements. The formulation process to be followed in the study will entail compliance with federal environmental laws and executive orders.

To support both compliance and ecosystem restoration planning, the District is compiling known environmental information on the status and condition of biological and physical resources in the study area. Where data gaps exist, the District will assess the need for further studies. One area in which little current or systematically collected data is available is regarding freshwater native mussel (unionid) population studies in the upper Ohio River. Development of information on native freshwater mussel populations in the Upper Ohio River is likely to be important in evaluating the influence of existing and future navigation facilities and commercial navigation. For this reason, the District developed a scope of work to complete mussel surveys in the upper Ohio River and subsequently contracted EnviroScience, Inc. (ES) through D'Appalonia and in association with Skelly and Loy, Inc. to complete the project.

Project Goals and Work Products

The purpose of this study was to gather and assess information on the presence, distribution, and types of native freshwater mussels within the study area. This study was also designed to provide a qualitative assessment of presence, diversity, and distribution of mussels throughout the project area in order to define a baseline condition for environmental compliance documentation. Further goals were to evaluate the study findings in light of prior knowledge and research, and to make recommendations for further work associated with interpreting the mussel data and how navigation facility improvements would impact species populations.

The study area consisted of Ohio River navigation miles (NM) 0.0 to 35.0 that included 35 non-random sampling sites deemed to have a high probability of having native mussels. These 35 sites were broken down into specific pools as follows: Emsworth Pool had six sites, Dashields Pool had 12 sites, Montgomery Pool had thirteen sites, and the New Cumberland Pool had four sites. The lock chambers and the "Restricted Areas" in the immediate vicinity of each of the navigation structures were off-limits for sampling.

The District developed the following study objectives relevant to the assessment of environmental conditions and evaluation of alternative navigation system modernization alternatives:

- 1) Is there potential native mussel habitat in the upper Ohio River and if so, is it occupied by freshwater mussels?
- 2) What are the native unionids inhabiting the upper Ohio River?
- 3) What do the study results indicate for potential of native mussels in unsurveyed portions of the river?
- 4) Do mussel concentrations occur in proximity to potential lock and dam improvement projects which may require additional sampling at a later date?

A secondary purpose of this study was to develop information that would be compatible with the District's Geographical Information System (GIS) database of the study area, so that the results of the field sampling could be incorporated into a compatible database. The field tasks were therefore conducted using Differential Global Positioning System (DGPS) equipment for spatial determination of the beginning and ending points of transects and other sampling points. Additionally, during preparation of the sampling plan, evaluations of side scan sonar and bathymetry data available from the Pennsylvania Fish and Boat Commission (PFBC) and the District were reviewed.

Current Status of Freshwater Mussels

Freshwater mussels are found on all continents except Antarctica and have reached by far their greatest species richness in North America, particularly in drainages of the southeastern and Midwestern United States. Turgeon et al. (1998) recognized 297 unionid species (includes a number of subspecies; Margaritiferidae = five species; Unionidae = 292 species) within drainages of the U.S. and Canada from the Rio Grande basin and northward. Comparatively, other continents/regions historically contained a fraction of this unionid richness, for example: Australia = 17 species, India = 54 species, China = 38 species, Europe and the former Soviet Union = 10 species and Africa = 56 species.

Of the 297 freshwater mussel species recognized in the U.S. and Canada, over 70% are considered endangered, threatened, or of special concern, including 21 species presumed to be extinct (Williams et al., 1993). Currently, the U. S. Fish and Wildlife Service (USFWS) lists 62 unionid species as endangered, eight as threatened, and 19 as candidates for federal listing (USFWS, 2008). The waters of Pennsylvania historically contained a rich assemblage of freshwater mussels totaling at least 65 species (Bogan, 1993a). Of these species, 44 are believed to still inhabit Pennsylvania, while 21 are considered extirpated (no longer inhabiting Pennsylvania). The historical distribution of all these species amongst the six major drainages in the state are as follows: 53 in the Ohio River, 24 in Lake Erie, two in the Genesee River, six in the Potomac River, 12 in the Susquehanna River, and 14 in the Delaware River (Bogan, 1993a, 1993b). Currently, mussel fauna within Pennsylvania's Ohio River basin, which encompasses the Allegheny River and its tributaries, includes two known extant federally endangered species (*Epioblasma torulosa rangiana* [northern riffleshell], and *Pleurobema clava* [clubshell]), as well as six presumably extirpated federally endangered species and two species (*Plethobasus cyphus* and *Villosa fabalis*) which are candidates for federal listing (USFWS, 2008). The Pennsylvania Department of Conservation and Natural Resources (DCNR, 2008), officially lists only the northern riffleshell and clubshell as state endangered, but also lists 20 species with a proposed state endangered or threatened status in Pennsylvania (not including species presumed extirpated). In December of 2008, the Pennsylvania Fish and Boat Commission proposed to elevate five species to state threatened or endangered including the salamander mussel (*Simsonaias ambigua*), rabbitsfoot (*Quadrula c. cylindrica*), snuffbox (*Epioblasma triquetra*), sheepnose, and rayed bean.

Unionid Biology and Ecology

Adult freshwater mussels range in size from a few centimeters (e.g., *Simpsonaias ambigua* and *Villosa fabalis*) to over 300mm (e.g., *Megaloniais nervosa*) and have lifespans ranging from <10yr (e.g., *Utterbackia imbecillis*) (Cummings and Mayer, 1992) to >100yr (i.e., *Margaritifera margaritifera*) (Heller, 1990; Bauer, 1992). They are relatively sedentary and feed on microscopic material (e.g., algae, diatoms, bacteria, and dissolved organic matter) that they siphon and filter out of the water column. Although it is not clear how they utilize different materials for energy, they can differentially separate filtered material by size with ciliary action on the gill surface; food is swept towards the mouth and other material (along with mucus) is rejected out the excurrent siphon as pseudofeces (Paterson, 1984; McMahon, 1991). Juvenile mussels are <1mm in length and are believed to use ciliary action and sweeping movements of their foot to collect food (= pedal feeding; Gatenby et al., 1997; Yeager et al., 1994). Mussels can control uptake of water and particulate matter by adjusting filtration rate (Burky, 1983), often in conjunction with siphon and valve posture, which is well correlated with environmental stimuli such as photoperiod and water flow (Englund and Heino; 1996). Mussels are capable of moving laterally (several meters per day) and vertically (burying) using their strong, tongue-like foot. In clear waters, "trails" left in the substrate are often observed in areas where they move to avoid immersion or, presumably, to find more preferable habitat; however several studies have shown that mussels on average move very little throughout the year (2.9m/yr [Balfour and Smock, 1995]; 0.6cm/day [Amyot and Downing, 1997]). Amyot and Downing (1998) reported that most lateral movement occurs during reproduction. Mussels are also known to bury in winter (Balfour and Smock, 1995; Amyot and Downing, 1997), as well as in response to environmental stress (Sparks and Strayer, 1998).

Unionid species (and individuals within species) attain sexual maturity at different rates, but most probably start reproducing between three and five years of age. Reproduction is initiated when male mussels release sperm into the water column. If the sperm happens to be siphoned from the passing water by a female, then fertilization of the eggs (held in the female's gills) will occur. A few species exhibit hermaphroditism (male and female sexual organs in the same individual). The embryos develop within the gills until they are ready for release as glochidia (larval stage). This brooding time varies among species but generally follows one of two strategies: 1) tachytictic brooders, or "short-term" brooders, hold their glochidia for several weeks to several months, with development starting in the spring/summer and glochidial release occurring in the summer/fall, or 2) bradytictic brooder, or "long-term" brooders hold their glochidia for development over winter, with development generally starting in the summer and release occurring the following summer. However, glochidial release timing and frequency (more than once per year) appears to be a function of water temperature (Watters, 2000). The glochidia are unique in that in they require attachment to the gills or fins of a fish host to complete metamorphosis from the larvae stage to a juvenile mussel (except in the salamander mussel [*Simpsonaias ambigua*], which uses the mudpuppy as a host). Often, only one or several fish species act as successful hosts for each unionid species, which clearly confounds the success of offspring survival. To increase the likelihood of host/parasite interactions, various mussel species have evolved extensions of the soft mantle tissue near the siphons (which can mimic aquatic insects and fish) or develop mucoid strands or structures (super conglutinates) that lure potential hosts nearby to increase the likelihood of larval attachment (Haag and Warren, 1998; Hartfield and Butler, 1997). Glochidial transformation on the fish host occurs within one week to many months (Cummings and Mayer, 1992), depending on the mussel species. Newly transformed juveniles are then sloughed off by the fish host and settle in the substrate; unfortunately, little is known about juvenile habitat requirements.

In general most unionid species prefer waters with moderate flow conditions and a heterogeneous mixture of substrate composed of larger particles (e.g., cobble and large gravel) for substrate stability and smaller particles (e.g., small gravel, sand and small amounts of silt or clay) that allow for burrowing into the substrate. Mussels are uncommon in high velocity areas because they are subject to dislodgement from the substrate, and juveniles are prohibited from settling. Additionally, most unionid species are not usually found in unstable substrate (Cvancara, 1972; Strayer and Ralley, 1993) or depositional areas (slow flow) because soft or shifting substrate can smother the mussels (Ellis, 1936; Fuller, 1974). The distribution of mussels in streams is generally patchy (Downing and Downing, 1992), and is a culmination of such factors as host fish distribution, larval settlement conditions, and a complex combination of hydraulic variables (e.g., shear stress) at varying levels of flow (discharge) conditions (Layzer and Madison, 1995). However, despite our inability to accurately predict unionid distribution based on microhabitat characteristics (Strayer and Ralley, 1993), the relationship between general hydrologic conditions and general species composition is certainly apparent (Vannote and Minshall, 1982; Cummings and Mayer, 1992; Watters, 1994; Di Maio and Corkum, 1995). In most lotic (riverine) systems, mussel distribution across the stream channel is often concentrated in a longitudinal (upstream to downstream) "band" between the bank and main channel. Habitat near the bank is typically limited by slow flow, sedimentation, temperature extremes, and possible emersion (during low flow); whereas habitat in the stream channel's deepest area (thalweg) is limited by erosive velocities, scour, and relatively impervious substrate.

Unionid species have adapted in a variety of ways to deal with various habitat conditions. The most apparent, and perhaps important, traits are modification of the shell to facilitate processes such as burial (or non-burial), anchoring, and anti-scouring. The shell is composed internally of calcium carbonate (primarily nacre) with an external proteinaceous covering (periostracum) that prevents dissolution of the shell in freshwater. The great variety of shell sizes among species (e.g., several centimeters to over 300mm length) is the most obvious indication of habitat differentiation. For example, intra-specific (within a species) and inter-specific (among different species) shell length tends to increase with stream size; shell obesity (width) is positively correlated with stream size and negatively with water velocity (Rhoads and Lutz, 1980). More specifically, alterations in individual shell morphometry have been linked with habitat conditions such as flow (Green, 1972), substrate (Bailey et al., 1983), and various aspects of water quality such as temperature, pollutants, water hardness, and pH (Bailey and Green, 1988; Hinch et al., 1989; see also review by Tevesz and Carter, 1980). Other morphological variations of the shell include sculpture or ornamentation in the form of knobs, pustules (bumps), ridges, and ripples, which assists with burial, anchoring, or reduction of sediment scouring around the shell (Watters, 1994). Some species can exhibit sexually dimorphic shells characteristics, whereby the posterior-ventral margin of the shell is inflated in females due to outward pressure from the marsupial gills filled with glochidia; however, this differential shell morphology is not believed to have any adaptive advantages for such species.

Unionids can alter many important abiotic and biotic characteristics of freshwater ecosystems (Vaughn and Hakenkamp 2001, Gutiérrez et al. 2003). For example, unionid mussels remove substantial amounts of sediments and phytoplankton from the water column as they filter feed (Strayer et al. 1994, Strayer et al. 1999), and they influence the benthos by disturbing sediments during burrowing, depositing pseudofeces, and excreting wastes (Vaughn and Hakenkamp 2001, Vaughn et al. 2004). Furthermore, unionids shells in mussel beds in fine-grained sediments provide a complex physical structure inhabited by benthic invertebrates and fish (Beckett et al. 1996, Gutiérrez et al. 2003). Also, large densities of live

mussels may have a substantial influence on substrate compaction and potentially erosion (Zimmerman and de Szalay 2007).

Threats to Upper Ohio River Basin Unionids

Sand and Gravel Mining

For the aggregate industry, the Allegheny and Ohio Rivers provide a well sorted source of sand and gravel. Typically, these resources are mined by dredging operations that permanently destroy or severely modify existing habitat suitable for mussels. This practice originated long ago at a time when most natural resources were managed very differently. Today, the U.S. Corps of Engineers still approves such operations but is placing increasingly stringent restrictions on them. In many parts of the country, including Pennsylvania, aggregate dredging occurs within known habitat of freshwater mussel species that are federally listed as endangered. Currently, the District has approved sand and gravel dredging for the Allegheny River (Mile 0.0 - 69.5) and the Ohio River (Mile 0.0 - 40.0). Impact of dredging operations on freshwater mussels and their habitats are well understood and well documented. Primary Impacts are habitat destruction and direct killing of dredged mussels of all ages (Aldridge, 2000; Marking, 1979; Yokley, 1976). Secondary Impacts include downstream siltation, displacement of host fish, and destruction of host fish spawning areas (Aldridge, 1987; Brown and Curole, 1997). Ecological impacts of habitat destruction are wide spectrum (deepening and reconfiguration of bed, reduction in oxygen levels, decrease in water circulation) and result in macroinvertebrate decline and decline of all species (especially fish) that feed on them (Nelson, 1993; Thorp and Covich, 2001; USACE 2006; Watters, 2000).

River Navigation

The U.S. Army Corps of Engineers owns, operates and maintains approximately 200 miles of navigable waterways and 23 navigation locks and dams on the Ohio, Allegheny and Monongahela Rivers in Western Pennsylvania. The Port of Pittsburgh is the second busiest inland port in the nation and the 13th busiest port of any kind. At 52 million tons of cargo per year, it is larger in tonnage than Baltimore, Philadelphia and St. Louis. The port's extent encompasses an eleven county area in southwestern Pennsylvania and supports more than 200 river terminals and barge industry service suppliers. On an annual basis, the port moves approximately \$8 billion worth of goods, which equates to 53,000 jobs and more than \$2 billion in income to the region. While its contributions to our economy are undeniable, the port's life and success is directly dependent on the efficient operation of the navigable waterway transportation system. In 2005, waterway traffic increased by 13 percent on the Ohio River and 16 percent on the Monongahela River and this trend is expected to continue (American Society of Civil Engineers, 2006).

Commercial shipping and its associated activities and structures present significant modifications to river ecosystem structure, species composition, and flow dynamics (Hartfield, 1993; Stein, 1972). Tow motor turbulence impacts the river bottom profoundly and in some cases (i.e. in a nine foot deep shipping channel) the propellers are very close to it. Shipping channels normally follow the thalweg (main channel) of a river. The thalweg, which is the deepest part of the river, is characterized by erosional hydraulic regimes and is often poor habitat for unionid mussels. Nearby mussel beds in shallow water can, however, be impacted by propeller turbulence and the load of silt it carries (Aldridge, D.W. 1987; Chaney, A. M. 1993). When dredging activities occur to keep the shipping channel open, to deepen it, or even form it, the impacts are likely similar to those of sand and gravel dredging. An

additional product is dredge spoil, which can smother mussels (Marking, L.L. 1979), and must be disposed of with ecosystem integrity and mussel populations (beds) in mind.

Impoundments

Stream impoundment to create dams and locks have been shown to have substantial negative impacts on mussel populations (Vaughn and Taylor, 1999; Bates, 1962; Blalock and Sickel, 1996; Harman, 1974; Suloway et al, 1981; Williams, Fuller, and Grace, 1992). Essentially, riffle and run habitats become pools with their attendant drop in water velocity, increase in silt accumulation (Chaney, 1993; Dennis, 1984; Payne, Miller, and Shaffer, 1999), and decrease in dissolved oxygen. Many of the more specialized and sensitive mussel species cannot tolerate these conditions. An often overlooked effect of stream impoundment on unionids is that they alter the species makeup of the fish community. Important fish host species typical of riffle and run habitats such as darters become replaced by lotic species such as catfish and exotic / invasive species (e.g., European carp). Unionids may be able to persist for decades within an area following impoundment, but they may effectively cease to reproduce due to an absence or scarcity of fish hosts (S. Ahlstedt, pers. obs.). Fish host species may be unable to negotiate the dams and subsequently the dispersal of mussels during their parasitic stage is hampered. Ultimately, host fish species can be eliminated from reaches of the river with subsequent extirpation of the mussel species that depend on them.

Exotic Species and Other Impacts

Over the decades, numerous species from other lands have been unintentionally and intentionally introduced into U.S. inland waters. The greatest recent impact was produced by a small bivalve mollusk (*Dreissena polymorpha*, the zebra mussel). Due to its rapid reproduction (a typical zebra mussel female produces 30,000 eggs per season) and dispersal via a planktonic larva, these animals have spread widely with the unwitting help of boaters, commercial traffic, fishermen, and others (Herbert, et al, 1991). They have led to the decline of unionid mussels because the zebra mussels attach to unionid shells, sometimes by the thousands, and suffocate indigenous mussels (Ricciardi, Whoriskey, and Rasmussen, 1995; Ricciardi, Whoriskey, and Rasmussen, 1996; Nalepa, 1994; Haag et al, 1993). Most of the unionids in Lake Erie have been extirpated by this introduced pest, and Ohio River unionid populations continue to be negatively affected.

Another introduced species is the Asian clam, *Corbicula fluminea*, which was intentionally brought to North America in the early 1900's as a food item. It occurs widely in Pennsylvania waters and may displace indigenous unionids. Whether the displacement is through competitive exclusion or simply because Asian clams came to occupy habitats where unionids were extirpated remains uncertain. Many exotic fish species also occur in Pennsylvania rivers and lakes. The danger these animals pose to unionids is that they are often extremely competitive and will drive indigenous fish species away from their habitats. This means that the usual fish host for many unionid species will decline in numbers or become unavailable. One of the newest fish threats to unionids and native gastropods is the Asian black carp (*Mylopharyngodon piceus*) which was brought to the U.S. for various uses but primarily to control snails in aquaculture. This species is a molluscivore and has specialized pharyngeal teeth capable of crushing relatively large snails and unionids. The species has escaped from aquaculture and is currently known from locations within the Mississippi and lower Ohio River.

Point-source and Other Threats to Unionid Mussels

Similarly, industrial point source pollution effects have been well documented by the above authors. These threats can manifest as continual or intermittent discharge or as a single event that is associated with an accident or lack of maintenance,

Oil and Gas Operations

Since Drake's first oil well at Titusville (1859), petroleum extraction, transportation, and refining operations have been part of Western Pennsylvania's countryside. Potential impacts of these operations occur through accidents that produce oil spills, through brine spills, and by pipeline construction, maintenance, and leaks. Toxicity of crude oil and brine to aquatic life has been established (Hart and Fuller, 1974; Commonwealth of Pennsylvania, Department of Environmental Protection, 1998; Andreasen and Spears, 1983).

Railroad and Roadway Crossings

Bridge construction (Stein, 1972) and maintenance or replacement, spills from either road or rail hazardous carriers, and road salt application all provide threats, albeit sometimes unpredictable ones, to freshwater mussels. Vehicle and railway accidents can cause significant damage to unionids and their habitat (G. Zimmerman, unpub. data; Virginia Department of Game and Inland Fisheries, 2008).

Municipal Wastewater

Municipal wastewater discharge (see below) and its deleterious effects on streams and the biotic communities in them has been well documented (Fuller and Hart, 1974) In addition to carrying toxins and nutrients, wastewater is chlorinated before it is discharged or can simply be inadequately treated.

Another serious threat to stream water quality is the Combined Sewer Overflow (CSO). According to the U. S. Environmental protection Agency (2008): "Combined sewer systems are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe. Combined sewer systems are designed to overflow occasionally and discharge excess wastewater directly to nearby streams, rivers, or other water bodies. These overflows, called combined sewer overflows (CSOs), contain not only storm water but also untreated human and industrial waste, toxic materials, and debris. They are a major water pollution concern for the approximately 772 cities in the U.S. that have combined sewer systems."

Coal Mining, Washing, and Distribution Operations

The coal industry impacts streams in a number of ways. Extraction can produce acid mine drainage, which creates unsuitable habitat for freshwater mussels and many other aquatic species. Washing operations produce coal slurry, a suspension of fine coal dust and its attendant toxins (including sulfur, arsenic, and heavy metals). Accidental discharge of coal slurry into streams can have serious consequences (Ludlow, 2008). Coal slurry contains fine particulate matter that clogs the feeding apparatus of mussels, and additionally contains toxic components such as arsenic and mercury that adversely affect mussels' health (Ludlow, 2008).

NonPoint Source Pollution

Nonpoint sources of stream degradation are often difficult to identify and include lawn care chemicals, ineffective septic systems, improper disposal of various chemicals, runoff of agricultural chemicals (fertilizers, pesticides, and herbicides) and poorly managed golf courses. Poor construction practices, aggressive farming techniques, allowing livestock free access to sensitive streams all contribute damage to unionid mussel populations.

METHODS

Semi-Quantitative Survey Design

Surveying methods were based on methods provided in the District's Scope of Work (May 29, 2008) and data collection methods were based on the District's scope. The purpose of the survey design was to:

1. Reliably detect mussel concentrations within the sampling area with good repeatability within sites and between sites;
2. Provide a semi-quantitative method for determining relative abundance information so that any mussel resources encountered could be accurately mapped;
3. Collect habitat (observed substrate type %) and depth concurrent with mussel searches;
4. Detect the presence of mussel resources in the general vicinity using bank searches for middens and other mussel concentrations.

These methods did not result in a precise mussel concentration (density) estimate or exact substrate composition data; that would have required quantitative sampling and a much greater level of effort. However, due to the high level of mussel survey experience among divers (>100hrs of survey experience for most divers), data collection was expected to be consistent (and therefore, comparable) and meet the goals of identifying important mussel concentrations and habitat.

A total of 35 transects were established perpendicular to flow between Ohio River mile 1.7 in Pittsburgh, Pennsylvania, and 34.4, near Shippingport, Pennsylvania (Figure 1). The study site locations were initially based on 35 locations provided by the District as part of the scope of work. Each proposed site location was pre-screened using both field and desktop methods. The proposed locations were first compared to available data prior to field operations. ES examined the locations in relation to available river bathymetry data, navigational charts, and best scientific judgment within a GIS (ESRI ArcGIS9.1) using their best scientific judgement. Most sites were considered suitable for study. Approximately 30% of the proposed site locations were relocated a few hundred meters or to the opposite bank based on available river bathymetry as well as their proximity to possible sources of artificial and natural riverbed disturbance (e.g., barge fleeting areas and upstream tributary confluences). The revised sites were then plotted in the GIS and transferred to the dive vessel's navigation system.

A second level of site screening was performed in the field by the Field Manager prior to diving. Pre-determined coordinates of each proposed site were used by the Team to navigate to each general location using the boat's onboard GPS / depth sounder (Garmin GPSmap 178c Sounder). The diving team then used the dive vessel's depth sounder to examine the river bottom for several hundred to one thousand meters upstream and downstream from the proposed site. The river bottom profile (from the shoreline to riverward), shoreline, and surrounding land use was examined for features that might positively or negatively indicate the presence of unionid concentrations. Bottom profiles that appeared to be very irregular and/or very deep (>30ft) were generally considered poor habitat

for mussels as the area was assumed to contain large substrates or debris (e.g., boulder or sunken barges), or to have been commercially dredged. Municipal and industrial discharges were also avoided. In contrast, bottom profiles that were relatively shallow (<25ft) and showed an even or gradually sloped profile were considered likely habitat. Areas near bridges and pipelines were also considered likely habitat for unionids, as these areas are off-limits to gravel mining. In a few cases, site locations were moved due to the proximity of municipal and industrial intakes because of diver safety concerns. Due to the high level of pre-screening that was performed prior to diving operations, it was unnecessary to move any transect because of strong evidence of gravel mining or dredging.

Diving and Search Methods

Diving operations were performed following the EnviroScience's *Safe Practices Manual for Diving and Underwater Operations* (on file with the Pittsburgh District). All diving operations used a minimum of a five-person dive team. A Dive Plan, Anticipated Hazards Analysis, and dive team member qualification summary, was pre-approved by the District Diving Coordinator (Mr. Gary Householder), and on site by the District Diving Inspector (Mr. Charley Weight).

Diving was conducted by one surface supplied air (SSA) diver using a Kirby Morgan (17B, 27K, or 57) diving helmet with full duplex (two-way) diver to surface and diver to diver communications. A standby diver was suited with a harness and prepared to dive in the event of a stricken diver. The dive vessel was a 24ft open johnboat with a landing craft style bow for diver water entry and exit and a 150hp outboard engine. Although the vessel was not anchored for most of the surveys, "liveboating" techniques were not used as the engine was never in operation while the diver was in the water. Typically, the diver entered the water at the shore and proceeded along the transect riverward, pulling the dive vessel along the transect in the process.

Diving transects consisted of weighted lines marked in 10.0m (32.8ft) increments with the zero mark placed at the water's edge. The start and end points of the transect were recorded by DGPS (Trimble GeoXT). In the event of poor satellite reception at the bank, an offset DGPS point was collected at a known distance from the transect start by using a rangefinder or the dive vessel's GPS. All transects were a minimum of 100m long. However, most transects were extended to 150m or more because we suspected that the 100m transect length did not adequately sample habitats located mid-river that were holding some mussels. In some cases (e.g., Site 12, Site 15) transects were extended completely or nearly completely across the river.

Diving mussel searches were completed along the bottom following transect lines perpendicular to the flow of the river. Divers searched the river bottom visually and by feel, regularly sweeping away silt and excavating the substrate (one to two inches) for buried individuals by hand. All mussels (live and dead) were placed in a mesh bag with each 10m x 1m (L x W) sample along the transect being kept discrete from other samples. If the diver found two or more mussels within a 1m² area, the information was reported to topside and noted. Each 10m segment required a minimum of 5min, however less time was spent in unsuitable habitat (i.e., trees, unstable sand, concrete, rip-rap). More effort was expended in areas of suitable habitat (stable mud, sand, gravel, or cobble mixes) or where mussels were detected. Relative substrate composition (percent substrate size; modified Wentworth Scale) of each habitat was estimated by the diver and reported to topside via two-way diver/tender communications. Depth readings were also regularly collected using a pneumofathometer

and using the dive vessel's depth sounder. Shoreline searches for spent mussel shells and mussel middens were also performed 80m upstream and downstream from each Site.

Mussel Handling Procedures

Collection bags were returned to the boat with the diver and the samples were processed by a trained malacologist. All live mussels were identified, counted, measured, and sexed (sexually dimorphic species only) and their location on the transect noted. All dead shells were scored as either fresh dead (lustrous nacre, dead <1yr), weathered dead (dull or chalky nacre, dead one to many years), or subfossil (heavily weathered and fragmented, dead many years to many decades) and noted as present. Live mussels were kept submersed in ambient river water or in live wells before and after processing. Mussels were kept cool and moist during processing and were not out of the water more than five minutes. All live mussels were returned to the exact area of their collection. Digital images of most mussel species were taken as well as images of representative site habitats and riparian vegetation. The presence and abundance of zebra mussels (*Dreissena polymorpha*) and any remnant zebra mussel byssal threads was noted and recorded. Representative specimens of snail species were also collected when available.

Quality Control

To maintain high quality data, two measures of quality control were implemented to ensure thorough mussel collection and accurate habitat assessments by the divers. First, the project malacologist (Mr. Gregory Zimmerman) conducted an orientation on proper search methods and habitat assessment to standardize data collection and reduce diver bias. Second, all divers on this project had previous experience with mussel searches and were familiar with the methods and protocol. A diver proven to effectively collect mussels (e.g., Mr. Matthew Walsh; >200hrs survey experience) periodically confirmed the survey work of the other divers and during the survey the results of his survey transects were compared to the results of other divers collecting in similar areas. All divers were found to produce similar results in terms of catch per unit effort, when in similar and nearby habitats (e.g., Figure 3; note mussel abundance follows a consistent trend from upstream to downstream despite different collectors).

RESULTS AND DISCUSSION

Survey Conditions

Field surveys were completed August 19th – 29th and on September 4, 2008. Field conditions were very good during the course of both field events; river flows were below normal and river visibility was good (>45cm on bottom). Working visibility on bottom was often less than optimal once the bottom was disturbed due to the silty nature of the areas being surveyed and low river flow. The weather was sunny to partially cloudy, and warm with a light wind (<5mph). Air temperatures averaged between 70° - 85° F (21.1° – 29.4°C), and water temperatures were between 74° - 79°F (23.3° – 26.1°C).

Summary of Unionids Collected within the Study Area

Overall, the mussel community was found to be relatively low in terms of density and diversity relative to other mussel communities recently surveyed farther downstream within the middle Ohio River (e.g., Ecological Specialists 2000; EnviroScience 2007a) and within the navigable pools of the Allegheny River (e.g., EnviroScience 2007b). No evidence of federal or state endangered or federal candidate species was detected. Most of the study area was found to have a low relative density of mussels or no mussels at all. Assuming a 50% efficiency, mussel density rarely reached or exceeded an estimated 0.4 mussels / m² (Figures 2 - 7).

A total of 110 live mussels were collected representing six species from all sites and all methods (Table 1). Two additional species, the fragile papershell (*Leptodea fragilis*) and the deertoed (*Truncilla truncata*) were collected from fresh dead shell material only. The pink heelsplitter (*Potamilus alatus*) was dominant (51.8%) and the mapleleaf (*Quadrula quadrula*) was subdominant (37.3%). Together, those two species in addition to the threehorn wartyback (*Obliquaria reflexa*) (7%) comprised over 96% of all mussels. Two live fawnsfoot (*Truncilla donaciformis*) were also collected and this should be noted due to this species' state status of "unknown" within Pennsylvania and its extremely small size (<40mm). The deertoed is also of interest as it is currently listed as "extirpated" within Pennsylvania. The deertoed and threehorn wartyback are both species proposed by the USFWS, PFBC, and the Adaptive Management Group (Appendix A) as indicator species indicative of flowing water and large river habitats where federal and state protected species may occur. Individual survey results for the Emsworth, Dashields, Montgomery, and New Cumberland pools are provided in Tables 2 - 5, respectively. Representative digital images of selected mussel species are included in Appendix B.

Unionids were detected in a wide variety of habitats at an average depth of 11.5ft, and a maximum depth of 26ft. Most mussels (78%) were found in 15ft of water or less (Figure 8). Mussels were not limited to shoreline areas and approximately 48% of the individuals collected were 50m or greater from shore. Habitat availability did not appear to be a limiting factor in mussel distribution. Live mussels were, on average, associated with substrates composed of 17% silt, 22% sand, 20% gravel, 18% cobble, 17% boulder, and 6% other (mud, wood, and bedrock). Sand and to a lesser extent cobble appeared to be the best predictors for mussel presence. Transect segments associated with mussels were found to have, on average, 15% more sand and 4% more cobble than non-mussel sites. Segments without mussels were found, on average, to be composed of 7% more mud and 5% more boulder than sites with mussels. Many of the areas investigated appeared to have large amounts of suitable but largely unoccupied habitat (e.g., Site 14). Most of the substrate compositions between and within sites were similar; therefore care should be taken when

interpreting the substrate data relative to mussel presence or absence due to the qualitative nature of the data.

When compared to other areas of the Ohio River, the study area likely has relatively fewer mussels and fewer species per unit of effort. For example, Ecological Specialists (2000) showed 18 or more live species of unionids collected from between the Hannibal and Meldahl pools during various studies between 1969 and 1999. In contrast, evidence of only eight species was found during this project. Of note, the same document reported that eight live species were collected from the New Cumberland Pool; four of which were not collected in the present study; bringing the total "recent" (since 1969) species count for that pool to nine.

Live zebra mussels (*Dreissena polymorpha*) were common on live unionids within the the study area and, in particular, the New Cumberland Pool. Old zebra mussel byssal thread scars were present on most of the mussels encountered (Appendix B). Zebra mussels may have a significant negative influence on the local mussel population within the New Cumberland Pool. Many live and fresh dead unionids there were found with up to 10% of their total area infested by zebra mussels.

Summaries of the mussel species collected, their location, and their respective proposed state status for all sites are presented in Table 1. Few species were found to be actively reproducing with the exception of the threehorn wartyback and mapleleaf, as evidenced by small individuals (Table 1; Appendix C). However, because the sampling method was tactile, smaller individuals (e.g., fawnsfoot) were more likely to be overlooked. The fawnsfoot and deertoe may be expanding their range within the project area based on their presence within the project area and recent nearby observations. In 2008, EnviroScience found that the fawnsfoot was one of the most common species in Pool 2 of the Allegheny River, at NM 12.5 and composed 60% of the mussel fauna. The deertoe was also observed to be expanding its range within the upper Ohio River by Ecological Specialists (2000). Both the fawnsfoot and deertoe largely utilize freshwater drum (*Aplodinotus grunniens*) and sauger (*Sander canadensis*) as fish hosts which may, likewise, be expanding or recovering within the project area.

The individual narrative results for each group of sites within each Ohio River pool is provided below. The potential for native unionid populations within each pool of the Ohio River was tentatively categorized as:

1. **Poor.** Based on a limited number of sampling locations, the area was found to sustain only a very low (≤ 1 mussel / 100 linear meters of diver search effort) level of non-listed / non-sensitive unionids although suitable habitat was present. Threatened and endangered species were considered not likely to be present within the reach. While the area may warrant some further study, other areas should receive a higher priority.
2. **Marginal.** Based on the limited number of sampling locations, the area was found to sustain areas of low (≤ 3 mussels / 10 linear meters of search effort) levels of mussel resources, including some indicator species and / or suitable habitat. The area may warrant further qualitative studies to define the extent of mussel distributions and species present, however; relatively dense (> 1 mussel / m^2) mussel concentrations appeared to be uncommon and the possibility of threatened and endangered species appeared to be unlikely.
3. **Fair.** Some areas were found to sustain at least moderate (≥ 3 mussels / 10 linear meters of search effort) concentrations of unionids, including indicator species and suitable habitat. The area likely warrants further studies to define the extent of mussel distributions including relatively dense (> 1 mussel / m^2) concentrations, and possible sensitive, threatened, or endangered species.

Emsworth Pool Sites 1 – 6 (NM 1.7 – 5.2)

The Emsworth Pool mussel community was considered to be “poor” in terms of a resident mussel community based on the five survey locations investigated (Figure 2). Only one live fatmucket (*Lampsilis siliquoides*) and one fresh dead pink heelsplitter were encountered (Table 2). The locations and relative distribution of mussel resources encountered within the Emsworth Pool are presented in Figure 2. Detailed results for the Emsworth Pool, including species composition, status, relative abundance, and size structure of unionids are presented in Table 2. A general description of each site within the pool is provided below in Table 6.

Table 6. Summary of Method and Results for Each Site within Emsworth Pool.

~NM	Bank	Site	Description	Type(s)	Length (m)	Mussels
1.7	Island	1	West channel of Brunot Island	Transect	100	0
2.4	Left	2	West channel of Brunot Island	Transect	120	1
3.5	Left	3	Ohio River mainstem	Transect	150	0
4.5	Island	4	Upstream tip of Davis Island to Ohio River Mainstem	Transect	150	0
4.9	Island	6	Upstream tip of Neville Island to Ohio River Mainstem	Transect Spot Dive (2)	150	0
5.2	Right	5	Ohio River mainstem	Transect	100	0

The river substrate within the Emsworth Pool was found to include suitable mussel habitat and should be considered as a potential area for future habitat restoration. The average depth within transect segments was 16.8ft and the maximum depth was 28ft (Site 3). The dominant observed substrates were, on average, gravel (30%), cobble (25%) boulder (17%), and mud (11%). Other substrates, such as woody debris, were noted in minor percentages. The riparian zone was variable but included many large tracts of heavy industry.

Dashields Pool Sites 8 – 18 (NM 6.4 – 11.9)

The Dashields Pool unionid community was considered to be “fair” in terms of a resident mussel community based on the 12 survey locations investigated (Figure 3); however, this area likely merits further study. All live individuals were encountered in the upstream reaches of the pool near Neville Island; from below the Emsworth Locks and Dams (NM 6.2 mainstem and backchannel) to approximately NM 9.0. The upstream reach of the pool had many characteristics of suitable mussel habitat including clean-swept substrates in moderate river flow. No live mussels were encountered from the 4 sites surveyed downstream from NM 9.0 on the Ohio River mainstem (sites 11, 16, 17, and 18).

A total of 42 live unionids and 6 species (5 live + 1 fresh dead) were encountered including the fawnsfoot (Table 4). One additional live unionid was collected during a spot dive at Site 14. While some moderate concentrations of mussels were found in this river reach, it remains unknown why more mussels were not detected in this area considering the availability of suitable habitats. The locations and relative distribution of mussel resources encountered within the Dashields Pool are presented in Figure 3. Detailed results for the Dashields Pool, including species composition, status, relative abundance, and size structure of unionids are presented in Table 3. A general description of each site within the pool is also provided in the table below.

Table 7. Summary of Method and Results for Each Site within Dashields Pool.

~NM	Bank	Site	Description	Type(s)	Length (m)	Mussels
6.4	Island	14	Neville Island to Ohio River mainstem	Transect Spot Dive(2)	160	7
6.9	Island	15	Neville Island across mainstem channel to right descending bank	Transect	260	7
7.0	Island	12	Neville Island backchannel	Transect	170	8
7.5	Right	8	Ohio River mainstem	Transect	150	3
7.6	Island	12.5	Neville Island backchannel	Transect	100	4
7.8	Right	9	Ohio River mainstem	Transect	150	3
8.6	Island	10	Neville Island to Ohio River mainstem	Transect	150	3
8.9	Island	13	Neville Island backchannel	Transect	150	10
9.7	Island	16	Neville Island to Ohio River mainstem	Transect	150	0
9.9	Right	11	Ohio River mainstem	Transect	150	0
10.6	Right	17	Ohio River mainstem	Transect	150	0
11.8	Right	18	Ohio River mainstem	Transect	150	0

We completed an additional transect (Site 12.5) to increase sampling coverage because the Neville Island backchannel was found to have relatively good habitat and moderate concentrations of mussels upstream (Site 12) and downstream (Site 13) from there (Figure 3). Also, the proposed Site 7 and Site 15 were combined into a single 260m transect (Site 15) that went completely across the main channel between Neville Island (start) and to the right descending bank (end).

The river substrate within the upper Dashields Pool included suitable mussel habitat and some concentrations of native mussels, and therefore was considered a potential area for future habitat restoration, avoidance, or mitigation. The average depth within transect segments was 15ft in the mainstem of the Ohio River and 9.5ft in the backchannel of Neville Island. The maximum depth was 28ft (Site 17 and Site18). The dominant observed substrates were, on average, gravel (24%), cobble (22%) boulder (14%), and a relatively even mix of silt, mud, and sand (11%, 13%, and 13%, respectively). Other substrates, such as woody debris, were noted in minor percentages. The riparian zone was variable but included tracts of heavy industry residential, and urban land use.

Montgomery Pool Sites 19 - 31 (NM 13.5 – 29.4)

The Montgomery Pool unionid community was considered to be “marginal” in terms of a resident mussel community based on the 12 survey locations investigated (figures 4 and 4). Mussel distribution within the pool was patchy; with live mussels detected immediately downstream from the Dashields Locks and Dam at NM 13.3 (Site 19), and then again continuously between NM 16.7 (Site22) to NM 26.2 (Site 29). No live mussels were detected downstream from NM 26.2 within the Montgomery Pool (Figure 4). While mussels were consistently present throughout much of this reach, the relative abundance of mussels was

very low; on average less than one mussel was found for every 100 linear meters of search effort.

A total of 17 live unionids and 4 species (3 live + 1 fresh dead) were encountered within the Montgomery Pool (Table 7). While some moderate concentrations of mussels were found in this river reach, it remains unknown why more mussels were not detected in this area considering the availability of suitable habitats. Direct evidence of commercial gravel mining was common (Appendix B) which may, in part, explain the irregular distribution and the relatively low abundance and diversity of unionids in this reach of the Ohio River. The locations and relative distribution of mussel resources encountered within the Montgomery Pool are presented in Figure 4 and 5. Detailed results for the Montgomery Pool, including species composition, status, relative abundance, and size structure of unionids are presented in Table 4. A general description of each site within the pool is provided below in Table 8.

Table 8. Summary of Method and Results for Each Site within Montgomery Pool.

~NM	Bank	Site	Description	Type(s)	Length (m)	Mussels
13.4	Right	19	Ohio River mainstem	Transect	200	1
13.9	Left	20	Ohio River mainstem	Transect	150	0
15.5	Left	21	Ohio River mainstem	Transect	150	0
16.7	Left	22	Ohio River mainstem	Transect	270	6
17.4	Right	23	Ohio River mainstem	Transect	150	1
18.1	Left	24	Ohio River mainstem	Transect	150	3
19.5	Right	25	Ohio River mainstem	Transect	150	2
22.5	Right	26	Ohio River mainstem	Transect	150	1
23.1	Right	27	Ohio River mainstem	Transect	100	1
24.2	Left	28	Ohio River mainstem	Transect	200	1
26.2	Left	29	Ohio River mainstem	Transect	150	1
27.9	Right	30	Ohio River mainstem	Transect	150	0
29.5	Right	31	Ohio River mainstem	Transect	100	0

The river substrate within the Montgomery Pool was found to include suitable mussel habitat and some low concentrations of native mussels, and therefore was considered a potential area for future habitat restoration. The average depth within transect segments was 19ft and the maximum depth was recorded as 54ft (Site 31). However, the depths recorded within Site 30 and Site 31 were later suspect and it was deemed likely that the boat's depth sounder was misaligned when those readings were recorded. The diver's pneumofathometer read approximately 20ft less during dive surveys. The maximum depth within the pool, excluding the suspected data, was 28ft (Site 28). The dominant substrate within many transect segments consisted of silt over top of cobble / gravel / boulder substrates; however the presence of heavy silt did not preclude the presence of mussels. The dominant observed substrates were, on average, silt (34%), gravel (18%), boulder (15%), and cobble (14%). Other substrates, such as woody debris, were noted in minor percentages. The riparian zone was variable but included tracts of industrial, residential, and suburban land use.

New Cumberland Pool Sites 32 - 35 (NM 31.8 – 34.4)

The New Cumberland Pool unionid community was considered to be “fair” in terms of a resident mussel community based on the 4 survey locations investigated (Figure 6). Mussels were consistently present throughout this reach at low levels with the exception of Site 32 which resulted in very high relative numbers of mussels per transect segment. Site 32 yielded 38% of all mussels found during the entire study and from within a relatively small area 0 to 70 meters from the right descending bank. Most mussels (~70%) were found in 10ft or less of water. A maximum of 10 mussels were collected per 10 linear meter segment at Site 32 (0m – 20m). An shell deposit containing several 100 fresh dead shells of the mapleleaf were found in a muskrat midden on shore, as well as two fresh dead deertoe.

A total of 49 live unionids and 5 species (3 live + 1 fresh dead + 1 weathered dead) were encountered (Table 9). The dominant species was the pink heelsplitter (61%) and the mapleleaf (35%) was subdominant. The locations and relative distribution of mussel resources encountered within the New Cumberland Pool are presented in Figure 6. Detailed results for the New Cumberland Pool, including species composition, status, relative abundance, and size structure of unionids are presented in Table 5. A general description of each site within the pool is also provided below in Table 9.

Table 9. Summary of Method and Results for Each Site within the New Cumberland Pool.

~NM	Bank	Site	Description	Type(s)	Length (m)	Mussels
31.8	Right	32	Ohio River mainstem	Transect	100	42
32.2	Right	33	Ohio River mainstem	Transect	100	1
32.6	Left	34	Ohio River mainstem	Transect	100	1
34.4	Right	35	Ohio River mainstem	Transect	150	5

The New Cumberland Pool was found to include suitable mussel habitat and some relatively high concentrations of native mussels (e.g. Site 32), and therefore was considered a potential area for additional studies, avoidance, mitigation, or future habitat restoration. However, only the upper section of this pool was investigated. The average depth within transect segments was 13.6ft and the maximum depth was recorded as 40ft (Site 32). The dominant substrate within many transect segments was silt over top of cobble / gravel / boulder substrates, however the presence of heavy silt did not preclude the presence of mussels. The dominant observed substrates were, on average, gravel (22%), silt (19%), and cobble (19%). boulder (16%), and mud (8%).

GIS and Electronic Work Products

Geographic Information System (GIS) software (ArcGIS 9.1) was used to compile the DGPS points and field notes into series of point shapefiles. A point theme was created that includes all habitat and mussel distribution information for every 10m of transect at the center of the respective segment. Each point contains information on substrate (percentage) and any mussel resources present including species, length, estimated density, and other recorded parameters. All shapefiles were created in WGS 1984, decimal degrees unless otherwise noted in the metadata. Shapefiles created for this project will be made available to the Pittsburgh District via FTP or CD-ROM. The GIS data files and Microsoft Excel database

provided with this report contain highly-detailed mussel and substrate information for each site and from within each transect. This information should be useful as the District continues to evaluate various alternatives for the modernization of the Emsworth, Dashields, and Montgomery locks and dams.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Mussel communities within the study area were considered to be either “poor” (Emsworth Pool), “marginal” (Montgomery Pool) or “fair” (Dashields and New Cumberland pools) tentatively based on a combination of physical conditions, presence/absence of live mussels, and species diversity / composition. No sites, with the exception of Site 32 (New Cumberland), were found to meet or exceed Pennsylvania’s proposed criteria for protected mussel resources (Attachment A).

This project reasonably answered the four main project goals of the project, namely:

- 1) *Is there potential native mussel habitat in the upper Ohio River and if so, is it occupied by freshwater mussels?*

The upper Ohio River was found to contain large areas unionid habitats, however these were largely unoccupied. Possible explanations include persistent or chronic water quality or sediment toxicity.

- 2) *What are the native unionids inhabiting the upper Ohio River?*

The upper Ohio River was found to contain at least 8 extant species based on the present study (Table 1); all were found as either alive or fresh dead. A recent (2001) record of one additional species, the elktoe (*Alasmidonta marginata*) was found within the Montgomery Pool at NM 18 during a literature search of available data (see below). No evidence of federal candidate, threatened, or endangered species was detected. The deertoe was collected as fresh dead specimens only at Site 32 below the Montgomery Locks and Dam in the New Cumberland Pool. Based on the relatively few sites that were sampled relative to the size of the survey area, it is highly likely that other species will be detected from within the study area with additional survey work concentrating in areas of known mussel presence.

A number of other investigators and consultants are known to have completed similar surveys within the upper Ohio River study area (e.g., Aquatic Systems, CEC, Dinkins Biological Consulting, Jerry Diamond; Appendix D). Most of these surveys were conducted for commercial gravel mining operations and in some cases the methods and quality of the resulting data has been questioned by resource agencies (PennDOT Mussel Programmatic, in prep.). A review of over 24 mussel survey reports performed within the study area since 1996 by PennDOT indicated a total of 51 mussels from four species were collected within the Dashields, Montgomery, and New Cumberland pools. One species that was not detected during this survey, the elktoe (*Alasmidonta marginata*), was detected in the Montgomery Pool in 2001 by Aquatic Systems (2002). While it is difficult to compare the present study with these other, relatively recent surveys because slightly different locations were surveyed and different methods were employed, it is important to note that the present survey detected approximately twice the number of species and twice the number of individuals recorded from over 24 previous mussel surveys. Mussel species diversity and relative abundance as documented in this survey are obviously greater than previous studies have indicated.

- 3) *What do the study results indicate for potential of native mussels in un-surveyed portions of the river?*

We designated each pool as either “poor”, “marginal”, or “fair” as to our best relative judgment of the potential of unionids within the study area. The Emsworth Pool appeared to have the least potential for unionids despite large areas of available habitat and at least 7 species of mussels being collected recently from the Allegheny River near the three rivers confluence (EnviroScience, 2002). The Montgomery Pool was found to have low, patchy concentrations of mussels and this area may deserve further study. The upper reaches of the Dashields Pool and the New Cumberland Pool were found to support low to moderately high (e.g., Site 32) concentrations of mussels and, in our opinion, demonstrated the highest potential for significant (>1 mussel / m^2) mussel populations and / or sensitive, candidate, threatened, or endangered species.

4) Do mussel concentrations occur in proximity to potential lock and dam improvement projects which may require additional sampling at a later date?

The tail waters of dams usually offer a number of attributes highly suitable for most unionids including; an availability of host fishes, oxygenated water, adequate river flow, clean swept substrates, protection from commercial dredging, and navigation traffic. All of the lock and dam tail water areas investigated appeared to have moderate to extensive amounts of suitable habitat for unionids; however most areas investigated in this study were largely unoccupied. Only the tail waters of the Emsworth and the Montgomery Locks and Dams were found to hold relatively low to moderate concentrations of mussels. These areas (including the restricted areas) will very likely require additional sampling to determine the extent, density, and composition of the resident unionid communities. As previously noted, unionid distributions tend to be related to overall hydrologic conditions and form “patchy” (Downing and Downing, 1992) communities. Therefore, a survey sampling method that employs better spatial coverage (more searches over more area) than what we used for this study should be employed in areas of suspected mussel resources. The design of the study should ensure that the level of sampling effort is adequate to meet the expected probability of target species detection (Strayer and Smith, 2003) and, if successful, provide better understanding of mussel distribution and relative density.

Recommendations for Future Study

Additional survey work will likely be necessary as part of the Upper Ohio River Study alternatives analysis process and to meet the requirements of state and federal resource agency review. Additional information may also be required to meet other federal reporting and permit requirements (e.g., NEPA). Using the methods of Strayer and Smith (2003) we based our recommendations on the following five considerations for the future study design:

1 What are the potential study objectives?

- a) further define the distribution and composition of mussel resources within target areas of the study area (upper Dashields and New Cumberland pools);
- b) identify areas of “significant” mussel resources (e.g., >0.5 mussel / m^2);
- c) confirm, with at least 85% confidence, the presence or absence of target species (e.g., federal and state endangered species) within key areas (i.e., dam tail waters);
- d) confirm the absence or relative absence of mussels from areas identified marginal or poor through additional sampling;

- e) identify any other areas for screening (e.g., the Beaver River and other tributaries) that could potentially be affected by this project.

2 *What is the target population?*

- a) unionids within the upper Dashields and New Cumberland pools
- b) rare species (e.g., federal and state endangered species) that may exist at very low ($<0.001 / m^2$) densities
- c) to a lesser extent, other locations within the project area

3 *What resources are available?*

- a) unknown – resources will be best utilized by incorporating a stratified survey design where the most likely habitats (based on preliminary data) are given the most resources while other areas are surveyed using a similar method, just less intensively.

4 *What is known about the study area?*

- a) water quality may be a limiting factor to unionids
- b) areas known to have been recently commercially dredged are unlikely to contain mussels;
- c) past mussel survey reports may be a useful resource to identify areas of potential mussel concentrations but may not necessarily indicate the absence of mussels.

5 *What is known about the mussel populations?*

- a) mussel populations are usually of relative low ($<0.5 / m^2$) density;
- b) most mussels (78%) are found in < 15 ft of water but not limited to near bank areas.

Based on the above assumptions, results of this study, and our survey experience within the upper Ohio River and lower Allegheny River, we recommend that a stratified survey design be employed using transect searches as proposed by Smith (2006). We successfully used this survey design in Pool 6 of the Allegheny River to evaluate the effects of a large proposed discharge and detect for endangered species (EnviroScience, 2007b). Advantages of this method include:

1. Detection with a high probability of rare (T&E) species within the sampling area;
2. Provide a semi-quantitative method for determining relative abundance information so that any mussel resources can be mapped to the proposed alternative(s);
3. Collects habitat (observed substrate type %) concurrent with mussel searches;
4. Stratifies sampling effort so that most search effort is allocated to likely mussel habitats (i.e., depths ≤ 15 ft);
5. Can be modified to cover a relatively large area;
6. Collects data in a systematic fashion conducive for GIS analysis and mapping.

Using the above method, the habitats within the study area would be stratified into units (i.e., poor, marginal, and fair; deep and shallow). More effort would be devoted to areas considered likely for mussel presence than to less likely areas. For example, 200 transects completely across the river could be completed in fair habitat, 50 in marginal, and 25 in poor habitat. The actual number of transects and spacing would depend on the available resources, the size of the target areas, and the desired level of rare species detection for a particular reach of the river. Another variation could include that only one of every three transects would extend beyond 15ft of river depth. Transect locations would use two - three random starts to prevent sampling bias. Other, alternative sampling methods that could be employed include "double sampling for stratification" (see Strayer and Smith, 2003), depending on the goals of the District.

In summary, the present study improved our basic of mussel resources and their distribution within the upper Ohio River. However, the results of the study are likely at too coarse a scale to preclude the presence of listed species or "significant" (>1 mussels / m^2) from some areas (e.g., Neville Island backchannel and downstream from the New Cumberland Locks and Dam). This information should be a useful asset to the Upper Ohio River Study and to the District as it further refines the data needs for this project.

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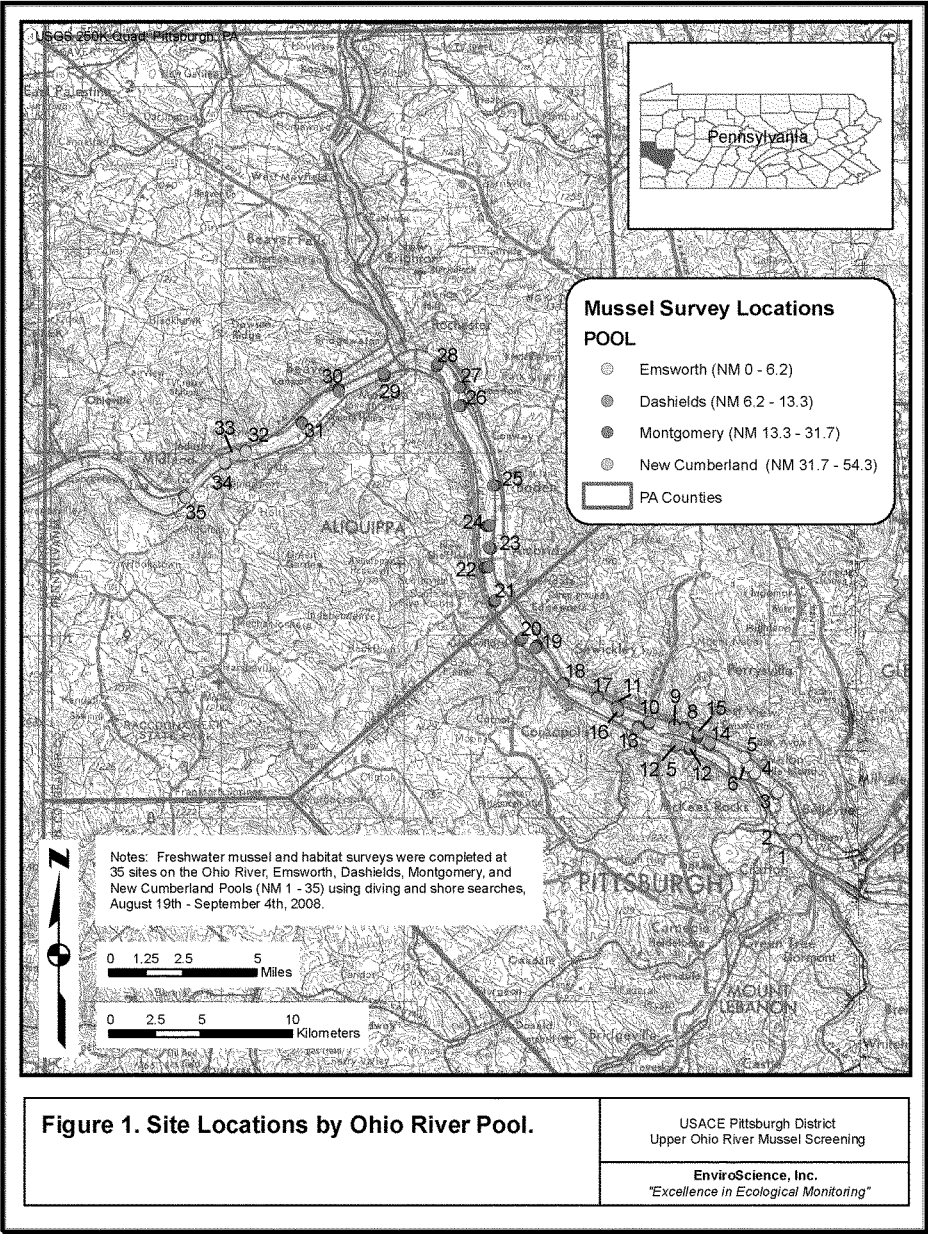
FIGURES

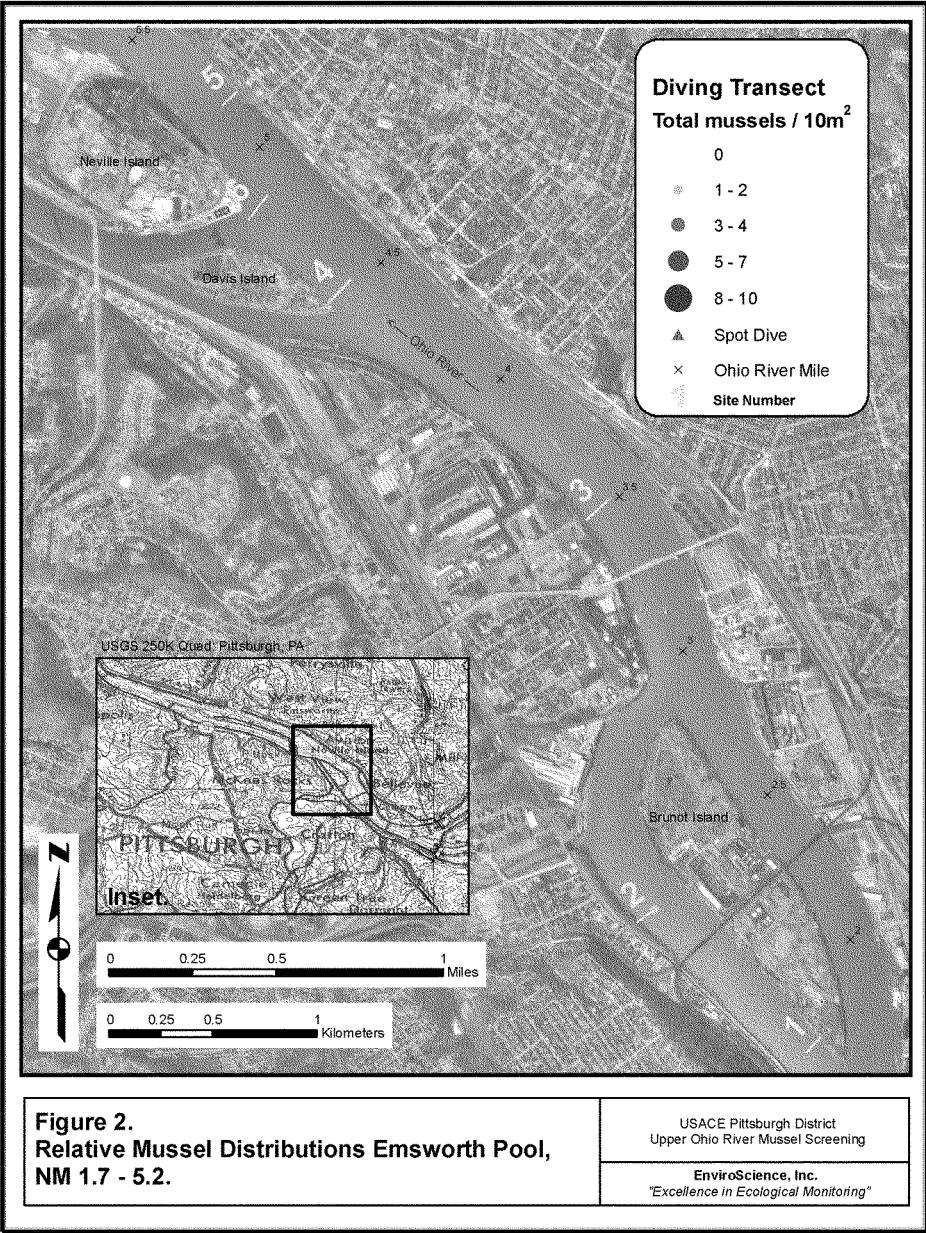
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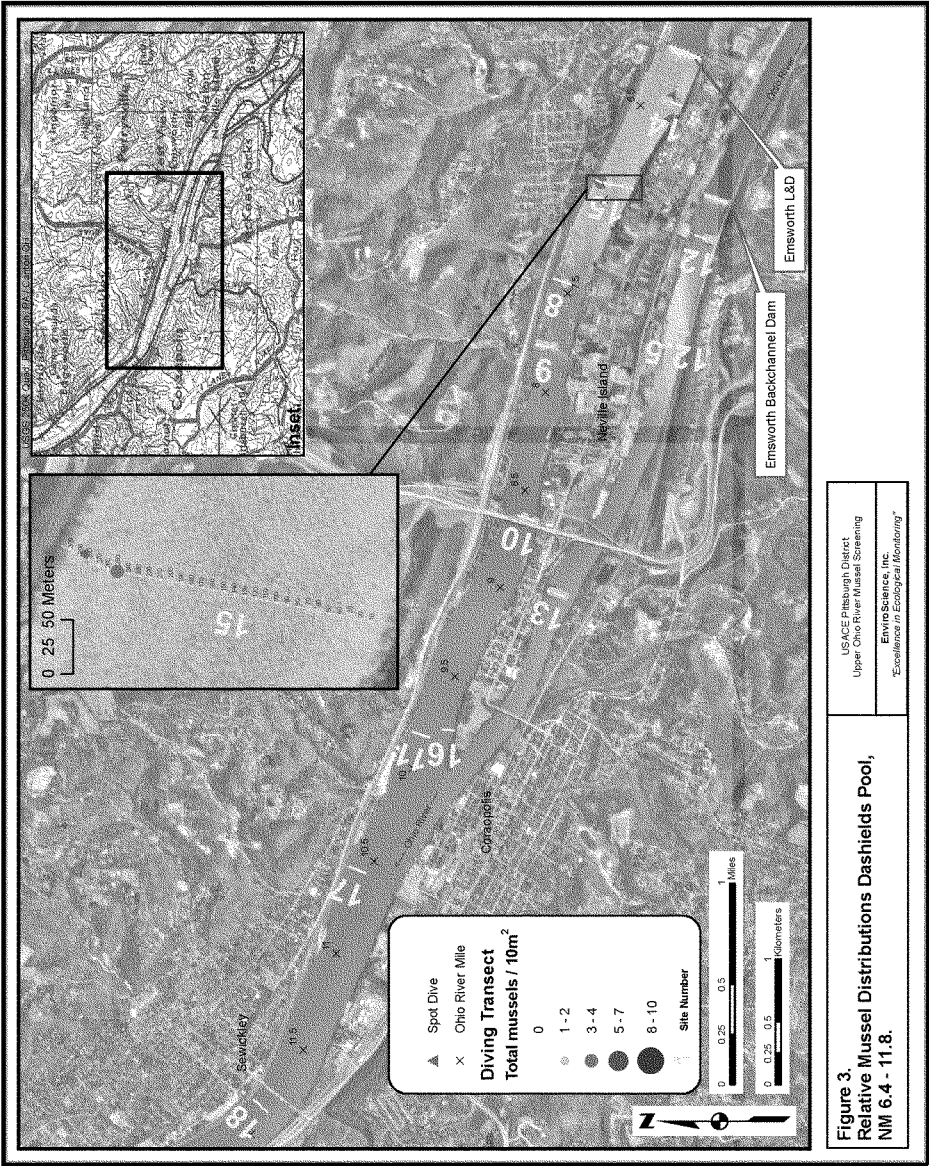
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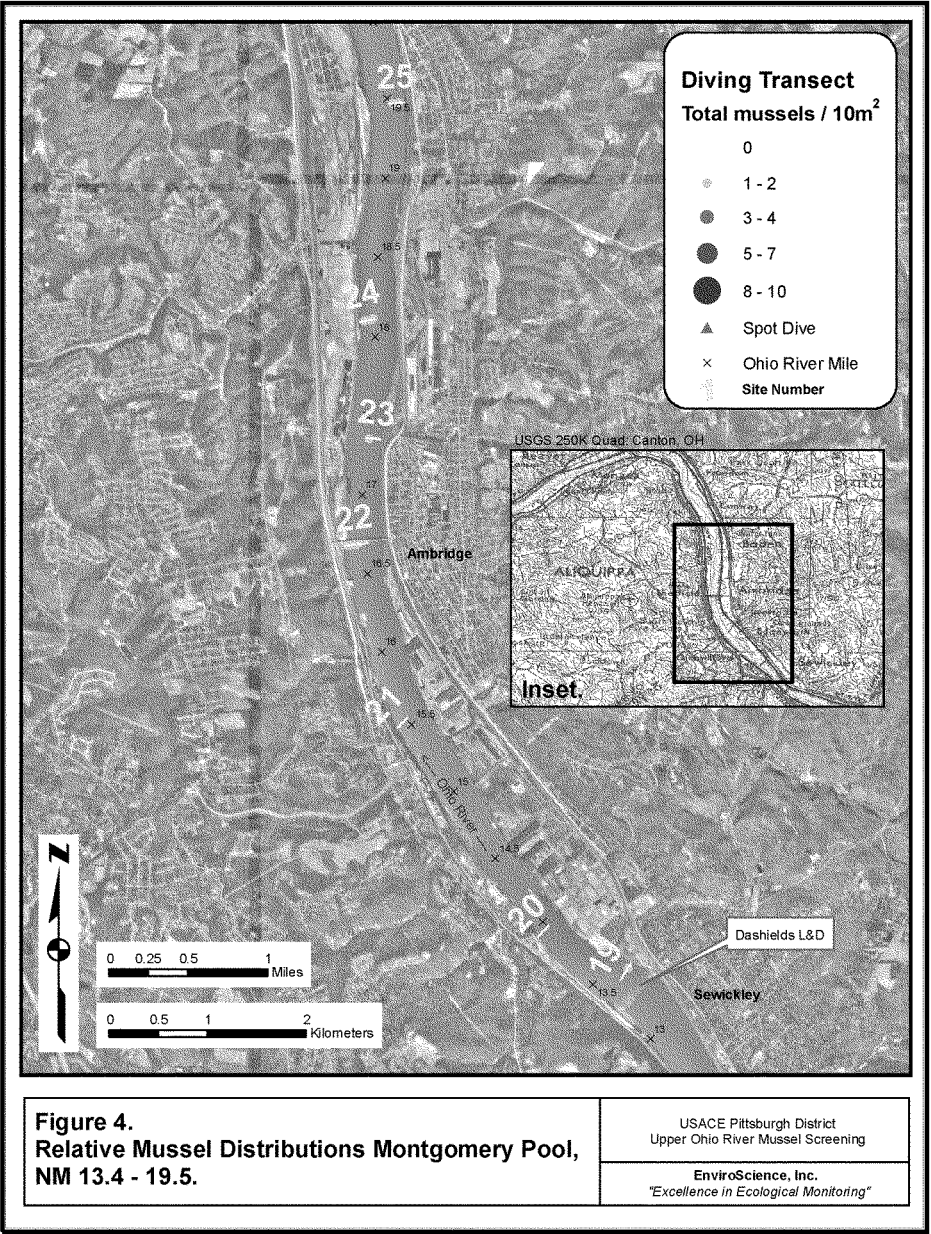
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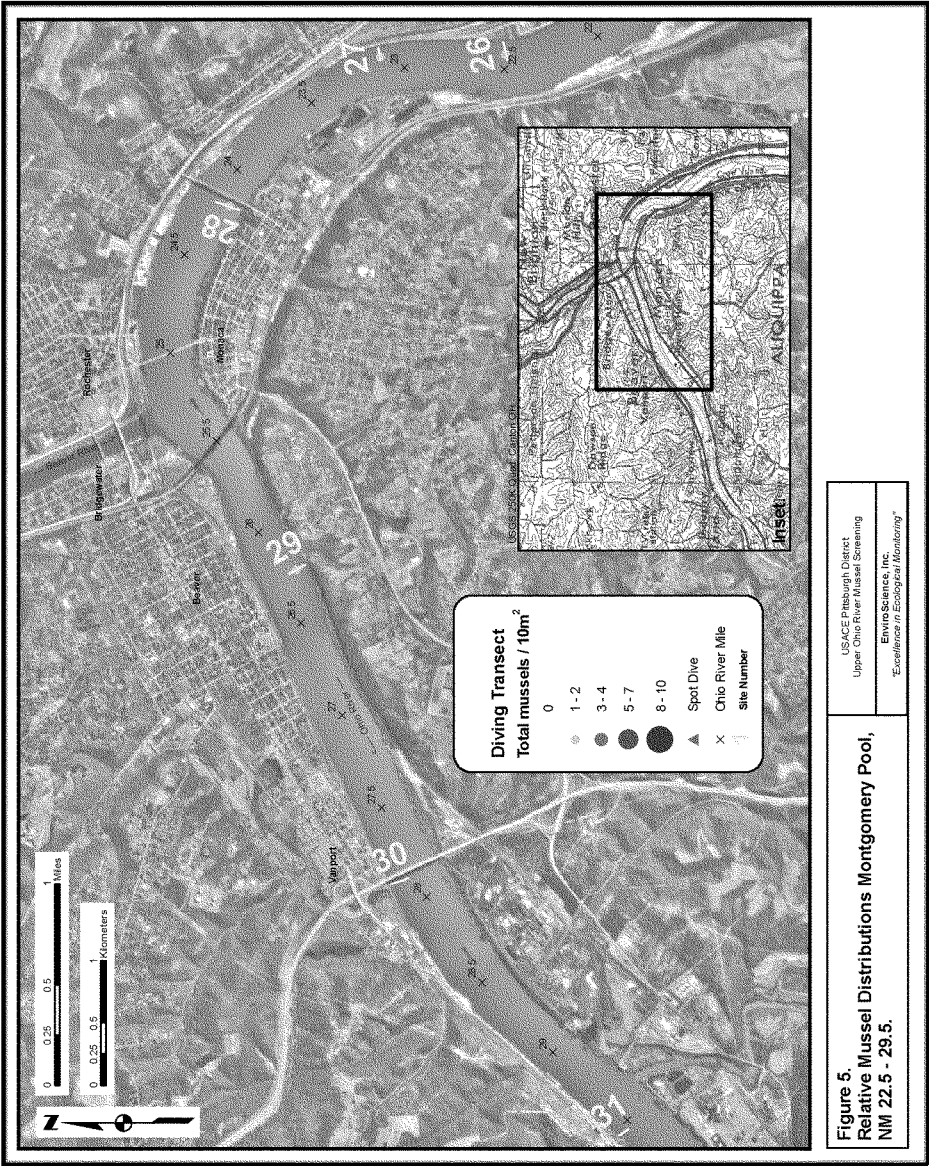
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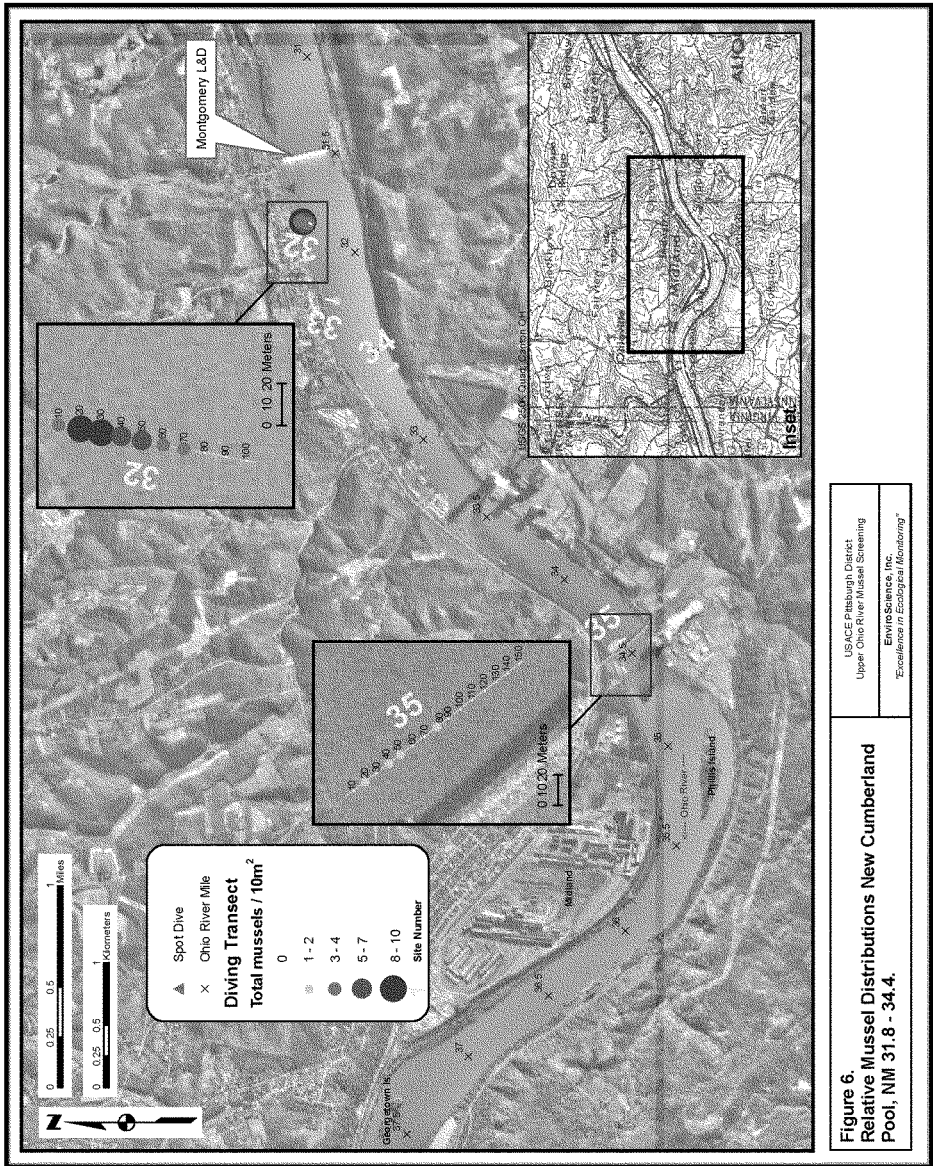












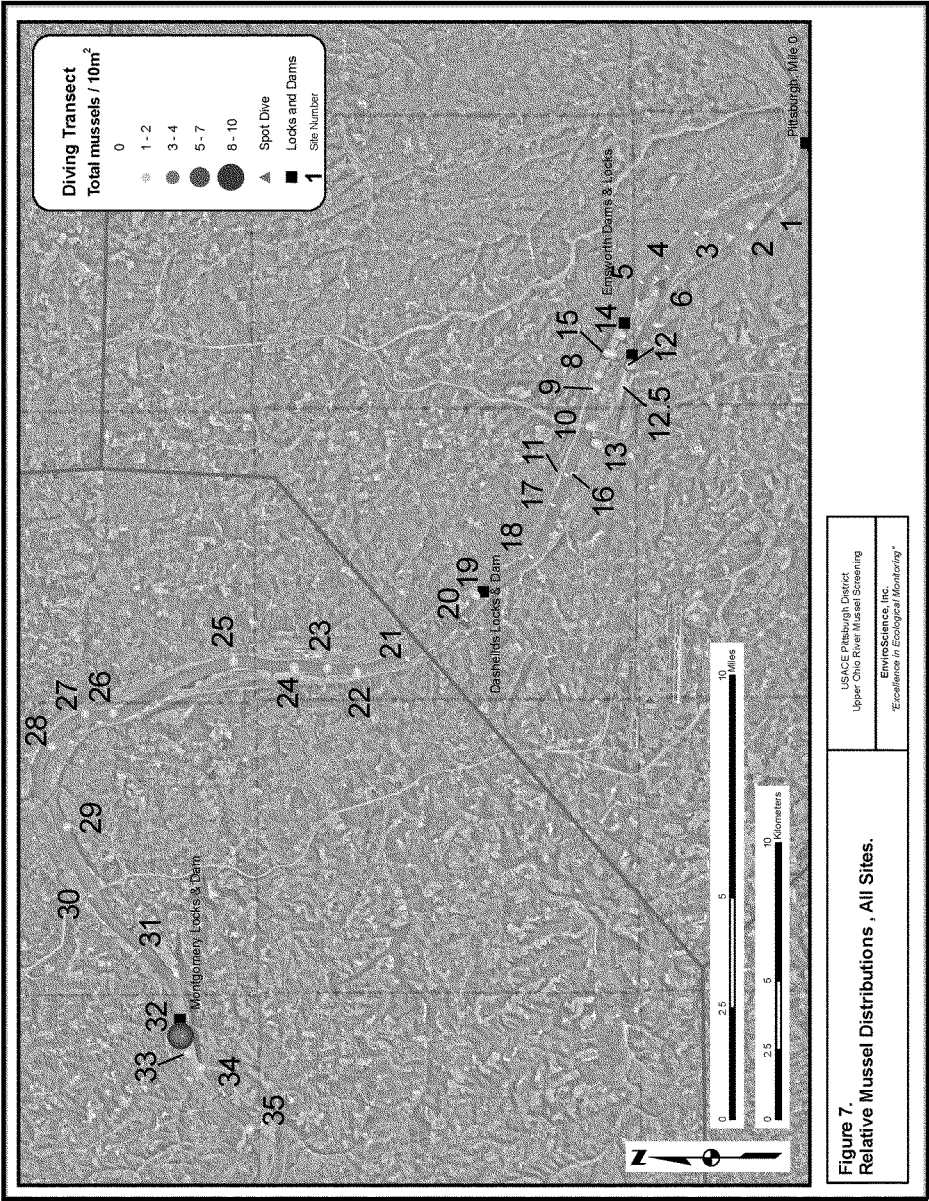
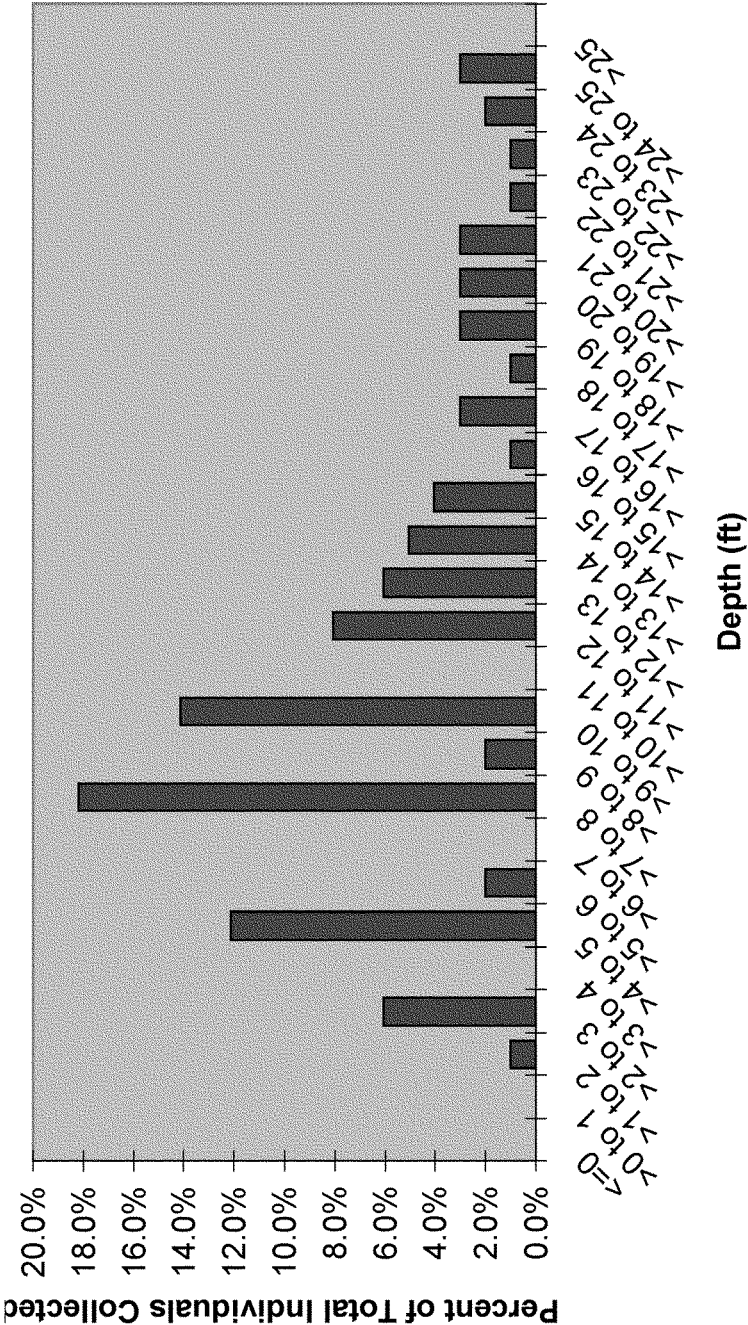


Figure 8. Number of Mussels Collected by Depth



TABLES

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Native Mussel Screening Survey – Upper Ohio River

USACE Contract No. W911WN-08-D-0001 T.O. 0009 / ES Project No. 1276-2657

Table 1. Species Composition, Status, Abundance, and Size Structure of Unionid Mussels Collected at All Upper Ohio River Survey Sites (August 19 – September 4, 2008).

Species	Common Name	PA Status ¹	Best Condition ²				Length (mm)		
			Live	FD	D		min.	max.	avg.
<i>Lasmigona costata</i>	fluted shell		1		1		114.5	114.5	114.5
<i>Lampsilis siliquoidea</i>	fatmucket		1				122.4	122.4	122.4
<i>Leptodea fragilis</i>	fragile papershell	CR		6	3				
<i>Obliquaria reflexa</i>	threehorn wartyback	PXT	8	11			43.8	74.5	55.2
<i>Potamilius alatus</i>	pink heelsplitter	CR	57	8	6		84.2	162.0	134.1
<i>Quadrula quadrula</i>	mapleleaf	PT	41	90			27.7	119.0	78.7
<i>Truncilla donaciformis</i>	fawnisfoot	CU	2				23.8	40.3	32.1
<i>Truncilla truncata</i>	deertoe	PXT		2					
Total:			110	117	10				
No. of Species (8 Total Live + Dead):			6	5	3				100.0%

¹ PE=PA proposed Endangered; PT=PA proposed Treated; CR=PA proposed Candidate Rare; PXT=PA proposed Extirpated, N=PA proposed for review, CU=PA condition undetermined, note that none are officially listed by the PFBC to date.

² FD=fresh dead shell, D=includes weathered dead and subfossil shells

Table 2. Species Composition, Status, Abundance, and Size Structure of Unionid Mussels
Collected at Emsworth Pool Survey Sites (August 19-20, 2008).

Species	Common Name	PA Status ¹	Best Condition ²				Length (mm)		
			Live	FD	D		min.	max.	avg.
<i>Lampsilis siliquoidea</i>	fatmucket		1				122.4	122.4	122.4
<i>Potamilius alatus</i>	pink heelsplitter	CR		1					
Total:			1	1	0				
No. of Species (2 Total Live + Dead):			1	1	0				

¹ PE=PA proposed Endangered; PT=PA proposed Treated; CR=PA proposed Candidate Rare; PXT=PA proposed Extirpated;

N=PA proposed for review, CU=PA condition undetermined, note that none are officially listed by the PFBC to date.

² FD=fresh dead shell, D=includes weathered dead and subfossil shells

Table 3. Species Composition, Status, Abundance, and Size Structure of Unionid Mussels Collected at Dashields Pool Survey Sites (August 20-22, 2008).

Species	Common Name	PA Status ¹	Best Condition ²				Length (mm)		
			Live	FD	D		min.	max.	avg.
<i>Lasimigona costata</i>	fluted shell		1		1		114.5	114.5	114.5
<i>Leptodea fragilis</i>	fragile papershell	CR		2					
<i>Obliquaria reflexa</i>	threehorn wartyback	PXT	5	1			43.8	57.5	50.2
<i>Potamilus alatus</i>	pink heelsplitter	CR	13	1			99.2	160.0	135.3
<i>Quadrula quadrula</i>	mapleleaf	PT	22				27.7	99.5	75.3
<i>Truncilla donaciformis</i>	fawnsfoot	CU	2				23.8	40.3	32.1
Total:			43	4	1				
No. of Species (6 Total Live + Dead):			5	3	1				

¹ PE=PA proposed Endangered; PT=PA proposed Treated; CR=PA proposed Candidate Rare; PXT=PA proposed Extirpated.

N=PA proposed for review, CU=PA condition undetermined, note that none are officially listed by the PFBC to date.

² FD=fresh dead shell, D=includes weathered dead and subfossil shells

Table 4. Species Composition, Status, Abundance, and Size Structure of Unionid Mussels
Collected at Montgomery Pool Survey Sites (August 23-26, 2008).

Species	Common Name	PA Status ¹	Best Condition ²				Length (mm)		
			Live	FD	D		min.	max.	avg.
<i>Leptodea fragilis</i>	fragile papershell	CR		4					
<i>Obliquaria reflexa</i>	threehorn wartypack	PXT	1				74.5	74.5	74.5
<i>Potamilus alatus</i>	pink heelsplitter	CR	14	5	2		84.2	152.0	126.1
<i>Quadrula quadrula</i>	mapleleaf	PT	2				70.0	83.6	76.8
Total:			17	9	2				
No. of Species (4 Total Live + Dead):			3	2	1				

¹ PE=PA proposed Endangered; PT=PA proposed Treated; CR=PA proposed Candidate Rare; PXT=PA proposed Extirpated.

N=PA proposed for review. CU=PA condition undetermined, note that none are officially listed by the PFBC to date.

² FD=fresh dead shell, D=includes weathered dead and subfossil shells

Table 5. Species Composition, Status, Abundance, and Size Structure of Unionid Mussels Collected at New Cumberland Pool Survey Sites (August 26 and September 4, 2008).

Species	Common Name	PA Status ¹	Best Condition ²				Length (mm)		
			Live	FD	D		min.	max.	avg.
<i>Leptodea fragilis</i>	fragile papershell	CR			3				
<i>Obliquaria reflexa</i>	threehorn wartypack	PXT	2	10			49.0	67.0	58.0
<i>Potamilus alatus</i>	pink heelsplitter	CR	30	1	4		111.6	162.0	137.4
<i>Quadrula quadrula</i>	mapleleaf	PT	17	90			48.8	119.0	82.6
<i>Truncilla truncata</i>	deertoe	PXT		2					
Total:			49	103	7				
No. of Species (5 Total Live + Dead):			3	4	2				

¹ PE=PA proposed Endangered; PT=PA proposed Treated; CR=PA proposed Candidate Rare; PXT=PA proposed Extirpated;

N=PA proposed for review. CU=PA condition undetermined, note that none are officially listed by the PFBC to date.

² FD=fresh dead shell. D=includes weathered dead and subfossil shells

APPENDICES

EnviroScience, Inc.

"Excellence in Ecological Monitoring"

Native Mussel Screening Survey – Upper Ohio River

USACE Contract No. W911WN-08-D-0001 T.O. 0009 / ES Project No. 1276-2657

APPENDIX A.

Adaptive Management Group Sampling Protocol

**A Mussel Sampling Protocol to Assess Potential Commercial
Dredging Sites in Pools 2, 3, 4, 5, 7, 8, and 9 in the Allegheny
River and the Dashields, Montgomery, and New Cumberland
Pools in the Ohio River, Pennsylvania**

7 May 2007

Prepared by:

The Adaptive Management Group

Preface

This document describes a sampling protocol to be used for mussel surveys in the upper Allegheny and lower Ohio Rivers. It consists of background information on the protocol, as well as the actual mussel sampling protocol. This document was prepared by a multi-agency Adaptive Management Group (AMG). Information for this document was obtained from the scientific and government literature, results of past mussel surveys, and experiences of those on the AMG. The following individuals developed this document:

Name		Agency
Robert	Anderson	US Fish and Wildlife Service (USFWS)
John	Arway	Pennsylvania Fish and Boat Commission (PAFBC)
Frank	Borsuk	US Environmental Protection Agency (USEPA)
Michael	Cummings	US Army Corps of Engineers (USACE)
Rita	Graham	PADEP
Scott	Hans	USACE
Christopher	Kriley	Pennsylvania Department of Environmental Protection (PADEP)
Jessica	Martinsen	USEPA
Andrew	Miller	Ecological Applications, a consultant to the dredging Industry
Allan	Percha	Hanson Aggregates PMA, Inc., a representative of the Dredging Industry.
Thomas	Proch	PADEP
Tom	Shervinskie	PAFBC
Richard	Spear	PADEP

Introduction

Background

Commercial sand and gravel dredging in the lower Allegheny and upper Ohio rivers (project area) is permitted by the U.S. Army Corps of Engineers (USACE) and the Pennsylvania Department of Environmental Protection (PADEP). The project area (Pools 2, 3, 4, 5, 7, 8, and 9 in the Allegheny River and the Dashields, Montgomery, and New Cumberland Pools in the Ohio River, Pennsylvania) is within the range of eight federally-protected mussel species (Family: Unionidae) (Table 1). Since suitable riverine mussel habitat exists in the project area, there is concern that one or more of these species could be present and be affected by proposed sand and gravel dredging.

Live specimens of two endangered species, the northern riffleshell (*Epioblasma torulosa rangiana*) and the clubshell (*Pleurobema clava*), have been collected in the northern portion of the project area. Recent surveys documented these two species in Pools 8 and 9 of the Allegheny River, and they could be found elsewhere in the project area. Environmental legislation protects individuals and populations of federally and state-protected mussel species from adverse effects of water resource projects. Therefore, before permits are granted to dredge specific river reaches, applicants must conduct mussel surveys using an approved sampling protocol.

Purpose and Scope

The purpose of this document is to provide a sampling protocol that will be used to obtain presence / absence data on federally and state-protected mussel species at selected river reaches in the project area. The mussel sampling protocol will also be used to obtain data on physical (substratum composition, water clarity, etc.) and biotic conditions (species richness, relative species abundance, Catch per Unit Effort (CPUE), etc.).

This protocol, developed as part of an adaptive management process, is intended to allow commercial sand and gravel dredging to occur within the project area without damaging federally and state-protected mussel species. This protocol was prepared for Glacial Sand & Gravel Company, Hanson Aggregates PMA, Inc., and Tri-State River Products, Inc.

This document consists of two parts. The first part presents background and rationale for the protocol. The second part contains the sampling protocol.

Background and Rationale for the Sampling Protocol

The Need for Adaptive Management

The Record of Decision prepared by the USACE (USACE 2006) for this project specified that an adaptive management process, to be implemented by a multi-agency group, will be used to assess and evaluate technical issues pertaining to commercial sand and gravel dredging. The Adaptive Management Group (AMG) consists of representatives from the following organizations: US Fish and Wildlife Service (USFWS), USACE, PADEP, Pennsylvania Fish and Boat Commission (PFBC), US Environmental Protection Agency, and the dredging industry. The USACE and PADEP lead the AMG. At the discretion of the USACE and PADEP, other individuals or organizations could be included in the adaptive management process.

The adaptive management approach to resource issues was first described by Holling (1978), and further refined by Forest Practices Branch, British Columbia (BC) Forest Service (1999), Salafsky et al. (2001), Gunderson et al. (1995), and many others. As described by the Record of Decision for this project (USACE 2006), this adaptive management process will develop improved and scientifically valid permit conditions or restrictions to enhance protection of aquatic and associated littoral and terrestrial biota and habitat. The process will facilitate avoiding or mitigating known or potential adverse environmental impacts associated with dredging. It will also identify river reaches where dredging could occur without causing substantial environmental damage. Surveys conducted using the sampling protocol will obtain physical and biotic data (mussel species richness, relative species abundance, CPUE) that can be used for decision making by the AMG. Finally, as stated in the Record of Decision, it is the intent of the adaptive management process and this protocol to avoid or mitigate adverse environmental impacts associated with the dredging, and to identify areas with limited environmental concern (U.S. Army Engineer District, Pittsburgh. 2006).

As described by Forest Practices Branch, BC Forest Service (1999), adaptive management is an iterative process that begins with 1) problem assessment, then proceeds to 2) study design, 3) study implementation, 4) monitoring of results, 5) evaluation of results, and finally, 6) adjustment to plans and procedures as needed. Concerning mussel sampling and presence / absence of endangered species, this process could be iterated many times as hypotheses are made, data are assembled and synthesized, and collecting methods are refined. As further described by Salafsky et al. (2001), appropriately executed adaptive management depends upon an understanding of traditions of science and philosophy (Pirsig 2005), careful integration of science and politics (Lee 1993), and an understanding of how organizations learn (Schon 1983, Senge 2006).

The *Committee on Scientific Issues in the Endangered Species Act* concluded that the Endangered Species Act requires not only sound science, but also innovative policy and management decisions (National Research Council 1995). Lee (1993) emphasized that

when adaptive management brings about political change, social learning results. This mussel sampling protocol will use sound science to achieve a balance among common and endangered mussels and commercial sand and gravel dredging operations.

The AMG has developed a streamlined mussel sampling protocol for commercial sand and gravel dredging in the project area. This protocol reduces the area searched during a Phase II survey (i.e., when trigger conditions are met during Phase I) compared to the conditions described in the permits. The reduction of the Phase II survey is from a 2,000 ft (610 m) section of channel to 328 ft (100 m). The area of a Phase II is reduced even more in water deeper than 22.5 ft (6.9 m) if it appears that mussel species richness and abundance are reduced. In addition, the protocol allows sampling to occur during a single sampling event, without a Phase I report review by regulatory and resource agencies.

This protocol depends, as do all scientific protocols, on the independence and professional qualifications of the principal investigator to locate any protected mussel species and to correctly assess the mussel resource. Following the 2007 field season, the AMG will review survey results and past permit decisions to ensure that important aspects of this protocol—collecting methods, collection time, extent of the search area, and other basic assumptions—are appropriate. As appropriate, the AHG could extend or revise the protocol.

Study Reaches

Mussel surveys will be conducted in a study reach, defined as a river section that includes area to be dredged as well as all surrounding upriver, downriver, and lateral buffers (see below).

Buffers

For this protocol, protection of mussel resources requires buffers, or areas off-limits to dredging that are likely to be affected during and following aggregate removal. Such buffers are specific zones within a study reach set aside to protect the resource from indirect effects of commercial dredging. Buffers will be established upriver, downriver, and lateral to (shoreward) of the area to be dredged. Downriver buffers would protect mussels from resuspension and settlement of fine particulate material associated with aggregate removal. Upriver buffers would protect the mussel resource from sloughing and movement of substratum. The lateral buffer would include a zone extending at least 500 ft (152 m) on either side of the area to be dredged. These shoreward buffer zones could be less than 500 ft (152 m) wide in narrow river reaches where they extend on to shore. Lateral buffers protect from sedimentation and substratum movement as well as changes in water velocity adjacent to a deepened channel.

Use of Divers

Because water depths will be greater than 1.0 m, sampling will be done by divers equipped with scuba or surface supplied air. Therefore, certain procedures used by non-divers when collecting mussels (i.e., some parts described in Smith et al. 2001) were modified to make procedures applicable to the project area while continuing to be scientifically defensible. This protocol was also designed to be logistically efficient, cost-effective, and safe for divers and support personnel. Surveys could be conducted by one, two, or more divers; however, the actual search time in minutes, whether by one or more divers, is the important factor.

Scientific Basis for the Protocol

This protocol relies extensively on published and unpublished reports describing mussel sampling methods. Specifically, it is based upon: a survey conducted in a free-flowing (unimpounded) reach of upper Allegheny River by Smith et al. (2001), procedures used in the Ohio River (Ohio River Valley Ecosystem Subgroup 2004), proposed sampling methods developed by the dredging industry (Western Pennsylvania Dredging Group 2005), guidelines prepared by the USFWS (USFWS 2005), and methods used by the PADEP (PADEP 2006). Recommendations made by a sampling protocol review panel, convened in 2005 (Carline 2005), were also used to develop this protocol. Finally, recommendations made by the AMG, which met in Pittsburgh, PA on 22 and 23 January and on 21 March 2007, were integral to this protocol.

In addition to the above, many other mussel sampling procedures used in flowing water systems were reviewed. Protocols developed by federal and state biologists that were evaluated include those used for Wisconsin (WDNR 2005), Florida and Georgia (USFWS and GADOT 2005), Arkansas (USFWS 2001), and Minnesota (Davis and Eliason 2003). Basic discussions of mussel sampling by Miller and Payne (1993, 1998), Strayer and Smith (2003), Cummings and Bogan (2006), and the U.S. Army Engineer Research and Development Center (2006) were also consulted. The difficulty of ensuring that rare species are being collected has been studied by many scientists. Publications by Green (1993), Isom and Gooch (1996), Strayer (1999), Metcalfe-Smith et al. (2000), Smith et al. (2001, 2003), Heath (2003), Thompson (2004), and Smith (2006a) were consulted. Finally, the problem of rarity and how it can apply to the status of federally and state-protected species (Ehrlich and Ehrlich 1981; Rabinowitz 1981; Slobodkin 1986; Burke and Humphrey 1987; Arita et al. 1990; Gaston 1994; and de Grammont and Cuaron 2006), and techniques for estimating the amount of sampling required to obtain rare species (Carline 2005, Smith 2006a) were examined.

Multiple sampling methods have been applied for a variety of purposes in lotic habitats throughout the United States. Some were designed to specifically deal with permitting issues related to dredging and other waterway modifications; others were designed to investigate more basic aspects of life history, ecology, and population demographics of common and uncommon mussel species. Nevertheless, the intent of this protocol is first

to determine if federally and state-protected mussel species are present in a specific river reach, and second, to evaluate (or characterize) the overall mussel resource. Therefore, this protocol relies on qualitative sampling methods, which are preferred for detecting presence of rare mussel species (Miller and Payne 1993, Vaughn et al. 1997, Smith et al. 2001).

Both phases of this protocol rely on constrained rather than unconstrained searches. In a constrained search the diver is restricted to a pre-measured area or an underwater transect line. The area searched can be measured and an estimate of mussel density can be made. In addition, the diver can be timed so that information on sampling rate (i.e., CPUE) can be obtained. Likewise it is possible to estimate (or to prescribe) that a diver search substratum at a specific rate. The protocol review panel (Carline 2005) concluded that constrained sampling was more consistent and repeatable than unconstrained sampling mainly because it focused the collector in a specifically delineated area. In this protocol divers will be constrained in a 1-m-wide transect or in a cell typically measuring 50 m on a side.

Application of the Sampling Protocol

This protocol specifies procedures, plus personnel and equipment requirements, to conduct surveys at study reaches in the project area. Field survey results will be used to make permitting decisions for sand and gravel dredging operations. Nevertheless, the AMG has determined that some river reaches could be evaluated simply with data and information obtained by bathymetric mapping (side scan sonar images and/or 5-ft (1.5 m) water depth contours) and would not require field surveys for mussels. As part of the adaptive management process, the AMG will evaluate the use of bathymetric mapping to further streamline the granting of permits for selected river reaches.

The field sampling portion of this protocol consists of two phases. (As noted above, under certain conditions a field survey might not be required). The purpose of the first phase will be to determine either if federally or state-protected species are present or if biotic conditions indicate that it is likely that federally and state-protected species could be present. If it appears that endangered species could be in the study reach (i.e., certain trigger criteria are met; see below), then a second, more spatially intensive phase could be required. It is the intent of this protocol to have Phase I and II take place within the same study period. Therefore, if additional sampling is required, and conditions permit, the crew could proceed to directly to Phase II. Logistical problems (pertaining to weather, personnel, and equipment, etc.) could necessitate a slight delay between study phases. In addition, the permit applicant could choose to avoid an area based on Phase I results rather than invest resources in Phase II.

There are several reasons why Phase I and II should be conducted in the same study period. First, it will be less expensive and logistically more efficient to have all diving work conducted during a single time period (i.e., one mobilization of the survey crew). Second, having the two phases combined will ensure that abiotic conditions (water

clarity, temperature, and velocity) are essentially the same throughout both phases. Third, this will ensure that Phase II is conducted at exactly the same location as Phase I. Finally, this will help to ensure that the same crew conducts both phases.

Trigger Criteria

Trigger criteria have been established that, if met, indicate that it is possible that one or more federally and state-protected mussel species are present but have not been located. Two types of trigger criteria are employed: 1) presence of one or more species that could indicate habitat is suitable for federally and state-protected mussels, and 2) specific density criteria. These are described in more detail below:

1. **Habitat conditions which could indicate that federally-protected species are present.** The USFWS prepared a list of mussel species typical of flowing-water, riverine habitat (Table 2). The federally-protected species whose historical ranged included the project area require such habitats.
2. **Density criteria.** Specific density criteria have been established that would trigger the Phase II survey. Collection data from Phase I will be adjusted based upon findings by Smith et al. (2001). Smith et al. (2001) reported that qualitative sampling (visual and search by feel) at a bridge replacement site in a free-flowing reach of the upper Allegheny River under-estimated mussel relative species abundance when compared with results from quantitative substratum sampling (excavation of 0.25 sq m quadrats). Findings were species-specific (e.g., 31 percent of clubshells and 52 percent of northern riffleshells present were located without substrate excavation). Therefore, for this protocol, actual counts (number of mussels collected) will be doubled to convert from an *observed* to an *actual* mussel density (see below).

Two density criteria will be applied to Phase I surveys that would require a Phase II:

1. A transect segment could have an *observed* density between 0.3 and 0.5 mussels/m² (*actual* density equal to 0.6 to 1.0 mussels/m²). If a transect segment supported this density, and at least one species listed in Table 2, a Phase II survey would be triggered.
2. A transect segment could support an *observed* density of at least 0.5 mussels/m² (*actual* mussel density equal to at least 1.0 mussels/m²), regardless of species composition.

These above criteria, if met or exceeded, would trigger a Phase II study.

Basis of the Phase II Design

Phase II survey design is based on information in Smith et al. (2001) in which collectors (referred to as observers) searched qualitatively in twenty-four mainly 2,500 m² cells placed within the entire area expected to be directly and indirectly affect by a proposed bridge replacement project. Smith et al. (2001) used divers in water deeper than 1.0 m and snorkelers in water less than 1.0 m deep. Observers were instructed to search a minimum of 240 min / cell (i.e., four observers each searched for 60 min). Observers worked by fanning away fine sediment, removing loose, non-embedded material, and raking loose sediment with fingertips in an effort to detect mussels. It was assumed that each observer searched at a rate of 0.5 m²/min based on extensive comparisons between quadrats searched visually with those completed excavated (Smith et al. 2006).

Phase II of this protocol requires that divers search within a 2,500 m² cell, collect for a specific minimum time, and work at an estimated effective search rate. For this protocol, as in Smith et al. (2001), it is assumed that the effective diver search rate is 0.5 m²/min. Phase II of this protocol, as in Smith et al. (2001), requires that the minimum search time in the 50 by 50 m cell will be 240 min.

Application of the Adaptive Management Process

As described above, adaptive management for this project was envisioned to be iterative and used to facilitate needed adjustments based upon hypotheses, monitoring, evaluation, and synthesis. It is within the intent of the Record of Decision (USACE 2006) to apply adaptive management as the major mechanism to develop improved and scientifically valid permit conditions or restrictions that are required to protect aquatic and associated littoral and terrestrial biota and habitat. The intent of adaptive management will be to achieve a balance between survival of federally and state-protected mussel species and commercial utilization of aggregate. In addition to data on federally and state-protected species, the AMG will use other physical and biotic data obtained with this protocol for decision making. As this project proceeds it is likely that the AMG will evaluate and discuss the following, as well as many other, technical aspects of this protocol:

Appropriateness of data for decision process. Past permitting decisions will be reviewed to determine if they were reasonable and appropriate based upon the biotic and abiotic data obtained using the protocol.

Trigger criteria for Phase I studies. Phase I trigger criteria will be evaluated based on results of sampling.

Interpretation of biotic results for Phase II. Phase II sampling takes place in a larger area than Phase I (2,500 m² cells vs. 10 m² segments). Therefore, numeric criteria established for 10 m² segments would not necessarily apply to Phase II results. As data are obtained, the appropriateness of numeric criteria for both phases will be examined.

Efficiency and safety of the sampling protocol. Logistic aspects of the sampling protocol will be analyzed and adjustments made if needed.

Efficiency of the permitting process. All aspects of the permitting process will be evaluated.

Buffer areas. The size and use of buffer areas will be evaluated based on the results of new information.

Sampling restrictions. Any existing restrictions pertaining to water temperature, water clarity, weather, etc., will be examined for appropriateness and modified if necessary based on scientifically defensible information.

Clarification of the mussel concentration concept. The Record of Decision (USACE 2006) stated that density criteria for mussels (referred to as mussel concentration standards) were included in attachments to the permits. As future mussel surveys are conducted and results evaluated by the AMG, these mussel concentration standard for non-federal and non-state-protected species will be evaluated and further refined if necessary. Mussel concentration standards could vary throughout the study area depending on site-specific conditions (e.g., Pool 8 could be different from Montgomery Pool). If warranted, the AMG could recommend other biotic criteria (standards) to further protect common species.

Clarification of the significant mussel resource concept. The permit developed by the PADEP (2006) defines significant mussel resources differently than permits prepared by the USACE. The AMG will evaluate existing and new information on mussels to better define this concept. Since the project area is large (over 100 miles, 161 km) and river conditions vary throughout, a single definition will not likely apply for the entire project area. Carline (2005) recommended using a frequency distribution of representative data to define mussel resources significant in the project area.

Species that could indicate habitat suitable for federally and state-protected species. This protocol relies on a species list developed by the USFWS (Table 2) which could indicate mussel habitat based on descriptions in Parmalee and Bogan (1998). Adaptive management can be used to refine the list based on new and scientifically valid information.

Sampling Protocol

Background

The initial evaluation for dredging authorization will consist of performing bathymetric mapping of the proposed dredging and buffer areas. This mapping (at a scale of 1 inch to 100 ft, or 2.54 cm to 30.5 m) will consist of side scan sonar images, and/or water depth contouring at 5-ft (1.5 m) contour intervals. This mapping should be provided to the appropriate USFWS, USACE, PADEP, and PFBC representatives for review at least 30 days prior to proposed sampling.

Some portions of the project area are currently restricted from dredging based on physical barriers (bridges, submerged crossings, dams, public water intakes, and public water well fields, etc). Some of the remaining areas available for dredging authorization have been disturbed by past dredging. If such latter areas were permitted, then previously dredged areas would be re-dredged. Depending on water depths and other physical characteristics, these previously dredged areas are very unlikely to support live mussels. The AMG could suggest that, based on an evaluation of bathymetric mapping, such areas could be permitted for dredging without the need for mussel surveys. It is not the intent of regulatory and resource agencies to require the industry to expend time and money surveying areas that are unlikely to support live mussels.

This protocol describes procedures for collecting physical and biotic data at study reaches proposed for dredging that, based on a review of bathymetric mapping, are likely to support live mussels.

Purpose

The purposes of Phase I are: 1) to assess if endangered species are present, or 2) to determine if habitat and biotic conditions are suitable for federally and state-protected species. In other words, if Phase I results indicate that federally and state-protected species could be present, then either the species is assumed to be present and avoided or additional sampling would be conducted. The purpose of Phase II is to specifically search for federally and state-protected mussel species using a constrained, qualitative search. If conditions that would trigger Phase II are not met, then the site could be authorized for dredging.

Phase I Survey

Requirements. Requirements for Phase I sampling are based on the following (taken from USFWS 2005):

1. Mussel surveys will be overseen by a qualified individual with a valid scientific collector's permit and a special permit to collect threatened and endangered species. In addition, the individual must have experience successfully locating and identifying mussel species in the project area. The qualified individual will be present at all times during the survey. The PFBC and USFWS maintain lists of individuals qualified to collect mussels using this protocol; these organizations should be contacted if additional information is required. Assistants who search for mussels will have at least some previous experience successfully conducting such surveys.
2. Surveys will be performed between 1 May and 15 October, contingent upon suitable and safe weather and river discharge conditions. During this time mussels are likely to be more active and therefore more visible to divers, and more likely to re-burrow after being disturbed. Air and water temperatures will be no less than 55° F (12.8° C).
3. Mussel sampling will take place along transect lines placed perpendicular to the river bank that will extend through the reach to be dredged, and will also include the up, downriver, and lateral buffer zones that will not be directly disturbed by dredging but could experience indirect effects. Transects will be placed at 100-m increments (328 ft) throughout the study reach.
4. Each transect will be subdivided into 10-m segments.
5. Along each transect, paired divers will visual search an area one meter wide for mussels (0.5 m on each side of the transect). A visual search includes moving cobble and woody debris, hand-sweeping away silt and small detritus, and disturbing and probing the upper 2.5 – 5.0 cm (1-2 in) of substratum to better see mussels that could be partially buried (based on Smith et al. 2001). Since this is a qualitative survey of the substrate surface relying primarily on visual cues, minimum water visibility should be 0.5 m (20 in).
6. A minimum of 10 diver-min of searching will take place in each 10-m² segment in which mussels and/or suitable mussel habitat is present (paired divers will each spend half the time, or at least 5 min, searching half of the segment). If conditions in any 10-m² segments are determined to provide unsuitable mussel habitat, they will not be searched. Reasons for not searching a segment will be documented in writing. Unsuitable habitat includes bedrock or areas with at least 25 cm (10 in) of silt. It is understood that some habitats and conditions could be more complex and difficult to search because of presence of silt, possible zebra mussel colonization, large cobble, boulders and woody debris, or other factors. If additional search time is required, reasons will be documented in writing.
7. From each 10-m² segment, all observed mussels will be placed in a labeled mesh bag and brought to the surface for further processing and identification. All mussels will be recorded as occurring within a specific transect segment.

Observations of each diver be recorded and reported separately, although ultimately results will be summarized for each transect segment.

8. If no mussels are observed in two adjacent transects, with at least one transect containing apparently suitable mussel habitat, a free dive of at least 10 min per diver will be conducted between the two transects in the area of suitable mussel habitat. If live or fresh dead mussels are found between two transect lines, an additional transect line will be placed at that location and a search conducted as described above.
9. Mussels will be held long enough to identify, measure, and photograph, during which time they will not be exposed to temperature extremes. A series of color photographs will be taken of all live mussel species that are collected. The side, anterior, and posterior of each will be depicted in sufficient detail and clarity to identify it. All federally-protected mussels will be returned to the point of capture immediately following identification. No federally-protected mussels will be removed from the subject river reach.
10. A voucher specimen of each mussel species observed to be dead will be provided to the appropriate USFWS or PFBC representative.
11. Survey results, including data listed in Table 3 will be sent to the USFWS and PFBC following completion of the survey.
12. Bathymetric mapping of the site will occur before mussel surveys are conducted. This information will be sent to the appropriate USFWS, USACE, PFBC, and PADEP representatives. It is possible that some proposed areas will not require mussel surveys if bathymetric mapping indicates past dredging. An annual report of dredging activities will be prepared and submitted to PADEP. If requested, this report will be provided to representatives of USFWS, USACE, and PFBC.

Effectiveness. Mussel surveys will remain in effect for five years as per the USACE permit unless new information warrants reconsideration. The five-year period will commence when the field survey is completed.

Interpretation of Phase I Survey Results

Data from Phase I will consist of 1) a listing of the actual numbers of live unionid mussels present in each 10-m² segment of each transect, 2) A species list to include the actual numbers obtained per transect to prepare a table of relative species abundances for each river reach, and 3) Other required data and information listed on Table 3. Depending on survey results, any one of the following situations could apply:

River Reaches that Could Qualify for Dredging

Situation I. Either of the following two conditions, if met, would indicate that no Phase II survey is required and that the river reach could be dredged: 1) Transect segments support an *observed* density less than 0.3 mussels/m² (*actual* density less than 0.6 mussels/m²) with no federally and state-protected species present; 2) Transect segments support an *observed* density between 0.3 and 0.5 mussels/m² (*actual* density between 0.6 and 1.0 mussels/m²) with no species listed in Table 2 present.

The Need to Buffer a Study Reach, with no Phase II Survey Required

Situation II. If one or more live or fresh dead federally or state-protected mussel species are found, all direct and indirect dredging effects will be avoided in consultation with the USFWS. Buffer areas will be established so that no dredging will be permitted 1,500 ft (457 m) upriver, 500 ft (152 m) lateral to, and 500 ft (152 m) downriver of the federally and state-protected species. In some cases a larger buffer area could be required to avoid potential adverse effects. In this case no Phase II survey would be conducted.

Conditions to Trigger Phase II

Two situations could trigger a Phase II survey.

Situation III. A transect segment could have an *observed* density between 0.3 and 0.5 mussels/m² (*actual* density equal to 0.6 to 1.0 mussels/m²) and support one or more species indicative of riverine conditions (Table 2). In this situation there are two possible actions: 1) buffers will be established so that no dredging will be permitted within at least 1,500 ft (457 m) upriver, 500 ft (152 m) lateral to, and 500 ft (152 m) downriver of the transect segment; or, 2) a Phase II survey (see below) will be conducted to determine if federally and state-protected species are present.

Situation IV. A transect segment could support an *observed* density of 0.5 or more mussels/m² (*actual* density equal to or greater than 1.0 mussels/m²), regardless of species composition. This density is achieved if five or more mussels are observed within any 10-m² segment. In this situation either 1) buffers will be established so that no dredging will be permitted within at least 1,500 ft (457 m) upriver, 500 ft (152 m) lateral to, and 500 ft (152 m) downriver of the transect segment; or, 2) a Phase II survey (see below) will be conducted to determine if federally and state-protected species are present.

Planning the Phase II Survey

Assuming that transects are 100 m apart, the Phase II survey area includes a reach 50 m up and 50 m downriver of the central transect line. That is, the area should extend for a distance approximately half way between the central transect line and next nearest up- and downriver transect lines. It is assumed that these cells are 50 m on a side (2,500 m²), although cell size could vary under certain conditions (as in Smith et al. 2001)

The AMG determined that surveys will be spatially more intensive in shallow (rather than deep) and undisturbed (rather than disturbed) riverine habitat. Preliminary data from the Allegheny River suggest that mussel species richness and abundance appear to be greatest in water less than 20 ft (6.1 m) deep at normal pool. This is based on a study by Tamara Smith (Smith 2006b) who reported that the greatest mussel abundance and richness values (at eight transects in Pools 5-8 of the Allegheny River) were obtained in water less than 20 ft (6.1 m) deep, although depths up to 30 ft (9.1 m) were sampled. Additional data provided by the Pennsylvania Fish and Boat Commission (provided to the AMG in 2007) supported these findings and documented the occurrence of northern riffleshell at a depth of 20 ft in Pool 9 of the Allegheny River. Based on this information, the AMG determined that habitats less than 22.5 ft deep should be more intensively sampled than habitats greater than 22.5 ft (6.9 m) deep at normal pool. (Depths will be adjusted for river discharges to normal pool elevation). The additional 2.5 feet is conservative and considers 1) the small set of data in Smith (2006b), 2) the inherent variability in mussel distribution in rivers, 3) the difficulty of accurately and precisely measuring water depth in the field, and 4) the documented presence of at least one endangered species at a depth of 20 feet.

Implementing the Phase II Survey

The number of 50 by 50 m cells to be searched during Phase II will be determined by the suitability of the habitat (based upon water depth and physical disturbance caused by past dredging) immediately surrounding the transect where trigger conditions were met or exceeded during the Phase I survey. The following describes three conditions that could exist:

Habitat Condition I. The area immediately surrounding the 10 m² transect segment (where trigger criteria to initiate Phase II were met) could be less than 22.5 ft (6.9 m) deep at normal pool and comprised of habitat considered to be suitable for riverine mussel species.

In this circumstance, divers will delineate multiple 2,500 m² cells on either side of the transect line (extending halfway to the up- and halfway to the downriver transect line). Cells to be searched, however, will only be delineated in water less than 22.5 ft (6.9 m) deep at normal pool.

Habitat Condition II. The area immediately surrounding the 10 m² transect segment (where trigger criteria to initiate Phase II were met) could be greater than

22.5 ft (6.9 m) deep at normal pool and comprised of habitat considered to be less suitable for riverine mussel species than those described immediately above (Habitat Condition I).

Since the transect which met trigger criteria is in water deeper than 22.5 ft (6.9 m), only a single 2,500 m² cell will be searched. This 2,500 sq m cell should be centered, to the extent possible, on the 10-m² transect segment where trigger criteria were met. This cell is centered on the line and extends up and downriver of the transect.

Habitat Condition III. The area immediately surrounding the 10 m² transect segment (where trigger criteria to initiate Phase II were met) could be comprised of habitat considered to be unsuitable for riverine mussel species because it was recently altered by past dredging or other similar disturbances.

In this circumstance, no Phase II survey will be conducted.

Sampling Procedure within Each Cell

Diver(s) will search the 2,500-m² area for a minimum search time of 240 min. If it is determined that one sub-area is substantially better than the other, then diver(s) could spend additional time where mussels are most likely to be found; however, the entire cell should be searched.

If conditions in any of these cells are determined to provide unsuitable mussel habitat, they will not be searched. Reasons for not searching a cell will be documented in writing. Unsuitable habitat includes bedrock or areas with at least 25 cm (10 in) of silt. Conversely, conditions in a cell could be more complex and difficult to search because of presence of silt, zebra mussel colonization, large cobble, boulders and woody debris, or other factors requiring additional search time to cover the area of the cell. When the qualified biologist who is on site determines that additional search time is required to effectively search a cell, the reasons will be documented in the survey report.

Data and Information Obtained during the Phase II Survey

Data and information obtained during the Phase II survey will consist of 1) a listing of the actual numbers of live and freshly dead unionid mussels present in the 2,500-m² cell, 2) An estimate of CPUE by dividing the number of live mussels actually collected by the total search time expended, and 3) A species list to include the actual numbers of live mussels and a relative species abundance table. Data and information will be submitted to appropriate agency personnel.

Suitability of Study Reaches for Dredging

Data collected during Phase II could lead to the following decisions being made:

Situation V. If one or more live or fresh dead federally or state-protected mussel species are found, all direct and indirect dredging effects will be avoided in consultation with the USFWS. Buffer areas will be established so that no dredging will be permitted 1,500 ft (457 m) upriver, 500 ft (152 m) lateral to, and 500 ft (152 m) downriver of federally and state-protected species. In some cases a larger buffer area could be required to avoid potential adverse effects. This corresponds to Situation I, Phase I studies.

Situation VI. If no federally or state-protected species are found, then the area could be suitable for dredging. As stated above, the AMG will evaluate and further refine mussel concentration standards (density criteria) for common mussel species. Therefore, if warranted, the AMG could ultimately recommend new standards, or possibly other biotic criteria, to further protect common mussel species.

Summary

The background, rationale, and a full description of a sampling protocol for common, as well as federally and state-protected freshwater mussel species in the project area have been presented. This protocol will be used to obtain data on physical (substratum composition, water clarity, etc.) and biotic conditions (species richness, relative species abundance, CPUE, etc.) in each study reach. This protocol, developed as part of an adaptive management process, will allow commercial sand and gravel dredging to occur within the project area without damaging federally and state-protected mussel species. In the future the AMG could modify the trigger criteria, study plans, and procedures as more data are collected and synthesized.

Table 1. Endangered species, candidate species, and mussel species of concern. The project area is within the reported range of these species. This table was taken from Appendix T of the USFWS (2005)

<i>Species</i>	Common name	Habitat	Status
<i>Cyprogenia stegaria</i>	fanshell	Lotic	Endangered
<i>Epioblasma torulosa rangiana</i>	northern riffleshell	Lotic	Endangered
<i>Hemistena lata</i>	cracking pearly mussel	Lotic	Endangered
<i>Lampsilis abrupta</i>	pink mucket	Lotic	Endangered
<i>Obovaria retusa</i>	ring pink	Lotic	Endangered
<i>Plethobasus cooperianus</i>	orange-foot pimpleback	Lotic	Endangered
<i>Pleurobema clava</i>	clubshell	Lotic	Endangered
<i>Pleurobema plenum</i>	Rough pigtoe	Lotic	Endangered
<i>Plethobasus cyphus</i>	sheepnose mussel	Lotic	Candidate
<i>Villosa fabalis</i>	Rayed bean mussel	lotic	Candidate
<i>Epioblasma triquetra</i>	snuffbox	lotic	Species of concern
<i>Quadrula cylindrica</i>	rabbitsfoot	lotic	Species of concern
<i>Simpsonaias ambigua</i>	salamander mussel	generalist	Species of concern
Habitat description summarized from Parmalee and Bogan (1988) lotic – typical of flowing water and gravel and cobble substrates; lentic – minimal flow; sand or silt substrates; generalist – occurs in both habitat types.			

Table 2. Species indicative of flowing water and large river habitats with stable substratum. The asterisk (*) indicates that the species is likely extirpated from the Ohio River and lower Allegheny River. This table was taken from Appendix T of the USFWS (2005)

Species	Common name	Habitat
<i>Actinonaias ligamentina</i>	Mucket	lotic
<i>Alasmidonta marginata</i>	Elktoe	lotic
<i>Cyclonaias tuberculata</i> *	purple wartyback	lotic
<i>Amblema plicata</i>	Threeridge	generalist
<i>Ellipsaria lineolata</i> *	butterfly mussel	lotic
<i>Elliptio crassidens</i> *	elephant ear	lotic
<i>Elliptio dilatata</i>	Spike	lotic
<i>Fusconaia flava</i>	Wabash pigtoe	lotic
<i>Fusconaia subrotunda</i>	long-solid	lotic
<i>Lampsilis fasciola</i>	wavyrayed lampmussel	lotic
<i>Lasmigona compressa</i> *	creek heelsplitter	lotic
<i>Ligumia recta</i>	Black sandshell	lotic
<i>Obliquaria reflexa</i>	threehorn wartyback	lotic
<i>Obovaria olivaria</i> *	Hickorynut	lotic
<i>Obovaria subrotunda</i>	round hickorynut	lotic
<i>Pleurobema cordatum</i> *	Ohio pigtoe	lotic
<i>Pleurobema rubrum</i> *	pyramid pigtoe	lotic
<i>Pleurobema sintoxia</i>	round pigtoe	lotic
<i>Ptychobranhus fasciolaris</i>	Kidneyshell	lotic
<i>Quadrula metanevra</i> *	Monkeyface	lotic
<i>Quadrula pustulosa</i> *	Pimpleback	generalist
<i>Truncilla truncata</i> *	Deertoe	generalist
<i>Tritogonia verrucosa</i> *	pistolgrip mussel	generalist
<i>Villosa iris</i> *	rainbow mussel	lotic

Table 3. Required and optional data and information for mussels surveys in the project area (based on USFWS 2005 and recommendations of this AMG).
Individual recording data
Divers
Mussel identifier
Surface weather conditions
Air temperature
Water temperature
Water visibility at collection points
Any notes on sampling methods and survey methodology
Site map
Reach description (River Miles, past river bed disturbances if known, substratum description, water clarity, etc.)
River discharge at nearest USGS station
Date and time of collections
All dive times
GPS coordinates of each dive transect
Substratum data. This is intended to be a visual description of grain size based on the Wentworth scale. See Wentworth (1922) and Carver (1978) for more information.
Estimate of relative compaction of substratum
Estimate of percent zebra mussel coverage
Unionid species list (note both live and dead)
Size range of mussels
Photographs of state-listed mussel species
Presence of live snails (optional)
Any other (optional) information the collector deems worthy to include
In addition, those conducting these surveys are encouraged to provide a brief statement describing their Quality Assurance Project Plan. This statement would describe specific planning, implementation, and assessment procedures for these mussel surveys as well as any specific quality assurance and quality control activities.

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APPENDIX B.

Digital Images Recorded at Sites

**APPENDIX B.
DIGITAL IMAGES RECORDED AT SITES**



Image 1. District diving representative Charley Weight performs field inspections on 8/19/08.



Image 2. The EnviroScience Dive team (Matthew Walsh, Daniel Lakamp, and Michael Hanway, L-R) and dive setup ready to begin field work aboard the survey vessel *E.O. Wilson* (ES file photo)

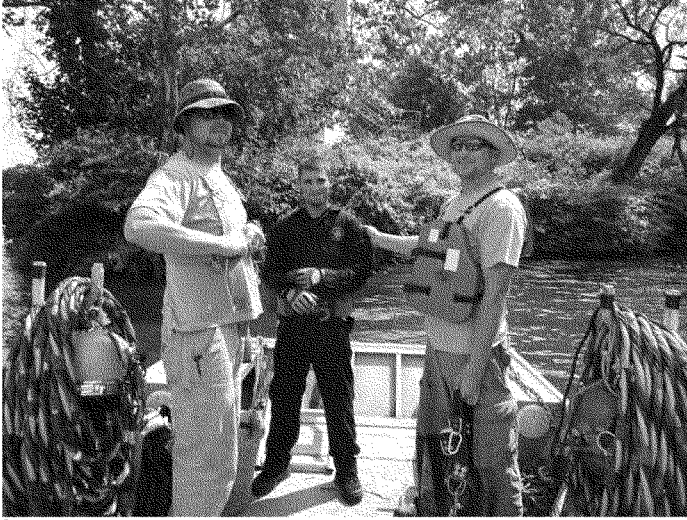


Image 3. Standby diver Matt Walsh (left), diver Jimmy Hartman (center), and tender / safety officer Tim Willaman (right) prepare for a spot dive near NM 4.8 on 8/19/08.



Image 4. View of a typical mussel sample divided into metered segments



Image 5. Shoreline habitat at SITE 3, 8-19-08



Image 6. View from the beginning of the transect at Davis Island, SITE 4, 8-19-08

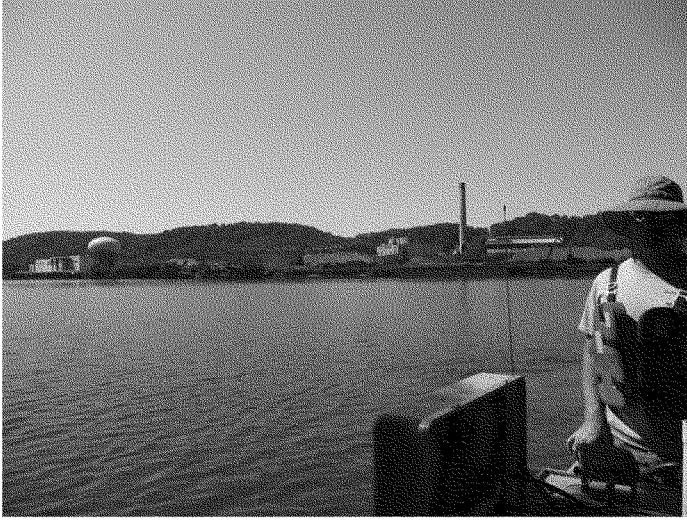


Image 7. View of SITE 6 and industrial land use at Neville Island, 8-20-08



Image 8. View of SITE 5, 8-20-06

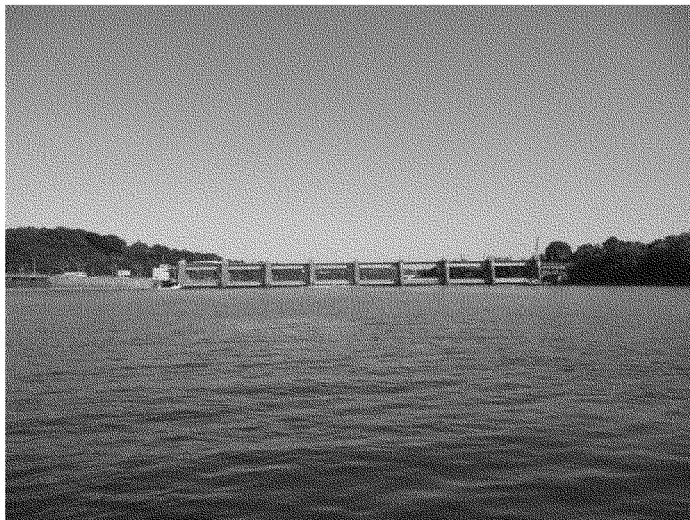


Image 9. View of the Emsworth mainstem Locks and Dam, near SITE 5, 8-20-06



Image 10. A diver begins a search beginning at Neville Island at SITE 14, 8-20-08



Image 11. View of the right descending bank facing upstream from SITE 8 on 8-21-08



Image 12. View of the right descending bank shoreline habitat at SITE 11, 8-21-08



Image 13. View of the left descending shoreline and the backchannel area around Neville Island from SITE 13, 8-22-08



Image 14. View of the right descending bank facing upstream near the end of SITE 15. This transect covered the entire channel between Neville Island, 8-22-08

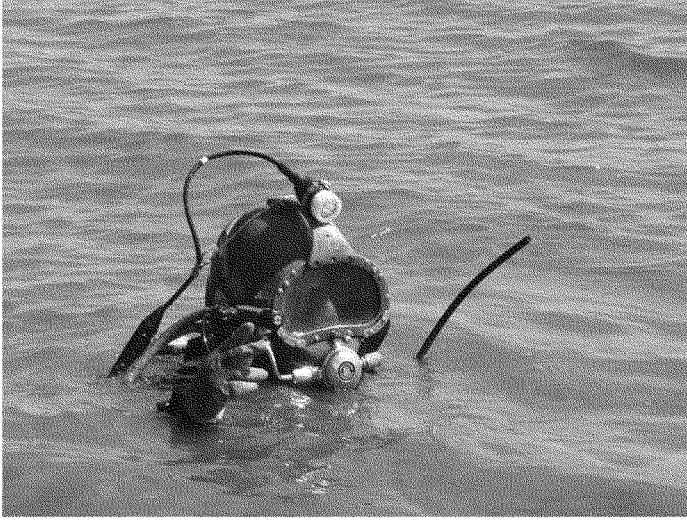


Image 15. 8-22-08 SITE 15



Photo Credit: Skelly & Loy

Image 16. View from the river towards the right descending bank at
SITE 24, 8-24-08



Photo Credit: Skelly & Loy

Image 17. View of a commercial gravel dredging operation near SITE 24, 8-24-08



Image 18. A male fatmucket (*Lampsilis siliquoidea*) from SITE 2, 8-19-08.
Note zebra mussel byssal scars on the posterior (left).



Image 19. View of a zebra mussel on the posterior margin of a pink heelsplitter (*Potamilus alatus*) on 8-20-08 at SITE 5



Photo Credit: Skelly & Loy

Image 20. Processing of mussels on 8-20-08 at SITE 14

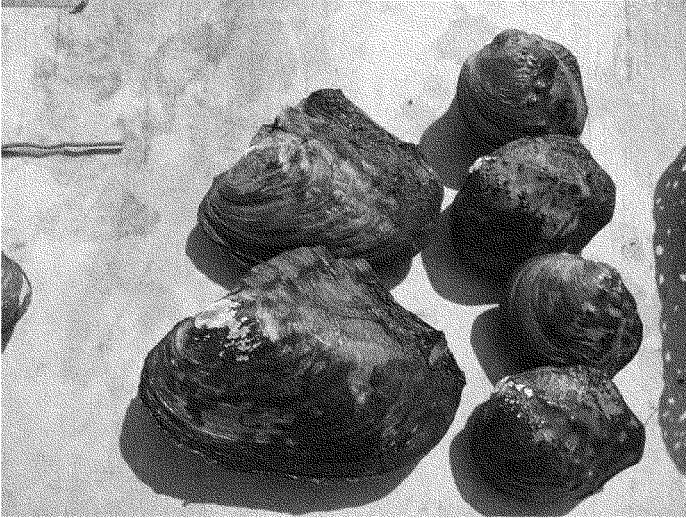


Image 21. View of the pink heelsplitter (*Potamilus alatus*; left) and the mapleleaf (*Quadrula quadrula*; right), 8-20-08 SITE 14

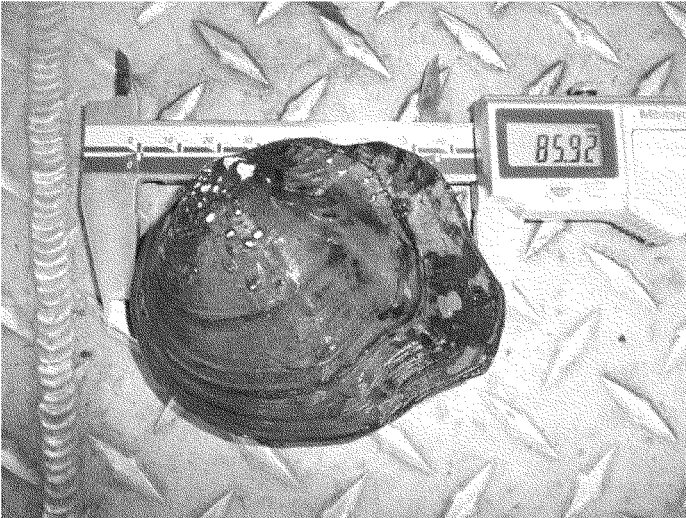


Image 22. View of the mapleleaf (*Quadrula quadrula*), 8-20-08, SITE 14

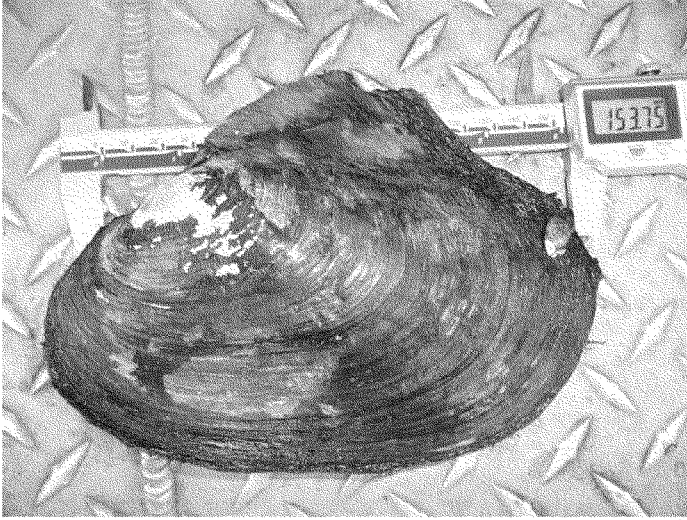


Image 23. View of the pink heelsplitter (*Potamilus alatus*), 8-20-08, SITE 14

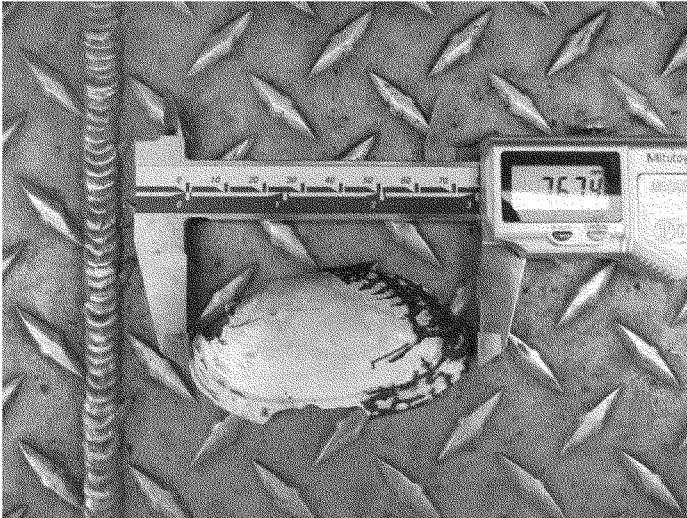


Image 24. A weathered dead fluted shell (*Lasmigona costata*)
8-20-08 SITE14

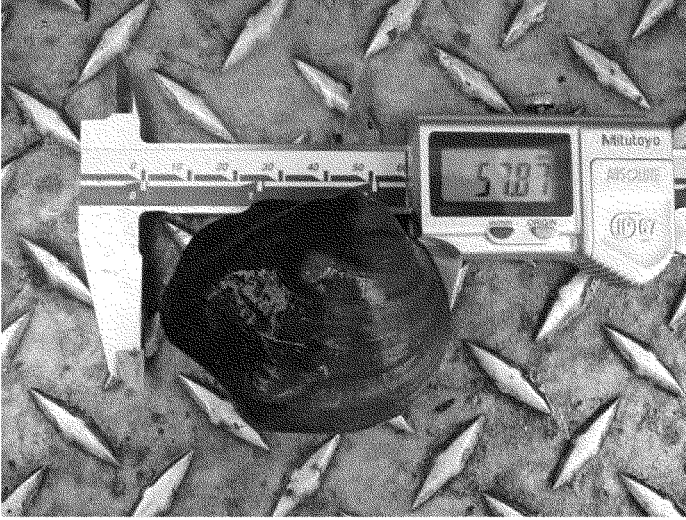


Image 25. View of a threehorn wartyback (*Obliquaria reflexa*),
8-21-08 SITE 15

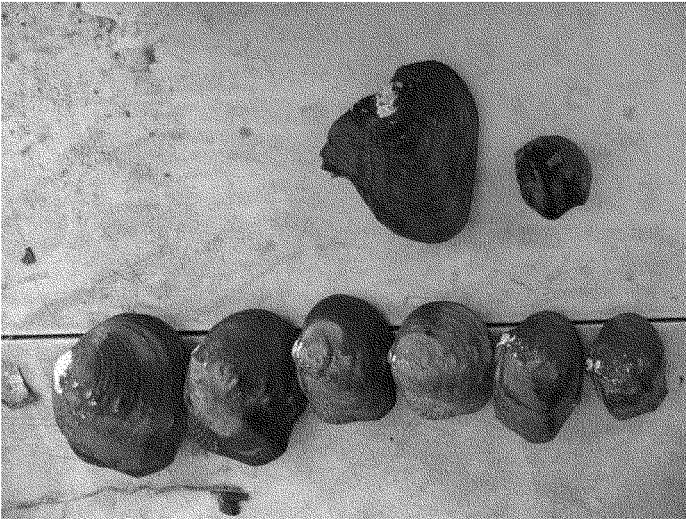


Image 26. View of assorted mussel species collected at SITE 15, 8-21-08

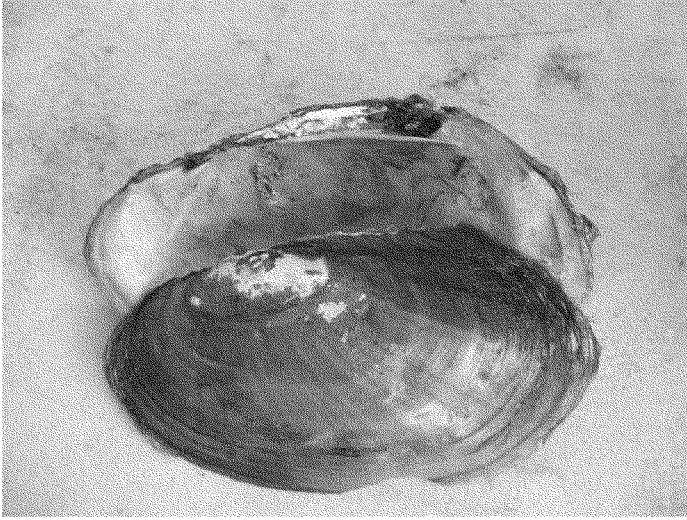


Image 27. View of a fresh dead fragile papershell (*Leptodea fragilis*)
SITE 16, 8-21-08



Image 28. View of an old male fawnsfoot (*Truncilla donaciformis*)
SITE 13, 8-22-08



Image 29. View of a juvenile / sub-adult mapleleaf (*Quadrula quadrula*)
SITE 12, 8-22-08



Image 30. View of a male fawnsfoot (*Truncilla donaciformis*)
SITE 12, 8-22-08

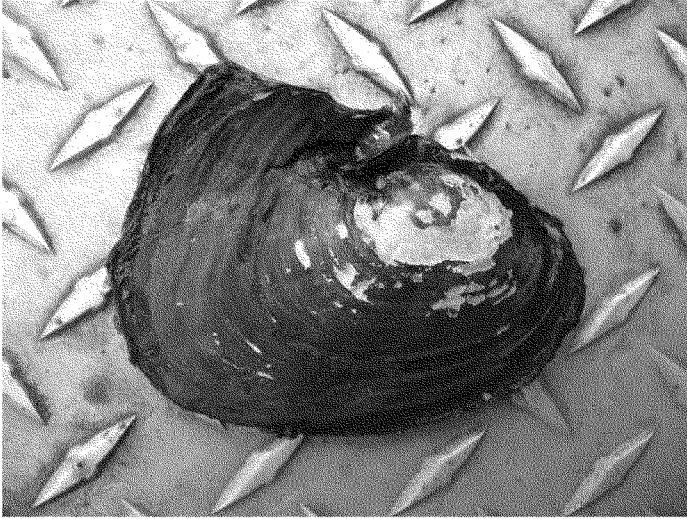


Image 31. A pink heelsplitter (*Potamilus alatus*) collected at SITE 19, 8-23-08



Image 32. Fresh dead fragile papershell (*Leptodea fragilis*) collected from SITE 24 on 8-24-08. Fresh dead shells of this species were commonly encountered but no live individuals were collected.



Image 33. Profile view of a zebra mussel infested fresh dead pink heelsplitter (*Potamilus alatus*) SITE 28, 8-25-08



Image 34. Posterior view of a zebra mussel infested fresh dead pink heelsplitter (*Potamilus alatus*) SITE 28, 8-25-08

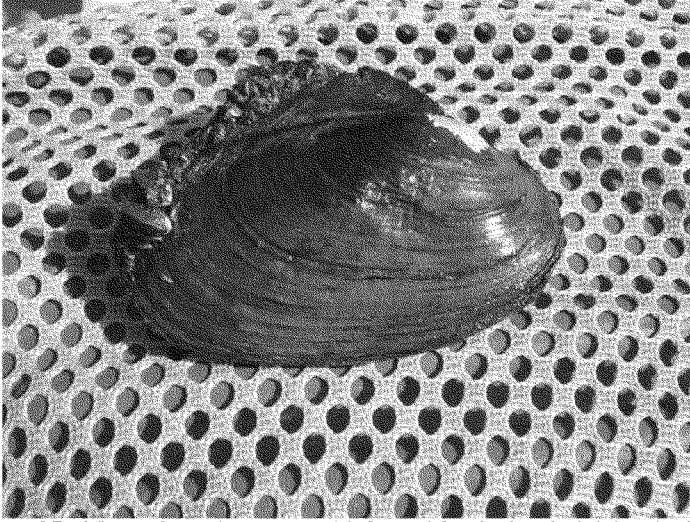
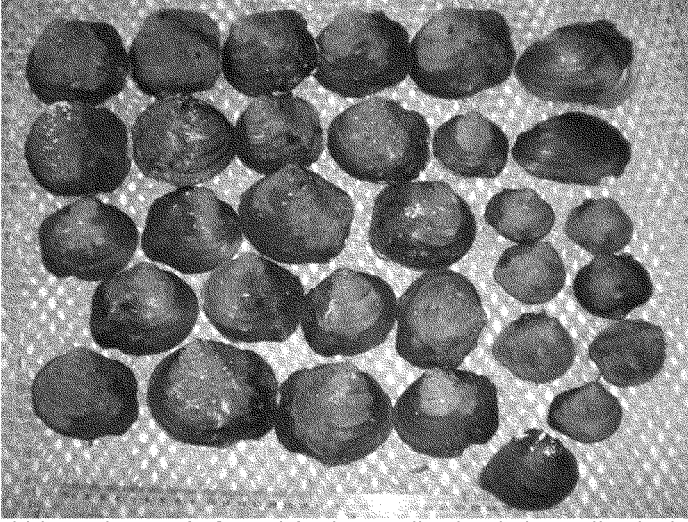


Image 35. View of a zebra mussel infested fresh dead pink heelsplitter (*Potamilus alatus*) 8-25-08 SITE 26



Fresh dead deertoe (*Truncilla truncata*) from muskrat midden sample from right descending bank, downstream of Montgomery Dam and Locks, Ohio River, SITE 32, 8/26/08.

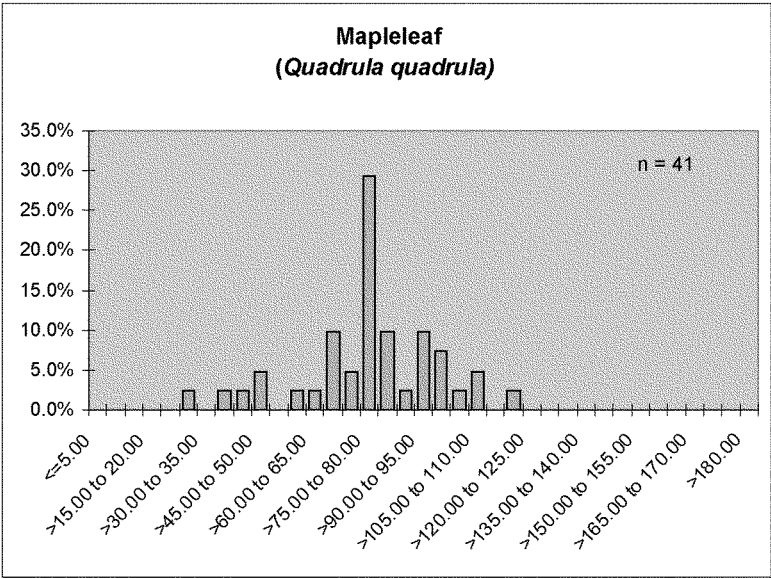
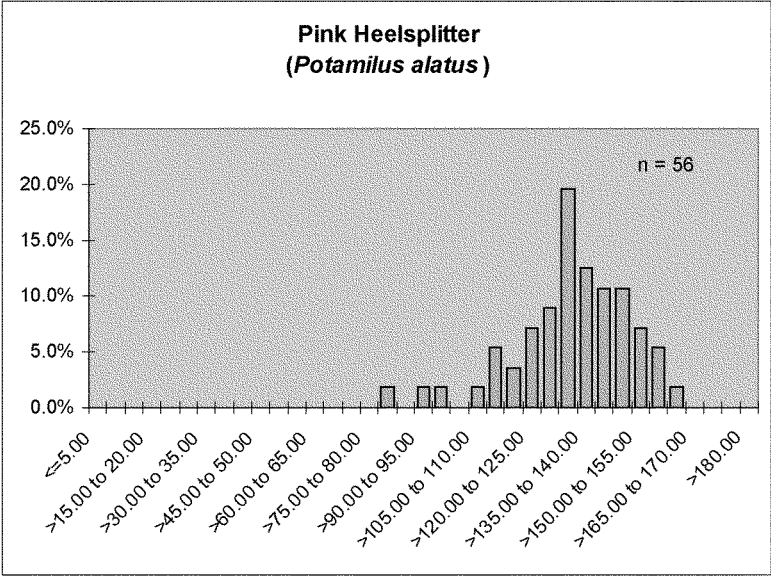


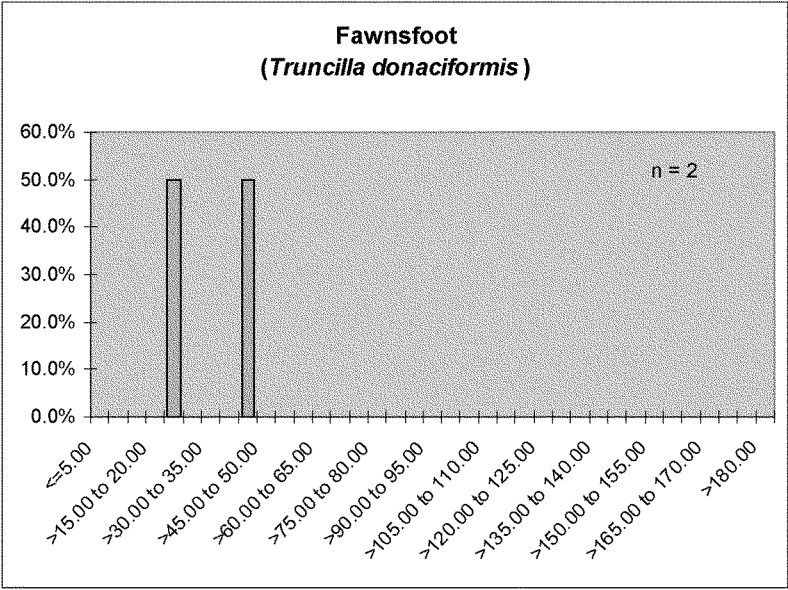
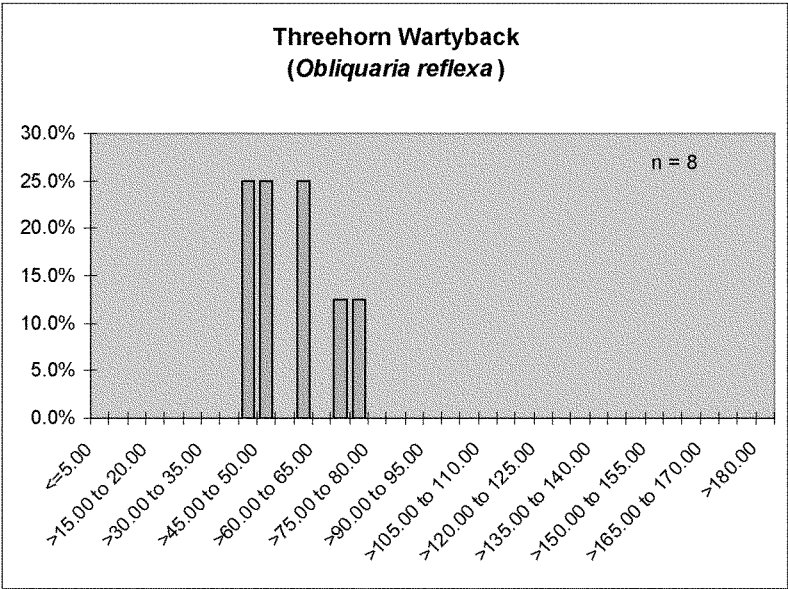
Muskrat midden sub-sample from right descending bank, immediately downstream of Montgomery Dam and Locks, Ohio River SITE 32, 8/26/08. 69% mapleleaf, 22% threehorn wartyback, 6% pink heelsplitter, 3% deertoe. Many of these specimens were fresh dead.

APPENDIX C.

Length Histograms of Selected Mussel Species

APPENDIX C.
LENGTH HISTOGRAMS OF SELECTED MUSSEL SPECIES





APPENDIX D.

Recent Mussel Surveys Known from within the Study Area

Appendix D. Recent Mussel Surveys Known from within the Study Area

- Aquatic Systems, A Service of McLaren/Hart, Inc., 1997. Mussel brailing survey report, Ohio River Montgomery Pool, miles 21.6 – 23.6, Beaver Co., PA, Sept. 1997. 5pp plus figures, tables and appendices.
- Aquatic Systems, A Service of McLaren/Hart, Inc., 1997. Mussel brailing survey report, Ohio River New Cumberland Pool, miles 32.0 – 32.3, Beaver Co., PA, June 11. 1997. 5pp plus figures, tables and appendices.
- Aquatic Systems, A Service of McLaren/Hart, Inc., 1998. Mussel brailing survey report, Ohio River New Cumberland Pool, miles 37.8 to 38.9, Beaver Co. PA, Sept. 14-16, 1998. 5pp plus figures, tables and appendices.
- Aquatic Systems, Inc., 2001. Freshwater mussel diver survey report, right descending river segments mile points 36.5 to 37.1, New Cumberland Pool, Ohio River, Beaver Co., PA. 8pp plus figures, tables and appendices.
- Aquatic Systems, Inc., 2002. Freshwater mussel dive survey final report, river mile 31.6 to 29.6, left descending river segments, Montgomery Pool, Ohio River, PA. 7pp plus figures, tables and appendices.
- Aquatic Systems, Inc., 2004. Freshwater mussel dive survey final report – right descending river segments, river mile 21.8 to 20.5, Montgomery Pool, Ohio River, Beaver County, PA. 8pp plus figures, tables and appendices.
- Aquatic Systems, Inc., 2004. Freshwater mussel dive survey final report – river mile segments 36.2 to 35.4, New Cumberland Pool, Ohio River, Beaver County, PA. 8pp plus figures, tables and appendices.
- Aquatic Systems, Inc., 2005, Freshwater mussel dive survey report, right descending river segments 19.1 to 20.4, Montgomery Pool, Ohio River, Beaver Co., PA. 7pp plus figures, tables and appendices.
- Aquatic Systems, Inc., 2005, Freshwater mussel dive survey report, river mile segment 26.1 to 27.4, Montgomery Pool, Ohio River, Beaver Co., PA. 8pp plus figures, tables and appendices.
- Aquatic Systems, Inc., 2005, Freshwater mussel dive survey report, river mile segments 30.8 to 31.5 off right descending bank, Montgomery Pool, Ohio River, Beaver Co., PA. 8pp plus figures, tables and appendices.
- Civil and Environmental Consultants, Inc., 2002. Report of findings freshwater mussel resource evaluation, Ohio River, Montgomery Pool, river miles 16.9-18.4, left and right, Beaver Co. PA. 20pp plus figures, tables and appendices.
- Civil and Environmental Consultants, Inc., 2004. Report of findings freshwater mussel resource evaluation, Ohio River, Montgomery Pool, river miles 20.9-21.9, left descending side of the river, Beaver Co. PA. 21pp plus figures, tables and appendices.
- Diamond, Jerry, 2000. Results of mussel surveys of mile points 18.2 through 19.6 in Montgomery Pool, Ohio River, Tetra Tech, Inc., Owings Mills, MD. 4pp plus figures, tables and appendices.
- Diamond, Jerry, 2000. Results of mussel surveys of mile points 20.4 through 21.4 in Montgomery Pool, Ohio River, Tetra Tech, Inc., Owings Mills, MD. 16pp plus figures, tables and appendices.

Dinkins Biological Consulting, 2001. Freshwater mussel survey report, Ohio River New Cumberland Pool, mile points 38.9 to 39.5, Beaver Co., PA. 9pp plus figures, tables and appendices.

Tetra Tech, Inc., 1997. Report of mussel sampling and analysis: Montgomery Pool, Ohio River. 17pp plus figures, tables and appendices.

Tetra Tech, Inc., 1999. Mussel surveys including underwater video camera examination and mussel brailing of mile points 13.8 through 15.4 in Montgomery Pool, Ohio River. 5pp plus figures, tables and appendices.

UPPER OHIO NAVIGATION STUDY, PENNSYLVANIA
ENVIRONMENTAL APPENDIX

Fish and Wildlife Coordination Act 2(b) Report ORMSS

Fish and Wildlife Coordination Act Report on the
Ohio River Mainstem Systems Study
Programmatic Environmental Impact Statement
February 25, 2009

Note to Reader:

The U. S. Fish and Wildlife Service's Coordination Act Report prepared for the Corps of Engineers Ohio River Mainstem System Study in 2009 is reproduced here for reference. Their report provides agency recommendations concerning the Corps navigation activities on the entire Ohio River mainstem and impacts to natural resources of concern. Since the Service did not provide a separate 2(b) report for the Upper Ohio Navigation Study, the Service's recommendations on the mainstem river are considered to the extent that they apply to activities and resources in the Upper Ohio River study area.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
330 West Broadway, Suite 265
Frankfort, Kentucky 40601
(502) 695-0468

February 25, 2009

Ms. Lenna C. Hawkins
Deputy District Engineer for Programs
And Project Management
Pittsburgh District, Corps of Engineers
William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, PA 15222-4186

Subject: FWS #06-0890; Transmittal of the Final FWCA for ORMSS Programmatic EIS

Dear Ms. Hawkins:

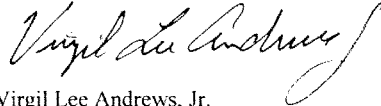
In response to your November 5, 2008 letter requesting a Final Fish and Wildlife Coordination Act (FWCA) report for inclusion in the Ohio River Mainstem System Study Investment Plan and Programmatic Environmental Impact Statement, the Service is pleased to provide the Corps with this Final FWCA report.

The following is a brief background leading up to the current status of this Final FWCA report. Our office prepared the draft FWCA report and sent it out for review in April of 2006 to the states of Illinois, Indiana, Ohio, Pennsylvania, West Virginia, and Kentucky; and, to the Service offices in these states. We then incorporated, as appropriate, the comments we received into the FWCA report and sent the Corps a "Draft" Final FWCA, dated July 18, 2006, which incorporated these comments. The Corps responded to this "Draft" Final FWCA report with a letter to the Service dated September 16, 2008. Our office then sent the "Draft" Final FWCA report along with the Corps' September 16, 2008 letter, to the states and Service offices, for a final opportunity to comment. We received only two comments, both from within the Service, complimenting the Corps on their commitments in the September 16, 2008 letter.

In the September 16, 2008 letter, the Corps expressed its desire and commitment to mitigate for systemic environmental impacts resulting from Corps actions within its legal and financial limits. The Service is pleased with the Corps' response to these issues, and we look forward to working with the Corps on specific projects as they come up in the future. We have included the Corps' September 16, 2008 response letter as an attachment to the Final FWCA report.

We have enjoyed working with the Corps during this process, and we look forward to continued joint efforts and opportunities to protect, preserve, and enhance the fish and wildlife resources along the Ohio River. We will send a copy of this letter and the Final FWCA to the states and appropriate Service offices. If you have any questions or comments pertaining to this Final FWCA report please contact Leroy Koch of my staff at 502-695-0468.

Sincerely,

A handwritten signature in black ink, reading "Virgil Lee Andrews, Jr." in a cursive script.

Virgil Lee Andrews, Jr.
Field Supervisor

cc: Diane Lynch, USFWS, Region 5, Hadley, MA
Jeff Weller, USFWS, Region 4, Atlanta, GA
Jeff Gosse and Robert Krska, USFWS, Region 3, Minneapolis, MN

Attachment 1 – Final FWCA Report dated February 25, 2009

Attachment 2 – Corps' September 16, 2008 letter

ATTACHMENT 1

**FINAL FISH AND WILDLIFE
COORDINATION ACT REPORT**

on the

**OHIO RIVER MAINSTEM SYSTEMS STUDY
PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT**

by

Leroy M. Koch
U.S. Fish and Wildlife Service
Ecological Services
330 West Broadway, Suite 265
Frankfort, Kentucky 40601

February 25, 2009

PRIMARY AUTHOR AND OTHER CONTRIBUTORS

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330 West Broadway, Suite 265
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Leroy Koch (Kentucky Ecological Service's (ES) Office) is the primary author on this FWCA Report; however, other U.S. Fish and Wildlife Service biologists have also contributed to this report. They include: Mike Thomas, Marion, Illinois ES Sub-Office; Greg Conover and Rob Simmonds, Chuck Surprenant (retired), Cartersville Fisheries Office; Mike Litwin, Bloomington, Indiana ES Office; Ken Lammers (retired) and Jeromy Applegate, Reynoldsburg, Ohio ES Office; Tom Chapman and Barbara Douglas, Elkins, West Virginia; Patricia Morrison, Ohio River Islands National Wildlife Refuge, Parkersburg, West Virginia; and Mike Armstrong, Kentucky ES Office.

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I. EXECUTIVE SUMMARY

Background

Prior to the 18th century, the Ohio River flowed through essentially pristine lands. The River was free flowing throughout its entire length, with a diverse array of habitats including deep pools, rocky rapids, occasional waterfalls, sand and gravel bars, numerous snags and drift piles, sloughs, side and overflow channels, islands, and backwaters with submerged and emergent aquatic plants. A wide variety of habitat types prevailed and riverine aquatic life was abundant. In general, the river had pure water throughout most of the drainage basin. Extreme variations in flow are evident from early records. The first European settlers in the Ohio River Basin found a river bounded by vast, virgin hardwood forests, many marshes and other wetlands, and abundant supplies of fish and game.

This scenario has changed drastically over the last 150 years. Impacts from converting the forests to agriculture, industrial, mining, and development uses and the effects of population growth, invasive species, alteration of the river by the Corps to allow for year round navigation, and other impacts, have and continue to play a role in the river's and watershed's appearance today. Today's appearance is much different than that of the early 1800's, as are the challenges associated with managing the river.

Although the Ohio River has been modified greatly, it still remains a national treasure, with a rich history of culture, commerce and natural resources. However, some of these natural resources are declining, and the continued existence of some of these resources may be tenuous at best. Some resources are already gone, such as certain species of freshwater mussels that only occurred in riffles in larger river systems. Conservation of other imperiled resources, such as endangered and threatened species, migratory birds, mollusks, interjurisdictional fish, habitat on National Wildlife Refuge and other public trust lands, river shoals, backwaters, and islands, to name a few, will require active human intervention if they are to persist and improve. This will require a holistic view of resource conservation, recognizing that all resources are connected.

Role of the Fish and Wildlife Coordination Act Report (FWCAR)

This FWCAR is, essentially, an opportunity for the Service and States to provide recommendations to the Corps concerning the activities covered under the Ohio River Mainstem Study (ORMSS) Programmatic Environmental Impact Statement (PEIS) relative to potential or actual impacts to natural resources of concern. The Fish and Wildlife Coordination Act requires the Corps to include this report in their Final PEIS and requires that the Corps must give equal consideration to fish and wildlife resource recommendations from the Service and States regarding the Corps' activities considered under the PEIS. However, it is not mandatory for the Corps to accept the recommendations in the FWCAR.

Purpose and Goal of the Ohio River Mainstem Systems Study

The Corps' goal for the Ohio River Mainstem Systems Study (ORMSS) is to identify the best long-term comprehensive program for maintaining a viable navigation system on the main stem of the Ohio River while striving to achieve environmental sustainability. Specifically, the study's purpose is to evaluate the Major Maintenance, Major Rehabilitation, and New Construction investment needs for the 19 existing navigation lock and dam sites on the mainstem

with the aim to identify the optimum plan for meeting these needs over the next 40-50 years. This evaluation is intended to be adaptive and responsive to changes on the river and the river system.

A Systems Investment Plan (SIP) was developed by the Corps and is included in the ORMSS Programmatic Environmental Impact Statement (PEIS). The SIP takes into account the cumulative effects of Corps activities on the river into the future until 2060. The SIP is intended to be a guidance document for implementing new management practices, initiating non-structural efficiencies, and establishing budgets for future lock modernization feasibility and major rehabilitation studies.

The purpose of the PEIS, under the National Environmental Policy Act (NEPA), is to document consideration of various alternative Federal actions formulated to meet overall program goals and to disclose environmental impacts associated with those alternatives so that they can be disclosed and evaluated prior to making any decisions. The Corps' focus of this PEIS differs from EISs developed in the past for proposed construction at one or a few sites. This PEIS presents economic, engineering, and environmental information to evaluate broad system investment alternatives. The PEIS also provides information regarding overall impacts of the program, including cumulative effects, so that the decision-makers can make a reasoned judgment of the merits of the actions at the present state of planning or development by considering the effects of navigation improvements on environmental sustainability. This SIP/PEIS also provides information on sustainability status and needs of ecological resources throughout the study area.

The Cumulative Effects Assessment (CEA) that is included in this PEIS analyzes the impacts on the environment that result from implementation of the Ohio River mainstem navigation system modernization when added to other past, present, and reasonably foreseeable future actions regardless of the agency or person(s) undertaking such other actions. Consideration of cumulative effects requires a broader perspective than examining just the direct and indirect effects of a proposed action. It requires that future impacts be assessed in the context of past and present effects to each important resource requires consideration of a larger geographic area than just the immediate "project" area. One of the most important aspects of a cumulative effects assessment is that it requires consideration of how actions by others, including those actions completely unrelated to the proposed action, have and will affect the same resources.

In assessing cumulative effects, the key determinant of importance or significance is whether the incremental effect of the proposed action will alter the sustainability of the resource in light of other effects that the resource has or will experience. The CEA was prepared considering a reasonable upper limit of possible navigation improvement needs identified in the ORMSS in order to examine the total effects to each resource. For this reason, comparisons among alternatives are made in the SIP/PEIS rather than in the CEA report. Environmental issues are addressed in the CEA, and the Corps presents the use of environmental sustainability (ES) as an "ultimate test" for determining the significance of cumulative effects. ES is identified by the Corps as a "synergistic process whereby environmental and economic considerations are effectively balanced through the life cycle of project planning, design, construction, operation and maintenance to improve the quality of life for present and future generations.

The ES categories of the various environmental resources or Valued Ecological Components (VECs) included in the CEA are derived by combining the best professional judgment of the Corps Planning Team and Interagency Working Group (IWG) members with the cumulative effects of multiple actions as manifested through information available on indicators selected for each VEC. The Corps considers the ES categories to be somewhat qualitative. They are based on analyses of past and present conditions as well as future conditions related to trends, plans, laws, regulatory programs, and other sources of information that are beyond mere speculation. The general template the Corps used for ES categories is Not Sustainable (NS), Marginally Sustainable (MS), and Sustainable (S). The environmental sustainability of each VEC is presented over time as NS, MS, or S.

The Service believes the Corps has made a commendable effort to evaluate the various natural resources and assess their past, present, and future status. The Corps has taken an extremely complex, difficult, and contentious (at times) task and made great strides in working proactively with members of the IWG to provide the groundwork for future coordination on projects. The IWG is composed of the Service, State representatives, Corps, and other entities and persons. Given a diverse membership on the IWG, we expect that there will be some disagreements and interpretation of the FWCAR. However, we hope the Corps and other members of the IWG understand our insistence for a high level of continued communication and coordination as projects are identified and refined so that natural resources benefits can be maximized.

Impacts to Resources from Without Project Conditions and With Project Conditions

Since the Environmental Impact Statement is programmatic, specific future actions are not addressed in detail, and it is not the intention of this FWCAR to make a determination on specific project impacts to trust resources. We provide some general thoughts and commentary on impacts to trust resources in the FWCAR for the Without Project Conditions (WOPC) and With Project Conditions (WPC) scenarios, but the Service's primary intent is for the Corps to use our recommendations as guidance on their activities on the Ohio River.

As specific projects and opportunities occur in the future, we expect the Corps to involve the Service, States, and others in determining how each project will or may impact trust resources and to include the recommendations in this FWCAR, as appropriate, to help maximize the overall project benefits to natural resources. In addition, the Service expects the Corps to make every effort to avoid, minimize, and/or compensate for any impacts to trust resources.

The various scenarios of the WOPC and WPC presented by the Corps in the PEIS contain many uncertainties and leave us with few firm assessments as to what will actually happen in the future. We realize it is difficult to predict the future accurately, and we do expect navigation traffic to increase and the current infrastructure to become less reliable with age. The Service believes impacts on natural resources will likely continue much as they have in the past with some resources benefiting from the current condition of the river, and others, especially the more riverine components, continuing to decline or be reduced in extent or number.

Without Project Conditions

Regarding the Corps assessment of the WOPC, the Service believes that there will be continued adverse impacts to selected natural resources as a result of the locks and dams, navigation related

dredging activity, and other related navigation activities. This is expected to continue in a manner that is similar to past and current conditions. We believe there will be continued adverse impacts, especially to mussels, riverine fishes, riverine habitat and diversity, stream habitat quality, bottomland forests, and island habitat under the WOPC. We also expect these adverse impacts to vary depending on the resource, its location within the influences of the river, and over time.

With Project Conditions

The Corps addresses the WPC through their formulation of alternative system investment plans. Investment plans are defined by the Corps by the timing and specification of proactive maintenance and/or modernization projects at each lock and dam facility and are evaluated for each of the traffic forecasts the Corps presents in the PEIS in Section 8.2. The evaluations consider navigation and ecosystem benefits and associated environmental or ecosystem impacts.

The Corps has tentatively selected one System Investment Plan (SIP) as a basis from which a schedule of future site-specific feasibility studies will be developed. This SIP is essentially a process involving a mixture of structural improvements (new lock chambers), operational measures (helper boats and navigation upstream and downstream lockage policy during closures), and maintenance alternatives (reactive, advanced and rehabilitation). Significant Corps findings and recommendations from this process include: new lock chambers at Emsworth, Dashields and Montgomery to replace the existing auxiliary chambers; main chamber rehabilitations at all other mainstem projects except McAlpine and New Cumberland where auxiliary chamber rehabilitation is recommended and a reliable main chamber displaces the need for auxiliary lock extension under the current traffic forecast scenarios; and reactive maintenance or component replacement strategies which are intended to complement the recommended SIP.

The Service believes this mixture of structural improvements, operational measures, and maintenance alternatives presented in the SIP is a good approach. As a result, this approach will prevent the need for new lock extensions that could have potentially greater negative impacts to the natural resources. We recommend the Corps continue this evaluation process and refine it as needed as new information becomes available.

Regarding the Corps' WPC presented in the PEIS, the Service believes that there will be continued adverse impacts to selected natural resources as a result of the locks and dams, navigation related dredging activity, and other related navigation activities (e.g., loss of habitat due to shoreline development dependent on navigation). This is expected to continue to be similar to past and current conditions. We believe there will be continued adverse impacts to mussels, riverine fishes, riverine habitat and diversity, stream habitat quality, bottomland forests, and island habitat under the WPC. We also expect these adverse impacts to vary depending on the resource, its location within the extent of the river, and time.

Involvement by Service, States, and other representatives

Early in the ORMSS process, the Corps recognized a need to include Service, state agency representatives, and others in discussions of environmental concerns. The group was initially known as the Environmental Team, but it is currently called the Interagency Working Group. It was initiated in 1996 to (a) aid the Corps in the ORMSS process, (b) discuss topics of concern,

(c) provide technical expertise on natural resource topics, and (d) provide comments and review of Corps products being prepared for inclusion in the CEA/PEIS. Representatives from the Service's Ecological Field Offices in Illinois, Indiana, Ohio, West Virginia, Tennessee, and Kentucky participated in these group meetings. In addition, individuals at the Cartersville Fisheries Office in Illinois have been involved in this group, especially regarding fish related studies conducted by the Corps, and individuals from the Ohio River Islands National Wildlife Refuge in West Virginia, Pennsylvania and Kentucky are active participants on the IWG. Initially, the Service's Cookeville, Tennessee Ecological Field Office served as the Service's point of contact to the Corps. However, this point of contact is currently located in the Service's Kentucky Ecological Services Field Office located in Frankfort, Kentucky. State representatives, non-governmental organizations (NGO), and other participants, as appropriate, have been involved in this IWG. The Corps is commended for implementing the IWG as an environmental working group.

Other Recommendations and Considerations

Previous Ohio River-related FWCARs have usually been a result of specific Corps projects and detail efforts that the Corps implements to mitigate impacts to fish and wildlife resources near the project site. In this FWCAR, we hope to encourage the Corps to look at the entire river system and to consider and implement the recommendations contained in the FWCAR using a broad perspective. The Corps should use this FWCAR, as it develops specific projects in the future, as guidance on what the Service believes are important natural resource issues, concepts, and actions. As these projects are developed, we expect the Corps to find opportunities to cooperate and coordinate with the Service, States, and others regarding the guidance presented in the FWCAR and to develop additional levels of detail that can be analyzed.

The IWG should remain in-place and be encouraged to take an even more active role with the Corps. Additional participants should also be identified and asked to take part in the IWG (e.g., Coast Guard, academia, specialists, etc.). The Corps should work to foster the IWG's ability to meet to discuss issues relating to activities the Corps has on the river and the influences those activities have on various resources. The Corps also should provide consistent long-term funding to ensure that the collaborative efforts of the IWG are continued and that members are able to fully participate. This will add value to the process and improve the Corps' decision-making on future projects.

The Corps should continue to use adaptive management and monitoring to help determine and respond appropriately to natural resource priorities into the future (e.g., Ecological Restoration Program). We support the concept of adaptive management. However, we believe that the Corps should focus on adaptive management that achieves the greatest environmental benefits possible.

Connectivity of habitats and resources, through natural means and/or active human intervention, is critical to achieving sustainability for a rich variety and quantity of fish, wildlife, and other natural resources. Connectivity along the Ohio River is influenced by human activities in and along the river. The Corps locks and dams have been and will continue to be a long-term factor that limits connectivity, because they create long pools that separate semi-natural, riverine habitats. These structures, and the associated maintenance and other activities that collectively

ensure a navigable river, have often created or resulted in conditions where connectivity is diminished, inadequate, and/or absent. In some instances, connectivity can be enhanced and/or restored so the river can function better; however, in other instances it will likely require proactive intervention through the Corps' management, maintenance, and monitoring efforts for as long as the locks and dams, pools, and navigation-related activities exist.

As a Federal agency, the Corps has had the major role in creating and maintaining the current navigation system. The Corps' role in determining how the future navigation system will look includes the responsibility to minimize its impacts to natural resources and create conditions where natural resources can be enhanced, recovered, and sustained. This responsibility must also include ensuring that sufficient funding is available to achieve a high level of fish and wildlife resource sustainability. How best to achieve and maintain adequate funding for improving the river and its natural resources should be a top priority of the Corps.

The Service recognizes that as long as the locks and dams remain, the long stretches of pools exist, a navigation channel is maintained, and navigation plies the river, the riverine portion of the river will, at best, be only a remnant of its former extent. As a result, the ability of certain natural resources, especially freshwater mollusks and riverine fish species, to improve and/or achieve sustainability over a large extent of the river is problematic. Even though these challenges exist, there are significant opportunities that remain where the Corps could place its focus, especially those portions of the watershed that continue to contain riverine conditions or important riverine components. We believe a high priority should be placed on maintaining or improving the quality and quantity of resources in these remaining riverine segments. The Service recommends that the Corps conduct a river-wide, long-term assessment of these segments and develop a list of habitat restoration and enhancement projects for these resources along the full length of the river.

Elsewhere in this FWCAR, the Service provides several broad recommendations and specific recommendations to help guide the Corps towards achieving maximum overall project benefits, especially regarding the natural resources. These recommendations are a result of past, present, and anticipated future actions that could negatively impact the natural resources in and along the Ohio River. The following recommendations briefly describe selected priority actions, which are in no particular order and may be interrelated, that the Service recommends the Corps consider adopting, funding, and/or accomplishing:

1. Identify, describe, and quantify remaining riverine habitat in the Ohio River mainstem and larger tributaries. This baseline information will help in future adaptive management and monitoring activities to determine progress on achieving sustainability.
2. Collaborate with the Service, States, NGO's, and other entities to develop a vision for natural resource sustainability. This vision should be developed based upon realistic concepts of environmental sustainability and ecosystem restoration for the river and its resources. The Corps would then lead the implementation of this vision.

3. Maintain, restore and enhance high quality riverine habitat. The ability of the Corps to improve the quantity and quality of riverine habitat will be crucial in achieving environmental sustainability of the natural resources of the Ohio River.
4. Maintain, restore and enhance islands, backwaters and sidechannels, substrate, water quality, snags and/or other large woody structure, and flow conditions in the Ohio River and its tributaries to meet all life stage requirements for native riverine mollusks and riverine fishes, including interjurisdictional fishes and federally listed species.
5. Maintain, restore, and enhance the connectivity between riverine portions of the mainstem and tributaries, especially larger tributaries.
6. Maintain, restore, and enhance the riparian forest, bottomland forest, and wetlands and their functions and connectivity to the river, including embayments of the larger tributaries.
7. Maintain, restore, and enhance opportunities for fish passage at all locks and dams on the mainstem Ohio River in order to create improved connectivity between remaining riverine portions of the river. This will likely require construction of fish ladders and/or constructed streams circumventing the dams and the use of other adaptive management techniques.
8. Support and adequately fund propagation of selected freshwater mollusks and/or fish, especially rare species, for restoration and enhancement in the Ohio River mainstem and selected reaches of tributaries.
9. Support and adequately fund riverine fish and mollusk surveys and long-term trend monitoring of these resources throughout the Ohio River and the lower reaches of its larger tributaries.
10. Support the development and enhancement of shorebird, waterfowl, and water bird habitat, especially least terns.
11. Minimize physical impacts and pollution from barge traffic and barge fleeing, dredging and disposal, and other navigation related activities on the river that may negatively impact natural resources. Identify and make available appropriate upland disposal sites for dredge material and/or utilize dredge material for creating and/or enhancing natural resource habitat within the river.
12. Address how lock and dam facilities, and related navigation barge traffic, have played a role in the presence of invasive species, especially the zebra mussel, and determine and implement potential solutions (e.g., management of flows at appropriate times of year to retard settlement of zebra mussels, requiring decontamination of barges/tows entering the river, etc.) to prevent or minimize the impacts of zebra mussels and other invasive species to the native fauna.

13. Cooperative and collaborate with the Service and other federal, state, local agencies, NGO's, and others interested in working together to improve the river and its fish and wildlife resources.

The Corps has also undertaken another study, in cooperation with the Service and the states of Illinois, Indiana, Ohio, Kentucky, West Virginia and Pennsylvania, for the development and implementation of an Ohio River Ecosystem Restoration Project Partnership program, a large-scale ecosystem restoration initiative. The program would partner with non-Federal entities to restore, enhance, and protect fish and wildlife abundance, diversity, and habitats within the Ohio River watershed. This project is currently languishing primarily for lack of funding. We recommend the Corps make efforts to reinvigorate this project. A major impediment to implementation, if funded, is the current cost-share percentage of 65 percent federal and 35 percent non-federal. The Service offers the following suggestions that we believe would allow the program to proceed and meet its objectives:

1. Cost sharing will not be required for projects conducted on federal lands.
2. Project Planning and Design should be 100 percent federally funded.
3. Minimal cost-sharing (i.e., 10 percent) should be implemented for state and other conservation partners.
4. Block grants may be given to state agencies to administer for project design and construction.
5. The Corps should work with the Service and State fish and wildlife agencies to develop specific goals for the restoration program, and these goals should incorporate the goals of other ecosystem based fish and wildlife conservation plans (e.g., Ohio River Valley Ecosystem Team, Ohio River Fish Management Team, etc.).
6. A long-term monitoring program should be implemented to gauge the success of specific projects and the success of the program.

Construction of the past and current system of locks and dams and maintenance of a navigable river has allowed navigation and related activities to flourish, whereas the natural resources have often greatly suffered. The Service believes the Corps has responsibility under the FWCA to ensure that fish, wildlife, and natural resources conservation will receive equal consideration to maintaining a viable navigation system. The Corps should identify internal mechanisms and other ways that it could better provide sustainable natural resource conservation.

Section 7(a)(1) of the Endangered Species Act (ESA) requires that the Corps, as a Federal agency, shall, in consultation with and with the assistance of the Service, utilize its authority in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered species and threatened species listed pursuant to Section 4 of the ESA. The Service believes that guidance under the FWCA and ESA provides the Corps with the necessary level of

discretion to develop and fund proactive programs and/or projects for the conservation of federally listed species and other natural resources in the Ohio River.

The recommendations and comments found in this FWCAR provide the Corps with guidance regarding conservation of natural resources. We believe the recommendations contained herein are realistic, obtainable, and fit in well with the goal of the Corps' ORMSS to identify the best long-term comprehensive program for maintaining a viable navigation system on the main stem of the Ohio River while striving to achieve environmental sustainability. For certain resources environmental sustainability will be difficult to achieve and/or determine. Success will require adequate funding along with the willingness to consider multiple ideas and ways of achieving sustainability. The Corps has a great opportunity to provide leadership in implementing these recommendations while working collaboratively with the Service, States, other entities, and individuals.

State Perspectives of the FWCA Report

This FWCAR was provided to the fish and wildlife agency in each state bordering the Ohio River for their review and comments. A copy of the letter received from each state is included as an attachment to this FWCAR. The following paragraphs provide a summary of the comments the Service received from each state, but for more detail please refer to the attachments.

In general, each state's review supported the Service recommendations presented in this FWCAR and recommend full implementation of those recommendations. There is a recognition that under current conditions and without implementation of the recommendations, the fish and wildlife resources of the Ohio River will continue to be impacted by on-going activities, and that some species may be driven to extinction.

One of the other topics commented on by the States is the time and effort expended by the IWG during the Corps' development of the ORMSS. In general, the States believe this collaboration and discussion was valuable, that it should continue at some appropriate level, and that the states should be active participants. In addition, the States expressed strong support for funding from the Corps to enable this to occur. The State of Ohio expressed concern that expanding the IWG may render it ineffective and suggested reducing the size of the IWG to a core working group that is tightly focused. The Service believes this suggestion has merit and that a small core group could be used to help a larger more inclusive group remain focused on particular issues.

Another topic raised by the States is the Ohio River Ecosystem Restoration Project. States agree that ecosystem restoration projects are critical to achieving sustainable use of the Ohio River, and that funding for this should be a top priority for the Corps. There is a realization that the Corps activities occurred by the direction of the U.S. Congress and that congressional funding is needed to evaluate and mitigate for impacts to aquatic and terrestrial wildlife resources. The current cost share arrangement discourages State involvement, and the States believe the cost share should be changed so that project funding requires less or no federal match, with ecosystem projects being fully funded without cost share requirements.

The states recognize the importance of achieving balance between the ecosystem and use of the river for commercial purposes. There is a need to develop a sustainable model for the Ohio

River. Emphasis should be on enhancing areas with some existing riverine conditions and restoring connectivity to tributary systems and adjacent forests and wetlands as part of that sustainability model. The Ohio River is highly used by navigation, industry, and utilities. The cumulative effects to the river's aquatic ecosystem from these uses are known. In light of the cumulative effects, the losses in fish passage, connectivity of the river, mussel depletion, fish population and habitat loss, wetland loss, and riparian fragmentation are pertinent to the discussion of sustainability. It was pointed out by the State of Illinois that the Cumulative Effects Assessment needs to entail more than just examining the direct and indirect effects of a proposed action and that a larger geographic area than just the immediate project are should be considered.

Habitat concerns are another subject the State's emphasized. Maintaining, restoring, and enhancing mainstem, backwater, and tributary habitats is critical to sustaining diverse and viable fish and wildlife populations in the Ohio River ecosystem. These issues require long-term, large-scale, and well-funded efforts to be meaningful. Habitat projects of the scale required to improve the Ohio River necessitate substantial and consistent funding, and the State's want to encourage the Corps to accept responsibility for such support. In addition, maintaining connectivity between riverine portions of the mainstem and larger tributaries is an important component of addressing habitat issues. On the specific subject of fish passage through locks and dams, the State of Ohio considered it to be a minor and expensive subject, but the State of Kentucky recommended that innovative approaches to fish passage be considered as new navigation projects are implemented.

II. PURPOSE, SCOPE, AND AUTHORITY

The purpose of this Fish and Wildlife Coordination Act Report (FWCAR) is to discuss the Corps' proposed Ohio River Mainstem Systems Study (ORMSS) Programmatic Environmental Impact Statement (PEIS), which evaluates alternative investment strategies for commercial navigation infrastructure on the Ohio River System for the next 60 years, for project related impacts to fish and wildlife resources and the measures can be taken to avoid or minimize adverse impacts. This FWCAR is an opportunity for the Service and States to provide recommendations to the Corps concerning Corps activities covered under this ORMSS PEIS and impacts to natural resources of concern. The Fish and Wildlife Coordination Act requires the Corps to include this report in their Final PEIS and give equal consideration to the recommendations from the Service and States. However, it is not mandatory for the Corps to accept the recommendations in the FWCAR. In those instances where the Corps disagrees or differs in the interpretation of our concerns and recommendations, the Corps should work with us to resolve the differences so that we can move forward together for the benefit of natural resources. This FWCAR constitutes the report of the Secretary of the Interior, as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*).

The proposed Corps action is being conducted under the authority of United States Senate, Committee on Public Works resolution dated May 16, 1955; and United States House of Representatives, Committee on Public Works and Transportation resolution dated March 11,

1982. The Corps has been collecting data and pursuing approaches for the study of the Ohio River Navigation since 1996. Preliminary economic analysis has indicated traffic congestion and economic losses associated with foreseeable and anticipated maintenance cycles.

III. INTRODUCTION AND BACKGROUND

Provided below are selected prior studies regarding past investigations of natural resources in the Ohio River Basin.

1. Fish and Wildlife Resources of the Ohio River Basin (included as Appendix "G" in the Ohio River Basin Comprehensive Survey – (USFWS undated). The Service's report analyzed the fish and wildlife resource problems in the Ohio River Basin and furnished general solutions, especially as related to potential water development projects. The report also included the related needs of the present and future sportsmen of the area.
2. Planning Aid Report, Gallipolis Locks and Dam Replacement Study (USFWS 1980) discusses the high quality fish and wildlife resource areas within the primary study area. The study area included the Greenup and Gallipolis Navigation Pools on the Ohio, Kanawha, and Big Sandy Rivers.
3. Final Fish and Wildlife Coordination Act Report, Lower Ohio River Navigation Study, Kentucky-Illinois (USFWS 1985a) describes existing fish and wildlife resources of the Ohio River from the mouth of the Cumberland River (RM 920) to its confluence with the Mississippi River (RM 981). The report identifies potential impacts to these fish and wildlife resources from project alternatives, recommends project modifications to avoid and/or minimize these impacts, and outlines various mitigation needs associated with the project.
4. Planning Aid Report for the Fish and Wildlife Resources of the Upper Ohio River (USFWS 1986a) describes existing fish and wildlife resources of the Ohio River from Pittsburgh (mile 0.0) to the Pennsylvania-West Virginia-Ohio border (mile 40.0). The report focused on the results of fish sampling efforts undertaken in the summer of 1985 and on the ecologically significant areas, including wetlands, which could be affected by rehabilitation of the existing Emsworth, Dashields, and Montgomery Locks and Dams.
5. Final Environmental Assessment for the Ohio River Islands National Wildlife Refuge Proposal (USFWS 1989) outlined the various threats to important fish and wildlife resources within the study area. It analyzed various alternatives for long-term protection of important habitats, including land acquisition by the Service.
6. Reconnaissance Stage Planning Aid Report for the Uniontown Locks and Dams Study (USFWS 1991a) provided preliminary information concerning fish and wildlife resources that occur within the area of project influence and identified resource issues and concerns that could be addressed by the ongoing study.

7. Final Fish and Wildlife Coordination Act Report for the Olmsted Locks and Dam Project (USFWS 1993) was a supplement to the FWCAR report released to the Corps in 1985. The report evaluated changes in project design since the 1985 report and their potential for impacts to Federal trust fish and wildlife resources.
8. Draft Fish and Wildlife Coordination Act Report for J.T. Myers and Greenup Locks Improvements (USFWS 1999) provided information concerning fish and wildlife resources occurring within the project area as well as fish and wildlife resources within the Ohio River mainstem system. The report outlined ongoing impacts to these resources and predicted reduced or additional impacts as a result of project implementation. In that report, the Service also discussed the proposed restoration program and offered suggestions that the Service believed would allow the Program to proceed and meet its objectives.
9. Draft Fish and Wildlife Coordination Act Report on the Ohio River Ecosystem Restoration Project Partnership Program (USFWS 2000) discussed this large scale ecosystem restoration initiative.
10. Ohio River Islands National Wildlife Refuge Final Comprehensive Conservation Plan (CCP) published in November 2001.

The following are selected on-going studies and projects within the Ohio River Basin.

1. Ecosystem Restoration - The Corps has undertaken another study, in cooperation with the Service and the States of Illinois, Indiana, Ohio, Kentucky, West Virginia and Pennsylvania, for the development and implementation of an Ohio River Ecosystem Restoration Project. The program under consideration is a large-scale ecosystem restoration initiative. For details of this initiative see a report entitled *ORMSS Ohio River Ecosystem Restoration Program - Integrated Decision Document and Environmental Assessment, August 2000*. Although authorized by Congress it has not received funding and may soon become de-authorized for lack of congressional support. The Service encourages the Corps to find ways to implement this initiative in cooperation with the state agencies, other federal agencies, NGO's and others. In addition, the Service believes that the state fish and wildlife agencies or any other state agencies to be cost-share sponsors for these projects (U.S. Army Corps of Engineers 2000). Adequate funding for this Ecosystem Restoration Project should be a top priority for the Corps.
2. Ohio River Valley Ecosystem (ORVE) Strategic Plan - The Service's Ohio River Valley Ecosystem Team has developed and implemented a Strategic Plan for Conservation of Fish and Wildlife Service Trust Resources in the Ohio River Valley Ecosystem. The Team's several Sub-groups are the primary mechanisms for conducting activities on the ground and were formed on the basis of the resource priorities outlined in the Strategic Plan.
3. ORVE GAP Migratory Bird Resource Priority GAP Metaproject - This project will identify areas of importance within the Ohio River Valley Ecosystem to species of

migratory birds. Target bird species include songbirds that winter in South America or Latin America and breed or inhabit the ORVE during the spring and summer. Both Partners in Flight and Service personnel believe that these species are in particular danger due to stress caused by fragmentation and loss of habitat in both their wintering grounds and their spring and summer ranges. Loss of habitat and fragmentation have a number of effects upon a species and many of these are currently being studied. The purpose of the project is to identify areas in the Ohio River watershed that are of particular importance to these species of birds and present the information in an ArcView GIS format.

4. North American Bird Conservation Initiative (NABCI-US) - In the United States, the goals of this project are to bring together the bird initiatives already underway, including: North American Waterfowl Management Plan, Partners in Flight, U.S. Shorebird Conservation Plan, and the North American Colonial Waterbird Conservation Plan. Recognizing that the conservation interests of these initiatives can be better served through more integrated planning and delivery of bird conservation, the vision of NABCI-US is to "achieve regionally-based, biologically-driven, landscape-oriented partnerships that deliver the full spectrum of bird conservation across the North American continent and that support simultaneous, on-the-ground delivery of conservation for all birds" (North American Bird Conservation Initiative): Strategy and Action Plan, May 1999, <http://www.bsc-eoc.org/nabci.html>).
5. The U.S. Shorebird Conservation Plan - The development of this plan is a collaborative effort between researchers, land managers, and education specialists from the U.S. who will cooperate with colleagues from Canada and Mexico to advance effective conservation of North American shorebird species. The shorebird plan partnership has participated actively in the development of NABCI-US. The Plan, coordinated by Manomet Center for Conservation Sciences, focuses on three main components: 1) habitat management, 2) research and monitoring and 3) education and outreach. National working groups and smaller task groups and regional working groups were established to address issues in each of these areas. There are basically two planning areas, which include portions of the Ohio River mainstem area: Central Hardwoods and Appalachian Mountains. The Central Hardwoods area is included within the Upper Mississippi Valley/Great Lakes Regional Plan, but there will not be a regional shorebird conservation plan prepared for the Appalachian Mountains area.

Description of the Study Area

Prior to the 18th century, the Ohio River flowed through essentially pristine lands. The River was free flowing throughout its entire length, with a diverse array of habitats including deep pools, rocky rapids, sand and gravel bars, snag and drift piles, islands, and backwaters, along with an occasional waterfall. A wide variety of habitat types prevailed and aquatic life was abundant. In general, the river had pure water throughout most of the drainage basin; gravelly, rocky or sandy bottoms; and a lush growth of aquatic plants in the clear, shade-covered streams. Extreme variations in flow are evident from early records.

The Ohio River begins at the confluence of the Allegheny and Monongahela Rivers at Pittsburgh, Pennsylvania, and flows 981 miles to its confluence with the Mississippi River at Cairo, Illinois. Its present channel is roughly at the edge of the southernmost extension of the last glacial invasion of North America about 10,000 years ago (Pearson and Krumholz, 1984). When the first French and English explorers reached the river in the 1600's they described it as a beautiful, clean stream flowing through extensive hardwood forests, with marshy areas along the floodplain and at nearly every creek mouth (Pearson and Krumholz, 1984).

This scenario has changed drastically within the last 150 years or so. Impacts from converting the forests to agriculture, industrial development, mining, development and population growth, invasive species, and altering the river by the Corps to allow for year round navigation, and other impacts, have and continue to play a role in creating a river much different than the pristine scene prior to the early 1800's.

After leaving Pennsylvania, the Ohio River forms a portion of the border of West Virginia, Ohio, Kentucky, Indiana and Illinois. The Ohio River has a relatively constricted channel upstream of Louisville, Kentucky (RM 606); however, small floodplains are common within portions of this river reach. The channel downstream of Louisville is not so constricted with the floodplains being relatively larger in size (Thorp 1992). The drainage area for the Ohio River Basin totals 203,940 square miles, including the Tennessee and Cumberland River drainages. The drainage area encompassed by Ohio River tributaries with drainage areas 1,000 square miles or more is 182,370 square miles, or 89.4 percent of the total drainage area. The Ohio River flows through four physiographic provinces, as described by Fenneman (1928): Appalachian Plateau; Interior Low Plateau; Central Lowlands Plateau; and, Coastal Plain.

The location of the Ohio River made it important as a route to the west and a transportation route to the sea. The first settlers in the Ohio River Basin found a river bounded by vast, virgin hardwood forests, many marshes and other wetlands, and abundant supplies of fish and game. Agricultural lands attracted the first settlers and today the western portion of the basin is part of one of the most important agricultural regions in the U.S. The early settlers cleared the forests and drained many of the wetlands between 1800 and 1900 (Pearson and Pearson, 1989). One of the major effects of this clearing and draining was increased siltation into the river due to soil erosion from the fields and pastures.

A joint committee of the Ohio Valley states met in 1819 for the purpose of improving the Ohio River for navigation. The commission mapped 102 obstructions between Pittsburgh, Pennsylvania, and Louisville, Kentucky. In 1824, Congress passed the General Survey Act, which gave the U.S. Corps of Engineers continuing authority for navigational studies. In 1827, Congress passed the first Rivers and Harbors Act to authorize Federal removal of river obstructions and improve harbors. Removing snags and dredging sand bars were popular means of navigation improvement. The first Federal dam on the Ohio River was built in 1838 at Brown's Island to divert the river around one side of the island. The first navigation lock was built five miles downstream of Pittsburgh at Davis Island in 1885 to create a harbor at Pittsburgh that could hold 12,000 boats and barges. At one time, there were 54 wicket dams in operation on the Ohio River. With the completion of Olmsted Locks and Dam, currently under construction, all of the previous wicket dams will have been replaced by a series of 19 lock and dam projects.

predominantly with high lift dams. Presently, the Ohio River mainstem is maintained by the Corps as a series of relatively flat pools providing for year-round navigation.

With increased industrialization of the Ohio River valley, water quality of the river began to degrade because of the combination of waste loadings from the manufacturing processes and the increased population pressure that followed the industrial boom (Cavanaugh and Mitsch, 1989). However, the lower 150-200 miles of the river was not polluted as badly, since fewer people lived along that portion of the river and several large tributaries provided additional dilution. The water quality of the Ohio River continued to deteriorate and was at its worst during the droughts that occurred in 1930-31 and 1934 (Pearson and Krumholz, 1984).

In 1948, the governors for the states along the Ohio River established an interstate Ohio River Valley Water Sanitation Commission (ORSANCO) to fight the growing water pollution problem in the river. As a result of this effort, a valley-wide educational program was started, new state laws were passed, industrial committees set control standards for industrial wastes, and many new pollution control installations were made (ORSANCO, 1998).

During the period 1973 to 1985, Van Hassel et al. (1988) found decreased numbers of pollution tolerant fish species, and increased numbers of more pollution intolerant species, indicating improvement in the water quality and fishery of the Ohio River. Ohio River sediment samples taken in 1987 generally had lower concentrations of cadmium, chromium, copper, iron, lead, nickel and zinc, and higher values for manganese than did sediment samples taken in 1977 (Youger and Mitsch, 1989). Although there were and are some reductions in the concentrations of metals, concentrations generally remain well above background and may be a source of water contamination in the Ohio River for the future (Youger and Mitsch, 1989).

Trends in Ohio River water quality indicate increasing concentrations of chloride, pH, suspended sediments and arsenic, and decreasing concentrations of sulfate, dissolved oxygen deficit and lead. Atmospheric deposition is suggested as a causal factor for the changes in nitrate, lead, arsenic and cadmium concentrations. Municipal waste treatment, use of highway salts and nitrogen fertilizer and regional trends in coal combustion are suggested as other significant influences on the water quality of the river (Cavanaugh and Mitsch, 1989). More recent data collected by OSANCO between 1980 to 1990 for total phosphorus, nitrate/nitrite nitrogen, and ammonia nitrogen indicates either no change or decreasing concentrations in nutrient parameters at most of the 16 Ohio River sampling locations. However, nutrients have been identified as a concern on Ohio River tributaries (Heath et. al., unpublished).

The Ohio River basin constitutes approximately 20 percent of the Mississippi Watershed, and contributes about 35 percent of the Mississippi River's total flow at its entrance to the Gulf of Mexico. Preliminary data indicate that a significant amount of nutrients delivered to the Gulf come from the upper Mississippi River and Ohio River watersheds contributing to a zone of hypoxia in the Gulf of Mexico.

IV. ALTERNATIVES

A “conditional” without-project condition (WOPC) and with-project conditions (WPC) are described and evaluated by the Corps in the ORMSS PEIS. The Corps WOPC scenario is essentially keeping the system in operation without ‘new’ investment. The Corps WPC scenario describes a ‘process’ of which selected to determine what course of action will be taken. These are briefly described below, but the ORMSS PEIS should be referred to for greater detail.

Without-Project Condition Alternatives

The following information regarding WOPC is largely derived from Section 8 of the SIP/PEIS and Section 8 of the SIP- Economics Appendix. Please refer to these sections for greater detail on the WOPC alternatives.

WOPC - Formulation

The WOPC has traditionally been defined as the most likely condition expected to prevail on the Ohio River mainstem throughout the planning horizon in absence of additional project (Congressional) authorizations. For the ORMSS, this definition has been expanded by the Corps to reflect their current philosophy concerning planning for a highly uncertain future. One of the most critical determinants of the need for future investments in the Ohio River Navigation System, and at the same time the most uncertain, is the demand for waterway commodity movements through all Ohio River locks.

The Corps formulation of the WOPC begins with the existing locks and their current performance and structural condition. It involves maintenance of the existing system in the absence of new investment in the system. It assumes implementation of expected and economically-justified, nonstructural measures within the Corps authority, operational measures (e.g., helper boats, revised lockage policies), and includes authorized improvements either under construction or are pending appropriation.

The Corps defines a range of alternative scenarios that describe the potential demand for transportation of major commodities transported on the river. The scenarios are not evaluated with respect to numerical probability or likelihood of occurrence, and a single most probable without-project condition is not identified.

Multiple Scenarios of Projected Traffic Demands

To address the inherent difficulties associated with predicting traffic forecasts on the Ohio River, the Corps presents five navigation traffic forecasts. Two of the five forecasts were based on information obtained from utility surveys regarding their plans in light of environmental regulations. These scenarios are termed the 1) **Utility-Based** and 2) **Utility Based-High** scenarios. The difference between these two is that the Utility Based-High scenario assumes high economic growth. The remaining three scenarios were based on the output of models. The first of these is a continued application of existing laws, specifically the National Ambient Air Quality Standards. This scenario is referred to as the 3) **NAAQS** scenario. The second reflects implementation of the administration’s multi-emissions proposal, the Clear Skies Initiative, as an amendment to the Clean Air Act. This proposal, referred to as the 4) **Clear Skies** scenario could be expected to have a fairly profound impact on the use of coal by electric utilities, largely

because of the proposal's implied mercury emissions restrictions. The final scenario would be implementation of the Clear Skies initiative without the severe mercury restrictions that are included under Clear Skies. This scenario is referred to as the 5) **No Mercury Limitations** Scenario. All of the forecast scenarios reflect the effects of coal switching by ORS-dependent utilities to meet the requirements of existing or proposed environmental regulations. The two utility-based forecasts reflect the outlook of the utilities themselves.

Specifically, the goal of this approach is to define a range of reasonable alternative scenarios that ultimately describe the potential demand for transportation of major commodities transported on the Ohio River. A consequence of applying a scenario-based approach to traffic forecasting is multiple representations of the WOPC. However, scenarios are not evaluated with respect to numerical probability or likelihood of occurrence. A single most probable WOPC, therefore, is not identified.

The Corps has stated the consideration of the impacts of various scenarios greatly enhances the decision-making process, and that this scenario-based approach is consistent with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G), the procedural and analytical framework for Corps feasibility studies. The WOPC is determined for each traffic scenario the Corps presents.

After determination of the applicable future scenarios for traffic demands, the formulation of the any WOPC scenario begins with a comprehensive evaluation of the existing locks and dams, pools, channels, and existing operation and maintenance rules during normal operations and when main chambers are closed, their current performance, and their structural condition. The Corps indicates that the definition or choice of the WOPC is not obvious and that it is not necessarily the status quo or existing condition. It may involve certain improvements in the Corps' current ways of doing business that do not require Congressional authorizations. It is assumed that any reasonable and economically justified nonstructural practice within the Corps of Engineers' discretion (i.e. not requiring Congressional Authorization) will be implemented at the appropriate future time. For example, operational alternatives, the use of helper boats, revised scheduling and lockage policies, and various maintenance alternatives have been examined for their ability to improve project performance to ensure the best use of the existing facilities. The WOPC will also include authorized improvements that are either under construction or are pending appropriation (e.g., Olmsted, Greenup, and J.T. Myers Locks and Dams). The most likely WOPC will not include any proactive maintenance requiring an investment decision.

However, the importance of the WOPC is not changed; it still serves as the basis against which impacts of project improvements/additions requiring Congressional authorization (in any WPC) are measured. The net system-wide transportation savings (benefits less costs) and impacts to the valued environmental components (VECs) due to any WPC can be compared to those values in the corresponding WOPC (i.e. based on the same set of economic and environmental forecasts). Likewise, the environmental and social measures of any WPC can be compared to those of the appropriate WOPC.

WOPC - Existing Condition

As navigation projects age, component reliability worsens and maintenance requirements and unscheduled closures typically increase. Development of a WOPC begins with an assessment of existing conditions, capacity, and demands. The performance of each lock is affected by each lock's availability for service. For example, the age and level of use for each lock varies within the system. The Corps identifies strategies for maintaining and operating the Ohio River locks for each navigation traffic forecast scenario in the WOPC. The Corps identifies three different maintenance plans it develops and analyzes in the SIP. They include reactive maintenance, advanced maintenance or component replacement, and rehabilitation maintenance (bundled components). Since both the advanced component replacement and major rehabilitation require an investment decision, they were not considered alternatives for the WOPC. They are, however, considered in the WPC. In the absence of new investment, a reactive maintenance plan is assumed by the Corps to be the base maintenance plan for the WOPC. Under reactive maintenance, components are fixed or replaced only after they perform unsatisfactorily.

The WOPC also includes the following currently authorized projects:

1. Myers auxiliary chamber extension – In the Corps analysis, the auxiliary chamber at Myers is scheduled for extension in years 2009 and 2010. Myers is modeled as twin 1200' x 110' locks beginning in 2011. This project is not yet under construction.
2. Greenup auxiliary chamber extension and main chamber rehabilitation – In this Corps analysis, the Greenup auxiliary chamber is extended in 2008 and 2009 and the main chamber in 2010 and 2011. The project is not yet under construction.
3. Olmsted Locks and Dam – Olmsted locks and dam (twin 1200' x 110' chambers) were authorized to replace Locks and Dams 52 and 53. Construction began in 1993, but completion is not expected until 2011.
4. McAlpine lock replacement – A new 1200' x 110' chamber was authorized to replace the existing 600' x 110' auxiliary chamber. Construction began in 1996 and is scheduled for completion in 2008.

Projected Traffic Demands

Traffic demand forecasts for this study represent an update of previous forecasts completed in the spring of 1999 for the J.T. Myers and Greenup Locks Improvements Feasibility Report. New forecasts were prepared for all commodity groups, but because of the dominance of utility steam coal on the system and the uncertainties surrounding the regulatory future, alternative scenarios were developed only for utility coal and sorbent materials (lime and limestone) used for coal desulfurization. The dominance of these commodities shipped on the Ohio River is expected to continue through the planning period although other commodities continue to represent a significant percentage of traffic in the future as well.

The current round of adjustments to the utility coal forecasts was necessitated by existing and likely future regulatory changes affecting the electric utility industry. Coal that moves by barge to electric utilities accounts for nearly half of all traffic on the Ohio River System (ORS). This

market for coal continues to receive much attention from government regulators, the Congress, and the public. Regulation and law governing coal's use overseas, and stiff competition from competing exporting countries, has been responsible for the near disappearance of the steam coal export market, particularly in Europe. For the ORS, the result has been the first prolonged period of coal traffic stagnation. While other commodities and barge-served markets face uncertainty, none matches the dominance of coal or level of uncertainty regarding future use. Environmental issues are acknowledged by industry experts to be the dominant issues expected to affect future coal utilization and sourcing on the part of the electric utilities. In light of this, five alternative forecast scenarios were developed, three of which directly reflect alternative legislative approaches to emissions reductions. A "broad-based" or single projection for all other traffic is also made and incorporated into each of these scenarios.

Traffic demands for the Ohio River mainstem show similar patterns to those for the ORS. Ohio River mainstem traffic annually accounts for about 87 percent of total system traffic throughout the forecast period. In 2020, traffic demands range between 273.6 million tons under the Clear Skies scenario and 306.1 million tons under the Utility-Based High scenario. In 2060, the range is between 322.3 and 443.2 million tons. Annual growth between 2000 and 2060 under Clear Skies is 0.5 percent and under the Utility-Based High scenario 1.03 percent. Over the 1970-2000 period, growth rates for traffic on the Ohio River mainstem were substantially higher than for the ORS overall (2.1 versus 1.7 percent per annum). For the forecast period, growth rates for the ORS are slightly higher under all scenarios, indicating that traffic demand growth for tributary streams, especially the Tennessee River, are higher than the mainstem.

Lock-Level Traffic Demands

Since most of the forecasts were arrived at independently and since considerable coal switching takes place in some of the forecasts, the forecasts can align quite differently at the locks. For example, the high forecast at one lock might not be the high forecast at another.

Environmental regulations can affect coal sourcing for various plants, and this in turn can affect coal movements through the Ohio River facilities. Under most of the forecast scenarios, projected growth rates are the highest for the lower river locks. This arises since utilities are expected to include more coal from western sources, including the Illinois Basin, as well as more coal from the Northern Appalachian area. The increasing demand for coal from these sources, which is relatively high in sulfur content but lower in cost than coals now used from the Kanawha basin, is thought to be due to the fact that scrubbers are becoming more widespread, which render the sulfur content of coals less important. The impact of increased use of coal from western sources would be to increase coal movements through the lowermost Ohio River locks but lower the same through the middle and upper locks. Northern Appalachian coal always has and is expected in the future to move primarily on the middle and lower Ohio River (serving, for example, the Florida coal market). The increased use of Northern Appalachian coal would result in traffic growth downstream of and including Hannibal. The utility-based scenarios show the lowest growth rates occurring at the uppermost locks on the Ohio, while the NAAQS, Clear Skies, and No Mercury Limits scenarios show the lowest growth rate occurring at projects on the middle river. Generally speaking, the NAAQA, Clear Skies, and the No Mercury Limits scenarios are more pessimistic concerning the future of Central Appalachian coal than the utility-based scenarios.

However, over the projected longer term, the high and low alternatives that emerge are the Utility-Based High scenario and the Clear Skies scenario. In year 2020, the forecasts range between 318 million tons under the Clear Skies scenario and 350.4 million tons under the Utility-Based High scenario. By year 2060, the range is between 368.7 and 511.0 million tons for these same scenarios. Annual growth for the 2000-2060 period ranges from 0.51 percent to 1.06 percent. This is compared to average annual growth over the 1970-2000 period of 1.7 percent per year.

WOPC Conclusions of the Service

Regarding the Corps assessment of the WOPC, the Service believes that there will be continued adverse impacts to selected natural resources as a result of the locks and dams, navigation related dredging activity, and other related navigation operations and existing activities. This is expected to continue to be similar to past and current conditions. We believe there will be continued adverse impacts to mussels, riverine fishes, riverine habitat and diversity, stream habitat quality, bottomland forests, and island habitat under the WOPC. We also expect these adverse impacts to vary depending on the resource, its location within the river, and time.

With Project Conditions (WPC)

The Corps addresses the WPC through their formulation of alternative system investment plans. Investment plans are defined by the Corps by the timing and specification of proactive maintenance and/or modernization projects at each lock and dam facility and are evaluated for each of the traffic forecasts the Corps presents in the PEIS in Section 8.2. The evaluations consider navigation and ecosystem benefits and associated environmental or ecosystem impacts.

In Section 10 of the ORMSS PEIS the Corps has tentatively selected one SIP as a basis from which a schedule of future site-specific feasibility Studies will be developed. The approach the Corps took to determine the SIP is best summarized in Section 10 of the SIP/PEIS.

This SIP is essentially a process involving a mixture of structural improvements (new lock chambers), operational measures (helper boats and navigation upstream and downstream lockage policy during closures), and maintenance alternatives (reactive, advanced and rehabilitation). Significant Corps findings and recommendations from this process include: new lock chambers at Emsworth, Dashiels and Montgomery to replace the existing auxiliary chambers; main chamber rehabilitations at all other mainstem projects except McAlpine and New Cumberland where auxiliary chamber rehabilitation is recommended; a reliable main chamber displaces the need for auxiliary lock extension under the current traffic forecast scenarios; and reactive maintenance or component replacement strategies which are intended to complement the recommended SIP.

The Service believes this mixture of structural improvements, operational measures, and maintenance alternatives as presented in the SIP/PEIS is a good approach. As a result, this approach will prevent the need for new lock extensions that could have potentially greater negative impacts to natural resources. We recommend the Corps continue this evaluation process and refine it as needed as new information becomes available (i.e., adaptive management).

Regarding the Corps WPC presented in the PEIS, the Service believes that there will be continued adverse impacts to selected natural resources as a result of the locks and dams, navigation related dredging activity, and other related navigation activities. This is expected to continue to be similar to past and current conditions. We believe there will be continued adverse impacts to mussels, riverine fishes, riverine habitat and diversity, stream habitat quality, bottomland forests, and island habitat under the WPC. We also expect these adverse impacts to vary depending on the resource, its location within the river, and time.

V. DESCRIPTION OF AFFECTED RESOURCES

The Ohio River

Previous alterations to the Ohio River as a result of dam construction and operations, maintenance of the river for navigation traffic, and floodwalls and levees have resulted in permanent alterations to the structure and function of the river and the surrounding habitat. Cumulative impacts from human activities including direct habitat loss through development and floodplain encroachment, pollution, bank erosion and siltation of embayments, increased use of the river for water supply, recreation, navigation, etc. These impacts continue to accrue and degrade the quality and quantity of remaining habitat. Conversely, water quality improvements, mainly due to the passage of the Clean Water Act, have allowed many species to begin to recover from previous impacts and to recolonize areas that were previously unsuitable. Although habitat encroachment will continue, benefits derived from improved water quality, if not coupled with other improvements, will likely plateau.

Ohio River Fisheries

The Ohio River and geologic predecessors, as parts of the Mississippi Drainage, have provided habitat for large river fishes for 200 million years. The evolution and distribution of freshwater fishes in this large river system have been shaped by many geologic events—continental drift, sea level fluctuations, climatic changes, the advance and retreat of glaciers, and the establishment of land bridges between North America and both Asia and South American. The fish community of the Mississippi Drainage is exceptionally rich in species, harbors many ancient or relic forms, contains several evolutionary lines not found elsewhere in the world, and represents the center of adaptive radiation for freshwater fishes in North America (Pearson and Pearson, 1989). A distinctive assemblage of fish species that occur mainly in the Mississippi and Ohio Rivers and the lower reaches of their major tributaries inhabit the big rivers. Shovelnose sturgeon, paddlefish, skipjack herring, river shiner, goldeye, silverband shiner, and blue sucker are characteristic examples of the big river fishes found in the Ohio River.

The human activity that probably resulted in the most disruptive influence on Ohio River fish communities is the series of locks and dams constructed on the Ohio River mainstem. The dams have inundated and facilitated siltation of extensive reaches of formerly clean gravel or rubble substrate. This coarse substrate provided the predominant lithophilic fishes (fishes which spawn over clean gravel-rock) with their preferred spawning substrate, which is now in reduced supply.

The Louisville District Corps developed and utilized a mathematical model to assess the impacts that project-induced increases in navigation traffic would have on selective aquatic resources. A

review of the document "Incremental Environmental Effects of Commercial Navigation Traffic, Olmsted Locks and Dam Study, Navigation Predictive Analysis Technique (NAVPAT)" (undated) revealed that the existing project conditions have substantially reduced the habitat quality of the river for fifty percent of the life stages evaluated and five of the seven species evaluated. The quality of the river's spawning habitat for sauger, paddlefish, and spotted bass has been significantly degraded by the development of the river as a navigation corridor (USFWS, 1993).

Most Ohio River fishes spawned in the mainstem, predominantly in the shore-debris zone of the river. Many of the lithophilic fish (i.e., shovelnose sturgeon, redhorses, blue sucker, and paddlefish) have declined in abundance, while fishes, which produce pelagic eggs, and/or larvae that float above the bottom (i.e., freshwater drum, emerald shiner and gizzard shad) have increased in relative abundance. Fishes that spawn over vegetative matter (i.e., buffalo-fishes and carpsuckers) appear to have remained stable. Nest guarding sunfishes and basses primarily occur where protected embayments and backwaters are available for spawning. After 1900, a number of fish species apparently declined in abundance, including: lampreys, shovelnose sturgeon, paddlefish, muskellunge, and blue sucker. One would also expect that the smaller, riffle-inhabiting species also were more abundant prior to 1900. Fish that were reported from the Ohio River mainstem prior to 1920, but have not been located since that time include: least brook lamprey; Alabama shad; horny head chub; Ozark minnow; and crystal, mud, gilt and longhead darters (USFWS 2000). By 1950, populations of a number of fish species were further reduced in abundance, including: lake sturgeon; shovelnose sturgeon; bigeye chub; blue sucker; and muskellunge (Pearson and Krumholz, 1984). And, since 1970, lake sturgeon, as well as burbot (which may have been introduced), southern redbelly dace, dusky darter, and banded sculpin have not been reported from the mainstem Ohio River. Species which probably also declined during the period 1900-1980 include: shortnose gar; mooneye; white sucker; redhorses; buffalofishes; and smallmouth and spotted basses (Pearson and Krumholz, 1984).

Species for which there appears to be no change in abundance include: emerald shiner, channel catfish and freshwater drum. Between 1900 and 1980, species, which increased in abundance, include: common carp, gizzard shad, threadfin shad, and perhaps, river carpsucker (Preston and White, 1978). Based on lock chamber rotenone sampling, the ten most abundant fishes in the Ohio River are: emerald shiner; gizzard shad; freshwater drum; mimic shiner; channel catfish; common carp; bullheads; skipjack herring; white crappie; and threadfin shad.

Several species of fish have been introduced to the Ohio River mainstem, at least six fish have established populations in the river and include the carp, goldfish, white catfish, silver carp, bighead carp and banded killifish (Pearson, 1992). Among other introduced species, it is likely that rainbow smelt and northern pike will establish populations (Pearson and Pearson, 1989). In addition, there are 13 fish species that have only been reported from the river since 1970, three of which may have small populations only recently discovered: flathead chub, channel darter, and slenderhead darter.

According to Johnson (1987), 18 percent (28 species) of 159 fishes reported from the Ohio River are considered rare enough to be protected by law in one or more of the states bordering the Ohio River. An additional 13 percent (21 species) are considered to be of "special concern" by one or

more of these same states because of "...low numbers, limited distributions, or recent declines." The Ohio River populations which might be particularly threatened include silver lamprey, least brook lamprey, lake sturgeon, paddlefish, alligator gar, Alabama shad, flathead chub, blue sucker, crystal darter, channel darter, and slenderhead darter (Pearson and Pearson, 1989).

It is likely that the dams interfere with fish movements, which in the past eliminated the spring run of Alabama shad, and perhaps are now impairing movements of a number of other fish species (Pearson and Pearson, 1989; Burr and Page, 1986). However, some large river species (e.g., paddlefish, spotted gar, mooneye, and highfin carpsucker) have been able to recolonize upstream areas in the last 20 years as water quality improved dramatically in the upper half of the river. Populations of pollution-tolerant species (e.g., bullheads and carp) have declined in the upper third of the river over the past years, while populations of many relatively pollution-intolerant species (e.g., Hiodontids, *Moxostoma* spp., and walleye) have increased.

Lock chamber studies during the period 1957 through 1980 indicates that, after 1960, there were significant increases in densities of all fishes combined in the upper 100 miles of the river, and between ORM 400-600 and ORM800-900. Species diversity indices increased significantly in the upper 100 miles of the river between 1957 and 1980. Nearly all species of fishes increased in density between 1957 and 1980, with the most dramatic increases after 1974 (Pearson and Krumholz, 1984). It appears that fish communities are responding positively to the continuing improvements in water quality in the Ohio River.

The emerald shiner and mimic shiner are most abundant in the upper third of the river, while the freshwater drum is most abundant in the lower two-thirds of the river. Gizzard shad and channel catfish are evenly distributed throughout the mainstem. Generally, larval fishes are present in the Ohio River between April and September, with densities the greatest in May and June. Larval fish density increases from the upper to the lower river. Cyprinid and percid larvae are the most abundant larva in the upper third of the Ohio River, while clupeids, cyprinids, and catostomids are most abundant in the lower two-thirds of the river.

Ohio River Mussels

Approximately 300 species of freshwater mussels (Family Unionidae) occur within the United States of America. Freshwater mussels reside in permanent bodies of water ranging from large lakes to small streams. The vast majority of the species prefer streams with the most diverse assemblages occurring in riverine shoals or gravel bars. Within the United States, the most diverse freshwater mussel fauna known occurred in the mainstems of the Tennessee River (102 species), Cumberland River (87 species), and Ohio River (72 species) (Parmalee and Bogan, 1998; Johnson, 1980). All three of the rivers occur within the Ohio River watershed, which historically supported approximately 127 distinct species and subspecies of freshwater mussels. Of this once rich mussel fauna, 11 mussels are extinct, 34 mussels are classified as Federally endangered, and others are under review for possible addition to the federal Endangered Species List. The Ohio River basin contained over 42 percent of the continent's mussel fauna, and of the 127 species in the basin, the mainstem Ohio River was home to over 56 percent of the basin's mussels. Only 48 of those 72 species have been found alive or fresh dead in the mainstem in the past 20 years (Watters 2004; ESI 2000). In less than 100 years, nearly half (44 percent) of the

Ohio River basin's mussel fauna has become extinct, endangered, or been decimated to the point where Federal protection is being considered.

The Ohio River watershed's mollusk (snails and mussels) fauna has been adversely affected by impoundment, siltation, channelization, in-stream dredging and disposal for navigation, commercial sand and gravel dredging and pollution. Reservoirs have flooded and destroyed many mussel populations, which is one of the primary causes of their demise in large rivers. Because the current velocity decreases as the flow approaches a dam, there is a greater amount of silt deposited in the lower pool areas. With the changes in current flow and velocity, silt has dropped out on some mussel assemblages in quantities great enough to reduce or extirpate the mussels (Williams and Schuster, 1989).

Within the watershed, coal mining related siltation and acid mine drainage have adversely impacted many stream reaches with freshwater mussels. Numerous streams within the watershed have experienced mussel kills from toxic chemical spills; poor land use practices have fouled many waters with silt; and runoff from larger urban areas has degraded water and substrate quality.

Continued mussel losses can be expected because many of these same factors still threaten existing populations. Also, many of the mussel populations are now isolated and reduced to such small remnant reproductive units that they may contain insufficient genetic diversity to provide for long-term survival. In addition, some species exist only as old individuals that may no longer be capable of reproduction.

The diversity of Ohio River freshwater mollusks is critically threatened by the recent invasion of the exotic zebra mussel into the Ohio River basin. Zebra mussels rapidly expanded their range in the Ohio River. Zebra mussels were first observed in the lower Ohio River in 1991 and had expanded upriver to Cincinnati by 1992. By 1993, low densities of zebra mussels occurred in the upper reaches of the Ohio River and only a few unionids near Cincinnati had zebra mussels on their shells. By 1999 they were present all the way up to Pittsburgh (Patty Morrison, personal communication). Concurrently, unionids and snails in the lower Ohio River were covered by large numbers of adult zebra mussels. Observations in 1994 found zebra mussel densities still relatively low in the upper Ohio River, but very high in the lower Ohio River. Dunn (1995) reported that, in 1994, every unionid observed below Portsmouth, Ohio had zebra mussels. Commercial and recreational boating activities increases the probability of unintentionally translocating exotic species such as the zebra mussel from one river reach or drainage basin to another in bilge water, on hulls, engine components, mooring lines, fishing tackle, trailers, wet suits, and other navigational components and leisure equipment.

Encrustation by zebra mussels has a severe energetic cost for native unionids (Berg et.al., 1993). There is a strong relationship between the degree of zebra mussel infestation and mortality of native unionids in rivers and lakes (Schloesser, 1995). Zebra mussels impair locomotion and burrowing of native unionids. They impact native unionids by preventing valve closure, preventing valves from opening, and causing food deprivation.

Zebra mussel infestations in the Ohio River and its major tributaries have reached such densities that the future health of many of the freshwater mussel populations are imperiled. Effective strategies to control zebra mussel populations along the Ohio River will probably depend on complementary efforts designed to identify and reduce existing upriver source populations, and to prevent vessels from transmitting zebra mussels upstream to replenish these populations (Steingraeber, 1999 [draft]).

Ohio River Migratory Birds

On the Ohio River, areas around islands, flooded sloughs and other backwater and/or embayment areas provide important habitats for water birds. Wetlands and shallow water zones associated with islands/backchannels provide habitat on which waterbird (i.e., waterfowl, shorebirds and wading bird) populations depend, particularly during migration. Mature forested wetlands and bottomland hardwoods provide important nesting habitat for species such as wood ducks, osprey, and great blue herons, and the inland and fringe wetlands are important brood rearing areas. Embayments are also important, particularly those areas containing submerged and emergent aquatic vegetation.

Neotropical Songbirds

The Ohio River Valley Ecosystem (ORVE) Migratory Bird Resource Priority Metaproject was created in an effort to identify areas of importance to species of migratory birds. Target bird species include songbirds that winter in South America or Latin America and breed or inhabit the Ohio River Watershed during the spring and summer. These species are in particular danger due to stress caused by fragmentation and loss of habitat in both their wintering grounds and their spring and summer ranges.

Targeted bird species of concern within the ORVE include: Bewick's wren; cerulean warbler; golden-winged warbler; wood thrush; Louisiana waterthrush; worm-eating warbler; blackburnian warbler; Henslow's sparrow; eastern wood peewee; loggerhead shrike; hooded warbler; black and white warbler; dickcissel; yellow-billed cuckoo; yellow-throated vireo; field sparrow; whip-poor-will; Aadian flycatcher; black-billed cuckoo; black-throated blue warbler; chestnut-sided warbler; ovenbird; northern parula; Canada warbler; prairie warbler; gray catbird; Bachman's sparrow; summer tanager; great-crested flycatcher; short-eared owl; eastern phoebe; scarlet tanager; cedar waxwing; and northern (Baltimore) oriole.

Waterfowl

More than fourteen species of waterfowl utilize the islands and the various other riverine habitats. The majority of the waterfowl are migratory, using the habitats as feeding and resting areas. Annual floods, primarily during the winter to spring period, create areas attractive to migratory waterfowl. Bottomland hardwoods produce mast, e.g., acorns, which are used extensively as a food source by mallards, black ducks and wood ducks when flooded. The more open sloughs produce emergent vegetation used by widgeon, gadwall, blue-winged and green-winged teal, and ring-necked ducks. These fertile wetlands also produce an abundant invertebrate resource that is vital as a source of protein to spring migrating ducks.

There are two principal fall migration routes for waterfowl in the basin. The eastern route cuts across northern Ohio and Pennsylvania to the Atlantic Coast. The western route enters the basin

in northeastern Indiana and northwestern Ohio; follows the historic Kankakee marsh area in northern Indiana; and then proceeds down the Wabash River to wintering grounds in southern Indiana, Illinois, northwestern Kentucky, and farther south. There are minor flyways down other rivers such as the Scioto, White, and mainstem of the Ohio River.

The lower Ohio River is encompassed by the Mississippi Flyway and, as such, is an important migratory route with significant wintering populations of ducks. The lower Ohio River area is also part of the wintering area for the Mississippi Valley Population (MVP) Canada geese. An estimated 800,000 MVP geese winter in southern Illinois, southwestern Indiana, eastern Missouri, and western Kentucky. The Southern James Bay Canada Goose population migrates through Ohio, Pennsylvania, Indiana, and Kentucky to wintering grounds in Tennessee and Alabama.

North American Waterfowl Management Plan - The North American Waterfowl Management Plan (USFWS 1986b) provides a framework for waterfowl conservation and management efforts by describing population and habitat goals. The Plan's major premise is that the maintenance of abundant waterfowl populations is dependent on the protection, restoration and management of habitat. The Plan sets goals for waterfowl populations based on species numbers during the decade of the 1970's.

In concert with the Plan, 10 habitat joint ventures were established in the United States and three in Canada. Parts of the Ohio River are included within joint venture areas: the Lower Mississippi River Valley Joint Venture, the Upper Mississippi River Joint Venture, and the Atlantic Coast Joint Venture. Within the UMRJV, the New Madrid focus area includes portions of the Ohio River mainstem area in Illinois and Indiana. The Kentucky portion of the Ohio River is included in the LMRJV, and the West Virginia and Pennsylvania portion of the Ohio River are in the ACJV. Habitat joint venture actions include protection, restoration, and enhancement of wetland and associated upland habitats. Protection strategies include habitat acquisition, conservation easements, leases, and management agreements with private landowners. Habitat enhancement activities include rest/rotational-grazing practices, seasonal flooding of active croplands, and construction of nesting islands and structures for waterfowl and songbirds.

Presently, each state's waterfowl and waterfowl habitat objectives are undergoing review to develop site-specific focus area objectives. A draft of these site-specific objectives should be available in the near future.

Dabbling ducks are the most abundant and widespread group of ducks breeding in North America. This group includes: black duck, mallard, widgeon, pintail, gadwall, green-winged teal, blue-winged teal, cinnamon teal, shoveler and wood duck. Continuing habitat degradation and loss since the early 1960's have diminished the likelihood of these populations recovering to former abundance without innovative and intensive management on private and public lands, greater efforts to preserve existing habitat, and changes in land use and agricultural practices on private lands.

Bottomland forests, freshwater marshes and areas with submerged aquatic vegetation provide important habitat for wintering waterfowl. In addition, bottomland forests provide important

breeding habitat for wood ducks. Although no specific habitat goals have been established for protection/restoration of wetlands in the Ohio River floodplain, the amount of remaining wetlands within the Ohio River mainstem area has been severely reduced. A draft Ohio River Basin Commission report (1978) indicated that the wetlands remaining along the Ohio River total 19,500 acres or 2.3 percent of the 846,700-acre floodplain (1978). Of that amount, only approximately 3,400 acres of wetlands were protected at that time by encroachment from development (0.4 percent of the floodplain).

Shorebirds

A number of shorebird species (for example: lesser and greater yellowlegs; spotted sandpipers; semipalmated plovers) utilize the Ohio River corridor during both spring and fall migration. Important areas include mud flats and emergent wetlands.

U.S. Shorebird Conservation Plan – The U.S. Shorebird Conservation Plan is a collaborative effort between researchers, land managers and education specialists from the U.S. who will cooperate with colleagues from Canada and Mexico to advance effective conservation of North American shorebird species. The Plan, coordinated by Manomet Center for Conservation Sciences, will focus on three main components: 1) Habitat Management, 2) Research and Monitoring, and 3) Education and Outreach. National working groups as well as smaller task groups and regional working groups have been established to address issues in each of these areas.

The Ohio River mainstem falls within two of the shorebird planning regions: Upper Mississippi/Great Lakes and Appalachian Mountains. The shorebird planning units are organized to correspond with the newly created Bird Conservation Regions. The first joint meeting between regional working groups of the shorebird plan, Partners in Flight, the Atlantic Coast Joint Venture, and the Colonial Waterbird Plan focused on cooperative approaches to bird conservation. The result of this effort will identify migration timing in each of eight regions, important migration staging areas, and management and conservation opportunities and concerns on a regional basis.

Colonial Waterbirds

Colonial waterbird species whose ranges encompass all or a part of the mainstem Ohio River area (Peterson, 1980) include:

Herring gull (B,M,W)	Ring-bill gull (W,M)
Bonaparte's gull (M)	Caspian tern (M)
Least tern (B,M)	Great blue heron (B,W, M)
Louisiana heron (I)	Great egret (B, M)
Snowy egret (I,M)	Cattle egret (I)
Green heron (B,M)	Black-crowned night heron (B,M,W)
White-faced ibis (I)	Glossy ibis (I)
Yellowed-crowned night heron (B)	Common tern (M)
Forster's tern (M)	Double-crested cormorant (IB, M,W)

B=breed; W =winter; M =migrant; I = incidental

North American Colonial Waterbird Conservation Plan - There is an initiative to develop a North American Colonial Waterbird Conservation Plan to advance the conservation of colonial-nesting waterbirds (seabirds, terns, wading birds, gulls) and their habitats in North America. It is a partnership of non-governmental agencies, researchers, private individuals, academics, and federal and state governmental agencies that will develop the Plan over the next two years. The goal is to develop a plan whose implementation will result in sustainable populations, distributions, and habitats of colonial-nesting waterbirds throughout North America, including breeding, migratory, and wintering ranges. The Plan is being developed in concert with other bird conservation planning efforts underway: these efforts include the North American Waterfowl Management Plan, Partners in Flight Bird Conservation Strategy, Important Bird Areas, and Shorebird Conservation Plan.

Endangered Species

The federally listed endangered (E), threatened (T), and candidate (C) species whose ranges include the project study area are shown in the following table:

Common Name	Scientific Name	Listing Status
<i>Mammals</i>		
gray bat	<i>Myotis grisescens</i>	endangered
Indiana bat	<i>Myotis sodalis</i>	endangered
<i>Birds</i>		
bald eagle	<i>Haliaeetus leucocephalus</i>	threatened
Interior least tern	<i>Sterna antillarum</i>	endangered
<i>Mussels</i>		
clubshell	<i>Pleurobema clava</i>	endangered
cracking pearlymussel	<i>Hemistena lata</i>	endangered
dromedary pearlymussel	<i>Dromus dromas</i>	endangered
fanshell	<i>Cyprogenia stegaria</i>	endangered
fat pocketbook	<i>Potamilus capax</i>	endangered
Northern riffleshell	<i>Epioblasma torulosa biloba (=rangiana)</i>	endangered
orangefoot pimpleback	<i>Plethobasus cooperianus</i>	endangered
pink mucket	<i>Lampsilis abrupta</i>	endangered
Purple catspaw	<i>Epioblasma obliquata obliquata</i>	endangered
Rayed bean	<i>Villosa fabilis</i>	candidate
Ring pink	<i>Obovaria retusa</i>	endangered
Rough pigtoe	<i>Pleurobema plenum</i>	endangered
Sheepnose	<i>Plethobasus cyphus</i>	candidate
Spectaclecase	<i>Cumberlandia monodonta</i>	candidate
Tubercles blossom	<i>Epioblasma torulosa torulosa</i>	endangered
White wartyback	<i>Plethobasus cicatricosus</i>	endangered
Winged mapleleaf	<i>Quadrula fragosa</i>	endangered
<i>Plants</i>		
Running buffalo clover	<i>Trifolium stoloniferum</i>	endangered
Short's goldenrod	<i>Solidago shortii</i>	endangered

Gray bat

The gray bat occurs primarily in Alabama, northern Arkansas, Kentucky, Missouri, and Tennessee. Smaller populations, however, are known to occur in northwestern Florida, western Georgia, southeastern Kansas, southern Indiana, southern and southwestern Illinois, northeastern Oklahoma, northeastern Mississippi, western Virginia, and western North Carolina (Barbour and Davis, 1969; Tuttle, 1979). Historically, distribution was patchy, but fragmentation and isolation of populations is increasing (USFWS, 1982).

Each summer colony occupies a traditional home range that often contains several roosting caves scattered along as much as 70 km of river or reservoir border (USFWS, 1982). The gray bat may range up to 20 km from occupied caves while out feeding at night, and nearly always feeds over streams and rivers with good wooded canopies along the bank (USFWS, 1982). Foraging is generally parallel to streams, over the water at heights of 2 to 3 meters. Activities which modify the cave environment in any way, or which create large breaks in the feeding or travel corridors used by gray bats may have negative impacts. Mayflies are a major food source.

The gray bat is habitat restricted. It occurs only in limestone caves, and only a few caves provide the appropriate temperature and humidity conditions required by the species. Maternity colonies are usually in rather large caves containing substantial streams. Evidence suggests that colonies travel from summer to winter caves and often stop at transient caves. The times of maximum migration are in April and September.

The gray bat's known summer distribution in Indiana is limited to Clark, Crawford, Floyd and Harrison Counties. The only known summer roosts are in Clark County in the watersheds of Silver Creek and a couple of small Ohio River tributaries. In Kentucky, gray bats are most common and widespread in the caves of the "Pennyrile" region of western and west-central Kentucky. Of the Kentucky counties that border the Ohio River mainstem, there are isolated records for Breckinridge, Meade, Hardin, Bullitt, Crittenden and Livingston Counties. Summer colonies are also likely to occur in these counties. Of the Illinois counties that border the Ohio River mainstem, isolated records are available for Hardin, Pope and Pulaski Counties.

Impoundment of waterways, water pollution and siltation causes loss of foraging habitat and flooding of caves. Pesticides also present a major threat.

Indiana bat

The scientific name for the Indiana bat is *Myotis sodalis*. Formally listed as endangered throughout its range, on March 11, 1967, *Myotis sodalis* is currently protected under the Endangered Species Act of 1973 (Public Law 93-205). Critical Habitat was designated for the Indiana bat on September 24, 1976 (41 FR 41914); 11 caves and 3 mines in six states are listed as Critical Habitat.

The Indiana bat has a body approximately the size of a small mouse (body length of 7.5-9 centimeters). The wingspan is several times the average body length, ranging from 24-27 centimeters. Weights range from 4.5 – 9.5 grams, with females being larger than males. The historical range of the Indiana bat encompasses the eastern United States extending westward to Oklahoma, Iowa, and Wisconsin.

Indiana bats hibernate during the winter months. By entering a state known as torpor, they greatly reduce their metabolic rate and survive off the body fat they accumulate in the fall. Indiana bats hibernate in limestone caves and abandoned underground mines, known as hibernacula. They require very specific habitat features in these hibernacula, with cool, stable temperatures preferably between 4°C and 8°C, and humidity above 74% but below saturation.

After hibernation, most females depart from the caves and abandoned underground mines during April, while males typically remain longer before migrating to summer habitat. A few males may even occupy the hibernacula during the summer months. Females migrate to summer habitat where they will congregate to bear and raise young, in what are known as maternity colonies. Pregnant females typically give birth to single young in late June. These juveniles are capable of flying within a month. Indiana bats travel, forage, and roost within a variety of interconnected forested habitats, including riparian corridors, bottomlands, and uplands. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 3 inches DBH.

Water sources for the bat include stream corridors, ponds, and water filled road ruts in forests. Diet of the Indiana bat can vary within a night, seasonally, between years, and across its range. Despite this variability, diet generally includes flies, moths, beetles, and caddisflies as the most important prey, suggesting some selectivity by the bats. Although Indiana bats can feed opportunistically, as demonstrated with alate ants, it is unlikely that the Indiana bat is a strict generalist or opportunist, and this species may best be described as a "selective opportunist". Current literature suggests that the Indiana bat has a flexible diet that probably is influenced by available foraging habitat and available prey, and possibly by local, interspecific competition (e.g., gray bats and eastern pipistrelles).

Upon arrival at hibernacula in August-September, Indiana bats "swarm," a behavior in which "large numbers of bats fly in and out of entrances from dusk to dawn, while relatively few roost in the hibernacula during the day". Swarming continues for several weeks and mating occurs during the latter part of the period. Fat supplies are replenished as the bats forage prior to hibernation. Indiana bats tend to hibernate in the same hibernacula in which they swarm, although swarming has occurred in caves other than those in which the bats hibernated. During swarming, males remain active over a longer period of time at entrances than do females, probably to mate with the females as they arrive. Studies conducted in Kentucky have shown that males tend to forage within 1.5 miles of the hibernacula during this time. However, in West Virginia, male Indiana bats roosted within 3.5 miles in trees near ridgetops, and often switched roost trees from day to day. After mating, females enter directly into hibernation. A majority of bats of both sexes hibernate by the end of November. Hibernation is driven mainly by ambient temperature and may occur later or earlier depending on weather conditions.

Bald eagle

The bald eagle was federally listed as endangered in 1978 (43 FR 6233, February 14, 1978), and was downlisted to threatened status in 1995 (60 FR 36000, July 12, 1995). The downlisting was

a direct result of the banning of DDT and other persistent organochloride pesticides, as well as habitat protection and other recovery efforts. The bald eagle was formally proposed for delisting on July 6, 1999 (64 FR 123; pages 36453-36464).

In general, eagles nest in close proximity to lakes, rivers, or reservoirs. They construct their nests near habitat ecotones, such as lakeshores, rivers, and timber management areas (clearcuts or selective cuts). Tolerance of human activity during the nesting season has been variable, but, ideally, human disturbance of eagles should be avoided. The bald eagle's food base from the watershed includes carrion, waterfowl, and especially fish.

In Indiana, there are recent wintering records from all Ohio River counties except Dearborn, Floyd, Ohio and Switzerland. The area surrounding the Wabash River mouth in Posey County is considered a primary wintering area (John Castrale, IDNR, personal communication). Portions of the Ohio River in Livingston, Crittendon, Union and Henderson Counties, Kentucky are known to be used by wintering bald eagles (L. Burford, Kentucky Department of Fish and Wildlife Resources, pers. comm.). In addition the bald eagle is common in the winter along the West Virginia, Ohio, and Pennsylvania portion of the river, as long as the river remains relatively free of ice, and a recent (unsuccessful) nesting attempt was made by a young pair of eagles in 2001 near Parkersburg, West Virginia (Patty Morrison, personal communication). The Sloughs Wildlife Management Area, Henderson County, Kentucky, is a highly productive nesting area. In Indiana recent nesting activity has occurred in Harrison, Crawford and Posey Counties. The possibility remains that nests may become established along the Ohio River during the life of this project, particularly in the vicinity of established nesting territories.

Interior Least Tern

The interior least tern population was estimated at 1,250 individuals in 1980. This low number coupled with the obvious continued loss and degradation of nesting islands led to the listing of the species as endangered in 1985. There is little historical information on population numbers. However, it is widely accepted that the interior least tern population was affected by loss of nesting habitat, for which there is documentation. Nesting habitat loss occurred primarily from the various channelization and irrigation projects and the construction of reservoirs and pools along many interior river systems within the population's range.

Throughout the population's range (which includes the lower Ohio River) the primary factors which limit abundance and distribution of the least tern include: 1) limited availability of suitable nesting habitat; 2) predation; and 3) human disturbance to nesting colonies. Riverine nesting areas are sparsely vegetated sand and gravel bars within a wide, unobstructed river channel. The size of the nesting areas depend on water levels and the extent of associated sandbars. Other characteristics of valuable nesting habitat include: close proximity to shallow water areas with concentrations of forage fish; isolation of the sand/gravel bar such that access by mammalian predators is limited; and elevation of the sand bar such that inundation is precluded in most years during the nesting season while allowing for periodic flooding that scours encroaching vegetation.

Within the population's range, the construction of navigation pools and channel training structures have altered river processes that once created and disturbed riverine habitats, including

sand/gravel bars, throughout the river system. In the lower Ohio River, the Corps is working with the Service and the appropriate state agencies to determine if dredged material can be used to create nesting habitat in Ohio River waters. These efforts have shown some success in creating nesting habitat (Bob VanHoff, Louisville Corps, 2004, personal communication). Recent surveys of terns in the lower Mississippi River have indicated an increase in the population size (John Rumancik, Memphis Corps, 2004, personal communication).

Endangered Freshwater Mussels

Historically, there were 72 species of freshwater mussels reported from the mainstem of the Ohio River (Johnson, 1980). Several federally listed endangered mussels are thought to be either extirpated or very near extirpation in the Ohio River mainstem, including the white-wartyback, *Plethobasus cicatricosus*; cracking pearlymussel, *Hemistema lata*; rough pigtoe, *Pleurobema plenum*; winged mapleleaf, *Quadrula fragosa*; northern riffleshell, *Epioblasma torulosa rangiana*; and purple catspaw, *E. obliquata obliquata*. Also, the tuberculed blossom, *Epioblasma torulosa torulosa*, once occurred in the Ohio River but is now considered extinct. Historical records indicate that the dromedary, *Dromus dromas*, may have occurred in the mainstem Ohio River, but is not currently thought to be present. The endangered ring pink, *Obovata retusa*, may be present but has not been reported from the mainstem Ohio River recently. In addition, the Service has determined that three other mussels can be justified for listing under the ESA: rayed bean, sheephnose, and spectaclecase. The remaining species of federally listed mussels are known and/or believed to be extant at various locations in the Ohio River and are discussed below.

Clubshell

Historically, this species had an extensive range and was abundant in many states including Alabama, Illinois, Indiana, Kentucky, Michigan, Ohio, Pennsylvania, Tennessee, and West Virginia (USFWS, 1994). It historically existed in the Ohio River basin in the Ohio, Allegheny, Scioto, Kanawha, Little Kanawha, Licking, Kentucky, Wabash, White, Vermillion, Mississinewa, Tippecanoe, Tennessee, Green, and Salt River drainages. It also has been recorded from the Maumee River basin and tributaries of western Lake Erie (Huron River and River Raisin).

In the Ohio River basin the best current populations exist in the Allegheny River system in Pennsylvania and the Tippecanoe River system in Indiana. The most recent report for the clubshell from the mainstem Ohio River is a report of a (presumably live) clubshell from the Haunted Hollow mussel assemblage in Harrison County, Indiana during Clark's 1993-1994 Ohio River survey (1995).

This species occurs in small to large rivers in clean swept sand and gravel substrate. The clubshell's decline can be attributed to many factors; however, the primary factors include impoundments, channelization, loss of riparian habitat, and the impacts of silt from poor land uses. Water pollution from municipalities, chemical discharges, coal mines, and reservoir releases also have impacted the species. The recent invasion of the zebra mussel poses an additional threat to this species.

Fanshell

The fanshell inhabits gravel substrate in medium to large rivers of the Ohio River basin. The species' distribution and reproductive capacity has been impacted by the construction and operation of reservoirs and by other impacts on water and substrate quality. Unless new populations are found or created, and existing populations are maintained, this species will likely become extinct in the foreseeable future (USFWS 1991b). Historically, this species was widely distributed in the Ohio, Wabash, Cumberland, and Tennessee Rivers and their larger tributaries in Pennsylvania, Ohio, West Virginia, Illinois, Indiana, Kentucky, Tennessee, Alabama, and Virginia. The best reproducing populations remaining are found in the Green River and Licking River in Kentucky and the Clinch River in Virginia and Tennessee. A small population exists in the upper Kanawha River in West Virginia and small populations may still be present in several other Ohio River basin streams and the mainstem Ohio River. Live individuals have been recently recorded from the Belleville and Racine pools (ESI 2000).

Fat pocketbook

There are numerous recent records for this species in the lower Ohio River, primarily from the Wabash River and downstream. This is a species of larger streams or rivers and prefers substrates of mixed sand, silt and clay. Its decline is believed to be related to extensive dredging and other activities that destabilize substrates. The freshwater drum is known to be able to serve as a host fish for the glochidia of the fat pocketbook.

Orangefoot pimpleback

The orangefoot pimpleback inhabits gravel substrate in medium to large rivers of the Ohio River basin. This species' distribution and reproductive capacity have also been impacted by the construction and operation of reservoirs, locks and dams, and by other impacts on water and substrate quality. In the Ohio River this species is currently found in the lowermost portion, most recently in the open river and pool 53. The best remaining populations occur in the Tennessee River in Alabama and Tennessee, especially downstream of Pickwick Landing Dam in Tennessee.

Pink mucket

The pink mucket is an Ohioan or Interior Basin species found in medium to large rivers, associated with moderate to fast flowing water and depths ranging from 0.5 to 8.0 meters (USFWS, 1985). Its habitats range from silt to boulders, rubble, gravel, and sand substrates (Hickman, 1937; Yokley, 1972; Buchanan, 1980; Clarke, 1982).

Historically, the species was widespread in distribution, occurring in at least 25 rivers (USFWS, 1985). It has always been considered as uncommon or rare. The reasons for the decline of this species are thought to be similar to most of our native mollusks including impoundment, siltation, and pollution. The pink mucket is presently known from about 16 different rivers representing three major geographic regions, one of which is the Tennessee/Cumberland/Ohio River System (USFWS, 1985). It is likely that this species still occurs in portions of the mainstem of the Ohio River. Recent records are known from the Belleville pool, R. C. Byrd pool, and Greenup pool (ESI 2000).

Ohio River Habitats of Concern

For the purposes of this FWCAR, we have considered the following as habitats of high quality importance:

- islands and backchannel areas
- floodplains (bottomland forest, riparian corridor, wetlands)
- tributary streams
- tailwaters
- wildlife refuges, natural areas or preserves
- prime migratory bird, waterfowl, and shorebird habitat
- gravel and/or sand bars and cobble substrates
- mussel assemblages
- embayments
- fish spawning sites
- colonial water bird rookeries/heronries
- threatened or endangered species habitat
- karst communities
- unique upland habitats

Several of these habitats of high quality importance, especially those habitats of particular significance in or along the Ohio River mainstem, are discussed in more detail below.

Islands

Since the locks and dams were constructed on the river, the dynamic forces that were responsible for creating islands within the mainstem Ohio River are no longer controlling. Many of the islands that previously existed are no longer present due to the impacts of inundation, dredging, sedimentation and erosion. The Ohio River Islands NWR compiled an assessment of the number and acreage of islands lost from the river since 1900 (Patty Morrison, personal communication). Historically, there were 124 islands in the Ohio River, comprising 25,291 acres. Since the 1911-1914 benchmark mapping by the Corps, 31 islands have been lost completely, and 10,906 acres (net loss) have disappeared from the terrestrial/wetland realm. The greatest percentage of lost island habitat occurred in the upper 300 miles, where 20 islands were lost. For example, in the early 1900's, there were 49 islands within the State of West Virginia's reach of the Ohio River (RM 40 to RM 317). Fourteen of these islands have been eliminated; one (Lesage Island) has been created; and two other islands are disappearing (Upper Sister and Bakers Islands) (Tolin and Schettig, 1983). Overall, the river has lost 43 percent of its historic island habitat, primarily due to dam construction (many of the high lift dams were built on islands), subsequent pool raises, and dredging. At the present time, 22 islands comprising 3,400 terrestrial and aquatic acres from river mile 35 to 397 are protected by the Ohio River Islands NWR.

For a number of the Ohio River islands, the habitats contain near natural assemblages of plants and animals native to the river, particularly when compared to the past and present use and development of the Ohio River and its floodplain. The often-complex interspersed of bottomland and riparian habitats and deep and shallow aquatic habitats make these areas extremely valuable to numerous fish and wildlife species. The deep and shallow water habitats associated with the islands are major fish and mussel production areas in the Ohio River. The

often-undisturbed island shorelines, especially the heads and back channels, are favored sport fishing areas. Back channels offer unique spawning and nursery habitat for a number of fish species and typically offer feeding areas for adult fish. The diversity of water depths, current patterns, and substrates and riparian cover provided by the islands provide habitats for large numbers of fish, macro invertebrates, waterfowl, shore and wading birds, and riparian furbearers.

The substrates associated with islands are largely a function of current velocity and pattern. Sand, gravel and cobble are predominant at island heads and in some back channels exposed to the thalweg or which naturally receive a great volume of river flow. With the exception of the dam tailwaters, the heads of the islands most closely resemble a natural run/riffle habitat.

Gravel, sand Bars and Cobble Substrates

Diversity in the topography of the river bottom is important in maintaining a diversity of plant and animal life. In shallow areas with swift waters, gravel beds and riffles provide habitat and spawning areas for many species. Where currents are slower, submerged and emergent vegetation becomes established and provides food and shelter for a different group of aquatic species. All sediment sizes have some habitat value for select species. For example, burrowing invertebrates prefer sandy bottoms and many filter feeding insects require a stable, hard substrate surface. However, the highest productivity and diversity of benthic organisms occurs in riffle habitats of medium cobble (approximately 150 mm in diameter) and gravel. Fine sediments or areas of continually shifting sands tend to reduce macro invertebrate species abundance and diversity, which may then affect fish species abundance and diversity.

It is likely that the most important effect of human environmental disturbance on the Ohio River fishes is the siltation and inundation of much of the original clean gravel or rubble substrate of the river bed. This coarse substrate provides lithophilic species of fish, which were the predominant type of fish in the historic Ohio River, with their preferred spawning substrate, which is now in short supply. When sediment deposition exceeds sediment transport, deposits of fine sediment can cover gravel bottoms that many organisms require for feeding and reproduction. When fine sediments smother these areas it reduces habitat quality and may result in the smothering of fish eggs and larvae.

Freshwater mussels are found in a variety of habitats ranging from mud and sand between bedrock ledges and boulders to rubble and gravel substrates. The majority of freshwater mussel species are typically found in riverine conditions in relatively firm rubble, gravel and sand substrates swept free of excessive siltation. These mussels are usually found buried in the substrate in shallow riffles and shoal areas. Persistent siltation of these areas has severely affected freshwater mussels. Mussel life cycles can also be affected indirectly by siltation by impacting host fish populations by smothering fish eggs or larvae, reducing food availability, or filling of interstitial spaces in gravel and rubble substrate, thus eliminating spawning beds and habitat critical to the survival of young fishes.

Floodplains, Bottomland Forest, Riparian Corridor, and Wetlands

Floodplains offer a number of different habitats and zones. These include constantly inundated channels and lakes, overflow riverine wetlands and dry uplands, which are infrequently inundated. Floods are the recurring feature of floodplains. Fish populations are dependent upon

the overflow areas for food production, feeding, spawning and rearing of young (Lambou, 1989). Floodplains can support extensive fish populations, depending upon water regimes, size of the river system, proximity to estuarine and marine waters, physical and chemical characteristics of the water and geographic location of the river basin.

The types of plants and animals found in oxbow marshes and backwater lakes are determined largely by the periodic flooding of these areas by the main river. Because this annual flood is a predictable and recurring phenomenon, many organisms have evolved adaptations that enable them to exploit the seasonally expanded habitat and the food brought in by the flood. Times of low water, however, are just as important as flooding. A low water level concentrates fish into shallow pools where herons and egrets obtain food for nestlings; it exposes mudflats where moist-soil plants grow and produce seeds sought by waterfowl; and it allows soils to drain and be exposed to oxygen, thereby speeding the processes of decay and the recycling of nutrients.

In the Ohio River floodplain, a typical habitat structure was a matrix of bottomland forest interspersed with components of other wetland types such as sloughs and oxbows. Much of this habitat has been drained and cleared for agricultural, leaving the remainder highly fragmented; however, several high quality natural areas remain. Regulation of the river for navigation has altered the height and frequency of water in these areas.

Wetlands formed by rivers are of several types, including oxbow marshes, floodplain bottomlands, and backwater lakes.

Marshes are highly productive habitats in which hundreds of species of birds, insects, and other wildlife spend most of their lives. Two factors account for the high productivity of marshes. One is the ability of marsh plants to capture large amounts of energy from the sun and transform and store much of it as chemical energy in the form of plant tissue. The other is the efficient recycling of nutrients already produced.

Forested wetlands are dominated by woody vegetation. They are differentiated into swamps or bottomland forest based on the duration of the presence of water. Swamps are forested areas in which the woody vegetation is 20 feet (6 m) or more in height and water is present on a permanent or semi-permanent basis; the woody vegetation is adapted to prolonged exposure to standing water. Forested swamps, once common in the southern Midwest, are often dominated by bald cypress and water tupelo. The soil in forested swamps may be either organic or mineral but usually has a topmost organic layer underlain with a mineral soil. Shrub swamps are similar to forested swamps except that less of the vegetation is in the form of trees. Typical plants include black willow, sandbar willow, buttonbush, swamp rose, and few species of dogwood growing in mostly mineral soils.

Bottomland or floodplain forests are temporarily or seasonally flooded areas that usually occur along streams and rivers. Because these forests are flooded frequently, they have a lower diversity of tree species than forests located on higher ground. The under story is typically open, and the ground cover is sometimes dominated by nettles. Rotting logs and woody debris deposited by floodwaters are abundant. Typical trees of midwestern floodplain forests are silver

maple, cottonwood, green ash, hackberry, and sycamore. Several oaks species can be found on terraces bordering floodplains. The soils that support these forests are usually mineral.

Year round pool retention by the Corps has adversely affected the species composition of the riparian forest. Where historically these areas would have had lower water levels during the growing season and high diversity of bottomland trees, there is now higher water levels and few tree species that can tolerate saturated root zones year round. For example, mast producing oaks and hickories are less tolerant and have been disappearing from the floodplain. Monocultures of silver maple now dominate the floodplain forest, with a resultant decline in habitat quality for floodplain forest dependent wildlife.

Bottomland forest overlaps broadly with wetlands. Some bottomland forest on alluvial soils is relatively well drained, and forest on floodplain terraces may be flooded only irregularly, however all bottomland forest types are of high value for wildlife. In most cases, historical wetland complexes along the Ohio River existed within a matrix of bottomland forest.

Significant wildlife use by wetlands and bottomland forest include the Indiana bat, bald eagle, copperbelly watersnake, several state-endangered species, furbearers, waterfowl, colonial wading birds, neotropical migrant songbirds, and a variety of reptiles and amphibians.

Embayments

Prior to impoundment, the Ohio River was a relatively shallow river with numerous islands, gravel bars, channel wetlands (riverine emergent, and riverine aquatic bed), and adjacent overflow sloughs surrounded by bottomland hardwood forests. Impoundment of the river for navigation interests created primarily deepwater habitat along the main channel corridor (average depth in channel 20–30 feet), with many islands, shallow bars, and channel wetlands consequently disappearing. Most of the remaining shallow water and wetlands in the floodplain occur in the embayments – the drowned tributary mouths inundated by backwaters from the impounded Ohio River.

In summer, during the height of the growing season, the diversity of wetland plants and habitat types provide excellent food and cover for migratory and resident wildlife. The shallow water habitats are important feeding areas for wading birds such as great blue herons, great egrets and black-crowned night herons, especially for those that nest in heronries nearby and feed in the embayments while raising their young. After fledging, juvenile herons concentrate in the embayments as well. Wood ducks, mallards, and Canada geese nest and raise their broods in the embayments and along the mainland wetlands in summer.

Young-of-the year fishes find shelter in the riverine aquatic bed and emergent wetlands. The embayments are important nursery areas for Ohio River fishes, particularly Centrarchids. The embayments also support an abundance of amphibians and reptiles (i.e., snapping turtles, spiny softshell turtles, painted turtles, map turtles, northern water snake, bull frog, leopard frog, green frog, pickerel frog, grey tree frog, spring peeper, fowler's toad, American toad), as well as at least 19 species of mussels.

Fall generally brings lower water levels in the embayments, exposing mudflats and invertebrates as well as aquatic plants to feed migrating shorebirds, wading birds and waterfowl. Native wildlife food plants such as smartweeds, bulrushes, wild rye and millet lie down and become available to migratory birds and other wildlife. Soft mast-producing trees and shrubs dominate in the embayments (elderberry, cherry, spicebush, hackberry, grape, dogwoods), providing abundant food for migratory landbirds en-route to their southern destinations.

During winter, the emergent wetland vegetation in the embayments lays down and dies back, but submerged aquatic vegetation and rootstocks remain as important food for wintering waterfowl and muskrat. While high water and swift currents are common on the main river in winter, the embayments provide quiet resting places off the main river for fish and wildlife. Over 25 species of waterfowl (ducks, geese, swans, mergansers) and other waterbirds (loons, grebes, and gulls) rest and feed in the embayments in winter as long as they remain ice-free. Bald eagles are more abundant in winter than at other times of the year along the Ohio River and in the embayments, as they shift south off frozen lakes and rivers in the north.

Spring comes to the embayments earlier than the main river, as the shallow waters warm up faster. Those bottomlands, which were flooded in winter "green up," and the exposed mudflats again nourish migrating shorebirds and wading birds. Herons and waterfowl begin to nest as early as March. Neotropical migratory landbirds also return to nest including warblers, thrushes, vireos, cuckoos, flycatchers, and tanagers. Many more species pass through on their journey back to their northern breeding range, stopping and feeding on late fruits, early seeds, and abundant insects.

Uplands

Upland forest is defined herein as all forest that is outside of floodplains and does not meet the definition of wetlands. Significant wildlife use of upland forests along the Ohio River includes the Indiana bat, gray bat, raptors (including bald eagle nesting) and neotropical migratory songbirds.

Tributary Rivers and Streams

There are numerous tributaries throughout the Ohio River system of importance, especially to fish and mussels resources. For example the Wabash River and its tributaries contain a major compliment of big river fishes, and may even contain healthier populations of some species (e.g. blue sucker, lake sturgeon) than the Ohio River; and the lower Tennessee River contains an extremely rich big river mussel and snail fauna. The issue of connectivity of these tributaries to the river is of concern.

VI. RESOURCE CONCERNS AND SERVICE RECOMMENDATIONS

The unusually rich and diverse fauna found in the Ohio River watershed is the product of a multitude of biotic and abiotic factors, which have evolved over time. Throughout geologic time, changes in such factors as topography, climate, and geomorphology have formed, modified, and eliminated habitats and consequently have had a profound effect upon the distribution of the floral and faunal assemblages in the watershed. Due to the watershed's central

geographical location in the eastern United States, some species with northern affinities and others with southern affinities occur in the watershed in addition to those common to the central region of the country.

Environmental alteration and degradation are continuing challenges to the maintenance of a productive and healthy watershed. Resources of the Ohio River watershed are threatened by land-use practices, direct and indirect physical alteration of the area's rivers and streams, acid mine drainage, destruction of wetland habitats, and both point- and nonpoint-source discharges of pollutants. Herbicides, insecticides, nutrients, and sediment are significant components of the agricultural runoff that adversely affect aquatic systems in the Ohio River watershed. Acid precipitation and other airborne pollutants are having effects on aquatic and terrestrial communities. Natural resources are further threatened by an expanding human population and its increased demand for both renewable and nonrenewable resources. Contamination of both aquatic and terrestrial systems through acid mine drainage and accidental release of toxic chemicals is a continuing threat. Continued operation and maintenance of the inland navigation system and the recent invasion of the non-indigenous zebra mussels are having significant adverse impacts on native flora and fauna of the watershed's rivers and streams. Other non-indigenous species are threatening native components of aquatic and terrestrial systems throughout the watershed. The expansion of urban and suburban areas within the Ohio River watershed and the concurrent loss of forest, wetlands, grasslands and other habitat types have reduced the quantity and quality of natural habitats available to fish and wildlife.

Although the Ohio River has been modified greatly, it still remains a national treasure, with a rich history of culture, commerce and natural resources. However, some of these natural resources are declining and/or their very existence is tenuous. Some are already gone forever, such as certain big river riffle species of freshwater mussels now considered extinct. Protection of Service trust resources (i.e., endangered and threatened species, migratory birds, interjurisdictional fisheries and Service lands) and conservation of these and other resources such as river shoals, backwaters, islands, etc., will require active human intervention to preserve, enhance, and sustain these resources and the healthy ecosystems on which they depend. This will require a more holistic view of resource conservation, recognizing that all resources are connected. To be effective, an ecosystem restoration approach will not only mean protecting or restoring the function, structure, and species composition of an ecosystem but also factoring in the impacts of and providing for sustainable socioeconomic activity.

Provided below are selected natural resources and topics of particular importance on the Ohio River. They are essentially 'riverine' in nature and/or connection to the Ohio River. Included in these assessments are recommendations to the Corps regarding each resource and topic. These are topics the Service believes are of highest priority. The Service strongly encourages the Corps to fully address each one at the earliest opportunity.

The Quality and Quantity of Riverine habitat and the Connectivity of Riverine Habitat in the Mainstem and Tributaries

Historically, the Ohio River contained long shallow riffle/shoal areas (such as the Falls of the Ohio) and wide, shallow backwater side channel wetlands and overflow channels/sloughs through the floodplains. These important habitats types were mostly lost when the river was

impounded. Islands, and other important habitat type, still remain, but there are fewer in number and many suffer from shoreline erosion and side channel sedimentation. Most tributary mouths have been converted by impoundment to embayment, usually of lesser quality than natural backwaters. Many of these are silted in through a combination of sediment input due to adjacent and upstream land use and navigation-related alterations in river flow regimes, which prevent or reduce natural flushing of sediments into the Ohio River mainstem.

The aquatic habitat, especially immediately downstream of the locks and dams on the Ohio River, still 'resembles somewhat' the former riverine nature of the Ohio River. The Service considers this remaining 'riverine' habitat as extremely important to the riverine fish and mollusk fauna in the Ohio River, serving as feeding and resting areas, permanent habitat for riverine fish and mollusks, staging areas for migrating fish, and contains spawning habitat. It is of the ultimate importance to maintain and/or enhance the sustainability of this riverine habitat throughout the river system. These riverine habitats are currently limited in quantity, quality, and connectivity. The pooled portions of the river create large distances that separate these remnant riverine habitats; and, the presence of the locks and dams increase the discreteness of these remnants, intensifying the need to provide connections to the aquatic fauna within and between each pooled portion of the river. The Corps has an opportunity and responsibility to preserve and enhance these habitats for the aquatic fauna, and to fund efforts and use various other means to connect these habitats to each other. This is also an opportunity for the Corps to work with and collaborate with state agencies, the Service, and others interested in improving this remaining riverine habitat and ultimately achieving a high quality of sustainability.

Recommendations:

1. Identify, describe, and quantify riverine habitat in the Ohio River mainstem and larger tributaries. This baseline information will help in future adaptive management and monitoring activities to determine progress on achieving sustainability. The Corps will need to work closely with state agencies, the Service, and others to jointly determine just what is the appropriate definition of 'riverine' habitat throughout the mainstem. This may vary depending upon the particular aquatic resource and may encompass more than the discrete tailwaters below the dams. Maintaining a high quality of existing riverine habitat, along with the ability of the Corps to improve the quantity and quality of this habitat, will be crucial towards achieving any environmental sustainability of the natural resources of the Ohio River.
2. Restore connectivity between the riverine portions of the mainstem river, and between riverine mainstem sections and the larger tributaries; and, enhance stream habitat quality in the lower reaches of tributaries. It may not be possible to achieve complete 'natural connectivity' for all aquatic resources. For certain resources and/or species it may require a long-term commitment from the Corps to seek and obtain funding of 'active human intervention' to create connections and sustain certain resources at desirable levels. For example, this could involve the Corps working closely with state agencies, the Service, and others to fund propagation of mussels and/or riverine and interjurisdictional fishes to create, enhance, and/or maintain populations in appropriate riverine habitat.

3. Preserve natural spawning shoals, and create artificial shoals (e.g., gravel shoals) at appropriate locations, which do not interfere with navigation. Incorporate into the project design the creation of shoals using material generated by the proposed activity or obtained elsewhere. Other artificial structures can be used to create structural habitat, cover and low-velocity areas.
4. Create vegetated shallows both in the mainstem Ohio River and in selected embayments through vegetation planting and construction of shallow protective dikes (if necessary). These habitat types are used by several fish species for spawning and nursery areas. They are also used by waterfowl and wading birds.
5. Stabilize eroding shorelines on the riverbank and on islands. Where conditions permit, stabilization of eroding shorelines by a combination of armoring, removal of submerged dikes (where appropriate), longitudinal dikes set parallel to eroding shorelines, tree plantings and other techniques (e.g., bio-engineering) can substantially reduce the silt load of the river. Several potential project locations exist on the Ohio River and its tributaries and on islands within the Ohio River.
6. The Corps should incorporate and maintain large woody material (i.e. large trees, snags) at selected sites (side channels, islands, etc.) especially in the 'more riverine' portions of the pools. Snags and large woody material were a prominent element of the river prior to the Corps efforts to remove this material to improve navigation. Replacing some of this large woody material may require a research component and adaptive management to determine the appropriate locations and amount of such woody material. However, the Service believes that the creation of this kind of woody habitat will benefit numerous aquatic resources, and can be done without negatively impacting navigation on the river.

Stream Habitat Quality in the Lower Reaches of Tributary Mouths:

Tributary mouths have been transformed by impoundment from stream environments to lake-like environments, often for several miles of the stream's lower reaches. Many embayments have silted in due to soil runoff and lack of flow velocity resulting from impoundment.

Recommendations:

1. Restore embayments and enhance their connectivity to the river. This could include dredging of heavily silted embayment entrances and creation or expansion of deep-water areas. Deepening access to portions of heavily silted embayments, provides an important component of connectivity to riverine habitat.
2. Enhance stream habitat quality in the lower reaches of tributary mouths.
3. Reforest the lower reaches of tributaries as a means of reducing siltation of embayments and of creating valuable wildlife habitat.

4. Consider placing wing dikes or similar structures to concentrate flows in sub-channels at the lower end of tributaries to keep channel deeper and free of accumulated sediment.
5. Restore or enhance wetlands in the upper ends of tributary embayments as a means of reducing siltation and creating valuable fish and wildlife habitat.
6. Restore or enhance embayment values to fishery resources by selective dredging of accumulated sediments.

Freshwater (Unionid) Mussel and Snail Fauna:

Native mussel populations in the Ohio River have experienced severe declines and were identified in early study planning by the Corps and the Interagency Working Group (IWG) as an important topic to be addressed in the PEIS. Refer to the chapter on mussels in this PEIS for the Corps historical, current, and CEA assessment on this fauna; and, for important references in the citation section. In addition to the Corps, the Service and state representatives participating on the IWG also provided input and reviewed of the mussel chapter. The term 'mollusk' fauna is used herein to refer to those appropriate situations involving both the mussel and snail fauna.

The riverine snail fauna of the Ohio River has also experienced drastic declines similar to the mussel resource. The Service encourages the Corps to consider the snail fauna as an important component of the mollusk fauna; however, the Service believes that habitat improvements done for the mussel resource alone will also greatly benefit the snail fauna.

The mussel fauna is a key biological indicator of the overall condition of the river and as such is useful as a measure of progress regarding the river's environmental sustainability. The Service considers the mussel resource of utmost importance, especially since this resource is influenced tremendously by the fish fauna, fish passage through locks and dams, aquatic habitat conditions downstream of locks and dams, navigation traffic, lock and dam construction and operation, dredging/disposal activities, water dependent industry development on shore, invasive species, long pool reaches, and other factors.

While the Service recognizes the Corps has varying levels of involvement and/or influence regarding achieving a high level of environmental sustainability for mollusks, the Corps must consider, as shown in this ORMSS PEIS, how its past, present and future activities interconnect with other factors impacting the mollusk resource. The construction of the dams and the maintenance of the navigation pools creating year round slackwater habitat, have created unsuitable and /or marginal conditions for mollusk sustainability throughout much of the Ohio River. This alone likely complicates and may actually prevent any long-term high quality environmental sustainability of the mollusk resource. Certain big river riffle species of mussels are extinct and/or extirpated from the river because their habitat has been eliminated. No species of snail has yet been known to become extinct in the Ohio River; however, the riverine snail fauna has drastically declined to such an extent that it currently exists as only a remnant of its pre-dam fauna. Only small portions of the Ohio River mainstem still 'resemble somewhat' the riverine conditions prior to dam construction, or even the 'wicket dam era', when dams were more numerous but their height was lower. The loss and/or diminishment of long stretches of former riverine habitat, is made more acute by the recent trend toward higher dams, and is likely

contributing to an increasing isolation of mollusk assemblages throughout the mainstem. The ability of a mussel species fish host to move through these long stretches of pools is not well known, but likely varies greatly depending upon the species and time of year (water levels).

The Service recognizes that water quality in the Ohio River has generally improved sufficiently to allow nascent recolonization of certain species of mollusks. For example, certain species of mussels are again present in the upper portion of the Ohio River, an area in which the mollusk fauna was negatively impacted the most by historic water quality conditions. There are many factors that can prevent or setback water quality improvement, but if improvement continues it is likely the mollusk fauna will respond positively and improve in the direction of increased sustainability, at least in certain river reaches or pools.

The Corps has an opportunity in this ORMSS PEIS, regarding future projects on the Ohio River, to provide vigorous positive leadership and produce results regarding its role in incorporating actions that will benefit the mollusk resource. The Service currently believes the Corps assessment of the overall mollusk resource as 'marginally sustainable' is a best case scenario only for certain mussel species. Much of the mussel resource is not sustainable under the recent past, present, and foreseeable future. This resource will continue to require proactive management by the Corps and others interested in maintaining and improving this fauna to a level of marginal sustainability.

The primary causative factor in the decline and present endangered status of freshwater mussel species is loss of habitat. A lot of historic diversity is gone from the river because of loss of habitat, especially for the big river riffle-dependent species; however, some species are gone from the river (especially the upper river) because of historic water quality problems, and now that water quality is suitable again, they may have difficulty coming back on their own because Corps dams separate the habitat from existing reproducing populations many pools away (or up into tributaries). Active restoration (stocking adults and juveniles) would help these species. A number of agencies are presently working to develop techniques for artificial propagation of mussels. However, successful propagation of mussels in laboratories will not contribute to the recovery of species unless there is suitable protected habitat available in which to place them.

Recommendations:

1. Avoid and/or minimize additional loss of riverine mollusk habitat. The Corps should address this issue collaboratively with state agencies, the Service and others. This issue is closely aligned with the earlier discussion regarding riverine habitat and highlights opportunities the Corps can take to benefit multiple aquatic resources through certain actions. The status or sustainability of mollusk habitat is an issue that will vary in different reaches of the river. It is important to establish an early assessment of this habitat with other partners (i.e., state agencies, Service, others) in order to best describe this baseline of mollusk habitat, and to set river reach and/or pool priorities in order to obtain the greatest benefit for the mollusk resource.
2. The Corps should institute a "no more net loss" of mussel habitat in the river; and Corps sanctioned or permitted water dependent development which could result in additional

losses of riverine habitat, which is already reduced, should require habitat improvements elsewhere.

3. The Corps should make every effort that is reasonable and possible to improve the environmental sustainability of the mollusk resource to a high level of sustainability throughout the entire mainstem of the Ohio River, including larger tributaries.
4. The Corps should support and fund the gathering of baseline information on mollusk populations throughout the Ohio River. This should include mollusk surveys and long-term trend monitoring of the mollusk resource.
5. The Corps should continue to investigate the feasibility of creating mussel habitat in the Ohio River and/or in the lower reaches of its tributaries in areas that presently or historically supported mussel populations. The possibility of creating side channels with continuous flow and suitable substrate below existing dams, or creating artificial "islands" with back chutes, should be explored.
6. Restore native mussel populations in the Ohio River and reintroduce extirpated species where habitat is suitable and fish hosts are now present or can be reintroduced themselves.
7. The Corps should support and fund specific studies to determine how barge fleeing areas impact the mollusk resource. In addition, areas of mollusk assemblages can be identified at which no fleeing activity is permitted; and/or, areas specifically set aside to contain necessary fleeing activities.
8. The Corps should provide funding to determine fish hosts for those mussel species in the Ohio River for which hosts are not currently known.
9. The Corps should support and provide adequate funding to mollusk propagation facilities (e.g. Kentucky's Center for Mollusk Conservation, Columbus Zoo/OSU facility, White Sulphur Springs facility, and etc.) to enhance mollusk assemblages and reintroduce rare and historic species to appropriate locations in the Ohio River. Active human intervention regarding mollusk propagation will likely be needed for the foreseeable future.
10. The Corps should restore connectivity of mainstem mussel populations to each other and to tributary populations. This will most likely involve working with identified host fish and insuring they are able to access separate mussel assemblages both within and between pools. This may also involve active human intervention in the form of infecting and transporting fish hosts from one location to other locations.
11. Restore mobility of fish hosts through the dams at the appropriate times of year needed for mussel reproduction. This is discussed in more detail in the following fish passage section.

Fish Fauna and Fish Passage:

The fish fauna of the Ohio River is still relatively diverse; however, certain riverine and/or migratory species are not present, exist in very low numbers (e.g. sturgeon), and/or occur in sparse distribution in the river. For certain fish species connectivity between populations is problematic and will require proactive intervention.

Fish passage was recognized as an important issue of concern for special attention very early during the ORMSS Interagency Working Group meetings and discussion. The IWG provided suggestions to the Corps for specific studies to help address questions concerning fish passage on the Ohio River. The studies and reports funded by the Corps as part of the ORMSS attempt to address several aspects of fish passage issues and possibilities. Although the reports may not be as complete and/or conclusive as desirable, the Service believes the reports, as a whole, do provide additional information regarding fish passage that is useful in determining higher priority lock and dam facilities in need of improved fish passage opportunities. Based on these recent studies and other information, the Service believes that the upper portion of the Ohio River is experiencing the greatest impediment to fish passage from the locks and dams; and, that other 'higher' dams in the downstream portion also greatly impede fish passage. The downstream portion of the Ohio River is experiencing fish passage problems; however, these problems do not seem to be as acute as in the upstream portion of the river. Please refer to the chapter on fish passage in the CEA portion of the ORMSS PEIS for more detailed information on the Corps funded studies. Selected members of the IWG provided input during the formation of these studies and review of the reports. The Corps is to be commended for conducting these studies; however, there is still additional specific studies that are needed to complement those already done, and to address additional questions or concerns developed during the recently conducted studies.

There are essentially two possibilities for fish to move on their own from downstream to upstream of a particular lock and dam. Passage can occur through the lock either during a normal lockage event or a lockage specifically designed to encourage and allow fish to pass; or, fish can circumvent and/or swim over the lock and dam. The later method is complicated by the height of dams, frequency of water levels sufficient to allow fish to circumvent or pass over the dam, velocity of flow through gates and over the upper surfaces of the dam. In addition, it is very important that the timing of passage opportunities and the desire of fish to migrate occur simultaneously. The impulse to migrate or move varies with fish species and for some species is not well defined or understood.

Fish passage is also intricately linked to mussel fauna sustainability. A portion of a freshwater mussels life cycle requires the partially developed young to attach to a fish host after leaving the female mussel. Certain mussels are very fish species specific in their host requirement. It is extremely important that the appropriate fish host for a mussel be present in sufficient numbers when larval mussels are released from the female mussel. Mussels need the fish host to be able to move freely when they are infested with mussel larvae, which is generally spring through fall for most species of mussels. Even though the lower river reaches experience passable water conditions for fish more often than the upper portion of the river, the ability of the fish to move over mussel beds and disperse during the right time of year for the mussels is still impaired in the

lower river. For the greatest benefit to the mussel resource, the timing of fish passage for a particular fish host is critical.

The Service does not believe that concerns about invasive fish species using fish passage improvements should hinder or prevent the Corps from vigorously installing fish passage. The Service believes that the invasive fish species will be able to access the entire river system regardless of improved fish passage; and, that at the very best, the current locks and dams will only slow somewhat this invasion.

Dams prevent migratory/highly mobile species (e.g., paddlefish, sturgeon, blue suckers, and etc.) from moving freely throughout the river to exploit the variety of habitats necessary for different parts of their life cycles, and isolate mussel populations in the various pools from each other. Recently completed ORMSS fish studies indicate lock chambers are apparently not used extensively by fish to move from pool to pool. There may be times when the lock chambers and high flows facilitate fish passage to some extent; however, their operation is generally not designed to facilitate fish passage, and passage may not be available at critical times in the life cycles of migratory fishes. In addition, freshwater mussels have an obligate parasitic stage during which they are attached to the gills of a specific host species of fish. These mussel species are dependent on their host fish for early development and dispersal throughout their natural range. If host fishes are prevented from moving upstream or downstream during critical life stages of mussel reproduction and development, then this mechanism of development and dispersal is disrupted.

Recommendations:

1. Improve riverine habitat conditions downstream of locks and dams to maximize spawning, feeding, resting, and over wintering opportunities for fish.
2. Restore connectivity between various habitats utilized by riverine fishes.
3. Support and fund efforts to restore fish, especially the more riverine species (e.g., sturgeon, paddlefish, blue sucker, etc.) to appropriate locations throughout the river and in the larger tributaries.
4. Create, restore, and maintain velocity shelters in the river using either natural or man-made materials, especially including habitat sites fish will use during winter.
5. Create opportunities for adequate fish passage at all locks and dams on the mainstem Ohio River in order to improve connectivity between fish populations and mussel assemblages throughout the river. This will likely require construction of appropriate fish ladders and/or artificial streams circumventing the dams at most if not all such facilities. To place such fish passage structures at every lock and dam facility, the Corps will likely need to obtain special funding; however, the Corps could incorporate fish passage into expected large-scale improvements such as the replacement of locks (e.g., Emsworth, Dashields, and Montgomery Locks and Dams). The Corps should work closely with state agencies and the Service (e.g., Interagency Working Group) to

determine how this effort should be prioritized. Based on the Corps fish studies it appears to be more acute in the upper portion of the river and the Service believes the locks and dams in the upper portion of the river; and, higher dams throughout the system should receive priority for this action.

6. The Corps should evaluate the feasibility of improving fish passage through locks by incorporating techniques to encourage fish to enter locks and 'lock through' during normal lockages.
7. The Corps should evaluate the feasibility of utilizing lockages specifically designed to provide increased opportunities for fish to pass through the locks, and/or other adaptive management and active intervention to facilitate fish passage.
8. Modify lock chamber management to facilitate fish passage at key times, such as during paddlefish spawning migrations.
9. When replacing or adding additional filling capacity to a lock consider replacing the existing open/close valve with one that would allow partial flow to enter the chamber. This would allow flow to enter during "dummy lockages" – i.e., leaving the lower lock gates open for a fixed period of time with valves cracked open to provide an attracting flow within the open chamber. The lower gates would then be closed and the trapped fish locked upstream to the next pool.

Navigation Impacts:

Of special concern are the physical impacts and pollution from navigation activities on the Ohio River, primarily barge traffic and barge fleeting/loading and unloading facilities. These activities would not exist to such a vigorous extent without the Corps maintenance of a navigable channel. The Service has found that it has been difficult and frustrating to get consensus on who is responsible for these kinds of activities. The Service believes that the Corps and Coast Guard should both be accepting more responsibility for these activities; however, we believe both agencies tend to disclaim responsibility or place it on the other agency. This problem must be resolved in a collaborative manner if we are to develop, preserve, protect, and enhance riverine resources, especially riverine habitat, island preservation, mollusks, and riverine fish fauna.

The Service reminds the Corps of the responsibility they have under the FWCA to provide that wildlife conservation shall receive equal consideration of importance as maintaining a viable navigation system. To do this, we believe there are a number of questions that will need to be answered: What does 'equal consideration of importance' really mean? Has the level of a 'viable' navigation system been reached relative to, and at the expense of, wildlife conservation? We believe the Corps has the responsibility to determine and quantify this. The Service believes that currently the navigation system could be considered more viable than the natural resources (i.e., wildlife conservation), especially 'riverine' resources. We are willing to collaborate proactively with the Corps to discuss and move forward on this issue.

There are extensive barge fleeting areas along the Ohio River shoreline, many associated with electrical generating stations (coal), coal production, producers of rock and gravel products, and

commercial ports. Since most fleeting is in relatively shallow shoreline areas, substantial impacts may occur to mussel assemblages and shoreline fish spawning habitat when these fleeting areas are developed and dredged, particularly if the facility is sited over a mussel assemblage. Physical impacts of tow traffic are intensified around these areas. Impacts on mussels from towboat scour and barge groundings can be magnified in queuing areas. Recent information from individuals propagating juvenile mussels indicates that light levels may play an important role in juvenile development. It is possible that barge fleeting may negatively impact mussels by the shade created from the fledged barges.

The impacts of navigation traffic on aquatic biota is a subject that has been studied extensively by the Corps and others (Gloman, 1984; Miller et al., 1997). The types of impacts have been identified, however the extent of impacts has not been extensively analyzed. The extent of impacts is probably dependent upon such factors as season, flow stage, and local conditions. In general, impacts include entrainment of planktonic and mid-water eggs and larvae through propellers, shoreline erosion and disruption of shoreline fish nesting by barge wakes, displacement of fish from shelter areas during winter, scouring of benthic habitat, siltation on mussels and other benthic biota, spills of pollutants from barges and loading docks, and direct physical impacts of barges and propeller thrust on benthic biota, especially mussels.

At present, aquatic resources are being adversely affected by navigation on the Ohio River. Aquatic organisms may be impacted whenever barge traffic occurs in water shallow enough that bottom substrates and benthic organisms (especially unionid mussels) are disturbed by propeller scouring, barge wakes and barge groundings (Gloman 1984, Miller et al. 1997, Rasmussen 1983, Corps 1997). These impacts may be magnified during queuing of barges waiting for lock passage, which typically occurs in shallow water. Barge fleeting areas cause similar but greater long-term adverse impacts due to the greater concentration of aquatic species in shallow water and shoreline areas (Gloman 1984). Additionally, benthic organisms may be adversely affected by instream disposal of spoil from maintenance dredging, particularly in the lower Ohio River, where dredging is more frequent. And, the short-term fluctuations in water level resulting from barge wakes may affect fish nesting success in shallow water shoreline areas.

Recommendations:

1. The Corps should take a lead role in bringing together appropriate parties to discuss problems and solutions to the impacts of navigation activities to natural resources, and continue to fund needed studies that result from such discussions and collaboration.
2. The Corps should take a lead role in determining the compatibility of navigation related activities and natural resource needs, and to determine and quantify what is equal consideration of wildlife conservation and maintenance of a viable navigation system, and how it should be achieved. Determinations of 'marginally sustainable' (e.g., mussel resource, riparian/floodplain resources) indicate a need for a more proactive role by the Corps in giving these resources, and perhaps others, 'equal consideration'.
3. The Corps should work with the navigation industry, Coast Guard, and others to minimize physical impacts and pollution from barge traffic and barge fleeting.

4. Under the ORMSS PEIS With Project Conditions, the Corps proposed to use a mixture of structural improvements, operational measures, and maintenance alternatives as presented in the SIP/PEIS to determine appropriate actions at their facilities. The Service is concerned that the issue of queuing of barge tows, especially when tows are positioned near mussel assemblages. We especially urge the Corps to address this issue to ensure that negative impacts to mussel resources do not occur due to queuing.
5. To conserve mussel and other aquatic resources and riparian habitats, install mooring cells or buoys at critical locations where barges temporarily moor over mussel beds or against the shoreline.
6. Create additional velocity shelter structures in the mainstem for fish to utilize, especially needed during winter periods for all age classes and as nursery habitat post-spawning, to protect fish from velocities and turbulence caused by towboat wakes.
7. Work with the commercial navigation industry to conserve fish and wildlife resources by providing charts showing the location of mussel assemblages and other sensitive resources, with information concerning why these resources should be avoided.
8. Work with industry and the Coast Guard, as well as the Federal and state fish and wildlife agencies, to install channel markers/navigation markers, if appropriate, around shallow water mussel assemblages and other sensitive areas to reduce direct impacts of tow traffic to fish and wildlife resources.
9. Use adaptive management regarding the need to dredge the navigation channel. We encourage the Corps to dredge only when absolutely necessary. The Corps is encouraged to continue and improve upon its communications with the Service and state agencies regarding dredging issues.
10. Consider flow-concentrating structures to prevent sediment from building up at approaches to the locks and dams or other long-term problem areas. Also, develop alternatives to instream disposal of dredged materials (upland sites, island creation, use for bank stabilization by filling behind dikes, etc.).
11. Install mooring cells or buoys at critical locations where barges temporarily moor over mussel assemblages, in order to protect mussel and other aquatic resources and riparian habitats.
12. Minimize physical impacts and pollution from barge traffic and barge fleeting, dredging and disposal, and other navigation related activities on the river that may negatively impact the natural resources. This might entail various actions including strategic placement of dredge spoil.

Islands, Back Channels, Side Channels and associated Habitat Conditions:

These kinds of habitat and their quality, quantity, and location within a pool and/or reach of river are extremely important to the fish and mollusk fauna. Their connectivity to the river is essential if the aquatic fauna is to utilize these habitats at critical time during their life cycle.

Recommendations:

1. Determine which pools and/or reaches of river require enhancement of these types of habitat, and which sites should receive the highest priority for improvement.
2. Restore and enhance as much as possible throughout the Ohio River and its larger tributaries, and especially in the more riverine habitat and its components, islands, backwaters and side channels, substrate and flow conditions which meet all life stage requirements for native mussels and riverine fishes, including interjurisdictional fishes and endangered species, appropriate flow regimes for optimal water quality for fish and wildlife, snags and/or other large woody structure, and etc.
3. Improve habitat conditions in side and back channels in pools in which significant amounts of silt have accumulated. Provide additional flow as needed into these channels while still maintaining backwater environments.
4. Protect existing islands by appropriate methods (managing flow, bioengineering, rock, etc.), and also create islands, both permanent and temporal, throughout the river.
5. Use dredge material, if it is appropriate, to enhance and/or create habitat for mussels, fish, and other vertebrates and invertebrates. This could include the creation of islands and/or diversification of habitats for various aquatic species. This has already been done in some portions of the lower river e.g., sand islands for interior least terns. Dredged material could also be used to create shallow water habitats, especially vegetated shallows, which could also be called riverine wetlands.
6. The Corps should incorporate and maintain large woody material (i.e. large trees, snags) at selected sites (side channels, islands, etc.) especially in the 'more riverine' portions of the pools. Snags and large woody material were a prominent element of the river prior to the Corps efforts to remove this material to improve navigation. Replacing some of this large woody material may require a research component and adaptive management to determine the appropriate locations and amount of such woody material. However, the Service believes that the creation of this kind of woody habitat will benefit numerous aquatic resources, and can be done without negatively impacting navigation on the river.

Flood Plains - Bottomland Forest, Wetlands, and Riparian Corridor:

In the Ohio River floodplain, a typical habitat structure was a matrix of bottomland forest interspersed with components of other wetland types such as sloughs and oxbows. Much of this habitat has been drained and cleared for agriculture, leaving the remainder highly fragmented; however, several high-quality natural areas remain.

Recommendations:

1. The Service recommends the Corps restore and enhance as much as possible the riparian forest, bottomland forest and wetlands along with their functions and connectivity to the river, throughout the Ohio River and the lower portions of tributaries, including their embayments.
2. Restore and/or create as much as practicable floodplain wetlands (palustrine emergent, scrub-shrub and forested) and their connections to the river during high flow periods via sloughs and overflow channels.
3. Investigate seasonal water level management to enhance channel wetlands and increase survival of less water tolerant floodplain trees. Try to mimic the seasonal highs and lows of the natural water cycle.
4. Re-establish, by active planting, a diverse complement of bottomland hardwood trees species needed by floodplain dependent wildlife, e.g., cottonwood, sycamore, swamp white oak, green ash, sweet gum, hackberry, American elm, Kentucky coffee tree, shagbark hickory, shellbark hickory, pignut hickory, river birch, butternut, black willow, pecan, pin oak, shumard oak, including a mix of standing dead trees and snags. Manage the understory for appropriate native shrubs such as pawpaw, spicebush, and dogwoods.
5. Consider increasing the elevation of selected low-lying areas adjacent to the river or create higher island habitats (above the static pool level) to promote forest growth. For more information on this see Ulrich *et al.* 2002.
6. Restore bottomland forest and riparian forest as a means of increasing fish and wildlife habitat and reducing habitat fragmentation.
7. Connect existing fragments of bottomland forest and riparian forest by creating corridors of floodplain forest minimum of 100 meters wide; as a condition of all Corps permitted activities (Section 10 and 404) along the river.
8. Require an appropriate minimum buffer strip of intact riparian habitat be maintained.
9. Re-connect floodplain wetlands to the river by restoring overflow channels and sloughs, which connect to the river during normal high water events.

Invasive Species:

It is expected that the native mollusk fauna will continue to be negatively impacted from invasive species for the foreseeable future. The Asian clam is present throughout the river system and likely plays a role in competing for resources (e.g. food, space) with native mollusks, and may negatively impact the reproductive success of native mussels somewhat through its filtering capacity; however, it does not seem to have the evident negative impact that the zebra mussel has demonstrated. It remains to be determined if the native mollusk fauna and zebra mussel presence will be able to coexist at a level which permits the native fauna to reach some

high level of sustainability. Another invasive species with potential ramifications to the mollusk fauna is the black carp. The black carp is one of several Asian carp present in the Mississippi River basin. It feeds primarily on small mollusks, so if it becomes a significant portion of the Ohio River fish fauna its impact could be devastating on the native mollusk fauna. It was recorded close to the mouth of the Ohio River in March of 2003 in Horseshoe Lake in southern Illinois. Other species of Asian carp (e.g. bighead, silver) have been documented, by fisheries biologists working in the Mississippi River, as becoming the dominant fish in their preferred habitat. These species are present in the lower reaches of the Ohio River upstream to McAlpine Lock and Dam (silver carp) and Markland Lock and Dam (bighead) (personal communications, Doug Henley, KDFWR). Their impact on the native fish fauna in the Ohio River is yet to be determined.

Recommendations:

1. The Corps support and fund trend monitoring of zebra mussels throughout the Ohio River. This is needed to not only monitor zebra mussels but to obtain information regarding their impact on other aquatic fauna, especially mollusks and fish.
2. Explore using controlled releases from tributary reservoirs and navigation dams to flush zebra mussel veligers from the river system at appropriate times of the year, thereby minimizing their ability to settle out and colonize the river substrate and native mollusk fauna.
3. The Corps address how its facilities, actions, and related navigation barge traffic, have influenced the presence of invasive species, especially the zebra mussel; and, determine and implement solutions to minimize the impacts of invasive species to the native fauna. This could include evaluating the efficacy of cleaning vessels to prevent re-introductions of zebra mussels from downstream and/or between pools, or other means to minimize impacts.
4. Explore what can be done to inhibit or prevent the black carp from becoming established in the Ohio River.
5. Control problematic invasive exotic plants on existing Corps lands along the Ohio River.

VII. SUMMARY OF FINDINGS AND SERVICE POSITION

As a Federal agency, the Corps has the responsibility to minimize negative impacts to fish and wildlife resources resulting from the construction, operation, and maintenance of the navigation system on the Ohio River. The Service expects the Corps to make every effort to avoid, minimize, and/or compensate regarding any mitigation that may occur regarding trust resources. We also believe the Corps has the responsibility to create conditions in which these riverine resources can be enhanced, recovered, and sustained, throughout the river, especially in those portions still with 'riverine' characteristics. The Corps needs to fully acknowledge the negative impacts to the Ohio River due to its navigation system on the Ohio River. These impacts have

diminished greatly the riverine nature of the Ohio River and the fish and wildlife resources. As long as these negative impacts resulting from the navigation system remain, the Corps, working with state agencies, the Service, and others, will need to support and fund efforts, not only to minimize negative impacts, but provide proactive adaptive management for the fish and wildlife resources for the foreseeable future. Corps responsibility includes taking the lead in finding appropriate funds to achieve environmental sustainability of the riverine fish and wildlife resources in the Ohio River.

The U.S. Fish and Wildlife Service (Service) fully supports the concept of a river-wide long-term assessment of needs and the effects of proposed changes on the system's natural resources. The Service recognizes the limitations and challenges the navigation system imposes on the fish and wildlife resources. The Service's desire is to work with the Corps, state agencies, and others to protect, enhance, and maintain the fish and wildlife resources and their habitat which remains, and increase the quantity and quality of these resources to the greatest extent possible.

The Corps has also undertaken another study, in cooperation with the Service and the states of Illinois, Indiana, Ohio, Kentucky, West Virginia and Pennsylvania, for the development and implementation of an Ohio River Ecosystem Restoration Project Partnership program, a large-scale ecosystem restoration initiative. The program would partner with non-Federal entities to restore, enhance, and protect fish and wildlife abundance, diversity, and habitats within the Ohio River watershed. This project is currently languishing primarily for lack of funding. We recommend the Corps make efforts to reinvigorate this project. A major impediment to implementation, if funded, is the current cost-share percentage of 65 percent federal and 35 percent state. The Service offers the following suggestions that we believe will allow the program to proceed and meet its objectives:

1. Cost sharing will not be required for projects conducted on federal lands.
2. Project Planning and Design should be 100 percent federally funded.
3. Minimal cost-sharing (i.e., 10 percent) should be implemented for state and other conservation partners.
4. Block grants may be given to state agencies to administer for project design and construction.
5. The Corps should work with, at a minimum, the Service and State fish and wildlife agencies to develop specific goals for the restoration program, and these goals should incorporate the goals of other ecosystem based fish and wildlife conservation plans.
6. A long-term monitoring program should be implemented to gauge the success of specific projects and the success of the program.

Previous Ohio River related FWCA Reports have usually been a result of specific Corps projects, and detail efforts that the Corps takes to mitigate impacts, regarding the fish and wildlife resources, near the actual site of the project. It is the intention of this FWCA Report to

direct the Corps to look at the entire river system and consider recommendations contained herein, not only when specific projects are considered, funded and constructed; but also to encourage the Corps to take a proactive approach and implement these measures and recommendations as specially funded projects.

The Fish and Wildlife Coordination Act directs the Corps to incorporate into project plans such justifiable means and measures for wildlife purposes as the Corps finds should be adopted to obtain maximum overall project benefits. The Service recommends proactive direct action by the Corps (e.g., fish passage via ladders or artificial streams around dams; connectivity of riverine habitats; propagation of juvenile mussels for transplanting to selected locations; fish stocking; island creation; improving habitat conditions downstream of locks and dams; restoring snags along shorelines; and etc.), in order to provide conditions to achieve the greatest fish and wildlife resource sustainability. Adaptive management, adaptive monitoring, and input and cooperation among the Corps and its partners (i.e. Federal, State, NGOs, and private entities), will be crucial in order to make progress and to determine if such progress will achieve environmental sustainability.

The National Environmental Policy Act directs federal agencies to undergo a "big picture" analysis. This analysis is necessary to avoid the potential cumulative impact problems that may go unnoticed in projects that are segmented into interdependent components. The Senate Report that accompanied NEPA states that "Important decisions concerning the use and the shape of man's future environment continue to be made in small but steady increments which perpetuate rather than avoid the recognized mistakes of previous decades." Senate Report No. 91-269, 91st Cong. 1st Session, 5 (1969). A federal agency's compliance with NEPA should help to avoid these mistakes. This Programmatic Environmental Impact Statement is an important step in that direction.

The Service believes the Corps should also view this ORMSS PEIS as the beginning of a process that will include adaptive management, adaptive monitoring, and input from others regarding fish and wildlife issues. The Corps has an opportunity, regarding future projects on the Ohio River, to provide vigorous positive leadership and produce results regarding its role in incorporating actions that will benefit the fish and wildlife resources.

One positive result of the Ohio River Mainstem Systems Study (ORMSS) was the formation and active involvement of the members of the Interagency Working Group (IWG). The Corps is commended for persistently encouraging this group to meet and discuss a variety of issues, and be involved in the ORMSS process. In addition, the Corps has worked with state agencies and the Service in order to make positive progress in the area of maintenance dredging activities in the river. The Louisville and Huntington Corps Districts continue to work with the states and the Service to refine and improve communication and to minimize negative impacts of dredging to the fish and wildlife resources. The Service believes these are good examples of team involvement and that the Corps should continue these team efforts and provides appropriate financial support so that team members will be able to participate to the fullest extent possible. Additional opportunities remain to work with the states, the Service, and others to improve existing conditions and impacts from operation of the navigation system. There is a need to establish designated fleeting areas that will not impact freshwater mussel assemblages or

sensitive fish habitat, etc.; and, the need to protect known sensitive areas such as fish spawning habitat, fish wintering habitat, mussel assemblages, and etc., from barge traffic impacts.

There remains the continued need for additional research, studies, management, monitoring, etc., to be done in order to more fully understand, how the fish and wildlife resources can become as sustainable as possible given the locks and dams and navigation constraints the resource has to deal with. The Service recognizes the Corps does not have the responsibility and/or ability to eliminate and/or fix all problems impacting the fish and wildlife resource in the Ohio River (e.g. water pollution, preventing erosion of uplands, and etc.); however, the Corps needs to recognize that once those impacts (e.g. water pollution, sedimentation, etc.) are in the Ohio River mainstem, the presence of the locks and dams, pools, etc., influence their impact on the resource; and, are likely to impact the level of success of resource environmental sustainability.

For further discussion please contact Leroy Koch at the USFWS Kentucky Ecological Service's Field Office (502) 695-0468.

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ATTACHMENT 2



DEPARTMENT OF THE ARMY
PITTSBURGH DISTRICT, CORPS OF ENGINEERS
WILLIAM S. MOORHEAD FEDERAL BUILDING
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REPLY TO
ATTENTION OF

SEPTEMBER 16 2008

Planning and Environmental Branch
Business Resource Division

Mr. Leroy Koch
US Fish and Wildlife Service
Kentucky ES Field Office
J C Watts Federal Building - Room 266
330 West Broadway
Frankfort, Kentucky 40601

KY FIELD OFFICE

SEP 18 2008

RECEIVED

Dear Mr. Koch:

We have reviewed your agency's Draft Fish and Wildlife Coordination Act Report (CAR), July 18, 2006, for the Ohio River Mainstem System Study's (ORMSS) System Investment Plan and Programmatic Environmental Impact Statement (SIP/PEIS). We thank you for a thorough and comprehensive discussion of resources on the Ohio River. We also want to express our appreciation for the Service's interest and active participation in the ORMSS throughout the course of the study. Your agency's input to the study process served to make the study report a high quality document.

We join with your agency in wanting to see the ecological resources of the river return to a fully sustainable level. In fact, since the initiation of the Mainstem System Study, the Corps has issued its Environmental Operating Principles along with ER 200-1-5, a policy for implementation. The Environmental Operating Principles direct the Corps to integrate environmental sustainability into all its activities. Throughout the study, the Corps has proactively sought the input of others. We convened the Interagency Working Group, prepared a report recommending an Ecosystem Restoration Program that was subsequently authorized, and completed a challenging assessment of cumulative effects on the river. We recognize the resources of the Ohio River have been affected by a number of actions including those of the Corps, and we accept responsibility and accountability for impacts of those actions under our jurisdiction.

The CAR provides a comprehensive list of recommendations to aid in achieving environmental sustainability. Those recommendations are grouped in several categories including riverine habitat and connectivity; stream habitat quality in the lower reaches of tributaries; mussels and snail fauna; fish fauna and fish passage; navigation impacts; island back channels, side channels and associated habitat conditions; flood plains; invasive species; and reduction of contaminants and excessive nutrients.

We would like to respond by first explaining our general capability for approaching ecosystem restoration and mitigation before we discuss the specific actions we intend to take pursuant to the SIP. Whereas most agencies with environmental missions were created through organic legislation that empowered them to use their discretion to fund authorized activities, the Corps of Engineers has no such programmatic authority. The Corps pursues missions such as navigation and ecosystem restoration as agreed upon between Congress and the President through project-specific legislation. Corps projects are authorized through Water Resources Development Acts and funded through annual appropriations bills. In reviewing the recommendations of your draft report, we note many recommendations that, although important and worthy of pursuit, are currently beyond the authority of the Corps acting alone. Implementation of the CAR recommendations would require a dedicated stream of funds and specific authorization to carry out. Since the SIP is a planning document and is not meant to go forward for Congressional authorization, it is unlikely we will obtain funding through this study.

The Corps of Engineers does have several continuing authorities at this time for addressing impacts attributed to ongoing actions, however, none of these can be implemented at full federal expense. For ecosystem restoration where a Corps project is causing or contributing to the degradation, Congress authorized Section 1135 of the Water Resources Development Act of 1986, as amended, for the Federal government to provide a greater share of project costs than under other ecosystem restoration authorities. Section 1135 is cost shared at 75% Federal and 25% non-Federal, whereas our other applicable ecosystem restoration authorities are cost shared at 65% Federal and 35% non-Federal. Section 1135 has a Federal funding limit of \$5,000,000 per project. Therefore, it could not be used on a large scale. Section 216 of the River and Harbor and Flood Control Act of 1970 could, however, be used for large scale modification of projects but would be subject to the Act's 65/35% cost sharing requirement.

Accepting that the navigation system is causing or contributing to impacts to environmental resources of the Ohio River, the Corps understood its responsibility to implement ecosystem restoration. It was with this in mind that it recommended the Ohio River Ecosystem Restoration Program for authorization. As prescribed by legislative mandates and Corps policies, this program was created with a non-federal cost sharing requirement. This authority would provide up to \$200 million in federal funds toward restoring the environment of the mainstem. Unfortunately, Congress has not chosen to provide any appropriations for this program to date. Since this program has not received funding, it is now a candidate for de-authorization. If appropriations are not provided, the program will be de-authorized on September 30, 2009.

That said, the Corps is committed to do all it can within legal and financial limits to mitigate for systemic environmental impacts. We recognize that our current actions on the Ohio River continue to have profound impacts on certain environmental resources associated with the river, most notably mussels and lithophilic fishes. These adverse effects are a result of maintaining navigation pools that reduce shallow water habitat and facilitate siltation of extensive reaches of formerly clean gravel or rubble substrate.

The Corps' recommended plan in the SIP is the first step toward mitigating (i.e., minimizing the effects of) traffic impacts. The areas of the river most subjected to navigation related impacts are the downstream approaches to the lock chambers where most of the remaining riverine habitat exists. By increasing reliability of the existing chambers (and constructing new chambers in the upper river), the time it takes to move traffic through this stretch of river will be reduced greatly. Transit days are the days it takes to move one tow from point of origin to its destination. By implementing reliability improvements, we estimate that transit days will be reduced by 1.5 million days over the 60-year study period. Since intra-pool transit rates will not change due to recommended improvements, the reductions will all be accounted for at the locks. Those days should be equally divided between up-bound and down-bound tows; therefore, there would be 750,000 fewer transit days, and concomitant impacts, in the lower approaches.

The Corps will consider incorporating sustainability-focused mitigation measures as identified in the SIP into its future actions. While potential measures identified in mitigation plans have typically focused on replacement-in-kind for anticipated adverse effects of planned projects, plans for future mitigation could, if agreed to by the resource agencies, include measures directed toward enhancing the environmental sustainability of affected resources and ecosystems. Such measures would be perceived as "sustainability-focused mitigation measures." Again, contingent on agency opinion, these measures could be implemented outside the geographic area of the site specific project if the benefits are great enough. We believe system-wide benefits would be cumulative over time as each site specific project is implemented.

To address more systemic issues related to the navigation system, the Corps will incorporate several environmental components into future site specific studies that this report recommends: evaluation of fish passage strategies at each lock and dam along the Mainstem during studies for lock modernization and major rehabilitation; continuance of the Interagency Working Group concept at the local level to participate in and to review and comment on studies as they progress; identification, description and quantification of riverine habitat within the individual project's area of influence; incorporation of sustainability planning within each individual project's area of influence; and, if a non-federal partner is identified, development of an Environmental Restoration Plan that will become part of the plan recommended for authorization of each site specific project. As required for navigation investments, however, all separable restoration costs will require a cost sharing partner.

At the invitation of the Fish and Wildlife Service, an annual meeting will be held between the Lakes and Rivers Division and District Commanders of the Corps and the Regional Directors of the USFWS Regional Offices with jurisdiction over the Ohio River to discuss where the agencies could become better stewards of the environment and participate, within our authorities, in making the river more sustainable.

Again, we thank you and all the Service participants for their valuable participation in the ORMSS. Your efforts have made the SIP/PEIS a better document.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael P. Crall". The signature is fluid and cursive, with the first name "Michael" and last name "Crall" being clearly distinguishable.

Michael P. Crall
Colonel, Corps of Engineers
District Engineer

UPPER OHIO NAVIGATION STUDY, PENNSYLVANIA ENVIRONMENTAL APPENDIX

Fish and Wildlife Planning Aid Report Update

Biological Resources of the Upper Ohio River
A Planning Aid Report Final Update for the
Upper Ohio River Navigation Study
Emsworth, Dashields, and Montgomery Locks and Dams
April 2009

Note to Reader:

The U. S. Fish and Wildlife Service prepared Planning Aid Reports under the Fish and Wildlife Coordination Act for the Pittsburgh District in 1983, 1985, and 1986, primarily addressing Upper Ohio River fish surveys, water quality and important habitat areas. At the onset of the Upper Ohio Navigation Study, the District requested that the Service prepare updates to these Reports. The scope of the update was to take in a description of the project area, describe current conditions of the natural resources, compile list of significant natural resource studies from 1985 to present, analyze and identify significant data gaps, and provide specific recommendations for additional studies. The Service was also to define and discuss resource priorities and opportunities in the Ohio River valley ecosystem and make recommendations.

The following report was used as a planning tool; it does not include represent the Service's comments on any of the alternative navigation plans or the recommended plan that would be part of the Fish and Wildlife Coordination Act 2(b) report. The Service did not provide a separate 2(b) report for the Upper Ohio Navigation Study. The District, therefore, considered the recommendations of the Service's 2(b) report provided for the Ohio River Mainstem System Study in formulating the Upper Ohio Navigation Study (see previous appendix entry, Fish and Wildlife Coordination Act 2(b) Report ORMSS).

Biological Resources of the Upper Ohio River

A Planning Aid Report Final Update

for the

**Upper Ohio River Navigation Study, Emsworth, Dashields, and Montgomery
Locks and Dams**



Prepared for:
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Project Background

The purpose of this planning aid report is to describe the fish and wildlife biological resources of the Upper Ohio River, in response to the U.S. Army Corps of Engineer's (Corps) Upper Ohio River Navigation Study, which encompasses Emsworth, Dashields, and Montgomery Locks and Dams, collectively known as EDM. The Corps' Upper Ohio River Navigation Study was initiated as a reconnaissance study in May of 1982. At this time this project has evolved into a feasibility study which entails considering and evaluating the feasibility of alternatives for maintaining and improving safe, environmentally sustainable, and reliable commercial navigation on the Upper Ohio River in Pennsylvania as well as integrating ecosystem restoration features within the project area (Federal Register, Vol. 71, No. 189, pages 57487-57488, September 29, 2006). The potential for installation of hydroelectric facilities and fish passage methods at each EDM lock and dam are currently being considered and studied.

The project area of the study evaluated in this report is the Ohio River and associated floodplains from the confluence of the Allegheny and Monongahela Rivers at Pittsburgh, PA (river mile (RM) 0) downstream to the Ohio/Pennsylvania border, (RM 40.0). The upper 40 miles of the river includes all of the three Ohio River pools created by Emsworth, Dashields, and Montgomery locks and dams, and the upper third of the New Cumberland Pool. Emsworth, Dashields, and Montgomery Locks and Dams are the uppermost navigation structures on the Ohio River, located respectively at RM 6.2, 13.3, and 31.7 (FR Volume 71, Number 189, Page 57487-57488, 9/29/2006). The EDM facilities have dual lock chambers with 110 feet (33.5 meters) x 600 feet 182.9 meters) main chambers and 56 feet (17.07 meters) x 360 feet (109.7 meters) auxiliary chambers, which at this point in time are the lowest capacity lock chambers on the Ohio River navigation system. Main lock chambers on more modern Ohio River facilities measure 110 feet (33.5 meters) x 1,200 feet (365.8 meters). During main lock chamber closures, the small auxiliary lock chambers at EDM can only process one barge at a time, which requires multiple lockages for typical tows (Federal Register, Vol. 71, No. 189, September 29, 2006).

Emsworth and Montgomery locks and dams are the oldest gated structures on the Ohio River, and Dashields is the only fixed-crest dam on the river (Federal Register, Vol. 71, No. 189, September 29, 2006). Emsworth is the oldest operating facility on the Ohio River system with its locks dating from 1921. Emsworth's original fixed crest dams were replaced in 1938 with higher gated structures which consequently increased the head between the upper and lower pools, as well as increased structural loads on the concrete lock walls. Dashields and Montgomery locks and dams were constructed and placed into operation in 1929 and 1936, respectively. Additional concerns at EDM are in regards to the structural integrity of the aged concrete lock walls. Lock wall surfaces are in advanced stages of deterioration and there are concerns about the stability of various wall sections. It is very possible that water may be reaching the interior concrete structures through internal cracks causing it to become saturated and susceptible to weathering, freeze-thaw damage, and additional deterioration (Federal Register, Vol. 71, No. 189, September 29, 2006).

The Upper Ohio Navigation Study will consider navigational needs over a 60-year period from 2010 to 2070. Alternatives to be considered in this study include navigation facility operation and maintenance, rehabilitation of each lock and dam (repair or replacement for concrete wall sections), expansion of main and/or auxiliary lock chambers, and new construction needs and

opportunities (Federal Register, Vol. 71, No. 189, September 29, 2006). Construction laydown and disposal sites will also be required for the proposed project. Actual project construction plans as well as locations of construction laydown and disposal sites have not been developed at the time of this report. The Service anticipates the need to review actual construction plans at each lock and dam in order to further avoid and minimize impacts to fish and wildlife habitats.

This Fish and Wildlife Coordination Act (FWCA) planning aid report updates and expands upon four previous planning aid reports (USFWS March 1983; USFWS January 1985; USFWS February 1986; USFWS 2001(b)) prepared by the U. S. Fish and Wildlife Service (Service). The four previous reports presented the results of fish sampling surveys conducted in the upper Ohio River by the Service, and discussed water quality and important habitat areas. An additional FWCA report was prepared by the Service dated June 1983, however the report did not address biological resources of the Upper Ohio River or the Emsworth, Dashiels, Montgomery, and New Cumberland Pools. This current report will build on the Service's four previous reports and describe the historic, current, and possible future trends of biological resources in the Upper Ohio River. Because construction laydown and disposal sites will impact upland areas, this report will discuss in some detail upland habitat types and the terrestrial wildlife resources they support. This report will also provide information such as: updated natural resource inventory by navigation pool; current status of natural resources in the project area; a baseline condition assessment of natural resources; trends in natural resource conditions and management; priorities of natural resource management; and significant information gaps. In addition, this report will assist in scoping studies to acquire information, and will contribute to scoping for a programmatic environmental impact statement for this feasibility study.

Historical Conditions of the Upper Ohio River

The Upper Ohio River, prior to early European settlement, consisted of a free flowing river, dotted with islands, bordered by mature hardwood forests and numerous wetlands, and free from pollution. Early accounts of the Ohio River (Cramer 1814) describe "...numerous islands that are interspersed in this river" and "a great many shoals and sandbars." The original free-flowing river averaged less than one foot depth between Pittsburgh and Cincinnati during low-flow periods (Jones 1920 in Taylor 1989). Upland areas were described as vast diverse hardwood forests. Of particular note were massive sycamore trees (*Acer pseudoplatanus*) bordering the Ohio River; "The Sycamore seems to be the king of the forest on the banks of the Ohio. Their monstrous growth, towering height, and extended branches really fill the beholder with awe and astonishment. Between Wheeling and Marietta I measured several from 10 to 16 feet over, four feet above ground, and this seems to be but their common size" (Cramer 1814). Fish and wildlife in and adjacent to the river were abundant and diverse as well. "The fish of the Ohio are numerous and of various kinds: the black and yellow cat, weighing from 3 to 100 pounds; the buffalo, from 5 to 30 pounds; the pike from 4 to 15 pounds; the sturgeon from 4 to 40; the perch from 3 to 12 pounds; the sucker from 1 to 6 pounds; eels and soft shelled turtles are sometimes caught. These ascend the Allegheny and Monongahela rivers, and their principal branches, and are caught in seines, baskets, pots and with trot-lines, hooks and lines. The different species of the wild duck are numerous, and a few geese and brant are seen on the river" (Cramer 1814).

This undisturbed Ohio River environment changed, however, with early settlement of the upper Ohio River valley. Settlers cleared forests and drained many of the wetlands between 1800 and 1900, subjecting the river to siltation from the erosion of soils from cleared fields and pastures. During this period, the potential of the Ohio River to act as an important transportation route was also developed. Accordingly, the Corps responded to the directives of Congress dating from the first River Act of 1824 by undertaking open channel improvements, and later in 1885 completing the Ohio's first main channel lock and dam (No. 1) at Davis Island (RM 4.8), creating the first navigation pool on the river. By 1914, Lock and Dam Nos. 1-8 were completed in the project area providing slackwater from Pittsburgh to RM 46.4. In 1929 a series of 51 low-lift movable dams was completed on the 981 miles of the Ohio River with differences between the pool levels of between 1.7 to 3.4 meters. All but two of these dams have since been replaced by eighteen high-lift dams with pool elevation differences of between 4.9 to 10.7 meters, significantly increasing the depth of the pools (Beckett et al. 1997). This new system of high-lift dams has created a minimum 2.75-m channel depth for navigation, and allowed it to carry more freight than any waterway in the United States, with the exception of the Mississippi River (Beckett et al. 1997).

One of the first effects of Ohio River dams was the inundation of native gravel and cobble substrate with fine materials such as silt. This inundation was exacerbated by the logging and wetland destruction occurring at the time. Pearson and Pearson (1989) suggest that the most important effect of human environmental disturbances on Ohio River fishes has been the siltation and inundation of much of the original clean gravel or rubble substrate of the river bed. This coarse substrate historically provided the predominant lithophilic fishes, such as the lake sturgeon (*Acipenser fulvescens*) and paddlefish (*Polyodon spathula*) with their preferred spawning substrate. This type of substrate became much less common following the construction of the navigation dams. The dams also interfered with fish movements, eliminating the spring run of Alabama shad (*Alosa alabamae*), and seriously impairing those of other fishes (Pearson and Pearson 1989).

Ortmann (1909(a)) noted the early effects of these dams on the Ohio River fauna:

“By this process the rivers, which originally possessed a lively current, with riffles, islands, etc., have been transformed into a series of pools of quiet, stagnant water, and this change has driven out certain forms of life. It is most destructive to mussels, most of which require a lively current. Dams also prevent free migration, for instance of fishes, and thus they must be an obstacle to the natural restocking of the rivers in periods of high water.”

Emery, et al. (2003) more recently pointed out that flow regulation has cascading effects on all aspects of ecological structure and function of rivers, including altered sediment transport and temperature regimes, reduced production, fewer native species, and more nonnative species.

Raising the river depth also impacted terrestrial habitat in the upper Ohio River, by flooding much of the island and shoal habitat in the river, thereby eliminating important ecotone areas and

significantly reducing instream habitat heterogeneity. As a result, four historic islands no longer exist in the study area. All of these islands were in, or at the ends of, the present Montgomery Pool. Starting downstream and working upstream they were:

- 1) Montgomery Island (31.4 acres; 12.7 hectares) - flooded by the New Cumberland Locks and Dam, and/or flooded or otherwise destroyed as a result of constructing of Montgomery Locks and Dam, which appeared to have been located at the head of Montgomery Island;
- 2) Hog Island (105.1 acres; 42.5 hectares) - a large island located just downstream of Crew Island and the town of Baden (RM 22 below Pittsburgh fell at the center of Hog Island (Hayes 1877));
- 3) Crew Island (137.9 acres; 55.8 hectares) – a second large island a few hundred feet upstream of Hog Island with the head of the island at Baden (RM 21 below Pittsburgh fell at the head of Crew Island according to the E.L. Hayes map of 1877); and
- 4) Deadman Island (12.9 acres; 5.2 hectares) – located between Leetsdale and Edgeworth, flooded or otherwise destroyed as a consequence of constructing the Dashields Lock and Dam at Edgeworth or by flooding from the Montgomery Lock and Dam pool (RM 14 below Pittsburgh fell several hundred feet below the head of the Island (Hayes 1877)).

In addition to the compounding effects of impoundment and soil erosion, point source pollution resulting from growing industry in the late 19th and early 20th centuries and growing human population pressure was having an immense effect on the Ohio River and its biota. Much of the Ohio River pollution has been and still is concentrated in the upper portion of the river from Wheeling to Pittsburgh (Cavanaugh and Mitsch 1989). Municipal and industrial wastewater treatment, as well as responsible mine reclamation practices, were almost non-existent. Acid mine drainage was responsible for pH values less than 4.0 in the upper river prior to 1950 (Thomas et al. 2005). Once called the “most beautiful river in the world” by Thomas Jefferson (Frost and Mitsch 1989), by the 1950s it was described in the New York Times as the nation’s “Industrial Aorta” (Mitsch 1989). Numerous pollutants were discharged from point sources by the iron and steel industry, chemicals industry, and through municipal sewage.

The effects of this pollution on fish and wildlife resources were obvious. Ortmann (1909(a)) described Ohio River conditions at this time:

“At Pittsburgh, the two main rivers, *Allegheny* and *Monongahela*, unite to form the *Ohio*. As we shall see below, both the *Allegheny* and *Monongahela* are as badly polluted as they possibly could be, and, consequently, it is not astonishing that the *Ohio* immediately below Pittsburgh is also in a deplorable condition. Generally, there is not much life in this part of the *Ohio*. There are crawfishes in this part of the river, but they are disappearing fast. Unionidae have disappeared long ago.”

Ortmann (1909(a)) goes on to say that below Pittsburgh the river “...loses its bad qualities, at least in part, about 30 miles further down.” “Here it is sufficient to point out, that at present (1908) the condition of the Ohio below dam No. 6 is good or fair, life being not only possible,

but abundant in it, all the way down to the state line at Smith's Ferry." "Moreover, there are indications that the fauna in the Ohio below Vanport is already suffering. There are at least two tremendous banks, consisting chiefly of dead shells (with many living ones among them) in the river, one at Industry, the other at Shippingport (Ortmann 1909(b)). Since dead shells are dissolved rather rapidly, these masses indicate a recent dying of mussels on a large scale. And further, it is very remarkable that among the living shells collected by myself there are hardly any young individuals" (Ortmann 1909(a); Ortmann 1909(b)).

Ortmann (1921) also published an inventory of upper Ohio River unionids in the late 19th and early 20th centuries. He found 33 mussel species in the Ohio River in Pennsylvania, most of them congregated in the lower portion of the river in present day New Cumberland Pool. A summary of his findings are presented in Appendix A.

In addition to impoundment and pollution, overharvest for the pearl and button industries may have had impacts to upper Ohio River mussels. Although he did not document mussel overharvest in Pennsylvania, Ortmann (1909(a)) states "Once I came across people from somewhere down the Ohio in the State of Ohio or West Virginia, and it was indeed a sight to look upon the wholesale destruction [to mussels] carried on by them."

Beginning in the middle part of the 20th century, steps were being taken to reduce chemical pollution to the upper Ohio River. The Ohio River Valley Water Sanitation Commission (ORSANCO) was created in 1948 as an interstate water pollution control agency to mitigate water pollution throughout the Ohio River basin. Municipal sewage treatment began at this time, and continued to improve following the passage of the Clean Water Act (1972). In addition, other environmental laws, including the Surface Mining Control and Reclamation Act of 1977, reduced other sources of pollution. Reduction of point source pollution in the upper Ohio River has also been attributed to the decline of the U.S. steel industry during the latter part of the 20th century. This reduction in water quality impairments has resulted in an improvement in many biological assemblages in the Ohio River, notably fish and macroinvertebrates. Although much of this point-source pollution has been reduced in the last 50 years, remaining point sources, as well as nonpoint-source pollution, continued impoundment by navigational dams, and flood plain development continue to have an adverse effect on Ohio River biota.

Inventory of Fish and Wildlife Resources Including Current Conditions and Trends

Summary of USFWS FWCA Reports (March 1983; June 1983; January 1985; February 1986) and USFWS Ohio River Mainstem Restoration Partnership FWCA Report 2001(b)

Threatened and Endangered Species

The Service reported three federally-listed endangered birds in the 1983 report, the bald eagle (*Haliaeetus leucocephalus*), the peregrine falcon (*Falco peregrinus*), and the Kirtland's warbler (*Dendroica kirtlandii*). Since this time the bald eagle and the peregrine falcon have reached their recovery goals and are no longer listed under the Endangered Species Act (ESA). Kirtland's warbler continues to be listed under the ESA, however it currently is not known to exist in Pennsylvania.

The Indiana bat (*Myotis sodalis*) is listed as an endangered species under the ESA. The Service's 1983 report stated that there were no populations of Indiana bat known to occur in the project area. However, recently updated ESA species lists have documented an Indiana bat hibernaculum (winter cave habitat) in Beaver County. There are currently no maternity sites (summer riparian habitats) in the project area, however there is potential summer habitat for the Indiana bat throughout Pennsylvania in forested or wooded areas near sources of water. The distribution of the Indiana bat is strongly correlated with major rivers within its range and it has been postulated that major rivers are navigation corridors for the Indiana bat.

The Service's 1983 report noted the following three federally-listed freshwater mussel species which historically occurred in the project area: orange footed pearly mussel (*Plethobasus cooperianus*), pink mucket pearly mussel (*Lampsilis abrupta*), and rough pigtoe mussel (*Pleurobema plenum*). More current research on the orange footed pearly mussel notes that this species historically occupied the Ohio River from western Pennsylvania to southern Indiana (NatureServe 2003). Currently, the orange footed pearly mussel is believed to survive only in the lower Ohio River in Illinois (Ahlstedt 1984, Miller et al. 1986), and live individuals have been regularly documented in the Ohio River in the vicinity of Metropolis, Illinois (Cummings and Mayer 1995). Although the orange footed pearly mussel was historically present in the Upper Ohio River within the project area, it is likely that this species no longer exists in the project area.

The pink mucket pearly mussel has undergone a substantial range reduction. This mussel was historically distributed in 25 rivers and tributaries in the Ohio, Cumberland, Mississippi, and Tennessee River systems. This species is now likely extirpated in Ohio, Pennsylvania, and Illinois (NatureServe 2003). Records from 1990 indicate that this species remained in only 16 rivers and tributaries at that time (NatureServe 2003). Although the pink mucket pearly mussel was historically present in the Upper Ohio River within the project area, it is likely that this species no longer exists in the project area.

The rough pigtoe mussel was historically known from the Ohio River in Pennsylvania and West Virginia, however it is now believed to be extirpated from these two states. Therefore, it is not likely that the rough pigtoe mussel is present within the project area.

The clubshell mussel (*Pleurobema clava*) is a federally-endangered species which is currently known to exist in the Allegheny River; however it has not been found recently in its historical range in Beaver County, Pennsylvania. Since the Allegheny River drains directly into the Upper Ohio River, it may be possible that this species exists in the project area.

The sheepsnose mussel (*Plethobasus cyphus*) is currently listed as a candidate species which is being considered for federal listing under the ESA. This species historically occurred in the Allegheny River in Armstrong County, and the Ohio River in Allegheny and Beaver counties, Pennsylvania. However, the sheepsnose mussel has not been recently found in these rivers (USFWS July 2008).

The Corps should contact the Service's Pennsylvania Field Office prior to construction of the proposed project to determine whether federally-listed species may be impacted by the project.

Vegetation

Most of the land along the Ohio River in Pennsylvania is highly developed by industry and development, leaving few large expanses of open land or forest adjacent to the river (USFWS 1983). A majority of these lands do contain thin strips of forested riparian corridors parallel to the river as well as some forested wetlands, embayments, and uplands. The dominant vegetation type in the upland areas of the Upper Ohio River Valley is mixed mesophytic forest (USFWS 2001(b)). There are a total of about 15 to 20 dominant tree species within this vegetation type, including tulip popular (*Liriodendron tulipifera*), silver maple (*Acer saccharinum*), sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), American basswood (*Tilia americana*), various oaks (*Quercus* spp.), hickories (*Carya* spp.) and willows (*Salix* spp.). The lower canopy is dominated by sassafras (*Sassafras albidum*), dogwood (*Cornus* spp.), eastern hophornbeam (*Ostrya virginiana*), eastern redbud (*Cercis canadensis*), sourwood (*Oxydendrum arboreum*), magnolia (*Magnolia* spp.), and serviceberry (*Amelanchier* spp.). Shrubs and herbs are abundant and diverse, and include witch-hazel (*Hamamelis virginiana*), pawpaw (*Asimina triloba*), black haw (*Viburnum* spp.), elderberry (*Sambucus canadensis*), wild grape (*Vitis rotundifolia*), and greenbrier (*Smilax* spp.) (USFWS 2001(b)).

Along the floodplains of the Ohio River in this region, bottomland hardwood forests are the natural climax community. Much of this habitat type has been eliminated by industrial, residential, and agricultural development. The remaining riparian area is often less than a few hundred feet in width. This habitat type has the classic four layered plant structure. Dominant tree species in the overstory include: silver maple, American sycamore, eastern cottonwood (*Populus deltoids*), black willow (*Salix nigra*), slippery elm (*Ulmus rubra*), and boxelder (*Acer negundo*). Dominant species in the lower canopy include: hackberry (*Celtis occidentalis*), black locust (*Robinia pseudoacacia*), American elm (*Ulmus Americana*), green ash (*Fraxinus pennsylvanica*), pawpaw, and black walnut (*Juglans nigra*). Shrubs include spice bush (*Lindera benzoin*), and Virginia creeper (*Parthenocissus quinquefolia*) (USFWS 2001(b)). Additional associated woody species found along riparian areas of the Ohio River in 1983 included staghorn sumac (*Rhus typhina*) and poison ivy (*Toxicodendron radicans*) (USFWS 1983).

Much of the river shoreline in Pennsylvania consists of numerous industrial, commercial and residential developments. Due to these land disturbances various invasive and non-native plant species have replaced native species of the original mesophytic forest along the riparian areas of the Ohio River. Such non-native and invasive plant species found along the Ohio River in Pennsylvania now include Northern catalpa trees (*Catalpa speciosa*), tree-of-heaven (*Ailanthus altissima*), multiflora rose (*Rosa multiflora*), purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Fallopia japonica*), mile-a-minute vine (*Polygonum perfoliatum*), garlic mustard (*Alliaria petiolata*), reed canary-grass (*Phalaris arundinacea*), Russian olive (*Elaeagnus angustifolia*), Japanese honeysuckle (*Lonicera japonica*), and others.

Migratory Birds

The Ohio River is a significant water area for numerous migratory waterfowl and shorebirds (USFWS 2001(b)). Ospreys (*Pandion haliaetus*) are not currently known to breed in western Pennsylvania; however they are likely to be observed as spring and fall migrants through the project area (USFWS 1983). The Service reported numerous waterfowl observed along the Pennsylvania reach of the Ohio River during January 1983 (USFWS 1983). Among the species observed were American black ducks (*Anas rubripes*), mallards (*Anas platyrhynchos*), common goldeneye (*Bucephala clangula*), common merganser (*Mergus merganser*), and scaup (*Aythya*

spp.). Gulls (*Larus* spp.) were abundant during this field visit and a flock of approximately 15-20 great blue herons (*Ardea herodias*) were seen along the river near the Montgomery Locks and Dam (USFWS 1983).

The bottomland hardwood forested floodplains along the Upper Ohio River Valley are commonly utilized by cavity nesting migratory bird species such as wood ducks (*Aix sponsa*), great horned owls (*Bubo virginianus*), eastern bluebirds (*Sialia sialis*), goldeneyes, and mergansers (USFWS 2001(b)). The forest structure in habitats of floodplains along the Upper Ohio Valley provides the proper canopy and insect life required to support migratory songbirds like the warbling vireo (*Vireo gilvus*), northern oriole (*Icterus parisorum*), Carolina wren (*Thryothorus ludovicianus*), wood thrush (*Hylocichla mustelina*), and numerous warblers (USFWS 2001(b)).

The following game bird and raptor species have been reported from the Pittsburgh and surrounding areas: wild turkey (*Meleagris gallopavo*), American woodcock (*Scolopax minor*), Canada goose (*Branta Canadensis*), barred owl (*Strix varia*), eastern screech owl (*Otus asio*), northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), northern goshawk (*Accipiter gentilis*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*) (Pennsylvania Environmental Council 2004).

Allegheny and Beaver counties, through which the upper Ohio River flows, have recorded confirmed and suspected breeding of at least 125 species of migratory birds (Breeding Bird Atlas Explorer 2006). Appendix G lists the data of the Breeding Bird Atlas of bird species recorded as confirmed and suspected breeding in Beaver and Allegheny counties from 1983 and 1989 (Breeding Bird Atlas Explorer 2006). No state or federally-listed bird species were recorded during this time period for this study; however, a second Breeding Bird Atlas project was recently concluded to document Pennsylvania's avian fauna. This project spanned 2004-2008 with the goal of being "the most extensive survey of the state's nesting birds ever attempted." Additional information can be found on the 2nd Pennsylvania Breeding Bird Atlas website at <http://www.carnegiennh.org/atlas/home.htm>.

Mammals

The upland mesophytic forested areas along the Upper Ohio River Valley are commonly utilized by a wide variety of mammals such as white-tailed deer (*Odocoileus virginianus*), eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), and eastern gray squirrel (*Sciurus carolinensis*)

(USFWS 2001(b)). Bottomland hardwood forests along the floodplains of the Ohio River in this region provide good habitat for furbearers such as the muskrat (*Ondatra zibethicus*), mink (*Mustela vison*), and beaver (*Castor canadensis*), as well as cavity nesting species such as the eastern fox squirrel (*Sciurus niger*) and raccoon. Understory areas within bottomland hardwood forests provide habitat for northern short-tailed shrew (*Blarina brevicauda*), Norway rats (*Rattus norvegicus*), and white-tailed deer (USFWS 1983; USFWS 2001(b)).

Other mammals likely to utilize various habitats of the Upper Ohio River include the eastern chipmunk (*Tamias striatus*), star-nosed mole (*Condylura cristata*), deer mouse (*Peromyscus maniculatus*), white-footed mouse (*Peromyscus leucopus*), opossum (*Didelphis virginiana*), masked shrew (*Sorex cinereus*), striped skunk (*Mephitis mephitis*), meadow vole (*Microtus pennsylvanicus*), long-tailed weasel (*Mustela frenata*), and woodchuck (*Marmota monax*). Bats which forage along riparian areas and over waterways of the Upper Ohio River include the big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), Indiana bat, red bat (*Lasiurus borealis*), little brown bat (*Myotis lucifugus*), eastern small-footed bat (*Myotis leibii*), and eastern pipistrelle (*Pipistrellus subflavus*) (USFWS 1983).

Reptiles and Amphibians

The habitat types along the corridors of the Ohio River in Pennsylvania are likely to support reptiles such as the northern fence lizard (*Sceloporus undulatus hyacinthinus*), copperhead (*Agkistrodon contortrix*), black racer (*Coluber constrictor*), five-lined skink (*Eumeces fasciatus*), black rat snake (*Elaphe obsoleta*), eastern garter snake (*Thamnophis sirtalis sirtalis*), eastern hognose snake (*Heterodon platirhinos*), eastern milk snake (*Lampropeltis triangulum triangulum*), eastern ribbon snake (*Thamnophis sauritus*), smooth green snake (*Opheodrys vernalis*), brown snake (*Storeria dekayi*), northern red-bellied snake (*Storeria occipitomaculata occipitomaculata*), northern water snake (*Nerodia sipedon*), queen snake (*Regina septemvittata*), ringneck snake (*Diadophis punctatus*), stinkpot (*Sternotherus odoratus*), eastern box turtle (*Terrapene Carolina*), painted turtle (*Chrysemys picta*), snapping turtle (*Chelydra serpentina*), spotted turtle (*Clemmys guttata*), and wood turtle (*Glyptemys insculpta*) (USFWS 1983). Embayments of the Upper Ohio River also support map turtles (*Graptemys geographica*) (USFWS 2001(b)).

In addition, aquatic habitat types in and along the corridors of the Ohio River in Pennsylvania are likely to support the following amphibian species: American bullfrog (*Rana catesbeiana*), gray tree frog (*Hyla versicolor*), green frog (*Rana clamitans*), pickerel frog (*Rana palustris*), wood frog (*Rana sylvatica*), hellbender (*Cryptobranchus alleganiensis*), red-spotted newt (*Notophthalmus viridescens viridescens*), northern spring peeper (*Pseudacris crucifer crucifer*), four-toed salamander (*Hemidactylium scutatum*), long-tailed salamander (*Eurycea longicauda*), marbled salamander (*Ambystoma opacum*), northern dusky salamander (*Desmognathus fuscus*), red salamander (*Pseudotriton ruber*), spring salamander (*Gyrinophilus porphyriticus*), northern two-lined salamander (*Eurycea bislineata*), eastern red-backed salamander (*Plethodon cinereus*), northern slimy salamander (*Plethodon glutinosus*), spotted salamander (*Ambystoma maculatum*), and American toad (*Bufo americanus*) (USFWS 1983). Embayments of the Upper Ohio River also support northern leopard frogs (*Rana pipiens*) (USFWS 2001(b)).

Freshwater Mussels

Freshwater mussels are bi-valve mollusks that live in the sediments of rivers, streams, and other flowing bodies of water. Most species of mussels are sessile, moving only short distances their entire life. Most freshwater mussels require a fish host in order to complete their unique life cycle. During spring and summer, female mussels release tiny mussel larva (called glochidia) into the flowing water, and some female mussels will display their mantle flaps which look like prey items to attract a fish host. Glochidia released into the water column will drift and by chance will find a suitable fish host. As parasites, glochidia are dependent on fish for their nutrition. Glochidia will clamp onto the gills or fins of a fish host species and remain attached for one to four weeks while transforming into juvenile mussels. If glochidia are not attached to a suitable host fish within a few days of being released into the water column, they die. Some mussels may depend only on a single species of fish to complete their life cycle, whereas others can parasitize many different species of fish.

Mussels are an important part of the aquatic community. To feed, mussels draw in river water from which they filter fine organic matter. A single mussel can filter several gallons of water per day, thereby improving water quality by removing sediment and associated contaminants from the water. Live mussels and relic shells also provide a relatively stable substrate in dynamic riverine environments for a variety of other macroinvertebrates and algae. Mussels depend on good water quality and suitable physical habitats for their survivability and reproduction.

The status of freshwater mussel populations in the upper Ohio River is currently largely unknown. The Service (USFWS 1985) notes that 47 species of mollusks have been identified as likely to occur or formerly occurred in the upper Ohio River, but does not give a source for this information.

Watters, et al. (2003) conducted a review of historical records of mussels in the Ohio River and states, “Based upon historical records we know that each pool or reach supported 40-50 species of mussels; today many have less than ten” (Watters et al. 2003). The results of this review represent the most up-to-date knowledge of the mussel distribution in the upper Ohio River. Freshwater mussel populations by pool are discussed below in other sections of this report. One event that has in many cases severely impacted freshwater mussel populations is the introduction of the non-native zebra mussel (*Dreissena polymorpha*). Watters et al. (2003) states, “In nearly all cases the most dramatic declines in mussels are obviously associated with the arrival of zebra mussels in the Ohio River in 1991. Often these declines are precipitous. However, the overall diversity is usually found to be already in decline prior to zebra mussels, and this decline is often attributable to impoundment. Thus, the overall loss of mussels in each pool is rarely attributable to any one cause; rather zebra mussels seem to work on an already declining diversity caused by impoundment, loss of hosts, and pollutants.”

Taylor (1989) noted that impoundments were detrimental to some mussel species, but a benefit to other species tolerant of deeper water and slower flows such as the *Quadrula quadrula*. According to Ortmann (1919) this species was not known upstream of Cincinnati in the early 20th Century. However, by the 1980s Taylor noted it was the most commonly found unionid. He stated that the most significant change since Ortmann’s work was not the reduction in

number of species, but the reduction in numbers of individuals. He refers to the early bargeloads of shells being removed from the upper river in the early 1900s. He opined that the mussel community in the Ohio River is in a fragile state and merits constant monitoring to assure its continued existence, and lists the mussel species he believes are likely extirpated from the upper Ohio River (Table 1).

Table 1. Species of freshwater mussels that are probably extirpated from the upper Ohio River (from Taylor 1989).

<i>Cyprogenia stegaria</i>	<i>Epioblasma flexuosa</i>	<i>Epioblasma torulosa</i>
<i>Epioblasma triquetra</i>	<i>Lampsilis fasciola</i>	<i>Lampsilis ovata</i>
<i>Obovaria olivaria</i>	<i>Obovaria retusa</i>	<i>Plethobasus cicatricosus</i>
<i>Plethobasus cooperianus</i>	<i>Pleurobema clava</i>	<i>Pleurobema coccineum</i>
<i>Pleurobema pyramidatum</i>	<i>Ptychobranhus fasciolaris</i>	<i>Quadrula cylindrical</i>
<i>Tritogonia verrucosa</i>	<i>Truncilla truncata</i>	

Fish

Electrofishing:

ORSANCO has been conducting night electroshocking surveys for Ohio River fish since 1991 (ORSANCO 1998). They have developed a multimetric index for assessing the biological condition of the Ohio River, the Ohio River Fish Index (ORFI_n) (Emery et al. 2003). The index is composed of 13 metrics that reflect fish assemblage structure and function and respond predictably to measures of human disturbance or reflect desirable features of the Ohio River. This survey work has resulted in the collection of 47 taxa of fish (including hybrids) from Emsworth Pool, 54 from Dashiels Pool, 67 species from Montgomery Pool, and 53 from New Cumberland pool in Pennsylvania (ORSANCO 1998). Appendix B lists the taxa collected in each pool. Individual metric values, metric scores, ORFI_n scores and raw data can be found in Appendix C. These data indicate a relatively diverse fish assemblage in the upper river (ORSANCO 1998). Although not collected in electrofishing samples by ORSANCO, juvenile paddlefish (*Polyodon spathula*) have been stocked in the upper Ohio River by the Pennsylvania Fish and Boat Commission in an effort to restore this species to its former range (Pennsylvania Fish and Boat Commission 2002).

An inventory of fish and wildlife resources for the upper Ohio River was completed in the mid 1980s and presented in two previous Planning Aid Reports (USFWS 1985, 1986). These two reports presented the results of fish collection studies conducted by the State College, Pennsylvania field office of the Service. Fish collection methods included gill nets, boat and backpack electrofishing, trap and hoop nets, seines, and minnow traps. Collection occurred in September and October of 1984, and June through August, 1985. Results of these studies included the capture of 45 fish species from RM 6.2 - 40. The Service concluded that the results of these surveys documented an improving upper Ohio River fishery. They attributed this increase to economic decline along the upper Ohio River, more effective constraints on industrial discharges, and various fish stocking programs.

Lock Chamber Surveys:

Fish assemblages in the upper three lock chambers in the Ohio River were sampled by ORSANCO and cooperating state and federal agencies between 1957 and 2005 (ORSANCO 1998). Raw data for these collections are presented in Appendix D. Lock chamber surveys in the upper three locks have collected 177,074 individuals of 66 species (ORSANCO 1998). Lock chamber data demonstrate a marked improvement in the quality and diversity of Ohio River fish communities during that time period. Thomas et al. (2005) analyzed temporal trends in Ohio River fish based on lock chamber surveys for the entire Ohio River and found that changes in feeding and breeding guild structure showed significantly improving fish assemblages throughout the entire river. Several pollution-tolerant species also declined significantly.

Results of lock chamber surveys for the upper three lock chambers, Emsworth, Dashields, and Montgomery, provided to the Service by ORSANCO indicate that the Ohio River in Pennsylvania has experienced a similar improvement in the quality of fish communities since the 1950s (ORSANCO 1998). This improvement in the upper river is indicated by increased species richness (Figure 1), decreasing proportion of pollution-tolerant fish species (Figure 2), and a more complex food web structure, as evidenced by the increase in number of top piscivore species (Figure 3). Figures 1, 2, and 3 are located at the end of this document.

Effects of Dams on Fish Assemblage Structure

Another study analyzing electrofishing data revealed several trends in the upper river regarding the effects of dams on fish communities. Simon and Emery (1995) found that the number of intolerant fish species and simple lithophils decreased as one moves downstream within a pool. As flow conditions change from lotic just downstream of dams to more lentic near the upstream end of dams, fish communities change from typical riverine communities to those representative of a more lake environs. They also found that species richness, number of centrarchid taxa, and proportion of tolerants and omnivores increased as one moved downstream within a pool from a lotic to lentic habitat.

In addition to the habitat-modification effects of Ohio River dams, they remain an impediment to fish movement (Pearson and Pearson 1989), including the catadromous American eel (*Anquilla rostrata*). This impediment of fish movement may also restrict distribution of unionids between pools, by restricting movement of glochidial hosts.

Threatened and endangered species

No federally-listed, candidate, or proposed fish species were collected during the course of ORSANCO's studies (ORSANCO 1998). Twelve fish species listed by the Commonwealth of Pennsylvania as endangered, threatened, or of special concern were collected at a total of 56 sites during ORSANCO's electrofishing sampling (ORSANCO 1998)(Table 2). Appendix E lists the collection locations and year when each fish was collected.

Table 2. Number of electrofishing sites where Pennsylvania State listed fish species were collected by ORSANCO between 1991 and 2005 (ORSANCO 1998).

Species	Pennsylvania Status	Number of Collection Sites
Bluebreast Darter	Threatened	1
Brook Silverside	Special Concern	6
Channel Darter	Threatened	13
Longear Sunfish	Endangered	3
Longnose Gar	Special Concern	25
Mooneye	Threatened	17
Redfin Shiner	Endangered	1
River Redhorse	Special Concern	19
River Shiner	Endangered	4
Silver Chub	Endangered	33
Skipjack Herring	Threatened	12
Smallmouth Buffalo	Threatened	50

Recommended Data Collection: Although the electrofishing and lock chamber sampling conducted by ORSANCO has created a large database of upper Ohio River fishes, each of these two sampling techniques has separate biases, and neither is entirely representative of the fish community of the upper Ohio River. One group of fish that is undersampled by both of these collection methods is the darters, a group of small benthic fishes, several of which are on the Pennsylvania list of endangered, threatened, and special concern species. ORSANCO has begun conducting benthic trawling to better sample this component of the ichthyofauna, but has not used it to sample the upper three pools of the Ohio River (Personal Communication, Matt Wooten, Ohio River Valley Water Sanitation Commission). The Service recommends that benthic trawling samples be conducted on the upper Ohio River to better evaluate the status of this undersampled benthic group.

Aquatic Invertebrates

ORSANCO has been collecting macroinvertebrate samples using Hester-Dendy multiplate samplers since 1991 (ORSANCO 1998). Applegate (2002) identified benthic macroinvertebrate metrics that respond to pointsource outfall effluent in the Ohio River, and ORSANCO is evaluating these metrics for use in a biotic index as part of the Ohio River biocriteria program. Raw data for ORSANCO's macroinvertebrate sampling program for the upper Ohio River can be found in Appendix F. Wooten et al. (2006) analyze current and historic macroinvertebrate sample data and found that several invertebrate metrics that decline in response to point source pollution in the Ohio River, including number of Diptera taxa, EPT taxa richness, percent Hydropsychidae, and percent Amphipoda, have increased significantly from 1965-1971 to 2002. This trend holds for the Upper Ohio River as well. The authors attributed these trends to improved water quality in the upper river caused by improved point source effluent treatment following passage of the Clean Water Act of 1972.

Wooten et al. (2006) also noticed two interesting shifts in taxa composition from historic to recent samples. First was the complete shift in the amphipod assemblage from *Crangonyx* sp. to *Gammarus* sp. This same shift was observed by Beckett et al. (1997), who theorized the cause to be increased flow regulation. However Wooten et al. (2006) added that available literature indicates *Gammarus* sp. can reduce *Crangonyx* sp. densities through intraguild predation, and that zebra mussels can facilitate *Gammarus* sp. population growth by increasing benthic habitat complexity.

The other taxa shift seen in the data was the reduction in the caddisfly (*Cyrnellus fraternus*) from historical to recent samples, and the authors suggested that zebra mussels may compete with this filter feeding caddisfly for substrate position and filtration currents.

Beckett and Miller (1982) found that widely different macroinvertebrate assemblages become established on artificial substrate samplers above and below dams on the Ohio River, and attributed these differences to differing flow regimes above and below the dams. They found the below-dam samplers were composed of large-river rheophilic species such the chironomid (*Polypedium convictum*) and the caddisfly (*Hydropsyche orris*), while these taxa above the dam were almost completely absent and were dominated by the amphipod (*Gammarus* sp. and *P. illinoense*). The release of cold, hypoxic water from dams on the Ohio River is not a factor because Ohio River pools do not stratify and water is released over the top of the dam or just below the surface.

Exotic Species

Several aquatic exotic species are well established within the upper Ohio River. Two well-known species are the common carp (*Cyprinus carpio*), and zebra mussel (*Dreissena polymorpha*). The common carp was introduced into the U.S. by the U.S. Fish Commission in the 1800s. Since then the impacts of this exotic, such as redistribution of sediment and destruction of aquatic vegetation, are well documented, and have been quite profound in many systems, especially wetlands (Johnson et al. 1997, Loughheed et al. 1998). Although the common carp no longer dominates fish samples in the upper Ohio River, as it historically has (USFWS 1895, 1986), its negative impacts are still present.

Likewise, the impacts of the zebra mussel, primarily on the benthic communities, have been documented. This species was introduced into the Great Lakes through discharge of ballast water from international shipping vessels and has since spread to most shallow-water areas in lentic and semi-lotic systems throughout the Midwestern U.S. Zebra mussel impacts on native unionids have been especially severe. Zebra mussels can form dense clusters on native unionids, outcompeting natives for food and oxygen and adversely affecting reproduction. Zebra mussels' possible effects on macroinvertebrate communities, as described previously, are also becoming apparent.

Potential exotic species invasions that could further impact native Ohio River fauna are three species of Asian carp: the bighead carp (*Hypophthalmichthys nobilis*), silver carp (*Hypophthalmichthys molitrix*), and black carp (*Mylopharyngodon piceus*). Bighead and silver carp are large filter-feeders that compete with larval fishes, paddlefish, bigmouth buffalo, and

freshwater mussels. In addition, boaters have been injured by silver carp when carp jump from the water into or over boats in response to outboard motors. Black carp are molluscivores and may further impact freshwater mussel populations in the upper Ohio River.

Navigation Pool Specific Descriptions

Emsworth Pool:

Emsworth dam actually consists of two separate dams located on either side of Neville Island. Emsworth pool covers RM 0.0 - 6.2, and includes 6.7 miles of the Allegheny River and 11.2 miles of the Monongahela River. This pool is characterized by industrialization and urbanization, with numerous barge docks and industrial facilities located along the banks (USFWS 2001(b)).

Three islands are located in this pool: Brunot, Davis (located at the head of Neville Island), and a portion of Neville. Brunot and Neville islands are heavily industrialized. Of the islands in this pool, Davis Island has the greatest amount of available fish and wildlife habitat consisting mostly of deciduous forest (USFWS 2001(b)).

The floodplain in this pool has been almost completely surrounded by industrial and residential development. Roads or railroads are located immediately adjacent to the river on both sides of the channel. This has eliminated any opportunity for riparian habitat to be maintained or developed. In 1984 aerial photos, some forested floodplain habitat does appear to be intact on the right descending bank just downstream of the main channel dam. However, this habitat has been fragmented by residential development, and it can be expected that development has progressed since the time these photos were taken (USFWS 2001(b)).

At the confluence of the Monongahela and Allegheny rivers, the substrate is primarily sand. A ribbon of silt occurs along the left descending bank from the confluence to the inlet of Chartiers Creek. Near the head of Neville Island on the right descending side before the dam, substrates are primarily gravel, however in the backchannel of the island before the dam substrates consist mostly of silt. The percentages of the total pool area that have substrates dominated by the following particle types are: silt - 8.5%; sand - 27.6%; gravel - 29.2%; cobble - 2.1%; boulder <1%. Islands cover 30.7% of the total pool area. The remaining areas are unclassified (USFWS 2001(b)).

Fish of Emsworth Pool

Due to relatively limited aquatic habitat and poor water quality, diversity and abundance of fish are reduced compared with downstream pools. Channel catfish (*Ictalurus punctatus*) predominate the pool. Other species present include: smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), walleye (*Stizostedion vitreum*), freshwater drum (*Aplodinotus grunniens*), sauger (*Stizostedion canadense*), gizzard shad (*Dorosoma cepedianum*), common carp (*Cyprinus carpio*), quillback (*Carpionodes cyprinus*), and shorthead redhorse (*Moxostoma macrolepidotum*) (USFWS 2001(b)). As stated above, ORSANCO has been conducting night electroshocking surveys for Ohio River fish since 1991 and they have reported 47 taxa of fish (including hybrids) from Emsworth Pool (ORSANCO 1998). Appendix B lists the taxa collected

in the Emsworth Pool from these surveys. Fish assemblages in the upper three lock chambers of the Ohio River were also sampled by ORSANCO and cooperating state and federal agencies between 1957 and 2005 (ORSANCO 1998). Raw data for these collections are presented in Appendix D.

Freshwater Mussels of Emsworth Pool

No historical records of freshwater mussels exist for the Emsworth Pool (Watters et al. 2003). However, freshwater mussel surveys were conducted by the Pittsburgh District Corps, in the Emsworth Pool of the upper Ohio River during the field season of 2008. The results of this 2008 survey are not available at this time for inclusion in this report.

Dashiels Pool:

Like the Emsworth Pool, this pool's floodplain has been heavily developed. Development is concentrated adjacent to the river, leaving little to no habitat intact. Some forested land does appear to exist surrounding the locks of Dashiels dam. Development is steadily spreading to areas farther away from the river which has fragmented any habitat still remaining. Roads run directly adjacent to both sides of the river, however in some locations they do move away from the bank. In these cases, the area between the road and the river is almost always completely developed, once again leaving little land available for riparian habitat. Neville Island is the only island located in this pool. As discussed above, this island is heavily developed and has little habitat value for fish and wildlife species (USFWS 2001(b)).

There is a prominent shallow water shoal downstream of Emsworth Dam that has been identified as a resource category 1 habitat by the Service. This shoal, which is periodically exposed, is used by migratory waterfowl, provides walleye and sauger spawning and feeding habitat, and is utilized by prey species of many fish and shore birds (USFWS 2001(b)).

Downstream of the dams, on both sides of Neville Island, substrates are mostly sand. Downstream and adjacent to the toe of Neville Island gravel is dominant on the main channel side, and silt is dominant along the backchannel side. Silt-dominated substrates continue in a band downstream on the left descending bank. Substrates dominated by silt cover 9.4% of the total pool area. Sand covers 34.9%, gravel 13.5%, cobble 1.3%; and boulder < 1%. Neville Island covers 35% of the total pool area (USFWS 2001(b)).

Fish of Dashiels Pool

Dominant fish species in this pool include: common carp, freshwater drum, and channel catfish. Smallmouth bass, spotted bass (*Micropterus punctulatus*), and walleye are reasonably abundant. The appearance of river redhorse (*Moxostoma carinatum*), quillback, white catfish (*Ameiurus catus*), and striped shiner (*Luxilus chrysocephalus*) in this pool indicate recent improvements in water quality (USFWS 2001(b)). As stated above, ORSANCO has been conducting night electroshocking surveys for Ohio River fish since 1991 and they have reported 54 taxa of fish (including hybrids) from Dashiels Pool (ORSANCO 1998). Appendix B lists the taxa collected in Dashiels Pool from these surveys. Fish assemblages in the upper three lock chambers in the Ohio River were also sampled by ORSANCO and cooperating state and federal agencies between 1957 and 2005 (ORSANCO 1998). Raw data for these collections are presented in Appendix D.

Freshwater Mussels of Dashields Pool

The Dashields Pool has one of the longest records of mussels in the river, dating to 1800s (Watters et al. 2003). Records indicate that this reach once supported a thriving mussel community of perhaps 40 species, including the extinct *Epioblasma torulosa*, last seen in 1800. Recent surveys have found less than ten species. It is clear that the decline began as early as the late 1800s. Low lift wicket dams were operating in the upper Ohio River at Davis Island from 1885. Dashields Dam was completed in 1929 and no further surveys were conducted until the 1970s. At that time the pool probably still supported over 20 species. No marked decline attributable to the dam is apparent in the data. Species richness began to decline in 1980. After briefly leveling off in the late 1980s, the fauna dramatically declined with the arrival of zebra mussels in 1991. The fauna today is largely comprised of mussels using freshwater drum or catfish as their hosts. The endangered *Cyprogenia stegaria* probably still exists in the pool (Watters et al. 2003).

Table 3 provides a list of freshwater mussel species found in Dashields Pool from Ohio State University museum records (from Watters et al., 2003). In addition, freshwater mussel surveys were conducted by the Pittsburgh District Corps in the Upper Ohio River in the Dashields Pool during the field season of 2008. The results of the 2008 survey are not available at this time for inclusion in this report.

Table 3. OSU museum records indicating mussels of the Dashields and Emsworth pools of the Ohio River in Pennsylvania (from Watters et al., 2003).

Taxon			Number	Last Year	Abundance	Federal Status
			Years Found	Seen		
Dashields Pool						
<i>Actinonaias ligamentina ligamentina</i>			6	1982		
<i>Actinonaias Ligamentina carinata</i>			2	1998	R	
<i>Amblema plicata</i>			17	2000		
<i>Anodonta suborbiculata</i>			2	1998	R	
<i>Cyprogenia stegaria</i> ^a			5	1997	U	E
<i>Ellipsaria lineolata</i>			11	2000		
<i>Elliptio crassidens</i>			5	1995		
<i>Elliptio dilatata</i>			2	1879	R	
<i>Epioblasma rangiana</i>			1	1800	R	
<i>Epioblasma torulosa</i> ^a			1	1800	R	
<i>Epioblasma triquetra</i> ^a			1	1879	R	
<i>Fusconaia ebena</i>			2	1909	R	
<i>Fusconaia flava</i>			11	2000		
<i>Fusconaia Maculata maculate</i>			5	1909	R	
<i>Lampsilis abrupta</i>			3	1991	R	
<i>Lampsilis cardium</i>			12	1999		

<i>Lampsilis ovata</i> ^a	2	1879	R	
<i>Lampsilis siliquoidea</i>	9	1998		
<i>Lasmigona complanata</i>	14	2000		
<i>Lasmigona compressa</i>	1	1979	R	
<i>Lasmigona costata</i>	8	1998		
<i>Leptodea fragilis</i>	12	1999		
<i>Leptodea leptodon</i>	2	1879	R	
<i>Ligumia recta</i>	8	2000	U	
<i>Megaloniais nervosa</i>	10	2000		
<i>Obliquaria reflexa</i>	15	2000		
<i>Obovaria olivaria</i> ^a	1	1879	R	
<i>Obovaria retusa</i> ^a	1	1879	R	E
<i>Obovaria subrotunda</i>	10	1999		
<i>Plethobasus cyphus</i>	10	2000		C
<i>Plethobasus striatus</i>	2	1909	R	
<i>Pleurobema cordatum</i>	15	2000		
<i>Pleurobema sinuoxia</i>	7	1998	U	
<i>Potamilus alatus</i>	16	2000		
<i>Potamilus ohioensis</i>	7	1995		
<i>Ptychobranchnus fasciolaris</i> ^a	1	1800	R	
<i>Pyganodon grandis</i>	7	1993		
<i>Quadrula Cylindrical cylindrica</i> ^a	2	1879	R	
<i>Quadrula metanevra</i>	15	2000		
<i>Quadrula nodulata</i>	1	1800	R	
<i>Quadrula pustulosa</i>	16	2000		
<i>Quadrula quadrula</i>	19	2000		
<i>Strophitus undulates</i>	5	1995	U	
<i>Toxolasma parvus</i>	2	1979	R	
<i>Truncilla donaciformis</i>	12	1999		
<i>Truncilla truncata</i> ^a	9	2000		
<i>Uniomerus tetralasmus</i>	2	1985	R	
<i>Utterbackia imbecillis</i>	7	1998		
<i>Villosa iris</i>	1	1979	R	

^a = species listed by Taylor (1989) as probably extirpated from the upper Ohio River.

R = rare

U = uncommon

Montgomery Pool:

Land use within the floodplain of the Montgomery Pool is primarily industrial/developed, and roads border both sides of the river. There is little to no riparian buffer in the first half of the pool. Any habitat areas within the floodplain are effectively separated from the river by roads or

development. Between RM 24.0-26.0, the river is flanked by the densely developed towns of Rochester, Bridgewater and Monaca. Riparian zones and floodplains become increasingly less urbanized/industrialized downriver from Pittsburgh (USFWS 2001(b)).

The Beaver River is a major tributary that enters the Ohio at RM 25.5 and provides shallow water habitat areas for fish and other aquatic species. A strip of riparian and terrestrial forested habitat begins on the left descending bank across from the confluence of Beaver River, and continues to approximately RM 28.0. Industrial development of the left descending bank once again increases downstream from here, while development of the right descending bank decreases somewhat. Some undeveloped land is adjacent to Four Mile Run at approximately RM 29.8. A significant tributary, Raccoon Creek, flows into the Ohio around RM 29.7 (USFWS 2001(b)).

Near the town of Ohioview, just upstream of the Montgomery Locks and Dam, is a large natural embayment area of approximately 100 acres (40.5 hectares). This is the most upstream location proposed for acquisition by the Service's Ohio River Islands National Wildlife Refuge (ORINWR) and has been identified as resource category 1 habitat. The 1988 Hydroelectric Development in the Upper Ohio River Basin Environmental Impact Statement said this is "probably the most ecologically significant area in the upper Ohio River" (FERC 1988). The embayment portion of this habitat is a nursery area for forage fish, and provides feeding and cover habitat for numerous species of birds and fish. Palustrine forested and immature bottomland hardwood habitats are found on the eastern and northeastern shoreline of the embayment. This embayment may contain the last remaining silver maple-American sycamore stand in the Pennsylvania section (USFWS 2001(b)).

The majority of this pool has sand substrates, with scattered pockets of gravel. Larger areas that are covered primarily with gravel exist in the tailwaters of Montgomery Dam, between Legionville Run and Tevebau Run on the right descending bank, and downstream of the Beaver River approximately between RM 26.0-28.0. The tailwaters of Montgomery Dam have been classified as a resource category 2 habitat by the Service. The percent of the total pool area with substrates consisting primarily of silt is 5.4%; sand - 66.4%; gravel - 23.5%; cobble, boulder, and bedrock are all < 1%. There are no islands located in the Montgomery Pool (USFWS 2001(b)).

Fish of Montgomery Pool

Common carp and channel catfish are the most common fish species collected in surveys. Species that have recently begun to appear in surveys include smallmouth buffalo (*Ictiobus bubalus*), river redhorse, northern hogsucker (*Hypentelium nigricans*), goldfish (*Carassius auratus*), white catfish, and silverjaw minnow (*Notropis buccatus*) (USFWS 2001(b)). As stated above, ORSANCO has been conducting night electroshocking surveys for Ohio River fish since 1991 and they have reported 67 taxa of fish (including hybrids) from Montgomery Pool (ORSANCO 1998). Appendix B lists the taxa collected in Montgomery Pool from these surveys. Fish assemblages in the upper three lock chambers in the Ohio River were also sampled by ORSANCO and cooperating state and federal agencies between 1957 and 2005 (ORSANCO 1998). Raw data for these collections are presented in Appendix D.

Freshwater Mussels of Montgomery Pool

The mussel data from this pool are insufficient to draw any conclusions (Watters et al. 2003). Only two species occur in the database; neither is rare and both are more properly considered stream and lake species (Watters et al. 2003). The giant floater mussel (*Pyganodon grandis*) was found once in 1984 within the Montgomery Pool and is considered having a rare abundance within the pool (Watters et al. 2003). The rainbow shell mussel (*Villosa iris*) was found once during 1979 within the Montgomery Pool and is considered having a rare abundance within the pool (Watters et al. 2003).

In addition, freshwater mussel surveys were conducted by the Pittsburgh District Corps in the Upper Ohio River in the Montgomery Pool during the field season of 2008. The results of this 2008 survey are not available at this time for inclusion in this report.

New Cumberland Pool:

The floodplain of the New Cumberland Pool is less developed than those upstream. Most of the floodplain consists of clusters of residential and industrial developments interspersed with agricultural and forested lands. The left descending bank has some large tracts of undeveloped land adjacent to the river with intact riparian vegetation. The floodplain surrounding RM 41.0-45.0 is heavily developed due to the presence of East Liverpool on the Ohio side and the towns of Chester and Newell on the West Virginia side. This area is adjacent to the Pennsylvania-West Virginia border. A large impoundment that is not adjoining the mainstem has been created on Little Mill Creek (confluence with Ohio at RM 40.1). Based on calculations conducted by ORSANCO in 1988, land use between RM 40.0 and 84.2 (includes Pike Island Pool) was 39% forested, 27% cropland, 14% pasture, 14% urban, and 6% other (ORSANCO 1998). The segment of the river between RM 40 and 54.4 also supports 9 small boat facilities, 2 industrial intakes, 1 municipal intake, 1 power plant, 11 industrial discharges, and 3 municipal discharges (USFWS 2001(b)).

The New Cumberland Pool contains 4 islands: Phillis, Georgetown, Babbs, and the Cluster Islands. These islands total 84.3 acres (34.1 hectares) in size and have 101.2 acres (41.0 hectares) of backchannel habitat. Babbs Island is the largest, with 32.6 acres (13.2 hectares). Babbs and the Cluster Islands appear to be eroding. Baker Island formerly existed in this pool between RM 49.4 and 49.7, but it has been dredged and eroded away. Mature bottomland hardwoods and old field are the dominate habitat types on the islands. Phillis Island provides a good example of the diverse immature bottomland hardwood habitat type. Phillis and Georgetown islands are part of the ORINWR (USFWS 2001(b)).

The New Cumberland Pool has 7 embayments that provide a total of 4.4 miles of slack water habitat. A large scrub-shrub wetland exists on the north bank of the Ohio, upstream from the tip of Georgetown Island. Four priority wetland and embayment areas (i.e., off the head of Phillis Island, off the head of Georgetown Island, Congo Run, and Tomlinson Run) were identified for this pool. These areas total 120.7 acres (48.8 hectares) and are dominated by immature bottomland hardwood, riverine open water, and palustrine forested habitats. One of the priority areas, Tomlinson Run, flows into the Ohio at approximately RM 53.0, just downstream from the Cluster Islands. Tomlinson Run State Park is located upstream on this tributary. The two

priority wetland areas identified in this pool total 22.3 acres (9.0 hectares). Although not a priority area, Squirrel Run, another small tributary, is located just upstream from New Cumberland Locks and Dam. This stream travels through some intact terrestrial habitat (USFWS 2001(b)).

Sixteen percent of the total pool area has substrates made up of 75% or more large sand, gravel, and cobble. Areas where silt and fine sand compose half or more of the substrate make up 52.8% of the total pool area. The substrate composition of this pool closely conforms to the expected gradient of an impounded system, with larger grained material dominating downstream of the dam and in the tailwaters, while smaller grained particles are predominate further downstream towards the approach of the dam (USFWS 2001(b)).

High percentages of sand, gravel and cobble are found in the center of the main channel from the dam tailwaters to the head of Phillis Island. Sand and gravel deposits are also found at the head of Georgetown Island, continuing downstream along the shore until the confluence of Little Beaver Creek. The remainder of the pool downstream of Babbs Island has substrate mainly composed of silt and fine sand. In the mid-1980s, the head of Georgetown Island was experiencing severe erosion due to illegal sand and gravel dredging. Since that time, bank stabilization projects have been completed to alleviate this problem (USFWS 2001(b)).

The areas surrounding Phyllis and Georgetown islands provide important fish habitat and have been identified as resource category 1 habitat by the Service. The backchannels to these islands have significant underwater and overhanging cover. The Little Beaver River, Yellow Creek, and Little Yellow Creek all provide shallow water habitat at their mouths that is utilized heavily by fish (USFWS 2001(b)).

Fish of the New Cumberland Pool

The New Cumberland Pool has similar fish species assemblages to the other upstream pools. Silver redhorse (*Moxostoma anisurum*), river chub (*Nocomis micropogon*), and central stone roller (*Camptostoma anomalum*) have appeared within last ten years. The WH Sammis power plant is located ½ mile upstream of New Cumberland Locks and Dam. Fish and benthic macroinvertebrate samples have been conducted here annually between 1977 and 1994 as part of a power plant monitoring program. A total of 52 fish species have been collected as part of this monitoring. Numerically gizzard shad dominated those collections (87%). Emerald shiner (*Notropis atherinoides*), smallmouth bass, sauger, channel catfish, and golden redhorse (*Moxostoma erythrurum*) were also numerically abundant. By biomass, common carp, smallmouth bass, golden redhorse, and smallmouth buffalo were dominant. Three fish species of special concern in Ohio were collected during the 1994 sampling: mooneye (*Hiodon tergisus*), river redhorse (found at this location since 1991), and bluebreast darter (*Etheostoma camurum*). This represents the first collection of bluebreast darter since power house monitoring began. This species had not been previously reported in the Ohio River mainstem (USFWS 2001(b)).

As stated above, ORSANCO has been conducting night electroshocking surveys for Ohio River fish since 1991 and they have reported 53 taxa of fish (including hybrids) from the New Cumberland Pool in Pennsylvania (ORSANCO 1998). Appendix B lists the taxa collected in the

New Cumberland Pool from these surveys. Fish assemblages in the upper three lock chambers in the Ohio River were also sampled by ORSANCO and cooperating state and federal agencies between 1957 and 2005 (ORSANCO 1998). Raw data for these collections are presented in Appendix D.

Freshwater Mussels of the New Cumberland Pool

The few mussel records available from this pool all date from the 1990s, after both dam construction and zebra mussel introduction had taken place (Watters et al. 2003). This data suggested a dramatic decline in mussel diversity following the construction of the dam (Watters et al. 2003).

ORINWR staff conducted mussel surveys near Phillis and Georgetown islands in the late 1990s. A total of 10 species were identified at Phillis Island over 5 years, while only one species was collected in the 1995 survey at Georgetown (USFWS 2001(b)). Specific mussel records also occur for the areas of the Phillis and Georgetown islands in New Cumberland Pool (Table 4). The mucket (*Actinonaias ligamentina*) and the spike (*Elliptio dilatata*) were re-introduced from the Allegheny River into the back channel of Phillis Island in the autumn of 2004.

Table 4. Freshwater mussel species recorded between 1994 and 2004 in the vicinity of Phillis and Georgetown islands in the New Cumberland pool of the Ohio River (Personal Communication, Patty Morrison, Ohio River Islands National Wildlife Refuge).

Island	Species
Phillis Island	
	<i>Actinonaias ligamentina</i> ^a
	<i>Elliptio dilatata</i> ^a
	<i>Quadrula quadrula</i>
	<i>Leptodea fragilis</i>
	<i>Potamilus alatus</i>
	<i>Utterbackia imbecillis</i>
	<i>Truncilla donaciformis</i>
	<i>Obliquaria reflexa</i>
	<i>Pyganodon grandis</i>
	<i>Lampsilis siliquoidea</i>
	<i>Lasmigona costata</i>
Georgetown Island	
	<i>Leptodea fragilis</i>
	<i>Quadrula quadrula</i>

^a Species was reintroduced from the Allegheny River into the Phillis Island back channel, Autumn 2004.

In addition, freshwater mussel surveys were conducted by the Pittsburgh District Corps in the upper Ohio River in the upper portion of the New Cumberland Pool during the field season of 2008. The results of this 2008 survey are not available at this time for inclusion in this report.

Water Quality and Contaminants

The Service's previous planning aid reports briefly discussed environmental contaminants. They stated that although significant progress had been made in improving the water quality of the river, a large number of industrial discharges still flow into the river, and that a number of illegal and accidental discharges are detected annually.

Water quality in the upper Ohio River varies. The 2004 Biennial Assessment of Ohio River Water Quality Conditions (ORSANCO 2004) reports the river's ability to support each of its four designated uses: warm water aquatic life; public water supply; contact recreation; and fish consumption, for years 2002 and 2003. Table 5 summarizes the results of this report for the portion of the Ohio River in Pennsylvania. All of the River in Pennsylvania fully supported the warmwater habitat aquatic life use designation in 2002 and 2003, meaning that it supported a balanced, integrated, adaptive community of warmwater organisms. The criteria for supporting a public water supply were met at all river reaches in Pennsylvania except for the reach between RM 0 and 2.2, which exhibited high levels of fecal coliform bacteria. The river reach between mile 0 and 6.2 did not support the contact recreation beneficial use, due to elevated levels of pathogenic bacteria, but the remaining length of the Ohio River partially supported the contact recreation beneficial use, because of only slightly elevated or less frequent elevated levels of bacteria. Fish consumption beneficial use was only partially supported throughout the length of the Ohio River in Pennsylvania, because of polychlorinated biphenyl (PCB) fish consumption advisories present in the river, as well as exceedence of the water quality criterion for dioxin. Because "No consumption" advisories were not in effect for all commonly consumed fish species, the river in Pennsylvania was not included in the "Not Supporting" category.

On April 11, 2001, Pennsylvania issued a general, statewide health advisory for recreationally caught sport fish that is still in effect. The state advises that no more than one meal (one-half pound) per week of sport fish caught in the state's waterways be eaten, to protect against eating large amounts of fish that have not been tested or may contain unidentified contaminants. In addition to this general statewide advisory, restrictions have been issued for specific fish species in the Ohio River (Table 5).

Table 5. Summary of 2006 fish advisories for the Ohio River in Pennsylvania (Pennsylvania DEP 2006).

<u>Area Under Advisory</u>	<u>Species</u>	<u>Meal Frequency</u>	<u>Contaminant</u>
Pittsburgh Point (RM 0.0) to the Montgomery Lock and Dam (RM 31.7)	Walleye/sauger White bass Freshwater drum	1 meal/month	PCB
	Carp Channel catfish	Do Not Eat	PCB
Montgomery Lock and Dam (RM 31.7) to the state border (RM 40.0)	White bass Hybrid Striped bass Freshwater drum Walleye 17" and over	1 meal/month	PCB
	Flathead catfish Channel catfish under 17"	6 meals/year	PCB
	Channel catfish over 17" Carp	Do Not Eat	PCB

Special Habitats

Ohio River Floodplain

Fortney, et al. (2001) characterized the change in land cover in the floodplain of the upper 55 miles of the Ohio River from 1954 to 2000. They characterized the floodplain as heavily influenced by industrial and urban development. In the period between 1954 and 2000, the number of commercial marinas, private docks, and fleeting sites in the upper Ohio River increased substantially, and a nearly 60% increase in industrial and commercial land use occurred during this same time period. The length of riparian habitats with shrub or tree cover declined during the 46-year period, and a corresponding increase in herbaceous and unvegetated shoreline occurred. Currently, the floodplain of the upper Ohio River is primarily developed with industrial, commercial, and residential land uses. However, beyond the floodplains, second growth forest dominates much of the hilly landscape.

Little Beaver Creek National Scenic River

Little Beaver Creek, which flows into the Ohio River on the right descending bank (RDB) at approximate RM 39.9 (Figure 4), was designated as a National Scenic River on October 23, 1975. A total of 33 miles of this stream system carry the designation. Almost all of this scenic river lies within Ohio, but it flows through Pennsylvania for less than a mile before its confluence with the Ohio River just east of the Pennsylvania/Ohio state line. The National Park Service lists the following resource types as protected values in the Little Beaver Creek system:

Natural Resources, Scenic Resources, Recreational Resources, Historic Resources, Fish and Wildlife Resources, and Geologic Resources (Personal communication, Sue Jennings, NPS, Omaha, Nebraska). Little Beaver Creek represents some of the most rugged and wildest land in Ohio. Forested to a width of over a mile in places, it is inhabited by the state of Ohio-endangered eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) and retains most of its original aquatic community.



Figure 4. Little Beaver Creek National Scenic River, looking upstream from the State Route 68 bridge.

Islands

A total of five islands exist along the Ohio River within the project study area, including the upper third of the New Cumberland Pool. The Service's 1983 report noted Brunot and Neville islands as being highly developed, while Davis, Phillis, and Georgetown Islands were virtually free of significant development. The Service's 1983 report described an embayment and wetland complex located near the Montgomery Lock and Dam and a small emergent and forested wetland complex located along the left descending bank in the Dashields Pool.

Ohio River Islands National Wildlife Refuge

ORINWR is another example of nationally designated lands within the Ohio River in Pennsylvania and was established in 1990 under authority of the Fish and Wildlife Act of 1956. The refuge currently

consists of all or part of 21 islands and three mainland tracts in the Ohio River, encompassing 3,221 acres (1,303.5 hectares) of valuable fish and wildlife habitat. As acquisition progresses, the refuge may include up to 35 river islands. The acquisition focus area stretches nearly 400 RMs from Shippingport, Pennsylvania, to Maysville, Kentucky, and includes four states (Pennsylvania, Ohio, West Virginia, and Kentucky). Georgetown Island and Phillis Island are the only two islands in Pennsylvania that are part of the refuge.

The Ohio River Islands contain near-natural assemblages of plants and animals that are endemic to the river. The distribution of bottomland and riparian habitats, and deep and shallow water aquatic habitats, make these areas extremely beneficial to fish and wildlife species. A huge diversity of species (waterfowl, shore and wading birds, neotropical migratory land birds, furbearers, fish and benthic organisms, including freshwater mussels) find these areas invaluable for resting, feeding, nesting, spawning, and other necessary life functions. The deep and shallow water habitats associated with the islands are major fish and mussel production areas of the Ohio River. The often undisturbed island shorelines, especially the heads and backchannels, are favored sport fishing areas. Over 200 bird species (76 of which breed there), 42 mollusk species, 15 species of reptiles and amphibians, 101 species of fish, 25 mammals, and 500 species of plants have been identified so far within the entire Refuge (USFWS 2001(a)).

Public uses of all types have occurred on and around the Ohio River Islands in recent years. The relatively undisturbed nature of many of the islands have made them popular areas for nature study, hunting, fishing, camping, picnicking, and pleasure boating. As islands are acquired for the refuge, only those uses determined to be compatible with refuge purposes will be allowed to continue. Compatible Use is defined as "...a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge." Wildlife-dependent recreational use is defined as "...a use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation" (USFWS 2001(a)).

Georgetown and Phillis islands in the upper Ohio River provide habitat for the bald eagle, which has been observed foraging on and near the islands during the winter. No bald eagle nests have been recorded on either of these two islands. The islands also provide habitat for the federally endangered Indiana bat, although no surveys for this species have been conducted to confirm their presence. No federally-listed mussels have been located on Georgetown or Phillis islands, although the federally endangered pink mucket (*Lampsilis abrupta*) and fanshell (*Cyprogenia stegaria*) are present on refuge islands bordering Ohio (USFWS 2001(a)).

Unresolved issues at Georgetown and Phillis islands include the loss of island acreage. Fortney et al. (2001) indicated that the surface area for Phillis and Georgetown islands has decreased by approximately 27.2 acres (11 hectares) (60%) and 19.8 acres (8 hectares) (80%), respectively between 1954 and 2000. The losses are mainly related to the increase in pool elevation associated with the installation of New Cumberland Locks and Dam, and from shoreline erosion. Fortney, et al. (2001) noted that the banks on the navigation channel side of the islands appeared to be unstable and unvegetated. We understand that Georgetown Island had, in 1994, an area of 8.4 acres (3.4 hectares), but the area was only 5 acres (2.0 hectares) in 2004, a loss of about 3.6 acres (1.4 hectares) in 10 years. This loss of acreage has been attributed to dredging near the

island before it was purchased by the refuge. The Service is desirous of having a 2,000-foot buffer around its islands that would prevent dredging within this zone. Thus far, these dredging limitations have not been adopted by permitting agencies.

Thorp (1992) stated that Ohio River islands are important in increasing aquatic habitat heterogeneity, and found that Ohio River islands he studied had significant positive effects on macroinvertebrate density and diversity related to changes in physical habitat characteristics. He recommended preservation of riverine islands in the Ohio River. Areas in the Pennsylvania reach of the Ohio River and the New Cumberland Pool in Ohio that might be of interest to the Service as possible additions to the refuge include Babbs Island in the New Cumberland Pool in Ohio, and the Ohioview Peninsula and associated embayment area just upstream of the Montgomery Locks and Dam on the right descending bank.

Natural Heritage Sites

The Western Pennsylvania Conservancy (WPC) (1993, 1994) has documented the most significant natural areas in Allegheny and Beaver counties, Pennsylvania, through which the upper Ohio River flows. These natural areas include Georgetown and Phyllis islands, the mouths and valleys of several Ohio River tributaries, as well as several upland areas. Of particular note is the Ohioview Peninsula and adjacent embayment, which was discussed by the Service in two previous planning aid reports (1985, 1986). The Service stated that embayment contains an excellent centrarchid assemblage, is very productive (high catch per unit effort), and provides nursery habitat for a variety of fish species. It also provides habitat for many waterfowl and piscivorous (osprey, kingfisher) bird species due to a high density of invertebrates and fish as a food source for birds.

The WPC (1993) described the Ohioview Peninsula as 30 acres (12.1 hectares) of floodplain forest and shallow-water backchannel area that represent some of the last such natural features along the upper Ohio River (Figure 5). Small wetlands have formed along the fringes of the peninsula and embayment where the river current has less effect on the shoreline (Figure 6). The mature forest that covers the western portion of the peninsula, combined with the shallow embayment and wetland areas, could provide excellent habitat for the federally endangered Indiana bat, although no surveys for this species have been conducted at this site. The WPC states that efforts should be made to protect this site from any further disturbances. The upstream end of the peninsula has been excavated in the past and what remains is an area in which the topsoil has been removed and invasive plant species have become established. The WPC recommends that the topsoil be replaced and graded so that the original topography of this section is restored and the floodplain forest can be encouraged to expand to this part of the peninsula. Recreational use should also be limited to low-impact activities (no ATVs). The Ohioview Peninsula and adjacent embayment are on the Fish and Wildlife Service's refuge Land Protection Plan for possible inclusion into the ORINWR.



Figure 5. Forested floodplain habitat on the Ohioview Peninsula



Figure 6. Wetland fringe and mudflat area of embayment adjacent to Ohioview Peninsula

Wetlands

The area in and surrounding the Ohio River in Pennsylvania has few remaining wetlands. This portion of the river has a naturally restricted floodplain, due to the mountainous topography, and much of the already small floodplain has been developed into industrial and residential uses, and in the process, draining and filling most of the wetlands that may have once existed in this part of the river. A review of the National Wetlands Inventory (NWI), located at <http://www.fws.gov/nwi/>, indicates that wetlands occur at twelve locations along the river in Pennsylvania. Please see Appendix H for the locations and individual descriptions of these wetlands. Aerial photographs of these wetlands indicate that many of them are surrounded by industrial and residential land-uses, which would impact the quality of these wetlands. Given the surrounding developed land uses, however, these wetlands may act as local refugia for wildlife species, and some of them may be especially important given their rarity. Note that the NWI is not an exhaustive list of all wetlands, and other wetlands may exist within or adjacent to the project area. For example, although not documented on the NWI, wetlands occur in the Ohioview Peninsula embayment.

Resource Classification/FWS Mitigation Policy

As stated in the Service's January 1985 and February 1986 Reports to the U.S. Army Corps of Engineers, the following are the Service's classifications of important high quality resource areas in the proposed project area which may be impacted by the Upper Ohio Navigation Study. Impacts to these areas should be avoided and minimized to the most extent practicable. The intent of the Service's Mitigation Policy is to ensure that the most important fish and wildlife resources receive the greatest level of mitigation when the environment of a particular area is changed by land and water developments. By designating four resource categories, the Service can vary the degree of mitigation recommended according to the value and scarcity of the habitat at risk of being impacted. Note that evaluation species are those important fish and wildlife resources with high public interest or ecological significance, or both. The following high quality resources have been classified in accordance with the Service's Mitigation Policy (Federal Register, Vol. 46, No. 15, January 23, 1981).

Resource Category and Mitigation Goal

<u>Resource Category</u>	<u>Criteria for Resource Category Designation</u>	<u>Mitigation Planning Goal</u>
1	Habitat is of high value for evaluation species and is unique and irreplaceable	No loss of existing habitat value
2	Habitat is of high value for evaluation species and is scarce or becoming scarce	No net loss of in-kind habitat value

3	Habitat is of high to medium value for evaluation species and is abundant	No net loss of habitat value, while minimizing the loss of in-kind habitat value
4	Habitat is of medium to low value for evaluation species	Minimize loss of habitat value

The following areas have been identified as high quality habitats in the project area:

<u>Habitat</u>	<u>Resource Category</u>	<u>Evaluation Species</u>
Montgomery Embayment Riverine Lower Perennial	1	merganser, osprey, wood duck, green heron, great blue heron, walleye, <i>Alosa</i> spp., <i>Centrarchid</i> spp., spotted sandpiper
Emsworth Tailwaters Riverine Lower Perennial	2	merganser, osprey, wood duck, green heron, great blue heron, walleye, <i>Alosa</i> spp., <i>Centrarchid</i> spp., spotted sandpiper
Dashields Tailwaters Riverine Lower Perennial	2	merganser, osprey, wood duck, green heron, great blue heron, walleye, <i>Alosa</i> spp., <i>Centrarchid</i> spp., spotted sandpiper
Montgomery Tailwaters Riverine Lower Perennial	2	merganser, osprey, wood duck, green heron, great blue heron, walleye, <i>Alosa</i> spp., <i>Centrarchid</i> spp., spotted sandpiper
Wetlands Palustrine Scrub-Shrub Palustrine Forested	2	mink, woodcock, black duck, swamp sparrow, green heron, yellow warbler, willow flycatcher, muskrat, great horned owl, pileated woodpecker, <i>Natrix</i> spp., red-shouldered hawk, barred owl, great blue heron, veery
Phillis Island Deciduous Forest	1	<i>Peromyscus</i> spp., red-shouldered hawk, pileated woodpecker, broad-

Palustrine Scrub-Shrub		winged hawk, wood thrush, barred owl, summer tanager, red-bellied woodpecker, box turtle, mink, woodcock, black duck, wood duck, swamp sparrow, green heron, yellow warbler, willow flycatcher
Georgetown Island	1	mink, woodcock, black duck, wood duck, swamp sparrow, green heron, yellow warbler, willow flycatcher, muskrat, great horned owl, pileated woodpecker, <i>Natrix</i> spp., red-shouldered hawk, barred owl, great blue heron, veery
Palustrine Scrub-Shrub		
Palustrine Forested		
Davis Island	3	<i>Peromyscus</i> spp., red-shouldered hawk, pileated woodpecker, broad-winged hawk, wood thrush, barred owl, summer tanager, red-bellied woodpecker, box turtle
Deciduous Forest		

Most of the remaining vegetated habitats in the study area are classified as resource category 3 habitats, while the industrialized and disturbed areas are classified as resource category 4.

Conclusion

Prior to European settlement, the upper Ohio River was a pristine system with abundant and diverse fish and wildlife resources. Settlement of the Ohio River Valley led to habitat alteration and pollution throughout the 19th and 20th centuries, which resulted in severe impacts to Ohio River biota. The construction and operation of navigational dams inundated a large amount of high-quality habitat (e.g. islands, their backchannels, and floodplain forest) and converted a free-flowing river to a more lentic (or pool-like) environment. Today the tailwater areas of these dams provide the highest value aquatic habitats. Other sources of impairment to the system have included point source pollution from industrial and municipal wastewater; non-point source pollution from logging, agriculture, and mining; and floodplain habitat alteration from human development. Much of the point source pollution has been reduced since passage of environmental legislation resulting in improvement in fish and macroinvertebrate assemblages in the river, and as a result the upper Ohio River is gradually recovering to a healthy natural system. However, remaining point and non-point sources of pollution still impact Ohio River biota. In addition, the impoundments remain a source of impairment to fish and wildlife resources of the upper Ohio River system. Existing and potential impacts from exotic species, and continued loss of island habitats, are a real threat to Ohio River biota. Protecting the few remaining high-quality habitats in the upper Ohio River, promoting natural flows and habitat heterogeneity within the river, and improving inventories of Ohio River biota present opportunities to benefit valuable fish and wildlife resources of the upper Ohio River.

Additional Information Needs

The Service is identifying additional information needs that should be pursued as the Corps continues its study of navigation modernization in the Upper Ohio River.

- 1) In order to avoid and minimize impacts to the aquatic environment of the Ohio River to the maximum extent practicable, the Corps should avoid impacts to high quality habitat areas (i.e., resource categories 1-3) as classified by the Service's Mitigation Policy to the maximum extent practicable. This can be accomplished by providing pre-construction plans of each lock chamber/dam reconfiguration to the Service and other resource agencies for their review and comment. Upon review of said plans, the Service may be able to provide ideas or methodologies regarding construction techniques which would further avoid and minimize impacts to the aquatic environment.
- 2) Following completion of the feasibility study and prior to construction of the proposed project the Corps should contact the Service's Pennsylvania and West Virginia field offices to determine whether federally-listed species may be impacted by the project.
- 3) The Corps should conduct Habitat Evaluation Procedures (HEP) Analyses for both aquatic and terrestrial habitats which may be impacted by the proposed project in order to determine amounts of habitat losses and mitigation needs. The HEP should be conducted with Service personnel, and any mitigation needs should be evaluated by the Service to determine their appropriateness.
- 4) The Corps should investigate the potential of both structural and non-structural techniques to improve fish passage and mussel hosts in the upper Ohio River. The Corps should continue to work cooperatively with the Service and other resource agencies in the development of fish passage techniques at each of the three locks and dams (Emsworth, Dashields, and Montgomery). The construction of fish passage structures at each of the three locks and dams is an important priority for migrating fish species such as the paddlefish and the sturgeon.
- 5) The Corps should work cooperatively with the Service, ORSANCO, Pennsylvania Fish and Boat Commission, and other resource agencies to provide for benthic trawling sampling on the upper Ohio River to better evaluate the status of the under-sampled bottom dwelling fishes.
- 6) The Corps should conduct analyses on the upper Ohio River in the project area to help address system-wide aquatic impacts within the three EDM pools associated with lock modifications of the Upper Ohio Navigation Study. One such methodology utilized by the Corps' Huntington District on lock improvements/widening is the Navigation Predictive Analysis Technique (NAVPAT). NAVPAT is a computer model which analyzes certain shear forces of fleet configurations on selected fish species in navigational pools. Although NAVPAT is not a methodology which predicts absolute impacts, it can be used as a planning level tool to rank alternatives (USFWS March 2008). The analysis tool utilized for this project should be the best scientific information/model available in order to most accurately determine system-wide aquatic

impacts. The Service should be an active participant in the selection of evaluation species and habitat models for the analysis.

This constitutes the report of the Service under provisions of the Fish and Wildlife Coordination Act. We look forward to opportunities for continued involvement as the study progresses into the alternative plan formulation stage, at which time we will provide more specific recommendations for minimizing and mitigating impacts. If you have any questions regarding this letter, please contact Laura Hill at the letterhead address or phone (304) 636-6586.

Sincerely,

Deborah Carter
Field Supervisor

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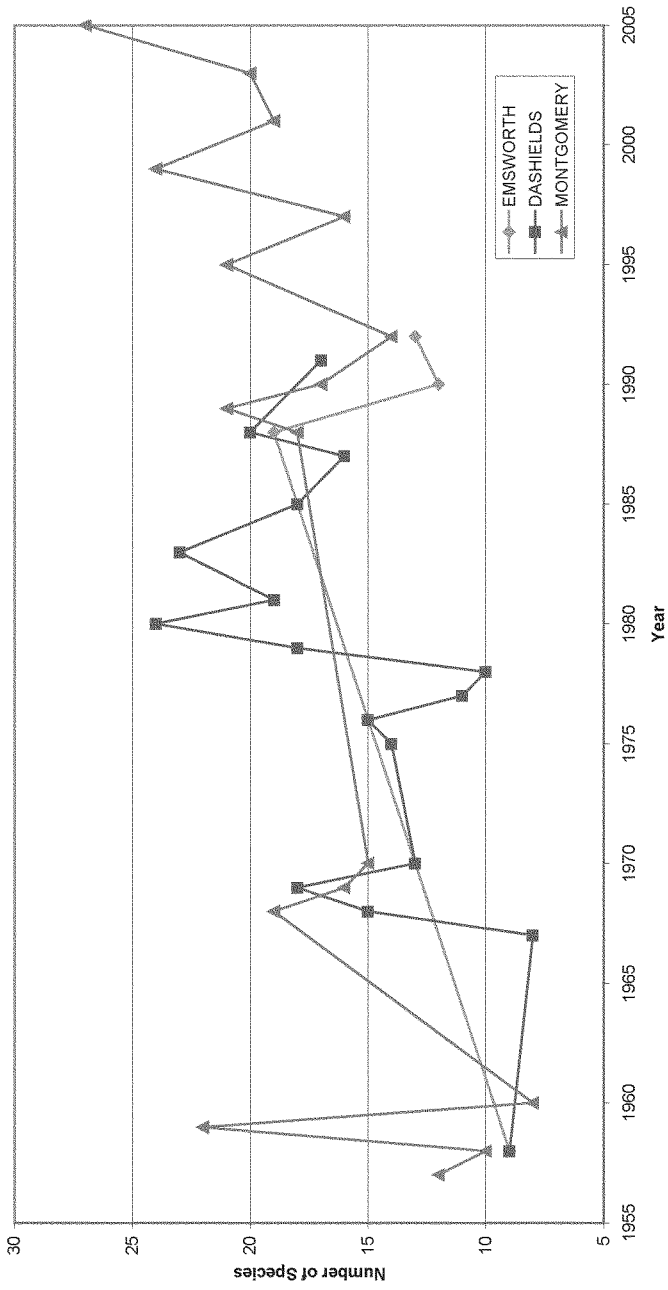


Figure 1. Total number of fish taxa collected during rotenone surveys of three upper Ohio River lockchambers.

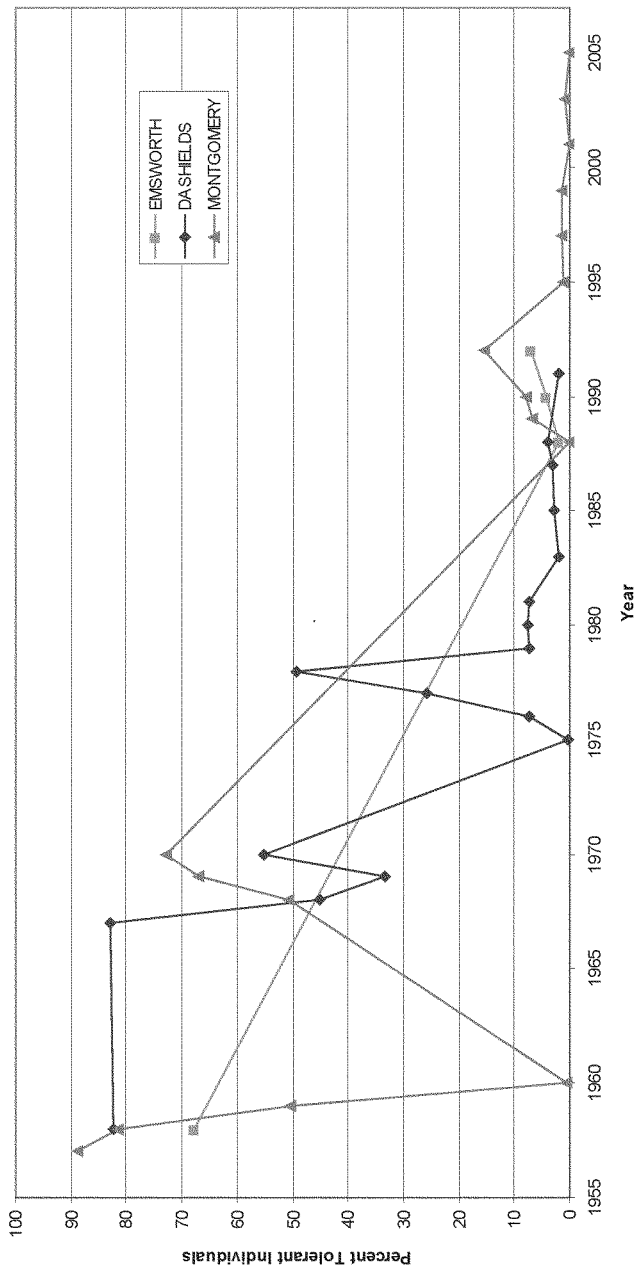


Figure 2. Percent tolerant individuals (as listed by Emery et al. 2003) collected during rotenone surveys of three upper Ohio River lockchambers.

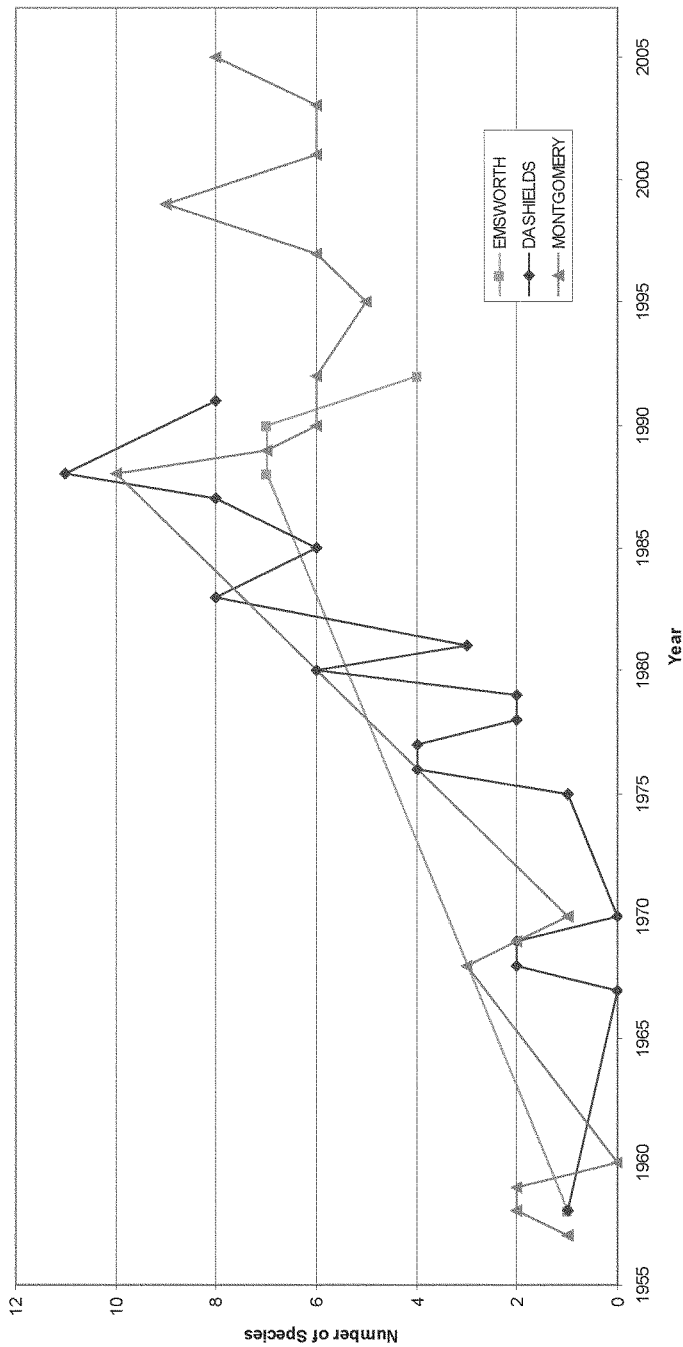


Figure 3. Number of predator species collected during rotenone surveys of three upper Ohio River lockchambers.

Appendix A.

Table 1 summarizes the historic mussel inventory conducted by Ortman (1921), which includes the mussel species, taxonomic names (and our attempt at updating some of them), locations where specimens were collected, and some of Ortman's information about their status in 1921.

We also tried to locate the areas where the species Ortman mentioned from the Ohio River were collected. The 10 areas were, from downstream to upstream, Smiths Ferry, Cooks Ferry, Shippingport, Industry, Beaver, Shousetown, Deadman Island, Edgeworth, Coraopolis, and Neville Island. Some of these locations are not to be found on modern maps. Because these areas of mussel collections mark important historic mussel beds we consulted Eli L. Hays (1877) "Illustrated Atlas of the Upper Ohio River and Valley from Pittsburgh PA. to Cincinnati, O." to locate some of the mussel collection areas which are no longer on modern maps.

Smiths Ferry, just upstream of the state line, is located opposite about Market Street in Georgetown, and is located at the upstream end of Glasgow on the right descending bank. The location of Cooks Ferry does not exist even on this 1877 map, but we noted that several Cook families resided in the vicinity of Rogers Ferry Station, presumably a stop on the railroad, which is directly opposite Shippingport. Rogers Ferry also does not occur on the modern map we consulted, but we assume that this is the location where the mussels were collected. The mention of both Shippingport and Cooks Ferry locations seems to imply that collections were made on opposite sides of the river. Industry is located about a mile upstream of Cooks Ferry/Rogers Ferry on the right descending bank. Shousetown is another place not on modern maps, this town now being called Glenwillard, and it is on the left descending bank opposite Leetsdale. Deadman Island no longer exists because it was flooded or otherwise destroyed as a consequence of constructing the Dashields Lock and Dam at Edgeworth, or flooding from the Montgomery Lock and Dam pool. By our reckoning (using the 1877 E.L. Hayes map), the dam was built through the center of the island.

Smiths Ferry, Cooks Ferry, Shippingport, and Industry were all located in the present New Cumberland Lock and Dam pool, the dam itself being located downstream of the state line in Ohio. Beaver, Shousetown, and Deadman Island were located in the present Montgomery Lock and Dam pool. Edgeworth and Coraopolis were located in the present Dashields Lock and Dam pool. Neville Island is presently located in both the Dashields Lock and Dam pool and the Emsworth Lock and Dam pool.

Locations within the present New Cumberland pool produced the most mussel species in Ortman's 1921 monograph, these locations being mentioned 73 times (Table 1). The Montgomery pool sites were mentioned 12 times, the Dashields pool sites were mentioned 20 times. The Neville Island site with 20 mentions could have occurred in either/both the present Dashields and Emsworth pools due to the location of the dam, the precise locations for any of these locations not being given in Ortman's monograph. Ortman (1909, page 99), in reference to Neville Island mussels, mentioned that "There was a colony of them in

the left branch of the Ohio at Neville Island, Allegheny County, up to 1904; during that year, however, they died out, and in 1905 the last living one was found there.”

Table 1. List of 34 mussel species occurring in the Pennsylvania reach of the Ohio River compiled from Ortmann’s (1919) “A Monograph of the Naiades of Pennsylvania. Part III, Systematic Account of the Genera and Species.” An attempt has been made to update the names of the species, but we are uncertain of several. Ortmann noted these records as being collected at Cooks Ferry (CF), Shippingport (S), Coraopolis (C), Neville Island (NI), Industry (I), Smiths Ferry (SF), Shousetown (Sh), Beaver (B), Deadman Island (DI), and Edgeworth (E). The T&E column records the present Federal status of the species under the Endangered Species Act of 1973 (E=endangered, C=candidate).

Taxon	Common Name	Location	T&E	Status in 1921
<i>Actinonaias ligamentina</i>	Mucket	SF, S, CF, I, B, DI, Sh, NI, C, E		Common
<i>Amblema plicata</i>	Threeridge	S, CF, I		Common
<i>Amygdaloniaias donaciformes</i> = <i>Truncilla d.</i>	Fawnsfoot	S, I, NI		-
<i>Anodonta grandis</i> = <i>Pyganodon g.</i>	Giant floater	SF		Typical of smaller creeks
<i>Cyprogenia stegaria</i>	Fanshell	I	E	All dead shells, some freshly dead
<i>Elliptio dilatatus</i> = <i>E. dilatata</i>	Spike	SF, S, CF, I, C, NI		Common
<i>Elliptio niger</i> = <i>E. crassidens</i>	Elephant ear	SF, S, I, B, Sh, C, NI		Common
<i>Eyurnia recta</i> = <i>Ligumia r.</i>	Black sandshell	S, CF, I, NI, E		Common
<i>Fusconia flava</i>	Wabash pigtoe	NI		Mainly smaller streams
<i>Fusconia subrotunda</i>	Long solid	CF, S, C, NI		Common
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	I		Rare
<i>Lampsilis luteola</i> = <i>L. siliquioidea</i>	Fat mucket	CF, I, C, NI		Common
<i>Lampsilis ovata</i>	Pocketbook	I, C, NI, E, SF, CF, S		Very common
<i>Lasmigona costata</i>	Flute-shell	I, NI, B, C		Common
<i>Obliquaria reflexa</i>	Threehorn wartyback	S, CF, I		Rare
<i>Obovaria retusa</i>	Ring pink	I	E	Rare, only 2 shells in

				PA known
<i>Obovaria subrotunda</i>	Round hickorynut	NI		-
<i>Paraptera fragilis</i> = <i>Leptodea</i> f. ?	Fragile papershell?	SF, CF, B, DI, E		-
<i>Plagiola lineolata</i> = <i>Ellipsaria</i> l.	Butterfly	SF, CF, S, I, NI		-
<i>Plethobasus cooperianus</i>	Orange-foot pimpleback	S, CF, I, C	E	One of the rarest
<i>Plethobasus cyphus</i>	Sheepnose	S, I, C	C	Rare
<i>Pleurobema obliquum</i> = <i>P. plenum</i> ?	Rough pigtoe?	SF, S, CF, I, C, NI	E	Common
<i>Pleurobema obliquum cocineum</i> = <i>P. cocineum</i>	Round pigtoe	CF		Single shell found
<i>Pleurobema obliquum cordatum</i> = <i>P. cordatum</i>	Ohio pigtoe	CF		-
<i>Pleurobema obliquum rubrum</i> = <i>P. rubrum</i>	Pyramid pigtoe	S, I, NI		Rare
<i>Proptera alata</i> = <i>Potamilus alatus</i>	Pink heelsplitter	S, CF, I, B, DI, C, NI, E		Rare
<i>Quadrula Cyndrica</i>	Rabbitsfoot	S, CF, I, B, C		Common
<i>Quadrula metanerva</i>	Monkeyface	S, CF, I, C, NI		Common where found
<i>Quadrula pustulosa</i>	Pimpleback	S, CF, I, NI, C		Rare
<i>Quadrula quadrula</i>	Mapleleaf	CF		Very rare-one shell
<i>Quadrula verrucosa</i> = <i>Tritigonia</i> v.?	Pistolgrip?	I, C		Local, not widely distributed
<i>Rotundaria tuberculata</i> = <i>Cyclonaias</i> t.?	Purple wartyback?	CF, I, NI, B, C		Common
<i>Truncilla triquetra</i> = <i>Epioblasma</i> t.	Snuffbox	NI		Uncommon

Appendix B

List of Fish Species Collected during electrofishing surveys in the Ohio River in Pennsylvania by ORSANCO between 1992 and 2005, by pool.

Pool Lock	Species	Genus name	Species name
DASHIELDS	ROCK BASS	Ambloplites	rupestris
DASHIELDS	FRESHWATER DRUM	Aplodinotus	grunniens
DASHIELDS	GOLDFISH	Carassius	auratus
DASHIELDS	RIVER CARPSUCKER	Carpiodes	carpio
DASHIELDS	QUILLBACK	Carpiodes	cyprinus
DASHIELDS	WHITE SUCKER	Catostomus	commersonii
DASHIELDS	SPOTFIN SHINER	Cyprinella	spiloptera
DASHIELDS	STEELCOLOR SHINER	Cyprinella	whipplei
DASHIELDS	COMMON CARP	Cyprinus	carpio
DASHIELDS	GIZZARD SHAD	Dorosoma	cepedianum
DASHIELDS	MUSKELLUNGE	Esox	masquinongy
DASHIELDS	RAINBOW DARTER	Etheostoma	caeruleum
DASHIELDS	BLUEBREAST DARTER	Etheostoma	camurum
DASHIELDS	FANTAIL DARTER	Etheostoma	flabellare
DASHIELDS	BANDED DARTER	Etheostoma	zonale
DASHIELDS	MOONEYE	Hiodon	tergisus
DASHIELDS	NORTHERN HOG SUCKER	Hypentelium	nigricans
DASHIELDS	CHANNEL CATFISH	Ictalurus	punctatus
DASHIELDS	SMALLMOUTH BUFFALO	Ictiobus	bubalus
DASHIELDS	BLACK BUFFALO	Ictiobus	niger
DASHIELDS	BROOK SILVERSIDE	Labidesthes	sicculus
DASHIELDS	LONGNOSE GAR	Lepisosteus	osseus
DASHIELDS	GREEN SUNFISH	Lepomis	cyaneus
DASHIELDS	PUMPKINSEED	Lepomis	gibbosus
DASHIELDS	BLUEGILL	Lepomis	macrochirus
DASHIELDS	LONGEAR SUNFISH	Lepomis	megalotis
DASHIELDS	REDEAR SUNFISH	Lepomis	microlophus
DASHIELDS	SILVER CHUB	Macrhybopsis	storeriana
DASHIELDS	SMALLMOUTH BASS	Micropterus	dolomieu
DASHIELDS	SPOTTED BASS	Micropterus	punctulatus
DASHIELDS	LARGEMOUTH BASS	Micropterus	salmoides
DASHIELDS	WHITE BASS	Morone	chrysops
DASHIELDS	STRIPED BASS	Morone	saxatilis
DASHIELDS	HYBRID STRIPER	Morone	saxatilis x chrysops
DASHIELDS	MORONE SP	Morone	sp
DASHIELDS	SILVER REDHORSE	Moxostoma	anisurum
DASHIELDS	SMALLMOUTH REDHORSE	Moxostoma	breviceps
DASHIELDS	RIVER REDHORSE	Moxostoma	carinatum
DASHIELDS	BLACK REDHORSE	Moxostoma	duquesnei
DASHIELDS	GOLDEN REDHORSE	Moxostoma	erythrurum
DASHIELDS	GOLDEN SHINER	Notemigonus	chrysroleucas

DASHIELDS	EMERALD SHINER	Notropis	atherinoides
DASHIELDS	SPOTTAIL SHINER	Notropis	hudsonius
DASHIELDS	MIMIC SHINER	Notropis	volucellus
DASHIELDS	YELLOW PERCH	Perca	flavescens
DASHIELDS	LOGPERCH	Percina	caprodes
DASHIELDS	CHANNEL DARTER	Percina	copelandi
DASHIELDS	BLUNTNOST MINNOW	Pimephales	notatus
DASHIELDS	WHITE CRAPPIE	Pomoxis	annularis
DASHIELDS	FLATHEAD CATFISH	Pylodictis	olivaris
DASHIELDS	SAUGER	Sander	canadensis
DASHIELDS	SAUGEYE	Sander	canadensis x vitreus
DASHIELDS	SANDER SP	Sander	sp
DASHIELDS	WALLEYE	Sander	vitreus
EMSWORTH	ROCK BASS	Ambloplites	rupestris
EMSWORTH	FRESHWATER DRUM	Aplodinotus	grunniens
EMSWORTH	RIVER CARPSUCKER	Carpoides	carpio
EMSWORTH	WHITE SUCKER	Catostomus	commersonii
EMSWORTH	SPOTFIN SHINER	Cyprinella	spiloptera
EMSWORTH	COMMON CARP	Cyprinus	carpio
EMSWORTH	GIZZARD SHAD	Dorosoma	cepedianum
EMSWORTH	STREAMLINE CHUB	Erimystax	dissimilis
EMSWORTH	MUSKELLUNGE X NORTHERN PIKE	Esox	masquinongy x lucius
EMSWORTH	GREENSIDE DARTER	Etheostoma	blennioides
EMSWORTH	RAINBOW DARTER	Etheostoma	caeruleum
EMSWORTH	FANTAIL DARTER	Etheostoma	flabellare
EMSWORTH	JOHNNY DARTER	Etheostoma	nigrum
EMSWORTH	BANDED DARTER	Etheostoma	zonale
EMSWORTH	NORTHERN HOG SUCKER	Hypentelium	nigricans
EMSWORTH	CHANNEL CATFISH	Ictalurus	punctatus
EMSWORTH	SMALLMOUTH BUFFALO	Ictiobus	bubalus
EMSWORTH	BROOK SILVERSIDE	Labidesthes	sicculus
EMSWORTH	LONGNOSE GAR	Lepisosteus	osseus
EMSWORTH	GREEN SUNFISH	Lepomis	cyaneus
EMSWORTH	PUMPKINSEED	Lepomis	gibbosus
EMSWORTH	BLUEGILL	Lepomis	macrochirus
EMSWORTH	BLUEGILL X LONGEAR SUNFISH	Lepomis	macrochirus x megalotis
EMSWORTH	REDEAR SUNFISH	Lepomis	microlophus
EMSWORTH	SILVER CHUB	Macrhybopsis	storeriana
EMSWORTH	SMALLMOUTH BASS	Micropterus	dolomieu
EMSWORTH	SPOTTED BASS	Micropterus	punctulatus
EMSWORTH	LARGEMOUTH BASS	Micropterus	salmoides
EMSWORTH	WHITE BASS	Morone	chrysops
EMSWORTH	HYBRID STRIPER	Morone	saxatilis x chrysops
EMSWORTH	MORONE SP	Morone	sp
EMSWORTH	SILVER REDHORSE	Moxostoma	anisurum
EMSWORTH	SMALLMOUTH REDHORSE	Moxostoma	breviceps
EMSWORTH	RIVER REDHORSE	Moxostoma	carinatum

EMSWORTH	BLACK REDHORSE	Moxostoma	duquesnei
EMSWORTH	GOLDEN REDHORSE	Moxostoma	erythrurum
EMSWORTH	EMERALD SHINER	Notropis	atherinoides
EMSWORTH	SPOTTAIL SHINER	Notropis	hudsonius
EMSWORTH	MIMIC SHINER	Notropis	volucellus
EMSWORTH	LOGPERCH	Percina	caprodes
EMSWORTH	CHANNEL DARTER	Percina	copelandi
EMSWORTH	BLUNTNOST MINNOW	Pimephales	notatus
EMSWORTH	BLACK CRAPPIE	Pomoxis	nigromaculatus
EMSWORTH	FLATHEAD CATFISH	Pylodictis	olivaris
EMSWORTH	SAUGER	Sander	canadensis
EMSWORTH	SAUGEYE	Sander	canadensis x vitreus
EMSWORTH	WALLEYE	Sander	vitreus
MONTGOMERY	CARP X GOLDFISH		
MONTGOMERY	SKIPJACK HERRING	Alosa	chrysochloris
MONTGOMERY	ALEWIFE	Alosa	pseudoharengus
MONTGOMERY	ROCK BASS	Ambloplites	rupestris
MONTGOMERY	FRESHWATER DRUM	Aplodinotus	grunniens
MONTGOMERY	CENTRAL STONEROLLER	Campostoma	anomalum
MONTGOMERY	RIVER CARPSUCKER	Carpoides	carpio
MONTGOMERY	QUILLBACK	Carpoides	cyprinus
MONTGOMERY	CARPIODES SP	Carpoides	sp
MONTGOMERY	HIGHFIN CARPSUCKER	Carpoides	vellifer
MONTGOMERY	WHITE SUCKER	Catostomus	commersonii
MONTGOMERY	SPOTFIN SHINER	Cyprinella	spiloptera
MONTGOMERY	STEELCOLOR SHINER	Cyprinella	whipplei
MONTGOMERY	COMMON CARP	Cyprinus	carpio
MONTGOMERY	GIZZARD SHAD	Dorosoma	cepedianum
MONTGOMERY	GREENSIDE DARTER	Etheostoma	blennioides
MONTGOMERY	RAINBOW DARTER	Etheostoma	caeruleum
MONTGOMERY	FANTAIL DARTER	Etheostoma	flabellare
MONTGOMERY	ORANGETHROAT DARTER	Etheostoma	spectabile
MONTGOMERY	BANDED DARTER	Etheostoma	zonale
MONTGOMERY	MOONEYE	Hiodon	tergisus
MONTGOMERY	NORTHERN HOG SUCKER	Hypentelium	nigricans
MONTGOMERY	CHANNEL CATFISH	Ictalurus	punctatus
MONTGOMERY	SMALLMOUTH BUFFALO	Ictiobus	bubalus
MONTGOMERY	BLACK BUFFALO	Ictiobus	niger
MONTGOMERY	BROOK SILVERSIDE	Labidesthes	sicculus
MONTGOMERY	LONGNOSE GAR	Lepisosteus	osseus
MONTGOMERY	GREEN SUNFISH	Lepomis	cyaneus
MONTGOMERY	PUMPKINSEED	Lepomis	gibbosus
MONTGOMERY	BLUEGILL	Lepomis	macrochirus
MONTGOMERY	LONGEAR SUNFISH	Lepomis	megalotis
MONTGOMERY	REDEAR SUNFISH	Lepomis	microlophus
MONTGOMERY	LEPOMIS SP	Lepomis	sp
MONTGOMERY	REDFIN SHINER	Lythrurus	umbratilis

MONTGOMERY	SILVER CHUB	Macrhybopsis	storeriana
MONTGOMERY	SMALLMOUTH BASS	Micropterus	dolomieu
MONTGOMERY	SPOTTED BASS	Micropterus	punctulatus
MONTGOMERY	LARGEMOUTH BASS	Micropterus	salmoides
MONTGOMERY	WHITE BASS	Morone	chrysops
MONTGOMERY	HYBRID STRIPER	Morone	saxatilis x chrysops
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MONTGOMERY	BLACK REDHORSE	Moxostoma	duquesnei
MONTGOMERY	GOLDEN REDHORSE	Moxostoma	erythrurum
MONTGOMERY	RIVER CHUB	Nocomis	micropogon
MONTGOMERY	GOLDEN SHINER	Notemigonus	chrysoleucas
MONTGOMERY	EMERALD SHINER	Notropis	atherinoides
MONTGOMERY	RIVER SHINER	Notropis	blennius
MONTGOMERY	SPOTTAIL SHINER	Notropis	hudsonius
MONTGOMERY	NOTROPIS SP	Notropis	sp
MONTGOMERY	SAND SHINER	Notropis	stramineus
MONTGOMERY	MIMIC SHINER	Notropis	volucellus
MONTGOMERY	CHANNEL SHINER	Notropis	wickliffi
MONTGOMERY	YELLOW PERCH	Perca	flavescens
MONTGOMERY	LOGPERCH	Percina	caprodes
MONTGOMERY	CHANNEL DARTER	Percina	copelandi
MONTGOMERY	TROUT-PERCH	Percopsis	omiscomaycus
MONTGOMERY	BLUNTNOST MINNOW	Pimephales	notatus
MONTGOMERY	WHITE CRAPPIE	Pomoxis	annularis
MONTGOMERY	BLACK CRAPPIE	Pomoxis	nigromaculatus
MONTGOMERY	FLATHEAD CATFISH	Pylodictis	olivaris
MONTGOMERY	SAUGER	Sander	canadensis
MONTGOMERY	SAUGEYE	Sander	canandensis x vitreus
MONTGOMERY	SANDER SP	Sander	sp
MONTGOMERY	WALLEYE	Sander	vitreus
NEW CUMBERLAND	SKIPJACK HERRING	Alosa	chrysochloris
NEW CUMBERLAND	ALEWIFE	Alosa	pseudoharengus
NEW CUMBERLAND	ROCK BASS	Ambloplites	rupestris
NEW CUMBERLAND	FRESHWATER DRUM	Aplodinotus	grunniens
NEW CUMBERLAND	CENTRAL STONEROLLER	Campostoma	anomalum
NEW CUMBERLAND	RIVER CARPSUCKER	Carpiodes	carpio
NEW CUMBERLAND	QUILLBACK	Carpiodes	cyprinus
NEW CUMBERLAND	HIGHFIN CARPSUCKER	Carpiodes	velifer
NEW CUMBERLAND	GRASS CARP	Ctenopharyngodon	idella
NEW CUMBERLAND	SPOTFIN SHINER	Cyprinella	spiloptera
NEW CUMBERLAND	STEELCOLOR SHINER	Cyprinella	whipplei
NEW CUMBERLAND	COMMON CARP	Cyprinus	carpio
NEW CUMBERLAND	GIZZARD SHAD	Dorosoma	cepedianum
NEW CUMBERLAND	NORTHERN PIKE	Esox	lucius

NEW CUMBERLAND	GREENSIDE DARTER	Etheostoma	blennioides
NEW CUMBERLAND	BANDED DARTER	Etheostoma	zonale
NEW CUMBERLAND	MOONEYE	Hiodon	tergisus
NEW CUMBERLAND	NORTHERN HOG SUCKER	Hypentelium	nigricans
NEW CUMBERLAND	CHANNEL CATFISH	Ictalurus	punctatus
NEW CUMBERLAND	SMALLMOUTH BUFFALO	Ictiobus	bubalus
NEW CUMBERLAND	BROOK SILVERSIDE	Labidesthes	sicculus
NEW CUMBERLAND	LONGNOSE GAR	Lepisosteus	osseus
NEW CUMBERLAND	GREEN SUNFISH	Lepomis	cyanellus
NEW CUMBERLAND	PUMPKINSEED	Lepomis	gibbosus
NEW CUMBERLAND	BLUEGILL	Lepomis	macrochirus
NEW CUMBERLAND	REDEAR SUNFISH	Lepomis	microlophus
NEW CUMBERLAND	SILVER CHUB	Macrhybopsis	storeriana
NEW CUMBERLAND	SMALLMOUTH BASS	Micropterus	dolomieu
NEW CUMBERLAND	SPOTTED BASS	Micropterus	punctulatus
NEW CUMBERLAND	LARGEMOUTH BASS	Micropterus	salmoides
NEW CUMBERLAND	WHITE PERCH	Morone	americana
NEW CUMBERLAND	WHITE BASS	Morone	chrysops
NEW CUMBERLAND	HYBRID STRIPER	Morone	saxatilis x chrysops
NEW CUMBERLAND	MORONE SP	Morone	sp
NEW CUMBERLAND	SILVER REDHORSE	Moxostoma	anisurum
NEW CUMBERLAND	SMALLMOUTH REDHORSE	Moxostoma	breviceps
NEW CUMBERLAND	RIVER REDHORSE	Moxostoma	carinatum
NEW CUMBERLAND	BLACK REDHORSE	Moxostoma	duquesnei
NEW CUMBERLAND	GOLDEN REDHORSE	Moxostoma	erythrurum
NEW CUMBERLAND	RIVER CHUB	Nocomis	micropogon
NEW CUMBERLAND	EMERALD SHINER	Notropis	atherinoides
NEW CUMBERLAND	SPOTTAIL SHINER	Notropis	hudsonius
NEW CUMBERLAND	MIMIC SHINER	Notropis	volucellus
NEW CUMBERLAND	YELLOW PERCH	Perca	flavescens
NEW CUMBERLAND	LOGPERCH	Percina	caprodes
NEW CUMBERLAND	CHANNEL DARTER	Percina	copelandi
NEW CUMBERLAND	BLUNTNOST MINNOW	Pimephales	notatus
NEW CUMBERLAND	BLACK CRAPPIE	Pomoxis	nigromaculatus
NEW CUMBERLAND	FLATHEAD CATFISH	Pylodictis	olivaris
NEW CUMBERLAND	SAUGER	Sander	canadensis
NEW CUMBERLAND	SAUGEYE	Sander	canandensis x vitreus
NEW CUMBERLAND	WALLEYE	Sander	vitreus
NEW CUMBERLAND	CREEK CHUB	Semotilus	atromaculatus

Electrofishing Raw Data

APPENDIX C

Event Code	Rm	Reel	Bank	Pool	Look	C	Outfall	C-Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	Known
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Ictalurus	ichabodus	SMALLMOUTH BUFFALO	ichabodus	1	16	1	1.6
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CLUPEIDAE	Dorosoma	dorosoma	SPOTTED SHAD	punctulatus	2	1	1	0.01
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	3	0.01	0.01
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	3	0.01	0.01
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	5	0.04	0.04
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	5	0.06	0.06
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	6	0.08	0.08
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	6	0.1	0.1
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	7	0.1	0.1
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	7	0.15	0.15
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	7	0.16	0.16
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	8	0.18	0.18
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	8	0.18	0.18
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	10	0.36	0.36
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	1	2	0.02	0.02
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Dorosoma	dorosoma	GIZZARD SHAD	dolomieu	23	3	0.19	0.19
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Dorosoma	dorosoma	GIZZARD SHAD	dolomieu	2	10	0.46	0.46
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CLUPEIDAE	Dorosoma	dorosoma	GIZZARD SHAD	dolomieu	2	10	0.46	0.46
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CYPRINIDAE	Notropis	notropis	EMERALD SHINER	affinis	69	2	0.066	0.066
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CLUPEIDAE	Ictalurus	ichabodus	CHESAPEAKE CATFISH	punctulatus	2	2	0.08	0.08
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CLUPEIDAE	Lepomis	lepomis	FINLET CATFISH	osseus	1	9	0.02	0.02
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	LEPISOSTEIDAE	Leposteus	leposteus	LONGNOSE GAR	osseus	1	9	0.02	0.02
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	LEPISOSTEIDAE	Leposteus	leposteus	LONGNOSE GAR	osseus	1	9	0.02	0.02
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	PERCIDAE	Percia	percina	LOGPERCH	caprodes	2	8	0.04	0.04
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	PERCIDAE	Percia	percina	LOGPERCH	caprodes	1	3	0.003	0.003
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	SCIAENIDAE	Aplodinotus	aplodinotus	FRESHWATER DRUM	gunnieri	2	2	0.05	0.05
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	SCIAENIDAE	Aplodinotus	aplodinotus	FRESHWATER DRUM	gunnieri	1	12	0.56	0.56
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	3	2	0.05	0.05
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SPOTTED BASS	punctulatus	5	3	0.02	0.02
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Ictalurus	ichabodus	SMALLMOUTH BUFFALO	dolomieu	1	4	0.02	0.02
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Micropterus	micropterus	SILVER REDHORSE	ansurum	1	17	2	2
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Micropterus	micropterus	SILVER REDHORSE	ansurum	1	15	0.85	0.85
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Micropterus	micropterus	SILVER REDHORSE	ansurum	1	15	0.85	0.85
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Micropterus	micropterus	RIVER REDHORSE	carolinum	1	17	1.8	1.8
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Micropterus	micropterus	RIVER REDHORSE	carolinum	1	19	2	2
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Micropterus	micropterus	RIVER REDHORSE	carolinum	2	16	2.5	2.5
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CATOSTOMIDAE	Anelopterus	anelopterus	ROCK BASS	rupestris	1	4	0.13	0.13
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Anelopterus	anelopterus	ROCK BASS	rupestris	1	4	0.02	0.02
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Anelopterus	anelopterus	ROCK BASS	rupestris	1	6	0.1	0.1
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Anelopterus	anelopterus	ROCK BASS	rupestris	1	7	0.14	0.14
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Anelopterus	anelopterus	ROCK BASS	rupestris	1	7	0.16	0.16
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Lepomis	lepomis	BLUEGILL	macrochirus	1	3	0.06	0.06
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Lepomis	lepomis	SPOTTED BASS	punctulatus	1	3	0.08	0.08
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Lepomis	lepomis	SPOTTED BASS	punctulatus	18	2	0.016	0.016
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Lepomis	lepomis	BLUEGILL	dolomieu	1	6	0.05	0.05
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	1	6	0.05	0.05
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	1	7	0.08	0.08
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	1	7	0.12	0.12
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	1	8	0.16	0.16
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	1	12	0.84	0.84
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	2	2	0.01	0.01
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	2	6	0.11	0.11
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	3	7	0.1	0.1
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	3	7	0.28	0.28
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	3	6	0.15	0.15
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	5	6	0.26	0.26
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Micropterus	micropterus	SMALLMOUTH BASS	dolomieu	19	5	0.75	0.75
001 8LDB380701	16	OHIO	LDB	ENSWORTH	EF	FALSE	07-Aug-01	2001	CENTRARCHIDAE	Lepomis	lepomis	BLUEGILL	macrochirus	1	6	0.12	0.12

Electrofishing Raw Data

APPENDIX C

001	RD3690701	1,6	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	SCIENIDAE	Aplocheilichthys	gummites	19	3	0.1	FRESHWATER DRUM
002	RD3690702	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CYPRINIDAE	Cyprinus	carpio	1	15	1	COMMON CARP
003	RD3690703	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CYPRINIDAE	Percia	capros	2	5	0.045	LOGPERCH
004	RD3690704	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Nepotia	althernodes	25	2	0.05	EMERALD SHINER
005	RD3690705	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	ICTALURIDAE	Italusus	punctatus	1	23	0.008	CHANNEL CATFISH
006	RD3690706	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	ICTALURIDAE	Italusus	punctatus	1	13	0.886	CHANNEL CATFISH
007	RD3690707	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	LEPISOSTEIDAE	Morone	oxasus	1	11	0.05	LONGNOSE GAR
008	RD3690708	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	MORONIDAE	Morone	sp	1	22	0.003	MORONE CARP
009	RD3690709	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Etheostoma	biemmes	2	2	0.002	GREENSIDE DARTER
010	RD3690710	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Etheostoma	caeruleum	1	2	0.001	RAINBOW DARTER
011	RD3690711	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Etheostoma	fabellare	1	5	0.01	FANAIL DARTER
012	RD3690712	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Etheostoma	fabellare	1	6	0.004	FANAIL DARTER
013	RD3690713	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Etheostoma	ingrum	1	2	0.001	FANAIL DARTER
014	RD3690714	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Etheostoma	ingrum	1	2	0.001	BANDED DARTER
015	RD3690715	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Percia	capros	2	2	0.002	LOGPERCH
016	RD3690716	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Percia	capros	11	2	0.02	LOGPERCH
017	RD3690717	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Percia	capros	11	3	0.04	LOGPERCH
018	RD3690718	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Percia	caprellini	6	1	0.004	CHANNEL DARTER
019	RD3690719	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Sander	canadensis	1	9	0.17	SAUGER
020	RD3690720	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Sander	vitreus	1	10	0.22	WALLEY
021	RD3690721	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Aplocheilichthys	gummites	3	2	0.007	FRESHWATER DRUM
022	RD3690722	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	SCIENIDAE	Aplocheilichthys	gummites	4	3	0.016	FRESHWATER DRUM
023	RD3690723	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	PERCIDAE	Percia	capros	1	3	0.003	LOGPERCH
024	RD3690724	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	119	2	0.215	GIZZARD SHAD
025	RD3690725	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	2	18	1.35	GIZZARD SHAD
026	RD3690726	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CATOSTOMIDAE	Cyprinus	carpio	2	16	0.2	RIVER CARPSUCKER
027	RD3690727	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CATOSTOMIDAE	Micropterus	domelleus	2	8	0.2	SMALLMOUTH BASS
028	RD3690728	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	6	0.074	SMALLMOUTH BASS
029	RD3690729	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	6	0.086	SMALLMOUTH BASS
030	RD3690730	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	7	0.12	SMALLMOUTH BASS
031	RD3690731	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	7	0.165	SMALLMOUTH BASS
032	RD3690732	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	8	0.15	SMALLMOUTH BASS
033	RD3690733	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	8	0.18	SMALLMOUTH BASS
034	RD3690734	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	8	0.19	SMALLMOUTH BASS
035	RD3690735	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	9	0.26	SMALLMOUTH BASS
036	RD3690736	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	9	0.27	SMALLMOUTH BASS
037	RD3690737	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	10	0.35	SMALLMOUTH BASS
038	RD3690738	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	10	0.36	SMALLMOUTH BASS
039	RD3690739	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	11	0.4	SMALLMOUTH BASS
040	RD3690740	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	6	0.08	SMALLMOUTH BASS
041	RD3690741	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	2	7	0.11	SMALLMOUTH BASS
042	RD3690742	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	1	4	0.04	SMALLMOUTH BASS
043	RD3690743	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	2	8	0.34	SMALLMOUTH BASS
044	RD3690744	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	domelleus	19	3	0.195	SMALLMOUTH BASS
045	RD3690745	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	1	9	0.26	SPOTTED BASS
046	RD3690746	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	2	3	0.01	SPOTTED BASS
047	RD3690747	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CENTRARCHIDAE	Dorosoma	capedunum	1	1	0.001	GIZZARD SHAD
048	RD3690748	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	1	2	0.02	GIZZARD SHAD
049	RD3690749	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	1	9	0.2	GIZZARD SHAD
050	RD3690750	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	1	10	0.26	GIZZARD SHAD
051	RD3690751	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	1	12	0.3	GIZZARD SHAD
052	RD3690752	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	2	10	0.2	GIZZARD SHAD
053	RD3690753	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	6	10	2.2	GIZZARD SHAD
054	RD3690754	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	10	1	0.04	GIZZARD SHAD
055	RD3690755	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CLUPEDAE	Dorosoma	capedunum	50	2	0.06	GIZZARD SHAD
056	RD3690756	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CATOSTOMIDAE	Micropterus	domelleus	2	6	0.12	SMALLMOUTH BASS
057	RD3690757	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CATOSTOMIDAE	Micropterus	domelleus	1	14	0.74	RIVER REDHORSE
058	RD3690758	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CATOSTOMIDAE	Italusus	biabatus	1	14	1.3	SMALLMOUTH BUFFALO
059	RD3690759	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CATOSTOMIDAE	Italusus	biabatus	1	15	1.3	SMALLMOUTH BUFFALO
060	RD3690760	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CATOSTOMIDAE	Italusus	biabatus	1	1	1.4	SMALLMOUTH BUFFALO
061	RD3690761	2,2	CHLO ROB	ENSWORTH	EF	FALSE	07 Aug-01	2001	CATOSTOMIDAE	Italusus	biabatus	1	15	1.45	SMALLMOUTH BUFFALO

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002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Ictiobus	ibubalis	1	15	1.5
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Ictiobus	ibubalis	1	16	1.6
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Ictiobus	ibubalis	1	16	1.5
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Ictiobus	ibubalis	1	18	2.5
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Moxostoma	ansurum	1	12	0.54
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Moxostoma	ansurum	1	13	0.6
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Moxostoma	ansurum	1	16	1.1
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Moxostoma	ansurum	1	16	1.1
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.07
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.09
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Cariaculus	carpio	1	12	0.75
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.015
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.01
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	1	2	0.005
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Lepomis	macrochirus	13	1	0.008
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Lepomis	breviceps	1	10	0.32
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Micropterus	macrochirus	1	6	0.14
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Moxostoma	breviceps	1	12	0.6
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Anabias	reppensis	1	5	0.07
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Anabias	reppensis	1	4	0.04
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Anabias	reppensis	1	4	0.022
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Anabias	reppensis	1	2	0.1
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CATOSTOMIDAE	Micropterus	dolomieu	1	15	1.1
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.08
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2001 SCIAENIDAE	Aplodinotus	gummiensis	1	6	0.15
002.2R0B06701	2.2 OHIO RDB	ENSWORTH	EF	FALSE	07-Aug-01	2002 PERCIDAE	Sander	canadensis	22	3	0.07
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	gummiensis	1	11	0.24
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	gummiensis	18	2	0.04
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	gummiensis	3	14	2.45
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	gummiensis	2	3	0.01
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	gummiensis	1	13	0.64
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	gummiensis	1	9	0.2
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	gummiensis	1	5	0.02
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Sander	canadensis	1	9	0.125
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Sander	canadensis	1	12	0.3
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Sander	canadensis	1	12	0.3
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	11	2	0.022
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	7	7	0.64
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	6	4	0.1
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	5	9	1.03
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	5	6	0.3
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	2	2	0.015
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	3	8	0.5
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CLUPEIDAE	Dorosoma	cepedianum	2	1	0.001
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	2	12	1.15
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CLUPEIDAE	Dorosoma	cepedianum	2	10	0.48
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CLUPEIDAE	Dorosoma	cepedianum	2	13	0.7
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	1	11	0.4
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	2	1	0.01
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	2	1	0.01
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Anabias	reppensis	1	6	0.08
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Anabias	reppensis	1	3	0.011
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moxostoma	eythrumum	2	14	1.45
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moxostoma	eythrumum	2	13	1.1
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	3	5	0.1
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CYPRINIDAE	Natopsis	volucellus	29	2	0.051
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Percina	caprodes	13	4	0.101
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Percina	caprodes	3	3	0.02
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Percina	caprodes	2	1	0.001
002.2R0B072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Percina	caprodes	1	6	0.02

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002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Etheostoma	zonale	BANDED DARTER	1	2	0.001
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 LEPISTOSTEIDAE	Lepisosteus	osseus	LONGNOSE GAR	1	5	0.004
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CTALURIDAE	Ptychocheilus	olivaris	FLATHEAD CATFISH	3	14	2.2
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CTALURIDAE	Ptychocheilus	olivaris	FLATHEAD CATFISH	1	13	0.5
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CTALURIDAE	Dorosoma	cepedianum	GAZZARD SHAD	1	5	0.06
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CTALURIDAE	Notropis	punctulatus	CHANNEL CATFISH	1	5	0.023
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	1	3	0.004
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CYPRINIDAE	Notropis	athetoides	CHANNEL SHINER	28	3	0.082
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	2	4	0.021
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CYPRINIDAE	Emysternis	dissemilis	STREAMELINE CHUB	2	4	0.003
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.6
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.3
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.3
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CTALURIDAE	Ptychocheilus	punctulatus	GAZZARD SHAD	3	11	0.4
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Notostoma	fluviatilis	CHANNEL CATFISH	1	11	0.45
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Notostoma	fluviatilis	CHANNEL CATFISH	1	11	0.45
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Lepisosteus	osseus	BLUEGILL	1	5	0.055
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 LEPISTOSTEIDAE	Lepisosteus	osseus	LONGNOSE GAR	1	23	0.6
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	5	0.03
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	4	3	0.021
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	2	0.006
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	9	0.22
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	8	0.16
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	6	0.08
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	16	1	0.008
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	8	0.2
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	4	0.092
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	2	9	0.47
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	3	0.013
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CATOSTOMIDAE	Notostoma	carolinensis	ROCK BASS	1	16	1.2
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	güntheri	FRESHWATER DRUM	6	2	0.015
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	güntheri	FRESHWATER DRUM	3	5	0.08
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	güntheri	FRESHWATER DRUM	1	15	1.2
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 SCIAENIDAE	Aplodinotus	güntheri	FRESHWATER DRUM	1	6	0.02
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Sander	canadensis	SAUGER	1	14	0.84
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Sander	canadensis	SAUGER	1	12	0.28
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Lepisosteus	osseus	BLUEGILL	3	3	0.075
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Cyprinella	sculptura	SPOTTIN SHINER	6	3	0.013
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Notostoma	fluviatilis	BLACK REDHORSE	3	14	2.1
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Notropis	volucellus	CHANNEL SHINER	13	2	0.015
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Notropis	volucellus	BUNTINGS MINNOW	1	3	0.015
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	4	2	0.003
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Notropis	hudsonius	SPOTTAL SHINER	1	3	0.008
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	56	3	0.181
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	6	2	0.006
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	7	0.12
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	1	5	0.02
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 PERCIDAE	Perca	caprodes	LOGPERCH	4	4	0.019
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CLUPEIDAE	Dorosoma	cepedianum	GAZZARD SHAD	48	2	0.048
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CLUPEIDAE	Dorosoma	cepedianum	GAZZARD SHAD	3	3	0.015
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CLUPEIDAE	Dorosoma	cepedianum	GAZZARD SHAD	1	11	0.3
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CLUPEIDAE	Dorosoma	cepedianum	GAZZARD SHAD	1	0	0.4
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	5	3	0.08
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	3	6	0.2
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	2	10	0.44
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	3	4	0.04
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Lepisosteus	osseus	BLUEGILL	2	4	0.045
002 SR06072302	2.5 OHIO RDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	5	2	0.012

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[illegible]

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002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Cyprinotus	salinoides	1	6	0.08
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CYPRINIDAE	Cyprinotus	carpio	2	18	4.5
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	ansurum	1	14	0.85
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	carinatum	1	18	1.5
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	carinatum	1	14	0.7
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	breviceps	5	13	2.7
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	breviceps	15	1,889	
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	breviceps	2	14	1.15
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	breviceps	1	12	0.5
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	ansurum	2	16	2
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 ESCOCEAE	Esoc	mesogymnety x lucius	2	7	0.089
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Micropterus	punctulatus	8	15	
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Micropterus	punctulatus	15	4	0.15
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Micropterus	dobsoni	1	18	0.4
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Micropterus	dobsoni	1	16	0.7
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Micropterus	dobsoni	1	15	1.3
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 SCIAENIDAE	Aplodinotus	grunniens	21	3	0.145
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 SCIAENIDAE	Aplodinotus	grunniens	1	4	0.03
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 PERCIDAE	Sander	canadensis x vitreus	1	7	0.054
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 PERCIDAE	Sander	canadensis	1	13	0.49
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 MORONIDAE	Morone	sp	4	5	0.15
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	29-Jul-02	2002 CATOSTOMIDAE	Moostoma	ansurum	2	15	1.9
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 PERCIDAE	Sander	canadensis	1	13	0.4
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CATOSTOMIDAE	Moostoma	ansurum	4	15	3.77
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CATOSTOMIDAE	Moostoma	ansurum	1	17	1.4
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CATOSTOMIDAE	Moostoma	ansurum	4	14	0.82
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CATOSTOMIDAE	Moostoma	ansurum	4	15	1.4
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CATOSTOMIDAE	Moostoma	ansurum	4	17	1.9
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CATOSTOMIDAE	Moostoma	ansurum	1	16	1.5
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CATOSTOMIDAE	Moostoma	ansurum	3	3	0.008
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 SCIAENIDAE	Labidesthes	grunniens	19	2	0.035
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	salinoides	1	5	0.06
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 PERCIDAE	Sander	leptus	1	21	2
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Leptus	macrochirus	3	5	0.21
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 PERCIDAE	Sander	canadensis	1	12	0.28
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 PERCIDAE	Sander	canadensis	1	10	0.16
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 PERCIDAE	Sander	caprosus	1	9	0.125
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 PERCIDAE	Percina	caprosus	4	4	0.04
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 PERCIDAE	Percina	caprosus	1	3	0.002
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 MORONIDAE	Morone	sp	1	5	0.06
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 MORONIDAE	Morone	sp	2	5	0.05
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 MORONIDAE	Morone	sp	2	3	0.005
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	05-Aug-02	2002 SCIAENIDAE	Aplodinotus	grunniens	7	3	0.024
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	dobsoni	2	9	0.58
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	23-Jul-02	2002 CATOSTOMIDAE	Moostoma	duquesnei	1	13	0.6
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	2	10	0.78
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	2	9	0.56
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	2	7	0.28
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	1	9	0.28
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	1	6	0.08
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	1	5	0.07
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	dobsoni	6	3	0.09
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CATOSTOMIDAE	Moostoma	dobsoni	1	18	0.1
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	dobsoni	2	9	0.028
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	dobsoni	1	7	0.16
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	dobsoni	1	6	0.08
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	dobsoni	1	5	0.05
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Leptus	microlophus	1	5	0.075
002_5LDB693002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Leptus	microlophus	1	4	0.02

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002 5LDB93002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	100	2	0.347
002 5LDB93002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	21	3	0.173
002 5LDB93002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	18	4	0.33
002 5LDB93002	2.5 OHIO LDB	ENSWORTH	EF	FALSE	30-Sep-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	18	3	0.185
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	4	4	0.07
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	4	4	0.48
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	1	6	0.27
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	1	10	0.33
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	1	11	0.41
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	1	12	0.55
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	2	3	0.019
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	2	8	0.36
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	2	9	0.44
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	2	9	0.59
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Lepomis	macrochirus	63	2	0.2
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	3	8	0.44
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Lepomis	macrochirus	6	2	0.016
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	5	3	0.04
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	5	7	0.8
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	10	3	0.34
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	16	3	0.24
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.013
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	11	0.5
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	3	4	0.015
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	6	3	0.05
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	1	4	0.009
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	2	9	0.94
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	19	1.9
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	13	0.62
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	14	0.78
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	14	0.8
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	14	0.88
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	14	0.88
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	14	0.88
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	14	0.88
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	14	0.88
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	15	0.94
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	15	1.1
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Micropterus	doonieu	1	7	1.2
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Cyprinus	carpio	1	17	1.4
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	14	1.75
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	20	2.5
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	duquesnei	1	13	0.85
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	duquesnei	1	13	0.7
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	duquesnei	1	14	0.76
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	duquesnei	1	14	0.77
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	duquesnei	1	14	0.82
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	duquesnei	1	14	0.82
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	duquesnei	1	15	1.23
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	1	2	0.01
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Micropterus	doonieu	1	4	0.034
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CENTRARCHIDAE	Lepomis	macrochirus	1	3	0.007
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	carinatum	1	16	1.4
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Dorosoma	cepedianum	2	11	0.89
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 SCENIDAE	Aplocheilichthys	grunniens	1	15	0.986
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	saualis x chrysops	1	10	0.44
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Moostoma	bevericops	1	14	0.74
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Cyprinus	carpio	1	19	2.4
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Cyprinus	carpio	1	19	3.208
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Cyprinus	carpio	1	20	3.4
003 8RDB100101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001 CATOSTOMIDAE	Macrhybops	storenana	2	4	0.017

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003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	15	3	0.037
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	24	3	0.06
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	31	2	0.046
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	ICTALURIDAE	ictalurus	punctatus	CHANNEL CATFISH	1	2	0.002
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	ICTALURIDAE	ictalurus	punctatus	CHANNEL CATFISH	2	3	0.01
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	SCAENIDAE	Aplocheilichthys	gambusia	FRESHWATER DRUM	27	4	0.34
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	SCAENIDAE	Morone	saxatilis x chrysops	HYBRID STRIPER	1	5	0.09
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	MORONIDAE	Aplocheilichthys	zonale	FRESHWATER DRUM	2	11	0.71
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	PERCIDAE	Etheostoma	caprodes	BANDED DARTER	1	2	0.001
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	PERCIDAE	Percina	caprodes	LOOPERCH	1	3	0.008
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	PERCIDAE	Percina	caprodes	LOOPERCH	3	4	0.028
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	PERCIDAE	Sander	caprodes	LOOPERCH	1	9	0.16
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	PERCIDAE	Sander	caprodes	LOOPERCH	2	12	0.71
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	SCAENIDAE	Aplocheilichthys	gambusia	FRESHWATER DRUM	1	4	0.013
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	SCAENIDAE	Aplocheilichthys	gambusia	FRESHWATER DRUM	1	5	0.015
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	SCAENIDAE	Aplocheilichthys	gambusia	FRESHWATER DRUM	1	12	0.43
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	SCAENIDAE	Aplocheilichthys	gambusia	FRESHWATER DRUM	1	14	0.73
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CLUPIIDAE	Dorosoma	cephedianum	GAZZARD SHAD	4	4	0.02
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	ICTALURIDAE	Pylodictis	olivaris	FLATHEAD CATFISH	1	12	0.46
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	14	0.85
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SILVER REDHORSE	1	16	1.2
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	ictalurus	bulbulus	SMALLMOUTH BUFFALO	1	15	1.4
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	ictalurus	bulbulus	SMALLMOUTH BUFFALO	1	15	1.75
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anistrum	SILVER REDHORSE	1	16	0.92
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	11	0.86
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	11	0.86
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	12	0.91
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	12	0.82
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	13	0.85
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	13	0.72
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	14	0.7
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	ictalurus	bulbulus	SMALLMOUTH BUFFALO	1	16	1.6
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	14	0.8
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Ambloplites	rupestris	ROCK BASS	3	0.005	
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Ambloplites	rupestris	ROCK BASS	1	5	0.95
003 RB051000101	3.8 OHIO RDB	ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	ictalurus	bulbulus	SMALLMOUTH BUFFALO	1	17	2
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	PERCIDAE	Sander	caprodes	SAUGER	1	9	0.14
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	SCAENIDAE	Aplocheilichthys	gambusia	FRESHWATER DRUM	7	2	0.015
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	PERCIDAE	Sander	caprodes	LOOPERCH	5	4	0.062
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	PERCIDAE	Percina	caprodes	WHITE BASS	1	8	0.16
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	MORONIDAE	Morone	chrysops	LONGNOSE GAR	1	8	0.02
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	LEPIDOSTEIDAE	Lepisosteus	notatus	BLUNTNOSE MINNOW	1	2	0.001
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CYPRINIDAE	Pimephales	notatus	EMERALD SHINER	24	3	0.09
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	4	2	0.008
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	1	4	0.006
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CYPRINIDAE	Machyrops	strenata	SILVER CHUB	2	4	0.025
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CYPRINIDAE	Sander	vitreus	WALLEYE	1	4	0.012
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	4	6	0.27
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CLUPIIDAE	Dorosoma	cephedianum	GAZZARD SHAD	250	2	0.15
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	2	4	0.04
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	3	5	0.07
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	2	9	0.05
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	2	9	0.44
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	10	0.32
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	6	0.16
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Micropterus	punctulatus	SMALLMOUTH BASS	2	2	0.002
004 RB0572902	4.9 OHIO LDB	ENSWORTH	EF	FALSE	28-Jul-02	2002	CENTRARCHIDAE	Micropterus	punctulatus	SMALLMOUTH BASS	1	10	0.32

Electrofishing Raw Data

APPENDIX C		Electrofishing Raw Data										
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	4	0.01
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	2	2	0.01
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	3	0.011
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Lepomis	cyaneilus	GREEN SUNFISH	1	3	0.014
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	4	0.015
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	3	0.015
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	2	0.011	
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CATOSTOMIDAE	Moostoma	carinatus	RIVER REDHORSE	1	16	1.3
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CATOSTOMIDAE	Dorosoma	cepedianum	SMALLMOUTH REDHORSE	1	6	0.076
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Macropterus	breviceps	GAZZARD SHAD	32	1	0.013
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	6	0.06
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	29-Jul-02	2002	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	1	0.06
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	SILVER REDHORSE	2	1	0.08
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	SILVER REDHORSE	1	15	1.1
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	SMALLMOUTH BUFFALO	1	15	1.1
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	2	4	0.02
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	macrochirus x megalotis	BLUEGILL X LONGEAR SUNFISH	1	3	0.025
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	6	0.02
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	7	0.07
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	7	0.09
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	7	0.095
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	9	0.18
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	9	0.18
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	9	0.27
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	10	0.29
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	12	3	0.1
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	3	0.06
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	BLUEGILL	1	3	0.06
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	2	5	0.08
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	2	7	0.18
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	2	8	0.36
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	2	9	0.6
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	3	3	0.03
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	3	6	0.14
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	3	7	0.12
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	3	8	0.14
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	4	4	0.08
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	5	4	0.08
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Macropterus	dobsoni	SMALLMOUTH BASS	1	10	0.3
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	5	0.04
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	breviceps	SMALLMOUTH REDHORSE	1	3	0.34
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	breviceps	SMALLMOUTH REDHORSE	1	13	0.57
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	RIVER REDHORSE	1	3	0.57
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	RIVER REDHORSE	1	13	0.64
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	RIVER REDHORSE	1	14	0.66
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	RIVER REDHORSE	1	15	0.82
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	RIVER REDHORSE	1	15	0.84
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	RIVER REDHORSE	1	17	1.2
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	carinatus	RIVER REDHORSE	1	18	1.5
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CATOSTOMIDAE	Moostoma	erythrurum	GOLDEN REDHORSE	1	5	0.029
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	68	2	0.24
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Lepomis	rupestris	ROCK BASS	1	2	0.004
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	20	3	0.14
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	5	0.07
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	6	0.08
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	8	0.16
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	8	0.28
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	2	3	0.008
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	2	5	0.05
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	3	0.016
004 9LD607/2902	49 OHIO LDB ENSWORTH	EF	FALSE	01-Oct-01	2001	CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	1	0.002

Electrofishing Raw Data

APPENDIX C

ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	Moxostoma	ansurum	SILVER REDHORSE	4	9	0.795
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	3	10	0.565
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	7	9	0.85
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	9	8	0.89
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	vitreus	WALLEYE	2	6	0.085
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	gurneius	WALLEYE	2	7	0.105
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 SCIAENIDAE	Aplocheilichthys	gurneius	WALLEYE	2	8	0.08
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	4	8	0.38
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	Percina	canadensis	SMALLMOUTH REDHORSE	2	7	0.179
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	7	4	0.11
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	Sander	canadensis x vitreus	SAUGEYE	1	10	0.66
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	Moxostoma	ansurum	SILVER REDHORSE	1	5	0.025
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	ictiobus	bulbulus	SMALLMOUTH BUFFALO	3	10	0.762
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	ictiobus	bulbulus	SMALLMOUTH BUFFALO	2	10	0.72
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	ictiobus	bulbulus	SMALLMOUTH BUFFALO	2	9	0.48
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	hypentelium	nigricans	SMALLMOUTH BUFFALO	1	11	0.44
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	Aplocheilichthys	gurneius	NORTHERN HOG SUCKER	1	9	0.28
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 SCIAENIDAE	Aplocheilichthys	gurneius	FRESHWATER DRUM	2	13	1.375
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CATOSTOMIDAE	Moxostoma	breviceps	FRESHWATER DRUM	1	16	1.18
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 MORONIDAE	Morone	chrysops	WHITE BASS	1	16	1.2
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 MORONIDAE	Morone	chrysops	WHITE BASS	6	8	0.8
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	6	0.065
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CENTRARCHIDAE	Micropterus	punctulatus	SMALLMOUTH BASS	14	8	1.78
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	2	0.001
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	5	0.035
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	2	6	0.12
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	1	8	0.125
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	12	0.485
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.47
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	2	19	4.64
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 MORONIDAE	Morone	chrysops	WHITE BASS	2	6	0.06
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	4	7	0.42
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	1	7	0.08
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis	SAUGEYE	1	4	0.02
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis	SAUGEYE	1	4	0.03
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis	SAUGEYE	2	7	0.8
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis	SAUGEYE	2	8	0.185
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis	SAUGEYE	3	15	2.07
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis	SAUGEYE	5	6	0.13
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 PERCIDAE	Sander	canadensis	SAUGEYE	7	10	1.115
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	12	9	1.38
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	21-Jul-92	1892 MORONIDAE	Morone	chrysops	WHITE BASS	6	5	0.26
ENSWAD9201	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	ictiobus	breviceps	SMALLMOUTH REDHORSE	1	9	0.19
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	ictiobus	punctulatus	CHANNEL CATFISH	19	8	2.04
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CATOSTOMIDAE	Micropterus	punctulatus	SPOTTED BASS	1	15	0.81
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CENTRARCHIDAE	Pomoxis	nigromaculatus	SPOTTED BASS	1	6	0.04
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CENTRARCHIDAE	Dorosoma	cepedianum	BLACK CRAPPIE	1	8	0.16
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	2	8	0.038
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	2	8	0.256
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	3	9	0.362
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.28
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.85
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	20	2.92
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 MORONIDAE	Morone	chrysops	WHITE BASS	17	5	0.536
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 MORONIDAE	Percina	caprodes	LOGPERCH	1	8	0.09
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 PERCIDAE	Sander	canadensis	SAUGEYE	2	4	0.02
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	1	9	0.09
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	1	8	0.056
ENSWAD9202	5.5 OHIO RDB	ENSWORTH	EF	FALSE	07-Sep-92	1892 PERCIDAE	Sander	canadensis x vitreus	SAUGEYE	1	9	0.108

Electrofishing Raw Data

[illegible]

Electrofishing Raw Data

APPENDIX C

006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	ICTALURIDAE	Pygidius	guttatus	1	9	0.15
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	SCAENIDAE	Aplocheilichthys	guttatus	1	14	0.84
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Sander	canadensis	5	8	0.5
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Sander	canadensis	3	9	0.24
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Percina	caprodes	1	10	0.14
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Percina	caprodes	5	4	0.037
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Percina	caprodes	1	4	0.053
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Percina	caprodes	1	2	0.17
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	MORONIDAE	Morone	oxalis	1	7	0.1
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	SCAENIDAE	Aplocheilichthys	guttatus	2	13	1.6
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Pimephales	notatus	1	2	0.001
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Notropis	valenciennesi	57	2	0.07
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Notropis	atherinoides	8	3	0.03
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Cyprinus	carpio	1	18	2.2
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Cyprinella	carpio	1	16	1.3
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Cyprinella	spioptera	3	3	0.014
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Dorosoma	cepedianum	8	2	0.008
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CLUPEIDAE	Dorosoma	flavescens	2	8	0.25
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Percia	flavescens	1	5	0.028
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	SCAENIDAE	Aplocheilichthys	guttatus	2	2	0.004
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	SCAENIDAE	Aplocheilichthys	guttatus	2	2	0.004
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	SCAENIDAE	Aplocheilichthys	guttatus	2	5	0.5
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	SCAENIDAE	Aplocheilichthys	guttatus	1	8	0.14
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Sander	canadensis	1	11	0.24
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Sander	canadensis	1	9	0.12
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Sander	canadensis	1	8	0.06
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Percina	caprodes	2	4	0.033
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Percina	caprodes	1	5	0.04
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Etheostoma	zonale	2	2	0.002
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	PERCIDAE	Etheostoma	caeruleum	2	2	0.004
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Notropis	volucellus	128	2	0.148
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	MORONIDAE	Morone	saxatilis x chrysops	5	6	0.38
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	MORONIDAE	Morone	saxatilis x chrysops	1	11	0.3
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	MORONIDAE	Pygidius	guttatus	1	7	0.08
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Notropis	guttatus	1	3	0.03
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Cyprinella	spioptera	1	19	2
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Cyprinella	spioptera	2	3	0.008
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Cyprinella	spioptera	2	2	0.005
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CLUPEIDAE	Dorosoma	cepedianum	2	10	0.5
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CLUPEIDAE	Dorosoma	cepedianum	1	12	0.44
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CLUPEIDAE	Dorosoma	cepedianum	1	11	0.3
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CLUPEIDAE	Dorosoma	cepedianum	1	6	0.12
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	LEPISOSTEIDAE	Lepisosteus	osseus	1	20	0.4
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	7	2	0.008
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	salmoides	2	5	0.1
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	1	11	0.5
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	1	9	0.16
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	1	6	0.1
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	8	6	0.1
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	7	9	1.38
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	5	2	0.005
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	3	7	0.28
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	3	5	0.12
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	1	12	0.42
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	1	9	0.2
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	1	8	0.16
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	1	4	0.02
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CYPRINIDAE	Micropterus	punctulatus	1	11	0.38
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	1	4	0.38
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CATOSTOMIDAE	ichthius	niger	15	1	1.4
006 8R0B072902	6.6 OHIO RDB	DASHIELDS	EF	FALSE	29-Jul-02	2002	CATOSTOMIDAE	ichthius	butalis	4	15	5.5

APPENDIX C

Electrofishing Raw Data

006 9LDB72402	6.9 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	salmoides	1	8	0.12
006 9LDB72402	6.9 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	doornieu	1	13	0.6
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Natopsis	volucellus	6	2	0.007
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	4	3	0.025
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	cepedianum	2	2	0.002
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	cepedianum	2	3	0.008
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	cepedianum	9	11	0.7
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	cepedianum	9	11	3.1
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	cepedianum	17	10	4.5
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	cepedianum	63	2	0.1
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Cyprinella	whipplei	3	3	0.012
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Cyprinella	punctulatus	3	3	0.022
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	athrinoides	13	2	0.012
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	31	2	0.016
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Natopsis	volucellus	39	2	0.068
007 0RB5100101	7 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Nat				

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APPENDIX C

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008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 SCARINIDAE	Apidolitus	guppies	4	5	0.14
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 SCARINIDAE	Apidolitus	guppies	1	4	0.03
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	doornieu	1	7	0.15
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	5	5	0.205
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	4	2	0.008
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	2	6	0.12
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.15
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.04
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	doornieu	4	2	0.008
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	ichthys	doornieu	4	6	0.275
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	ichthys	bulbulus	3	15	3.5
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	Dorosoma	bulbulus	2	9	0.47
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	Dorosoma	bulbulus	10	4	0.03
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	macranchus	1	7	0.14
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Anabailipies	iguessis	2	5	0.115
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Anabailipies	iguessis	1	3	0.018
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	Microstoma	eythrum	1	12	0.4
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	Microstoma	eythrum	1	11	0.4
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	Microstoma	eythrum	1	11	0.4
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	doornieu	3	5	0.145
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CENTRARCHIDAE	Micropterus	doornieu	31	2	0.04
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CYPRINIDAE	Notropis	volucellus	1	14	0.48
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 PERCIDAE	Sander	vitreus	1	9	0.35
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 PERCIDAE	Sander	canadensis	3	9	0.35
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 PERCIDAE	Sander	canadensis	3	9	0.35
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 PERCIDAE	Sander	canadensis	1	5	0.08
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 PERCIDAE	Sander	canadensis	1	5	0.08
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 PERCIDAE	Sander	canadensis	1	4	0.08
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 NORONIDAE	Notropis	chrysops	1	9	0.22
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CTALURIDAE	Pylaeidus	olivatus	1	9	0.17
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CLUPEIDAE	Dorosoma	cephedianum	1	6	0.08
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CTALURIDAE	Idalurus	punctatus	1	12	0.35
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CLUPEIDAE	Dorosoma	cephedianum	1	7	0.09
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CYPRINIDAE	Notropis	athetoides	2	1	0.001
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CYPRINIDAE	Notropis	athetoides	1	3	0.003
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CYPRINIDAE	Notropis	athetoides	4	4	0.055
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CYPRINIDAE	Notropis	athetoides	1	15	1.2
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CYPRINIDAE	Cyprinus	carpio	1	12	0.5
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CYPRINIDAE	Cyprinus	carpio	1	5	0.014
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CYPRINIDAE	Cyprinella	spiotetra	3	3	0.014
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CLUPEIDAE	Dorosoma	cephedianum	1452	2	1.03
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	Dorosoma	cephedianum	12	0.1	0.1
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	Dorosoma	cephedianum	1	22	2.4
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	30-Jul-02	2002 CATOSTOMIDAE	Dorosoma	cephedianum	1	14	0.8
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CENTRARCHIDAE	Micropterus	doornieu	1	13	0.6
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CENTRARCHIDAE	Micropterus	doornieu	1	12	0.41
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CENTRARCHIDAE	Micropterus	doornieu	1	10	0.2
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CENTRARCHIDAE	Micropterus	doornieu	1	8	0.15
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CENTRARCHIDAE	Micropterus	doornieu	1	7	0.11
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CENTRARCHIDAE	Micropterus	doornieu	1	5	0.05
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CENTRARCHIDAE	Micropterus	doornieu	1	4	0.011
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CENTRARCHIDAE	Micropterus	doornieu	1	7	0.15
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 MORONIDAE	Notropis	macranchus	1	7	0.15
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CLUPEIDAE	Dorosoma	saxatilis x chrysops	2	10	0.5
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	2	11	0.55
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	1	13	0.6
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	1	15	0.6
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	1	14	0.6
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	1	15	0.6
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	1	12	0.19
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	1	9	0.19
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	1	12	0.45
008 0LD67/3002	8.OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003 CATOSTOMIDAE	Dorosoma	cephedianum	1	14	0.92

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008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CENTRARCHIDAE	Lepomis	macrochirus	1	6	0.09
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CATOSTOMIDAE	Carpio	carpio	1	14	0.75
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	MORONIDAE	Carpiotes	saxatilis x chrysops	6	6	0.343
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	MORONIDAE	Morone	caproties	1	4	0.007
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	PERCIDAE	Sander	canadensis	1	8	0.09
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	PERCIDAE	Sander	canadensis	1	13	0.39
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	PERCIDAE	Sander	canadensis	1	12	0.1
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	PERCIDAE	Sander	canadensis	7	11	0.36
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	SCIAENIDAE	Aphidius	canadensis	3	7	0.2
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CATOSTOMIDAE	Morone	canadensis	1	13	0.81
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CYPRINIDAE	Notropis	virgatum	2	3	0.095
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CYPRINIDAE	Micropterus	veloxellus	1	10	0.3
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CENTRARCHIDAE	Micropterus	punctulatus	1	13	0.48
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CENTRARCHIDAE	Micropterus	punctulatus	1	7	0.11
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CENTRARCHIDAE	Dorosoma	salmoides	1	8	0.11
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CLUPEIDAE	Dorosoma	cepedianum	1	12	0.32
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CLUPEIDAE	Dorosoma	cepedianum	2	9	0.35
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CYPRINIDAE	Cyprinus	carpio	2	16	3.4
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CATOSTOMIDAE	Notropis	bulbulus	1	16	1.2
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CYPRINIDAE	Micropterus	atherinoides	4	3	0.007
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CENTRARCHIDAE	Micropterus	dobsonii	4	3	0.01
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CENTRARCHIDAE	Micropterus	veloxellus	14	2	0.18
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CTALURIDAE	Notropis	punctatus	1	9	0.09
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CTALURIDAE	Notropis	punctatus	1	9	0.11
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	MORONIDAE	Morone	chrysops	1	6	0.09
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	MORONIDAE	Morone	saxatilis x chrysops	1	7	0.11
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	MORONIDAE	Morone	saxatilis x chrysops	2	9	0.39
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CATOSTOMIDAE	Carpiotes	carpio	1	12	0.42
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CATOSTOMIDAE	Carpiotes	carpio	1	13	0.61
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CYPRINIDAE	Notropis	atherinoides	4	2	0.005
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	14-Jul-03	2003	CYPRINIDAE	Dorosoma	cepedianum	190	2	0.21
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CLUPEIDAE	Dorosoma	veloxellus	13	1	0.004
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CLUPEIDAE	Dorosoma	cepedianum	25	2	0.022
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinella	spilotera	2	2	0.005
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinella	spilotera	6	5	0.04
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinus	carpio	1	15	1.2
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinus	carpio	1	15	1.2
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinus	carpio	1	17	1.5
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinus	carpio	1	19	2.1
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinus	carpio	1	22	2.1
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinus	carpio	2	16	2.85
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Cyprinus	carpio	4	14	3.86
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Notropis	atherinoides	12	2	0.022
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CLUPEIDAE	Dorosoma	cepedianum	2	10	0.88
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	PERCIDAE	Etheostoma	zonale	2	2	0.002
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	SCIAENIDAE	Aphidius	gummius	1	15	1
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	SCIAENIDAE	Aphidius	gummius	1	8	0.16
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	SCIAENIDAE	Aphidius	gummius	1	8	0.09
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	SCIAENIDAE	Aphidius	gummius	1	8	0.09
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	PERCIDAE	Notropis	atherinoides	24	4	0.01
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Notropis	hydrochilus	1	2	0.001
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	MORONIDAE	Morone	saxatilis x chrysops	3	6	0.27
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	LEPISOSTEIDAE	Lepisosteus	osseus	1	23	0.62
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Pimephales	notatus	1	3	0.004
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Pimephales	notatus	1	2	0.002
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CYPRINIDAE	Pimephales	notatus	1	1	0.001
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CLUPEIDAE	Dorosoma	cepedianum	1	8	0.13
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	PERCIDAE	Sander	canadensis	6	8	0.88
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CLUPEIDAE	Dorosoma	cepedianum	10	6	0.46
008.6LD0671403	8.6 OHIO LDB	DASHIELDS	EF	FALSE	24-Jul-02	2002	CENTRARCHIDAE	Micropterus	dobsonii	6	2	0.009

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ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.025
ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.03
ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.185
ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	1	11	0.365
ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	2	7	0.17
ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	2	8	0.235
ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.025
ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	punctulatus	2	5	0.07
ENSMWD0201	9.5 OHIO RDB	DASHIELDS	EF	FALSE	21-Jul-92	1992 CENTRARCHIDAE	Micropterus	breviceps	4	6	0.21
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Moostoma	SILVER REDHORSE	1	13	0.62
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Lepisomis	macrochirus	1	4	0.03
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Lepisomis	macrochirus	1	4	0.015
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Lepisomis	macrochirus	1	4	0.015
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Anabailus	rock bass	1	4	0.03
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Anabailus	rock bass	1	4	0.019
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Moostoma	golden redhorse	8	3	0.018
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Moostoma	golden redhorse	3	2	0.012
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Moostoma	SILVER REDHORSE	2	15	1.64
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Moostoma	SILVER REDHORSE	1	16	1.1
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Moostoma	SILVER REDHORSE	1	13	0.68
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Moostoma	SILVER REDHORSE	1	13	0.57
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Moostoma	SILVER REDHORSE	1	13	0.48
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Ichthyos	SMALLMOUTH BUFFALO	1	16	1.408
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Ichthyos	SMALLMOUTH BUFFALO	1	15	1.3
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Ichthyos	SMALLMOUTH BUFFALO	1	15	1.1
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Ichthyos	SMALLMOUTH BUFFALO	1	14	0.93
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Ichthyos	SMALLMOUTH BUFFALO	1	14	0.93
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Carpoides	QUILLBACK	1	13	0.68
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Carpoides	QUILLBACK	1	13	0.68
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CATOSTOMIDAE	Carpoides	RIVER CARPSUCKER	1	16	0.89
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	SILVER REDHORSE	1	7	0.1
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASIS	1	6	0.12
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASIS	1	6	0.04
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASIS	1	5	0.04
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Lepisomis	BLUEGILL	19	1	0.012
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Lepisomis	macrochirus	1	6	0.08
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Lepisomis	macrochirus	1	6	0.07
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	BLUEGILL	2	7	0.15
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASIS	1	9	0.2
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASIS	1	9	0.1
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASIS	3	3	0.01
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASIS	6	3	0.06
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Mysis	COMMON CARP	1	19	2
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	GIZZARD SHAD	3	10	0.78
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	GIZZARD SHAD	4	11	1.4
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	GIZZARD SHAD	100	3	0.085
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CLUPEIDAE	Dorosoma	GIZZARD SHAD	16	2	0.12
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinella	SPOTFIN SHINER	4	3	0.014
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinella	STEELCOLOR SHINER	1	3	0.004
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinus	COMMON CARP	1	12	0.58
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinus	COMMON CARP	1	14	0.84
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinus	COMMON CARP	1	15	0.89
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinus	COMMON CARP	1	15	1
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinus	COMMON CARP	1	15	1
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinus	GIZZARD SHAD	10	24	1.1
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Dorosoma	COMMON CARP	1	18	1.8
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Dorosoma	GIZZARD SHAD	4	4	0.01
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinus	COMMON CARP	1	19	2.2
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Cyprinus	COMMON CARP	1	24	3.1
008 8LDB060601	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001 CYPRINIDAE	Macrhybopsis	SILVER CHUB	1	5	0.018

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008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.6
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	2	2	0.002
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CLUPEIDAE	Micropterus	punctulatus	SPOTTED BASS	1	5	0.05
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	8	0.12
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	10	0.28
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	3	0.04
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	9	0.08
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	2	0.02
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Notropis	sp.	EMERALD SHINER	2	3	0.01
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Notropis	sp.	WORME SP	1	3	0.01
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	ICTALURIDAE	Ptychodictis	olivaris	FLATHEAD CATFISH	1	8	0.1
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	ICTALURIDAE	Idalutius	punctatus	CHANNEL CATFISH	3	3	0.004
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	ICTALURIDAE	Idalutius	punctatus	CHANNEL CATFISH	2	2	0.004
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Pimephales	notatus	BLUNTNOS MINNOW	10	2	0.014
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	57	2	0.082
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	6	1	0.002
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	6	3	0.023
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	1	1	0.001
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Narcynobops	strenaria	SILVER CHUB	1	5	0.02
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Notropis	rudisius	SPOTT TAIL SHINER	1	3	0.003
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	CYPRINIDAE	Etheostoma	flaculare	SAUGER	1	6	0.001
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	PERCIDAE	Aplocheilichthys	canadensis x vitreus	SAUGER	1	6	0.001
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	SCIAENIDAE	Sander	canadensis	FRESHWATER DRUM	2	8	0.05
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	PERCIDAE	Sander	canadensis	SAUGER	1	10	0.18
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	PERCIDAE	Sander	zonale	SAUGER	1	2	0.001
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	PERCIDAE	Etheostoma	capredos	BANDED DARTER	3	2	0.004
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	PERCIDAE	Percia	canadensis	LOGPERCH	1	9	0.12
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	PERCIDAE	Sander	canadensis	SAUGER	1	5	0.025
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	08-Aug-01	2001	SCIAENIDAE	Aplodinotus	grunniens	FRESHWATER DRUM	18	3	0.03
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	9	0.21
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	9	0.26
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	1
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	9	0.22
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	11	0.4
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	11	0.43
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	11	0.48
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	4	4	0.05
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	25	3	0.14
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	25	4	0.18
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	106	3	0.98
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	334	4	2.4
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	5	0.025
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	9	0.24
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	10	0.41
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	2	8	0.31
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	2	11	0.88
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	3	9	0.07
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	3	5	0.07
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	4	9	0.86
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	5	7	0.52
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinella	olivaris	SPOTTIN SHINER	1	2	0.002
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	ICTALURIDAE	Ptychodictis	carpio	FLATHEAD CATFISH	1	8	0.1
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1.2
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.25
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.3
008.8LD8080801	9.5 OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.5

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009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	1	17	1.9
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	1	18	2.1
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Notropis	athetoides	28	3	0.064
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Notropis	athetoides	29	2	0.04
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Notropis	athetoides	30	3	0.088
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CYPRINIDAE	Notropis	vollicellus	1	2	0.02
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	ICTALURIDAE	italurus	punctulatus	5	3	0.02
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	MORONIDAE	Morone	chrysops	1	6	0.08
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	PERCIDAE	Sander	canadensis	1	7	0.08
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	PERCIDAE	Sander	canadensis	1	7	0.07
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	PERCIDAE	Sander	canadensis	1	11	0.3
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	PERCIDAE	Sander	canadensis	1	12	0.34
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	SCAENIDAE	Ambloplites	rupestris	1	6	0.1
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	SCAENIDAE	Ambloplites	rupestris	2	4	0.016
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	ICTALURIDAE	italurus	punctulatus	1	17	1.25
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.072
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.04
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.015
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	brevirostris	1	11	0.32
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	15	0.88
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	15	0.83
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	14	0.908
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	14	0.78
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	16	1.6
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	14	0.78
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	14	0.38
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	13	0.74
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	14	1.2
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Moxostoma	anisurum	1	15	0.83
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Lepomis	microlophus	1	3	0.007
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Lepomis	microlophus	1	7	0.14
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Lepomis	microlophus	48	2	0.14
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Lepomis	microlophus	1	7	0.12
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Lepomis	microlophus	1	4	0.018
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Lepomis	microlophus	1	5	0.08
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CENTRARCHIDAE	Lepomis	microlophus	1	7	0.18
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Lepomis	microlophus	1	14	0.8
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	03-Oct-01	2001	CATOSTOMIDAE	Lepomis	microlophus	1	11	0.41
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	0	0.9
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	12	0.7
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	1	0.41
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	14	0.618
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	10	0.66
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	2	15	2.29
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	8	0.1
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	10	12	4.853
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	16	0.48
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	ESOCIDAE	Esoc	musquinongy	1	5	0.095
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	4	13	2.886
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	10	0.16
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	3	13	2.305
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	2	5	0.05
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	3	11	0.21
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	4	9	0.435
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	13	0.47
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	7	0.09
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	1	5	0.02
009 9LDB100301	9.9.OHIO LDB	DASHIELDS	EF	FALSE	20-Jul-92	1992	CENTRARCHIDAE	Dorosoma	cepedianum	2	5	0.025

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APPENDIX C

[illegible]

Electrofishing Raw Data

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ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 SCANIDAE	Apollonius	guppies	FRESHWATER DRUM	1	0.45
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 PERCIDE	Sander	vitreus	WALLEYE	2	7
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 PERCIDE	Sander	vitreus	WALLEYE	1	9
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 PERCIDE	Sander	vitreus	WALLEYE	1	8
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	6	0.3
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Anabailopsis	repastis	ROCK BASS	1	6
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	3	0.12
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	4	0.08
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	4	0.5
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	20	7
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	7	1.655
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	0.12
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	0.125
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	0.125
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	2	14
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	10	0.2
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Anabailopsis	repastis	SMALLMOUTH REDHORSE	1	15
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Anabailopsis	repastis	ROCK BASS	7	0.12
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Leptomis	macrochirus	ROCK BASS	2	4
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Leptomis	macrochirus	BLUEGILL	1	5
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	0.51
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	10
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	0.32
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	0.45
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	0.015
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	5
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	0.07
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	7
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	cyprinus	GOLDEN REDHORSE	1	8
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	GOLDEN REDHORSE	1	0.1
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	2	10
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Ichthyus	bubalus	SMALLMOUTH REDHORSE	1	0.5
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Ichthyus	bubalus	SMALLMOUTH BUFFALO	1	8
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	anisurum	SMALLMOUTH BUFFALO	1	0.2
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	anisurum	SILVER REDHORSE	4	9
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	anisurum	SILVER REDHORSE	1	0.11
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	anisurum	SILVER REDHORSE	1	0.51
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	anisurum	SILVER REDHORSE	3	0.51
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	anisurum	SILVER REDHORSE	1	14
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	anisurum	SILVER REDHORSE	7	1.13
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	anisurum	SILVER REDHORSE	8	3.625
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	6
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 CATOSTOMIDAE	Apollonius	guppies	SMALLMOUTH REDHORSE	1	0.085
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Sander	canadensis x vitreus	SAUGEYE	2	3
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Sander	canadensis	SAUGEYE	2	0.055
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Sander	canadensis	SAUGEYE	1	0.1
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Sander	canadensis	SAUGER	7	0.105
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Sander	canadensis	SAUGER	2	7
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Percia	caprodes	SAUGER	1	5
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Percia	caprodes	LOGPERCH	4	0.06
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Percia	caprodes	LOGPERCH	5	3
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Percia	caprodes	LOGPERCH	3	0.014
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 CTALURIDAE	italicus	punctatus	CHANNEL CATFISH	4	0.03
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Percia	caprodes	LOGPERCH	1	12
ENSMWP9202	10.4 OHIO RDB	DASHIELDS	EF	FALSE	31-Aug-92	1992 PERCIDE	Percia	caprodes	LOGPERCH	2	0.001
ENSMWP9201	10.4 OHIO RDB	DASHIELDS	EF	FALSE	20-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	5	12
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CENTRARCHIDAE	Dorosoma	cepedianum	SMALLMOUTH BASS	1	2.26
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CLUPIDAE	Dorosoma	cepedianum	GIZZARD SHAD	9	0.31
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CLUPIDAE	Dorosoma	cepedianum	GIZZARD SHAD	3	0.693
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CENTRARCHIDAE	Micropterus	punctatus	SPOTTED BASS	1	12
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CENTRARCHIDAE	Micropterus	punctatus	SPOTTED BASS	4	0.03
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CENTRARCHIDAE	Micropterus	punctatus	SPOTTED BASS	7	0.03
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CENTRARCHIDAE	Micropterus	punctatus	SMALLMOUTH BASS	3	4
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CENTRARCHIDAE	Micropterus	punctatus	SMALLMOUTH BASS	3	0.04
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CENTRARCHIDAE	Micropterus	punctatus	SMALLMOUTH BASS	3	0.022
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CENTRARCHIDAE	Cyprinus	carpio	SMALLMOUTH BASS	1	10
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CATOSTOMIDAE	Moxostoma	duquesnei	COMMON CARP	2	1.02
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CATOSTOMIDAE	Moxostoma	duquesnei	BLACK REDHORSE	2	13
DASHAD9101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1991 CATOSTOMIDAE	Moxostoma	duquesnei	BLACK REDHORSE	1	0.45

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DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	SILVER REDHORSE	3	3	0.019
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	SMALLMOUTH BUFFALO	3	3	0.023
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	NORTHERN HOG SUCKER	1	6	0.043
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	SMALLMOUTH BASS	1	11	0.44
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	MONEYE	4	3	0.008
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	FRESHWATER DRUM	4	3	0.018
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	FLATFISH	4	3	0.03
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	SAUGER	6	5	0.15
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	SAUGER	7	5	0.15
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	SAUGER	2	11	0.55
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	WHITE BASS	160	4	3.08
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	GOLDEN CATFISH	1	10	0.47
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	3	3	0.013
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	EMERALD SHINER	1	16	1.5
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	EMERALD SHINER	3	2	0.003
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	3	3	0.005
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	3	13	2.16
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	3	3	2.35
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	2	15	2.35
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	2	14	1.89
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	2	14	0.18
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	15	0.93
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	11	0.3
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	10	0.23
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	6	0.065
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	2	13	0.96
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	2	3	0.012
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	2	4	0.02
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	15	1
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	4	14	2.82
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	29	4	0.347
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	17	3	0.132
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	12	0.51
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	8	0.03
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	4	0.014
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	2	0.003
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	23	3	0.126
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	11	0.51
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	40	4	0.66
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	12	5	0.37
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	12	3	0.102
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	7	7	0.875
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	6	9	1.424
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	3	10	0.83
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	2	12	0.78
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	12	0.39
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	2	13	1.042
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	8	0.03
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	6	0.075
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	5	0.055
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	4	0.02
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	2	0.002
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	2	0.001
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	13	0.86
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	7	3	0.07
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	1	5	0.024
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	39	4	0.5
DASHB09101	11.9 OHIO RDB	DASHIELDS	EF	FALSE	17-Jul-91	1891	CATOSTOMIDAE	anaxium	COMMON CARP	17	3	0.079

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DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	vitreus	6	4	0.06
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	vitreus	5	5	0.083
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	sp	2	1	
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	canadensis x vitreus	10	5	0.16
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 MORONIDAE	Morone	chrysops	3	3	0.018
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	canadensis x vitreus	1	11	0.25
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	canadensis	9	5	0.14
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	canadensis	5	6	0.178
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	canadensis	1	10	0.21
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Percia	caprodes	2	4	0.02
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Percia	caprodes	1	2	0.004
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Etheostoma	labellare	1	2	0.001
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Morone	chrysops	39	4	2.03
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 MORONIDAE	Morone	chrysops	39	4	2.03
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 PERCIDAE	Sander	WHITE BASS	5	4	0.11
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CATOSTOMIDAE	Caprodes	canadensis x vitreus	6	4	0.11
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CENTRARCHIDAE	Micropterus	cyprinus	2	4	0.022
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Micropterus	punctulatus	1	5	0.03
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Cyprinella	whipplei	8	3	0.047
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Macrhybopsis	storeriana	1	5	0.018
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Cyprinus	carpio	7	14	7.04
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Cyprinus	carpio	6	15	7.12
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Cyprinus	carpio	4	12	2.35
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Cyprinus	carpio	3	13	2.22
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Cyprinus	carpio	3	4	0.04
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Cyprinus	carpio	2	16	2.85
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notemigonus	chrysolaetus	2	3	0.013
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notemigonus	chrysolaetus	2	3	0.013
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CLUPEIDAE	Dorosoma	cepedianum	1	12	0.51
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Carassius	gibelius	1	2	0.032
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Dorosoma	cepedianum	620	3	1.835
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CLUPEIDAE	Dorosoma	cepedianum	1	2	
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CENTRARCHIDAE	Micropterus	punctulatus	15	4	0.233
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CENTRARCHIDAE	Micropterus	punctulatus	11	3	0.073
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CENTRARCHIDAE	Micropterus	punctulatus	1	10	0.28
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 ICTALURIDAE	Itallurus	punctulatus	4	3	0.017
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Cyprinus	carpio	1	17	1.7
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notropis	athetoides	21	3	0.069
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notropis	amulius	1	8	0.19
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CENTRARCHIDAE	Hiodon	tergistris	1	8	0.19
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 HODONTIDAE	Hiodon	volucellus	3	4	0.02
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notropis	volucellus	3	4	0.011
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notropis	volucellus	1	17	1.5
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notropis	stramineus	1	4	0.01
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notropis	athetoides	1	2	0.002
DASHB09101	13.4 OHIO RDB	MONTGOMERY	EF	FALSE	17-Jul-91	1891 CYPRINIDAE	Notemigonus	chrysolaetus	6	2	0.006
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Percia	copelandi	4	4	0.04
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	9	2	0.007
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	1	8	0.085
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	1	8	0.21
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	1	8	0.11
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	1	10	0.25
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 MORONIDAE	Morone	sp	1	10	0.2
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	1	5	0.185
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	4	7	0.08
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Percia	caprodes	1	4	0.02
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Percia	caprodes	1	4	0.036
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	3	7	0.2
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Percia	caprodes	3	3	0.01
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Etheostoma	blennioides	3	3	0.002
MONT0191702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1897 PERCIDAE	Sander	canadensis	1	11	0.26

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MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	canadensis	1	11	0.28
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	SAUGER	1	12	0.41
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	canadensis	1	13	0.51
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	SAUGER	1	13	0.54
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	canadensis	1	15	0.86
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	canadensis	2	7	0.04
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	canadensis	2	10	0.02
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	WALLEYE	1	8	0.14
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 MORONIDAE	Monroe sp	MORONE SP	3	4	0.08
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	3	8	0.215
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	canadensis	3	7	0.21
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	SAUGER	5	7	0.32
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 SCIAENIDAE	Aplodinotus	FRESHWATER DRUM	1	5	0.018
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	canadensis	2	7	0.12
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	4	4	0.052
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	4	0.02
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	5	0.03
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 SCIAENIDAE	Aplodinotus	FRESHWATER DRUM	18	3	0.09
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	5	0.04
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	6	0.055
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	7	0.08
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	8	0.22
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	10	0.41
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	11	0.45
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	11	0.54
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	5	4	0.11
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Pomoxis	BLACK CRAPPIE	2	8	0.485
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	10	0.35
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis	EMERALD SHINER	1	3	0.004
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 MORONIDAE	Monroe	WHITE BASS	1	6	0.05
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 ICTALURIDAE	Idallus	CHANNEL CATFISH	4	3	0.011
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 HIODONTIDAE	Hiodon	MCONEYE	2	4	0.025
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 HIODONTIDAE	Hiodon	MCONEYE	1	4	0.01
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis	MIMIC SHINER	76	2	0.12
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Alosa	SKIPJACK HERRING	1	5	0.001
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Notropis	EMERALD SHINER	2	5	0.08
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	3	5	0.08
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Cyprinus	COMMON CARP	1	20	3
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Cyprinus	COMMON CARP	1	15	1.05
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Cyprinus	COMMON CARP	1	14	1.1
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	16	4	0.21
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	7	9	1
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 MORONIDAE	Monroe	MORONE SP	2	5	0.12
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Notropis	SPOTTAIL SHINER	4	3	0.012
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sender	canadensis	1	11	0.225
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 PERCIDAE	Micropterus	SMALLMOUTH BASS	1	4	0.015
MONT019702	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 SCIAENIDAE	Aplodinotus	FRESHWATER DRUM	16	4	0.132
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CYPRINIDAE	Cyprinus	COMMON CARP	1	4	0.85
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CYPRINIDAE	Cypris	COMMON CARP	2	5	0.03
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	10	0.3
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	11	0.42
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	3	3	0.01
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CLUPEIDAE	Alosa	SKIPJACK HERRING	9	4	0.04
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	1	11	0.34
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	4	5	0.1
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	10	8	1.13
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	32	3	0.21
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	81	4	0.7
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CLUPEIDAE	Cypris	COMMON CARP	1	13	0.85
MONT019701	14.9 OHIO LDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 CYPRINIDAE	Cypris	COMMON CARP	1	13	0.86

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MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.9
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	GOLDEN REDHORSE	3	6	0.15
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1.46
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	PERCIDAE	Sander	canadensis	SAUGER	1	12	0.3
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Macrhybopsis	storeniana	SILVER CHUB	3	4	0.04
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Macrhybopsis	storeniana	SILVER CHUB	2	2	0.003
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	18	1.81
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.57
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.4
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1.8
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.18
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.2
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.03
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.1
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	GOLDEN REDHORSE	1	14	0.6
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.5
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	10	0.25
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CENTRARCHIDAE	Pomoxis	ngimaculatus	BLACK CRAPPIE	1	9	0.28
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Carpiotes	carpio	RIVER CARPSUCKER	1	12	0.85
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Carpiotes	carpio	RIVER CARPSUCKER	1	16	1.1
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Carpiotes	carpio	RIVER CARPSUCKER	1	16	1.32
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Hyentellum	nigricans	NORTHERN HOG SUCKER	3	3	0.016
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Ictalurus	nebulosus	SMALLMOUTH BUFFALO	1	14	0.86
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Ictalurus	nebulosus	SMALLMOUTH BUFFALO	1	12	1.52
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SILVER REDHORSE	1	13	0.24
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SILVER REDHORSE	1	13	0.54
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SILVER REDHORSE	1	13	0.6
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SILVER REDHORSE	1	14	0.7
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SILVER REDHORSE	1	8	0.13
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASSET	1	3	0.01
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	GOLDEN REDHORSE	1	9	0.18
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	GOLDEN REDHORSE	1	13	0.59
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	GOLDEN REDHORSE	1	13	0.58
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	GOLDEN REDHORSE	1	13	0.57
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	GOLDEN REDHORSE	1	12	0.5
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	GOLDEN REDHORSE	1	12	0.45
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	9	0.13
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	9	0.16
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	SMALLMOUTH REDHORSE	1	9	0.2
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	SMALLMOUTH REDHORSE	1	9	0.14
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	SMALLMOUTH REDHORSE	1	9	0.13
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	erythrum	SMALLMOUTH REDHORSE	1	11	0.32
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	RIVER REDHORSE	1	12	0.4
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	3	0.004
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Notropis	volucellus	MINNIE SHINER	1	10	0.25
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	GOLDEN REDHORSE	1	6	0.14
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	2	3	0.007
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Notropis	atherinoides	EMERALD SHINER	45	3	0.045
MON1019701	14.9.OHIO LDB	MON1019701	EF	FALSE	18-Aug-97	1997	SCIAENIDAE	Aplodinotus	grunniens	FRESHWATER DRUM	2	5	0.045
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Carpiotes	carpio	RIVER CARPSUCKER	2	4	0.085
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Hyentellum	nigricans	QUILLBACK HOG SUCKER	1	4	0.03
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Hyentellum	nigricans	NORTHERN HOG SUCKER	1	4	0.03
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Hyentellum	nigricans	NORTHERN HOG SUCKER	1	6	0.085
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Ictalurus	nigricans	NORTHERN HOG SUCKER	1	7	0.8
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Ictalurus	nigricans	NORTHERN HOG SUCKER	1	14	0.09
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Ictalurus	nigricans	NORTHERN HOG SUCKER	1	7	0.8
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Ictalurus	nigricans	NORTHERN HOG SUCKER	1	14	0.1
MON1019702	14.9.OHIO LDB	MON1019702	EF	FALSE	07-Oct-97	1997	CATOSTOMIDAE	Moxostoma	breviceps	SILVER REDHORSE	1	13	0.61

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015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus dolomieu	8	1	5	0.33
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Pseudocatharus olivaceus	1	11	5	0.33
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus punctulatus	1	6	0.07	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Lepomis macrochirus	2	3	0.019	9
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPEDAE	Dorosoma cepedianum	2	10	0.59	20
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPEDAE	Gizzard SHAD	3	7	0.265	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPEDAE	Dorosoma cepedianum	5	8	0.61	9
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPEDAE	Gizzard SHAD	8	5	0.34	10
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPEDAE	Dorosoma cepedianum	10	6	0.51	14
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPEDAE	Gizzard SHAD	300	2	0.3	3
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPEDAE	Gizzard SHAD	300	2	0.3	3
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CYPRINIDAE	SPOTFIN SHINER	3	3	0.004	3
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CYPRINIDAE	vollicella	20	2	0.04	2
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	GOLDEN REDHORSE	3	10	0.68	10
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	erythrionum	3	10	0.68	10
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SMALLMOUTH REDHORSE	1	15	1.1	15
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	quillback	1	13	0.72	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	NORTHERN HOG SLICKER	1	5	0.06	5
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	NORTHERN HOG SLICKER	1	5	0.06	5
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SMALLMOUTH BUFFALO	2	6	0.132	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SMALLMOUTH BUFFALO	1	14	1.2	14
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SMALLMOUTH BUFFALO	1	16	2	16
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SMALLMOUTH BUFFALO	1	18	2.5	18
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	BLACK BUFFALO	1	15	1.4	15
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SILVER REDHORSE	1	6	0.085	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SILVER REDHORSE	1	16	1.4	16
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	SMALLMOUTH BAS	1	2	0.001	2
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SMALLMOUTH REDHORSE	1	13	0.61	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	breviceps	1	13	0.04	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	regalis	1	13	0.04	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	erythrionum	1	13	0.1	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SMALLMOUTH REDHORSE	1	14	1	14
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	GOLDEN REDHORSE	3	5	0.18	5
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	erythrionum	3	5	0.18	5
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	erythrionum	5	6	0.33	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	LEPOGILL	1	4	0.06	4
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	macrochirus	1	6	0.1	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	macrochirus	1	12	0.48	12
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	FLAT-HEAD CATFISH	1	6	0.1	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	SILVER REDHORSE	3	13	3.1	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	channel catfish	1	5	0.023	5
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	channel catfish	1	18	0.34	18
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	LEPOSTIDAE	LONGNOSE GAR	1	6	0.35	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	LEPOSTIDAE	WHITE BASS	3	6	0.35	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAE	SAUGER	2	9	0.29	9
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAE	canadensis	12	6	1.32	12
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAE	SAUGER	1	10	0.06	10
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	SCAENIDAE	gummis	1	6	0.06	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	SCAENIDAE	gummis	1	6	0.06	6
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	SCAENIDAE	FRESHWATER DRUM	1	19	2.6	19
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	SCAENIDAE	FRESHWATER DRUM	1	19	2.6	19
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAE	WHITE BASS	4	7	0.48	4
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAE	LOGPERCH	4	7	0.48	4
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	EMERALD SHINER	4	4	0.08	4
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	athennodes	14	3	0.45	14
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	chrysochloris	1	4	0.01	4
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	chrysochloris	1	4	0.01	4
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	SKYPIACK HERRING	3	3	0.005	3
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	chrysochloris	100	3	0.6	100
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Gizzard SHAD	3	3	0.6	3
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	capetianum	500	3	3	500
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	Gizzard SHAD	3	3	0.6	3
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	12	0.55	12
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	carpio	1	12	0.55	12
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	12	0.55	12
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	12	0.55	12
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	13	0.7	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	13	0.7	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	13	0.7	13
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	14	0.8	14
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	14	0.8	14
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	15	0.94	15
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	15	0.94	15
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	15	0.94	15
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	16	1.2	16
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	20	2.58	20
015	3R0607/2302	15.3	OHIO	ROB	MONTGOMERY	EF	FALSE	18-Aug-97	1997	CYPRINIDAE	COMMON CARP	1	20	2.58	20

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MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.7
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus dolomieu	carpio	SMALLMOUTH BASS	1	3	0.08
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.81
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.85
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.85
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.9
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.92
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.96
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1.1
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.05
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.35
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.45
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.5
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	21	3.1
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis atherinoides	spiloptera	EMERALD SHINER	1	4	0.007
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	SPOTFIN SHINER	1	3	0.003
MONT029701	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	18-Aug-97	1997 SCIAENIDAE	Aplodinotus grunniens	drum	FRESHWATER DRUM	10	2	0.01
MONT029701	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Carpiodes carpio	carpio	RIVER CARPSUCKER	1	2	0.01
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Carpiodes	carpio	QUILLBACK	1	5	0.02
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Ichthyobus	ichthyobus	SMALLMOUTH BUFFALO	1	14	1
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Ichthyobus	ichthyobus	SMALLMOUTH BUFFALO	1	15	0.09
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	anthurus	SILVER REDHORSE	1	14	0.89
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	brevirostris	SMALLMOUTH REDHORSE	1	11	0.4
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	brevirostris	SMALLMOUTH REDHORSE	1	13	0.505
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	brevirostris	SMALLMOUTH REDHORSE	1	16	0.5
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	carinatum	RIVER REDHORSE	1	19	0.85
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	carinatum	RIVER REDHORSE	1	17	1.3
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	carinatum	RIVER REDHORSE	1	17	1.3
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	carinatum	RIVER REDHORSE	1	18	1.85
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus dolomieu	carpio	SMALLMOUTH BASS	1	6	0.038
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	13	0.56
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis atherinoides	atherinoides	EMERALD SHINER	19	3	0.066
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	7	0.11
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	6	0.195
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	8	0.085
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	4	0.02
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	carinatum	RIVER REDHORSE	1	21	2.2
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	14	0.6
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	14	0.1
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	3	0.52
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	12	0.56
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	12	0.51
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	12	0.49
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	12	0.48
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	Micropterus dolomieu	carpio	SMALLMOUTH BASS	1	5	0.04
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Macostoma	eythrum	GOLDEN REDHORSE	1	14	0.71
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis atherinoides	atherinoides	EMERALD SHINER	3	3	0.008
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 SCIAENIDAE	Aplodinotus grunniens	drum	FRESHWATER DRUM	9	3	0.05
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPIDAE	Dorosoma cepedianum	volucellus	GIZZARD SHAD	42	4	0.6
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis mimas	mimas	MIMIC SHINER	1	2	
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis punctatus	punctatus	MIMIC SHINER	1	3	0.001
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATALUIDAE	italurus	italurus	CHANNEL CATFISH	1	3	0.02
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis	sp	MOORE SP	3	4	0.001
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 MORONIDAE	Morone	morone	MORONE SP	3	5	0.09
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Percina	percinus	LOGPERCH	3	3	0.035
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Percina	percinus	LOGPERCH	2	3	0.01
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sander canadensis	sander	SAUGER	1	7	0.04
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sander canadensis	sander	SAUGER	1	7	0.06
MONT029702	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sander canadensis	sander	SAUGER	1	13	0.41

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APR02029702	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sander	canadensis	1	13	0.5
MONT029702	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 PERCIDAE	Sander	canadensis	1	14	0.6
MONT029702	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 SCIAENIDAE	Aplodinotus	gurnieus	1	12	0.53
MONT029702	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 SCIAENIDAE	Aplodinotus	gurnieus	2	3	0.068
MONT029702	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CYPRINIDAE	Notropis	atherinodes	20	4	0.18
MONT029702	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1998 CLUPEIDAE	Dorosoma	cephedianum	4	2	0.004
MONT029702	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1998 CLUPEIDAE	Dorosoma	cephedianum	2	7	0.36
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 PERCIDAE	Percid	catfish	7	4	0.07
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CTALURIDAE	Pycnodictis	olivaris	1	9	0.16
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CTALURIDAE	Pycnodictis	olivaris	1	10	0.22
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CTALURIDAE	Pycnodictis	olivaris	1	11	0.24
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CTALURIDAE	Pycnodictis	olivaris	1	11	0.24
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CTALURIDAE	Pycnodictis	olivaris	1	13	0.5
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 MORONIDAE	Morone	sp	1	5	0.02
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moxostoma	erythrum	1	6	0.06
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 PERCIDAE	Notropis	spectabilis	1	2	0.013
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Notropis	stramineus	13	2	0.015
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 PERCIDAE	Percina	canadensis	12	2	0.04
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 PERCIDAE	Sander	canadensis	1	6	0.14
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 PERCIDAE	Sander	canadensis	1	10	0.14
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 PERCIDAE	Sander	canadensis	1	10	0.14
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 PERCIDAE	Sander	canadensis	1	13	0.46
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 SCIAENIDAE	Aplodinotus	gurnieus	1	4	0.01
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 SCIAENIDAE	Aplodinotus	gurnieus	4	4	0.02
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 MORONIDAE	Morone	sp	1	5	0.04
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	15	1.2
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CLUPEIDAE	Dorosoma	cephedianum	8	0.14	
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CLUPEIDAE	Dorosoma	cephedianum	1	9	0.13
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CLUPEIDAE	Dorosoma	cephedianum	1	9	0.16
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CLUPEIDAE	Dorosoma	cephedianum	6	5	0.075
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CLUPEIDAE	Dorosoma	cephedianum	1	13	0.89
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	13	0.9
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	14	0.7
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	15	0.7
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Parachanna	platyphthalma	1	15	1.1
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CTALURIDAE	Pycnodictis	olivaris	1	3	0.004
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	16	1.1
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	16	1.1
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	16	1.5
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	16	1.9
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Macrhybopsis	storeriana	3	0.011	
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Notropis	atherinodes	35	3	0.088
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CYPRINIDAE	Notropis	stramineus	9	2	0.008
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	15	1
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	5	0.03	
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 SCIAENIDAE	Aplodinotus	gurnieus	12	3	0.06
LVREF9803	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.125
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.1
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.1
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.09
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.045
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.04
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.22
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.032
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.26
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.024
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.02
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.015
LVREF9801	18.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.01

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LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.88
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	1	2	0.007
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	1	3	0.006
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	1	13	0.635
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CATOSTOMIDAE	Anabaptites	breviceps	SMALLMOUTH REDHORSE	1	7	0.06
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CATOSTOMIDAE	Anabaptites	breviceps	SMALLMOUTH REDHORSE	1	4	0.03
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CATOSTOMIDAE	Lepomis	macrochirus	ROCK BASS	1	7	0.01
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CATOSTOMIDAE	Lepomis	macrochirus	ROCK BASS	1	12	0.201
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CATOSTOMIDAE	Lepomis	macrochirus	ROCK BASS	1	4	0.04
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 PERCIDAE	Percina	channelarius	BLUEGILL	5	2	0.003
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	4	0.01
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	8	0.18
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	9	0.28
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	10	0.32
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	6	5	0.28
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	9	7	0.97
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CATOSTOMIDAE	Idiotodus	bulbalus	SMALLMOUTH BUFFALO	1	14	1
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	4	4	0.02
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	15	2.3
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1.005
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.15
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.15
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.25
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.35
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.35
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.35
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 PERCIDAE	Sander	canadensis	SAUGER	2	8	0.185
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	19	1.75
LTVPF-9603	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	15-Sep-98	1998 CLUPIRIDAE	Dorosoma	cepedianum	GIZZARD SHAD	1	8	0.115
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	1	4	0.01
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Notropis	athierinoides	EMERALD SHINER	20	3	0.054
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Notropis	stramineus	SAND SHINER	22	2	0.027
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CTALURIDAE	Itallurus	punctatus	CHANNEL CATFISH	1	2	0.001
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CTALURIDAE	Itallurus	punctatus	CHANNEL CATFISH	1	3	0.005
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 PERCIDAE	Pygidius	oharitis	LOOPER CATFISH	1	1	0.001
LTVPF-9602	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	4	4	0.05
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	canadum	RIVER REDHORSE	1	17	1.95
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 PERCIDAE	Sander	canadensis	SAUGER	1	20	2
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Captolepis	anisum	RIVER CARPSUCKER	1	13	0.48
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	14	0.92
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	breviceps	SMALLMOUTH REDHORSE	1	14	0.67
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	breviceps	SMALLMOUTH REDHORSE	1	12	0.44
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	breviceps	SMALLMOUTH REDHORSE	1	12	0.36
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	11	0.325
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	16	1.05
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	14	0.775
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	14	0.74
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	15	0.79
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	13	0.64
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	13	0.54
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	13	0.53
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	12	0.51
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	12	0.48
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	15	1.2
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	13	0.93
LTVPF-9601	16.8 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-98	1998 CATOSTOMIDAE	Moostoma	anisum	SILVER REDHORSE	1	14	0.75
LTVPF-9602	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 PERCIDAE	Percina	caprodes	LOGPERCH	3	4	0.034
LTVOU19603	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	4	0.02
LTVOU19603	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998 CATOSTOMIDAE	Moostoma	erythrum	GOLDEN REDHORSE	1	14	0.71
LTVOU19603	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998 CENTRARCHIDAE	Anabaptites	rufescens	ROCK BASS	1	5	0.035

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LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 PERCIDAE	Percina	Channel Darter	9	2	0.005
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 PERCIDAE	Sander	Sauger	1	8	0.1
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	Smallmouth Bass	1	12	0.48
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 SCIAENIDAE	Dolomieu	Freshwater Drum	1	11	0.5
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CTALURIDAE	Pygidictis	Flathead Catfish	1	16	1.2
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Ictalurus	Smallmouth Buffalo	1	14	0.9
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Silver Redhorse	1	2	0.49
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Silver Redhorse	1	12	0.49
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Silver Redhorse	1	14	0.645
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Silver Redhorse	1	15	0.8
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Silver Redhorse	2	12	0.85
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 PERCIDAE	Sander	Sauger	3	13	0.38
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CYPRINIDAE	Notropis	Emerald Shiner	1	13	0.38
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CENTRARCHIDAE	Micropterus	Smallmouth Bass	2	4	0.018
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CLUPEIDAE	Dorosoma	Gizzard Shad	1	6	0.04
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CLUPEIDAE	Dorosoma	Gizzard Shad	1	9	0.16
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CLUPEIDAE	Dorosoma	Gizzard Shad	1	10	0.21
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CLUPEIDAE	Dorosoma	Gizzard Shad	1	11	0.32
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CLUPEIDAE	Dorosoma	Gizzard Shad	2	8	0.26
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CLUPEIDAE	Dorosoma	Gizzard Shad	6	9	0.2
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 PERCIDAE	Percina	Channel Darter	1	3	0.02
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 PERCIDAE	Percina	Emerald Shiner	2	2	0.003
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 PERCIDAE	Percina	Emerald Shiner	1	3	0.01
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CYPRINIDAE	Notropis	Sand Shiner	3	3	0.01
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CYPRINIDAE	Notropis	Sand Shiner	6	2	0.009
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CYPRINIDAE	Notropis	Sand Shiner	16	2	0.022
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CTALURIDAE	Ictalurus	Channel Catfish	1	18	1.8
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CTALURIDAE	Pygidictis	Flathead Catfish	1	10	0.54
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CTALURIDAE	Pygidictis	Flathead Catfish	1	15	0.9
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	1	11	0.3
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998 CYPRINIDAE	Notropis	Emerald Shiner	1	3	0.002
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	5	2	0.01
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	1	15	0.88
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Cyprinus	Common Carp	1	4	0.1
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	Common Carp	1	14	0.98
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	Common Carp	1	14	0.98
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	Common Carp	1	15	1.35
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	Common Carp	1	16	1.4
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Notropis	Emerald Shiner	2	2	0.001
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CLUPEIDAE	Dorosoma	Gizzard Shad	5	1	0.001
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Notropis	Emerald Shiner	5	1	0.001
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CLUPEIDAE	Dorosoma	Gizzard Shad	4	1	0.001
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Notropis	Emerald Shiner	14	3	0.053
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Notropis	Sand Shiner	10	2	0.016
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Notropis	Sand Shiner	1	7	0.055
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 MOONIDAE	Hydion	Mooneye	4	6	0.18
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 MOONIDAE	Hydion	Mooneye	1	1	1.2
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CTALURIDAE	Ictalurus	Channel Catfish	1	7	0.95
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CENTRARCHIDAE	Micropterus	Smallmouth Bass	1	7	0.95
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CENTRARCHIDAE	Micropterus	Smallmouth Bass	4	2	0.006
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	1	13	0.52
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	1	13	0.53
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	1	13	0.61
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	1	13	0.64
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	1	14	0.75
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CENTRARCHIDAE	Micropterus	Smallmouth Bass	1	5	0.02
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CYPRINIDAE	Cyprinus	Common Carp	1	13	0.715
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CENTRARCHIDAE	Micropterus	Smallmouth Bass	1	6	0.084
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1998 CATOSTOMIDAE	Moxostoma	Golden Redhorse	1	6	0.07

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LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1988	CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.145
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1988	CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.18
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1988	CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.24
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1988	CENTRARCHIDAE	Micropterus	dolomieu	1	13	0.85
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1988	CENTRARCHIDAE	Micropterus	dolomieu	2	5	0.067
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1988	CENTRARCHIDAE	Micropterus	dolomieu	2	11	0.775
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1988	CLUPEIDAE	Dorosoma	cepedianum	1	9	0.14
LTVOU19802	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	03-Aug-98	1988	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.035
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Sander	canadensis	1	13	0.43
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Percina	caprodes	3	4	0.02
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	SCAENIDAE	Aplodinotus	grunniens	1	14	0.87
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	SCAENIDAE	Aplodinotus	grunniens	1	13	0.92
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	SCAENIDAE	Aplodinotus	grunniens	1	13	0.87
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	SCAENIDAE	Aplodinotus	grunniens	1	6	0.045
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	SCAENIDAE	Aplodinotus	grunniens	1	5	0.045
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Sander	canadensis x vitreus	1	14	0.85
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	SCAENIDAE	Aplodinotus	grunniens	19	3	0.07
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Sander	canadensis	1	14	0.48
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Sander	canadensis	1	11	0.235
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Sander	canadensis	1	10	0.18
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Sander	canadensis	1	10	0.17
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Sander	canadensis	1	10	0.185
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Percina	canadensis	1	10	0.16
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Percina	copelandi	23	2	0.031
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Percina	canadensis	2	4	0.002
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Sander	canadensis	1	14	0.01
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	HOCOTIDAE	Micropterus	gibbosus	1	9	0.32
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CENTRARCHIDAE	Aplodinotus	grunniens	3	0	0.02
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	erythrum	1	14	0.82
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	1	14	0.66
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	1	14	0.78
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	1	15	0.84
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	breviceps	1	12	0.35
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	carinatum	1	14	0.56
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	1	12	0.49
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	erythrum	1	13	0.91
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Lepomis	macrochirus	1	12	0.3
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CENTRARCHIDAE	Micropterus	dobsoni	1	6	0.16
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CENTRARCHIDAE	Lepomis	gibbosus	1	4	0.04
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.08
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.035
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	PERCIDAE	Percina	caprodes	3	3	0.01
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.05
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	LEPIDOSTEIDAE	Lepisosteus	osseus	1	12	0.42
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CENTRARCHIDAE	Micropterus	dolomieu	1	19	0.385
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	1	5	0.02
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Etheostoma	caeruleum	1	13	0.6
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	MORONIDAE	Morone	sp	1	2	0.002
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	PERCIDAE	Micropterus	parvidens	1	9	0.04
LTVOU19803	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-98	1998	HOCOTIDAE	Micropterus	parvidens	1	9	0.17
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Idiotus	babalus	1	12	0.78
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	1	13	0.54
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	1	13	0.58
LTVOU19801	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Idiotus	babalus	1	13	0.76

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APPENDIX C

LTVOU19603	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	15-Sep-96	1998	PERCIDAIE	Percina	caprodes	LOGPERCH	1	4	0.005
LTVOU19601	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	13	0.56
LTVOU19601	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	12	0.51
LTVOU19601	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	10	0.34
LTVOU19601	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	ictobius	butabius	SMALLMOUTH BUFFALO	1	16	1.5
LTVOU19601	17.4 OHIO LDB	MONTGOMERY	EF	TRUE	16-Jul-98	1998	CATOSTOMIDAE	Sander	canadensis	LOGPERCH	1	14	0.28
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAIE	Dorosoma	caprodes	LOGPERCH	26	1	0.23
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPIEDAE	Dorosoma	caprodes	LOGPERCH	26	1	0.23
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPIEDAE	Cyprinella	spicifera	SPOTFIN SHINER	1	2	0.017
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CYPRINIDAE	Cyprinella	spicifera	SPOTFIN SHINER	1	2	0.016
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	3	2	0.006
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	3	2	0.006
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	6	3	0.017
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	1	1	0.001
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	29	2	0.05
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	LEPISOSTEIDAE	Lepisosteus	osseus	LONGNOSE GAR	1	6	0.01
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	MORONIDAE	Morone	chrysops	WHITE BASS	1	6	0.08
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAIE	Percina	caprodes	LOGPERCH	2	3	0.01
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAIE	Percina	caprodes	LOGPERCH	2	4	0.016
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CLUPIEDAE	Dorosoma	caprodes	LOGPERCH	2	4	0.016
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAIE	Sander	canadensis	SAUGER	2	10	0.32
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAIE	Sander	canadensis	SAUGER	2	10	0.32
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	PERCIDAIE	Aplocheilichthys	gurneius	FRESHWATER DRUM	3	8	0.14
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	SCAENIDAE	Aplocheilichthys	gurneius	FRESHWATER DRUM	7	5	0.008
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	SCAENIDAE	Aplodinotus	gurneius	FRESHWATER DRUM	1	21	4
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	SCAENIDAE	Aplodinotus	gurneius	FRESHWATER DRUM	1	3	0.72
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	10	4	0.234
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	17	1.4
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Dorosoma	caprodes	LOGPERCH	12	5	0.028
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Ambloplites	rupestris	ROCK BASS	2	3	0.028
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	4	5	0.17
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	4	2	0.008
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	7	0.4
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	7	0.4
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	8	0.21
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Leptosteu	osseus	LONGNOSE GAR	1	9	0.15
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Leptosteu	osseus	LONGNOSE GAR	1	10	0.14
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	ictabius	niger	BLACK BUFFALO	2	4	0.044
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	15	1.4
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	2	13	1.4
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	14	0.88
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	18	1.6
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	13	0.51
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	2	5	0.117
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	6	0.085
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	23-Jul-02	2002	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	2	0.002
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	CYPRINIDAE	Notropis	chrysops	WHITE BASS	6	2	0.01
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	CTALURIDAE	italurus	punctatus	CHANNEL CATFISH	1	10	0.14
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	LEPISOSTEIDAE	Lepisosteus	osseus	LONGNOSE GAR	1	10	0.14
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	LEPISOSTEIDAE	Lepisosteus	osseus	LONGNOSE GAR	1	10	0.14
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	PERCIDAIE	Percina	caprodes	LOGPERCH	1	6	0.03
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	PERCIDAIE	Sander	canadensis	SAUGER	1	6	0.03
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	PERCIDAIE	Sander	canadensis	SAUGER	1	11	0.28
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	PERCIDAIE	Sander	canadensis	SAUGER	1	12	0.78
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	PERCIDAIE	Sander	canadensis	SAUGER	1	14	0.5
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	PERCIDAIE	Sander	canadensis	SAUGER	2	5	0.05
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	PERCIDAIE	Sander	canadensis	SAUGER	1	13	0.65
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	SCAENIDAE	Aplodinotus	gurneius	FRESHWATER DRUM	7	2	0.005
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	SCAENIDAE	Aplodinotus	gurneius	FRESHWATER DRUM	7	4	0.03
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	17	3	0.053
LTVOU19601	17.9 OHIO LDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997	CYPRINIDAE	Notropis	athetoides	EMERALD SHINER	40	3	0.038

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APPENDIX C

MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	13	0.76
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	4	0.02
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	3	0.005
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	3	0.008
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	3	0.01
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	4	0.01
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	4	0.02
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	5	0.08
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	6	0.075
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	7	0.1
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	7	0.125
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	8	0.24
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	9	0.3
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Dorosoma	capedianum	GOLDEN REDHORSE	2	3	0.012
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Dorosoma	capedianum	GOLDEN REDHORSE	16	4	0.15
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CYPRINIDAE	Notropis	athinoides	EMERALD SHINER	7	2	0.003
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CYPRINIDAE	Notropis	athinoides	EMERALD SHINER	1	4	0.012
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CYPRINIDAE	Machyobopsis	storeriana	SILVER CHUB	4	5	0.05
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CYPRINIDAE	Machyobopsis	storeriana	SILVER CHUB	2	4	0.01
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CYPRINIDAE	Machyobopsis	storeriana	SILVER CHUB	1	2	0.002
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	10	0.38
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.68
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	12	0.64
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CLUPEIDAE	Dorosoma	capedianum	SKIPJACK HERRING	9	3	0.05
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CLUPEIDAE	Alosa	chrysoblottis	SKIPJACK HERRING	2	4	0.01
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CLUPEIDAE	Alosa	chrysoblottis	SKIPJACK HERRING	2	4	0.002
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	3	0.03
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	13	0.96
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Cyprinus	eythrum	GOLDEN REDHORSE	1	14	0.7
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	4	0.01
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	12	0.63
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Moostoma	ansurum	GOLDEN REDHORSE	1	13	0.64
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Moostoma	ansurum	GOLDEN REDHORSE	1	13	0.625
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Moostoma	breviceps	SMALLMOUTH REDHORSE	1	13	0.43
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Moostoma	breviceps	SMALLMOUTH REDHORSE	1	12	0.45
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Moostoma	breviceps	SMALLMOUTH REDHORSE	1	11	0.4
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	14	0.98
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Labidus	bulbulus	SMALLMOUTH BUFFALO	1	14	1.2
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Labidus	bulbulus	SMALLMOUTH BUFFALO	1	14	1.5
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Hyphessobrycon	pygmaeus	SMALLMOUTH BUFFALO	1	1	0.05
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	17-Aug-97	1997 CATOSTOMIDAE	Moostoma	breviceps	NORTHERN HOG SICKER	1	5	0.015
MONTO39701	19.5 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CLUPEIDAE	Dorosoma	capedianum	GIZZARD SHAD	4	9	0.727
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Notropis	athinoides	EMERALD SHINER	2	2	0.002
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 SCIAENIDAE	Aplodinotus	grunniens	FRESHWATER DRUM	1	2	0.38
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CLUPEIDAE	Dorosoma	capedianum	GIZZARD SHAD	65	3	0.08
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CLUPEIDAE	Dorosoma	capedianum	GIZZARD SHAD	155	1	0.09
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	12	1.12
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	17	3	3.25
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	4	5	4.4
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	4	16	4.78
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	5	13	3.985
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CLUPEIDAE	Notropis	athinoides	GIZZARD SHAD	1	10	0.3
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CLUPEIDAE	Notropis	athinoides	GIZZARD SHAD	2	2	0.001
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Dorosoma	hudsonius	EMERALD SHINER	1	6	0.145
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Notropis	hudsonius	GIZZARD SHAD	3	3	0.01
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Notropis	volucellus	SPOTT TAIL SHINER	2	2	0.003
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993 CYPRINIDAE	Pimephales	notatus	BLUNTNOSE MINNOW	3	2	

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DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	HICONTIDAE	Hiodon	legisus	1	3	0.01
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	ICTALURIDAE	italurus	punctatus	1	15	0.8
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	ICTALURIDAE	Pydictis	olivaris	1	12	0.39
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	MORONIDAE	Morene	chrysops	1	2	0.003
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	MORONIDAE	Morene	chrysops	1	4	0.009
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	MORONIDAE	Morene	chrysops	1	3	0.042
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	PERCINAE	Sander	canadensis	1	9	0.123
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	PERCINAE	Micropterus	salmoides	1	8	0.075
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	PERCINAE	Micropterus	salmoides	1	9	0.063
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	SCAIENIDAE	Aplodinotus	grunniens	2	3	0.216
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CLUPEIDAE	Dorosoma	cepedianum	48	2	0.039
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	ATHERINOPSIDAE	Lepisosteus	ocellus	1	3	0.002
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	Carpiodes	cyprinus	1	4	0.02
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	ictiobus	bulbulus	1	13	0.74
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	ictiobus	bulbulus	2	11	0.835
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	ictiobus	bulbulus	3	3	0.03
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	ictiobus	bulbulus	3	10	1.002
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	Micropterus	brevicaps	1	4	0.01
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	Dorosoma	cepedianum	11	4	0.118
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CLUPEIDAE	Microstoma	dolomieu	1	10	0.21
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Micropterus	dolomieu	4	6	0.875
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Micropterus	dolomieu	4	4	0.08
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	Microstoma	erythrinum	1	8	0.14
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	Microstoma	erythrinum	1	9	0.194
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Anbites	repastus	1	6	0.088
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Lepisosteus	sp	1	3	0.004
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Micropterus	dolomieu	1	12	0.485
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Micropterus	dolomieu	2	6	0.132
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Micropterus	dolomieu	2	7	0.175
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Micropterus	dolomieu	3	9	0.853
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Micropterus	salmoides	1	9	0.22
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CATOSTOMIDAE	Microstoma	brevicaps	1	8	0.11
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	ICTALURIDAE	italurus	punctatus	1	2	
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CLUPEIDAE	Dorosoma	cepedianum	1	3	0.178
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CLUPEIDAE	Dorosoma	cepedianum	1	3	0.178
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Cyprinus	carpio	30	4	0.156
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Cyprinus	carpio	1	14	0.97
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Cyprinus	carpio	1	17	1.53
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Cyprinus	carpio	2	12	1.13
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Cyprinus	carpio	2	13	1.48
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Cyprinus	carpio	2	15	1.99
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Cyprinus	carpio	6	16	8.01
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Macrhybops	storeriana	13	3	0.044
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Macrhybops	storeriana	1	7	0.08
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Notropis	volucellus	3	2	0.003
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Macrhybops	storeriana	1	3	0.004
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	ICTALURIDAE	italurus	punctatus	2	2	0.01
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	ICTALURIDAE	italurus	punctatus	35	3	0.089
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	PERCINAE	Morene	chrysops	3	3	0.03
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	MORONIDAE	Morene	chrysops	3	6	0.075
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	PERCINAE	Percia	caprodes	2	3	0.008
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	PERCINAE	Sander	looperch	1	6	0.028
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	ATHERINOPSIDAE	Lepisathes	ocellus	1	3	0.002
DASHMP9301	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	20-Jul-93	1993	CENTRARCHIDAE	Micropterus	dolomieu	3	3	0.037
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	SCAIENIDAE	Aplodinotus	grunniens	1	4	0.01
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	PERCINAE	Sander	canadensis	14	7	0.842
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CYPRINIDAE	Notropis	hydrunus	3	3	0.01
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CATOSTOMIDAE	Microstoma	erythrinum	1	4	0.01
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CATOSTOMIDAE	Hyphessilium	nigricans	1	4	0.01
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993	CATOSTOMIDAE	Hyphessilium	nigricans	1	6	0.036

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DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Hypentelium	nigricans	NORTHERN HOG SUCKER	1	9	0.2
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CYPRINIDAE	Notropis	athertonoides	EMERALD SHINER	2	2	0.002
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Ictalurus	bulbalus	SMALLMOUTH BUFFALO	1	10	0.33
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Ictalurus	bulbalus	SMALLMOUTH BUFFALO	3	3	0.03
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Moxostoma	brevirostris	SMALLMOUTH REDHORSE	1	4	0.01
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Carpiodes	brevirostris	SMALLMOUTH REDHORSE	1	8	0.122
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Carpiodes	brevirostris	QUILLBACK	1	4	0.02
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Moxostoma	brevirostris	SMALLMOUTH REDHORSE	1	10	0.205
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Moxostoma	erythrinum	GOLDEN REDHORSE	1	12	0.39
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Amphipotes	lepturus	ROCK BASS	1	6	0.09
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Lepturus	sp	LEPOMUS SP	1	3	0.004
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	4	0.008
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	8	0.008
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Moxostoma	brevirostris	SMALLMOUTH REDHORSE	1	9	0.03
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CATOSTOMIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	8	0.448
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	11	0.75
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	7	0.112
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	5	0.042
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	5	0.032
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	3	0.008
DASHMP9302	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	31-Aug-93	1993 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	3	0.008
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.3
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	7	4	0.05
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	7	4	0.05
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.82
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.82
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.82
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.79
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.8
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.85
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.95
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1.05
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	1.2
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	0.975
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.225
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	7	0.13
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.35
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.4
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.45
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.45
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.85
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.85
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.8
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	1	18	1.84
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	1	2	0.002
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Notropis	athertonoides	EMERALD SHINER	1	4	0.009
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Notropis	athertonoides	EMERALD SHINER	2	4	0.012
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Notropis	athertonoides	EMERALD SHINER	9	3	0.032
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Notropis	athertonoides	EMERALD SHINER	37	2	0.034
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Notropis	hudsonius	SPOTTAIL SHINER	1	2	0.002
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus	nigricans	COMMON CARP	1	15	1.19
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	Hypentelium	nigricans	NORTHERN HOG SUCKER	1	2	0.03
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CLUPEIDAE	Acacia	chrysocloris	SKIPJACK HERRING	1	4	0.09
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	Moxostoma	duquesnoi	BLACK REDHORSE	1	10	0.19
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	Moxostoma	duquesnoi	BLACK REDHORSE	1	10	0.19
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CENTRARCHIDAE	Micropterus	salmoides	SPOTTED BASS	1	9	0.18
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CENTRARCHIDAE	Micropterus	salmoides	SPOTTED BASS	1	3	0.01
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CENTRARCHIDAE	Micropterus	salmoides	SMALLMOUTH BASS	1	12	0.82
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CENTRARCHIDAE	Micropterus	salmoides	SMALLMOUTH BASS	1	4	0.02
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	Moxostoma	erythrinum	GOLDEN REDHORSE	1	3	0.004
MONT048701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	Carpiodes	veller	HIGHFIN CARPSUCKER	1	12	0.44

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MONT049702	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CATOSTOMIDAE	Hypentelium nigricans	1	4	0.01
MONT049702	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	dolomieu	1	8	0.15
MONT049702	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	dolomieu	1	5	0.042
MONT049702	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	dolomieu	1	5	0.04
MONT049702	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	dolomieu	1	4	0.02
MONT049702	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CENTRARCHIDAE	dolomieu	1	4	0.012
MONT049701	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CENTRARCHIDAE	tergisus	1	3	0.008
MONT049702	21.6 OHIO RDB	MONTGOMERY	EF	FALSE	07-Oct-97	1997 CLUPEIDAE	rhynchophis	1	6	0.04
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	brevirostris	1	12	0.47
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	macrochirus	2	6	0.185
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	leptostei	1	5	0.06
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	leptostei	2	5	0.04
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	leptostei	1	15	0.12
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	leptostei	1	15	0.72
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	leptostei	6	13	3.215
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	carpioles	6	5	0.235
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	Macropterus	2	4	0.037
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	dolomieu	1	11	0.295
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	Macropterus	1	10	0.245
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	Macropterus	1	5	0.033
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	Macropterus	1	13	0.95
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	Macropterus	1	5	0.03
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	Macropterus	1	11	0.36
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	Macropterus	3	14	1.69
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	6	4	0.119
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	6	4	0.119
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	3	8	0.435
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	2	7	0.245
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	1	6	0.055
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	4	6	0.195
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	2	4	0.02
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	1	10	0.35
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	1	10	0.405
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	2	3	0.02
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	1	3	0.01
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	9	7	0.87
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	6	6	0.43
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	4	9	0.935
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	2	6	0.265
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	2	5	0.08
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	punctulatus	4	6	0.205
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CENTRARCHIDAE	punctulatus	1	11	0.475
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	punctulatus	3	9	0.738
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CLUPEIDAE	Macropterus	16	3	0.08
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CLUPEIDAE	Macropterus	6	4	0.04
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CLUPEIDAE	Macropterus	2	12	0.86
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	1	11	0.47
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	1	5	0.042
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	1	4	0.012
DASHMP9102	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	04-Sep-91	1991 CATOSTOMIDAE	Macropterus	1	14	1.3
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	4	5	0.124
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	3	2	0.01
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	2	3	0.485
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	2	8	0.01
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	1	10	0.284
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	1	7	0.064
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	10	10	3.332
DASHMP9101	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-91	1991 CENTRARCHIDAE	Macropterus	17	4	0.31

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DASHRP0101	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-01	1991 CENTRARCHIDAE	Antiochites	inopistis	1	6	0.08
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	18-Jul-01	1991 CENTRARCHIDAE	Micropterus	dolomieu	4	5	0.115
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Etheostoma	caeruleum	1	2	0.002
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Leptomis	macrochirus	1	3	0.015
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	2	5	0.1
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	cedepianum	4	7	0.36
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Leptomis	macrochirus	2	4	0.03
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	1	2	0.005
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.07
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	1	10	0.32
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	punctulatus	3	5	0.15
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	2	7	0.04
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	1	13	0.46
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	cedepianum	2	8	0.24
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	cedepianum	2	2	0.002
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	cedepianum	1	11	0.32
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Dorosoma	cedepianum	1	5	0.032
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	salmoides	1	13	0.52
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	salmoides	1	7	0.11
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	salmoides	1	6	0.07
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Leptomis	macrochirus	16	6	1.21
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	macrochirus	1	6	0.14
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Labotus	labotus	1	7	0.089
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	2	5	0.12
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	10	0.35
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	14	0.95
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	10	0.3
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	11	0.44
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	7	0.09
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	2	15	2.08
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	18	1.5
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	16	1.4
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	13	0.55
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	6	0.082
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	2	15	2.7
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	17	2.2
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	16	1.6
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	14	1.2
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	8	0.3
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	2	6	0.193
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	2	0.003
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Microstoma	erythrum	1	5	0.055
021.9RB0607402	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	cedepianum	13	1	0.005
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CTALURIDAE	Idallus	punctatus	1	7	0.06
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CLUPEIDAE	Dorosoma	cedepianum	19	6	1.04
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	6	9	0.78
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	5	11	1.25
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	5	10	0.9
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	2	8	0.2
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	2	4	0.021
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 MORONIDAE	Perca	caprodes	10	3	0.049
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 MORONIDAE	Perca	caprodes	9	7	0.023
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 MORONIDAE	Perca	caprodes	2	2	0.02
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 MORONIDAE	Perca	caprodes	1	9	0.17
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 MORONIDAE	Perca	caprodes	1	8	0.18
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CTALURIDAE	Pylodictis	olivus	1	18	1.5
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CTALURIDAE	Pylodictis	olivus	1	15	0.89
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 SCAENIDAE	Aplodinotus	gummius	1	11	0.34
021.9RB060602	21.9.OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CYPRIIDAE	Notropis	atherinoides	36	3	0.122

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021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	08-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	1	15	1.2
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	08-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	1	11	0.42
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.28
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.1
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Moxostoma	ansurum	1	6	0.06
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Moxostoma	ansurum	3	13	1.76
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Moxostoma	ansurum	2	17	2.7
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Moxostoma	ansurum	4	16	4.5
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Moxostoma	breviceps	1	3	0.34
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Moxostoma	erythrum	1	7	0.1
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Moxostoma	erythrum	1	4	0.72
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Lepomis	macrochirus	2	6	0.155
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Moxostoma	erythrum	2	7	0.3
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Moxostoma	erythrum	5	14	3.69
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Anloplites	rupestris	1	4	0.029
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	1	1	0.01
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	1	3	0.011
021 9RDB080602	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	1	5	0.05
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	09-Aug-02	2002 CATOSTOMIDAE	Moxostoma	erythrum	1	10	0.22
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Cariodes	carpio	1	14	0.95
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Anloplites	rupestris	1	5	0.05
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Lepomis	macrochirus	2	7	0.29
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Lepomis	macrochirus	2	5	0.2
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Lepomis	macrochirus	2	4	0.02
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Lepomis	macrochirus	1	3	0.011
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Lepomis	macrochirus	1	21	2.2
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Lepomis	macrochirus	1	2	0.001
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CLUPEIDAE	Dorosoma	epedanium	1	7	0.26
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Anloplites	rupestris	2	4	0.13
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Anloplites	rupestris	1	8	0.13
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Moxostoma	erythrum	11	9	2.2
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Moxostoma	erythrum	1	8	1.49
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Moxostoma	erythrum	2	13	1.17
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Moxostoma	erythrum	1	7	1.08
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Moxostoma	erythrum	1	9	0.09
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Moxostoma	erythrum	1	9	0.16
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Moxostoma	breviceps	1	9	1.16
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Moxostoma	ansurum	1	18	1.5
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Lepomis	macrochirus	2	8	0.13
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Lepomis	macrochirus	2	1	0.012
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Dorosoma	lepidaleus	11	2	0.012
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CLUPEIDAE	Dorosoma	lepidaleus	2	13	0.76
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CLUPEIDAE	Dorosoma	lepidaleus	3	6	0.39
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	1	13	0.73
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	1	15	1.3
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	1	18	2.05
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	1	19	1.7
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	1	19	2.5
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	1	20	2.95
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	1	2	0.01
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Moxostoma	erythrum	2	4	0.016
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Moxostoma	erythrum	2	4	0.016
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Moxostoma	erythrum	2	4	0.016
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Lepomis	macrochirus	1	5	0.02
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Lepomis	macrochirus	1	17	1.25
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	punctulatus	1	5	0.017
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.01
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	punctulatus	3	9	0.54
021 9RDB071503	21 9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	punctulatus	1	16	1.2

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021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus dolomieu	1	13	0.6
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus dolomieu	1	12	0.4
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	ictiobus	4	16	5.7
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	carpio	1	18	3.55
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Microstoma	1	16	1.05
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 SCIAENIDAE	Apodinotus grunniens	1	9	0.7
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 SCIAENIDAE	Apodinotus grunniens	1	9	0.7
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 SCIAENIDAE	Apodinotus grunniens	1	14	0.65
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Carpiodes carpio	1	6	0.05
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 MORONIDAE	Morone morone	1	15	1.1
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	ictiobus	1	7	0.074
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	bulbulus	1	17	1.8
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	ictiobus	1	17	1.7
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	bulbulus	1	14	0.9
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	ictiobus	1	11	0.4
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	bulbulus	1	9	0.28
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Cyprinus cyrinus	1	10	0.34
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Cyprinus cyrinus	1	7	0.1
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Pylodictis olivaris	1	8	0.52
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Microstoma	1	6	0.52
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 MORONIDAE	axanthis x chrysops	2	6	0.118
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 MORONIDAE	axanthis x chrysops	2	3	0.004
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Carpiodes carpio	2	7	0.2
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 PERCIDAE	perca	2	4	0.015
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander canadensis	1	13	0.36
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander canadensis	2	11	0.43
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander canadensis	2	12	0.56
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander canadensis	3	6	0.26
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander canadensis	3	14	1.39
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	15-Jul-03	2003 CTALURIDAE	Pylodictis olivaris	1	17	1.05
021 9RDB071503	21.9 OHIO RDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	Carpiodes sp	11	3	0.52
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	15	1.17
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CLUPEIDAE	Dorosoma cepedianum	1	10	0.28
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CLUPEIDAE	Dorosoma cepedianum	1	11	0.28
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CLUPEIDAE	Dorosoma cepedianum	1	10	0.36
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CLUPEIDAE	Dorosoma cepedianum	4	8	0.44
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CLUPEIDAE	Dorosoma cepedianum	65	3	0.47
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	130	4	1.25
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	3	0.008
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	12	0.5
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	12	0.65
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	13	0.8
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	14	0.95
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	15	0.94
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CENTRARCHIDAE	Micropterus dolomieu	1	11	0.35
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	15	0.94
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	16	1.1
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	18	1.2
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	16	1.25
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	16	1.3
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	17	1.53
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Lethrinus umbratilis	1	3	0.003
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Macrhybopsis storenana	2	2	0.002
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Macrhybopsis storenana	4	4	0.049
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Macrhybopsis storenana	5	2	0.008
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Notropis atherinoides	3	1	0.001
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CYPRINIDAE	Cyprinus carpio	1	14	1
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	Microstoma ansurum	1	14	0.75
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	Microstoma ansurum	1	14	0.69
021 9RDB071503	22.8 OHIO LDB	MONTGOMERY	EF	FALSE	13-Aug-97	1997 CATOSTOMIDAE	ictiobus	1	14	1.06

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024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	Idolomieu	2	6	0.2
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	Idolomieu	1	11	0.4
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Micropterus	Idolomieu	1	10	0.36
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	macrophysum	15	6	0.73
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Lepisosteus	macrophysum	3	6	0.41
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	macrophysum	21	5	0.52
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Lepisosteus	macrophysum	2	14	0.023
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Lepisosteus	macrophysum	14	14	0.2
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	11	0.4
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	6	0.07
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	18	1.8
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	16	1.3
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	15	1.2
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CENTRARCHIDAE	Percina	caprodes	5	4	0.056
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 PERCIDAE	Percina	caprodes	9	2	0.015
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 SCIAENIDAE	Apodinotus	guttatus	2	5	0.08
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 SCIAENIDAE	Apodinotus	guttatus	1	16	2
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 SCIAENIDAE	Apodinotus	guttatus	1	19	1.5
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 SCIAENIDAE	Apodinotus	guttatus	1	15	1
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	macrophysum	1	15	0.03
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CLUPEIDAE	Dorosoma	macrophysum	3	8	0.35
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 MORONIDAE	Morone	canadensis	2	6	0.21
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 LEISOSTEIDAE	Lepisosteus	osseus	1	6	0.03
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CTALURIDAE	Pygidius	olivaceus	1	11	0.35
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CYPRINIDAE	Notropis	vulcellus	1	2	0.002
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CYPRINIDAE	Notropis	altheroides	27	3	0.062
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CYPRINIDAE	Macrhybopsis	storeriana	16	4	0.223
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CYPRINIDAE	Cyprinella	carpio	1	15	1.2
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CYPRINIDAE	Cyprinella	spilotera	3	3	0.016
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 PERCIDAE	Dorosoma	canadensis	630	2	0.29
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 PERCIDAE	Sander	canadensis	3	9	0.44
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	15	1
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	6	0.072
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	17	1.1
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	18	2.5
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	17	2.1
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	16	1.6
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2002 CATOSTOMIDAE	Moxostoma	macrophysum	1	16	1.5
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	24-Jul-02	2003 PERCIDAE	Sander	canadensis	1	7	0.1
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 PERCIDAE	Sander	canadensis	1	13	0.4
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 MORONIDAE	Morone	saxatilis x chrysops	8	1	0.125
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 PERCIDAE	Etheostoma	caeruleum	2	7	0.175
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 PERCIDAE	Percina	caprodes	1	2	0.001
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 PERCIDAE	Sander	canadensis	4	4	0.039
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 PERCIDAE	Sander	canadensis	1	10	0.2
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 PERCIDAE	Sander	canadensis	1	16	0.32
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 PERCIDAE	Sander	canadensis	6	11	1.45
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 PERCIDAE	Sander	canadensis	1	12	0.93
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Lepisosteus	macrophysum x vitreus	1	12	0.93
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CTALURIDAE	Idalurus	punctatus	3	5	0.19
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 SCIAENIDAE	Apodinotus	punctatus	1	9	0.14
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	punctatus	2	7	0.065
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Lepisosteus	macrophysum	1	10	0.41
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	macrophysum	3	6	0.25
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	macrophysum	1	3	0.008
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	macrophysum	1	10	0.22
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	macrophysum	2	9	0.34
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	macrophysum	4	6	0.21
024 3R0B072402	24.3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	macrophysum	5	4	0.09

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024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	5	8	0.71
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	8	5	0.23
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 MORONIDAE	Micropterus	saxatilis x chrysops	HYBRID STRIPER	1	15	0.97
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	8	0.15
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 MORONIDAE	Micropterus	saxatilis x chrysops	HYBRID STRIPER	1	10	0.3
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CYPRINIDAE	Cyprinella	spiloptera	SPOTFIN SHINER	3	3	0.015
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	12	0.39
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.15
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.45
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	18	1.67
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	3	16	4.01
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CYPRINIDAE	Macrhybopsis	suberiana	MINIC SHINER	6	3	0.14
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	7	0.12
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CYPRINIDAE	Notropis	volucellus	MINIC SHINER	6	3	0.014
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CTALURIDAE	Notropis	volucellus	MINIC SHINER	23	2	0.023
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Lepomis	punctatus	CHANNEL CATFISH	2	8	0.215
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	macrorchus	BLUEGILL	1	2	0.003
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	ansurum	GOLDEN REDHORSE	1	12	0.5
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	ansurum	SILVER REDHORSE	1	9	0.2
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	ansurum	SILVER REDHORSE	1	14	0.85
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	ansurum	SILVER REDHORSE	1	18	2
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	breviceps	SMALLMOUTH REDHORSE	1	9	0.2
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	breviceps	SMALLMOUTH REDHORSE	1	13	0.54
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	10	0.2
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	10	0.2
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	15	0.795
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	8	0.31
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	2	9	0.34
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	2	14	1.545
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	1	4	0.017
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	2	6	0.185
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	2	7	0.285
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CENTRARCHIDAE	Anblopilates	rupestris	ROCK BASS	6	5	0.3
024 3RDB071603	24 3 OHIO RDB	MONTGOMERY	EF	FALSE	16-Jul-03	2003 CATOSTOMIDAE	Dorosoma	breviceps	SMALLMOUTH REDHORSE	2	10	0.525
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Dorosoma	pediculatum	SPOTTED BASS	1	8	0.12
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Dorosoma	pediculatum	SPOTTED BASS	2	10	0.6
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Dorosoma	pediculatum	SPOTTED BASS	1	5	0.07
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Dorosoma	pediculatus	SPOTTED BASS	2	5	0.1
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Dorosoma	pediculatus	SPOTTED BASS	2	12	1
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Dorosoma	pediculatum	SPOTTED BASS	3	7	0.25
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	10	0.68
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	7	0.2
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	9	0.35
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	SMALLMOUTH BASS	1	9	0.2
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	SMALLMOUTH BASS	1	7	0.18
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	SMALLMOUTH BASS	1	6	0.07
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Lepomis	macrochirus	SMALLMOUTH BASS	3	4	0.13
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	7	0.15
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	5	0.86
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	15	0.06
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	2	0.014
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	5	0.24
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	6	4	0.021
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	18	0.25
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	2	7	0.18
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	2	5	0.6
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	1	13	0.42
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	6	4	0.07
024 6RDB072202	24 6 OHIO RDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Macostoma	erythrum	GOLDEN REDHORSE	4	9	0.58

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024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	MORONIDAE	Merone	chrysops	WHITE BASS	2	7	0.24
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	24	6	1.6
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	ICTALURIDAE	Pygidius	olivatus	FLATHEAD CATFISH	1	18	1.6
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	ICTALURIDAE	Idalutius	punctatus	CHANNEL CATFISH	1	5	0.04
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	ICTALURIDAE	Natropis	volucellus	MINIC SHINER	1	5	0.025
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CYPRINIDAE	Natropis	hudsonius	EMERALD SHINER	1	3	0.008
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CYPRINIDAE	Merone	stolepis	EMERALD SHINER	23	3	0.008
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CYPRINIDAE	Dorosoma	carpio	SILVER CHUB	4	3	0.095
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CLUPEIDAE	Dorosoma	cephedianum	COMMON CARP	1	16	1.5
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	MORONIDAE	Merone	chrysops	GIZZARD SHAD	167	2	0.042
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	WHITE BASS	3	6	0.18
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CATOSTOMIDAE	Capriodes	cyprinus	SILVER REDHORSE	1	6	0.08
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CATOSTOMIDAE	Capriodes	carpio	QUILLBACK	1	13	0.78
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CATOSTOMIDAE	Moostoma	ansurum	RIVER CARPSUCKER	1	14	1.2
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	22-Jul-02	1997	PERCIDAE	Sander	canadensis	SILVER REDHORSE	2	5	0.1
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	PERCIDAE	Sander	vitrifus	SAUGER	1	5	0.02
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	PERCIDAE	Sander	vitrifus	WALLEYE	1	6	0.03
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	SCIAENIDAE	Apolonius	gurneius	PERCH DRUM	2	3	0.08
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	SCIAENIDAE	Perca	carpio	FRESHWATER DRUM	34	3	0.14
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	PERCIDAE	Perca	carpio	GIZZARD SHAD	3	8	0.39
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	LOGPERCH	1	4	0.02
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CLUPEIDAE	Dorosoma	cephedianum	COMMON CARP	1	16	1.34
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	21	3	0.16
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	GIZZARD SHAD	35	4	0.395
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	CARP X GOLDFISH	1	12	0.67
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.69
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.7
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.75
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.8
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.9
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	CHANNEL DARTER	2	2	0.001
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	PERCIDAE	Perca	carpio	LOGPERCH	1	15	1.2
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Macrhybopsis	carpio	SILVER CHUB	11	3	0.05
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Natropis	strenosa	EMERALD SHINER	3	4	0.011
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Natropis	athleinioides	EMERALD SHINER	33	3	0.113
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Natropis	hudsonius	SPOTTAIL SHINER	63	2	0.065
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Natropis	volucellus	MINIC SHINER	2	2	0.003
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Idalutius	punctatus	CHANNEL CATFISH	1	2	0.005
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	ICTALURIDAE	Idalutius	punctatus	CHANNEL CATFISH	1	17	1.2
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	ICTALURIDAE	Idalutius	punctatus	CHANNEL CATFISH	4	2	0.008
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	ICTALURIDAE	Pygidius	olivatus	FLATHEAD CATFISH	1	2	0.01
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	FLATHEAD CATFISH	1	12	0.81
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	MORONE SP	3	3	0.03
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CLUPEIDAE	Dorosoma	cephedianum	COMMON CARP	1	15	1.15
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	2	7	0.2
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CENTRARCHIDAE	Micropterus	dobsoni	GIZZARD SHAD	10	8	1.05
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CATOSTOMIDAE	Moostoma	ansurum	SMALLMOUTH BASS	1	6	0.095
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	13	0.5
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	13	0.54
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	14	0.75
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	15	0.84
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CATOSTOMIDAE	Moostoma	ansurum	SILVER REDHORSE	1	16	1.22
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CATOSTOMIDAE	Moostoma	brevojei	SMALLMOUTH REDHORSE	1	12	0.39
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CENTRARCHIDAE	Lepomis	macrochilus	SMALLMOUTH REDHORSE	1	2	0.04
024 6R0607/2202	24.6 OHIO ROB	MONTGOMERY	EF	FALSE	13-Aug-97	1997	CENTRARCHIDAE	Lepomis	macrochilus	BLUESILL	1	2	0.03

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026.0LDB072202	26 OHIO LDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 ICTALURIDAE	Pygidictis	olivaris	1	13	0.5
026.0LDB072202	26 OHIO LDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 ICTALURIDAE	Idalurus	punctatus	2	5	0.035
026.0LDB072202	26 OHIO LDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 ICTALURIDAE	Idalurus	punctatus	1	6	0.03
026.0LDB072202	26 OHIO LDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CYPRINIDAE	Notropis	volucellus	1	2	0.002
026.0LDB072202	26 OHIO LDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CYPRINIDAE	Notropis	athrinoides	5	3	0.018
026.0LDB072202	26 OHIO LDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Maxostoma	anisurum	1	16	1.3
026.0LDB072202	26 OHIO LDB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Maxostoma	sp	5	0.05	
026.0LDB072202	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 SCIAENIDAE	Aplocheilichthys	grunniens	6	2	0.02
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CENTRARCHIDAE	Micropterus	doellemei	1	3	0.008
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CYPRINIDAE	Cyprinus	carpio	2	2	0.001
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CLUPEIDAE	Dorosoma	cephedianum	2	9	0.015
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CLUPEIDAE	Dorosoma	cephedianum	2	12	0.37
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CLUPEIDAE	Dorosoma	cephedianum	1	4	0.005
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CENTRARCHIDAE	Micropterus	punctulatus	1	7	0.07
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 ICTALURIDAE	Idalurus	punctatus	1	5	0.02
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CATOSTOMIDAE	Maxostoma	breviceps	2	14	1.27
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CATOSTOMIDAE	Maxostoma	breviceps	2	13	1.17
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CATOSTOMIDAE	Maxostoma	breviceps	1	12	0.42
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CATOSTOMIDAE	Idictobus	bulbulus	1	3	0.88
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CATOSTOMIDAE	Idictobus	bulbulus	1	11	0.45
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CENTRARCHIDAE	Micropterus	doellemei	1	9	0.23
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 PERCIDAE	Sander	canadensis	5	1	0.001
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 SCIAENIDAE	Aplocheilichthys	grunniens	2	8	0.3
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 SCIAENIDAE	Aplocheilichthys	grunniens	5	1	0.001
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 PERCIDAE	Sander	vitreus	1	9	0.12
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 PERCIDAE	Sander	vitreus	1	6	0.03
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 PERCIDAE	Sander	vitreus	1	5	0.02
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CYPRINIDAE	Notropis	athrinoides	2	11	0.45
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 PERCIDAE	Sander	athrinoides	80	3	0.2
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CYPRINIDAE	Notropis	volucellus	1	12	0.27
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 CYPRINIDAE	Notropis	volucellus	2	2	0.004
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 PERCIDAE	Sander	canadensis	1	5	0.03
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 MORONIDAE	Morone	sp	4	3	0.018
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 MORONIDAE	Morone	sp	2	2	0.005
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 ICTALURIDAE	Pygidictis	olivaris	1	0	0.2
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 ICTALURIDAE	Idalurus	punctatus	1	9	0.32
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	08-Aug-04	2004 SCIAENIDAE	Idalurus	punctatus	1	10	0.15
026.0LDB080604	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CYPRINIDAE	Notropis	hudsonius	2	10	0.37
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 LEPIDOSTEIDAE	Lepisosteus	osseus	3	0.002	
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CENTRARCHIDAE	Micropterus	salmoides	1	10	0.039
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CLUPEIDAE	Dorosoma	cephedianum	1	4	0.012
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CLUPEIDAE	Dorosoma	cephedianum	1	3	0.005
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CLUPEIDAE	Dorosoma	cephedianum	1	5	0.025
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CYPRINIDAE	Carassius	anomalum	158	4	1.558
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CYPRINIDAE	Cyprinella	sp	1	3	0.007
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CYPRINIDAE	Nocomis	microgobius	1	4	0.007
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CENTRARCHIDAE	Micropterus	punctatus	1	3	0.02
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CENTRARCHIDAE	Micropterus	athrinoides	3	4	0.035
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CENTRARCHIDAE	Micropterus	punctatus	1	3	0.08
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CYPRINIDAE	Notropis	volucellus	12	2	0.014
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 ICTALURIDAE	Idalurus	punctatus	20	3	0.037
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 ICTALURIDAE	Idalurus	punctatus	1	2	0.001
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 ICTALURIDAE	Idalurus	punctatus	2	2	0.007
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 ICTALURIDAE	Idalurus	punctatus	16	3	0.042
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 ICTALURIDAE	Pygidictis	olivaris	1	8	0.052
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 ICTALURIDAE	Pygidictis	olivaris	1	9	0.061
026.0LDB081505	26 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005 CYPRINIDAE	Notropis	athrinoides	3	4	0.021

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APPENDIX C

ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 PERCIDAE	Percina	caprotes	2	4	0.022
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 CYPRINIDAE	Machyhyopsis	storeriana	7	4	0.1
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 CYPRINIDAE	Morone	sp	1	5	0.06
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 MORONIDAE	athetoides	athetoides	22	2	0.019
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 CYPRINIDAE	Notropis	hudsonius	28	3	0.091
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 CYPRINIDAE	Notropis	stramineus	1	2	0.001
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 ICTALURIDAE	Pylodictis	ovatus	1	12	0.42
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 MORONIDAE	Morone	sp	1	4	0.02
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 PERCIDAE	Percina	caprotes	1	3	0.006
ARCOREF983	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	4	0.002
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	15	0.02
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 SCIAENIDAE	Aplocheilichthys	gambusia	1	3	0.01
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 SCIAENIDAE	Aplocheilichthys	gambusia	1	5	0.035
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 SCIAENIDAE	Aplocheilichthys	gambusia	1	5	0.04
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 SCIAENIDAE	Aplocheilichthys	gambusia	1	14	0.8
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 SCIAENIDAE	Aplocheilichthys	gambusia	2	5	0.075
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	2	5	0.08
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	13	0.68
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Sander	canadensis	1	9	0.15
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Ichthyobius	storeriana	1	14	0.63
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	9	0.125
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	20	3.4
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	15	0.78
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	10	0.24
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	11	0.33
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	13	0.66
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 CATOSTOMIDAE	Ichthyobius	storeriana	1	5	0.05
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 CLUPEIDAE	Dorosoma	capedianum	1	4	0.25
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 CLUPEIDAE	Dorosoma	capedianum	1	10	0.23
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 CLUPEIDAE	Dorosoma	capedianum	1	9	0.18
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	14-Sep-98	1998 PERCIDAE	Percina	caprotes	2	5	0.04
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Sander	canadensis	1	9	0.14
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 CYPRINIDAE	Cyprinus	carpio	1	11	0.315
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	2	14	0.02
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	4	0.03
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	12	0.435
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	3	3	0.007
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	10	0.26
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	4	2	0.006
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	9	0.16
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	4	0.01
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	13	0.51
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	3	0.003
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	4	4	0.04
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	6	0.1
ARCOREF981	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Jul-98	1998 PERCIDAE	Sander	canadensis	1	4	0.02
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	1	4	0.009
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	1	4	0.009
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	1	15	1.1
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	1	15	1.1
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	1	17	1.65
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	5	4	0.065
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	7	3	0.023
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	1	4	0.007
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	1	13	0.87
ARCOREF982	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	04-Aug-98	1998 PERCIDAE	Percina	caprotes	2	2	0.009

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APPENDIX C

ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	5	2	0.012
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	MORONIDAE	Aplocheilichthys	sp	MORONE SP	5	4	0.022
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	1	4	0.01
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	1	6	0.03
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	2	2	0.006
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	3	2	0.008
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	4	2	0.016
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	3	6	0.084
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	5	2	0.008
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	2	6	0.084
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	6	3	0.018
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	6	3	0.02
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	16	3	0.088
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	4	3	0.022
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Percina	caprodes	LOGPERCH	1	12	0.22
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Percina	caprodes	LOGPERCH	1	3	0.003
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Percina	caprodes	LOGPERCH	1	3	0.004
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	5	0.013	
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	11	0.23
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	SCAENIDAE	Aplocheilichthys	guniteus	FRESHWATER DRUM	1	4	0.007
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Morone	sp	MORONE SP	1	11	0.3
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	3	4	0.34
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	12	0.36
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	14	0.46
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	15	0.612
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	2	6	0.058
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	2	6	0.06
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	11	0.262
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CYPRINIDAE	Machyopsis	hudsonius	SPOTTAIL SHINER	1	3	0.005
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Notropis	storeriana	SILVER CHUB	6	4	0.106
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Notropis	altheinoides	EMERALD SHINER	1	4	0.008
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Notropis	altheinoides	EMERALD SHINER	2	3	0.007
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Notropis	altheinoides	EMERALD SHINER	2	3	0.01
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Notropis	bermudensis	EMERALD SHINER	1	3	0.004
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Notropis	hudsonius	CHANNEL DARTER	6	2	0.005
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Notropis	storeriana	SPOTTAIL SHINER	1	3	0.004
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	ICTALURIDAE	Machyopsis	italicus	SILVER CHUB	1	4	0.016
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	ICTALURIDAE	Pygidictis	olivatus	CHANNEL CATFISH	1	3	0.006
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	MORONIDAE	Morone	sp	MORONE SP	1	11	0.312
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	MORONIDAE	Morone	sp	MORONE SP	1	4	0.008
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	MORONIDAE	Morone	sp	MORONE SP	1	5	0.042
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	MORONIDAE	Morone	sp	MORONE SP	2	4	0.02
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	pedicellatum	GIZZARD SHAD	2	4	0.036
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Notropis	hudsonius	SPOTTAIL SHINER	1	3	0.003
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	pedicellatum	GIZZARD SHAD	1	3	0.044
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	pedicellatum	GIZZARD SHAD	7	7	0.044
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	pedicellatum	GIZZARD SHAD	2	6	0.092
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	pedicellatum	GIZZARD SHAD	4	3	0.212
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	pedicellatum	GIZZARD SHAD	4	3	0.023
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	pedicellatum	GIZZARD SHAD	5	3	0.016
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	storeriana	GIZZARD SHAD	5	4	0.042
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	storeriana	SILVER CHUB	2	4	0.038
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	storeriana	GIZZARD SHAD	6	3	0.046
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	storeriana	SILVER CHUB	1	5	0.024
ARCORF982U	26.3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	pedicellatum	GIZZARD SHAD	7	4	0.042

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APPENDIX C

ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	cephedianum	7	6	0.684
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	GIZZARD SHAD	10	3	0.048
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	GIZZARD SHAD	12	4	0.112
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Cyprinus	COMMON CARP	1	12	0.085
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Cyprinus	COMMON CARP	1	16	0.085
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CYPRINIDAE	Sander	SAUGER SHAD	7	7	0.216
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Dorosoma	FRESHWATER DRUM	5	4	0.001
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	Aplocheilichthys	FRESHWATER DRUM	1	18	0.086
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	Sander	SAUGER	1	17	1
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	Sander	SAUGER	2	6	0.19
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	Sander	SAUGER	2	9	0.206
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	3	8	0.302
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	5	6	0.342
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	Perca	CHANNEL DARTER	1	2	0.002
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	gurneius	FRESHWATER DRUM	1	4	0.008
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	canadensis	SAUGER	1	14	0.062
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	2	3	0.01
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	gurneius	FRESHWATER DRUM	2	4	0.02
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	2	7	0.02
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	gurneius	FRESHWATER DRUM	4	3	0.03
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	gurneius	FRESHWATER DRUM	4	3	0.03
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CLUPEIDAE	Dorosoma	GIZZARD SHAD	8	3	0.04
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	3	3	0.018
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	12	0.24
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	8	0.072
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	8	0.088
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	8	0.09
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	8	0.092
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	8	0.112
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	8	0.179
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	8	0.79
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	15	0.794
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	15	0.99
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	12	0.342
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	13	0.5
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	13	0.53
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	14	0.52
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	PERCIDAE	canadensis	SAUGER	1	14	0.67
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	LARGEMOUTH BASS	1	12	0.754
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	capedianum	GIZZARD SHAD	1	9	0.122
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CLUPEIDAE	capedianum	GIZZARD SHAD	1	7	0.08
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CATOSTOMIDAE	Cyprinus	QUILLBACK	1	12	0.486
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CATOSTOMIDAE	docheirus	SMALLMOUTH BASS	1	0	0.33
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	5	0.42
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	8	0.092
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	8	0.138
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	9	0.202
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	9	0.214
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	6	3	0.032
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	9	0.29
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	3	2	0.01
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	12	0.95
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SPOTTED BASS	2	5	0.04
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	punctulatus	SPOTTED BASS	1	4	0.018
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SPOTTED BASS	1	10	0.385
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	punctulatus	SPOTTED BASS	1	11	0.4
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	LARGEMOUTH BASS	1	12	0.648
ARCORF930U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	9	0.242

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ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	11	0.35
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CYPRINIDAE	Cyprinella	spilotera	3	3	0.008
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	3	4	0.007
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cedanum	100	2	0.112
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	punctulatus	1	6	0.05
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	7	0.105
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	7	0.07
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	8	0.1
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	8	0.14
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	8	0.17
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	cedanum	6	2	0.004
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CYPRINIDAE	Notropis	dolomieu	1	11	0.49
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CYPRINIDAE	Notropis	spottail shiner	9	3	0.003
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CYPRINIDAE	Notropis	affinisoides	9	3	0.018
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	3	0.004
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.03
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.09
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.05
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.08
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.13
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.14
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	10	0.26
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CLUPEIDAE	Alsea	chrysocloris	1	4	0.006
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.007
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	5	0.012
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	6	0.058
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	7	0.02
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CLUPEIDAE	Dorosoma	cedanum	1	7	0.062
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CLUPEIDAE	Dorosoma	cedanum	2	3	0.006
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Alsea	chrysocloris	3	3	0.003
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Carpoides	butellus	1	16	1.9
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Carpoides	butellus	1	15	1.1
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Carpoides	butellus	1	14	1.2
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Carpoides	butellus	1	15	1.3
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Carpoides	butellus	1	15	1.4
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Carpoides	butellus	1	5	0.022
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	16	1.4
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Leptomis	gynellus	1	5	0.016
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Leptomis	gynellus	1	2	0.002
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Leptomis	gynellus	1	5	0.042
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Leptomis	macrochirus	1	2	0.002
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Leptomis	macrochirus	1	4	0.014
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Leptomis	macrochirus	1	4	0.032
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Leptomis	macrochirus	1	5	0.042
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CENTRARCHIDAE	Leptomis	macrochirus	1	2	0.005
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Carpoides	butellus	4	15	1.6
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	16-Aug-99	1999	CATOSTOMIDAE	Carpoides	butellus	1	4	0.018
ARCORF982U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	vitreus	1	13	0.7
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	2	2	0.004
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	2	2	0.005
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	3	2	0.009
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	4	4	0.008
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	1	2	0.008
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	3	2	0.008
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	1	4	0.01
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	3	2	0.004
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	4	2	0.005
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	2	2	0.006
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	gurneius	1	2	0.002

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ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	ICTALURIDAE	Pseudocritius	clavatus	FLATHEAD CATFISH	1	12	0.39
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	vitreus	WALLEYE	1	4	0.012
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	MORONIDAE	Morone	sp	MORONE SP	3	2	0.005
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	MORONIDAE	Morone	vitreus	WALLEYE	1	3	0.007
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Percina	caprodes	LOGPERCH	1	5	0.01
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	8	0.1
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	8	0.11
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	9	0.01
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	9	0.15
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	SAUGER	1	11	0.3
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	sp	SAUGER SP	2	3	0.014
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	MORONIDAE	Morone	sp	MORONE SP	1	3	0.014
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Micropterus	salmoides	SILVER CHUB	2	4	0.029
ARCORF981U	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	Moxostoma	erythrum	GOLDEN REDHORSE	1	14	0.8
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CENTRARCHIDAE	Micropterus	dolomieu	SILVER BASS	1	14	0.8
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	ICTALURIDAE	italurus	punctatus	CHANNEL CATFISH	1	14	0.47
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	PERCIDAE	Sander	canadensis x vitreus	SAUGER	2	5	0.05
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	PERCIDAE	Sander	canadensis	SAUGER	3	11	0.79
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	PERCIDAE	Sander	canadensis	SAUGER	2	5	0.05
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	PERCIDAE	Sander	canadensis	SAUGER	1	12	0.3
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	17	2.7
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	ICTALURIDAE	italurus	punctatus	CHANNEL CATFISH	2	15	1.06
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	10	0.77
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	PERCIDAE	Sander	canadensis	SAUGER	1	11	0.77
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	ICTALURIDAE	italurus	punctatus	CHANNEL CATFISH	1	10	0.18
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	ICTALURIDAE	italurus	punctatus	CHANNEL CATFISH	1	9	0.13
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CYPRINIDAE	Notropis	leucostictus	MOONEYE	1	9	0.15
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CYPRINIDAE	Notropis	affinis	EMERALD SHINER	55	3	0.158
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	MORONIDAE	Morone	sp	MORONE SP	2	2	0.003
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	PERCIDAE	Sander	vitreus	WALLEYE	2	3	0.005
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	3	0.004
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	5	2	0.008
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	ICTALURIDAE	italurus	punctatus	CHANNEL CATFISH	2	16	3
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	ichthys	ichthys	SMALLMOUTH BUFFALO	1	13	0.41
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	ichthys	ichthys	SMALLMOUTH BUFFALO	2	16	3
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	Dorosoma	catostomus	SILVER REDHORSE	2	11	0.59
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	Moxostoma	catostomus	SILVER REDHORSE	1	12	0.92
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	Moxostoma	catostomus	SMALLMOUTH REDHORSE	1	13	0.56
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	Moxostoma	catostomus	SMALLMOUTH REDHORSE	1	12	0.43
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	8	0.27
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	Moxostoma	catostomus	SMALLMOUTH REDHORSE	1	13	0.49
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	11	0.38
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CLUPEIDAE	Dorosoma	catostomus	GIZZARD SHAD	1	5	0.08
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CLUPEIDAE	Dorosoma	catostomus	SILVER REDHORSE	2	15	2.1
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CLUPEIDAE	Dorosoma	catostomus	GIZZARD SHAD	2	10	0.49
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	0.015	
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	Moxostoma	catostomus	RIVER REDHORSE	1	16	1.4
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	09-Aug-04	2004	CATOSTOMIDAE	Moxostoma	catostomus	GIZZARD SHAD	1	3	0.003
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	PERCIDAE	Sander	canadensis	SAUGER	1	12	0.362
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	PERCIDAE	Sander	canadensis	SAUGER	2	5	0.07
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	PERCIDAE	Sander	canadensis	SAUGER	5	5	0.086
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	13	0.675
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	15	1.01
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	4	4	0.105
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	76	3	0.275
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	PERCIDAE	Etheostoma	biemionides	GREENSIDE DARTER	3	0.004	
026 3 LDB080904	26 3 OHIO LDB	MONTGOMERY	EF	FALSE	15-Aug-05	2005	SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	10	2	0.019

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ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.015
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	1	3	0.01
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	1	6	0.04
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	1	6	0.06
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Micropterus	dolomieu	4	4	0.065
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	1	2	0.004
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Moostoma	carinatum	1	17	1.9
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Moostoma	erythrurum	1	10	0.3
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	25	3	0.17
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Moostoma	erythrurum	1	12	0.95
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Moostoma	erythrurum	1	12	0.95
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	1	13	0.56
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	1	8	0.04
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Micropterus	dolomieu	2	3	0.01
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	1	5	0.05
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	2	3	0.02
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	3	3	0.02
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	5	2	0.03
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CENTRARCHIDAE	Lepisosteus	macrochirus	1	3	0.02
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Moostoma	dolomieu	1	3	0.015
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Notropis	erythrurum	1	14	0.75
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	atherinoides	4	3	0.016
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	storeriana	1	4	0.09
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	storeriana	1	4	0.09
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	storeriana	1	5	0.015
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	storeriana	2	4	0.017
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	storeriana	3	5	0.06
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	storeriana	1	3	0.002
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Dorosoma	cededianum	7	3	0.05
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	atherinoides	3	3	0.012
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Cyprinus	carpio	1	15	1.4
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	atherinoides	5	3	0.015
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	hudsonius	2	3	0.005
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	hudsonius	2	3	0.006
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Moostoma	brevicauda	1	14	0.74
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	hudsonius	5	3	0.023
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	hudsonius	5	3	0.023
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Notropis	atherinoides	1	3	0.006
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	4	3	0.02
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	1	7	0.07
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	1	7	0.08
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	1	7	0.09
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	1	10	0.2
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	1	10	0.24
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	2	4	0.03
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	2	6	0.11
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CYPRINIDAE	Cyprinus	carpio	1	17	1.6
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	3	7	0.24
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Cyprinus	carpio	1	8	0.74
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	1	6	0.4
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	5	3	0.05
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	5	4	0.05
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	6	3	0.03
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Notropis	hudsonius	2	3	0.008
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	13	4	0.14
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	1	6	0.04
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededianum	2	8	0.26
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Notropis	volucellus	2	2	0.003
ARCOF993L	26.6 OHIO LDB	MONTGOMERY	EF	FALSE	30-Sep-99	1999 CATOSTOMIDAE	Notropis	ansurum	1	15	0.9

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ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CYPRINIDAE	Notopterus	athetoides	12	3	0.038
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CYPRINIDAE	Cyprinus	carpio	1	15	1
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CYPRINIDAE	Cyprinus	carpio	1	17	1.7
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	89	2	0.111
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	1	6	0.055
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	1	6	0.075
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	1	8	0.13
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	1	9	0.2
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	2	3	0.006
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	52	2	0.087
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	89	2	0.087
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	91	6	0.12
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	96	2	0.101
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	103	2	0.115
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	111	2	0.084
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	120	2	0.13
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Dorosoma	cepedianum	129	2	0.137
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CLUPEIDAE	Cyprinus	carpio	1	11	0.41
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Dorosoma	cepedianum	1	14	0.75
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Dorosoma	cepedianum	89	2	0.073
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	13	0.88
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	9	0.225
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	9	0.17
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	14	0.95
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	15	0.955
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	8	0.2
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	10	0.28
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	11	0.415
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	5	0.045
ARCORF991L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	CATOSTOMIDAE	Micropterus	dolomieu	1	6	0.055
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	14	1.2
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	12	0.3
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	4	0.02
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	3	0.02
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	5	0.05
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	4	0.05
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	7	5
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	3	0.025
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	3	0.025
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	6	0.02
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	4	0.01
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	15	0.7
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	2	3	0.005
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	2	4	0.015
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	4	2	0.012
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	4	3	0.01
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	4	3	0.015
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	4	1	0.1
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	5	0.02
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	7	3	0.018
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	6	4	0.09
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	4	0.007
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	3	3	0.011
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	6	3	0.015
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	10	3	0.018
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	3	3	0.04
ARCORF992L	26.8 OHIO LDB	MONTGOMERY	EF	FALSE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	3	3	0.025

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ARC0RF992L	26.8 OHIO	LD8	MONTGOMERY	EF	FALSE	18-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	10	0.35
ARC0RF992L	26.8 OHIO	LD8	MONTGOMERY	EF	FALSE	18-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	2	2	0.005
ARC0RF992L	26.8 OHIO	LD8	MONTGOMERY	EF	FALSE	18-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	2	4	0.03
ARC0RF992L	26.8 OHIO	LD8	MONTGOMERY	EF	FALSE	18-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	11	4	0.075
ARC0RF992L	26.8 OHIO	LD8	MONTGOMERY	EF	FALSE	18-Aug-99	1999	CENTRARCHIDAE	Micropterus	punctulatus	1	3	0.005
ARC0RF992L	26.8 OHIO	LD8	MONTGOMERY	EF	FALSE	18-Aug-99	1999	CENTRARCHIDAE	Micropterus	punctulatus	1	3	0.008
ARC0RF992L	26.8 OHIO	LD8	MONTGOMERY	EF	FALSE	18-Aug-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	2	6	0.15
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	1	8	0.1
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	PERCIDAE	Sander	canadensis	2	6	0.1
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	canadensis	8	10	1.3
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	brevicaps	1	15	0.6
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	brevicaps	2	8	0.1
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	brevicaps	2	8	0.1
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	canadensis	4	7	0.251
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	canadensis	4	13	2.3
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	1	20	2.2
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	1	7	0.08
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	ansurum	1	15	0.88
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	1	12	0.5
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	ansurum	1	7	0.063
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	2	15	1.7
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	3	11	1.279
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	3	13	1.81
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	erythrum	4	14	2.85
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CENTRARCHIDAE	Lepomis	cyaneus	1	2	0.001
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CENTRARCHIDAE	Lepomis	macrochirus	1	2	0.001
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CENTRARCHIDAE	Lepomis	macrochirus	1	5	0.06
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CENTRARCHIDAE	Lepomis	macrochirus	1	7	0.14
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	canadensis	1	10	0.335
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	PERCIDAE	Sander	canadensis	3	8	0.295
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CYPRINIDAE	Cyprinella	spiloptera	2	3	0.011
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CYPRINIDAE	Cyprinella	carpio	1	16	1.5
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CYPRINIDAE	Macrhybopsis	storenana	2	4	0.032
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CYPRINIDAE	Pimephales	notatus	1	3	0.008
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	ICTALURIDAE	ichthius	punctatus	1	5	0.021
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	MORONIDAE	Morone	chrysops	1	6	0.085
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	PERCIDAE	Percina	caprodes	4	4	0.055
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	Moxostoma	brevicaps	1	12	0.4
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	PERCIDAE	Sander	canadensis	1	14	0.38
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CENTRARCHIDAE	Lepomis	macrochirus	1	17	2
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	CYPRINIDAE	Alburnoides	gimmis	5	5	0.21
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002	SCIAENIDAE	Sciaenops	opacirostris	1	15	1.4
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	ichthius	ichthius	1	17	2.3
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	ichthius	bubalus	1	15	1.4
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	ichthius	bubalus	1	17	2.3
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	ichthius	bubalus	1	18	2.7
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	ichthius	bubalus	3	16	5.25
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CATOSTOMIDAE	ichthius	bubalus	1	5	0.03
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	PERCIDAE	Sander	canadensis	1	9	0.165
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	PERCIDAE	Etheostoma	zonale	1	2	0.001
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CYPRINIDAE	Notopterus	volucellus	2	1	0.001
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CYPRINIDAE	Notopterus	volucellus	2	1	0.001
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	ICTALURIDAE	ichthius	punctatus	2	6	0.004
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	ICTALURIDAE	ichthius	punctatus	1	8	0.1
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	ICTALURIDAE	ichthius	punctatus	1	6	0.45
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	ICTALURIDAE	ichthius	punctatus	1	17	1.3
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	ICTALURIDAE	Ptychodius	divaris	3	1	0.001
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	PERCIDAE	Lepomis	macrochirus	1	11	0.3
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	PERCIDAE	Etheostoma	caeruleum	2	3	0.03
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	CYPRINIDAE	Notopterus	aethioides	1	2	0.001
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	PERCIDAE	Percina	caprodes	1	5	0.018
027 ORD060602	26.8 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002	PERCIDAE	Percina	caprodes	3	3	0.016

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027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	1	8	0.11
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	1	12	0.3
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	1	13	0.5
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Sander	canadensis	6	9	0.83
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 MORONIDAE	Morone	sp	1	3	0.003
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 MORONIDAE	Dorosoma	GIZZARD SHAD	5	8	0.256
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CLUPEIDAE	Dorosoma	GIZZARD SHAD	5	8	0.256
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CLUPEIDAE	Leptocottus armatus	leptocottus	21	1	0.015
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	dolomieu	1	7	0.08
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	dolomieu	1	12	0.54
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	dolomieu	1	14	0.81
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	dolomieu	3	2	0.008
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	dolomieu	3	6	0.205
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	dolomieu	6	3	0.032
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CYPRINIDAE	Notropis atherinoides	atherinoides	28	3	0.1
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CLUPEIDAE	Dorosoma atherinoides	GIZZARD SHAD	1	12	0.4
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CLUPEIDAE	Dorosoma atherinoides	GIZZARD SHAD	22	2	0.014
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CLUPEIDAE	Dorosoma cepedianum	GIZZARD SHAD	6	7	0.39
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CLUPEIDAE	Dorosoma cepedianum	GIZZARD SHAD	13	3	0.012
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CYPRINIDAE	Cyprinella cyprinella	GIZZARD SHAD	3	0.12	
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CYPRINIDAE	Cyprinella cyprinella	COMMON CARP	1	18	2.1
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CYPRINIDAE	Cyprinella cyprinella	COMMON CARP	1	18	2.1
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CYPRINIDAE	Macrochanna storeri	SILVER CHUB	1	4	0.016
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	storeri	1	5	0.03
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	macrochirus	1	6	0.46
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	punctulatus	9	3	0.034
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	spotted bass	800	2	1.61
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	GIZZARD SHAD	1	3	0.005
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	SMALLMOUTH BASS	2	11	0.85
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	GOLDEN REDHORSE	2	13	1.355
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	GOLDEN REDHORSE	3	7	0.16
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	GOLDEN REDHORSE	3	14	2.6
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	GOLDEN REDHORSE	3	14	2.6
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	GOLDEN REDHORSE	5	12	2.48
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	GOLDEN REDHORSE	5	12	2.48
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	GOLDEN REDHORSE	3	4	1.11
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	ROCKY BASS	6	3	0.09
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Micropterus dolomieu	river redhorse	1	17	1.3
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	SMALLMOUTH BASS	4	0.021	
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	SMALLMOUTH BASS	1	7	0.11
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	SMALLMOUTH BASS	1	10	0.3
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	SMALLMOUTH BASS	2	12	0.85
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	SMALLMOUTH BASS	5	5	0.13
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Micropterus dolomieu	SMALLMOUTH BASS	5	6	0.3
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CENTRARCHIDAE	Micropterus dolomieu	SMALLMOUTH BASS	1	2	0.008
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 PERCIDAE	Percilia punctulatus	SPOTTED BASS	19	4	0.196
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CENTRARCHIDAE	Leptocottus armatus	LOOPERCH	2	4	0.053
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SMALLMOUTH BUFFALO	2	20	9.7
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	GOLDEN REDHORSE	2	19	0.7
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SMALLMOUTH BUFFALO	1	19	2.8
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SMALLMOUTH BUFFALO	1	5	0.06
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	GOLDEN REDHORSE	3	15	4.1
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SILVER REDHORSE	2	6	0.17
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SMALLMOUTH REDHORSE	2	7	0.2
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SMALLMOUTH REDHORSE	2	11	0.7
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SMALLMOUTH REDHORSE	2	12	1
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SMALLMOUTH REDHORSE	2	14	1.46
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	RIVER REDHORSE	1	16	1.2
027	ORDB072302	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	22-Jul-02	2002 CATOSTOMIDAE	Labidesthes subilobus	GIZZARD SHAD	7	6	0.35
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 CATOSTOMIDAE	Labidesthes subilobus	SMALLMOUTH BUFFALO	1	8	1.8
027	ORDB080602	26.6 OHIO	ROB	MONTGOMERY	EF	FALSE	06-Aug-02	2002 SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	2	5	0.05

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APPENDIX C

ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	SCAENIDAE	Aplodinotus	gunnietus	1	9	0.2
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	SCAENIDAE	Aplodinotus	gunnietus	1	13	0.7
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	SCAENIDAE	Aplodinotus	gunnietus	1	14	0.9
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	SCAENIDAE	Aplodinotus	gunnietus	28	3	0.14
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	SCAENIDAE	Aplodinotus	gunnietus	33	4	0.24
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	0	0.1
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	ESOCIDAE	Esoc	masapungitoy	1	15	1.8
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	17	1.7
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	17	1.7
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	17	1.9
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	17	2
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	19	2.2
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CYPRINIDAE	Macrhybopsis	storeriana	1	20	2.7
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	MORONIDAE	Morone	chrysops	1	3	0.005
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CYPRINIDAE	Notropis	hudsonius	1	13	0.9
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	MORONIDAE	Notropis	chrysops	9	3	0.058
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	ICTALURIDAE	Ictalurus	punctatus	1	8	0.25
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	ICTALURIDAE	Ictalurus	punctatus	1	16	1.6
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	ICTALURIDAE	Ictalurus	punctatus	1	18	1.2
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	ICTALURIDAE	Ictalurus	punctatus	1	18	1.2
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	ICTALURIDAE	Ictalurus	punctatus	3	4	0.02
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	LEPIDOSTEIDAE	Lepisosteus	osseus	32	3	0.1
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	11	0.09
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CYPRINIDAE	Macrhybopsis	storeriana	1	14	0.65
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.022
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	8	0.18
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	15	1.35
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Lepomis	macrochirus	1	16	1.75
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	2	0.001
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.065
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.07
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.08
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	15	1.17
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	10	0.36
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	10	0.39
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	11	0.49
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	2	2	0.01
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	2	4	0.025
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	punctulatus	1	3	0.008
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	salmoides	1	7	0.085
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	dolomieu	1	14	1.05
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	4	0.18
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	08-Oct-97	1997	CATOSTOMIDAE	ichthobus	storeriana	2	6	0.18
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	1	1.1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	14	1.1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	12	0.6
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	13	0.87
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	14	0.85
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	15	1.3
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	14	0.97
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	15	1.25
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	14	1.1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	14	1.12
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	14	1.15
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	14	1.2
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	14	1.23
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Aug-97	1997	CATOSTOMIDAE	ichthobus	storeriana	1	15	1.13

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ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CATOSTOMIDAE	ictiobus	bulbulus	1	14	0.9
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CATOSTOMIDAE	bulbulus	bulbulus	1	14	0.94
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 SCIAENIDAE	Atherinoides	grunniens	18	3	0.08
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 MORONIDAE	Morone	Morone SP	18	3	0.04
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 MORONIDAE	blennioides	blennioides	4	2	0.002
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 PERCIDAE	Etheostoma	GREENSIDE DARTER	1	2	0.002
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 PERCIDAE	Percina	JOHNNY DARTER	4	2	0.002
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 PERCIDAE	Sander	LOGPERCH	10	3	0.045
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 PERCIDAE	Sander	SAUGER	1	9	0.12
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 PERCIDAE	Sander	SAUGER	1	15	0.14
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 MORONIDAE	Morone	MORONE SP	5	3	0.1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 SCIAENIDAE	Atherinoides	FRESHWATER DRUM	1	1	0.09
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 SCIAENIDAE	Atherinoides	FRESHWATER DRUM	12	2	0.18
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 08-Oct-97 1997 CATOSTOMIDAE	Carpio	RIVER CARPSUCKER	1	5	0.04
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 08-Oct-97 1997 CATOSTOMIDAE	ictiobus	RIVER CARPSUCKER	1	5	0.041
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BUFFALO	1	13	1.05
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CATOSTOMIDAE	ictiobus	LARGEMOUTH BASS	1	10	0.295
ARCOIS9702	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 08-Oct-97 1997 CATOSTOMIDAE	ictiobus	SMALLMOUTH BUFFALO	1	13	0.9
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 08-Oct-97 1997 CATOSTOMIDAE	ictiobus	SMALLMOUTH BUFFALO	1	14	1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CATOSTOMIDAE	Sander	SMALLMOUTH BUFFALO	1	14	1.2
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 PERCIDAE	Cyprinus	WALLEYE	2	5	0.05
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CYPRINIDAE	Pomoxis	COMMON CARP	1	15	1.14
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 LEPSISTEIDAE	Lepisosteus	BLACK CHARRIE	1	7	0.15
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 LEPSISTEIDAE	Dorosoma	LONGNOSE GAR	1	4	0.1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CLUPEIDAE	Dorosoma	GIZZARD SHAD	2	11	0.78
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CLUPEIDAE	Micropterus	GIZZARD SHAD	94	4	0.97
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CENTRARCHIDAE	Macropterus	LARGEMOUTH BASS	1	10	0.5
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CYPRINIDAE	Notropis	SILVER CHUB	1	4	0.012
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CENTRARCHIDAE	Micropterus	EMERALD SHINER	2	2	0.002
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 LEPSISTEIDAE	Lepisosteus	LARGEMOUTH BASS	1	10	0.39
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CYPRINIDAE	Notropis	LONGNOSE GAR	1	10	0.04
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CTALURIDAE	italurus	MINIC SHINER	1	2	0.002
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CTALURIDAE	italurus	CHANNEL CATFISH	3	3	0.015
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CTALURIDAE	Pylodictis	FLATHEAD CATFISH	25	2	0.06
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CTALURIDAE	Notropis	FLATHEAD CATFISH	1	11	0.3
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CTALURIDAE	Lepisosteus	SPYGLASS SHINER	2	3	0.12
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 LEPSISTEIDAE	Lepisosteus	SMALLMOUTH BASS	1	8	0.14
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Aug-97 1997 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	5	0.045
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	LARGEMOUTH BASS	1	14	0.935
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	14	0.97
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	12	0.52
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	11	0.5
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	10	0.355
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	7	0.09
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	6	0.145
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	7	0.1
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CLUPEIDAE	Dorosoma	GIZZARD SHAD	2	7	0.3
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	6	0.08
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	6	0.08
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Cyprinops	COMMON CARP	1	9	0.26
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Notropis	COMMON CARP	1	11	0.47
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Notropis	EMERALD SHINER	7	3	0.025
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98 1998 SCIAENIDAE	Atherinoides	EMERALD SHINER	4	2	0.003
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98 1998 SCIAENIDAE	Atherinoides	EMERALD SHINER	1	2	0.001
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Micropterus	FRESHWATER DRUM	6	2	0.005
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Macropterus	SMALLMOUTH BASS	1	6	0.095
ARCOIS9701	29.7 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98 1998 CENTRARCHIDAE	Macropterus	SILVER CHUB	1	4	0.005

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ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CLUPIEIDAE	Dorosoma	lepidodermum	1	9	0.15
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CYPRINIDAE	Cyprinus	carpio	1	18	1.85
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CLUPIEIDAE	Alosa	chrysobolus	1	5	0.03
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CLUPIEIDAE	Dorosoma	lepidodermum	3	8	0.42
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CLUPIEIDAE	Macrhybopsis	storeriana	1	10	0.245
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CLUPIEIDAE	Dorosoma	lepidodermum	1	4	0.165
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CLUPIEIDAE	Dorosoma	lepidodermum	1	8	0.13
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CLUPIEIDAE	Dorosoma	lepidodermum	1	8	0.11
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CLUPIEIDAE	Dorosoma	lepidodermum	1	8	0.1
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 ICTALURIDAE	Notropis	storeriana	1	3	0.01
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 PERCIDAE	italanus	punctatus	6	5	0.12
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 PERCIDAE	Sander	canadensis	3	8	0.3
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 PERCIDAE	Sander	canadensis	2	4	0.02
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 PERCIDAE	Sander	canadensis	1	4	0.01
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 PERCIDAE	Perca	caprodes	2	3	0.02
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 PERCIDAE	Perca	caprodes	2	3	0.018
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 CATOSTOMIDAE	ichthobus	bullatus	1	14	0.96
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 CATOSTOMIDAE	Lepisosteus	osseus	1	11	0.22
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 CATOSTOMIDAE	Carpiotes	carpio	1	6	0.3
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 ICTALURIDAE	italanus	punctatus	1	8	0.1
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CYPRINIDAE	Notropis	hudsonius	1	17	1.3
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 SCIAENIDAE	Aplocheilichthys	gurneius	2	3	0.007
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 ICTALURIDAE	italanus	punctatus	1	6	0.04
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 ICTALURIDAE	italanus	punctatus	1	15	0.81
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 MORONIDAE	Morone	sp	1	3	0.02
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 MORONIDAE	Morone	sp	1	13	0.6
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	Micropterus	dolomieu	1	5	0.03
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.015
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.005
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	15	2	0.028
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	4	0.02
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	4	0.02
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	Aplocheilichthys	gurneius	2	3	0.02
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	Aplocheilichthys	gurneius	1	14	0.8
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	Micropterus	brevicaes	3	5	0.08
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	Micropterus	brevicaes	1	8	0.11
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	ichthobus	bullatus	1	7	0.018
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	ichthobus	bullatus	1	15	1.2
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	ichthobus	bullatus	1	15	1.05
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	14	1.15
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	Micropterus	dolomieu	1	5	0.035
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 CATOSTOMIDAE	Micropterus	dolomieu	1	15	0.99
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 PERCIDAE	Sander	canadensis	1	1	0.235
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 SCIAENIDAE	Aplocheilichthys	gurneius	12	3	0.3
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 SCIAENIDAE	Aplocheilichthys	gurneius	1	4	0.03
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 SCIAENIDAE	Aplocheilichthys	gurneius	4	3	0.04
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 SCIAENIDAE	Aplocheilichthys	gurneius	1	4	0.015
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 SCIAENIDAE	Aplocheilichthys	gurneius	1	3	0.005
ARCOOUT981	297 OHIO LDB	MONTGOMERY	EF	TRUE 15-Jul-98	1998 SCIAENIDAE	Notropis	gurneius	1	4	0.005
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 CYPRINIDAE	Notropis	storeriana	1	2	0.003
ARCOOUT982	297 OHIO LDB	MONTGOMERY	EF	TRUE 04-Aug-98	1998 PERCIDAE	Sander	canadensis	10	2	0.016
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 ICTALURIDAE	italanus	punctatus	1	10	0.19
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 LEPISOSTEIDAE	Lepisosteus	osseus	3	3	0.005
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 LEPISOSTEIDAE	Lepisosteus	osseus	1	19	0.35
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 LEPISOSTEIDAE	Pygidictis	officinalis	1	17	1.6
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 ICTALURIDAE	italanus	punctatus	2	8	0.01
ARCOOUT983	297 OHIO LDB	MONTGOMERY	EF	TRUE 14-Sep-98	1998 ICTALURIDAE	italanus	punctatus	1	6	0.035

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ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	SCAENIDAE	Aphidius	gunnietus	FRESHWATER DRUM	1	2	0.005
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	ICTALURIDAE	Idalutius	punctatus	CHANNEL CATFISH	1	4	0.005
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	MORONIDAE	Morone	saxatilis x chrysops	HYBRID STRIPER	1	7	0.09
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	CYPRINIDAE	Pimephales	notatus	BLUNTNOSE MINNOW	1	2	0.008
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	CYPRINIDAE	Notropis	stramineus	SAND SHINER	13	3	0.007
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	CYPRINIDAE	Notropis	stramineus	SAND SHINER	1	4	0.008
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	CYPRINIDAE	Notropis	stramineus	SAND SHINER	1	3	0.003
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	CYPRINIDAE	Notropis	stramineus	SAND SHINER	1	2	0.001
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	ICTALURIDAE	Idalutius	punctatus	CHANNEL CATFISH	1	6	0.03
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Percia	caprodes	LOSPERCH	3	0	0.018
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Sander	canadensis	SAUGER	1	7	0.12
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Sander	canadensis	SAUGER	1	6	0.045
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Sander	canadensis	SAUGER	1	6	0.04
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Percia	copelandi	SAUGER	1	6	0.035
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	LEPIDOSTEIDAE	Lepisosteus	osseus	CHANNEL DARTER	13	2	0.009
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Percia	caprodes	LONGNOSE GAR	1	22	0.56
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	MORONIDAE	Morone	chrysops	LOSPERCH	19	4	0.155
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Percia	caprodes	WHITE BASS	1	13	0.895
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Percia	caprodes	LOSPERCH	1	3	0.005
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	MORONIDAE	Morone	sp	MORONE SP	1	5	0.05
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	MORONIDAE	Morone	sp	MORONE SP	1	2	0.025
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	MORONIDAE	Morone	sp	MORONE SP	1	4	0.015
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	MORONIDAE	Morone	saxatilis x chrysops	MORONE SP	1	13	0.75
ARCOOUT983	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	14-Sep-98	1998	PERCIDAE	Micropterus	punctulatus	CHANNEL DARTER	1	2	0.001
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	pedipedium	SPOTTED BASS	2	10	0.47
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	pedipedium	GIZZARD SHAD	2	6	0.095
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	pedipedium	GIZZARD SHAD	1	12	0.45
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	pedipedium	GIZZARD SHAD	1	9	0.14
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	GOLDEN REDHORSE	1	6	0.05
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	GOLDEN REDHORSE	1	13	0.92
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	LARGEMOUTH BASS	1	7	0.1
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	GIZZARD SHAD	5	11	1.8
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	SMALLMOUTH BASS	1	12	0.865
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	SMALLMOUTH BASS	1	10	0.931
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	SMALLMOUTH BASS	1	5	0.02
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	SMALLMOUTH BASS	1	3	0.01
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	sp	MORONE SP	2	2	0.003
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	sp	GIZZARD SHAD	1	5	0.02
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CYPRINIDAE	Notropis	macroleptus	BLUEGILL	1	4	0.03
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CYPRINIDAE	Notropis	macroleptus	SPOTTAL SHINER	1	3	0.003
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	ICTALURIDAE	Idalutius	olivatus	FLATHEAD CATFISH	1	10	0.25
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	ICTALURIDAE	Idalutius	punctatus	CHANNEL CATFISH	1	15	0.81
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CYPRINIDAE	Notropis	stramineus	CHANNEL CATFISH	1	5	0.025
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CYPRINIDAE	Notropis	stramineus	SAND SHINER	4	2	0.005
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	pedipedium	SAND SHINER	1	2	0.001
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	pedipedium	GIZZARD SHAD	1	3	0.009
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CYPRINIDAE	Notropis	stramineus	GIZZARD SHAD	5	8	0.68
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CYPRINIDAE	Notropis	stramineus	GIZZARD SHAD	4	4	0.338
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CYPRINIDAE	Cyprinus	carpio	SILVER CHUB	1	17	1.7
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CYPRINIDAE	Cyprinella	whitplei	COMMON CARP	1	12	0.85
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CLUPEIDAE	Dorosoma	pedipedium	STEELCOLOR SHINER	1	3	0.006
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	GIZZARD SHAD	12	9	2.1
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	GOLDEN REDHORSE	1	13	0.57
ARCOOUT981	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	15-Jul-98	1998	CATOSTOMIDAE	Micropterus	erythrum	RIVER CARPSUCKER	1	15	1.1

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ARCOOF989TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	CYPRINIDAE	Notropis	volucellus	1	2	0.001
ARCOOF990TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	CYPRINIDAE	Notropis	hudsonius	4	2	0.005
ARCOOF991TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	CYPRINIDAE	Notropis	SPOTTAIL SHINER	2	2	0.002
ARCOOF992TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	CYPRINIDAE	Notropis	SPOTTAIL SHINER	8	3	0.002
ARCOOF993TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	CYPRINIDAE	Notropis	EMERALD SHINER	8	2	0.003
ARCOOF994TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CYPRINIDAE	Micropterus	SMALLMOUTH BASS	4	2	0.012
ARCOOF995TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	CYPRINIDAE	Notropis	EMERALD SHINER	4	2	0.008
ARCOOF996TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	CYPRINIDAE	Notropis	EMERALD SHINER	3	3	0.008
ARCOOF997TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	ICTALURIDAE	Pseudotilus	FLATHEAD CATFISH	1	13	0.53
ARCOOF998TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	11	2	0.018
ARCOOF999TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	56	2	0.082
ARCOOF990TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	PERCH	1	3	0.004
ARCOOF991TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	18	2	0.022
ARCOOF992TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	9	2	0.016
ARCOOF993TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	4	2	0.008
ARCOOF994TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	1	16	1.8
ARCOOF995TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	1	6	0.044
ARCOOF996TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	FRESHWATER DRUM	1	5	0.042
ARCOOF997TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	PERCIDAE	Sander	FRESHWATER DRUM	1	5	0.02
ARCOOF998TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	PERCIDAE	Sander	canadensis x vitreus	1	12	0.33
ARCOOF999TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	PERCIDAE	Sander	SAUGEYE	1	9	0.14
ARCOOF990TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	2	3	0.014
ARCOOF991TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	4	0.008
ARCOOF992TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	PERCIDAE	Sander	canadensis	1	4	0.02
ARCOOF993TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	SCIAENIDAE	Aplocheilichthys	LOGPERCH	1	4	0.014
ARCOOF994TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	FRESHWATER BASS	33	2	0.06
ARCOOF995TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	1	7	0.12
ARCOOF996TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	2	3	0.015
ARCOOF997TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	11	11	0.4
ARCOOF998TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	10	0.45
ARCOOF999TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	10	0.39
ARCOOF990TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	10	0.35
ARCOOF991TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	10	0.3
ARCOOF992TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	9	0.25
ARCOOF993TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	8	0.25
ARCOOF994TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	8	0.23
ARCOOF995TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	8	0.21
ARCOOF996TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	7	0.18
ARCOOF997TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	12	0.32
ARCOOF998TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	7	0.14
ARCOOF999TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	12	0.55
ARCOOF990TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	3	3	0.032
ARCOOF991TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	6	0.1
ARCOOF992TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Notropis	EMERALD SHINER	1	4	0.007
ARCOOF993TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	5	0.08
ARCOOF994TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	3	0.01
ARCOOF995TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	2	0.008
ARCOOF996TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	17	2	0.025
ARCOOF997TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	15	2	0.03
ARCOOF998TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	13	2	0.027
ARCOOF999TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	12	2	0.022
ARCOOF990TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Lepomis	BLUEGILL	3	3	0.011
ARCOOF991TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	6	0.09
ARCOOF992TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	1	7	0.15
ARCOOF993TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	4	3	0.1
ARCOOF994TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CLUPEIDAE	Dorosoma	SKIPPY HERRING	3	0.01	
ARCOOF995TU	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999	CLUPEIDAE	Alosa	SPINNAK SHAD	1	4	0.025

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ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.008
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.004
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	2	0.002
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	dolomieu	1	2	0.001
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	sp	10	1	0.001
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	1	16	1.75
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CATOSTOMIDAE	Ichtyobus	bulbulus	1	1	0.001
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Micropterus	macrochirus	3	1	0.001
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	dolomieu	1	6	0.062
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	2	4	0.022
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	1	5	0.051
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	1	5	0.032
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	1	4	0.069
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	1	4	0.02
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	1	3	0.012
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	1	3	0.008
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	1	1	0.001
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CATOSTOMIDAE	Macostoma	gibbosus	1	4	0.03
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CATOSTOMIDAE	Macostoma	erythrinum	1	14	0.82
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CATOSTOMIDAE	Macostoma	erythrinum	1	14	0.7
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CATOSTOMIDAE	Lepis	erythrinum	1	13	0.84
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	12-Jul-99	1999	CENTRARCHIDAE	Lepis	macrochirus	4	4	0.068
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	chrysops	1	8	0.09
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Sander	caprosus	1	8	0.09
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Perca	caprosus	3	2	0.038
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Perca	copelandi	3	2	0.003
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Perca	copelandi	4	2	0.003
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Sander	canadensis	11	2	0.009
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Sander	canadensis	1	5	0.022
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Sander	canadensis	1	6	0.042
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	SCIAENIDAE	Aplodinotus	grunniens	1	7	0.062
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Perca	canadensis	3	4	0.042
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Perca	canadensis	1	7	0.064
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Sander	caprosus	2	3	0.008
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Sander	canadensis	1	8	0.068
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Sander	canadensis	1	8	0.1
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Sander	canadensis	1	8	0.118
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	SCIAENIDAE	Aplodinotus	grunniens	1	14	0.865
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	SCIAENIDAE	Sander	canadensis	1	3	0.002
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	sp	1	7	0.07
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	sp	1	3	0.005
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	saxatilis x chrysops	1	6	0.072
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	hybrid STRIPER	1	7	0.152
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	saxatilis x chrysops	1	8	0.17
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	saxatilis x chrysops	1	12	0.78
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	saxatilis x chrysops	1	15	1.3
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	saxatilis x chrysops	1	15	1.6
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	saxatilis x chrysops	1	16	0.02
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Perca	caprosus	1	19	2.7
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Perca	caprosus	3	3	0.015
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	sp	1	3	0.008
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	sp	1	4	0.01
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Morone	sp	1	5	0.032
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	MORONIDAE	Etheostoma	biennioides	2	3	0.01
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Etheostoma	caeruleum	1	3	0.002
ARCOOF989U	29.7 OHIO LDB	29.7 OHIO LDB	MONTEGOMERY	EF	TRUE	30-Sep-99	1999	PERCIDAE	Etheostoma	zonalis	1	2	0.002

Electrofishing Raw Data

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ARCOF983U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	4	3	0.012
ARCOF983U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 MORONIDAE	Morone	saxatilis x chrysops	HYBRID STRIPER	1	18	2.1
ARCOF983U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	2	3	0.018
ARCOF983U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	6	4	0.032
ARCOF983U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	6	4	0.054
ARCOF983U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	6	4	0.094
ARCOF983U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	12	3	0.084
ARCOF983U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	12	3	0.074
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 SCIAENIDAE	Dorosoma	cephedianum	GIZZARD SHAD	18	3	0.1
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 LEPISOSTEIDAE	Lepisosteus	osseus	LONGNOSE GAR	4	4	0.015
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Natoptis	athetoides	EMERALD SHINER	1	20	0.5
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Natoptis	athetoides	EMERALD SHINER	5	3	0.015
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Natoptis	hudsonius	SPOTTAIL SHINER	1	2	0.002
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	3	0.004
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	3	0.005
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	3	0.008
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	6	0.01
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 MORONIDAE	Morone	sp	HYBRID STRIPER	1	21	0.001
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 MORONIDAE	Morone	sp	MORONE SP	1	2	0.01
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 MORONIDAE	Morone	sp	MORONE SP	1	3	0.01
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 MORONIDAE	Morone	sp	MORONE SP	1	4	0.015
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 MORONIDAE	Morone	sp	MORONE SP	2	2	0.005
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 MORONIDAE	Morone	sp	MORONE SP	2	3	0.02
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 ICTALURIDAE	Pygidictis	olivatus	FLATHEAD CATFISH	1	8	0.15
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	4	4	0.06
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	1	4	0.08
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	1	6	0.12
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	1	8	0.1
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	2	3	0.012
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	2	6	0.2
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Natoptis	athetoides	EMERALD SHINER	1	4	0.007
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 MORONIDAE	Cyprinus	carpio	COMMON CARP	1	3	0.004
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	1	15	1.4
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	4	4	0.01
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	2	3	0.008
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	2	5	0.03
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CYPRINIDAE	Notemigonus	crysoleucas	GOLDEN SHINER	5	4	0.14
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 PERCIDAE	Etheostoma	perca	SPOTTED CRAYFISH	1	9	0.005
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 MORONIDAE	Morone	sp	MORONE SP	2	7	0.25
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	1	8	0.2
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	4	2	0.01
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	19	3	0.12
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	24	3	0.18
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	38	3	0.22
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 SCIAENIDAE	Apodinotus	gunnings	FRESHWATER DRUM	1	6	0.09
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 PERCIDAE	Sander	vitreus	WALLEYE	1	6	0.08
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 PERCIDAE	Perca	cephedianum	CHANNEL DARTER	40	2	0.24
ARCOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	1	7	0.03

Electrofishing Raw Data

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ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	caproides	LOGPERCH	1	3	0.01
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	caproides	LOGPERCH	1	5	0.025
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	caproides	LOGPERCH	2	3	0.012
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	caproides	LOGPERCH	3	3	0.03
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	caproides	LOGPERCH	3	4	0.08
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	caproides	LOGPERCH	5	4	0.09
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 SCIAENIDAE	Aplodinotus	güntheri	FRESHWATER DRUM	1	7	0.15
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	caproides	LOGPERCH	8	3	0.08
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 MORONIDAE	Morone	sp	MORONE SP	4	3	0.04
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	copelandi	CHANNEL DARTER	2	3	0.001
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	canadensis	CHANNEL DARTER	3	3	0.007
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Salinder	canadensis	SAUGER	1	6	0.08
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Salinder	canadensis	SAUGER	1	13	0.36
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Salinder	canadensis	SAUGER	1	13	0.36
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Salinder	canadensis	SAUGER	1	15	0.8
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Salinder	canadensis	SAUGER	3	5	0.2
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 18-Aug-99	1999 PERCIDAE	Percina	caproides	LOGPERCH	8	3	0.08
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	7	0.118
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	7	0.114
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	5	0.048
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	5	0.08
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	6	0.62
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	6	0.62
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	6	0.8
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	6	0.8
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	6	0.09
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	WHITE CRAPPIE	1	3	0.014
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	7	0.08
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	13	0.93
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	8	0.158
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	10	0.18
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	10	0.38
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	11	0.482
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	12	0.77
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	12	0.782
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	7	0.038
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	9	0.207
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	5	0.04
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	7	0.082
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	8	0.14
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	8	0.142
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	8	0.15
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	8	0.172
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	6	0.062
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	9	0.222
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	14	0.95
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	10	0.388
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	11	0.385
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	11	0.385
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	11	0.508
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	13	0.792
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	13	0.818
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CLUPEIDAE	Dorosoma	cededunum	GIZZARD SHAD	1	3	0.852
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	3	0.005
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CYPRINIDAE	Pimephales	notatus	BLUNTNOSE MINNOW	1	8	0.194
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CYPRINIDAE	Machyrops	storeriana	SILVER CHUB	1	2	0.002
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CYPRINIDAE	Machyrops	storeriana	SILVER CHUB	4	5	0.093
ARCOOF982U	29 7 OHIO LDB	MONTGOMERY	EF	TRUE 30-Sep-99	1999 CYPRINIDAE	Machyrops	storeriana	SILVER CHUB	5	5	0.101

Electrofishing Raw Data

APPENDIX C

ARCOO F962U	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 CATOSTOMIDAE	Moxostoma	epithelium	GOLDEN REDHORSE	1	13	0.638
ARCOO F962L	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 CATOSTOMIDAE	Hyentelium	nigriceps	NORTHERN HOG SUCKER	1	4	0.012
ARCOO F963U	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 CATOSTOMIDAE	Moxostoma	ansimium	SILVER REDHORSE	1	4	0.012
ARCOO F963U	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	5	0.038
ARCOO F963U	29.7 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 CATOSTOMIDAE	Moxostoma	breviceps	SMALLMOUTH REDHORSE	1	3	0.007
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	30-Sep-99	1999 CENTRARCHIDAE	Micropterus	gibbosus	PUMPKINSEED	1	6	0.047
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	dobsoni	SMALLMOUTH BASS	1	4	0.03
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	14	2	0.024
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	3	0.004
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	3	0.003
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	4	0.016
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	4	0.015
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	4	0.02
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	5	0.025
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	5	4	0.11
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	6	0.055
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	6	0.062
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	dobsoni	SMALLMOUTH BASS	1	7	0.12
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	13	2	0.027
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	4	0.022
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	11	2	0.023
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	9	2	0.03
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	2	4	0.07
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	3	4	0.011
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	2	2	0.004
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	8	0.16
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	5	0.022
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	5	0.065
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	5	0.062
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	4	0.04
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	4	0.03
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	4	0.024
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	7	0.08
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	8	3	0.05
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	13	3	0.064
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	7	3	0.064
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	3	3	0.044
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	BLUEGILL	1	4	0.02
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	7	3	0.04
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	4	3	0.016
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	3	7	0.28
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	3	3	0.018
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	2	4	0.025
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	9	0.18
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	3	0.012
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	7	0.085
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	8	0.185
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	6	0.016
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	4	0.012
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	2	0.002
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	4	0.015
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CLUPEIDAE	Dorosoma	epedanium	GIZZARD SHAD	1	4	0.014
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	salmoides	SKIPJACK HERRING	1	4	0.014
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	1	10	0.375
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	LARGEMOUTH BASS	1	3	0.008
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	5	4	0.038
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	3	4	0.038
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	2	3	0.012
ARCOO F962L	30 OHIO LDB	MONTGOMERY	EF	TRUE	16-Aug-99	1999 CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	13	0.88

Electrofishing Raw Data

APPENDIX C

MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CLUPEIDAE	Alosa	pseudoharengus	ALEWIFE	1	11	0.19
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	5	0.04
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 PERCIDAE	Sander	canadensis	SAUGER	1	6	0.03
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	4	6	0.19
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	7	0.045
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	10	0.23
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	3	0.035
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	2	5	0.09
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	6	0.06
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Lepomis	gibbosus	PUMPKINSEED	1	2	0.001
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	4	4	1.12
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 PERCIDAE	Perca	caprodes	LOGPERCH	1	17	1.85
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	3	0.015
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 PERCIDAE	Sander	canadensis x vitreus	SAUGYE	1	12	0.455
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 PERCIDAE	Sander	canadensis x vitreus	SAUGYE	6	9	0.825
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 PERCIDAE	Sander	canadensis x vitreus	SAUGYE	4	10	0.645
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 PERCIDAE	Sander	canadensis x vitreus	SAUGYE	3	7	1.163
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 PERCIDAE	Sander	canadensis x vitreus	SAUGYE	1	6	0.025
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 PERCIDAE	Sander	canadensis	SAUGER	2	9	0.175
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Ambloplites	rupestris	ROCK BASS	1	5	0.065
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	5	5	0.175
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Lepomis	gibbosus	PUMPKINSEED	1	5	0.06
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 MORONIDAE	Morone	chrysops	WHITE BASS	3	7	0.255
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 MORONIDAE	Morone	chrysops	WHITE BASS	2	8	0.205
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CTALURIDAE	Pylodictis	olivaris	FLATHEAD CATFISH	1	13	0.455
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CTALURIDAE	Ichthyolites	punctatus	CHANNEL CATFISH	1	7	0.045
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	1	5	0.021
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	1	1.148
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	2	6	0.15
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	salmoides	LARGEMOUTH BASS	2	12	0.7
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	punctatus	SAUGER	3	6	0.09
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	canadensis	SPOTTED BASS	1	5	0.035
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	4	8	0.345
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	9	0.425
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	6	0.23
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	7	0.175
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	6	0.01
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Lepomis	macrochirus	SMALLMOUTH BASS	1	13	0.6
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Lepomis	macrochirus	SMALLMOUTH BASS	3	5	0.145
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Lepomis	macrochirus	SMALLMOUTH BASS	2	4	0.045
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Lepomis	gibbosus	BLUEGILL	1	5	0.15
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Lepomis	punctulatus	PUMPKINSEED	1	5	0.15
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Ambloplites	rupestris	SAUGER	2	7	0.185
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Ambloplites	rupestris	WALLEYE	2	7	0.115
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Maxostoma	tyrinum	ROCK BASS	1	8	0.25
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Maxostoma	breviceps	GOLDEN REDHORSE	1	7	0.175
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Maxostoma	breviceps	SMALLMOUTH REDHORSE	4	15	0.9
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Maxostoma	ichthyos	SMALLMOUTH REDHORSE	3	6	0.315
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Hyphessobrycon	guttatus	SILVER REDHORSE	1	9	0.21
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Hyphessobrycon	guttatus	SMALLMOUTH BUFFALO	1	7	0.11
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 PERCIDAE	Perca	caprodes	NORTHERN HOG SUCKER	1	7	0.075
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 PERCIDAE	Aplocheilichthys	grunniens	LOGPERCH	6	4	0.08
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Ambloplites	rupestris	FRESHWATER DRUM	1	16	1.15
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	canadensis x vitreus	ROCK BASS	3	4	0.175
MONTAD9202	30.4 OHIO ROB	MONTGOMERY	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	canadensis x vitreus	SAUGETE	5	9	0.3

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APPENDIX C

MON096701	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	14-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	1	13	0.775
MON096701	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	14-Aug-97	1997	CYPRINIDAE	Cyprinus	carpio	1	14	1.05
MON096701	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	14-Aug-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.012
MON096701	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	14-Aug-97	1997	CLUPEIDAE	Alosa	tyloschoerlis	1	5	0.02
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	ICTALURIDAE	italurus	punctulatus	39	4	0.14
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	ICTALURIDAE	Lepomis	macrochirus	3	16	0.16
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	17	1.5
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	17	1.5
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	17	1.5
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	18	2.1
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Macrhybopsis	storerana	1	3	0.004
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Notropis	athetoides	1	3	0.005
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Notropis	athetoides	2	2	0.003
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	ICTALURIDAE	italurus	hudsonius	7	3	0.032
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	ICTALURIDAE	italurus	punctulatus	1	12	0.45
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	punctulatus	1	15	1.3
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	ICTALURIDAE	italurus	punctulatus	5	3	0.07
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Etheostoma	canadensis	1	15	0.003
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Perca	caprodes	4	3	0.02
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Perca	caprodes	4	3	0.02
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	7	0.065
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	8	0.13
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	14	0.65
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	15	0.9
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	15	0.95
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	16	0.85
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	PERCIDAE	Sander	canadensis	1	16	1.05
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	SCIAENIDAE	Aplocheilichthys	grunniens	4	7	0.34
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	ICTALURIDAE	italurus	punctulatus	12	4	0.09
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	ICTALURIDAE	italurus	punctulatus	53	3	0.29
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	14-Aug-97	1997	CATOSTOMIDAE	Microstomus	oxymochus	1	17	0.96
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	12	0.51
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.025
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.065
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.16
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.18
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.23
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.52
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	1	11	0.52
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	2	5	0.05
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	dolomieu	3	4	0.02
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	19	1.2
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	salmoides	1	3	0.01
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	salmoides	1	3	0.01
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CLUPEIDAE	Dorosoma	cecidium	14	5	0.25
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CLUPEIDAE	Dorosoma	cecidium	44	4	0.47
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	6	0.47
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	13	0.8
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	14	0.8
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	14	0.85
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	14	0.95
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	14	1
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	14	1.05
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	14	1.15
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	15	1.6
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CYPRINIDAE	Cyprinus	carpio	1	15	1.6
MON096702	30.4 OHIO RDB	MONTGOMERY	EF	FALSE	08-Oct-97	1997	CENTRARCHIDAE	Micropterus	salmoides	1	7	0.075

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MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	canadensis x vitreus	1	6	0.08
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	SAUGEYE	23	8	1.895
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	SAUGEYE	17	9	2.045
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 MORONIDAE	Monie	WHITE BASS	9	9	1.845
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	canadensis x vitreus	7	7	0.4
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	SAUGEYE	4	7	0.2
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	canadensis x vitreus	4	11	0.2
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	canadensis	12	9	1.27
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	canadensis	9	10	1.4
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	SAUGER	8	7	0.155
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 PERCIDAE	Sander	SAUGER	3	7	0.46
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 MORONIDAE	Monie	WHITE BASS	35	7	3.47
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	canadensis	1	7	0.105
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Lepomis	SAUGEYE	7	10	1.045
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	macrochilus	1	6	0.11
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	punctulatus	1	7	0.09
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	goldeyeu	1	6	0.04
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	goldeyeu	6	8	0.82
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	goldeyeu	8	8	0.82
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	goldeyeu	5	5	0.125
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	goldeyeu	2	6	0.1
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	goldeyeu	1	14	0.71
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Carpiodes	SAUGER	1	7	0.065
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Lepomis	SAUGER	2	9	0.405
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CENTRARCHIDAE	Micropterus	macrochilus	2	5	0.105
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	bulbulus	1	10	0.27
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	erythrum	5	14	3.52
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	erythrum	2	13	1
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	erythrum	1	9	0.165
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	erythrum	1	9	0.12
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	erythrum	1	7	0.08
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	duquesnei	1	7	0.35
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 CATOSTOMIDAE	Micropterus	duquesnei	1	7	0.44
MONTEBD0202	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	02-Sep-92	1992 MORONIDAE	Monie	BLACK REDHORSE	1	12	0.31
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Lepomis	WHITE BASS	6	6	0.075
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	duquesnei	4	4	0.12
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 MORONIDAE	Monie	BLACK REDHORSE	2	7	0.175
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	WHITE BASS	8	8	2.105
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	SAUGER	3	12	1.705
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	SAUGER	7	7	0.31
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	SAUGER	2	6	0.105
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	SAUGER	1	18	1.88
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	SAUGER	1	13	0.72
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CENTRARCHIDAE	Micropterus	SAUGER	1	7	0.105
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	1	3	2.265
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	4	10	1.375
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	5	10	1.375
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	3	12	1.78
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	2	6	0.125
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	1	14	0.715
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	1	9	0.195
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	1	14	0.85
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	4	7	0.34
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	3	6	0.19
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	2	13	1
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	1	12	0.315
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	1	0	0.1
MONTEBD0201	31.9 OHIO ROB	NEW CUMBERLAND	EF	FALSE	23-Jul-92	1992 CATOSTOMIDAE	Micropterus	SAUGER	3	15	2.8

APPENDIX C

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[illegible]

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032.8LDB071.904	32.3 OHIO	DB	NEW CUMBERLAND	EF	FALSE	13-Jul-04	2004 PERCIDAE	Sander	canadensis	canadensis	1	8	0.11
032.8LDB071.904	32.3 OHIO	DB	NEW CUMBERLAND	EF	FALSE	13-Jul-04	2004 PERCIDAE	Sander	canadensis	canadensis	8	9	1.09
032.8LDB071.904	32.3 OHIO	DB	NEW CUMBERLAND	EF	FALSE	13-Jul-04	2004 CYPRINIDAE	Machyobagis	storeriana	storeriana	1	4	0.008
032.8LDB071.904	32.3 OHIO	DB	NEW CUMBERLAND	EF	FALSE	13-Jul-04	2004 CATOSTOMIDAE	Moxostoma	arythnum	arythnum	1	9	0.19
032.8LDB071.904	32.3 OHIO	DB	NEW CUMBERLAND	EF	FALSE	13-Jul-04	2004 CATOSTOMIDAE	Moxostoma	anistrum	anistrum	1	10	0.2
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 PERCIDAE	Etheostoma	zonale	zonale	1	17	1.5
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 PERCIDAE	Etheostoma	caprodes	caprodes	2	3	0.001
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 PERCIDAE	Percina	caprodes	caprodes	1	5	0.014
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 PERCIDAE	Sander	canadensis	canadensis	23	3	0.09
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 PERCIDAE	Sander	canadensis	canadensis	6	6	0.267
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 PERCIDAE	Sander	canadensis	canadensis	9	7	0.43
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 SCIAENIDAE	Aplocheilichthys	gurneensis	gurneensis	1	6	0.4
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 SCIAENIDAE	Aplocheilichthys	gurneensis	gurneensis	107	3	0.569
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 MORONIDAE	Morone	sp	sp	16	4	0.14
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 MORONIDAE	Morone	sp	sp	4	4	0.07
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	punctulatus	1	3	0.004
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 SCIAENIDAE	Aplocheilichthys	gurneensis	gurneensis	3	2	0.006
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 CATOSTOMIDAE	Moxostoma	anistrum	anistrum	1	19	1.44
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 CENTRARCHIDAE	Micropterus	dolomieu	dolomieu	1	5	0.037
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 CLUPEIDAE	Dorosoma	cepedianum	cepedianum	1	4	0.027
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 CLUPEIDAE	Dorosoma	cepedianum	cepedianum	21	3	0.131
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 ICTALURIDAE	Ictalurus	punctatus	punctatus	2	2	0.008
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 ICTALURIDAE	Lepomis	osseus	osseus	1	10	0.035
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 MORONIDAE	Morone	sp	sp	2	3	0.003
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 MORONIDAE	Morone	sp	sp	2	2	0.004
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 PERCIDAE	Etheostoma	blemnoides	blemnoides	1	2	0.001
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	03-Aug-05	2005 SCIAENIDAE	Micropterus	dolomieu	dolomieu	1	4	0.014
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 SCIAENIDAE	Aplocheilichthys	gurneensis	gurneensis	41	3	0.164
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CYPRINIDAE	Cyprinus	carpio	carpio	1	17	1.855
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 MORONIDAE	Morone	sp	sp	2	4	0.026
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Micropterus	dolomieu	dolomieu	17	4	0.275
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	punctulatus	2	5	0.081
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	punctulatus	3	3	0.017
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	punctulatus	1	4	0.065
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Pomoxis	lagodonotus	lagodonotus	1	9	0.111
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Micropterus	dolomieu	dolomieu	13	4	0.22
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Micropterus	dolomieu	dolomieu	24	5	0.441
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CYPRINIDAE	Carpiostomus	anomalum	anomalum	1	4	0.012
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Micropterus	dolomieu	dolomieu	2	3	0.02
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CYPRINIDAE	Machyobagis	storeriana	storeriana	2	5	0.047
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CYPRINIDAE	Notropis	athetoides	athetoides	1	4	0.008
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CYPRINIDAE	Notropis	athetoides	athetoides	5	3	0.018
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CYPRINIDAE	Notropis	volucellus	volucellus	2	3	0.005
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CYPRINIDAE	Notropis	volucellus	volucellus	14	2	0.022
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 HIOCONIDAE	Hiodon	tergisus	tergisus	4	4	0.048
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 ICTALURIDAE	Ictalurus	punctatus	punctatus	8	3	0.061
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Dorosoma	cepedianum	cepedianum	76	4	0.1
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Moxostoma	anistrum	anistrum	3	4	0.1
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Carpiostomus	anomalum	anomalum	1	3	0.007
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Carpiostomus	anomalum	anomalum	4	4	0.075
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Carpiostomus	anomalum	anomalum	5	5	0.167
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Carpiostomus	anomalum	anomalum	2	5	0.074
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Hypentelium	ignificans	ignificans	3	3	0.016
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Hypentelium	ignificans	ignificans	13	4	0.133
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Hypentelium	ignificans	ignificans	1	4	0.01
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Ichthyos	bulbulus	bulbulus	1	15	1.4
034.3RDB0690705	34.3 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Ichthyos	bulbulus	bulbulus	1	15	1.4

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034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Micropterus salmoides	15	6	0.911
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	bulbulus	3	5	0.084
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 MORONIDAE	sp	34	3	0.183
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Moxostoma valenciennesi	1	3	0.008
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	breviceps	3	2	0.174
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	erythrurum	8	1	0.593
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Moxostoma valenciennesi	2	4	0.084
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	erythrurum	1	15	0.777
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	erythrurum	4	3	0.028
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Leptostichus	1	3	0.006
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CENTRARCHIDAE	Leptostichus	2	2	0.006
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	bulbulus	1	16	1.655
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Sep-05	2005 CATOSTOMIDAE	Cyprinid	2	4	0.031
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	bulbulus	2	5	0.108
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 SCIAENIDAE	Aplocheilichthys	32	3	0.145
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CYPRINIDAE	Semilabeus	1	5	0.031
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 HYDROCHLIDAE	Hiodon tergisus	2	4	0.021
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	3	0.001
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	4	1	0.001
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 MORONIDAE	Marone	1	13	0.072
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	bulbulus	3	7	0.031
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 PERCIDAE	Sander	57	3	0.254
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CYPRINIDAE	Notropis	1	7	0.062
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 PERCIDAE	Sander	8	5	0.155
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	canadensis	9	3	0.031
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	canadensis	7	6	0.208
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CYPRINIDAE	Cyprinid	1	6	0.052
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CYPRINIDAE	Volucellus	15	2	0.023
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Cantharus	5	3	0.015
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Cyprinid	5	5	0.132
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	bulbulus	2	16	3.059
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	cantharus	1	15	1.037
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	erythrurum	1	2	0.004
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	punctulatus	1	3	0.004
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	punctulatus	45	5	0.459
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	punctulatus	2	3	0.39
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	punctulatus	14	3	0.043
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	7	0.081
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	7	0.014
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	3	0.049
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	5	4	0.1
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	10	0.2
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	12	0.38
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	14	0.85
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	5	2	0.007
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	5	2	0.001
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	3	0.004
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	21	4
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	179	3	0.643
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	8	3	0.04
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	6	0.12
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	7	0.18
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	8	0.2
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	10	0.39
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	2	4	0.04
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	7	0.25
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	11	3	0.062
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	3	0.005
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	32	2	0.035
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	1	3	0.001
034.3RDB060705	34.3 OHIO RDB	NEW CUMBERLAND	EF	FALSE	07-Sep-05	2005 CATOSTOMIDAE	Leptostichus	3	3	0.012

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036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	erythrum	3	14	4.15
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	erythrum	5	11	1.8
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	erythrum	11	10	3.151
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	macrochilus	1	6	0.07
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	ansurum	1	17	1.25
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	dolesieu	1	8	0.013
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	grunniens	23	2	0.023
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	10	4	0.1
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	punctatus	2	14	1.14
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	volucellus	44	2	0.071
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	punctatus	1	8	0.01
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	punctatus	1	10	0.19
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	punctatus	1	13	0.93
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	1	10	0.07
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	2	9	0.29
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	carpio	1	20	2.9
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	punctatus	3	15	2.45
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	glanis	1	15	0.75
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	flavescens	1	2	0.002
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	copelandi	1	1	0.001
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	1	5	0.015
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	punctatus	1	16	0.97
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	dolesieu	7	2	0.068
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	altheimoides	1	6	0.21
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	ingonioculatus	1	4	0.01
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	copelandi	2	2	0.001
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	copelandi	12	3	0.07
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	spilotera	56	1	0.013
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	1	2	0.001
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	1	9	0.14
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	6	9	0.8
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	volucellus	6	3	0.018
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	punctatus	1	2	0.002
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	grunniens	3	8	0.2
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis x vitreus	5	6	0.06
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis x vitreus	1	9	0.13
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis x vitreus	2	13	0.59
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	1	13	0.42
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	1	11	0.255
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	canadensis	1	4	0.011
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	saxatilis x chrysops	1	6	0.072
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	erythrum	2	14	1.48
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	saxatilis x chrysops	2	10	0.55
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	dolesieu	1	6	0.05
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	dolesieu	1	4	0.013
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	leptopus	1	8	0.12
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	micropholis	1	8	0.025
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	macrochilus	1	4	0.013
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	macrochilus	1	3	0.013
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	dolesieu	1	5	0.075
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	dolesieu	2	8	0.391
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	dolesieu	3	10	0.545
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	ansurum	10	9	1.89
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	ansurum	6	8	0.89
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	ansurum	3	12	1.3
036 SRD6072604	36.5 OHIO	RDB	NEW CUMBERLAND	EF	FALSE	26-Jul-04	2004 CATOSTOMIDAE	Microstoma	ansurum	2	18	3.77

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APPENDIX C[illegible]

Electrofishing Raw Data

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038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CATOSTOMIDAE	latibulus	bulbulus	SMALLMOUTH BUFFALO	1	16	1.75
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CATOSTOMIDAE	latibulus	bulbulus	SMALLMOUTH BUFFALO	1	16	1.55
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CATOSTOMIDAE	latibulus	bulbulus	SMALLMOUTH BUFFALO	1	13	0.38
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CATOSTOMIDAE	latibulus	bulbulus	SMALLMOUTH BUFFALO	1	13	0.78
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CATOSTOMIDAE	latibulus	bulbulus	SMALLMOUTH BUFFALO	1	14	1.2
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CATOSTOMIDAE	latibulus	bulbulus	SMALLMOUTH BUFFALO	1	15	1.5
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Leptotis	macrochirus	BLUEGILL	2	2	0.003
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	9	0.55
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	3	3	0.02
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	9	0.28
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	0	0.1
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	10	4	0.14
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	9	4	0.16
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	5	0.084
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	4	7	0.2
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	GIZZARD SHAD	2	11	0.75
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	3	3	0.012
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	2	3	0.01
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	11	0.42
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	10	0.35
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	9	9	0.268
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	5	1	1.4
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Cyprinus	carpio	COMMON CARP	1	1	1.7
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	8	0.15
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	9	0.25
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	5	3	0.014
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	4	3	0.015
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	11	3	0.052
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	5	0.032
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	20	3.15
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	4	3	0.015
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Micropterus	dolomieu	SMALLMOUTH BASS	1	17	2
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Cyprinella	whitplei	GIZZARD SHAD	1	4	0.008
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	STEEL COLOR SHINER	375	2	0.44
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	GIZZARD SHAD	115	3	0.32
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	GIZZARD SHAD	30	2	0.003
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	GIZZARD SHAD	50	2	0.06
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	GIZZARD SHAD	4	4	0.054
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	GIZZARD SHAD	14	2	0.014
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Dorosoma	cepedianum	GIZZARD SHAD	1	18	1.9
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Cyprinus	carpio	COMMON CARP	15	3	0.06
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	3	2	0.015
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	17	1.5
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	3	2	0.015
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	3	2	0.015
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	10	0.164
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	5	0.02
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	3	2	0.01
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	2	3	0.005
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	13	3	0.005
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	5	3	0.005
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	15	1
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	2	5	0.04
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	2	4	0.02
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	13	0.52
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	3	0.011
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	16	1.25
038.0RB0306001	38 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001 CENTRARCHIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	14	0.73

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038.0RB030601	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001	ICTALURIDAE	Pygidictis	olivaris	1	13	0.66
038.0RB030601	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001	ICTALURIDAE	Pygidictis	olivaris	1	9	0.14
038.0RB030601	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001	HODONTIDAE	Hobdon	volucellus	18	4	0.008
038.0RB030601	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	06-Aug-01	2001	CYPRINIDAE	Natopsis	gambusia	10	2	0.017
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	SCIAENIDAE	Aplodinotus	grunniens	1	4	0.115
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	PERCIDAE	Sander	canadensis	1	14	0.0
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	PERCIDAE	Perca	canadensis	1	12	0.4
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	PERCIDAE	Perca	canadensis	1	3	0.005
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	MORONIDAE	Morone	sp	2	5	0.035
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	MORONIDAE	Morone	sp	1	5	0.031
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	MORONIDAE	Morone	sp	1	5	0.031
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	MORONIDAE	Morone	sp	1	7	0.125
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	MORONIDAE	Morone	sp	3	6	0.165
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	ICTALURIDAE	Lepisosteus	ichthyos	1	3	0.01
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	ICTALURIDAE	Micropterus	punctulatus	12	4	0.1
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	11	11	0.53
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	5	4	0.085
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.08
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.08
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	6	5	0.25
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	punctulatus	5	6	0.31
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	4	11	1
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	2	11	0.5
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	2	10	0.94
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	2	10	0.85
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	2	4	0.03
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	17	2
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	12	0.8
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	ICTALURIDAE	Pygidictis	olivaris	1	17	1.4
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CLUPEIDAE	Dorosoma	cephedianum	1	12	0.4
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CLUPEIDAE	Dorosoma	cephedianum	1	10	0.21
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	10	0.21
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	10	0.45
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.4
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	9	0.24
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.18
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.17
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.13
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.1
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.08
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.022
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Lepisosteus	macrochirus	11	2	0.02
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Lepisosteus	macrochirus	3	3	0.015
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Lepisosteus	macrochirus	1	4	0.02
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Lepisosteus	macrochirus	1	4	0.02
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Dorosoma	cephedianum	287	3	2.3
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CENTRARCHIDAE	Lepisosteus	macrochirus	3	4	0.03
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	HODONTIDAE	Hobdon	tergus	3	3	0.02
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Natopsis	volucellus	1	5	0.024
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Natopsis	volucellus	22	2	0.029
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Natopsis	hudsonius	3	3	0.014
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Natopsis	athetoides	2	3	0.014
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Natopsis	athetoides	13	2	0.018
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Natopsis	athetoides	12	3	0.005
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Machytopsis	storenana	1	3	0.09
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Machytopsis	storenana	9	4	0.09
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Machytopsis	storenana	1	5	0.035
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CYPRINIDAE	Cyprinus	carpio	1	21	3.4
038.1RDB100201	38.4 OHIO RDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001	CLUPEIDAE	Dorosoma	cephedianum	1	3	0.008

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041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 MORONIDAE	Morone	caprodes	1	4	0.012
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 PERCIDAE	Perca	caprodes	1	4	0.012
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Moxostoma	erythrinum	5	3	0.025
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Lepomis	macrochirus	1	5	0.025
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Anabiplexis	leptostictus	1	3	0.006
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Moxostoma	erythrinum	2	2	0.003
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	erythrinum	2	14	0.72
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	erythrinum	1	4	0.035
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	erythrinum	1	15	0.84
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	erythrinum	1	14	0.87
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	erythrinum	1	14	0.76
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	erythrinum	1	13	0.74
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	erythrinum	1	5	0.06
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Lepomis	macrochirus	1	13	0.53
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Caprodes	erythrinum	1	5	0.08
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Caprodes	erythrinum	2	13	0.53
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	breviceps	1	5	0.68
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	breviceps	1	17	1.4
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	ictidius	bulbulus	4	1	0.11
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	ictidius	bulbulus	13	4	0.035
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	ictidius	bulbulus	1	13	0.94
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	ictidius	bulbulus	1	5	0.029
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	ictidius	bulbulus	1	5	0.025
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Caprodes	erythrinum	1	13	0.1
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 MORONIDAE	Morone	caprodes	3	3	0.03
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CYPRINIDAE	Macrhybopsis	storeriana	1	3	0.03
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Moxostoma	erythrinum	1	13	0.68
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Perca	caprodes	1	10	0.3
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CYPRINIDAE	Cyprinus	carpio	1	20	2.5
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CATOSTOMIDAE	Caprodes	erythrinum	1	5	0.028
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CLUPEIDAE	Cyprinus	carpio	1	18	2.2
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CLUPEIDAE	Dorosoma	carpio	210	3	1.3
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Dorosoma	carpio	25	4	0.2
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Lepomis	macrochirus	4	2	0.008
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CLUPEIDAE	Dorosoma	carpio	1	11	0.34
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CLUPEIDAE	Dorosoma	carpio	220	4	1.8
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CLUPEIDAE	Dorosoma	carpio	1	3	0.008
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.013
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.013
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	17	1.6
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	12	0.6
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	11	0.46
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	9	0.42
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	11	0.26
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	6	0.17
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Lepomis	macrochirus	1	6	0.06
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Lepomis	macrochirus	9	2	0.015
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.002
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	2	2	0.02
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CLUPEIDAE	Dorosoma	carpio	25	3	0.13
041 8LDB100201	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	02-Oct-01	2001 CENTRARCHIDAE	Micropterus	punctulatus	1	4	0.008
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Cyprinus	carpio	1	2	0.017
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Cyprinus	carpio	25	2	0.017
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Notropis	storeriana	2	3	0.007
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Notropis	storeriana	1	3	0.007
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Notropis	storeriana	1	3	0.003
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Macrhybopsis	storeriana	13	4	0.125
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Macrhybopsis	storeriana	11	3	0.07
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Cyprinus	carpio	1	18	2.4
WTIRF9801	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	09-Jul-98	1998 CYPRINIDAE	Cyprinus	carpio	1	17	1.5

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WT01F9802	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	11-Aug-98	1998 SCIAENIDAE	Aplocheilichthys	guppies	1	5	0.04	FRESHWATER DRUM
WT01F9802	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	11-Aug-98	1998 SCIAENIDAE	Aplocheilichthys	guppies	1	3	0.01	FRESHWATER DRUM
WT01F9802	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	11-Aug-98	1998 PERCIDAE	Sander	canadensis	4	10	0.68	SAUGER
WT01F9802	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	11-Aug-98	1998 PERCIDAE	Sander	canadensis	3	5	0.05	SAUGER
WT01F9802	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	11-Aug-98	1998 PERCIDAE	Sander	canadensis	2	10	0.38	SAUGER
WT01F9802	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	11-Aug-98	1998 PERCIDAE	Sander	canadensis	2	9	0.38	SAUGER
WT01F9802	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	11-Aug-98	1998 PERCIDAE	Sander	canadensis	2	9	0.3	SAUGER
WT01F9803	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Sep-98	1998 CATOSTOMIDAE	Moxostoma valenciennesi	anthurum	1	13	0.29	SILVER REDHORSE
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CLUPEIDAE	Dorosoma cepedianum	cephedianum	18	3	0.148	GIZZARD SHAD
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Dorosoma cepedianum	punctulatus	3	4	0.09	CHANNEL CATFISH
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CATOSTOMIDAE	ichthyos	bulbatus	4	3	0.08	GOLDEN REDHORSE
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CENTRARCHIDAE	Etheostoma	erythrum	4	3	0.007	SMALLMOUTH BASS
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CLUPEIDAE	Dorosoma cepedianum	cephedianum	1	4	0.011	GIZZARD SHAD
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CYPRINIDAE	Dorosoma cepedianum	cephedianum	4	4	0.05	GIZZARD SHAD
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CYPRINIDAE	Notropis	aethioides	18	3	0.09	EMERALD SHAD
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CYPRINIDAE	Notropis	aethioides	7	4	0.046	EMERALD SHAD
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CYPRINIDAE	Notropis	hudsonius	44	3	0.135	EMERALD SHAD
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 HODONOTIDAE	Notropis	tergatus	7	3	0.029	SPOTTED BASS
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CYPRINIDAE	Notropis	volucellus	1	4	0.011	MOONEYE
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 MORONIDAE	Morone	sp	6	3	0.133	MORONE SP
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 PERCIDAE	Percina	caprodes	24	3	0.049	LOSPERCH
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 SCIAENIDAE	Sander	canadensis	11	3	0.068	SAUGER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 SCIAENIDAE	Aplocheilichthys	guppies	19	4	0.16	FRESHWATER DRUM
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CLUPEIDAE	Micropterus	gulosus	45	3	0.026	GIZZARD SHAD
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	12	4	0.131	SPOTTED BASS
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Carpiodes	carpio	1	4	0.018	RIVER CARPSUCKER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 ICTALURIDAE	ichthyos	punctulatus	1	2	0.001	CHANNEL CATFISH
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 LEPISOSTEIDAE	Lepisosteus	punctulatus	4	3	0.013	CHANNEL CATFISH
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 LEPISOSTEIDAE	Lepisosteus	osseus	1	9	0.028	LONGNOSE GAR
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 MORONIDAE	Morone	osseus	2	7	0.022	MORONE SP
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 MORONIDAE	Etheostoma	sp	1	4	0.024	MORONE SP
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 PERCIDAE	Percina	caprodes	3	2	0.009	RAINBOW DARTER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 PERCIDAE	Percina	caprodes	1	2	0.002	CHANNEL DARTER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Sander	canadensis	5	4	0.003	CHANNEL CATFISH
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CATOSTOMIDAE	ichthyos	bulbatus	1	6	0.007	SAUGER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	01-Aug-05	2005 CYPRINIDAE	Notropis	volucellus	15	3	0.062	FRESHWATER DRUM
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Carpiodes	gynosus	20	2	0.025	MINNIE SHINER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Carpiodes	gynosus	1	4	0.019	QUILLBACK
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Carpiodes	gynosus	3	5	0.112	QUILLBACK
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Carpiodes	gynosus	1	5	0.027	HIGHFIN CARPSUCKER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Hypentelium	ignificans	5	3	0.037	NORTHERN HOG SUCKER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	ichthyos	bulbatus	14	4	0.164	NORTHERN HOG SUCKER
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Moxostoma valenciennesi	erythrum	2	4	0.035	SMALLMOUTH BUFFALO
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Moxostoma valenciennesi	erythrum	1	4	0.02	SMALLMOUTH REDHORSE
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Lepomis	macrochirus	1	12	0.458	GOLDEN REDHORSE
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	gulosus	2	3	0.008	BLUEGILL
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	gulosus	1	3	0.008	BLUEGILL
041 8LDB091405	41 8 OHIO LDB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	gulosus	1	3	0.005	SMALLMOUTH BASS
WT01F9801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	punctulatus	6	2	0.017	FRESHWATER DRUM
WT01F9801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CLUPEIDAE	Dorosoma cepedianum	cephedianum	1	5	0.025	SPOTTED BASS
WT01F9801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CLUPEIDAE	Dorosoma cepedianum	cephedianum	1	5	0.025	SPOTTED BASS
WT01F9801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CLUPEIDAE	Dorosoma cepedianum	cephedianum	1	5	0.04	GIZZARD SHAD
WT01F9801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Cyprinus	carpio	1	13	0.86	CARP X GOLDFISH
WT01F9801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Cyprinus	carpio	1	14	0.8	COMMON CARP

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WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Microstoma	cyprinum	1	12	0.46
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Cyprinus	carpio	1	17	1.6
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.18
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Macrhybopsis	storeniana	1	4	0.015
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Macrhybopsis	storeniana	8	4	0.085
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Notropis	storerioides	3	3	0.009
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Notropis	storerioides	3	3	0.009
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Pimephales	notatus	14	2	0.018
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Pimephales	notatus	1	2	0.001
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Cyprinus	carpio	1	15	1.3
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Microstoma	dolomieu	1	4	0.03
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Microstoma	eythrumum	1	13	0.55
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	14	0.7
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	3	0.002
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	3	0.015
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.02
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	punctulatus	1	3	0.015
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.02
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.02
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	11	9.45
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.03
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.04
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.06
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.09
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.11
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CTALURIDAE	Itallatus	punctulatus	1	14	0.6
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Micropterus	dolomieu	1	3	0.02
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 SCIAENIDAE	Aplocheilichthys	bulbalus	1	15	1.2
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Aplocheilichthys	bulbalus	1	5	0.03
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Caprosoma	grunniens	1	6	0.04
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Caprosoma	grunniens	1	7	0.09
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Caprosoma	grunniens	1	6	0.08
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CYPRINIDAE	Phoxinus	phoxinus	1	8	0.17
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 SCIAENIDAE	Phoxinus	notatus	1	3	0.007
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Aplocheilichthys	bulbalus	1	4	0.025
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	18	2.1
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	7	0.09
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	12	0.47
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	17	1.25
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	beniciceps	1	12	0.38
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	beniciceps	1	13	0.48
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	beniciceps	1	6	0.05
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Caprosoma	veller	1	2	0.02
WTOU19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Caprosoma	veller	1	2	0.02
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Percina	caprodes	1	17	1.3
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Percina	caprodes	1	15	1.1
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CTALURIDAE	Itallatus	punctulatus	1	17	1.3
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Percina	caprodes	1	3	0.01
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Percina	caprodes	1	3	0.015
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Percina	caprodes	1	4	0.008
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 SCIAENIDAE	Aplocheilichthys	grunniens	1	4	0.015
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 SCIAENIDAE	Aplocheilichthys	grunniens	1	5	0.025
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 SCIAENIDAE	Aplocheilichthys	grunniens	1	5	0.02
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Percina	shumardi	1	2	0.001
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Percina	shumardi	1	2	0.14
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Sander	caudatus	1	10	0.16
WTOU19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Sander	caudatus	1	10	0.16

Electrofishing Raw Data

APPENDIX C

W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Sander	canadensis	1	14	0.6
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 SCIAENIDAE	Aplodinotus	gunnisoni	1	4	0.015
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 SCIAENIDAE	Aplodinotus	gunnisoni	1	4	0.02
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 ESCOIIDAE	Esox	lucius	1	19	1.3
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 PERCIDAE	Percina	caprodes	1	4	0.02
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	13	0.5
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	18	1.5
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Capriotes	carpio	1	5	0.06
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Capriotes	gyrinus	1	6	0.055
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Capriotes	gyrinus	1	6	0.06
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	18	1
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	18	1
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	17	1.4
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	6	0.08
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	7	0.1
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	8	0.115
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	9	0.21
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	9	0.215
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	11	0.32
W/OUT/19801	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	12	0.42
W/OUT/19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	09-Jul-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	17	1.3
W/OUT/19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	8	0.145
W/OUT/19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.025
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	4	0.02
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	4	0.02
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	5	0.08
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	1	6	0.07
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Lepomis	macrochirus	3	2	0.005
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	4	2	0.01
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.12
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	4	0.01
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	15	1
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	5	0.04
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.035
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.05
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	6	0.06
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	7	0.092
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.115
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.005
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	10	0.21
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	8	0.16
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	ansurum	1	19	1.95
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	breviceps	1	12	0.445
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	breviceps	1	13	0.445
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	5	0.015
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	7	0.08
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	7	0.11
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	gibbosus	1	5	0.035
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Lepomis	gibbosus	1	9	0.205
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Lepomis	gibbosus	1	10	0.22
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Lepomis	gibbosus	1	10	0.245
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	10	0.265
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	10	0.265
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	11	0.37
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	13	0.51
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	14	0.75
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	11	0.485
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	dolomieu	1	9	0.185
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 CATOSTOMIDAE	Maxostoma	elythrurum	1	10	0.235
W/OUT/19803	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998 ICTALURIDAE	Ptychotis	olaxilis	1	10	0.235

Electrofishing Raw Data

WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CENTRARCHIDAE	Micropterus	dolomieu	1	8	0.15
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	aethioides	180	2	0.159
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	hudsonius	1	3	0.003
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	spottail shiner	2	3	0.005
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	minck shiner	2	2	0.001
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	valenciennesi	1	6	0.065
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	punctatus	1	6	0.065
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	perca	3	4	0.012
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	perca	2	4	0.025
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	aethioides	1	2	
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 MORONIDAE	Notropis	white bass	1	6	0.055
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 MORONIDAE	Notropis	white bass	1	7	0.08
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 PERCIDAE	Perca	logperch	10	4	0.1
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 PERCIDAE	Sander	sauger	1	7	0.045
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 PERCIDAE	Sander	sauger	1	10	0.065
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 PERCIDAE	Sander	sauger	1	10	0.19
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 PERCIDAE	Sander	sauger	1	11	0.25
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Notropis	canadensis	2	3	0.01
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	channel catfish	1	15	0.65
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	channel catfish	1	15	0.65
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CATOSTOMIDAE	Micropterus	common carp	1	15	0.65
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CENTRARCHIDAE	Micropterus	spottail shiner	1	15	0.65
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CENTRARCHIDAE	Micropterus	spottail shiner	1	15	0.65
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CLUPEIDAE	Dorosoma	largemouth bass	1	11	0.18
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CLUPEIDAE	Dorosoma	gizzard shad	1	5	0.02
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CLUPEIDAE	Dorosoma	gizzard shad	1	9	0.135
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CLUPEIDAE	Dorosoma	gizzard shad	2	9	0.175
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CLUPEIDAE	Notropis	gizzard shad	1	9	0.345
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	emerald shiner	5	3	0.009
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	gizzard shad	11	5	0.3
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	smallmouth bass	1	11	0.37
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	common carp	1	13	0.77
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	common carp	1	15	1.05
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	common carp	1	17	1.9
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Cyprinus	common carp	1	17	1.9
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Micropterus	silver chub	4	5	0.08
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Micropterus	silver chub	5	4	0.05
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CYPRINIDAE	Macropterus	silver chub	8	5	0.12
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 22-Sep-98	1998 CLUPEIDAE	Dorosoma	gizzard shad	3	8	0.39
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	smallmouth bass	2	6	0.11
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CYPRINIDAE	Cyprinus	common carp	1	13	0.72
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	bluegill x green sunfish	1	4	0.02
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	smallmouth bass	1	5	0.025
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	smallmouth bass	1	5	0.04
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	smallmouth bass	1	7	0.055
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	smallmouth bass	1	7	0.08
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	smallmouth bass	1	10	0.3
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	smallmouth bass	1	4	0.035
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	bluegill	2	4	0.025
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	bluegill	1	4	0.015
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	spotted bass	1	4	0.015
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	spotted bass	1	4	0.02
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CLUPEIDAE	Dorosoma	gizzard shad	1	5	0.04
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CLUPEIDAE	Dorosoma	gizzard shad	1	7	0.09
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CLUPEIDAE	Dorosoma	gizzard shad	1	9	0.125
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CATOSTOMIDAE	Micropterus	silver redhorse	1	9	0.225
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CENTRARCHIDAE	Micropterus	smallmouth bass	3	5	0.025
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CATOSTOMIDAE	Micropterus	golden redhorse	1	12	0.52
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CATOSTOMIDAE	Micropterus	golden redhorse	1	11	0.125
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CATOSTOMIDAE	Micropterus	golden redhorse	1	8	0.13
WTOUT19803	42 OHIO ROB	NEW CUMBERLAND	EF	TRUE 11-Aug-98	1998 CATOSTOMIDAE	Micropterus	golden redhorse	1	8	0.13

Electrofishing Raw Data

APPENDIX C

WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	9	0.2
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	9	0.25
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	11	0.36
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Leptosis	macrochilus	BLUEGILL	1	5	0.06
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CENTRARCHIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	12	0.5
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.84
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	13	0.43
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	13	0.56
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	13	0.66
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	14	0.78
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CENTRARCHIDAE	Leptosis	macrochilus	GREEN SUNFISH	2	4	0.05
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	BLUEGILL	1	3	0.007
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	GOLDEN REDHORSE	1	12	0.46
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	1	5	0.03
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	PERCIDAE	Percina	caprodes	GOLDEN REDHORSE	1	10	0.26
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	PERCIDAE	Percina	caprodes	LOGPERCH	1	4	0.01
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	PERCIDAE	Sander	canadensis	LOGPERCH	5	4	0.04
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	PERCIDAE	Sander	canadensis	SAUGER	1	9	0.15
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	PERCIDAE	Sander	canadensis	SAUGER	1	16	1.05
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	PERCIDAE	Apodinotus	grunniens	SAUGER	2	10	0.32
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	LEPIDOSTEIDAE	Lepisosteus	osseus	FRESHWATER DRUM	1	2	0.001
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	LONGNOSE GAR	1	3	0.003
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	LONGNOSE GAR	1	3	0.003
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	CHANNEL CATFISH	2	18	2.8
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	1	6	0.04
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	2	5	0.045
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	6	2	0.01
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	17	2	0.025
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	SMALLMOUTH BUFFALO	1	14	1.3
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	GOLDEN REDHORSE	1	8	0.14
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	SCIAENIDAE	Apodinotus	grunniens	GOLDEN REDHORSE	1	3	0.005
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Notropis	athinoides	SPOTTAL SHINER	4	2	0.007
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.85
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	20	2.4
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	20	2.4
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	1	3	0.003
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	2	4	0.012
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	3	4	0.02
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	PERCIDAE	Percina	caprodes	LOGPERCH	1	4	0.025
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Notropis	athinoides	EMERALD SHINER	1	3	0.007
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	SMALLMOUTH BUFFALO	1	3	0.005
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Notropis	hudsonius	SPOTTAL SHINER	2	18	2.1
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Notropis	hudsonius	SPOTTAL SHINER	2	3	0.005
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Notropis	hudsonius	SPOTTAL SHINER	2	4	0.017
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Notropis	starnatus	SAND SHINER	5	2	0.011
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CYPRINIDAE	Notropis	starnatus	SAND SHINER	5	2	0.005
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	ICTALURIDAE	Itallurus	punctatus	CHANNEL CATFISH	1	5	0.012
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	ICTALURIDAE	Itallurus	punctatus	CHANNEL CATFISH	1	5	0.012
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	ICTALURIDAE	Itallurus	punctatus	CHANNEL CATFISH	1	17	1.2
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	11-Aug-98	1998	CATOSTOMIDAE	Moaxostoma	erythrurum	SILVER CHUB	7	4	0.075
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998	PERCIDAE	Sander	canadensis	SAUGER	1	15	1.3
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	1	13	0.48
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	52	3	0.28
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	18	3	0.085
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	13	4	0.115
WtOUT19802	42 OHIO RDB	NEW CUMBERLAND	EF	TRUE	22-Sep-98	1998	SCIAENIDAE	Apodinotus	grunniens	FRESHWATER DRUM	2	6	0.085

APPENDIX C

Electrofishing Raw Data

MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	labrus	bulbulus	SMALLMOUTH BUFFALO	1	9	0.19
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Caprosoma	duquesnei	BLACK REDHORSE	1	12	0.415
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	velifer	HIGHFIN CARPSUCKER	1	9	0.17
MONTP9201	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Aplocheilichthys	duquesnei	BLACK REDHORSE	2	14	1.32
MONTP9201	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	3	14	2.29
MONTP9201	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	2	16	2.06
MONTP9201	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	2	15	2
MONTP9201	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	6	0.14
MONTP9201	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	13	0.58
MONTP9201	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 SCIAENIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	8	0.11
MONTP9201	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 PERCIDAE	Sciaenops ocellatus	velifer	WALLEYE	1	10	0.267
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 PERCIDAE	Sander	grunniens	NORTHERN HOG SUCKER	1	7	0.267
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	ROCK BASS	1	9	0.175
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Sander	canadensis x vitreus	SAUGER	13	5	0.925
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	22-Jul-92	1992 PERCIDAE	Micropterus	grunniens	SAUGER	10	7	0.67
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	8	5	0.77
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	9	7	0.885
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	7	6	0.24
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	3	12	1.85
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	3	12	1.465
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	1	11	0.375
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	1	10	0.26
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	1	8	0.159
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	1	8	0.11
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CENTRARCHIDAE	Micropterus	grunniens	SMALLMOUTH BASS	1	8	0.065
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	grunniens	ROCK BASS	1	8	0.26
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	grunniens	GOLDEN REDHORSE	5	14	3.6
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	grunniens	GOLDEN REDHORSE	3	8	0.305
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	grunniens	GOLDEN REDHORSE	2	15	1.635
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	grunniens	GOLDEN REDHORSE	1	13	0.635
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	grunniens	GOLDEN REDHORSE	1	7	0.06
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	grunniens	GOLDEN REDHORSE	13	6.57	
MONTP9202	43 OHIO LDB	NEW CUMBERLAND	EF	FALSE	03-Sep-92	1992 CATOSTOMIDAE	Micropterus	grunniens	GOLDEN REDHORSE	3	15	2.46
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CTALURIDAE	Lepomis	grunniens	BLUEGILL	1	5	0.04
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	FLATHEAD CATFISH	1	13	0.6
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SMALLMOUTH REDHORSE	1	13	0.6
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SMALLMOUTH REDHORSE	1	11	0.95
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SMALLMOUTH REDHORSE	1	10	0.29
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SILVER REDHORSE	5	11	1.6
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SILVER REDHORSE	1	19	1.85
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SILVER REDHORSE	1	16	1.25
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SMALLMOUTH BUFFALO	1	17	1.65
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SMALLMOUTH BUFFALO	1	16	1.6
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SMALLMOUTH BUFFALO	1	15	1.05
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	SMALLMOUTH BUFFALO	1	9	0.3
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	BLACK REDHORSE	1	12	0.95
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	GOLDEN REDHORSE	1	9	0.2
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CATOSTOMIDAE	Micropterus	grunniens	COMMON CARP	1	19	2.1
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 PERCIDAE	Sciaenops ocellatus	grunniens	COOPERCH	1	4	0.1
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 PERCIDAE	Sciaenops ocellatus	grunniens	COOPERCH	1	5	0.015
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 PERCIDAE	Sciaenops ocellatus	grunniens	SAUGER	1	9	0.01
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 PERCIDAE	Sciaenops ocellatus	grunniens	SAUGER	1	12	0.31
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 PERCIDAE	Sciaenops ocellatus	grunniens	SAUGER	1	13	0.3
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CTALURIDAE	Aplocheilichthys	grunniens	FRESHWATER DRUM	1	10	0.3
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CTALURIDAE	Aplocheilichthys	grunniens	CHANNEL CATFISH	1	16	0.87
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CTALURIDAE	Aplocheilichthys	grunniens	CHANNEL CATFISH	1	15	0.51
044 2LDB070804	44 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	08-Jul-04	2004 CTALURIDAE	Aplocheilichthys	grunniens	BLUNTNOSE MINNOW	1	2	0.001

Electrofishing Raw Data

APPENDIX C

044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CYPRINIDAE	Notropis	volucellus	4	2	0.004
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CYPRINIDAE	Notropis	EMERALD SHINER	6	3	0.009
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Notropis	SMALLMOUTH REDHORSE	17	14	0.55
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CYPRINIDAE	Cyprinella	carpio	2	1	3.25
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CYPRINIDAE	Dorosoma	spottfin shiner	2	1	0.02
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CLUPEIDAE	Dorosoma	gizzard shad	2	1	0.03
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CLUPEIDAE	Dorosoma	gizzard shad	1	6	0.05
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CLUPEIDAE	Dorosoma	gizzard shad	1	2	0.001
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	2	9	0.41
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	2	6	0.12
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CENTRARCHIDAE	Leptomis	BLUEGILL	1	7	0.1
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CENTRARCHIDAE	Leptomis	BLUEGILL	1	3	0.005
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CENTRARCHIDAE	Leptomis	BLUEGILL	1	2	0.001
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Notropis	GOLDEN REDHORSE	1	13	0.55
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Notropis	GOLDEN REDHORSE	1	11	0.35
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CYPRINIDAE	Sander	EMERALD SHINER	2	2	0.002
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Aplocheilichthys	SAUGER	148	15	0.273
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Aplocheilichthys	FRESHWATER DRUM	21	7	0.273
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Sander	WALLEYE	7	5	0.174
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Sander	WALLEYE	4	4	0.008
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	canadensis x vitreus	canadensis	1	5	
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Sander	SAUGER	15	4	0.12
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Sander	SAUGER	3	5	0.051
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Percina	LOGPERCH	7	3	0.017
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Sander	GOLDEN REDHORSE	2	11	0.768
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Micropterus	SPOTTED BASS	1	3	0.017
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	5	3	0.022
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CENTRARCHIDAE	Micropterus	SMALLMOUTH BASS	3	4	0.039
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Micropterus	SMALLMOUTH BASS	1	2	0.001
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	MOXOSTOMA SP	49	3	0.191
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	3	14	0.204
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	3	2	0.014
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	2	12	0.876
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	6	4	0.058
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	1	6	0.045
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	1	4	0.012
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	SMALLMOUTH REDHORSE	5	3	0.017
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	SILVER REDHORSE	1	17	1.35
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	SMALLMOUTH BUFFALO	7	3	0.048
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	SMALLMOUTH BUFFALO	4	4	0.017
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	SMALLMOUTH BUFFALO	2	4	0.017
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	NORTHERN HOG SUCKER	7	18	2.37
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	2	3	0.024
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	2	13	1.198
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Percina	LOGPERCH	2	2	0.003
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 PERCIDAE	Percina	RAINBOW DARTER	2	4	0.028
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 MORONIDAE	Morone	MORONE SP	1	2	0.001
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 MORONIDAE	Morone	MORONE SP	92	2	0.119
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 MORONIDAE	Morone	MORONE SP	7	3	0.05
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 MORONIDAE	Morone	LONGNOSE GAR	2	6	0.027
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 ICTALURIDAE	Ictalurus	FLATHEAD CATFISH	1	10	0.233
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 ICTALURIDAE	Ictalurus	CHANNEL CATFISH	30	2	0.018
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 ICTALURIDAE	Ictalurus	CHANNEL CATFISH	1	16	0.885
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	2	3	0.002
044.2.LD6070804	44.2 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	20-Jul-05	2005 CATOSTOMIDAE	Dorosoma	GOLDEN REDHORSE	2	3	0.002

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[illegible]

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047 9RDB075604	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005 ICTALURIDAE	Pygidictis	olivatus	2	10	0.471
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Maxostoma	breviceps	8	4	0.143
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Maxostoma	ansurum	1	4	0.017
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Ichthyos	bulbulus	3	5	0.088
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Hypentelium	nigricans	2	3	0.086
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Hypentelium	nigricans	7	4	0.013
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Carpiodes	cyprinus	1	7	0.086
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Carpiodes	cyprinus	2	5	0.063
047 9RDB072505	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005 SCIAENIDAE	Aplocheilichthys	gurneius	183	4	0.022
047 9RDB072505	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005 SCIAENIDAE	Aplocheilichthys	gurneius	1	3	0.556
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Maxostoma	carolinum	6	4	0.034
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CATOSTOMIDAE	Micropterus	gulosus	2	4	0.034
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Cyprinus	carpio	1	2	0.004
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 PERCIDAE	Etheostoma	biemoides	1	18	1.78
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 MORONIDAE	Menidia	menidia	2	3	0.01
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 ICTALURIDAE	Pygidictis	olivatus	13	3	0.08
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 ICTALURIDAE	Pygidictis	olivatus	1	11	0.723
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 ICTALURIDAE	Ichthyos	punctulatus	2	7	0.064
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 ICTALURIDAE	Ichthyos	punctulatus	1	5	0.011
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 ICTALURIDAE	Ichthyos	punctulatus	1	3	0.005
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 PERCIDAE	Percina	copelandi	1	2	0.001
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CYPRINIDAE	Cyprinus	carpio	2	7	0.095
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 PERCIDAE	Sander	caeruleus	1	3	0.008
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 PERCIDAE	Carpiodes	cyprinus	1	3	0.008
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	salmoides	57	4	0.562
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	1	12	0.828
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	2	6	0.071
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	1	3	0.007
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	1	3	0.007
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	9	6	0.578
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	3	3	0.037
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	3	5	0.102
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 CENTRARCHIDAE	Micropterus	punctulatus	43	3	0.019
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 PERCIDAE	Percina	athetoides	67	3	0.187
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 SCIAENIDAE	Aplocheilichthys	gurneius	47	3	0.58
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 SCIAENIDAE	Aplocheilichthys	gurneius	20	4	0.38
047 9RDB091405	47 9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	14-Sep-05	2005 SCIAENIDAE	Aplocheilichthys	gurneius	19	2	2.52
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 SCIAENIDAE	Aplocheilichthys	gurneius	1	8	0.113
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 SCIAENIDAE	Aplocheilichthys	gurneius	1	12	0.42
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 PERCIDAE	Sander	canadensis x vitreus	1	9	0.19
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 PERCIDAE	Sander	canadensis	1	3	0.003
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	1	11	0.22
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Micropterus	inget	1	12	0.4
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CENTRARCHIDAE	Micropterus	inget	2	9	0.41
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	12	10	3.14
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	9	1	1.08
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	2	8	0.7
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	2	8	0.7
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	1	15	0.9
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	1	19	2.51
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CYPRINIDAE	Cyprinella	spottina	1	19	2.1
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	1	3	0.003
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	1	14	0.8
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	1	20	2.1
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	3	10	0.83
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	1	11	0.89
048 3LDB070604	48 3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	06-Jul-04	2004 CATOSTOMIDAE	Maxostoma	ansurum	1	8	0.17

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048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	ICTALURIDAE	italurus	punctatus	7	3	0.012
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	SCAENIDAE	Aplocheilichthys	grunniens	15	2	0.025
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	SCAENIDAE	Aplocheilichthys	grunniens	1	17	1.122
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	SCAENIDAE	Aplocheilichthys	grunniens	1	16	1.288
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	PERCIDAE	Sander	caprodes	2	5	0.045
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	PERCIDAE	Percia	grunniens	4	3	0.01
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	MORONIDAE	Morone	sp	6	2	0.01
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	MORONIDAE	Morone	sp	1	3	0.003
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	LEPISOSTEIDAE	Lepisosteus	osseus	1	8	0.001
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	LEPISOSTEIDAE	Lepisosteus	osseus	1	3	0.002
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	CLUPEIDAE	Dorosoma	cededianum	16	4	0.04
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	CLUPEIDAE	Dorosoma	cededianum	1	4	0.04
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	CENTRARCHIDAE	Micropterus	dolomieu	1	4	0.011
048.6.LD9072505	48.6 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	25-Jul-05	2005	CENTRARCHIDAE	Micropterus	dolomieu	1	3	0.009
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Carpiodes	cyprinus	1	6	0.006
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Hypentelium	nigricans	1	7	0.1
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Hypentelium	nigricans	1	6	0.042
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Hypentelium	nigricans	1	4	0.018
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Hypentelium	nigricans	1	3	0.003
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Carpiodes	cyprinus	18	3	0.17
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Carpiodes	cyprinus	4	6	0.38
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Carpiodes	carpio	5	4	0.03
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Carpiodes	cyprinus	2	12	1.02
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CATOSTOMIDAE	Carpiodes	cyprinus	1	15	1.6
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	phoxinophilus	1	4	0.013
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	ICTALURIDAE	italurus	punctatus	2	3	0.01
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	5	0.02
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	2	0.018
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	4	0.03
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	15	2	0.007
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	2	16	3.8
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	19	4	0.254
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	29	2	0.015
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	14	0.02
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	13	4	0.12
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	14	0.1
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	20	2.7
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	17	2.3
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	3	0.001
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	2	0.007
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	2	0.001
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	12	3	0.053
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	10	2	0.012
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	6	6	0.31
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	10	0.26
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	6	3	0.022
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	2	0.001
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	278	2	0.356
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	4	3	0.12
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	24	4.1
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	13	1
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	4	0.8
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	3	5	0.027
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	3	10	0.92
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	15	2	0.006
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	7	2	0.087
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	6	0.06
050.3.LD9080702	50.3 OHIO	LD8	NEW CUMBERLAND	EF	FALSE	07-Aug-02	2002	CYPRINIDAE	Notropis	punctatus	1	8	0.12

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050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	ictalurid	punctatus	1	6	0.08	CHANNEL CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	dolomieu	2	7	0.15	SMALLMOUTH BASS
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	dolomieu	2	6	0.1	SMALLMOUTH BASS
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	dolomieu	1	11	0.38	SMALLMOUTH BASS
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Lepomis	macrochirus	1	8	0.2	SMALLMOUTH BASS
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Lepomis	macrochirus	2	2	0.004	BLUEGILL
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Lepomis	gibbosus	1	5	0.1	BLUEGILL
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Lepomis	gibbosus	1	4	0.022	PUMPKINSEED
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Lepomis	gibbosus	1	3	0.011	GREEN SUNFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Anchoa	rupestris	2	3	0.19	ROCK BASS
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Notropis	erythrum	2	6	0.19	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Notropis	erythrum	8	12	0.92	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Notropis	erythrum	2	6	0.92	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Notropis	erythrum	2	2	0.001	JARGONMOUTH BASS
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 SCAENIDAE	Aplocheilichthys	gurneius	2	9	0.59	SILVER REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 SCAENIDAE	Aplocheilichthys	gurneius	8	7	0.703	FRESHWATER DRUM
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 SCAENIDAE	Aplocheilichthys	gurneius	4	6	0.203	FRESHWATER DRUM
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 SCAENIDAE	Aplocheilichthys	gurneius	2	11	0.85	FRESHWATER DRUM
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 SCAENIDAE	Aplocheilichthys	gurneius	1	14	1	FRESHWATER DRUM
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander	canadensis	4	12	1.12	FRESHWATER DRUM
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander	canadensis	3	13	1.2	SAUGER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander	canadensis	2	11	0.5	SAUGER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander	canadensis	2	9	0.25	SAUGER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 PERCIDAE	Sander	canadensis	2	1	0.09	SAUGER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CYPRINIDAE	Notropis	volucellus	54	2	0.59	SAUGER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	oxalilis x chrysops	2	7	0.35	HYBRID STRIPER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 MORONIDAE	Morone	oxalilis x chrysops	2	9	0.41	HYBRID STRIPER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 MORONIDAE	Morone	oxalilis x chrysops	1	8	0.15	HYBRID STRIPER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	1	2	0.002	FLATHEAD CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	1	15	0.8	FLATHEAD CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	1	12	0.55	FLATHEAD CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	7	7	0.48	CHANNEL CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	1	17	1.1	CHANNEL CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	1	15	0.75	CHANNEL CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	1	14	0.5	CHANNEL CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	1	12	0.63	CHANNEL CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 ICTALURIDAE	Pygidictis	oxalilis	6	7	0.99	CHANNEL CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Capetostomus	oxalilis	1	13	0.55	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Capetostomus	oxalilis	1	9	0.3	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Capetostomus	oxalilis	1	17	2	SMALLMOUTH BUFFALO
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Capetostomus	oxalilis	1	8	0.18	SMALLMOUTH BUFFALO
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Capetostomus	oxalilis	1	8	0.1	SILVER REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CENTRARCHIDAE	Micropterus	punctulatus	1	8	0.1	SPOTTED BASS
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	8	10	1.85	SILVER REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	1	14	0.7	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	1	15	0.7	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	1	18	0.8	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	2	11	0.8	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	4	0	0.86	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	3	8	0.86	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	3	18	1.7	GOLDEN REDHORSE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 CATOSTOMIDAE	Maxostoma	anurum	1	20	2.14	FLATHEAD CATFISH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2003 SCAENIDAE	Aplocheilichthys	gurneius	1	4	0.674	FRESHWATER DRUM
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2005 PERCIDAE	Sander	virgatus	1	6	0.1	WALLEYE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2005 PERCIDAE	Sander	virgatus	1	12	0.32	WALLEYE
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2005 PERCIDAE	Sander	virgatus	1	5	0.04	SAUGER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2005 PERCIDAE	Percina	copelandi	1	2	0.001	CHANNEL DARTER
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2005 PERCIDAE	Percina	copelandi	4	3	0.021	LOGPERCH
050 2L D8071 503	50 2 OHIO LDB	NEW CUMBERLAND	EF	FALSE	15-Jul-03	2005 PERCIDAE	Percina	copelandi	1	4	0.009	LOGPERCH

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061 9RDB091205	51.9 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	12-Sep-05	2005 CENTRARCHIDAE	Antiochius	1	4	0.036
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CLUPEIDAE	Antiochius	3	4	0.03
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Dorosoma	2	5	0.06
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Micropterus	2	10	0.065
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Micropterus	1	7	0.12
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Micropterus	2	5	0.115
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Micropterus	18	6	0.94
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Micropterus	3	3	0.006
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Micropterus	2	5	0.06
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Micropterus	1	3	0.035
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Dorosoma	2	3	0.014
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	5	0.043
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	14	0.73
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	16	1.95
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	16	0.065
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	4	4	0.039
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	13	0.94
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	18	2.25
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	2	14	1.96
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	12	5	0.365
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	8	0.16
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	3	0.007
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	4	0.01
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	13	0.46
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	2	11	0.565
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	6	0.075
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	2	0.017
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	2	2	0.005
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	23	4	0.46
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	2	6	0.13
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	4	0.062
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	9	3	0.051
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	13	0.52
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	7	0.085
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	2	6	0.095
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	19	7	0.063
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	2	8	0.08
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	5	4	0.043
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	56	3	0.26
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	5	0.03
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	4	0.007
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	8	0.185
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	11	0.31
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	15	1.1
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	19	1.3
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	2	12	0.95
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	12	0.4
NEWCA09101	52.4 OHIO	ROB	NEW CUMBERLAND	EF	FALSE	06-Aug-91	1991 CENTRARCHIDAE	Cyprinella	1	14	0.7

Electrofishing Raw Data

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053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 ICTALURIDAE	Pygidictis	olivaris	1	12	0.38
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 ICTALURIDAE	latidictis	punctatus	2	14	1.375
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 ICTALURIDAE	latidictis	punctatus	1	4	0.02
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CYPRINIDAE	Cyprinus	carpio	1	19	3.2
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CENTRARCHIDAE	Micropterus	dobsoni	2	7	0.25
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CENTRARCHIDAE	Lepomis	macrochirus	2	4	0.12
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CENTRARCHIDAE	Lepomis	macrochirus	1	5	0.09
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 ICTALURIDAE	Pygidictis	olivaris	2	13	1.05
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CATOSTOMIDAE	Maxostoma	erythrinum	2	8	0.32
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CENTRARCHIDAE	Micropterus	dobsoni	1	4	0.02
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CATOSTOMIDAE	latidictis	bulbasus	1	10	0.2
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CATOSTOMIDAE	Maxostoma	erythrinum	1	4	0.3
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CATOSTOMIDAE	Maxostoma	erythrinum	1	11	0.35
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CENTRARCHIDAE	Lepomis	macrochirus	1	3	0.012
053.4RDB071204	53.4 OHIO ROB	NEW CUMBERLAND	EF	FALSE	12-Jul-04	2004 CENTRARCHIDAE	Lepomis	macrochirus	1	6	0.09

FLATHEAD CATFISH	1	12	0.38
CHANNEL CATFISH	2	14	1.375
CHANNEL CATFISH	1	4	0.02
COMMON CARP	1	19	3.2
SMALLMOUTH BASS	2	7	0.25
BLUEGILL	2	4	0.12
BLUEGILL	1	5	0.09
FLATHEAD CATFISH	2	13	1.05
GOLDEN RED-HORSE	2	8	0.32
GOLDEN RED-HORSE	1	4	0.02
SMALLMOUTH BUFFALO	1	10	0.2
GOLDEN RED-HORSE	1	4	0.3
GOLDEN RED-HORSE	1	11	0.35
BLUEGILL	1	3	0.012
BLUEGILL	1	6	0.09

APPENDIX C

[illegible]

Metric Values and ORFm Score

APPENDIX C

Event Code	Emi	Bank	Outfall	Outfall Type	CDate	Dive Below Out. cm	Ind no GREY	Sp score	Sp score	Student	Student score	Centroids	Cent score	Great River	GRFm score	Ind score	To	% of score	Score		
ARCOOSR02	29.1 LDB	TRUE	TRUE	TRUE	03-Sep-05	219	218	200	20	5	3	2	1	2	3	4	3	15	0.444444	3	
ARCOOF68U	29.1 LDB	TRUE	TRUE	TRUE	13-Jul-99	1422	369	362	10	5	4	3	2	1	3	5	5	1	1.3470088	3	
ARCOOUT82	29.1 LDB	TRUE	TRUE	TRUE	04-Aug-88	121	113	108	17	3	4	3	3	1	1	2	1	5	1.4270078	3	
ARCOOF96U	29.1 LDB	TRUE	TRUE	TRUE	16-Aug-99	470	424	402	26	5	3	3	2	1	1	3	3	3	0.704717	5	
ARCOOUT81	29.1 LDB	TRUE	TRUE	TRUE	15-Jul-98	123	64	62	22	5	6	5	3	1	1	3	3	2	2.935238	5	
ARCOOF68L	30.1 LDB	TRUE	TRUE	TRUE	13-Jul-99	426	425	234	225	27	5	3	7	5	3	3	6	3	3.6813385	3	
ARCOOF68L	30.1 LDB	TRUE	TRUE	TRUE	30-Sep-89	325	325	245	21	5	5	5	3	3	3	5	4	4	1.6934438	5	
ARCOOF62L	30.1 LDB	FALSE	FALSE	TRUE	16-Aug-90	244	240	22	5	3	3	3	3	6	5	4	3	4	1.6934438	5	
MONTAD00U1	30.4 RDB	FALSE	FALSE	FALSE	23-Jul-82	128	135	113	22	5	7	5	1	1	5	3	2	2.222222	5		
MONTAD00U2	30.4 RDB	FALSE	FALSE	FALSE	14-Sep-87	120	254	193	12	3	4	3	5	3	1	4	3	20	10.3020943	1	
MONTAD00U3	30.4 RDB	FALSE	FALSE	FALSE	02-Sep-92	128	334	75	69	18	3	5	3	1	4	3	6	7.5220779	8		
MONTAD00U2	31.2 RDB	FALSE	FALSE	FALSE	23-Jul-82	383	349	282	16	3	6	5	3	3	0	1	4	3	2.97876569	5	
MONTAD00U1	31.2 RDB	FALSE	FALSE	FALSE	02-Sep-92	108	89	151	177	2	6	5	3	3	0	1	5	3	2.97876569	5	
MONTAD00U2	32.2 RDB	FALSE	FALSE	FALSE	02-Sep-92	108	89	151	177	2	6	5	3	3	0	1	5	3	2.97876569	5	
MONTAD00U3	32.2 RDB	FALSE	FALSE	FALSE	03-Sep-05	104	98	66	6	1	0	1	1	1	1	1	1	0	0	0	0
032-8LDB080305	32.8 LDB	FALSE	FALSE	FALSE	13-Jul-04	259	239	238	15	3	3	2	1	1	1	4	3	0	0	0	0
033-8LDB071304	32.8 LDB	FALSE	FALSE	FALSE	13-Jul-04	259	239	238	15	3	3	2	1	1	1	4	3	0	0	0	0
034-3RDB080305	34.3 RDB	FALSE	FALSE	FALSE	03-Aug-05	84	60	6	1	1	1	1	1	2	1	1	1	1	0.2512508	5	
034-3RDB07005	34.3 RDB	FALSE	FALSE	FALSE	06-Sep-05	504	388	397	25	5	6	5	6	5	1	2	1	1	0	0	0
034-3RDB07005	34.3 RDB	FALSE	FALSE	FALSE	07-Sep-05	266	150	150	15	3	4	3	1	1	3	3	5	1	0	0	0
034-1LDB080302	35.1 LDB	FALSE	FALSE	FALSE	29-Aug-02	493	302	219	22	5	6	5	3	3	1	3	3	0	0	0	0
035-1LDB080305	35.9 LDB	FALSE	FALSE	FALSE	07-Sep-05	351	302	269	22	5	6	5	4	3	2	3	7	5	1.0812583	3	
036-8LDB081004	39.0 LDB	FALSE	FALSE	FALSE	10-Aug-04	199	54	52	10	3	3	3	0	1	1	2	1	0	0	0	0
036-8LDB081004	39.0 LDB	FALSE	FALSE	FALSE	26-Jul-04	148	147	17	3	3	3	3	0	1	1	1	2	1	0.67497469	5	
036-8LDB072904	36.5 RDB	FALSE	FALSE	FALSE	05-Aug-01	228	228	228	148	17	3	3	3	6	5	1	1	1	1.67497469	5	
037-8LDB080301	37.2 RDB	FALSE	FALSE	FALSE	05-Aug-01	175	52	52	13	3	3	3	1	1	1	1	1	0	0	0	0
037-2RDB081004	37.2 RDB	FALSE	FALSE	FALSE	10-Aug-04	73	40	37	7	1	2	1	0	0	1	1	1	1	2.5	1	3
037-3RDB090505	37.7 RDB	FALSE	FALSE	FALSE	08-Sep-05	299	223	218	17	3	4	3	2	1	0	1	4	3	1.34329148	5	
037-7RDB080305	37.7 RDB	FALSE	FALSE	FALSE	08-Sep-05	248	243	248	25	5	7	5	2	3	1	4	3	5	2.33611126	3	
038-1RDB080305	38.1 RDB	FALSE	FALSE	FALSE	02-Oct-01	103	103	103	178	25	5	4	3	2	3	6	3	4	1.8570239	5	
038-1RDB100301	38.4 RDB	FALSE	FALSE	FALSE	02-Oct-01	641	183	183	178	25	5	7	5	6	5	4	3	5	2.4840256	1	
039-2RDB080305	39.2 RDB	FALSE	FALSE	FALSE	02-Aug-05	103	61	61	6	1	1	1	1	1	1	1	0	1	0	0	0
039-2RDB091005	39.2 RDB	FALSE	FALSE	FALSE	13-Sep-05	347	269	253	20	5	8	5	3	1	1	7	5	1.85873959	5		
039-8LDB071404	39.8 LDB	FALSE	FALSE	FALSE	14-Jul-04	33	33	33	39	11	1	1	1	1	1	1	1	1	12.12121	1	
040-2LDB081005	40.2 LDB	FALSE	FALSE	FALSE	13-Sep-05	277	119	119	18	3	7	5	3	3	1	4	3	2.5410256	1		
040-2LDB071304	40.2 LDB	FALSE	FALSE	FALSE	13-Jul-04	27	27	26	9	1	3	3	3	1	1	4	3	0	0	0	0
040-8LDB080305	40.8 LDB	FALSE	FALSE	FALSE	02-Aug-05	221	142	141	16	3	3	3	1	1	1	6	5	1	3.0303037	3	
040-8LDB091305	40.8 LDB	FALSE	FALSE	FALSE	13-Sep-05	239	155	153	19	3	3	3	3	1	1	5	1	0.74423358	5		
040-8LDB091305	40.8 LDB	FALSE	FALSE	FALSE	13-Sep-05	239	155	153	19	3	3	3	3	1	1	5	1	0.74423358	5		

[illegible]

APPENDIX C

[illegible]

Appendix D.

Event Code	Rm.	River Bank	Pool Lock	Q	Outfall	C Date	Year	Family	Genus Name	Species Name	Species	Count	Size Class	Lowest
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	CYPRINIDAE	Notropis	voelleus		MIMIC SHINER	1		0.003
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	CYPRINIDAE	Notropis	stannius		SAND SHINER	7		0.005
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	CYPRINIDAE	Dorosoma	afternoades		EMERALD SHINER	18		0.049
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	CLUPEIDAE	Dorosoma	capetum		GIZZARD SHAD	6		0.054
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	CENTRARCHIDAE	Lepomis	annularis		BULLY CRAPPIE	1		0.051
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	CENTRARCHIDAE	Lepomis	microchirus		BANDED KILLFISH	1		0.003
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	FUNDULIDAE	Lepomis	gibbosus		PUMPKINSEED	1		0.003
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	CENTRARCHIDAE	Lepomis	gibbosus		PUMPKINSEED	4		0.049
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	25-Jul-58	1958	CLUPEIDAE	Ameiurus	medus		BLACK BULLHEAD	163		6.413
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	19-Apr-67	1967	PERCIDAE	Dorosoma	capetum		GIZZARD SHAD	116		2.79
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	19-Apr-67	1967	PERCIDAE	Percina	capetum		LOGPERCH	1		0.045
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	19-Apr-67	1967	ICTALURIDAE	Notropis	punctatus		CHANNEL CATFISH	31		0.409
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	19-Apr-67	1967	CYPRINIDAE	Ameiurus	rebusus		BROWN BULLHEAD	175		11.063
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	19-Apr-67	1967	CYPRINIDAE	Cyprinus	carpio		COMMON CARP	536		75.636
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	19-Apr-67	1967	CENTRARCHIDAE	Lepomis	gibbosus		PUMPKINSEED	9		0.409
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	19-Apr-67	1967	CATOSTOMIDAE	Catostomus	commersoni		WHITE SUCKER	2		0.181
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	19-Apr-67	1967	ICTALURIDAE	Ameiurus	natalis		YELLOW BULLHEAD	47		0.071
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CATOSTOMIDAE	Catostomus	commersoni		WHITE SUCKER	47		0.071
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	PERCIDAE	Notropis	punctatus		CHANNEL CATFISH	50		0.73
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	PERCIDAE	Notropis	rebusus		WALLEYE	2		0.6
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CYPRINIDAE	Ameiurus	rebusus		BROWN BULLHEAD	484		20.48
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CYPRINIDAE	Lepomis	gibbosus		PUMPKINSEED	28		0.26
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CYPRINIDAE	Notropis	biennis		RIVER SHINER	14		0.03
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CYPRINIDAE	Pimephales	notatus		BLUNTNOSE MINNOW	31		0.08
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CENTRARCHIDAE	Fundulus	diaphanus		BLUGILL	13		0.05
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	FUNDULIDAE	Fundulus	diaphanus		BANDED KILLFISH	1		0.01
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CYPRINIDAE	Notropis	stannius		SAND SHINER	131		0.24
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CYPRINIDAE	Notropis	stannius		EMERALD SHINER	307		0.62
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CLUPEIDAE	Dorosoma	capetum		GIZZARD SHAD	75		4.24
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	CENTRARCHIDAE	Ameiurus	natalis		LARGEMOUTH BASS	18		0.26
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1968	1968	ICTALURIDAE	Ameiurus	rebusus		BLACK CRAPPIE	38		0.71
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	ICTALURIDAE	Notropis	stannius		BROWN BULLHEAD	180		8.92
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CYPRINIDAE	Notropis	stannius		EMERALD SHINER	756		2.74
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	PERCIDAE	Sander	vireus		WALLEYE	1		0.54
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	PERCIDAE	Percina	capetum		LOGPERCH	3		0.01
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	ICTALURIDAE	Ameiurus	punctatus		CHANNEL CATFISH	29		0.45
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	ICTALURIDAE	Ameiurus	natalis		YELLOW BULLHEAD	7		0.1
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CYPRINIDAE	Pimephales	notatus		BLUNTNOSE MINNOW	263		0.42
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	ICTALURIDAE	Ameiurus	rebusus		WHITE CATFISH	4		0.13
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CYPRINIDAE	Notropis	stannius		SAND SHINER	95		0.09
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CENTRARCHIDAE	Lepomis	gibbosus		PUMPKINSEED	18		0.16
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CYPRINIDAE	Cyprinella	scopelera		SPOTFIN SHINER	1		0.01
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CYPRINIDAE	Cyprinella	auratus		GIZZARD SHAD	70		3.33
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	PERCIDAE	Percina	capetum		BLACK CRAPPIE	2		0.28
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CENTRARCHIDAE	Micropterus	salmoides		LARGEMOUTH BASS	2		0.02
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CENTRARCHIDAE	Lepomis	microchirus		REDEAR SUNFISH	2		0.01
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CYPRINIDAE	Lepomis	macrochirus		BLUGILL	5		0.03
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1969	1969	CYPRINIDAE	Notropis	voelleus		MIMIC SHINER	15		0.04
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1970	1970	ICTALURIDAE	Ameiurus	natalis		YELLOW BULLHEAD	11		0.19
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1970	1970	CATOSTOMIDAE	Moxostoma	duquesnei		BLACK REDFISH	1		0.14
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1970	1970	CENTRARCHIDAE	Lepomis	microchirus		REDEAR SUNFISH	2		0.06
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1970	1970	CLUPEIDAE	Dorosoma	capetum		GIZZARD SHAD	29		4.13
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1970	1970	CYPRINIDAE	Cyprinella	scopelera		SPOTFIN SHINER	1		0.01
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1970	1970	CYPRINIDAE	Notropis	stannius		EMERALD SHINER	184		0.64
DASHLC0801	13.2 OHIO	DASHLDS	RT	FALSE	1970	1970	CYPRINIDAE	Notropis	voelleus		MIMIC SHINER	185		0.25

Appendix D.

Event Code	Bin	Event Bank	Field Lock	Q1	Outfall	C-Date	Year	Family	Genus name	Species name	Species	Count	Size Class (feet)
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1970	ICTALURIDAE	Ameiurus	calus	WHITE CATFISH	14	1.05
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1970	ICTALURIDAE	Ameiurus	rebusius	BROWN BULLHEAD	95	10.09
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1970	ICTALURIDAE	italurus	punctatus	CHANNEL CATFISH	48	2.19
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1970	ANGUILLIDAE	Anguilla	rostrata	AMERICAN EEL	2	0.15
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1970	CYPRINIDAE	Pimephales	notatus	BLUNTNOSE MINNOW	471	0.79
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1970	CYPRINIDAE	Leptomis	macrolepis	BLUEGILL	4	0.08
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	4	0.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	PERCIDAE	Percia	flavescens	YELLOW PERCH	3	0.22
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	SCAENIDAE	Aplocheilichthys	gymnauchen	FRESHWATER DRUM	3	0.22
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	ICTALURIDAE	italurus	punctatus	CHANNEL CATFISH	2	0.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	BROWN BULLHEAD	20	7.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	BROWN BULLHEAD	20	7.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	BROWN BULLHEAD	31	0.05
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	WHITE SUCKER	1	0.1
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	WHITE CATFISH	62	1.56
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	SAND SHINER	23	0.04
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	YELLOW BULLHEAD	20	1.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	WHITE GRAPPIE	2	0.15
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Dorosoma	capetatum	GIZZARD SHAD	219	23.64
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Cyprinella	splachna	SPOTFIN SHINER	4	0.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	EMERALD SHINER	29544	29.54
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1975	CYPRINIDAE	Notropis	rebusius	BROWN BULLHEAD	15	2.61
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Micropterus	punctulatus	SPOTTED BASS	2	0.36
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Micropterus	punctulatus	BROWN BULLHEAD	52	0.16
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Sander	carolinensis	CHANNEL CATFISH	117	5.93
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Pygocentrus	platy	FLATHEAD CATFISH	2	0.16
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	YELLOW BULLHEAD	21	0.94
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Percia	flavescens	YELLOW PERCH	19	0.74
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Percia	caprocles	LOGPERCH	1	0.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Aplocheilichthys	gymnauchen	FRESHWATER DRUM	1	0.24
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Notropis	rebusius	SAND SHINER	60	0.04
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Dorosoma	capetatum	EMERALD SHINER	600	0.3
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Dorosoma	capetatum	GIZZARD SHAD	53	1.65
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Aplocheilichthys	gymnauchen	ROCK BASS	1	0.1
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Cyprinella	splachna	WHITE CATFISH	10	0.3
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Cyprinella	splachna	SPOTFIN SHINER	49	0.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Percia	flavescens	YELLOW PERCH	3	0.16
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Percia	flavescens	WHITE GRAPPIE	1	0.11
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Dorosoma	capetatum	GIZZARD SHAD	25	1.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Dorosoma	capetatum	MUSKELLUNGE	1	1.76
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	WHITE CATFISH	8	0.22
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	YELLOW BULLHEAD	5	0.64
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	BROWN BULLHEAD	47	3.51
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	WHITE BASS	3	0.05
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	FRESHWATER DRUM	1	1.3
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	CHANNEL CATFISH	107	7.59
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	WHITE GRAPPIE	1	0.01
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	CHANNEL CATFISH	1	0.1
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	BROWN BULLHEAD	1	0.1
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	BROWN BULLHEAD	1	0.23
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	BROWN BULLHEAD	2	0.05
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	BROWN BULLHEAD	3	10.06
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	BROWN BULLHEAD	5	7
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	BROWN BULLHEAD	7	0.66
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	CHANNEL CATFISH	2	1
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	YELLOW BULLHEAD	2	10.06
DASHLC7001	13.2 OHIO	DASHIELDS	RT	FALSE	RT		1976	CYPRINIDAE	Ameiurus	rebusius	CHANNEL CATFISH	4	14

Appendix D

Event Code	km	River Bank	Pool Lock	OT	Outfall	C Date	Year	Family	Genus Name	Species Name	Species Name	Count	Size Class	kg/weight
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	YELLOW BULLHEAD	2	8	0.3
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	5	9	0.8
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	6	12	2.18
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	7	9	0.6
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	15	6	1.05
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	19	4	0.11
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	17	3	0.3
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	SCAENIDAE	Apollonia	grunners	FRESHWATER DRUM	1	3	0.01
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	4	13	1.68
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	6	7	0.6
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Pomoxis	annularis	WHITE CRAPPIE	1	4	0.01
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	1	5	0.2
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	4	2	0.01
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	6	0.19	
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	19	0.1
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	13	1.8
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Ameiurus	natalis	YELLOW BULLHEAD	23	3	0.1
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Idolus	punctatus	YELLOW BULLHEAD	4	12	2
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Idolus	punctatus	YELLOW BULLHEAD	3	6	0.24
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	11	7	58
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	23	8	3.25
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	24	10	6.95
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	37	9	7.9
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	WHITE CATFISH	1	11	0.35
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	WHITE CATFISH	5	7	0.44
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	YELLOW BULLHEAD	2	6	0.12
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	13	1.8
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	4	7	0.25
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	4	0.02
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	YELLOW BULLHEAD	1	7	0.09
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	YELLOW BULLHEAD	1	10	0.35
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	YELLOW BULLHEAD	1	11	1.05
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	YELLOW BULLHEAD	2	2	0.01
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	YELLOW BULLHEAD	2	8	0.98
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	YELLOW BULLHEAD	4	3	0.02
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	nebulosus	BROWN BULLHEAD	1	7	0.09
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	nebulosus	BROWN BULLHEAD	2	8	0.27
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	punctatus	CHANNEL CATFISH	2	8	0.3
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Cyprinus	carpio	CHANNEL CATFISH	2	3	0.01
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Ameiurus	natalis	CHANNEL CATFISH	4	2	0.01
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	1	4	0.01
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	4	15	3.12
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	5	2	0.02
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	5	5	0.1
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	6	4	0.05
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	6	10	1.5
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	6	11	1.73
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	6	13	3.1
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	7	14	4.24
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	8	6	0.28
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	9	2	0.03
DASHLC7801	13.2 OHIO	DASHIELDS	DASHIELDS	RT	FALSE	15-Sep-78	1978	ICTALURIDAE	Idolus	punctatus	CHANNEL CATFISH	38	3	0.3

Appendix D.

Event Code	Rm	River Bank	Pool Lock	CI	Outfall	C Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	Footprint
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 PERCIDAE		Sander	omismoyous	WALLEYE		1	6	0.05	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 PERCOPIDAE		Percoptis	grumens	TROUT-PERCH		23	2	0.04	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 SCALINIDAE		Apodictis	purcatus	CHANNEL CATFISH		1	8	0.12	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CATOSTOMIDAE		Macromia	brevis	SHAD		6	12	0.3	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CATOSTOMIDAE		Dorosoma	capetatum	SHAD		114	7	7.4	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		1	7	0.2	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		1	15	0.1	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Aneurus	natalis	YELLOW BULL-HEAD		3	2	0.08	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		6	6	0.17	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		7	12	3.52	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		17	11	8.32	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		26	8	4.6	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		63	10	17.78	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		75	9	17.08	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Notemigonus	omismoyous	GOLDEN SHINER		210	2	1.98	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Natrops	alburnus	SPOTTED SHINER		1	2	0.2	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Natrops	alburnus	SPOTTED SHINER		68	2	0.2	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Natrops	volucalis	SAND SHINER		445	2	0.21	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Pimephales	notatus	MINNIE SHINER		21	2	0.01	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Aneurus	natalis	BLUNTNOSE MINNOW		1	13	0.79	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		1	5	0.03	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Cyprinus	carpio	COMMON CARP		4	14	3	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Dorosoma	capetatum	GIZZARD SHAD		34	8	3.45	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Dorosoma	capetatum	GIZZARD SHAD		32	2	0.09	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Dorosoma	capetatum	GIZZARD SHAD		18	3	0.58	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Dorosoma	capetatum	GIZZARD SHAD		61	5	2.83	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Dorosoma	capetatum	GIZZARD SHAD		4	10	1.15	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Dorosoma	capetatum	GIZZARD SHAD		7	8	0.59	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CYPRINIDAE		Pomoxis	annularis	WHITE CRAPPIE		1	2	0.29	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Micropterus	punctulatus	SPOTTED BASS		1	6	0.09	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	SMALL MOUTH BASS		1	5	0.04	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Lepisomis	macrochirus	BLUEGILL		6	1		
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	GIZZARD SHAD		17	4	0.25	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	GIZZARD SHAD		56	3	0.28	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Cyprinella	spilotera	SPOTFIN SHINER		5	2	0.01	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Cyprinella	spilotera	SPOTFIN SHINER		2	2	0.01	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Ambloplites	rupestris	ROCK BASS		1	6	0.17	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Cyprinus	carpio	COMMON CARP		1	9	0.8	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	GIZZARD SHAD		4	15	0.98	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Cyprinus	carpio	COMMON CARP		1	3	0.03	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	GIZZARD SHAD		17	9	2.6	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	GIZZARD SHAD		16	4	0.13	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	GIZZARD SHAD		6	10	1.38	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	GIZZARD SHAD		22	8	2.83	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Dorosoma	capetatum	GIZZARD SHAD		3	11	1.02	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Lepisomis	gibbosus	GIZZARD SHAD		3	2	0.01	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Cyprinus	carpio	PUMPKINSEED		1	5	0.05	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Ambloplites	rupestris	ROCK BASS		4	11	1.64	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Aneurus	natalis	YELLOW BULL-HEAD		19	8	0.23	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Lepisomis	macrochirus	BLUEGILL		19	4	0.05	
DASHLC001	13.2 OHIO	DASHIELDS	RT	FALSE	05-Sep-80	1980 CENTRARCHIDAE		Lepisomis	macrochirus	BLUEGILL		10	5		

Appendix D.

Event Code	Bin	Flag	Bank	Pool Lock	Q1	Q2	C-Date	Year	Family	Genus name	Species name	Species	Count	Size Class	Kovachik
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	retalis	FLATHEAD CATFISH	6	3	0.02
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	retalis	FLATHEAD CATFISH	2	4	0.01
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Pixidites	olivaris	FLATHEAD CATFISH	1	7	0.07
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	41	3	0.12
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	31	7	1.77
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	22	6	0.67
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	20	8	1.75
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	retalis	YELLOW BULLHEAD	1	10	0.38
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	10	12	0.83
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	PERCOPIDAE	Percopsis	omnicolorus	PROUD PERCH	1	9	0.14
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	6	10	1.57
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	13	9	0.77
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	5	11	1.52
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	16	1
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	nebulosus	BROWN BULLHEAD	4	0.01	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	nebulosus	BROWN BULLHEAD	2	8	0.43
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	12	2	0.01
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	retalis	YELLOW BULLHEAD	1	9	0.28
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	5	9	1.12
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	5	10	1.46
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	CYPRINIDAE	Notropis	altricoloris	SAND SHINER	410	2	3.72
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	CYPRINIDAE	Notropis	volucalis	MIMIC SHINER	407	2	0.21
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	CYPRINIDAE	Pimephales	notatus	BLUNTNOSE MINNOW	1219	2	0.54
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	PERCIDAE	Perca	carolinensis	LOGPERCH	422	3	0.43
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	retalis	YELLOW BULLHEAD	1	8	0.15
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	PERCIDAE	Sander	vitreus	WALLEYE	1	12	0.39
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	retalis	YELLOW BULLHEAD	2	4	0.03
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	nebulosus	BROWN BULLHEAD	1	5	0.05
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	SCAENIDAE	Ambloplites	gymnistris	FRESHWATER DRUM	72	3	0.31
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	SCAENIDAE	Ambloplites	gymnistris	FRESHWATER DRUM	16	4	0.13
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	SCAENIDAE	Ambloplites	gymnistris	FRESHWATER DRUM	1	2	0.01
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	3	0.01
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	retalis	BROWN BULLHEAD	1	9	0.28
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	ICTALURIDAE	Aneurus	retalis	BROWN BULLHEAD	157	1	1.27
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1981	PERCIDAE	Sander	vitreus	WALLEYE	11	2	2.8
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	ATHERINOPSIDAE	Labiathes	scottus	ROCK SILVERSIDE	2	2	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CENTRARCHIDAE	Leptomus	macrochirus	BLUEGILL	1	5	0.03
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CATOSTOMIDAE	Catostomus	commersoni	WHITE SUCKER	1	12	0.36
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CATOSTOMIDAE	Myoxostoma	erythrurum	GOLDEN REDHORSE	4	0.84	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CENTRARCHIDAE	Ambloplites	rupestris	ROCK BASS	5	0.57	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	PERCIDAE	Sander	carolinensis	SAUGER	2	0.6	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CENTRARCHIDAE	Micropterus	dobsonii	SMALLMOUTH BASS	6	0.41	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	6	0.41
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CENTRARCHIDAE	Pomoxis	annularis	WHITE CRAPPIE	2	0.06	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CYPRINIDAE	Dorosoma	capitatum	POCKLE	1300	3	28.05
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CYPRINIDAE	Cyprinus	carpio	SPOTFIN SHINER	3	0.01	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CYPRINIDAE	Esox	masquinongy x lucius	MUSKELLUNG X NORTHERN PIKE	77	29.72	
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CYPRINIDAE	Aneurus	retalis	EMERALD SHINER	1	16	0.49
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	ICTALURIDAE	Aneurus	retalis	YELLOW BULLHEAD	2013	3	3.78
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	ICTALURIDAE	Pixidites	olivaris	FLATHEAD CATFISH	6	3	0.03
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CYPRINIDAE	Pimephales	notatus	BLUNTNOSE MINNOW	10	2	0.56
DASHL0301	13.2 OHIO		DASHIELDS	RT	FALSE			1983	CYPRINIDAE	Notropis	volucalis	MIMIC SHINER	2	2	

Appendix D

Event Code	Pool	Bank	Pool Lock	CI	Outfall	C Date	Year	Family	Species name	Species	Count	Size	Class	Weight
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1983	CYPRINIDAE	Natropis	stramineus	430	2	0.33	SAND SHINER
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1983	CYPRINIDAE	Natropis	hudsonius	2	2		SPOTTAL SHINER
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1983	ICTALURIDAE	Idatulus punctatus	punctatus	68	1	7.1	CHANNEL CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	MORONIDAE	Morone chrysops	chrysops	1	5	0.03	WHITE BASS
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	MORONIDAE	Morone chrysops	chrysops	1	5	0.03	WHITE BASS
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Aplodinotus chrysops	chrysops	2	6	0.15	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	MORONIDAE	Morone chrysops	chrysops	3	6	0.15	WHITE BASS
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	PERCIDAE	Sander canadensis	canadensis	1	11	0.41	SAUGER
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Aplodinotus gurneius	gurneius	1	13	0.41	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Aplodinotus gurneius	gurneius	1	16	1.13	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Aplodinotus gurneius	gurneius	3	13	1.68	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Dorosoma cepedianum	cepedianum	4	1	0.001	GIZZARD SHAD
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Aplodinotus gurneius	gurneius	15	9	3.43	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Aplodinotus gurneius	gurneius	8	9	1.65	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Aplodinotus gurneius	gurneius	11	8	1.24	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ESOCIDAE	Esox masquinongy x lucius	masquinongy x lucius	19	5	0.19	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Pygidichthys olivaris	olivaris	1	8	0.078	FLATHEAD CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Dorosoma cepedianum	cepedianum	5	2	0.013	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Dorosoma cepedianum	cepedianum	11	2	0.03	GIZZARD SHAD
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Ameletus retalis	retalis	4	3	0.03	YELLOW BULLHEAD
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Cyprinus carpio	carpio	3	18	4.5	COMMON CARP
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Cyprinus carpio	carpio	2	16	2.6	COMMON CARP
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Cyprinus carpio	carpio	1	21	2.55	COMMON CARP
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Dorosoma cepedianum	cepedianum	1	19	1.75	COMMON CARP
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Dorosoma cepedianum	cepedianum	108	3	0.74	GIZZARD SHAD
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Dorosoma cepedianum	cepedianum	8	9	2.25	COMMON CARP
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Cyprinus carpio	carpio	13	11	5.15	GIZZARD SHAD
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Dorosoma cepedianum	cepedianum	28	13	17.57	COMMON CARP
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Dorosoma cepedianum	cepedianum	6	1	0.003	GIZZARD SHAD
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CENTRARCHIDAE	Micropterus nigromaculatus	nigromaculatus	1	8	0.17	BLACK CRAPPIE
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CENTRARCHIDAE	Lepomis macrochirus	macrochirus	1	6	0.08	SHALLMOUTH BASS
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CENTRARCHIDAE	Ambloplites rupestris	rupestris	2	3	0.004	BLUEGILL
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CATOSTOMIDAE	Nocomis biguttatus	biguttatus	1	2	0.002	ROCK BASS
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CATOSTOMIDAE	Nocomis biguttatus	biguttatus	4	9	0.77	SMALLMOUTH REDHORSE
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Dorosoma cepedianum	cepedianum	26	5	0.3	GIZZARD SHAD
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ICTALURIDAE	Idatulus punctatus	punctatus	4	1	0.004	CHANNEL CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ICTALURIDAE	Pygidichthys olivaris	olivaris	11	25	0.25	FLATHEAD CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ICTALURIDAE	Pygidichthys olivaris	olivaris	1	8	0.18	FLATHEAD CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ICTALURIDAE	Idatulus punctatus	punctatus	30	3	0.08	CHANNEL CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ICTALURIDAE	Idatulus punctatus	punctatus	14	8	1.07	CHANNEL CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ICTALURIDAE	Idatulus punctatus	punctatus	10	11	2.78	CHANNEL CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Cyprinus carpio	carpio	7	15	6.78	COMMON CARP
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ICTALURIDAE	Idatulus punctatus	punctatus	5	3	0.005	CHANNEL CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	ICTALURIDAE	Idatulus punctatus	punctatus	2	3	0.009	FLATHEAD CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Aplodinotus gurneius	gurneius	1	15	58	CHANNEL CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	SCIAENIDAE	Ameletus retalis	retalis	484	3	2.42	FRESHWATER DRUM
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Natropis hudsonius	hudsonius	2	3	0.016	YELLOW BULLHEAD
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Natropis hudsonius	hudsonius	18	1	0.007	MIMIC SHINER
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Natropis altheroides	altheroides	1	3	0.003	SPOTTAL SHINER
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Oxyrinus carpio	carpio	232	2	1.507	EMERALD SHINER
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CYPRINIDAE	Oxyrinus carpio	carpio	31	11	12.85	COMMON CARP
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Idatulus punctatus	punctatus	6	13	2.49	CHANNEL CATFISH
DASHL0301	13.2 OHIO	DASHL03	DASHL03	RT	FALSE	06-Sep-85	1985	CLUPEIDAE	Dorosoma cepedianum	cepedianum	27	8	2.51	GIZZARD SHAD

Appendix D.

Event Code	Rm	River Bank	Pool Lock	Cl	Outfall	C Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	Weight
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	PERCIDEAE	Sander	vitreus	WALLEYE	3	13	1.39	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	PERCIDEAE	Sander	vitreus	WALLEYE	2	14	1.19	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	PERCIDEAE	Sander	canadensis	SALUGER	5	12	1.58	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	PERCIDEAE	Sander	canadensis	SALUGER	5	10	0.94	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	PERCIDEAE	Aplodinotus	gurnemus	FRESHWATER DRUM	5	8	0.77	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	PERCIDEAE	Sander	caprosides	SALUGER	3	13	1.44	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	PERCIDEAE	Perca	caprosides	LOGPERCH	7	1	0.02	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	MORONIDAE	Monore	chrysops	STRIPED BASS	1	5	0.02	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	MORONIDAE	Monore	chrysops	WHITE BASS	99	6	5.64	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	MORONIDAE	Monore	chrysops	WHITE BASS	33	5	1.01	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	MORONIDAE	Monore	chrysops	WHITE BASS	29	7	2.18	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	MORONIDAE	Monore	chrysops	WHITE BASS	2	8	0.32	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	MORONIDAE	Monore	chrysops	WHITE BASS	3	3	0.01	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	PERCIDEAE	Sander	canadensis	SALUGER	5	11	1.3	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	SCAENIDAE	Aplodinotus	gurnemus	FRESHWATER DRUM	4	14	1.94	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	SCAENIDAE	Aplodinotus	gurnemus	FRESHWATER DRUM	13	252		
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	SCAENIDAE	Aplodinotus	gurnemus	FRESHWATER DRUM	238	3	0.8	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	SCAENIDAE	Aplodinotus	gurnemus	FRESHWATER DRUM	47	4	0.38	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	SCAENIDAE	Aplodinotus	gurnemus	FRESHWATER DRUM	28	9	5.655	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	SCAENIDAE	Aplodinotus	gurnemus	FRESHWATER DRUM	9	10	5.05	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	SCAENIDAE	Aplodinotus	gurnemus	FRESHWATER DRUM	13	11	4.7	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	SCAENIDAE	Aplodinotus	gurnemus	FRESHWATER DRUM	1	10	0.4	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	MORONIDAE	Monore	chrysops	WHITE BASS	1	4	0.01	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	6	13	4.32	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	4	16	5.22	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	17	3.07	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	15	2.01	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	10	0.73	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	18	1.65	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	spiloptera	SPOTTIN SHINER	2	9	0.43	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Alosa	chrysocloris	SPOTJACK HERRING	3	12	4.89	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	12	0.8	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedanum	GIZZARD SHAD	4	5	0.06	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedanum	GIZZARD SHAD	3	10	0.63	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedanum	GIZZARD SHAD	2	9	0.27	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedanum	GIZZARD SHAD	1	12	0.36	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	punctatus	CHANNEL CATFISH	6	4	0.05	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	olvaris	WHITE BASS	4	4	0.05	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	olvaris	FLATHEAD CATFISH	1	16	1.1	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	olvaris	FLATHEAD CATFISH	1	11	0.32	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	olvaris	FLATHEAD CATFISH	1	10	0.25	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	olvaris	FLATHEAD CATFISH	1	8	0.15	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	olvaris	FLATHEAD CATFISH	1	6	0.08	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	olvaris	FLATHEAD CATFISH	1	3	0.01	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	6	14	5.115	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	punctatus	CHANNEL CATFISH	6	14	4.17	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	7	11	3.06	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	punctatus	CHANNEL CATFISH	3	16	3.15	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	punctatus	CHANNEL CATFISH	2	19	3.4	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	punctatus	CHANNEL CATFISH	2	15	1.82	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	punctatus	CHANNEL CATFISH	2	12	0.97	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	ichthys	punctatus	CHANNEL CATFISH	1	10	0.25	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	ESOCIDAE	Esoc	musculoney	MUSKELLONG	1	9	0.1	
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Notopterus	notopterus	SPOTTAIL SHINER	1	1		
DASHLC8801	13.2 OHIO		DASHIELDS	RT	FALSE	24-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedanum	GIZZARD SHAD	5	11	1.45	

Appendix D.

Event Code	Bin	Event	Bank	Flag	Lock	CI	Outfall	C Date	Year	Family	Genus name	Species name	Species	Count	Size Class (kg/ovs)
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	10	3 0.04
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	ICTALURIDAE	Pomoxis	amurensis	WHITE CRAPPIE	5	3 0.01
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CLUPIEIDAE	Dorosoma	capedianum	GIZZARD SHAD	152	3 0.78
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CLUPIEIDAE	Leptomis	macrotus	BLUEGILL	13	2 0.02
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	4	5 0.1
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	3	9 0.85
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	6 0.03
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	6 0.11
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Micropterus	domineus	SMALL MOUTH BASS	2	9 0.1
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Micropterus	domineus	SMALL MOUTH BASS	1	9 0.1
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Leptomis	macrotus	BLUEGILL	1	3 0.01
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Leptomis	macrotus	BLUEGILL	2	3 0.01
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Ambloplites	rupestris	PUMPKINSEED	1	3 0.01
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	24-Sep-88	1988	CENTRARCHIDAE	Micropterus	domineus	ROCK BASS	1	2 0.01
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	canadensis	SMALL MOUTH BASS	1	4 0.01
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	canadensis	SMALL MOUTH BASS	30	4 0.42
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Sander	chrysops	WHITE BASS	11	4 0.85
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Sander	canadensis	SAUGER	3	12 0.71
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Sander	canadensis	SAUGER	2	13 0.79
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Sander	canadensis	SAUGER	29	6 0.67
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	saxatilis x chrysops	HYBRID STRIPER	1	10 0.38
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Sander	canadensis	SAUGER	31	6 1.69
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Sander	canadensis	SAUGER	8	2 0.3
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Sander	canadensis	SAUGER	1	9 0.4
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	saxatilis x chrysops	HYBRID STRIPER	2	9 0.4
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	saxatilis x chrysops	HYBRID STRIPER	1	7 7.22
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	35	6 3.32
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	4 0.005
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	5 0.9
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	2	9 0.4
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	3	8 0.47
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	17 1.8
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	2 0.01
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	5	4 0.02
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	35	4 0.02
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	195	4 1.03
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	6	5 0.12
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	11 0.4
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	2	10 3.1
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	5 0.005
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	8 0.715
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	6	9 0.815
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	3	12 1.205
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	2	16 1.74
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	15 0.1
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	15 0.1
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	4	6 0.225
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	15 0.1
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	5	11 2.595
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	2	22 7.951
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	2	12 1.343
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	26 5.96
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	20 1.816
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	10 0.454
DASHL0301	13.2 OHIO	DASHIELDS				RT	FALSE	04-Sep-91	1991	PERCIDAE	Micropterus	chrysops	WHITE BASS	1	3 174.78

Appendix D.

Enslv Code	Enslv Bask	Post Lock	Q1	Q2	Date	Year	Family	Genus name	Species name	Species	Count	Size Class	Lowest
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Amblestus	luteus	ROCK BASS	1	7	0.165
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	3	0.01
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CATOSTOMIDAE	Microstoma	erythrurum	GOLDEN REDHORSE	2		
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	6	0.15
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	5	0.04
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Micropterus	punctulatus	SMALLMOUTH BASS	11	4	0.14
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	4		
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	10	0.3
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1	6	0.12
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Lepomis	macrochirus	BLUEGILL	1	8	0.1
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Amblestus	luteus	ROCK BASS	1	2	0.01
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CATOSTOMIDAE	Microstoma	erythrurum	SMALLMOUTH REDHORSE	1	1	0.3
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CATOSTOMIDAE	Microstoma	brevipinna	SMALLMOUTH REDHORSE	1	8	0.12
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CATOSTOMIDAE	Microstoma	brevipinna	SMALLMOUTH REDHORSE	1	7	0.09
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CENTARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	9	0.24
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	16	13	7.95
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	1	17	1.4
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	1	19	2.15
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	2	7	2.14
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	2	16	1.89
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	5	8	3.4
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	3	9	3.4
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	1	10	2.02
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedianum	SHAD	8	10	3.0
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedianum	SHAD	12	12	4.65
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Notropis	antherinus	SPOTTED SHINER	24		
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Pygidictis	olvaris	CHANNEL CATFISH	21	3	0.11
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Pygidictis	olvaris	FLATHEAD CATFISH	1	4	0.01
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Pygidictis	olvaris	FLATHEAD CATFISH	1	6	0.05
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	MORONIDAE	Morone	chrysops	FLATHEAD CATFISH	1	8	0.1
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	MORONIDAE	Morone	chrysops	WHITE BASS	3		
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	MORONIDAE	Morone	chrysops	WHITE BASS	27	6	1.45
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	MORONIDAE	Morone	chrysops	WHITE BASS	65	3	0.35
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	MORONIDAE	Morone	chrysops	WHITE BASS	100	3	3.15
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	10	14	2.1
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	6	1.5
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedianum	SHAD	2	11	2.5
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedianum	SHAD	6	11	2.5
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedianum	SHAD	14	9	2.01
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Dorosoma	cepedianum	SHAD	10	20	3.0
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1010	2	4.35
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Pomoxis	annularis	WHITE CRAPPIE	1	9	0.2
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Pomoxis	annularis	WHITE CRAPPIE	2	3	0.01
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Pheniphetes	notatus	BLUNTNOSTE MINNOW	1	10	0.35
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2		
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	1	20	2
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2		
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	17	3
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	19	3.2
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	4	1	1
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	5	12	2.5
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	4	14	3.5
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	5	13	4.55
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Notropis	antherinus	EMERALD SHINER	3		
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	PERCIDAE	Sander	vitreus	WALLEY	1	14	0.7
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.2
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	MORONIDAE	Morone	chrysops	WHITE BASS	129	4	1.7
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	PERCIDAE	Sander	vitreus	WALLEY	5	13	2.5
ENSWL C9801	6.2 OHIO	ENSWORTH	RT	FALSE	01-Sep-88	1988	SCIAENIDAE	Aplodinotus	grunniens	FRESHWATER DRUM	2	11	0.8

Appendix D.

Event Code	Rm	River Bank	Pool Lock	CI	Outfall	C Date	Year	Family	Species Name	Species	Count	Size	Class	Keyweight
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	01-Sep-88	1988	SCIAENIDAE	Ambloplites	gunnings	2	13		1.35
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	01-Sep-88	1988	SCIAENIDAE	Ambloplites	gunnings	3	8		0.35
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	01-Sep-88	1988	SCIAENIDAE	Ambloplites	gunnings	3	12		1.53
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	01-Sep-88	1988	SCIAENIDAE	Ambloplites	gunnings	6	10		0.41
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	01-Sep-88	1988	SCIAENIDAE	Ambloplites	gunnings	116	3		0.62
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	01-Sep-88	1988	PERCIDAE	Sciaenops ocellatus	gunnings	1	11		0.25
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	01-Sep-88	1988	SCIAENIDAE	Ambloplites	gunnings	7	9		1.2
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	01-Sep-88	1988	CYPRINIDAE	Pomoxis annularis	annularis	25	3		0.06
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CYPRINIDAE	Pomoxis annularis	carpio	1	16	1.1	
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CYPRINIDAE	Dorosoma cepedianum	annularis	1	9		0.182
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CLUPEIDAE	Alosa chrysocloris	shad	8	11		2.25
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CLUPEIDAE	Alosa chrysocloris	shad	1	5		0.032
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CLUPEIDAE	Alosa chrysocloris	shad	5	10		1.15
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CLUPEIDAE	Alosa chrysocloris	shad	2	6		0.63
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CLUPEIDAE	Alosa chrysocloris	shad	1	9		0.217
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CLUPEIDAE	Alosa chrysocloris	shad	1	8		0.16
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CLUPEIDAE	Alosa chrysocloris	shad	1	11		0.288
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CYPRINIDAE	Cyprinus carpio	carpio	1	8		0.13
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	SCIAENIDAE	Ambloplites	gunnings	1	20		2.4
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	4	9		0.832
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	SCIAENIDAE	Ambloplites	gunnings	1	13		0.501
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	SCIAENIDAE	Ambloplites	gunnings	7	10		1.758
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	SCIAENIDAE	Ambloplites	gunnings	2	11		0.702
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	SCIAENIDAE	Ambloplites	gunnings	1	15		0.78
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	SCIAENIDAE	Ambloplites	gunnings	1	14		1.022
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	SCIAENIDAE	Ambloplites	gunnings	1	12		0.32
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	PERCIDAE	Sciaenops ocellatus	gunnings	1	4		0.452
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	PERCIDAE	Sciaenops ocellatus	gunnings	1	11		0.239
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	PERCIDAE	Sciaenops ocellatus	gunnings	1	9		0.067
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	SCIAENIDAE	Ambloplites	gunnings	3	8		0.625
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	2	3		0.002
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	CYPRINIDAE	Cyprinus carpio	carpio	2	15		2.435
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	1	8		0.09
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	6	11		2.014
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	4	15		1.467
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	4	10		0.756
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	3	17		2.968
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	8	8		0.5
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	2	16		1.632
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	2	13		0.888
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	ICTALURIDAE	Pseudorasbora parva	gunnings	1	3		0.002
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	06-Sep-90	1990	MORONIDAE	Morone saxatilis x chrysops	gunnings	1	14		0.7
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	02-Sep-92	1992	MORONIDAE	Morone saxatilis	gunnings	13	15		9.44
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	02-Sep-92	1992	MORONIDAE	Morone saxatilis	gunnings	1	7		0.08
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	02-Sep-92	1992	ICTALURIDAE	Pseudorasbora parva	gunnings	5	3		0.012
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	02-Sep-92	1992	ICTALURIDAE	Pseudorasbora parva	gunnings	2	0.004		
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	02-Sep-92	1992	ICTALURIDAE	Pseudorasbora parva	gunnings	1	11		0.6
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	02-Sep-92	1992	ICTALURIDAE	Pseudorasbora parva	gunnings	1	13		0.99
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	02-Sep-92	1992	ICTALURIDAE	Pseudorasbora parva	gunnings	1	10		0.7
ENSWL C3801	6.2 OHIO	ENSWORTH		RT	FALSE	02-Sep-92	1992	ICTALURIDAE	Pseudorasbora parva	gunnings	1	10		0.7

Appendix D.

Event Code	Rm	River Bank	Pool	Lock	CI	Outfall	C Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	Weight
MONTLC5701	317	OHIO	MONTGOMERY	RT	FALSE	29-Aug-57	1957	CYPRINIDAE		Carassius	auratus	GOLDFISH	4			0.117
MONTLC5701	317	OHIO	MONTGOMERY	RT	FALSE	29-Aug-57	1957	CYPRINIDAE		Micropterus	salmoides	CARP X GOLDFISH	3			0.117
MONTLC5701	317	OHIO	MONTGOMERY	RT	FALSE	29-Aug-57	1957	CYPRINIDAE		Lepomis	macrochirus	LARGE MOUTH BASS	11			1.666
MONTLC5701	317	OHIO	MONTGOMERY	RT	FALSE	29-Aug-57	1957	CYPRINIDAE		Lepomis	cyaneus	BLUEGILL	10			0.018
MONTLC5701	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Micropterus	salmoides	GREEN SUNFISH	2			0.009
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Micropterus	punctatus	LARGE MOUTH BASS	2			0.359
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Carassius	auratus	SPOTTED BASS	1			0.241
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Dorosoma	cepedianum	GOLDFISH	1			1.176
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Notropis	chrysolaus	GOLDEN SHAD	6			1.176
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Carpiodes	carpio	GOLDEN SHINER	1			0.007
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Notropis	staminius	RIVER CARPSUCKER	9			2.019
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Pimephales	notatus	SAND SHINER	1			0.003
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Ameiurus	melas	BLUNTNOSE MINNOW	1			0.015
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	30-Jul-58	1958	CYPRINIDAE		Notropis	alternoides	BLACK BULLHEAD	159			7.3
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Hypoxys	amblyops	EMERALD SHINER	24			0.045
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Semotilus	atromaculatus	BIG EYE CHUB	24			0.027
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Notropis	chrysolaus	CREEK CHUB	2			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Notropis	alternoides	SILVER CHUB	6			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Notropis	alternoides	GOLDEN SHINER	2			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Notropis	alternoides	COMMON CARP	20			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Notropis	rubellus	COMMON SHINER	9			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Pimephales	notatus	ROSYFACE SHINER	28			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Fundulus	diaphanus	BLUNTNOSE MINNOW	119			0.14
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Carassius	auratus	GOLDFISH	1			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	27-Jun-59	1959	CYPRINIDAE		Pomoxis	annularis	WHITE CRAPPIE	1			0.136
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Ameiurus	melas	BLACK BULLHEAD	788			5.715
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Notropis	valucellus	MIMIC SHINER	623			0.456
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Dorosoma	cepedianum	CYPRINIDAE SP	2			3.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Lepomis	cyaneus	WHITE CRAPPIE	41			3.007
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Calostomus	comersonii	WHITE SUCKER	2			0.08
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	27-Jun-59	1959	CYPRINIDAE		Ameiurus	imilis	BLACK BULLHEAD	97			0.544
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	27-Jun-59	1959	CYPRINIDAE		Pimephales	notatus	BLUNTNOSE MINNOW	465			2.404
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	27-Jun-59	1959	CYPRINIDAE		Macrobryopsis	storeria	SILVER CHUB	2			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	27-Jun-59	1959	CYPRINIDAE		Dorosoma	cepedianum	GIZZARD SHAD	2			0.096
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	27-Jun-59	1959	CYPRINIDAE		Lepomis	gulosus	WARM MOUTH	1			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	27-Jun-59	1959	CYPRINIDAE		Lepomis	gulosus	PUMPKINSEED	1			0.004
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	27-Jun-59	1959	CYPRINIDAE		Lepomis	cyaneus	GREEN SUNFISH	5			0.167
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Percia	flavescens	YELLOW PERCH	3			0.226
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Notropis	staminius	SAND SHINER	750			1.173
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Cyprinus	carpio	COMMON CARP	2			0.179
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	06-Jul-59	1959	CYPRINIDAE		Dorosoma	cepedianum	GHOST SHINER	1			0.056
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Cyprinus	carpio	COMMON CARP	1			0.462	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Notropis	alternoides	EMERALD SHINER	1293			1.737	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Notropis	staminius	SAND SHINER	4			0.006	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Notropis	valucellus	MIMIC SHINER	377			0.259	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Pimephales	notatus	BLUNTNOSE MINNOW	8			0.017	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Lepomis	gulosus	PUMPKINSEED	1			0.015	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Lepomis	punctatus	CHANNEL CATFISH	1			0.184	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Lepomis	macrochirus	BLUEGILL	25			0.173	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Notropis	alternoides	EMERALD SHINER	7			0.01	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Cyprinus	carpio	COMMON CARP	151			35.62	
MONTLC5801	317	OHIO	MONTGOMERY	RT	FALSE	1960	CYPRINIDAE		Cyprinus	lagodon	SPOTTED SHINER	1			0.01	

Appendix D.

Event Code	Bin	Enter	Bank	Post Lock	Q1	Outlet	Date	Year	Family	Genus name	Species name	Species	Count	Size Class	Forward
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS		3	0.01	
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CENTRARCHIDAE	Leomis	macrolepis	BLUEGILL		1	6	0.11
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CATOSTOMIDAE	ichthys	bubalus	SMALLMOUTH BUFFALO		1	9	0.2
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CATOSTOMIDAE	ichthys	bubalus	SMALLMOUTH BUFFALO		1	12	0.53
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CATOSTOMIDAE	ichthys	bubalus	SMALLMOUTH BUFFALO		1	14	0.87
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CATOSTOMIDAE	ichthys	bubalus	SMALLMOUTH BUFFALO		3	10	0.92
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CATOSTOMIDAE	ichthys	bubalus	SMALLMOUTH BUFFALO		1	10	0.295
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CATOSTOMIDAE	ichthys	bubalus	SMALLMOUTH BUFFALO		19	14	9.255
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	Pseudocottus	diversus	CHANNEL CATFISH		2	4	
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	Pseudocottus	diversus	CHANNEL CATFISH		2	4	
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	PERCIDAE	Percid	carpio	LOGP EEL		9	6	1.236
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	PERCIDAE	Percid	carpio	LOGP EEL		9	6	1.368
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	PERCIDAE	Percid	carpio	LOGP EEL		9	6	1.368
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	MORONIDAE	Morone	chrysops	WHITE BASS		3	7	0.268
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	MORONIDAE	Morone	chrysops	WHITE BASS		2	10	0.423
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	MORONIDAE	Morone	chrysops	WHITE BASS		2	10	0.423
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	MORONIDAE	Morone	chrysops	WHITE BASS		1	11	0.3
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	Pseudocottus	diversus	CHANNEL CATFISH		7	3	0.1
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		3	11	0.69
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		2	10	0.45
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	PERCIDAE	Sander	caracensis	SAUGER		2	8	1.8
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		8	9	0.89
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		7	2	0.02
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		3	12	0.2
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		5	12	2.3
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		5	6	1.6
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		7	10	0.94
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	Pseudocottus	diversus	CHANNEL CATFISH		5	2	
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		2	3	
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		17	2	
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		15	10	4.075
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		13	8	1.45
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		10	11	3.5
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		10	7	1
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		4	9	0.15
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		4	2	0.2
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		1	6	0.036
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		2	14	1.35
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		1	11	0.355
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		1	17	0.96
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		1	15	0.84
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	SCIAENIDAE	Anodirus	gummus	FRESHWATER DRUM		1	13	0.45
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	PERCIDAE	Sander	vireus	WALLEYE		1	17	1
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	PERCIDAE	Sander	vireus	WALLEYE		1	13	0.47
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	PERCIDAE	Sander	vireus	WALLEYE		1	12	0.33
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	PERCIDAE	Sander	vireus	WALLEYE		5	9	0.545
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		2	15	1.365
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CLUPIDAE	Dorosoma	capedianum	FRESHWATER DRUM		2	6	1.47
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CLUPIDAE	Dorosoma	capedianum	FRESHWATER DRUM		2	6	1.47
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CYPRINIDAE	Cyprinus	carpio	COMMON CARP		4	18	8.44
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CYPRINIDAE	Cyprinus	carpio	COMMON CARP		4	11	1.67
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CYPRINIDAE	Cyprinus	carpio	COMMON CARP		3	17	5.21
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CYPRINIDAE	Cyprinus	carpio	COMMON CARP		1	23	3.94
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CYPRINIDAE	Cyprinus	carpio	COMMON CARP		1	21	2.6
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CYPRINIDAE	Cyprinus	carpio	COMMON CARP		1	20	2.71
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CYPRINIDAE	Cyprinus	carpio	COMMON CARP		1	10	0.38
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	ICTALURIDAE	ichthys	punctulatus	CHANNEL CATFISH		4	16	2.9
MONT C8901	317 OHIO		MONTGOMERY	RT	FALSE	05-Sep-89	1989	CLUPIDAE	Dorosoma	capedianum	GIZZARD SHAD		19	11	4.62

Appendix D.

Event Code	Bin	Event Bank	Box Lock	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70	Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80	Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100	Q101	Q102	Q103	Q104	Q105	Q106	Q107	Q108	Q109	Q110	Q111	Q112	Q113	Q114	Q115	Q116	Q117	Q118	Q119	Q120	Q121	Q122	Q123	Q124	Q125	Q126	Q127	Q128	Q129	Q130	Q131	Q132	Q133	Q134	Q135	Q136	Q137	Q138	Q139	Q140	Q141	Q142	Q143	Q144	Q145	Q146	Q147	Q148	Q149	Q150	Q151	Q152	Q153	Q154	Q155	Q156	Q157	Q158	Q159	Q160	Q161	Q162	Q163	Q164	Q165	Q166	Q167	Q168	Q169	Q170	Q171	Q172	Q173	Q174	Q175	Q176	Q177	Q178	Q179	Q180	Q181	Q182	Q183	Q184	Q185	Q186	Q187	Q188	Q189	Q190	Q191	Q192	Q193	Q194	Q195	Q196	Q197	Q198	Q199	Q200	Q201	Q202	Q203	Q204	Q205	Q206	Q207	Q208	Q209	Q210	Q211	Q212	Q213	Q214	Q215	Q216	Q217	Q218	Q219	Q220	Q221	Q222	Q223	Q224	Q225	Q226	Q227	Q228	Q229	Q230	Q231	Q232	Q233	Q234	Q235	Q236	Q237	Q238	Q239	Q240	Q241	Q242	Q243	Q244	Q245	Q246	Q247	Q248	Q249	Q250	Q251	Q252	Q253	Q254	Q255	Q256	Q257	Q258	Q259	Q260	Q261	Q262	Q263	Q264	Q265	Q266	Q267	Q268	Q269	Q270	Q271	Q272	Q273	Q274	Q275	Q276	Q277	Q278	Q279	Q280	Q281	Q282	Q283	Q284	Q285	Q286	Q287	Q288	Q289	Q290	Q291	Q292	Q293	Q294	Q295	Q296	Q297	Q298	Q299	Q300	Q301	Q302	Q303	Q304	Q305	Q306	Q307	Q308	Q309	Q310	Q311	Q312	Q313	Q314	Q315	Q316	Q317	Q318	Q319	Q320	Q321	Q322	Q323	Q324	Q325	Q326	Q327	Q328	Q329	Q330	Q331	Q332	Q333	Q334	Q335	Q336	Q337	Q338	Q339	Q340	Q341	Q342	Q343	Q344	Q345	Q346	Q347	Q348	Q349	Q350	Q351	Q352	Q353	Q354	Q355	Q356	Q357	Q358	Q359	Q360	Q361	Q362	Q363	Q364	Q365	Q366	Q367	Q368	Q369	Q370	Q371	Q372	Q373	Q374	Q375	Q376	Q377	Q378	Q379	Q380	Q381	Q382	Q383	Q384	Q385	Q386	Q387	Q388	Q389	Q390	Q391	Q392	Q393	Q394	Q395	Q396	Q397	Q398	Q399	Q400	Q401	Q402	Q403	Q404	Q405	Q406	Q407	Q408	Q409	Q410	Q411	Q412	Q413	Q414	Q415	Q416	Q417	Q418	Q419	Q420	Q421	Q422	Q423	Q424	Q425	Q426	Q427	Q428	Q429	Q430	Q431	Q432	Q433	Q434	Q435	Q436	Q437	Q438	Q439	Q440	Q441	Q442	Q443	Q444	Q445	Q446	Q447	Q448	Q449	Q450	Q451	Q452	Q453	Q454	Q455	Q456	Q457	Q458	Q459	Q460	Q461	Q462	Q463	Q464	Q465	Q466	Q467	Q468	Q469	Q470	Q471	Q472	Q473	Q474	Q475	Q476	Q477	Q478	Q479	Q480	Q481	Q482	Q483	Q484	Q485	Q486	Q487	Q488	Q489	Q490	Q491	Q492	Q493	Q494	Q495	Q496	Q497	Q498	Q499	Q500	Q501	Q502	Q503	Q504	Q505	Q506	Q507	Q508	Q509	Q510	Q511	Q512	Q513	Q514	Q515	Q516	Q517	Q518	Q519	Q520	Q521	Q522	Q523	Q524	Q525	Q526	Q527	Q528	Q529	Q530	Q531	Q532	Q533	Q534	Q535	Q536	Q537	Q538	Q539	Q540	Q541	Q542	Q543	Q544	Q545	Q546	Q547	Q548	Q549	Q550	Q551	Q552	Q553	Q554	Q555	Q556	Q557	Q558	Q559	Q560	Q561	Q562	Q563	Q564	Q565	Q566	Q567	Q568	Q569	Q570	Q571	Q572	Q573	Q574	Q575	Q576	Q577	Q578	Q579	Q580	Q581	Q582	Q583	Q584	Q585	Q586	Q587	Q588	Q589	Q590	Q591	Q592	Q593	Q594	Q595	Q596	Q597	Q598	Q599	Q600	Q601	Q602	Q603	Q604	Q605	Q606	Q607	Q608	Q609	Q610	Q611	Q612	Q613	Q614	Q615	Q616	Q617	Q618	Q619	Q620	Q621	Q622	Q623	Q624	Q625	Q626	Q627	Q628	Q629	Q630	Q631	Q632	Q633	Q634	Q635	Q636	Q637	Q638	Q639	Q640	Q641	Q642	Q643	Q644	Q645	Q646	Q647	Q648	Q649	Q650	Q651	Q652	Q653	Q654	Q655	Q656	Q657	Q658	Q659	Q660	Q661	Q662	Q663	Q664	Q665	Q666	Q667	Q668	Q669	Q670	Q671	Q672	Q673	Q674	Q675	Q676	Q677	Q678	Q679	Q680	Q681	Q682	Q683	Q684	Q685	Q686	Q687	Q688	Q689	Q690	Q691	Q692	Q693	Q694	Q695	Q696	Q697	Q698	Q699	Q700	Q701	Q702	Q703	Q704	Q705	Q706	Q707	Q708	Q709	Q710	Q711	Q712	Q713	Q714	Q715	Q716	Q717	Q718	Q719	Q720	Q721	Q722	Q723	Q724	Q725	Q726	Q727	Q728	Q729	Q730	Q731	Q732	Q733	Q734	Q735	Q736	Q737	Q738	Q739	Q740	Q741	Q742	Q743	Q744	Q745	Q746	Q747	Q748	Q749	Q750	Q751	Q752	Q753	Q754	Q755	Q756	Q757	Q758	Q759	Q760	Q761	Q762	Q763	Q764	Q765	Q766	Q767	Q768	Q769	Q770	Q771	Q772	Q773	Q774	Q775	Q776	Q777	Q778	Q779	Q780	Q781	Q782	Q783	Q784	Q785	Q786	Q787	Q788	Q789	Q790	Q791	Q792	Q793	Q794	Q795	Q796	Q797	Q798	Q799	Q800	Q801	Q802	Q803	Q804	Q805	Q806	Q807	Q808	Q809	Q810	Q811	Q812	Q813	Q814	Q815	Q816	Q817	Q818	Q819	Q820	Q821	Q822	Q823	Q824	Q825	Q826	Q827	Q828	Q829	Q830	Q831	Q832	Q833	Q834	Q835	Q836	Q837	Q838	Q839	Q840	Q841	Q842	Q843	Q844	Q845	Q846	Q847	Q848	Q849	Q850	Q851	Q852	Q853	Q854	Q855	Q856	Q857	Q858	Q859	Q860	Q861	Q862	Q863	Q864	Q865	Q866	Q867	Q868	Q869	Q870	Q871	Q872	Q873	Q874	Q875	Q876	Q877	Q878	Q879	Q880	Q881	Q882	Q883	Q884	Q885	Q886	Q887	Q888	Q889	Q890	Q891	Q892	Q893	Q894	Q895	Q896	Q897	Q898	Q899	Q900	Q901	Q902	Q903	Q904	Q905	Q906	Q907	Q908	Q909	Q910	Q911	Q912	Q913	Q914	Q915	Q916	Q917	Q918	Q919	Q920	Q921	Q922	Q923	Q924	Q925	Q926	Q927	Q928	Q929	Q930	Q931	Q932	Q933	Q934	Q935	Q936	Q937	Q938	Q939	Q940	Q941	Q942	Q943	Q944	Q945	Q946	Q947	Q948	Q949	Q950	Q951	Q952	Q953	Q954	Q955	Q956	Q957	Q958	Q959	Q960	Q961	Q962	Q963	Q964	Q965	Q966	Q967	Q968	Q969	Q970	Q971	Q972	Q973	Q974	Q975	Q976	Q977	Q978	Q979	Q980	Q981	Q982	Q983	Q984	Q985	Q986	Q987	Q988	Q989	Q990	Q991	Q992	Q993	Q994	Q995	Q996	Q997	Q998	Q999	Q1000	Q1001	Q1002	Q1003	Q1004	Q1005	Q1006	Q1007	Q1008	Q1009	Q1010	Q1011	Q1012	Q1013	Q1014	Q1015	Q1016	Q1017	Q1018	Q1019	Q1020	Q1021	Q1022	Q1023	Q1024	Q1025	Q1026	Q1027	Q1028	Q1029	Q1030	Q1031	Q1032	Q1033	Q1034	Q1035	Q1036	Q1037	Q1038	Q1039	Q1040	Q1041	Q1042	Q1043	Q1044	Q1045	Q1046	Q1047	Q1048	Q1049	Q1050	Q1051	Q1052	Q1053	Q1054	Q1055	Q1056	Q1057	Q1058	Q1059	Q1060	Q1061	Q1062	Q1063	Q1064	Q1065	Q1066	Q1067	Q1068	Q1069	Q1070	Q1071	Q1072	Q1073	Q1074	Q1075	Q1076	Q1077	Q1078	Q1079	Q1080	Q1081	Q1082	Q1083	Q1084	Q1085	Q1086	Q1087	Q1088	Q1089	Q1090	Q1091	Q1092	Q1093	Q1094	Q1095	Q1096	Q1097	Q1098	Q1099	Q1100	Q1101	Q1102	Q1103	Q1104	Q1105	Q1106	Q1107	Q1108	Q1109	Q1110	Q1111	Q1112	Q1113	Q1114	Q1115	Q1116	Q1117	Q1118	Q1119	Q1120	Q1121	Q1122	Q1123	Q1124	Q1125	Q1126	Q1127	Q1128	Q1129	Q1130	Q1131	Q1132	Q1133	Q1134	Q1135	Q1136	Q1137	Q1138	Q1139	Q1140	Q1141	Q1142	Q1143	Q1144	Q1145	Q1146	Q1147	Q1148	Q1149	Q1150	Q1151	Q1152	Q1153	Q1154	Q1155	Q1156	Q1157	Q1158	Q1159	Q1160	Q1161	Q1162	Q1163	Q1164	Q1165	Q1166	Q1167	Q1168	Q1169	Q1170	Q1171	Q1172	Q1173	Q1174	Q1175	Q1176	Q1177	Q1178	Q1179	Q1180	Q1181	Q1182	Q1183	Q1184	Q1185	Q1186	Q1187	Q1188	Q1189	Q1190	Q1191	Q1192	Q1193	Q1194	Q1195	Q1196	Q1197	Q1198	Q1199	Q1200	Q1201	Q1202	Q1203	Q1204	Q1205	Q1206	Q1207	Q1208	Q1209	Q1210	Q1211	Q1212	Q1213	Q1214	Q1215	Q1216	Q1217	Q1218	Q1219	Q1220	Q1221	Q1222	Q1223	Q1224	Q1225	Q1226	Q1227	Q1228	Q1229	Q1230	Q1231	Q1232	Q1233	Q1234	Q1235	Q1236	Q1237	Q1238	Q1239	Q1240	Q1241	Q1242	Q1243	Q1244	Q1245	Q1246	Q1247	Q1248	Q1249	Q1250	Q1251	Q1252	Q1253	Q1254	Q1255	Q1256	Q1257	Q1258	Q1259	Q1260	Q1261	Q1262	Q1263	Q1264	Q1265	Q1266	Q1267	Q1268	Q1269	Q1270	Q1271	Q1272	Q1273	Q1274	Q1275	Q1276	Q1277	Q1278	Q1279	Q1280	Q1281	Q1282	Q1283	Q1284	Q1285	Q1286	Q1287	Q1288	Q1289	Q1290	Q1291	Q1292	Q1293	Q1294	Q1295	Q1296	Q1297	Q1298	Q1299	Q1300	Q1301	Q1302	Q1303	Q1304	Q1305	Q1306	Q1307	Q1308	Q1309	Q1310	Q1311	Q1312	Q1313	Q1314	Q1315	Q1316	Q1317	Q1318	Q1319	Q1320	Q1321	Q1322	Q1323	Q1324	Q1325	Q1326	Q1327	Q1328	Q1329	Q1330	Q1331	Q1332	Q1333	Q1334	Q1335	Q1336	Q1337
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Appendix D.

Event Code	Rm	River Bank	Pool Lock	Cl	Outfall	C Date	Year	Family	Genus Name	Species Name	Species	Count	Size Class	Weight
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	14	10	3.45
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	4	14	3.42
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	4	7	0.29
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	MORONIDAE	Morone	chryseus	WHITE BASS	9	16	2.78
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	chryseus	FRESHWATER DRUM	8	16	1.65
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	MORONIDAE	Morone	chryseus	WHITE BASS	16	8	1.65
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	chryseus	FRESHWATER DRUM	1	20	3.45
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	18	2.88
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	13	0.75
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	9	0.18
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	3	9	0.01
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	PERCIDAE	Sander	canadensis	SALGER	3	9	0.3
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	2	16	2.02
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	SCIAENIDAE	Aplodinotus	brevoortis	SMALLMOUTH REDHORSE	2	7	0.15
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CATOSTOMIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	12	0.48
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	11	0.33
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	6	0.03
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	5	0.03
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	3	10	0.84
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	2	0.001
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	13	0.44
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Ambloplites	rupestris	ROCK BASS	1	7	0.15
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	3	0.002
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CATOSTOMIDAE	Microstoma	brevoortis	SMALLMOUTH REDHORSE	1	6	0.05
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CATOSTOMIDAE	Microstoma	brevoortis	SMALLMOUTH REDHORSE	9	9	1.75
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CATOSTOMIDAE	Microstoma	brevoortis	SMALLMOUTH REDHORSE	4	8	0.64
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	ICTALURIDAE	Ichthyolus	punctatus	CHANNEL CATFISH	1	11	0.28
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	PERCIDAE	Sander	canadensis	SALGER	1	10	0.18
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CATOSTOMIDAE	Carpiontes	carpio	RIVER CARP-SUCKER	1	13	0.59
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CENTRARCHIDAE	Lepomis	sp	LEPOMIS SPP	6	15	7.01
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CENTRARCHIDAE	Cyprinus	carpio	COMMON CARP	3	2	0.002
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CENTRARCHIDAE	Cyprinus	carpio	COMMON CARP	9	14	8.47
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	12	0.69
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Cyprinus	carpio	COMMON CARP	6	17	10.62
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	14	0.65
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	5	16	7.67
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	3	18	5.67
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	3	13	2.35
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	12	1.1
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	20	2.96
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	19	2.71
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Cyprinus	capedarum	COMMON CARP	1	11	0.33
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	3	9	0.47
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	3	8	0.3
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Cyprinus	carpio	COMMON CARP	1	21	3.24
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-92	1992	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	53	4	1.013
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	14	0.74
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	15	0.84
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	15	0.85
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Dorosoma	capedarum	GIZZARD SHAD	10	11	3.267
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	15	0.905
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	15	0.92
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	13	1.12
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	13	1.2
MONT C3201	317	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Aplodinotus	gunners	FRESHWATER DRUM	1	16	1.34

Appendix D

Event Code	Rm	River	Bank	Pool	Lock	Cl	Duffel	C-Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	Knight
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CATOSTOMIDAE	Ictalurus	bulbulus	SMALLMOUTH BUFFALO	1	14		1
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CATOSTOMIDAE	Ictalurus	bulbulus	SMALLMOUTH BUFFALO	1	13	0.83	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CATOSTOMIDAE	Ictalurus	bulbulus	SMALLMOUTH BUFFALO	1	13	0.805	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CENTRARCHIDAE	Lepisosteus	macrochirus	BLUEGILL	1	4	0.025	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	20	3.16	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	anogenus	COMMON SHINER	1	10	0.18	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	1	10	0.95	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	1	10	0.375	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Ambloplites	grunniens	FRESHWATER DRUM	1	11	0.505	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	1	12	0.34	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	3	3	0.055	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	carpio	COMMON CARP	80	2	0.062	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	1	20	2.7	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	chrysops	WHITE BASS	5	5	0.03	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	storeriana	COMMON SHINER	1	3	0.005	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Macrhybopsis	storeriana	SILVER CHUB	1	2	0.001	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	storeriana	SILVER CHUB	23	3	0.058	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	storeriana	EMERALD SHINER	2	4	0.011	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	storeriana	EMERALD SHINER	2	4	0.011	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	storeriana	EMERALD SHINER	2	4	0.011	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	storeriana	EMERALD SHINER	2	4	0.011	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	3	6	0.21	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CLUPEDAE	Dorosoma	cepedanum	GIZZARD SHAD	28	7	2.28	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	205	3	0.794	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	16	1.04	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	17	1.1	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	17	1.37	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	18	1.46	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	18	1.49	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	19	1.4	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	19	1.55	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	1	6	0.055	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	53	4	0.425	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	1	5	0.18	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Pseudocottus	elavus	FLATHEAD CATFISH	1	2	0.001	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Pseudocottus	elavus	FLATHEAD CATFISH	1	7	0.055	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Pseudocottus	elavus	FLATHEAD CATFISH	3	6	0.2	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Pseudocottus	elavus	FLATHEAD CATFISH	5	3	0.022	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	1	3	0.015	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	1	4	0.02	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	107	2	0.084	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	ICTALURIDAE	Ictalurus	punctatus	CHANNEL CATFISH	40	2	0.051	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	PERCIDAE	Percina	capitata	CHANNEL DARTER	1	2		
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	PERCIDAE	Ambloplites	grunniens	FRESHWATER DRUM	1	8	0.15	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	PERCIDAE	Sander	virgatus	WALLEYE	1	13	0.305	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	PERCIDAE	Sander	virgatus	WALLEYE	1	12	0.42	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	PERCIDAE	Sander	virgatus	WALLEYE	1	14	0.45	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	PERCIDAE	Sander	virgatus	WALLEYE	1	7	0.095	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	PERCIDAE	Sander	virgatus	WALLEYE	1	11	0.31	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	9	3	0.021	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	PERCIDAE	Sander	carolinensis	SAUGER	1	10	0.2	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	SCIAENIDAE	Ambloplites	grunniens	FRESHWATER DRUM	1	9	0.25	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	11	2	0.095	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	9	4	0.27	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	7	3	0.1	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	6	4	0.095	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	5	5	0.28	
MONTL03601	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1995	MORONIDAE	Morone	chrysops	WHITE BASS	5	5	0.27	

Appendix D

Event Code	Emt	Event Rank	Prod Lock	Q	Outfall	C Date	Year	Family	Genus name	Species name	Species	Count	Size Class	Keywords
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	MORONIDAE	Morone	chrysops	WHITE BASS	4	5	0.115
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Sander	carolinensis	SAUGER	1	1	0.29
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	10	0.275
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Pimephales	notatus	BLUNTNOSE MINNOW	2	2	0.003
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	HIOCTIDAE	Hiodon	tergisus	MOONEYE	1	5	0.04
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	2	
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	4	0.005
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	7	0.05
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	9	0.1
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	9	0.102
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	9	0.105
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	10	0.175
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	9	0.2
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	pinnatus	FRESHWATER DRUM	1	11	0.225
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	11	0.25
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	11	0.31
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.23
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.225
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.205
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	15	0.9
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	9	0.12
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.95
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.55
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	12	0.81
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.61
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.68
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.83
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	13	0.925
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	11	0.46
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.89
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CLUPIDAE	Dorosoma	cepedianum	GIZZARD SHAD	433	3	4.762
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	0.92
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.04
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	15	1.05
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.3
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	16	1.3
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Ichthyol	punctatus	CHANNEL CATFISH	1	16	0.945
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	14	0.95
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.33
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	11	0.43
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	11	0.405
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	11	0.4
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	11	0.36
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	11	0.33
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	11	0.3
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	12	0.55
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.35
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.8
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.3
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.3
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.28
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.275
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.27
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.255
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.25
MONTL03601	31.7	OHIO	MONTGOMERY	RT	FALSE	07-Sep-95	1955	SCIAENIDAE	Aplodinotus	günthers	FRESHWATER DRUM	1	10	0.355

Appendix D.

Event Code	Rm	River	Bank	Pool	Look	CI	Outfall	C-Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	kgweight
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	14	0.7	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	13	0.4	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	19	2.12	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	12	0.45	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	12	0.41	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	12	0.35	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	16	2.05	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	16	1.4	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	13	0.41	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	16	0.375	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	13	0.455	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	20	0.505	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	20	2.55	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	14	0.58	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	12	0.295	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	14	0.75	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	16	1.85	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	16	1.85	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	19	1.68	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	15	0.81	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	18	1.45	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	17	2.14	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	17	2.02	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	17	1.95	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	17	1.9	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	CYPRINIDAE	Oyrinus	carpo	COMMON CARP	1	17	1.84	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	07-Sep-95	1955	ICTALURIDAE	Italcatus	punctatus	CHANNEL CATFISH	1	13	0.63	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.2	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.276	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.22	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.22	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.23	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.238	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.24	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	10	0.22	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	10	0.2	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.21	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	canadensis	SAUGER	1	10	0.15	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	9	0.204	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	vireus	WALLEYE	1	21	1.07	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	vireus	WALLEYE	1	15	0.87	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	vireus	WALLEYE	1	14	0.74	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	vireus	WALLEYE	1	14	0.97	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	vireus	WALLEYE	1	13	0.97	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	vireus	WALLEYE	1	13	0.495	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	vireus	WALLEYE	1	13	0.468	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	vireus	WALLEYE	1	8	0.065	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	gumms	WALLEYE	1	8	0.08	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	5	0.19	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	MORONIDAE	Morone	chrysops	WHITE BASS	1	5	0.04	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	SCIAENIDAE	Aplodinotus	gumms	FRESHWATER DRUM	1	7	0.085	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	canadensis	SAUGER	1	9	0.14	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	canadensis	SAUGER	1	7	0.05	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	canadensis	SAUGER	1	6	0.04	
MONTL3501	317	OHO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	PERCIDAE	Sander	canadensis	SAUGER	1	6	0.039	

Appendix D

Event Code	Sm	River Bank	Pool	Lock	Q	Outfall	C Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	Knowledge
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	4		4	0.036
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		12	0.685
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		15	0.56
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		16	1.44
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		16	1.32
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		15	1.28
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		15	1.1
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		15	1.05
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		15	1.05
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		13	0.735
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		13	0.735
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	591		4	3.98
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		15	0.948
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		14	1.2
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		14	1
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		14	0.85
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		14	0.82
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		14	0.85
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		13	1
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1		15	1.02
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		13	0.8
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		14	1.008
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		14	1.004
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		14	0.96
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		14	0.93
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		14	0.89
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	2		3	0.068
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		13	0.86
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	SCIAENIDAE	Anodiniotus	gummius	FRESHWATER DRUM	66		4	0.522
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		13	0.76
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		13	0.74
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		13	0.7
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		13	0.65
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		12	0.53
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		12	0.46
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		14	0.86
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Dorosoma	cephedianum	GIZZARD SHAD	1		13	0.56
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	18		3	0.035
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CLUPEIDAE	Alosa	chrysotis	SKIP JACK HERRING	14		6	0.49
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CLUPEIDAE	Pomoxis	gramma	BLACK GRAPPIE	5		5	0.105
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CENTRARCHIDAE	Pomoxis	gramma	BLACK GRAPPIE	1		9	0.29
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CENTRARCHIDAE	Pomoxis	gramma	BLACK GRAPPIE	1		8	0.2
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1		9	0.28
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CENTRARCHIDAE	Micropterus	dobsoni	SMALLMOUTH BASS	1		8	0.148
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		15	0.94
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CENTRARCHIDAE	Lepomis	microchirus	BLUEGILL	1		5	0.052
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		15	0.99
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		13	0.8
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		15	1.1
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		15	1.13
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		15	1.08
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CATOSTOMIDAE	Ichtyos	bulabalus	SMALLMOUTH BUFFALO	1		15	1.05
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	MORONIDAE	Morone	chrysops	WHITE BASS	1		4	0.01
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CLUPEIDAE	Dorosoma	cephedianum	GIZZARD SHAD	1		9	0.11
MONTL03701	31.7	OHIO	MONTGOMERY	RT	FALSE	RT	04-Sep-97	1997	CENTRARCHIDAE	Lepomis	microchirus	BLUEGILL	1		5	0.06

Appendix D

Event Code	Rm	River	Bank	Pool	Lock	G	Outfall	C Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	Knights
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	14	0.702	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	13	0.552	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	17	1	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	16	1.16	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	12	1.02	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	16	0.98	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	15	1.03	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	17	1.32	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	15	0.8	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	18	1.3	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	14	0.632	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	14	0.67	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	14	0.638	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	14	0.562	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	14	0.561	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	13	0.6	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	13	0.61	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	9	0.042	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	MORONIDAE	Morone	chrysops	WHITE BASS	1	3		
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CLUPEIDAE	Dorosoma	cepedianum	GIZZARD SHAD	3	2	0.068	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	1	14	0.668	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.25	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	1	11	0.295	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	1	10	0.27	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	1	7	0.1	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	punctatus	CHANNEL CATFISH	1	17	1.2	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	1	7	0.062	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	1	14	0.64	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	1	5	0.04	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	332	5	0.83	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	21	0.8	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	21	2.31	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	19	1.25	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	18	1.78	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	18	1.57	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	1	7	0.07	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	20	2.64	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	punctatus	CHANNEL CATFISH	1	8	0.12	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	7	0.048	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	7	0.042	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	7	0.04	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	6	0.04	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	6	0.03	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	9	0.03	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	23	2.8	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.95	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	19	2.365	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	19	1.94	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	18	1.81	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	18	1.88	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	18	1.59	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.54	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	CYPRINIDAE	Pygidictis	olvaris	FLAT-HEAD CATFISH	128	3	0.46	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	HIOCCONTIDAE	Hiodon	tergisus	MOONIEYE	1	10	0.21	
MONTL03701	317	OHIO		MONTGOMERY		RT	FALSE	04-Sep-97	1997	ICTALURIDAE	Idiculus	punctatus	CHANNEL CATFISH	1	12	0.36	

Appendix D

Event Code	Rm	River/Bank	Pool/Lock	Cl	Outfall	C-Date	Year	Family	Scientific name	Species name	Count	Size	Class	Weight
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	4	8	0.41	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	5	12	2.41	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	ICTALURIDAE	Ictalurus punctatus	CHANNEL CATFISH	4	11	1.03	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	6	7	0.44	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	2	11	0.77	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	9	6	0.37	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	10	10	2.61	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	11	9	1.99	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	12	11	4.32	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	266	3	1.15	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CLUPEIDAE	Alosa chrysochloris	SKIPJACK HERRING	5	8	0.48	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	6	5	0.185	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	13	0.67	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	PERCIDAE	Sander vitreus	WALLEYE	1	8	0.1	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	19	1.72	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	8	0.1	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	12	0.5	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	13	0.57	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	3	4	0.02	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	13	0.86	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	PERCIDAE	Sander canadensis	SAUGER	1	15	0.79	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	15	0.97	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	15	1	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	16	1.5	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	2	2	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	2	3	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	2	7	0.05	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	SCIAENIDAE	Aplodinotus grunniens	FRESHWATER DRUM	1	13	0.58	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis macrochirus	BLUEGILL	1	5	0.03	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Micropterus dolomieu	SMALL MOUTH BASS	1	8	0.102	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Lepomis microlophus	SMALL MOUTH BUFFALO	1	13	1.38	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Lepomis microlophus	SMALL MOUTH BUFFALO	1	16	1.35	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Micropterus salmoides	GOLDEN REDHORSE	1	13	0.5	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis gibbosus	PUMPKINSEED	5	3	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis macrochirus	BLUEGILL	1	2	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis macrochirus	BLUEGILL	1	2	0.006	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis macrochirus	BLUEGILL	1	4	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Lepomis microlophus	SMALL MOUTH BUFFALO	1	15	1.25	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Lepomis microlophus	SMALL MOUTH BUFFALO	1	4	0.025	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Lepomis microlophus	SMALL MOUTH BUFFALO	1	15	1.15	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis microlophus	BLUEGILL	1	6	0.07	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis microlophus	BLUEGILL	1	6	0.1	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis microlophus	BLUEGILL	2	2	0.011	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis microlophus	BLUEGILL	2	3	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis microlophus	BLUEGILL	3	2	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis microlophus	SMALL MOUTH BASS	1	3	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Micropterus dolomieu	SMALL MOUTH BASS	1	4	0.001	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Micropterus dolomieu	SMALL MOUTH BASS	1	5	0.01	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CENTRARCHIDAE	Lepomis microlophus	BLUEGILL	1	4	0.02	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Lepomis microlophus	SMALL MOUTH BUFFALO	1	13	0.7	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Lepomis microlophus	SMALL MOUTH BUFFALO	1	13	0.74	
MONTLC9001	317	OHIO	MONTGOMERY	RT	FALSE	03-Sep-99	1999	CATOSTOMIDAE	Carpiotus carpio	RIVER CARP/SUCKER	1	14	0.8	

Appendix D

Event Code	Rm	River	Bank	Pool	Lock	CI	Outfall	C-Date	Year	Family	Genus name	Species name	Species	Count	Size	Class	Known
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-99	1999	CLUPEIDAE	Dorosoma	cededunum	GIZZARD SHAD	5		4	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-99	1999	CLUPEIDAE	Dorosoma	cededunum	GIZZARD SHAD	4		4	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-99	1999	CENTRARCHIDAE	Micropterus	domineum	SMALLMOUTH BASS	2		5	0.001
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-99	1999	CLUPEIDAE	Dorosoma	cededunum	GIZZARD SHAD	1	12	0.35	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-99	1999	CLUPEIDAE	Alosa	crispicollis	SAF-JACK HERRING	117		4	0.9
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-99	1999	CLUPEIDAE	Dorosoma	cededunum	GIZZARD SHAD	1		4	0.01
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-99	1999	CLUPEIDAE	Dorosoma	cededunum	GIZZARD SHAD	1		4	0.01
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Notropis	vaccellus	MIMIC SHINER	49	3	0.033	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	11	0.28	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	11	0.3	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	11	0.31	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	11	0.2	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	10	0.25	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	12	0.35	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	10	0.2	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	11	0.25	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Notropis	vaccellus	MIMIC SHINER	3	2	0.001	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Notropis	affinis	EMERALD SHINER	6	3	0.019	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Notropis	affinis	EMERALD SHINER	6	3	0.019	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Notropis	affinis	EMERALD SHINER	6	3	0.019	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Oryzias	carpio	COMMON CARP	21	20	2.096	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Oryzias	carpio	COMMON CARP	1	19	2.006	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Oryzias	carpio	COMMON CARP	1	18	2.2	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Oryzias	carpio	COMMON CARP	1	16	1.2	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	12	0.4	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	16	0.8	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Oryzias	carpio	COMMON CARP	1	15	0.7	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Oryzias	carpio	COMMON CARP	1	14	0.75	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CYPRINIDAE	Oryzias	carpio	COMMON CARP	1	17	1.059	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.55	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.54	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.54	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	16	0.7	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	15	0.81	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	15	0.8	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	15	0.75	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	14	0.6	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	15	0.85	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.88	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	12	0.41	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.5	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.49	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.483	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.46	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	13	0.4	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	12	0.5	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	12	0.46	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	12	0.46	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	ICTALURIDAE	Ichthyos	punctatus	CHANNEL CATFISH	1	14	0.55	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CATOSTOMIDAE	Ichthyos	bucalus	SMALLMOUTH BUFFALO	1	15	1.1	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CATOSTOMIDAE	Ichthyos	bucalus	SMALLMOUTH BUFFALO	1	13	0.88	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CATOSTOMIDAE	Ichthyos	bucalus	SMALLMOUTH BUFFALO	1	19	2.5	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CATOSTOMIDAE	Ichthyos	bucalus	SMALLMOUTH BUFFALO	1	18	2.1	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CATOSTOMIDAE	Ichthyos	bucalus	SMALLMOUTH BUFFALO	1	17	1.6	
MONTLC3601	317	OHIO	MONTGOMERY			RT	FALSE	08-Sep-01	2001	CATOSTOMIDAE	Ichthyos	bucalus	SMALLMOUTH BUFFALO	1	16	1.6	

Appendix D.

Event Code	Run	River	Bank	Pool	Lock	Q	Outfall	C-Date	Year	Family	Gender	Species name	Species	Count	Size	Class	Comments
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	PERCIDAE	Male	canadensis	SALGER	2	11	0.6	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	PERCIDAE	Female	canadensis	SALGER	1	12	0.4	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	PERCIDAE	Female	canadensis	LOGPERCH	3	5	0.016	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	MORONIDAE	Male	capricornis	WHITE BASS	1	7	0.15	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	PERCIDAE	Female	capricornis	LOGPERCH	1	5	0.016	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	9	3	0.05	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	2	3	0.006	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	MORONIDAE	Male	capricornis	WHITE BASS	11	5	0.35	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	MORONIDAE	Male	capricornis	WHITE BASS	14	3	0.1	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	MORONIDAE	Male	capricornis	WHITE BASS	6	1.25		
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	MORONIDAE	Male	capricornis	WHITE BASS	19	4	0.01	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	PERCIDAE	Female	capricornis	YELLOW PERCH	1	4	0.01	
317.LC090801	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	05-Sep-01	2001	PERCIDAE	Female	capricornis	YELLOW PERCH	1	4	0.014	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	1	22	3	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	canadensis	SALGER	10	10	0.185	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	punctatus	CHANNEL CATFISH	12	13	5.55	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	vitreus	WALLEYE	1	13	0.36	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	vitreus	WALLEYE	19	19	1.475	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	canadensis	SALGER	15	1.05		
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	canadensis	SALGER	2	12	0.625	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	canadensis	SALGER	1	14	0.49	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	canadensis	SALGER	1	13	0.34	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	vitreus	WALLEYE	1	16	0.81	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	MORONIDAE	Male	capricornis	WHITE BASS	1	3	0.05	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	5	3	0.063	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	1	11	0.3	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	2	2	0.022	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	1	21	2.5	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	1	17	1.4	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	1	16	1.2	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	1	6	0.05	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	vitreus	WALLEYE	2	15	1.21	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	4	5	0.15	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	4	19	7.875	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	CHYRIDAE	Male	spectator	SPOTFIN SHINER	1	2	0.001	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	1	3	0.01	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	ICTALURIDAE	Male	olvaris	FLATHEAD CATFISH	1	2	0.01	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	10	10	2.37	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	7	13	4.21	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	7	12	3.425	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	7	9	1.41	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	6	8	0.775	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	5	17	8.115	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	11	11	3.61	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	14	14	4.415	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	PERCIDAE	Male	vitreus	WALLEYE	3	14	1.425	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	15	15	3.835	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	4	3	0.009	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	2	1	0.001	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	1	22	1.6	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	1	20	2.875	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	1	20	2.675	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	1	18	1.84	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	1	7	0.1	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	1	4	0.005	
317.LC091803	317	OHIO	MONTGOMERY	RT	FALSE	RT	FALSE	18-Sep-03	2003	SCAENIDAE	Male	gurners	FRESHWATER DRUM	1	16	6.45	

Appendix D.

Event Code	Emt	Event Bank	Prod Lock	Q	Outfit	C Date	Year	Family	Genus name	Species name	Stocks	Card	Size	Class	Keywords
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	19	5	0.669		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	17	15	20.269		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	11	17	19.642		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	11	6	0.624		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	8	14	7.936		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	6	13	4.363		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	5	18	10.011		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	9	10	10.4		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	3	12	1.796		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	7	8	0.192		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Ichtylus	lucialis	SMALLMOUTH BUFFALO	12	17	16.019		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Micropterus	gymnurus	CHANNEL CATFISH	12	17	16.019		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Micropterus	gymnurus	CHANNEL CATFISH	1	3	0.068		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	CATOSTOMIDAE	Percina	caprodes	QUILLBACK	8	5	0.261		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Percina	caprodes	LOGPERCH	4	4	0.026		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Percina	canadensis x vitreus	LOGPERCH	1	8	0.124		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis	SALGUYE	5	5	0.206		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis	SAUGER	4	11	1.214		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis	SAUGER	4	7	0.377		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis	SAUGER	4	6	0.244		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis	SAUGER	2	12	1.156		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis	SAUGER	2	4	0.055		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis	SAUGER	1	13	0.474		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis	SAUGER	1	6	0.091		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Percina	caprodes	CHANNEL DARTER	1	2	0.031		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	Ichtylus	parcatus	LOGPERCH	13	3	0.056		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	Ichtylus	parcatus	CHANNEL CATFISH	10	16	10.197		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Percina	caprodes	LOGPERCH	4	4	0.033		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Percina	canadensis x vitreus	SAUGUYE	10	6	0.7		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Percina	caprodes	LOGPERCH	1	5	0.016		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Percina	flavescens	YELLOW PERCH	1	4	0.01		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	sp	MORONE SP	30	4	0.29		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	sp	MORONE SP	6	3	0.037		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	sp	MORONE SP	5	4	0.048		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	sp	MORONE SP	3	3	0.019		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	chrysops	WHITE BASS	67	7	7.753		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	chrysops	WHITE BASS	6	9	4.362		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	chrysops	WHITE BASS	49	9	4.223		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	chrysops	WHITE BASS	22	5	0.897		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MONIDAE	Morone	chrysops	WHITE BASS	1	13	0.634		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Percina	caprodes	LOGPERCH	1	12	0.776		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	9	3	0.042		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	2	20	4.75		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	320	3	2.023		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	126	4	1.05		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	19	11	6		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	15	12	7.094		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	14	10	3		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	12	16	15.59		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	10	10	19		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	10	13	10.5		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	9	15	10.5		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	7	5	0.15		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	6	14	5.8		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	5	17	8.25		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis x vitreus	SAUGUYE	2	8	0.293		
031 TL0362705	317 OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	SCAENIDAE	Aplodinotus	gymnurus	FRESHWATER DRUM	2	21	5.5		

Appendix D

Exhibit Code	Rm	River	Bank	Pool	Lock	CI	Outfall	C-Date	Year	Family	Genus name	Species name	Species	Count	Size Class	Knowledge
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	canadensis x vitreus	SALGUEYE	4	7	0.334
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	SCIAENIDAE	Alopiolus	gummers	FRESHWATER DRUM	2	9	0.4
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	SCIAENIDAE	Alopiolus	gummers	FRESHWATER DRUM	2	23	3.75
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	SCIAENIDAE	Alopiolus	gummers	FRESHWATER DRUM	2	3	0.006
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	vitreus	WALLEYE	5	6	0.627
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	vitreus	WALLEYE	2	1	0.001
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	vitreus	WALLEYE	2	8	0.305
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	vitreus	WALLEYE	1	18	1.473
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	vitreus	WALLEYE	1	15	1.031
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	vitreus	WALLEYE	1	14	0.775
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	vitreus	WALLEYE	1	13	0.512
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	PERCIDAE	Sander	vitreus	WALLEYE	1	11	0.341
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	MORONIDAE	Morone	american	WHITE PERCH	6	3	0.047
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	SCIAENIDAE	Alopiolus	gummers	FRESHWATER DRUM	3	19	6.75
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	3	9	0.585
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	MORONIDAE	Morone	chrysops	WHITE BASS	1	4	0.01
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	5	16	6.384
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	22	5.263
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	11	0.79
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	30	2.0
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	19	5.654
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	2	18	3.883
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	17	1.782
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Cyprinus	carpio	COMMON CARP	1	9	0.248
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Dorosoma	capedarum	GIZZARD SHAD	11760	3	58.03
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	488	4	4.36
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	319	4	2.785
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Notropis	hudsonius	SPOTTAIL SHINER	1	3	0.004
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Dorosoma	capedarum	GIZZARD SHAD	14	5	0.24
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Notropis	volucellus	MIMIC SHINER	18	1	0.004
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	2	3	0.01
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	10	1	0.31
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	12	0.73
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	1	4	0.08
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Alosa	chrysichthys	SKIP JACK HERRING	3	5	0.049
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Alosa	chrysichthys	SKIP JACK HERRING	1	8	0.15
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Pomoxis	microlepis	BLACK GRAPPIE	1	6	0.029
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CENTRARCHIDAE	Pomoxis	microlepis	BLACK GRAPPIE	1	9	0.344
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CENTRARCHIDAE	Pomoxis	microlepis	BLACK GRAPPIE	1	8	0.233
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CENTRARCHIDAE	Micropterus	punctulatus	SPOTTED BASS	1	4	0.012
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CENTRARCHIDAE	Micropterus	domineus	SMALL MOUTH BASS	2	6	0.119
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CENTRARCHIDAE	Micropterus	domineus	SMALL MOUTH BASS	1	5	0.043
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Dorosoma	capedarum	GIZZARD SHAD	27	5	0.489
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Identulus	punctatus	CHANNEL CATFISH	71	15	5.856
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CENTRARCHIDAE	Micropterus	domineus	SMALL MOUTH BASS	3	4	0.022
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	MORONIDAE	Morone	american	WHITE PERCH	4	3	0.022
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	MORONIDAE	Morone	american	WHITE PERCH	2	3	0.018
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Pidiclus	olvaris	FLATHEAD CATFISH	36	3	0.196
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Pidiclus	olvaris	FLATHEAD CATFISH	10	4	0.089
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Pidiclus	olvaris	FLATHEAD CATFISH	3	3	0.067
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Pidiclus	olvaris	FLATHEAD CATFISH	1	11	0.37
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Pidiclus	olvaris	FLATHEAD CATFISH	1	8	0.12
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Pidiclus	olvaris	FLATHEAD CATFISH	1	6	0.056
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Identulus	punctatus	CHANNEL CATFISH	118	4	1.287
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Identulus	punctatus	CHANNEL CATFISH	47	5	0.715
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CLUPEIDAE	Identulus	punctatus	CHANNEL CATFISH	19	3	0.107
031.TL0692705	317	OHIO	MONTGOMERY			RT	FALSE	27-Sep-05	2005	CYPRINIDAE	Notropis	antherinus	EMERALD SHINER	17	3	0.059

Appendix D.

Event Code	Em	Fixed Bank	Pool Lock	QT	Outfall	C Date	Year	Family	Genus name	Species name	Species	Court	Size	Class	Weight
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	8	12	3.4	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	MORONIDAE	Morone	americanus	WHITE PERCH	21	4	0.253	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	6	14	4.38	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	5	18	8.252	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	3	19	5.793	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	3	10	0.794	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	3	4	0.03	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	2	11	0.63	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	2	9	0.304	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	1	22	3.428	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	1	21	0.95	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	trispus	CHANNEL CATFISH	1	7	0.078	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	HYDONTIDAE	Hydrotis	volucellus	MIMIC SHINER	169	2	0.101	
031.7LC092705	31.7	OHIO	MONTGOMERY	RT	FALSE	27-Sep-05	2005	ICTALURIDAE	lctalurus	punctatus	CHANNEL CATFISH	11	13	6.261	

Appendix E.
Pennsylvania-listed Fish

Rmi	Pool Lock	Species	PA Status
1.6	EMSWORTH	LONGNOSE GAR	SC
1.6	EMSWORTH	RIVER REDHORSE	SC
1.6	EMSWORTH	SMALLMOUTH BUFFALO	T
2.2	EMSWORTH	CHANNEL DARTER	T
2.2	EMSWORTH	LONGNOSE GAR	SC
2.2	EMSWORTH	RIVER REDHORSE	SC
2.2	EMSWORTH	SMALLMOUTH BUFFALO	T
2.5	EMSWORTH	BROOK SILVERSIDE	SC
2.5	EMSWORTH	LONGNOSE GAR	SC
2.5	EMSWORTH	RIVER REDHORSE	SC
2.5	EMSWORTH	SILVER CHUB	E
2.5	EMSWORTH	SMALLMOUTH BUFFALO	T
3.8	EMSWORTH	RIVER REDHORSE	SC
3.8	EMSWORTH	SILVER CHUB	E
3.8	EMSWORTH	SMALLMOUTH BUFFALO	T
4.9	EMSWORTH	LONGNOSE GAR	SC
4.9	EMSWORTH	RIVER REDHORSE	SC
4.9	EMSWORTH	SILVER CHUB	E
4.9	EMSWORTH	SMALLMOUTH BUFFALO	T
5.1	EMSWORTH	RIVER REDHORSE	SC
5.1	EMSWORTH	SMALLMOUTH BUFFALO	T
5.5	EMSWORTH	SMALLMOUTH BUFFALO	T
6.6	DASHIELDS	SMALLMOUTH BUFFALO	T
6.9	DASHIELDS	LONGNOSE GAR	SC
6.9	DASHIELDS	SMALLMOUTH BUFFALO	T
7.0	DASHIELDS	BLUEBREAST DARTER	T
7.0	DASHIELDS	CHANNEL DARTER	T
7.0	DASHIELDS	LONGEAR SUNFISH	E
7.0	DASHIELDS	RIVER REDHORSE	SC
7.0	DASHIELDS	SMALLMOUTH BUFFALO	T
8.0	DASHIELDS	BROOK SILVERSIDE	SC
8.0	DASHIELDS	MOONEYE	T
8.0	DASHIELDS	RIVER REDHORSE	SC
8.0	DASHIELDS	SILVER CHUB	E
8.0	DASHIELDS	SMALLMOUTH BUFFALO	T
8.6	DASHIELDS	SILVER CHUB	E
8.6	DASHIELDS	SMALLMOUTH BUFFALO	T
8.7	DASHIELDS	LONGNOSE GAR	SC
8.7	DASHIELDS	RIVER REDHORSE	SC
8.7	DASHIELDS	SMALLMOUTH BUFFALO	T
9.5	DASHIELDS	SILVER CHUB	E
9.5	DASHIELDS	SMALLMOUTH BUFFALO	T
9.9	DASHIELDS	RIVER REDHORSE	SC
9.9	DASHIELDS	SMALLMOUTH BUFFALO	T
10.4	DASHIELDS	MOONEYE	T
10.4	DASHIELDS	SMALLMOUTH BUFFALO	T
11.9	DASHIELDS	MOONEYE	T
11.9	DASHIELDS	SMALLMOUTH BUFFALO	T
13.4	MONTGOMERY	BROOK SILVERSIDE	SC
13.4	MONTGOMERY	MOONEYE	T
13.4	MONTGOMERY	SILVER CHUB	E

Appendix E.
Pennsylvania-listed Fish

Rmi	Pool Lock	Species	PA Status
13.4	MONTGOMERY	SMALLMOUTH BUFFALO	T
14.9	MONTGOMERY	CHANNEL DARTER	T
14.9	MONTGOMERY	MOONEYE	T
14.9	MONTGOMERY	RIVER REDHORSE	SC
14.9	MONTGOMERY	SILVER CHUB	E
14.9	MONTGOMERY	SKIPJACK HERRING	T
14.9	MONTGOMERY	SMALLMOUTH BUFFALO	T
15.3	MONTGOMERY	LONGEAR SUNFISH	E
15.3	MONTGOMERY	LONGNOSE GAR	SC
15.3	MONTGOMERY	SMALLMOUTH BUFFALO	T
16.8	MONTGOMERY	CHANNEL DARTER	T
16.8	MONTGOMERY	LONGNOSE GAR	SC
16.8	MONTGOMERY	RIVER REDHORSE	SC
16.8	MONTGOMERY	SILVER CHUB	E
16.8	MONTGOMERY	SKIPJACK HERRING	T
16.8	MONTGOMERY	SMALLMOUTH BUFFALO	T
17.4	MONTGOMERY	CHANNEL DARTER	T
17.4	MONTGOMERY	LONGNOSE GAR	SC
17.4	MONTGOMERY	MOONEYE	T
17.4	MONTGOMERY	RIVER REDHORSE	SC
17.4	MONTGOMERY	SMALLMOUTH BUFFALO	T
17.9	MONTGOMERY	LONGNOSE GAR	SC
17.9	MONTGOMERY	RIVER REDHORSE	SC
17.9	MONTGOMERY	SMALLMOUTH BUFFALO	T
19.5	MONTGOMERY	LONGNOSE GAR	SC
19.5	MONTGOMERY	SILVER CHUB	E
19.5	MONTGOMERY	SKIPJACK HERRING	T
19.5	MONTGOMERY	SMALLMOUTH BUFFALO	T
21.6	MONTGOMERY	BROOK SILVERSIDE	SC
21.6	MONTGOMERY	CHANNEL DARTER	T
21.6	MONTGOMERY	MOONEYE	T
21.6	MONTGOMERY	SILVER CHUB	E
21.6	MONTGOMERY	SKIPJACK HERRING	T
21.6	MONTGOMERY	SMALLMOUTH BUFFALO	T
21.9	MONTGOMERY	BROOK SILVERSIDE	SC
21.9	MONTGOMERY	SILVER CHUB	E
21.9	MONTGOMERY	SMALLMOUTH BUFFALO	T
22.6	MONTGOMERY	CHANNEL DARTER	T
22.6	MONTGOMERY	MOONEYE	T
22.6	MONTGOMERY	REDFIN SHINER	E
22.6	MONTGOMERY	RIVER REDHORSE	SC
22.6	MONTGOMERY	RIVER SHINER	E
22.6	MONTGOMERY	SILVER CHUB	E
22.6	MONTGOMERY	SMALLMOUTH BUFFALO	T
24.3	MONTGOMERY	LONGNOSE GAR	SC
24.3	MONTGOMERY	SILVER CHUB	E
24.3	MONTGOMERY	SMALLMOUTH BUFFALO	T
24.6	MONTGOMERY	LONGNOSE GAR	SC
24.6	MONTGOMERY	SILVER CHUB	E
24.8	MONTGOMERY	CHANNEL DARTER	T
24.8	MONTGOMERY	SILVER CHUB	E

Appendix E.
Pennsylvania-listed Fish

Rmi	Pool Lock	Species	PA_Status
24.8	MONTGOMERY	SMALLMOUTH BUFFALO	T
25.0	MONTGOMERY	SKIPJACK HERRING	T
25.0	MONTGOMERY	SMALLMOUTH BUFFALO	T
26.0	MONTGOMERY	LONGNOSE GAR	SC
26.0	MONTGOMERY	SILVER CHUB	E
26.0	MONTGOMERY	SMALLMOUTH BUFFALO	T
26.3	MONTGOMERY	CHANNEL DARTER	T
26.3	MONTGOMERY	LONGNOSE GAR	SC
26.3	MONTGOMERY	MOONEYE	T
26.3	MONTGOMERY	RIVER REDHORSE	SC
26.3	MONTGOMERY	RIVER SHINER	E
26.3	MONTGOMERY	SILVER CHUB	E
26.3	MONTGOMERY	SKIPJACK HERRING	T
26.3	MONTGOMERY	SMALLMOUTH BUFFALO	T
26.6	MONTGOMERY	RIVER REDHORSE	SC
26.6	MONTGOMERY	RIVER SHINER	E
26.6	MONTGOMERY	SILVER CHUB	E
26.6	MONTGOMERY	SKIPJACK HERRING	T
26.6	MONTGOMERY	SMALLMOUTH BUFFALO	T
27.8	MONTGOMERY	LONGNOSE GAR	SC
27.8	MONTGOMERY	MOONEYE	T
27.8	MONTGOMERY	RIVER REDHORSE	SC
27.8	MONTGOMERY	SILVER CHUB	E
27.8	MONTGOMERY	SMALLMOUTH BUFFALO	T
29.5	MONTGOMERY	LONGNOSE GAR	SC
29.5	MONTGOMERY	SILVER CHUB	E
29.5	MONTGOMERY	SKIPJACK HERRING	T
29.5	MONTGOMERY	SMALLMOUTH BUFFALO	T
29.7	MONTGOMERY	CHANNEL DARTER	T
29.7	MONTGOMERY	LONGNOSE GAR	SC
29.7	MONTGOMERY	RIVER REDHORSE	SC
29.7	MONTGOMERY	SILVER CHUB	E
29.7	MONTGOMERY	SKIPJACK HERRING	T
29.7	MONTGOMERY	SMALLMOUTH BUFFALO	T
30.0	MONTGOMERY	CHANNEL DARTER	T
30.0	MONTGOMERY	LONGEAR SUNFISH	E
30.0	MONTGOMERY	MOONEYE	T
30.0	MONTGOMERY	RIVER SHINER	E
30.0	MONTGOMERY	SILVER CHUB	E
30.0	MONTGOMERY	SKIPJACK HERRING	T
30.0	MONTGOMERY	SMALLMOUTH BUFFALO	T
30.4	MONTGOMERY	SILVER CHUB	E
30.4	MONTGOMERY	SKIPJACK HERRING	T
30.4	MONTGOMERY	SMALLMOUTH BUFFALO	T
31.9	NEW CUMBERLAND	LONGNOSE GAR	SC
31.9	NEW CUMBERLAND	RIVER REDHORSE	SC
31.9	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
32.5	NEW CUMBERLAND	CHANNEL DARTER	T
32.5	NEW CUMBERLAND	SILVER CHUB	E
32.5	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
32.8	NEW CUMBERLAND	LONGNOSE GAR	SC

Appendix E.
Pennsylvania-listed Fish

Rmi	Pool Lock	Species	PA Status
32.8	NEW CUMBERLAND	SILVER CHUB	E
34.3	NEW CUMBERLAND	LONGNOSE GAR	SC
34.3	NEW CUMBERLAND	MOONEYE	T
34.3	NEW CUMBERLAND	SILVER CHUB	E
34.3	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
34.9	NEW CUMBERLAND	LONGNOSE GAR	SC
34.9	NEW CUMBERLAND	MOONEYE	T
34.9	NEW CUMBERLAND	RIVER REDHORSE	SC
34.9	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
35.1	NEW CUMBERLAND	BROOK SILVERSIDE	SC
35.1	NEW CUMBERLAND	LONGNOSE GAR	SC
35.1	NEW CUMBERLAND	MOONEYE	T
35.1	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
35.9	NEW CUMBERLAND	MOONEYE	T
35.9	NEW CUMBERLAND	SKIPJACK HERRING	T
35.9	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
36.5	NEW CUMBERLAND	CHANNEL DARTER	T
36.5	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
36.8	NEW CUMBERLAND	SILVER CHUB	E
37.2	NEW CUMBERLAND	LONGNOSE GAR	SC
37.2	NEW CUMBERLAND	SILVER CHUB	E
37.2	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
37.3	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
37.7	NEW CUMBERLAND	LONGNOSE GAR	SC
37.7	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
38.0	NEW CUMBERLAND	MOONEYE	T
38.0	NEW CUMBERLAND	SILVER CHUB	E
38.0	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
38.4	NEW CUMBERLAND	MOONEYE	T
38.4	NEW CUMBERLAND	SILVER CHUB	E
38.4	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
39.2	NEW CUMBERLAND	LONGNOSE GAR	SC
39.2	NEW CUMBERLAND	SILVER CHUB	E
39.2	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T
39.9	NEW CUMBERLAND	SILVER CHUB	E
39.9	NEW CUMBERLAND	SMALLMOUTH BUFFALO	T

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1992OR11	11	1992	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	244	OHIO
1992OR11	11	1992	HD	REF	COLEOPTERA	ELMIDAE	STENELMIS	CRENATA	1	OHIO
1992OR11	11	1992	HD	REF	DIPTERA	CHIRONOMIDAE	COELOTANYPUS	SP.	1	OHIO
1992OR11	11	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	VERRIENSIS	2	OHIO
1992OR11	11	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTENDIPES	NEOMODESTUS	6	OHIO
1992OR11	11	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTENDIPES	NERVOSUS	39	OHIO
1992OR11	11	1992	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	13	OHIO
1992OR11	11	1992	HD	REF	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP.	1	OHIO
1992OR11	11	1992	HD	REF	DIPTERA	CHIRONOMIDAE	THIENEMANNIMYIA	SP.	1	OHIO
1992OR11	11	1992	HD	REF	HAPLOTAXIDA	NAIDIDAE	BRANCHIURA	SOWERBYI	2	OHIO
1992OR11	11	1992	HD	REF	HAPLOTAXIDA	TUBIFICIDAE	CYRNELLUS	SP.	2	OHIO
1992OR11	11	1992	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	SP.	SP.	59	OHIO
1992OR11	11	1992	HD	REF	TRICHLADIDA	GAMMARIDAE	GAMMARUS	FASCIATUS	93	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	ABLARESOMYIA	PARAJANTA	544	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SYLVESTRIS	3	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	VERRIENSIS	8	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTENDIPES	NEOMODESTUS	9	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTENDIPES	NERVOSUS	26	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	110	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	30	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	SCALAEUM	14	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP.	5	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	CHIRONOMIDAE	THIENEMANNIMYIA	SP.	2	OHIO
1992OR30.4	30.4	1992	HD	REF	DIPTERA	HEPTAGENIIDAE	STENONEMA	TERMINATUM	3	OHIO
1992OR30.4	30.4	1992	HD	REF	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	1	OHIO
1992OR30.4	30.4	1992	HD	REF	EPEMEROPTERA	NAIDIDAE	SP.	SP.	5	OHIO
1992OR30.4	30.4	1992	HD	REF	HAPLOTAXIDA	TRICHOPTERA	CYRNELLUS	SP.	37	OHIO
1992OR30.4	30.4	1992	HD	REF	TRICHLADIDA	POLYCENTROPODIDAE	SP.	SP.	320	OHIO
1992OR30.4	30.4	1992	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	428	OHIO
1992OR31.8	31.8	1992	HD	REF	BIVALVIA	SPHAERIADAE	PISIDIUM	SP.	1	OHIO
1992OR31.8	31.8	1992	HD	REF	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP.	1	OHIO
1992OR31.8	31.8	1992	HD	REF	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	1	OHIO
1992OR31.8	31.8	1992	HD	REF	TRICHLADIDA	GAMMARIDAE	GAMMARUS	FASCIATUS	15	OHIO
1992OR5.6	5.6	1992	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	248	OHIO
1992OR5.6	5.6	1992	HD	REF	DIPTERA	CHIRONOMIDAE	ABLARESOMYIA	PARAJANTA	4	OHIO
1992OR5.6	5.6	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SYLVESTRIS	4	OHIO
1992OR5.6	5.6	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	VERRIENSIS	76	OHIO
1992OR5.6	5.6	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTENDIPES	NEOMODESTUS	116	OHIO
1992OR5.6	5.6	1992	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTENDIPES	NERVOSUS	20	OHIO
1992OR5.6	5.6	1992	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	140	OHIO
1992OR5.6	5.6	1992	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANTARSUS	SP.	72	OHIO
1992OR5.6	5.6	1992	HD	REF	DIPTERA	CHIRONOMIDAE	TRIBELOS	FUSCICORNE	4	OHIO
1992OR5.6	5.6	1992	HD	REF	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	8	OHIO
1992OR5.6	5.6	1992	HD	REF	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	1	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1992OR5.6	5.6	1992	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	SP	22	OHIO
1992OR5.6	5.6	1992	HD	REF	TRICHLADIDA			SP	340	OHIO
1992OR9.5	9.5	1992	HD	REF	AMPHIPODA		GAMMARUS	FASCIATUS	564	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		ABLATESMYIA	PARAJANTA	1	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		CRICOTOPUS	SYLVESTRIS	16	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		CHIRONOMIDAE	VERRENSIS	9	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		CHIRONOMIDAE	NERVOSUS	77	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		DIPTOTENDIPES	SP	3	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		GLYPOTENDIPES	ILLINOENSE	53	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		POLYPEDILUM	SP	3	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		TANYTARSUS	SP	4	OHIO
1992OR9.5	9.5	1992	HD	REF	DIPTERA		TRICORYTHODES	SP	2	OHIO
1992OR9.5	9.5	1992	HD	REF	EPHEMEROPTERA		NAIDAE	SP	1	OHIO
1992OR9.5	9.5	1992	HD	REF	HAPLOTAXIDA		CHEUMATOPSYCHE	SP	39	OHIO
1992OR9.5	9.5	1992	HD	REF	TRICHOPTERA		CYRNELLUS	SP	1	OHIO
1992OR9.5	9.5	1992	HD	REF	TRICHOPTERA			SP	8	OHIO
1992OR9.5	9.5	1992	HD	REF	TRICHLADIDA			SP	102	OHIO
1992OR9.5	9.5	1992	HD	REF	AMPHIPODA		GAMMARUS	FASCIATUS	10	OHIO
1997OR12.8	12.8	1997	HD	REF	GLADOCERA		SIDA	CRYSTALLINA	5	OHIO
1997OR12.8	12.8	1997	HD	REF	DIPTERA			SP	5	OHIO
1997OR12.8	12.8	1997	HD	REF	DIPTERA		CHIRONOMIDAE	CONCHAPELOPIA	490	OHIO
1997OR12.8	12.8	1997	HD	REF	DIPTERA		CHIRONOMIDAE	DICROTENDIPES	5	OHIO
1997OR12.8	12.8	1997	HD	REF	DIPTERA		CHIRONOMIDAE	NERVOSUS	1	OHIO
1997OR12.8	12.8	1997	HD	REF	DIPTERA		CHIRONOMIDAE	DISTINCTUS	1	OHIO
1997OR12.8	12.8	1997	HD	REF	EPHEMEROPTERA		STENACRON	INTERPUNCTATUM	3	OHIO
1997OR12.8	12.8	1997	HD	REF	EPHEMEROPTERA		TRICORYTHODES	SP	10	OHIO
1997OR12.8	12.8	1997	HD	REF	HAPLOTAXIDA		NAIS	COMMUNIS	7	OHIO
1997OR12.8	12.8	1997	HD	REF	TRICHOPTERA		HYDROPTILA	SP	24	OHIO
1997OR12.8	12.8	1997	HD	REF	TRICHOPTERA		CYRNELLUS	FRATERNUS	3	OHIO
1997OR12.8	12.8	1997	HD	REF	TRICHLADIDA		DUGESIA	TIGRINA	222	OHIO
1997OR14.8	14.8	1997	HD	REF	AMPHIPODA		GAMMARUS	FASCIATUS	940	OHIO
1997OR14.8	14.8	1997	HD	REF	GLADOCERA		SIDA	CRYSTALLINA	30	OHIO
1997OR14.8	14.8	1997	HD	REF	DIPTERA		CHIRONOMIDAE	SP	10	OHIO
1997OR14.8	14.8	1997	HD	REF	DIPTERA		ABLATESMYIA	MALLOCHI	10	OHIO
1997OR14.8	14.8	1997	HD	REF	DIPTERA		CONCHAPELOPIA	SP	10	OHIO
1997OR14.8	14.8	1997	HD	REF	DIPTERA		CRICOTOPUS	SP	530	OHIO
1997OR14.8	14.8	1997	HD	REF	DIPTERA		CHIRONOMIDAE	NERVOSUS	20	OHIO
1997OR14.8	14.8	1997	HD	REF	DIPTERA		DICROTENDIPES	DISTINCTUS	1	OHIO
1997OR14.8	14.8	1997	HD	REF	EPHEMEROPTERA		STENACRON	INTERPUNCTATUM	20	OHIO
1997OR14.8	14.8	1997	HD	REF	EPHEMEROPTERA		NAIS	COMMUNIS	40	OHIO
1997OR14.8	14.8	1997	HD	REF	HAPLOTAXIDA		NAIDAE	SIMPLEX	10	OHIO
1997OR14.8	14.8	1997	HD	REF	HAPLOTAXIDA		NAIS	SP	20	OHIO
1997OR14.8	14.8	1997	HD	REF	HIRUDINEA (NOT AN ORDER)			AMERICANA	110	OHIO
1997OR14.8	14.8	1997	HD	REF	HYDRIDAE		HYDRA	SP	140	OHIO
1997OR14.8	14.8	1997	HD	REF	TRICHOPTERA		HYDROPTILA	FRATERNUS	20	OHIO
1997OR14.8	14.8	1997	HD	REF	TRICHOPTERA		CYRNELLUS	SP	21	OHIO
1997OR14.8	14.8	1997	HD	REF	TRICHLADIDA		DUGESIA	TIGRINA		

Appendix F.

Event Code	Rim	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1997OR17	17	1997	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	162	OHIO
1997OR17	17	1997	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TREMULUS	1	OHIO
1997OR17	17	1997	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	103	OHIO
1997OR17	17	1997	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	1	OHIO
1997OR17	17	1997	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	1	OHIO
1997OR17	17	1997	HD	REF	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	1	OHIO
1997OR17	17	1997	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	4	OHIO
1997OR17	17	1997	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	28	OHIO
1997OR17.1	17.1	1997	HD	OUT	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	3	OHIO
1997OR17.1	17.1	1997	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TREMULUS	1	OHIO
1997OR17.1	17.1	1997	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	2	OHIO
1997OR17.1	17.1	1997	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	1	OHIO
1997OR17.1	17.1	1997	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	2	OHIO
1997OR17.1	17.1	1997	HD	OUT	HIRUDINEA (NOT AN ORDER)	NAIDIDAE	SP.	SP.	2	OHIO
1997OR17.1	17.1	1997	HD	OUT	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE	INCOMMODA	1	OHIO
1997OR17.1	17.1	1997	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	1	OHIO
1997OR19	19	1997	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	267	OHIO
1997OR19	19	1997	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TREMULUS	5	OHIO
1997OR19	19	1997	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	360	OHIO
1997OR19	19	1997	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	5	OHIO
1997OR19	19	1997	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	HALTERALE	5	OHIO
1997OR19	19	1997	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENONEMA	SP.	5	OHIO
1997OR19	19	1997	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	15	OHIO
1997OR19	19	1997	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	11	OHIO
1997OR19	19	1997	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	21	OHIO
1997OR19	19	1997	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	81	OHIO
1997OR2	2	1997	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	141	OHIO
1997OR2	2	1997	HD	REF	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP.	3	OHIO
1997OR2	2	1997	HD	REF	BASOMMATOPHORA	PLANORBIDAE	GYRAULUS	PARVUS	1	OHIO
1997OR2	2	1997	HD	REF	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	1	OHIO
1997OR2	2	1997	HD	REF	GLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	408	OHIO
1997OR2	2	1997	HD	REF	CYCLOPOIDA	SP.	SP.	SP.	1	OHIO
1997OR2	2	1997	HD	REF	DIPTERA	CHIRONOMIDAE	ABLATESMYIA	MALLOCHI	2	OHIO
1997OR2	2	1997	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TREMULUS	2	OHIO
1997OR2	2	1997	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	22	OHIO
1997OR2	2	1997	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	4	OHIO
1997OR2	2	1997	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANTARSUS	SP.	1	OHIO
1997OR2	2	1997	HD	REF	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	1	OHIO
1997OR2	2	1997	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	32	OHIO
1997OR2	2	1997	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP.	27	OHIO
1997OR2	2	1997	HD	REF	HAPLOTAXIDA	NAIDIDAE	RIPISTES	PARASITA	27	OHIO
1997OR2	2	1997	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	SP.	6	OHIO
1997OR2	2	1997	HD	REF	OSTRACODA (CLASS)	HYDROPTILIDAE	HYDROPTILA	SP.	3	OHIO
1997OR2	2	1997	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	21	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1997OR34	34	1997	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	1	OHIO
1997OR34	34	1997	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	4	OHIO
1997OR34	34	1997	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	9	OHIO
1997OR34	34	1997	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	BRETSCHERI	1	OHIO
1997OR34	34	1997	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	1	OHIO
1997OR34	34	1997	HD	REF	HIRUDINEA (NOT AN ORDER)	HYDROBIDAE	SOMATOGYRUS	SP.	4	OHIO
1997OR34	34	1997	HD	REF	NEOTAEINOGLLOSSA	PLANARIIDAE	DUGESIA	TIGRINA	1	OHIO
1997OR34	34	1997	HD	REF	TRICLADIDA	PLANARIIDAE	FASCIATUS	TIGRINA	8	OHIO
1997OR4.5	4.5	1997	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	CRYSTALLINA	157	OHIO
1997OR4.5	4.5	1997	HD	REF	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	25	OHIO
1997OR4.5	4.5	1997	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TREMULUS	15	OHIO
1997OR4.5	4.5	1997	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	435	OHIO
1997OR4.5	4.5	1997	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	90	OHIO
1997OR4.5	4.5	1997	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADUS	DISTINCTUS	15	OHIO
1997OR4.5	4.5	1997	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	10	OHIO
1997OR4.5	4.5	1997	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	5	OHIO
1997OR4.5	4.5	1997	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	25	OHIO
1997OR4.5	4.5	1997	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	92	OHIO
1997OR7	7	1997	HD	REF	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	20	OHIO
1997OR7	7	1997	HD	REF	DIPTERA	CHIRONOMIDAE	SP.	SP.	5	OHIO
1997OR7	7	1997	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	10	OHIO
1997OR7	7	1997	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	1040	OHIO
1997OR7	7	1997	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	30	OHIO
1997OR7	7	1997	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADUS	DISTINCTUS	10	OHIO
1997OR7	7	1997	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	6	OHIO
1997OR7	7	1997	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	SP.	5	OHIO
1997OR7	7	1997	HD	REF	NEMATODA			SP.	5	OHIO
1997OR7	7	1997	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	20	OHIO
1997OR7	7	1997	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	5	OHIO
1997OR7	7	1997	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	16	OHIO
1997OR9	9	1997	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	77	OHIO
1997OR9	9	1997	HD	REF	BASOMMATOPHORA	PLANORBIDAE	GYRAULUS	PARVUS	5	OHIO
1997OR9	9	1997	HD	REF	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	15	OHIO
1997OR9	9	1997	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	1040	OHIO
1997OR9	9	1997	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	10	OHIO
1997OR9	9	1997	HD	REF	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP.	30	OHIO
1997OR9	9	1997	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	7	OHIO
1997OR9	9	1997	HD	REF	ODONATA	COENAGRIONIDAE	ARGIA	SP.	5	OHIO
1997OR9	9	1997	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	TIGRINA	20	OHIO
1997OR9	9	1997	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	FASCIATUS	142	OHIO
1998OR12	12	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	CRYSTALLINA	30	OHIO
1998OR12	12	1998	HD	REF	GLADOCERA	SIDAE	SIDA	SP.	10	OHIO
1998OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	JANTA	17	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	8	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	119	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	144	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	93	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	25	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	76	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	144	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	8	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCHIRONOMUS	SP.	110	OHIO
1995OR12	12	1998	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANYTARSUS	SP.	8	OHIO
1995OR12	12	1998	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	10	OHIO
1995OR12	12	1998	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	24	OHIO
1995OR12.8	12.8	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	168	OHIO
1995OR12.8	12.8	1998	HD	REF	CLADOCERA			SP.	45	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE		SP.	5	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	5	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP.	15	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	TRIFASCIA	15	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	275	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	40	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	35	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	165	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	35	OHIO
1995OR12.8	12.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	25	OHIO
1995OR12.8	12.8	1998	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	17	OHIO
1995OR12.8	12.8	1998	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	AMERICANA	15	OHIO
1995OR12.8	12.8	1998	HD	REF	ODONATA	COENAGRIONIDAE	ARGIA	APICALIS	1	OHIO
1995OR12.8	12.8	1998	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	35	OHIO
1995OR12.8	12.8	1998	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	102	OHIO
1995OR20.6	20.6	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	219	OHIO
1995OR20.6	20.6	1998	HD	REF	CLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	50	OHIO
1995OR20.6	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE		SP.	15	OHIO
1995OR20.8	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	10	OHIO
1995OR20.6	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	489	OHIO
1995OR20.6	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	259	OHIO
1995OR20.6	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	38	OHIO
1995OR20.6	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	77	OHIO
1995OR20.6	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	48	OHIO
1995OR20.6	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	19	OHIO
1995OR20.6	20.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP.	10	OHIO
1995OR20.6	20.6	1998	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENONEMA	SP.	5	OHIO
1995OR20.6	20.6	1998	HD	REF	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	5	OHIO
1995OR20.8	20.6	1998	HD	REF	NEOTAEINOGLOSSA	HYDROBIIDAE	SOMATOGYRUS	SP.	5	OHIO
1995OR20.6	20.6	1998	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	65	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1998OR20.6	20.6	1998	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	17	OHIO
1998OR24.6	24.6	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	45	OHIO
1998OR24.6	24.6	1998	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	10	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE		SP	5	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	13	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	388	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	181	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	131	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	509	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	ILLINOENSE	13	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILLUM	SP	65	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCHEIRONOMUS	SP	1	OHIO
1998OR24.6	24.6	1998	HD	REF	DIPTERA	HEPTAGENIIDAE	SP	SP	5	OHIO
1998OR24.6	24.6	1998	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	OBTUSA	20	OHIO
1998OR24.6	24.6	1998	HD	REF	NEOTAEINOGLOSSA	NAIDIDAE	SOMATOGYRUS	SP	1	OHIO
1998OR24.6	24.6	1998	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	50	OHIO
1998OR24.6	24.6	1998	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	15	OHIO
1998OR26.4	26.4	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	24	OHIO
1998OR26.4	26.4	1998	HD	REF	DIPTERA	CHIRONOMIDAE		SP	3	OHIO
1998OR26.4	26.4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	5	OHIO
1998OR26.4	26.4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	45	OHIO
1998OR26.4	26.4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	64	OHIO
1998OR26.4	26.4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	443	OHIO
1998OR26.4	26.4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCHEIRONOMUS	SP	1	OHIO
1998OR26.4	26.4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	THIENEMANNIYA	SP	5	OHIO
1998OR26.4	26.4	1998	HD	REF	DIPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	3	OHIO
1998OR26.4	26.4	1998	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	AMERICANA	3	OHIO
1998OR26.4	26.4	1998	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	3	OHIO
1998OR26.4	26.4	1998	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	14	OHIO
1998OR28.8	28.8	1998	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	50	OHIO
1998OR28.8	28.8	1998	HD	OUT	GLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	60	OHIO
1998OR28.8	28.8	1998	HD	OUT	DIPTERA	CHIRONOMIDAE		SP	50	OHIO
1998OR28.8	28.8	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	316	OHIO
1998OR28.8	28.8	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	74	OHIO
1998OR28.8	28.8	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	56	OHIO
1998OR28.8	28.8	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	1395	OHIO
1998OR28.8	28.8	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	TRIBELOS	FUSCICORNE	19	OHIO
1998OR28.8	28.8	1998	HD	OUT	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	283	OHIO
1998OR28.8	28.8	1998	HD	OUT	TRICLAUIDA	PLANARIIDAE	DUGESIA	TIGRINA	10	OHIO
1998OR29.9A	29.9	1998	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	42	OHIO
1998OR29.9A	29.9	1998	HD	OUT	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP	3	OHIO
1998OR29.9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE		SP	40	OHIO
1998OR29.9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CONCHAPELOPIA	SP	1	OHIO
1998OR29.9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	5	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1995OR29 9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	16	OHIO
1995OR29 9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	30	OHIO
1995OR29 9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	521	OHIO
1995OR29 9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	20	OHIO
1995OR29 9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	PARACHIRONOMUS	SP	5	OHIO
1995OR29 9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	5	OHIO
1995OR29 9A	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	SEMYNOTHOCLADIUS	SEMIVIRENS	5	OHIO
1995OR29 9A	29.9	1998	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	13	OHIO
1995OR29 9A	29.9	1998	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENONEMA	INTEGRUM	13	OHIO
1995OR29 9A	29.9	1998	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENONEMA	TERMINATUM	29	OHIO
1995OR29 9A	29.9	1998	HD	OUT	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	1	OHIO
1995OR29 9A	29.9	1998	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	10	OHIO
1995OR29 9A	29.9	1998	HD	OUT	HIRUDINEA (NOT AN ORDER)			SP	7	OHIO
1995OR29 9A	29.9	1998	HD	OUT	TRICHOPTERA	HYDROPTILIDAE		SP	3	OHIO
1995OR29 9A	29.9	1998	HD	OUT	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	5	OHIO
1995OR29 9B	29.9	1998	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	55	OHIO
1995OR29 9B	29.9	1998	HD	OUT	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP	55	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE		SP	26	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	JANTA	4	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	26	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	16	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	8	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	35	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	351	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	4	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	ILLINOENSE	SP	4	OHIO
1995OR29 9B	29.9	1998	HD	OUT	DIPTERA	EMPIDIDAE	HEMERODROMIA	SP	3	OHIO
1995OR29 9B	29.9	1998	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	41	OHIO
1995OR29 9B	29.9	1998	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENONEMA	TERMINATUM	37	OHIO
1995OR29 9B	29.9	1998	HD	OUT	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	3	OHIO
1995OR29 9B	29.9	1998	HD	OUT	HAPLOTAXIDA	NAIDAE	DERO	SP	10	OHIO
1995OR29 9B	29.9	1998	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	SP	10	OHIO
1995OR29 9B	29.9	1998	HD	OUT	HAPLOTAXIDA	NAIDAE	ERPOBDELLA	PUNCTATA	3	OHIO
1995OR29 9B	29.9	1998	HD	OUT	PHARYNGOBOELLIDA	ERPOBDELLIDAE	CYRNELLUS	FRATERNUS	1	OHIO
1995OR29 9B	29.9	1998	HD	OUT	TRICHOPTERA	POLYCENTROPODIDAE	GAMMARUS	FASCIATUS	55	OHIO
1995OR2A	2	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS		241	OHIO
1995OR2A	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	1	OHIO
1995OR2A	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	6	OHIO
1995OR2A	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	23	OHIO
1995OR2A	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	7	OHIO
1995OR2A	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP	1	OHIO
1995OR2A	2	1998	HD	REF	TRICLADIDA	PLANARIIDAE	CUPA	FOREMANII	1	OHIO
1995OR2B	2	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	192	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1998OR2B	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	4	OHIO
1998OR2B	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	29	OHIO
1998OR2B	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	48	OHIO
1998OR2B	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	15	OHIO
1998OR2B	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	25	OHIO
1998OR2B	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	86	OHIO
1998OR2B	2	1998	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	2	OHIO
1998OR2B	2	1998	HD	REF	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	3	OHIO
1998OR2B	2	1998	HD	REF	NEOTAEINIGLOSSA	HYDROBIIDAE	SONATOGYRUS	SP	1	OHIO
1998OR2B	2	1998	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	12	OHIO
1998OR3.2	3.2	1998	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	67	OHIO
1998OR3.2	3.2	1998	HD	OUT	CLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	10	OHIO
1998OR3.2	3.2	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	JANTA	10	OHIO
1998OR3.2	3.2	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	25	OHIO
1998OR3.2	3.2	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	20	OHIO
1998OR3.2	3.2	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	10	OHIO
1998OR3.2	3.2	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	802	OHIO
1998OR3.2	3.2	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	130	OHIO
1998OR3.2	3.2	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	199	OHIO
1998OR3.2	3.2	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	5	OHIO
1998OR3.2	3.2	1998	HD	OUT	HAPLOTAXIDA	NAIDAE	DERO	SP	5	OHIO
1998OR3.2	3.2	1998	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	56	OHIO
1998OR3.2	3.2	1998	HD	OUT	HAPLOTAXIDA	NAIDAE	PRISTINA	LEIDYI	5	OHIO
1998OR3.2	3.2	1998	HD	OUT	ISOPODA	ASELLIDAE	LIRCEUS	SP	5	OHIO
1998OR3.2	3.2	1998	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	35	OHIO
1998OR3.2	3.2	1998	HD	OUT	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	310	OHIO
1998OR3.2	3.2	1998	HD	OUT	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	5	OHIO
1998OR32.5	32.5	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	123	OHIO
1998OR32.5	32.5	1998	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	36	OHIO
1998OR32.5	32.5	1998	HD	REF	CLADOCERA	CHIRONOMIDAE	SP	SP	75	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	5	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	29	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	78	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	19	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	349	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	155	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	58	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	175	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	49	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	29	OHIO
1998OR32.5	32.5	1998	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	29	OHIO
1998OR32.5	32.5	1998	HD	REF	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	1	OHIO
1998OR32.5	32.5	1998	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	AMERICANA	5	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1995OR32.5	32.5	1998	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP		220 OHIO
1995OR36	36	1998	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	8	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	CHIRONOMIDAE		SP	10	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	20	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	10	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	10	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	40	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	90	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	1140	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	30	OHIO
1995OR36	36	1998	HD	OUT	DIPTERA	NAIDAE	NAIS	COMMUNIS	15	OHIO
1995OR36	36	1998	HD	OUT	HIRUDINEA (NOT AN ORDER)			SP	5	OHIO
1995OR36	36	1998	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	5	OHIO
1995OR36	36	1998	HD	OUT	TRICHOPTERA	POLYCENTROPIDAE	CYRNELLUS	FRATERNUS	18	OHIO
1995OR36	36	1998	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	110	OHIO
1995OR36	36	1998	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	4	OHIO
1995OR37.8	37.8	1998	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	4	OHIO
1995OR37.8	37.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE		SP	30	OHIO
1995OR37.8	37.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	4	OHIO
1995OR37.8	37.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	32	OHIO
1995OR37.8	37.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	4	OHIO
1995OR37.8	37.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	23	OHIO
1995OR37.8	37.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	79	OHIO
1995OR37.8	37.8	1998	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	1	OHIO
1995OR37.8	37.8	1998	HD	REF	EPHEMEROPTERA	CAENIDAE	CAENIS	PUNCTATA	21	OHIO
1995OR37.8	37.8	1998	HD	REF	EPHEMEROPTERA	CAENIDAE	CAENIS	SP	1	OHIO
1995OR37.8	37.8	1998	HD	REF	EPHEMEROPTERA	HEPTAGENIDAE	STENACRON	INTERPUNCTATUM	1	OHIO
1995OR37.8	37.8	1998	HD	REF	ODONATA	COENAGRIONIDAE	ARGIA	APICALIS	1	OHIO
1995OR37.8	37.8	1998	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	130	OHIO
1995OR37.8	37.8	1998	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	49	OHIO
1995OR4	4	1998	HD	REF	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	3	OHIO
1995OR4	4	1998	HD	REF	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	13	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE		SP	13	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	JANTA	14	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CONCHAPELOPIA	SP	5	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	5	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	5	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	145	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	27	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NERVOSUS	32	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	113	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	14	OHIO
1995OR4	4	1998	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	5	OHIO
1995OR4	4	1998	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	AMERICANA	23	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1998OR4	4	1998	HD	REF	NEOTAENOGLOSSA	HYDROBIIDAE	SOMATOGYRUS	SP	5	OHIO
1998OR4	4	1998	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	150	OHIO
1998OR4	4	1998	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	21	OHIO
1998OR7	7	1998	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	FASCIATUS	56	OHIO
1998OR7	7	1998	HD	OUT	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	10	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE		SP	5	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	JANTA	20	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	5	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	37	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	15	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	73	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	480	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	10	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	5	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	CHIRONOMIDAE	THIENEMANNIYA	SP	10	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	EMERIIDAE	HEMERODROMIA	SP	5	OHIO
1998OR7	7	1998	HD	OUT	DIPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	10	OHIO
1998OR7	7	1998	HD	OUT	EPEMEROPTERA					
1998OR7	7	1998	HD	OUT	HAPLOTAXIDA	NAIDIDAE		SP	5	OHIO
1998OR7	7	1998	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	10	OHIO
1998OR7	7	1998	HD	OUT	ODONATA	COENAGRIONIDAE	ARGIA	COMMUNIS	5	OHIO
1998OR7	7	1998	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	95	OHIO
1998OR7	7	1998	HD	OUT	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	87	OHIO
1998OR7	7	1998	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	20	OHIO
1998OR24.65	24.65	1999	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	334	OHIO
1998OR24.65	24.65	1999	HD	REF	DIPTERA	CHIRONOMIDAE		SP	10	OHIO
1998OR24.65	24.65	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	44	OHIO
1998OR24.65	24.65	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	339	OHIO
1998OR24.65	24.65	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	44	OHIO
1998OR24.65	24.65	1999	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	1047	OHIO
1998OR24.65	24.65	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	136	OHIO
1998OR24.65	24.65	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	39	OHIO
1998OR24.65	24.65	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	214	OHIO
1998OR24.65	24.65	1999	HD	REF	NEMATODA			SP	10	OHIO
1998OR24.65	24.65	1999	HD	REF	OSTRACODA (CLASS)			SP	1	OHIO
1998OR24.65	24.65	1999	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	11	OHIO
1998OR24.75	24.75	1999	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	170	OHIO
1998OR24.75	24.75	1999	HD	REF	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	1006	OHIO
1998OR24.75	24.75	1999	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	13	OHIO
1998OR24.75	24.75	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	381	OHIO
1998OR24.75	24.75	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	102	OHIO
1998OR24.75	24.75	1999	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	698	OHIO
1998OR24.75	24.75	1999	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	76	OHIO
1998OR24.75	24.75	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE		SP	19	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count
1999OR24.75	24.75	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	3 OHIO
1999OR24.75	24.75	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	14 OHIO
1999OR24.75	24.75	1999	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	3 OHIO
1999OR24.8	24.8	1999	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	85 OHIO
1999OR24.8	24.8	1999	HD	REF	CLADOCERA	SIIDAE	SIDA	CRYSTALLINA	255 OHIO
1999OR24.8	24.8	1999	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	10 OHIO
1999OR24.8	24.8	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	25 OHIO
1999OR24.8	24.8	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	35 OHIO
1999OR24.8	24.8	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	276 OHIO
1999OR24.8	24.8	1999	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	231 OHIO
1999OR24.8	24.8	1999	HD	REF	DIPTERA	CHIRONOMIDAE	NAOCLADIUS	DISTINCTUS	40 OHIO
1999OR24.8	24.8	1999	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANYTARSUS	SP	25 OHIO
1999OR24.8	24.8	1999	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	1 OHIO
1999OR24.8	24.8	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	50 OHIO
1999OR24.8	24.8	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	20 OHIO
1999OR24.8	24.8	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	95 OHIO
1999OR24.8	24.8	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	PRISTINA	LEIDYI	5 OHIO
1999OR24.8	24.8	1999	HD	REF	HIRUDINEA (NOT AN ORDER)				5 OHIO
1999OR24.8	24.8	1999	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	25 OHIO
1999OR24.8	24.8	1999	HD	REF	TRICLADIDA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	5 OHIO
1999OR24.8	24.8	1999	HD	REF	AMPHIPODA	PLANARIIDAE	DUGESIA	TIGRINA	10 OHIO
1999OR24.85	24.85	1999	HD	REF	BASOMMATOPHORA	GAMMARIDAE	GAMMARUS	SP	113 OHIO
1999OR24.85	24.85	1999	HD	REF	BIVALVIA	PLANORBIDAE	MENETUS	DILATATUS	9 OHIO
1999OR24.85	24.85	1999	HD	REF	CLADOCERA	DREISSENIIDAE	DREISSENA	POLYMORPHA	42 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	SIIDAE	SIDA	CRYSTALLINA	14 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	7 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	10 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	210 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	10 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	120 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	NAOCLADIUS	DISTINCTUS	17 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	ORTHOCLADIUS	SP	17 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	FLAVUM	3 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	3 OHIO
1999OR24.85	24.85	1999	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANYTARSUS	SP	7 OHIO
1999OR24.85	24.85	1999	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	3 OHIO
1999OR24.85	24.85	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	44 OHIO
1999OR24.85	24.85	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	7 OHIO
1999OR24.85	24.85	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	30 OHIO
1999OR24.85	24.85	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	57 OHIO
1999OR24.85	24.85	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	PRISTINA	SP	2 OHIO
1999OR24.85	24.85	1999	HD	REF	OSTRACODA (CLASS)			SP	1 OHIO
1999OR24.85	24.85	1999	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	10 OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1999OR24.95	24.95	1999	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	11	OHIO
1999OR24.95	24.95	1999	HD	REF	TRICHLADIDA	PLANARIDAE	DUGESIA	TIGRINA	13	OHIO
1999OR24.9	24.9	1999	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	195	OHIO
1999OR24.9	24.9	1999	HD	REF	GLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	7	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	10	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	20	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	13	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	188	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	13	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	100	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	DISTINCTUS	7	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	SP	3	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	ORTHOCLODIUS	FLAVUM	7	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	SP	10	OHIO
1999OR24.9	24.9	1999	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANTYARSUS	SP	53	OHIO
1999OR24.9	24.9	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	7	OHIO
1999OR24.9	24.9	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	97	OHIO
1999OR24.9	24.9	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	HYDROPTILA	SP	3	OHIO
1999OR24.9	24.9	1999	HD	REF	TRICHOPTERA	HYDROPTILIDAE	DUGESIA	TIGRINA	37	OHIO
1999OR24.9	24.9	1999	HD	REF	TRICHLADIDA	PLANARIDAE	GAMMARUS	SP	392	OHIO
1999OR24.95	24.95	1999	HD	REF	AMPHIPODA	GAMMARIDAE	PHYSELLA	SP	17	OHIO
1999OR24.95	24.95	1999	HD	REF	BASOMMATOPHORA	PHYSIDAE	SIDA	CRYSTALLINA	1	OHIO
1999OR24.95	24.95	1999	HD	REF	GLADOCERA	SIDIDAE	CHIRONOMIDAE	SP	5	OHIO
1999OR24.95	24.95	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	20	OHIO
1999OR24.95	24.95	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	30	OHIO
1999OR24.95	24.95	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	264	OHIO
1999OR24.95	24.95	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	10	OHIO
1999OR24.95	24.95	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	588	OHIO
1999OR24.95	24.95	1999	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	DISTINCTUS	20	OHIO
1999OR24.95	24.95	1999	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	SP	30	OHIO
1999OR24.95	24.95	1999	HD	REF	EPEMEROPTERA	HEPTAGENIDAE	RHEOTANTYARSUS	INTERPUNCTATUM	1	OHIO
1999OR24.95	24.95	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	25	OHIO
1999OR24.95	24.95	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	30	OHIO
1999OR24.95	24.95	1999	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	45	OHIO
1999OR24.95	24.95	1999	HD	REF	HAPLOTAXIDA	TUBIFICIDAE	LIMNODRILUS	HOFFMEISTERI	5	OHIO
1999OR24.95	24.95	1999	HD	REF	ODONATA	COENAGRIONIDAE	ARGIA	SP	1	OHIO
1999OR24.95	24.95	1999	HD	REF	OSTRACODA (CLASS)			SP	5	OHIO
1999OR24.95	24.95	1999	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	200	OHIO
1999OR24.95	24.95	1999	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	202	OHIO
1999OR25	25	1999	HD	REF	GLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	90	OHIO
1999OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	SP	10	OHIO
1999OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	MALLOCHI	89	OHIO
1999OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	30	OHIO
1999OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	237	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	30	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	2486	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADUS	DISTINCTUS	30	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	RHOETANTYARSUS	SP	59	OHIO
1995OR25	25	1999	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	21	OHIO
1995OR25	25	1999	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	SP	47	OHIO
1995OR25	25	1999	HD	REF	HAPLOTAXIDA	NAIDAE	NAIDAE	COMMUNIS	5	OHIO
1995OR25	25	1999	HD	REF	ODONATA	COENAGRIONIDAE	ARGIA	SP	10	OHIO
1995OR25	25	1999	HD	REF	OSTRACODA (CLASS)				120	OHIO
1995OR25	25	1999	HD	REF	TRICHOPTERA				115	OHIO
1995OR25	25	1999	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	70	OHIO
1995OR25	25	1999	HD	REF	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	28	OHIO
1995OR25	25	1999	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	20	OHIO
1995OR25	25	1999	HD	REF	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP	33	OHIO
1995OR25	25	1999	HD	REF	GLADOCERA	CHYDORIDAE	CHYDORUS	SP	4	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	3	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CHIRONOMUS	SP	4	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	8	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	11	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	4	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADUS	DISTINCTUS	90	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	8	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	THIENEMANNIMYIA	SP	1	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	TIPULIDAE	LIMONIA	SP	2	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	1	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	NAIDAE		SP	13	OHIO
1995OR25	25	1999	HD	REF	EPHEMEROPTERA	NAIDAE	CHAETOGASTER	SP	7	OHIO
1995OR25	25	1999	HD	REF	HAPLOTAXIDA	NAIDAE	DERO	SP	7	OHIO
1995OR25	25	1999	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	SP	66	OHIO
1995OR25	25	1999	HD	REF	HAPLOTAXIDA	NAIDAE	PRISTINA	SP	7	OHIO
1995OR25	25	1999	HD	REF	HIRUDINEA (NOT AN ORDER)			SP	33	OHIO
1995OR25	25	1999	HD	REF	ODONATA	COENAGRIONIDAE	ARGIA	SP	2	OHIO
1995OR25	25	1999	HD	REF	ODONATA	MACROMIIDAE	MACROMIA	SP	1	OHIO
1995OR25	25	1999	HD	REF	OSTRACODA (CLASS)			SP	3	OHIO
1995OR25	25	1999	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	3	OHIO
1995OR25	25	1999	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	4	OHIO
1995OR25	25	1999	HD	REF	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	4	OHIO
1995OR25	25	1999	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	31	OHIO
1995OR25	25	1999	HD	REF	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP	1	OHIO
1995OR25	25	1999	HD	REF	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	16	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	3	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	15	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	54	OHIO
1995OR25	25	1999	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	35	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1995OR29.8	29.8	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	263	OHIO
1995OR29.8	29.8	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	20	OHIO
1995OR29.8	29.8	1999	HD	OUT	HAPLOTAXIDA	NAIDAE		SP	80	OHIO
1995OR29.8	29.8	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	DERO	SP	301	OHIO
1995OR29.8	29.8	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	SLAVINA	APPENDICULATA	20	OHIO
1995OR29.8	29.8	1999	HD	OUT	ODONATA	COENAGRIONIDAE	ARGIA	SP	3	OHIO
1995OR29.8	29.8	1999	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	1	OHIO
1995OR29.8	29.8	1999	HD	OUT	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	5	OHIO
1995OR29.8	29.8	1999	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	41	OHIO
1995OR29.85	29.85	1999	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	52	OHIO
1995OR29.85	29.85	1999	HD	OUT	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	540	OHIO
1995OR29.85	29.85	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	200	OHIO
1995OR29.85	29.85	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEMODESTUS	10	OHIO
1995OR29.85	29.85	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	340	OHIO
1995OR29.85	29.85	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	RHEOTANYTARSUS	SP	10	OHIO
1995OR29.85	29.85	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	THIENEMANNIYA	SP	20	OHIO
1995OR29.85	29.85	1999	HD	OUT	DIPTERA	NAIDAE	DERO	SP	160	OHIO
1995OR29.85	29.85	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	40	OHIO
1995OR29.85	29.85	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	SP	60	OHIO
1995OR29.85	29.85	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	PRISTINA	LEIDYI	10	OHIO
1995OR29.85	29.85	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	SLAVINA	APPENDICULATA	30	OHIO
1995OR29.85	29.85	1999	HD	OUT	OSTRACODA (CLASS)			SP	10	OHIO
1995OR29.85	29.85	1999	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	80	OHIO
1995OR29.85	29.85	1999	HD	OUT	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	20	OHIO
1995OR29.85	29.85	1999	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	41	OHIO
1995OR29.85	29.85	1999	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	45	OHIO
1995OR29.9	29.9	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	20	OHIO
1995OR29.9	29.9	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	50	OHIO
1995OR29.9	29.9	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	290	OHIO
1995OR29.9	29.9	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	230	OHIO
1995OR29.9	29.9	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	40	OHIO
1995OR29.9	29.9	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	30	OHIO
1995OR29.9	29.9	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	RHEOTANYTARSUS	SP	10	OHIO
1995OR29.9	29.9	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	DERO	SP	118	OHIO
1995OR29.9	29.9	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	59	OHIO
1995OR29.9	29.9	1999	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	SP	47	OHIO
1995OR29.9	29.9	1999	HD	OUT	HAPLOTAXIDA	HYDROPTILIDAE	HYDROPTILA	SP	12	OHIO
1995OR29.95	29.95	1999	HD	OUT	TRICHOPTERA	GAMMARIDAE	GAMMARUS	SP	60	OHIO
1995OR29.95	29.95	1999	HD	OUT	AMPHIPODA	SIDAE	SIDA	CRYSTALLINA	33	OHIO
1995OR29.95	29.95	1999	HD	OUT	GLADOCERA	CHIRONOMIDAE		SP	60	OHIO
1995OR29.95	29.95	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	10	OHIO
1995OR29.95	29.95	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	80	OHIO
1995OR29.95	29.95	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	30	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1999OR29.95	29.95	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	250	OHIO
1999OR29.95	29.95	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	240	OHIO
1999OR29.95	29.95	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CHIRONOMIDAE	DISTINCTUS	20	OHIO
1999OR29.95	29.95	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	RHEOTANTYARSUS	SP	30	OHIO
1999OR29.95	29.95	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	THIENANNIMYIA	SP	10	OHIO
1999OR29.95	29.95	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	44	OHIO
1999OR29.95	29.95	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	22	OHIO
1999OR29.95	29.95	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	PRISTINA	SP	73	OHIO
1999OR29.95	29.95	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	HYDROPTILA	SP	7	OHIO
1999OR29.95	29.95	1999	HD	OUT	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	30	OHIO
1999OR30	30	1999	HD	OUT	AMPHIPODA	GAMMARUS	GAMMARUS	SP	30	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	SP	74	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	30	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	21	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	10	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEODESTUS	231	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	20	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CHIRONOMIDAE	DISTINCTUS	272	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	NAOCLADIUS	SP	20	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	RHEOTANTYARSUS	SP	20	OHIO
1999OR30	30	1999	HD	OUT	DIPTERA	EMFIDIDAE	HEMERODROMIA	SP	10	OHIO
1999OR30	30	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	54	OHIO
1999OR30	30	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	39	OHIO
1999OR30	30	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	8	OHIO
1999OR30	30	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	54	OHIO
1999OR30	30	1999	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	TIGRINA	20	OHIO
1999OR30	30	1999	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	SP	30	OHIO
1999OR30	30	1999	HD	OUT	AMPHIPODA	GAMMARUS	GAMMARUS	SP	19	OHIO
1999OR30.05	30.05	1999	HD	OUT	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	22	OHIO
1999OR30.05	30.05	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	JANTA	39	OHIO
1999OR30.05	30.05	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CHIRONOMUS	SP	26	OHIO
1999OR30.05	30.05	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	489	OHIO
1999OR30.05	30.05	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	669	OHIO
1999OR30.05	30.05	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	NAOCLADIUS	DISTINCTUS	39	OHIO
1999OR30.05	30.05	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	RHEOTANTYARSUS	SP	26	OHIO
1999OR30.05	30.05	1999	HD	OUT	DIPTERA	CAENIDAE	CAENIS	SP	1	OHIO
1999OR30.05	30.05	1999	HD	OUT	EPEMEROPTERA	NAIDIDAE	SP	SP	695	OHIO
1999OR30.05	30.05	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	274	OHIO
1999OR30.05	30.05	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	274	OHIO
1999OR30.05	30.05	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	SP	137	OHIO
1999OR30.05	30.05	1999	HD	OUT	ODONATA	COENAGRIONIDAE	ARGIA	SP	12	OHIO
1999OR30.05	30.05	1999	HD	OUT	OSTRACODA (CLASS)					
1999OR30.05	30.05	1999	HD	OUT	AMPHIPODA	GAMMARUS	GAMMARUS	SP	1	OHIO
1999OR30.1	30.1	1999	HD	OUT	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	10	OHIO
1999OR30.1	30.1	1999	HD	OUT	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	6	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1999OR30.1	30.1	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP.	10	OHIO
1999OR30.1	30.1	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	152	OHIO
1999OR30.1	30.1	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	20	OHIO
1999OR30.1	30.1	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	112	OHIO
1999OR30.1	30.1	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	40	OHIO
1999OR30.1	30.1	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	ORTHOCLADIUS	SP.	11	OHIO
1999OR30.1	30.1	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	RHEOTANTYARSUS	SP.	10	OHIO
1999OR30.1	30.1	1999	HD	OUT	HAPLOTAXIDA	NAIDIAE	SP.	SP.	291	OHIO
1999OR30.1	30.1	1999	HD	OUT	HAPLOTAXIDA	NAIDIAE	DERO	SP.	582	OHIO
1999OR30.1	30.1	1999	HD	OUT	HAPLOTAXIDA	NAIDIAE	NAIS	SP.	970	OHIO
1999OR30.1	30.1	1999	HD	OUT	HIRUDINEA (NOT AN ORDER)	NAIDIAE	SP.	SP.	97	OHIO
1999OR30.1	30.1	1999	HD	OUT	NEMATODA				10	OHIO
1999OR30.1	30.1	1999	HD	OUT	TRICHOPTERA				10	OHIO
1999OR30.15	30.15	1999	HD	OUT	AMPHIPODA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	10	OHIO
1999OR30.15	30.15	1999	HD	OUT	BASOMMATOPHORA	GAMMARIDAE	GAMMARUS	SP.	14	OHIO
1999OR30.15	30.15	1999	HD	OUT	BIVALVIA	PLANORBIDAE	MENETUS	DILATATUS	7	OHIO
1999OR30.15	30.15	1999	HD	OUT	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	1	OHIO
1999OR30.15	30.15	1999	HD	OUT	GLADOCERA	DREISSENIDAE	DREISSENA	POLYMORPHA	7	OHIO
1999OR30.15	30.15	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	SIDA	CRYSTALLINA	3	OHIO
1999OR30.15	30.15	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	JANTA	6	OHIO
1999OR30.15	30.15	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP.	3	OHIO
1999OR30.15	30.15	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	188	OHIO
1999OR30.15	30.15	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	114	OHIO
1999OR30.15	30.15	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	9	OHIO
1999OR30.15	30.15	1999	HD	OUT	EPEMEROPTERA	CAENIDAE	CAENIS	SP.	2	OHIO
1999OR30.15	30.15	1999	HD	OUT	HAPLOTAXIDA	NAIDIAE	DERO	SP.	148	OHIO
1999OR30.15	30.15	1999	HD	OUT	HAPLOTAXIDA	NAIDIAE	NAIS	SP.	89	OHIO
1999OR30.15	30.15	1999	HD	OUT	HAPLOTAXIDA	NAIDIAE	PRISTINA	LEIDYI	30	OHIO
1999OR30.15	30.15	1999	HD	OUT	HAPLOTAXIDA	NAIDIAE	PRISTINA	SP.	15	OHIO
1999OR30.15	30.15	1999	HD	OUT	NEOTAEINOGLOSSA	HYDROBIDAE	SOMATOGYRUS	SP.	3	OHIO
1999OR30.15	30.15	1999	HD	OUT	ODONATA	COENAGRIONIDAE	ARGIA	SP.	3	OHIO
1999OR30.15	30.15	1999	HD	OUT	OSTRACODA (CLASS)			SP.	1	OHIO
1999OR30.15	30.15	1999	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	2	OHIO
1999OR30.15	30.15	1999	HD	OUT	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	4	OHIO
1999OR30.15	30.15	1999	HD	OUT	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	12	OHIO
1999OR30.2	30.2	1999	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	25	OHIO
1999OR30.2	30.2	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	10	OHIO
1999OR30.2	30.2	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	90	OHIO
1999OR30.2	30.2	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TRIFASCIA	90	OHIO
1999OR30.2	30.2	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	280	OHIO
1999OR30.2	30.2	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	80	OHIO
1999OR30.2	30.2	1999	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	180	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
1999OR30.2	30.2	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	750	OHIO
1999OR30.2	30.2	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	125	OHIO
1999OR30.2	30.2	1999	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	125	OHIO
1999OR30.2	30.2	1999	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	250	OHIO
1999OR30.2	30.2	1999	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	22	OHIO
2000OR17.0A	17	2000	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	187	OHIO
2000OR17.0A	17	2000	HD	REF	BASOMMATOPHORA	ANCYLIDAE	FERRISSIA	RIVULARIS	228	OHIO
2000OR17.0A	17	2000	HD	REF	BASOMMATOPHORA	PLANORBIDAE	MENETUS	DILATATUS	3	OHIO
2000OR17.0A	17	2000	HD	REF	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	17	OHIO
2000OR17.0A	17	2000	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	2	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	SP	SP	3	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	RHAMPHIE	2	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	3	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	28	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	91	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	31	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	MICROTENDIPES	SP	11	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	MICROTENDIPES	SP	3	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADUS	DISTINCTUS	3	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	FLAVUM	6	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANYTARSUS	SP	6	OHIO
2000OR17.0A	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	THIENEMANNIYA	SP	3	OHIO
2000OR17.0A	17	2000	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	27	OHIO
2000OR17.0A	17	2000	HD	REF	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	1	OHIO
2000OR17.0A	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	22	OHIO
2000OR17.0A	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	44	OHIO
2000OR17.0A	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	371	OHIO
2000OR17.0A	17	2000	HD	REF	NEOTAEINOGLOSSA	HYDROBIDAE	SOMATOGYRUS	SP	4	OHIO
2000OR17.0A	17	2000	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	36	OHIO
2000OR17.0A	17	2000	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	33	OHIO
2000OR17.0A	17	2000	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	NEURECLIPSIS	SP	2	OHIO
2000OR17.0A	17	2000	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	20	OHIO
2000OR17.0A	17	2000	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	265	OHIO
2000OR17.0B	17	2000	HD	REF	BASOMMATOPHORA	ANCYLIDAE	FERRISSIA	RIVULARIS	7	OHIO
2000OR17.0B	17	2000	HD	REF	BASOMMATOPHORA	PLANORBIDAE	MENETUS	DILATATUS	28	OHIO
2000OR17.0B	17	2000	HD	REF	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	2	OHIO
2000OR17.0B	17	2000	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	4	OHIO
2000OR17.0B	17	2000	HD	REF	GLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	10	OHIO
2000OR17.0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	SP	SP	2	OHIO
2000OR17.0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	RHAMPHIE	2	OHIO
2000OR17.0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	13	OHIO
2000OR17.0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	TREMULUS	2	OHIO
2000OR17.0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	34	OHIO
2000OR17.0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	35	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2000OR17 0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	58	OHIO
2000OR17 0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	MICROTENDIPES	SP	2	OHIO
2000OR17 0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADUS	DISTINCTUS	3	OHIO
2000OR17 0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	FLAVUM	8	OHIO
2000OR17 0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	HALTERALE	2	OHIO
2000OR17 0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	2	OHIO
2000OR17 0B	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	THIENEMANNIYA	SP	2	OHIO
2000OR17 0B	17	2000	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	21	OHIO
2000OR17 0B	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	13	OHIO
2000OR17 0B	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	13	OHIO
2000OR17 0B	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	PRISTINA	SP	191	OHIO
2000OR17 0B	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	SLAVINA	APPENDICULATA	25	OHIO
2000OR17 0B	17	2000	HD	REF	HAPLOTAXIDA	HYDRIDAE	HYDRA	AMERICANA	13	OHIO
2000OR17 0B	17	2000	HD	REF	HYDROIDA	HYDROBIDAE	SOMATOGYRUS	SP	4	OHIO
2000OR17 0B	17	2000	HD	REF	NEOTAEONIOGLOSSA	HYDROBIDAE	SP	SP	3	OHIO
2000OR17 0B	17	2000	HD	REF	OSTRACODA (CLASS)	HYDROPTILIDAE	HYDROPTILA	SP	1	OHIO
2000OR17 0B	17	2000	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	25	OHIO
2000OR17 0B	17	2000	HD	REF	TRICHOPTERA	LEPTOCERIDAE	NECTOPSYCHE	SP	1	OHIO
2000OR17 0B	17	2000	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	13	OHIO
2000OR17 0B	17	2000	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	5	OHIO
2000OR17 0C	17	2000	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	337	OHIO
2000OR17 0C	17	2000	HD	REF	BASOMMATOPHORA	PLANORBIIDAE	MENETUS	DILATATUS	1	OHIO
2000OR17 0C	17	2000	HD	REF	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	15	OHIO
2000OR17 0C	17	2000	HD	REF	CLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	5	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	ABLATESMYIA	RHAMPHIE	10	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	60	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	CRYPTOCHIRONOMUS	FULVUS	5	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	55	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	60	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	130	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	FLAVUM	5	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	HALTERALE	5	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCYRNOMUS	SP	5	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANTYARSUS	SP	10	OHIO
2000OR17 0C	17	2000	HD	REF	DIPTERA	CHIRONOMIDAE	TANTYARSUS	SP	5	OHIO
2000OR17 0C	17	2000	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	38	OHIO
2000OR17 0C	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	DERO	SP	86	OHIO
2000OR17 0C	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	29	OHIO
2000OR17 0C	17	2000	HD	REF	HAPLOTAXIDA	NAIDIDAE	PRISTINA	SP	402	OHIO
2000OR17 0C	17	2000	HD	REF	HAPLOTAXIDA	HYDRIDAE	HYDRA	AMERICANA	58	OHIO
2000OR17 0C	17	2000	HD	REF	HYDROIDA	HYDROPTILIDAE	HYDROPTILA	SP	5	OHIO
2000OR17 0C	17	2000	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	25	OHIO
2000OR17 0C	17	2000	HD	REF	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	39	OHIO
2000OR17 0C	17	2000	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	10	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2000OR17 515	17 515	2000	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	305	OHIO
2000OR17 515	17 515	2000	HD	OUT	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP	3	OHIO
2000OR17 515	17 515	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	PHYSELLA	SP	1	OHIO
2000OR17 515	17 515	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	RHAMPHIE	3	OHIO
2000OR17 515	17 515	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	LUCIFER	3	OHIO
2000OR17 515	17 515	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	MODESTUS	91	OHIO
2000OR17 515	17 515	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEODESTUS	12	OHIO
2000OR17 515	17 515	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SIMPSONI	63	OHIO
2000OR17 515	17 515	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	21	OHIO
2000OR17 515	17 515	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	INTERPUNCTATUM	109	OHIO
2000OR17 515	17 515	2000	HD	OUT	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	SP	3	OHIO
2000OR17 515	17 515	2000	HD	OUT	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	1	OHIO
2000OR17 515	17 515	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	7	OHIO
2000OR17 515	17 515	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	8	OHIO
2000OR17 515	17 515	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	PRISTINA	SP	18	OHIO
2000OR17 515	17 515	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	SLAVINA	APPENDICULATA	1	OHIO
2000OR17 515	17 515	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	SP	SP	1	OHIO
2000OR17 515	17 515	2000	HD	OUT	TRICHOPTERA	TUBIFICIDAE W.O.H.C.	HYDROPTILA	SP	1	OHIO
2000OR17 515	17 515	2000	HD	OUT	TRICHOPTERA	POLYCENTROPIDAE	CYRNELLUS	FRATERNUS	5	OHIO
2000OR17 515	17 515	2000	HD	OUT	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	56	OHIO
2000OR17 515	17 53	2000	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	330	OHIO
2000OR17 53	17 53	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	RHAMPHIE	5	OHIO
2000OR17 53	17 53	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	50	OHIO
2000OR17 53	17 53	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	MODESTUS	5	OHIO
2000OR17 53	17 53	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEODESTUS	15	OHIO
2000OR17 53	17 53	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SIMPSONI	10	OHIO
2000OR17 53	17 53	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	75	OHIO
2000OR17 53	17 53	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	NOCTADILUM	FLAVUM	10	OHIO
2000OR17 53	17 53	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP	5	OHIO
2000OR17 53	17 53	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	116	OHIO
2000OR17 53	17 53	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	281	OHIO
2000OR17 53	17 53	2000	HD	OUT	HIRUDINEA (NOT AN ORDER)	HYDROBIDAE	SOMATOGYRUS	SP	203	OHIO
2000OR17 53	17 53	2000	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	1	OHIO
2000OR17 53	17 53	2000	HD	OUT	TRICHOPTERA	POLYCENTROPIDAE	CYRNELLUS	FRATERNUS	20	OHIO
2000OR17 53	17 53	2000	HD	OUT	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	25	OHIO
2000OR17 53	17 53	2000	HD	OUT	TRICHOPTERA	GAMMARIDAE	GAMMARUS	SP	5	OHIO
2000OR17 545	17 545	2000	HD	OUT	AMPHIPODA	PHYSIDAE	PHYSELLA	SP	177	OHIO
2000OR17 545	17 545	2000	HD	OUT	BASOMMATOPHORA	PLANORBIDAE	MENETUS	DILATATUS	2	OHIO
2000OR17 545	17 545	2000	HD	OUT	BASOMMATOPHORA	CORBIICULIDAE	CORBIICULA	FLUMINEA	3	OHIO
2000OR17 545	17 545	2000	HD	OUT	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	1	OHIO
2000OR17 545	17 545	2000	HD	OUT	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	1	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2000OR17.7	17.7	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	50	OHIO
2000OR17.7	17.7	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	10	OHIO
2000OR17.7	17.7	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	55	OHIO
2000OR17.7	17.7	2000	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	56	OHIO
2000OR17.7	17.7	2000	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	1064	OHIO
2000OR17.7	17.7	2000	HD	OUT	ISOPODA	ASELLIDAE	CAECIDOTEA	SP.	5	OHIO
2000OR17.7	17.7	2000	HD	OUT	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	60	OHIO
2000OR17.7	17.7	2000	HD	OUT	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	5	OHIO
2000OR17.7	17.7	2000	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	223	OHIO
2000OR17.15	17.15	2000	HD	OUT	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP.	1	OHIO
2000OR17.15	17.15	2000	HD	OUT	BASOMMATOPHORA	PLANORBIIDAE	MENETUS	DILATATUS	5	OHIO
2000OR17.15	17.15	2000	HD	OUT	BIVALVIA	CORBICULA	CORBICULA	FLUMINEA	2	OHIO
2000OR17.15	17.15	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP.	2	OHIO
2000OR17.15	17.15	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	34	OHIO
2000OR17.15	17.15	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	MODESTUS	4	OHIO
2000OR17.15	17.15	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	15	OHIO
2000OR17.15	17.15	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	50	OHIO
2000OR17.15	17.15	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP.	1	OHIO
2000OR17.15	17.15	2000	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	1	OHIO
2000OR17.15	17.15	2000	HD	OUT	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	1	OHIO
2000OR17.15	17.15	2000	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	SP.	30	OHIO
2000OR17.15	17.15	2000	HD	OUT	HAPLOTAXIDA	NAIDAE	DERO	SP.	10	OHIO
2000OR17.15	17.15	2000	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	55	OHIO
2000OR17.15	17.15	2000	HD	OUT	HAPLOTAXIDA	NAIDAE	SLAVINA	APPENDICULATA	5	OHIO
2000OR17.15	17.15	2000	HD	OUT	HIRUDINEA (NOT AN ORDER)	HYDROPSYCHIDAE	HYDROPSYCHE	SP.	1	OHIO
2000OR17.15	17.15	2000	HD	OUT	TRICHOPTERA	HYDROPTILAE	HYDROPTILA	SP.	1	OHIO
2000OR17.15	17.15	2000	HD	OUT	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	3	OHIO
2000OR17.15	17.15	2000	HD	OUT	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	11	OHIO
2000OR17.15	17.15	2000	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	26	OHIO
2000OR17.73	17.73	2000	HD	OUT	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP.	308	OHIO
2000OR17.73	17.73	2000	HD	OUT	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	1	OHIO
2000OR17.73	17.73	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP.	1	OHIO
2000OR17.73	17.73	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	3	OHIO
2000OR17.73	17.73	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	40	OHIO
2000OR17.73	17.73	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	7	OHIO
2000OR17.73	17.73	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	33	OHIO
2000OR17.73	17.73	2000	HD	OUT	HAPLOTAXIDA	NAIDAE	DERO	SP.	55	OHIO
2000OR17.73	17.73	2000	HD	OUT	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	37	OHIO
2000OR17.73	17.73	2000	HD	OUT	HIRUDINEA (NOT AN ORDER)	OSTRACODA (CLASS)	SP.	SP.	277	OHIO
2000OR17.73	17.73	2000	HD	OUT	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	7	OHIO
2000OR17.73	17.73	2000	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	3	OHIO
2000OR17.73	17.73	2000	HD	OUT	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	60	OHIO
2000OR17.73	17.73	2000	HD	OUT	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	260	OHIO
2000OR17.73	17.73	2000	HD	OUT	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	1	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2000OR17.745	17.745	2000	HD	OUT	DIPTERA	CHIRONOMIDAE		SP.	1	OHIO
2000OR17.745	17.745	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP.	2	OHIO
2000OR17.745	17.745	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	88	OHIO
2000OR17.745	17.745	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	MODESTUS	2	OHIO
2000OR17.745	17.745	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	14	OHIO
2000OR17.745	17.745	2000	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	73	OHIO
2000OR17.745	17.745	2000	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	2	OHIO
2000OR17.745	17.745	2000	HD	OUT	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	2	OHIO
2000OR17.745	17.745	2000	HD	OUT	EPHEMEROPTERA	NAIDIDAE		SP.	14	OHIO
2000OR17.745	17.745	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP.	5	OHIO
2000OR17.745	17.745	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	11	OHIO
2000OR17.745	17.745	2000	HD	OUT	HAPLOTAXIDA	NAIDIDAE	HYDROPTILA	SP.	6	OHIO
2000OR17.745	17.745	2000	HD	OUT	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	95	OHIO
2000OR17.745	17.745	2000	HD	OUT	TRICLADIDA	GAMMARIDAE	GAMMARUS	SP.	11	OHIO
2002OR13.2a	13.2	2002	HD	REF	AMPHIPODA		MENETUS	DILATATUS	1	OHIO
2002OR13.2a	13.2	2002	HD	REF	BASOMMATOPHORA	PLANORBIIDAE	DREISSENA	POLY MORPHA	1	OHIO
2002OR13.2a	13.2	2002	HD	REF	BIVALVIA	DREISSENIIDAE	SIDA	CRYSTALLINA	1010	OHIO
2002OR13.2a	13.2	2002	HD	REF	GLADOCERA	SIDIDAE		SP.	10	OHIO
2002OR13.2a	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	70	OHIO
2002OR13.2a	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	70	OHIO
2002OR13.2a	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	490	OHIO
2002OR13.2a	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	3220	OHIO
2002OR13.2a	13.2	2002	HD	REF	EPHEMEROPTERA	CAENIDAE	CAENIS	SP.	110	OHIO
2002OR13.2a	13.2	2002	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	15	OHIO
2002OR13.2a	13.2	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	50	OHIO
2002OR13.2a	13.2	2002	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	AMERICANA	40	OHIO
2002OR13.2a	13.2	2002	HD	REF	NEOTAEIOGLOSSA		AMNICOLA		4	OHIO
2002OR13.2a	13.2	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	20	OHIO
2002OR13.2a	13.2	2002	HD	REF	TRICHOPTERA	POLYCENOTOPODIDAE	CYRNELLUS	FRATERNUS	20	OHIO
2002OR13.2a	13.2	2002	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	20	OHIO
2002OR13.2b	13.2	2002	HD	REF	BASOMMATOPHORA	PLANORBIIDAE	MENETUS	DILATATUS	10	OHIO
2002OR13.2b	13.2	2002	HD	REF	BIVALVIA	DREISSENIIDAE	DREISSENA	POLY MORPHA	2	OHIO
2002OR13.2b	13.2	2002	HD	REF	GLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	1010	OHIO
2002OR13.2b	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE		SP.	20	OHIO
2002OR13.2b	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	ABLATESMYIA	RHAMPHIE	20	OHIO
2002OR13.2b	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	70	OHIO
2002OR13.2b	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	110	OHIO
2002OR13.2b	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	3080	OHIO
2002OR13.2b	13.2	2002	HD	REF	EPHEMEROPTERA	CAENIDAE	CAENIS	SP.	181	OHIO
2002OR13.2b	13.2	2002	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	2	OHIO
2002OR13.2b	13.2	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	70	OHIO
2002OR13.2b	13.2	2002	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	AMERICANA	1	OHIO
2002OR13.2b	13.2	2002	HD	REF	NEOTAEIOGLOSSA		AMNICOLA	SP.	7	OHIO
2002OR13.2b	13.2	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	10	OHIO

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Event Code	Rmt	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2002OR13.2b	13.2	2002	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	3	OHIO
2002OR13.2b	13.2	2002	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	4	OHIO
2002OR13.2c	13.2	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	1	OHIO
2002OR13.2c	13.2	2002	HD	REF	BASOMMATOPHORA	ANCYLIDAE	FERRISSIA	RIVULARIS	10	OHIO
2002OR13.2c	13.2	2002	HD	REF	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP.	42	OHIO
2002OR13.2c	13.2	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	20	OHIO
2002OR13.2c	13.2	2002	HD	REF	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	1080	OHIO
2002OR13.2c	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	60	OHIO
2002OR13.2c	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	60	OHIO
2002OR13.2c	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	150	OHIO
2002OR13.2c	13.2	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CAENIS	GLYPTOTENDIPES	2920	OHIO
2002OR13.2c	13.2	2002	HD	REF	EPHEMEROPTERA	CAENIDAE	CAENIS	SP.	140	OHIO
2002OR13.2c	13.2	2002	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	66	OHIO
2002OR13.2c	13.2	2002	HD	REF	EPHEMEROPTERA	NAIDIDAE	DERO	SP.	30	OHIO
2002OR13.2c	13.2	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	10	OHIO
2002OR13.2c	13.2	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	AMNICOLA	SP.	140	OHIO
2002OR13.2c	13.2	2002	HD	REF	NEOTAEIOGLOSSA	HYDROPTILIDAE	HYDROPTILA	SP.	3	OHIO
2002OR13.2c	13.2	2002	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	50	OHIO
2002OR13.2c	13.2	2002	HD	REF	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	31	OHIO
2002OR13.2c	13.2	2002	HD	REF	TRICLADIDA	GAMMARIDAE	GAMMARUS	SP.	60	OHIO
2002OR13.5a	13.5	2002	HD	REF	AMPHIPODA	PHYSIDAE	PHYSELLA	SP.	191	OHIO
2002OR13.5a	13.5	2002	HD	REF	BASOMMATOPHORA	PLANORBIDAE	MENETUS	DILATATUS	121	OHIO
2002OR13.5a	13.5	2002	HD	REF	BASOMMATOPHORA	DREISSENIDAE	DREISSENA	POLYMORPHA	20	OHIO
2002OR13.5a	13.5	2002	HD	REF	BIVALVIA	SIDAE	SIDA	CRYSTALLINA	1	OHIO
2002OR13.5a	13.5	2002	HD	REF	CLADOCERA	CHIRONOMIDAE	CRICOTOPUS	SP.	100	OHIO
2002OR13.5a	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	20	OHIO
2002OR13.5a	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	10	OHIO
2002OR13.5a	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	10	OHIO
2002OR13.5a	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	220	OHIO
2002OR13.5a	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCYRNELLUS	SP.	430	OHIO
2002OR13.5a	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP.	120	OHIO
2002OR13.5a	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	THIENEMANNIYA	SP.	10	OHIO
2002OR13.5a	13.5	2002	HD	REF	DIPTERA	CAENIDAE	CAENIS	SP.	20	OHIO
2002OR13.5a	13.5	2002	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	20	OHIO
2002OR13.5a	13.5	2002	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENONEMA	SP.	53	OHIO
2002OR13.5a	13.5	2002	HD	REF	EPHEMEROPTERA	NAIDIDAE	NAIS	COMMUNIS	10	OHIO
2002OR13.5a	13.5	2002	HD	REF	HAPLOTAXIDA	HYDROPTILIDAE	HYDRA	AMERICANA	170	OHIO
2002OR13.5a	13.5	2002	HD	REF	HYDROPTILIDAE	HYDROPTILIDAE	AMNICOLA	SP.	30	OHIO
2002OR13.5a	13.5	2002	HD	REF	NEOTAEIOGLOSSA	HYDROPTILIDAE	CYRNELLUS	SP.	1	OHIO
2002OR13.5a	13.5	2002	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	50	OHIO
2002OR13.5a	13.5	2002	HD	REF	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	11	OHIO
2002OR13.5a	13.5	2002	HD	REF	TRICLADIDA	GAMMARIDAE	GAMMARUS	SP.	120	OHIO
2002OR13.5b	13.5	2002	HD	REF	AMPHIPODA	PHYSIDAE	PHYSELLA	SP.	243	OHIO
2002OR13.5b	13.5	2002	HD	REF	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP.	1	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	Ref
2002OR13.5b	13.5	2002	HD	REF	BASOMMATOPHORA	PLANORBIDAE	MENETUS	DILATATUS	85	OHIO
2002OR13.5b	13.5	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	6	OHIO
2002OR13.5b	13.5	2002	HD	REF	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	15	OHIO
2002OR13.5b	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE		SP	15	OHIO
2002OR13.5b	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	25	OHIO
2002OR13.5b	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	25	OHIO
2002OR13.5b	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	70	OHIO
2002OR13.5b	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	185	OHIO
2002OR13.5b	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	380	OHIO
2002OR13.5b	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCHEIRONOMUS	SP	145	OHIO
2002OR13.5b	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP	5	OHIO
2002OR13.5b	13.5	2002	HD	REF	EPHEMEROPTERA	CAENIDAE	CAENIS	SP	10	OHIO
2002OR13.5b	13.5	2002	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	15	OHIO
2002OR13.5b	13.5	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	20	OHIO
2002OR13.5b	13.5	2002	HD	REF	OSTRACODA (CLASS)			SP	5	OHIO
2002OR13.5b	13.5	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	20	OHIO
2002OR13.5b	13.5	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	10	OHIO
2002OR13.5b	13.5	2002	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	75	OHIO
2002OR13.5c	13.5	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	286	OHIO
2002OR13.5c	13.5	2002	HD	REF	BASOMMATOPHORA	ANCYLIDAE	FERRISSIA	RIVULARIS	15	OHIO
2002OR13.5c	13.5	2002	HD	REF	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP	33	OHIO
2002OR13.5c	13.5	2002	HD	REF	BASOMMATOPHORA	PLANORBIDAE	MENETUS	DILATATUS	65	OHIO
2002OR13.5c	13.5	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	10	OHIO
2002OR13.5c	13.5	2002	HD	REF	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	40	OHIO
2002OR13.5c	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	11	OHIO
2002OR13.5c	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	28	OHIO
2002OR13.5c	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	28	OHIO
2002OR13.5c	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	76	OHIO
2002OR13.5c	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	572	OHIO
2002OR13.5c	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	10	OHIO
2002OR13.5c	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCHEIRONOMUS	SP	184	OHIO
2002OR13.5c	13.5	2002	HD	REF	DIPTERA	CHIRONOMIDAE	STENOCHEIRONOMUS	SP	1	OHIO
2002OR13.5c	13.5	2002	HD	REF	EPHEMEROPTERA	CAENIDAE	CAENIS	SP	5	OHIO
2002OR13.5c	13.5	2002	HD	REF	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	1	OHIO
2002OR13.5c	13.5	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	35	OHIO
2002OR13.5c	13.5	2002	HD	REF	HIRUDINEA (NOT AN ORDER)	CORULIDAE	NEUROCORULIA	SP	5	OHIO
2002OR13.5c	13.5	2002	HD	REF	ODONATA	TRICHOPTERA	CHEUMATOPS/CHE	SP	1	OHIO
2002OR13.5c	13.5	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	10	OHIO
2002OR13.5c	13.5	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	20	OHIO
2002OR13.5c	13.5	2002	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	55	OHIO
2002OR16.5a	16.5	2002	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	78	OHIO
2002OR16.5a	16.5	2002	HD	OUT	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	220	OHIO
2002OR16.5a	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE		SP	15	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2002OR16.5a	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	RHAMPHAE	10	OHIO
2002OR16.5a	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	20	OHIO
2002OR16.5a	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	140	OHIO
2002OR16.5a	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	50	OHIO
2002OR16.5a	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	330	OHIO
2002OR16.5a	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	110	OHIO
2002OR16.5a	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	PSEUDOCHIRONOMUS	SP	30	OHIO
2002OR16.5a	16.5	2002	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	80	OHIO
2002OR16.5a	16.5	2002	HD	OUT	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	10	OHIO
2002OR16.5a	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	20	OHIO
2002OR16.5a	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	5	OHIO
2002OR16.5a	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDIDAE	PRISTINA	LEIDYI	130	OHIO
2002OR16.5a	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDIDAE	SLAVINA	APPENDICULATA	10	OHIO
2002OR16.5a	16.5	2002	HD	OUT	HYDROIDA	HYDROPTILIDAE	HYDRA	AMERICANA	35	OHIO
2002OR16.5a	16.5	2002	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	5	OHIO
2002OR16.5a	16.5	2002	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	126	OHIO
2002OR16.5b	16.5	2002	HD	OUT	BASOMMATOPHORA	PLANORIBIDAE	MENETUS	DILATATUS	20	OHIO
2002OR16.5b	16.5	2002	HD	OUT	BIVALVIA	DREISSENIIDAE	DREISSENA	POLYMORPHA	21	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	SP	20	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	20	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	RHAMPHAE	60	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	70	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	CRYPTOCHIRONOMUS	SYLVESTRIS	20	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	OHIO	
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	150	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	80	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	300	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	310	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	DISTINCTUS	10	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	PHAEONOSPECTRA	SP	7	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	PSEUDOCHIRONOMUS	SP	50	OHIO
2002OR16.5b	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP	10	OHIO
2002OR16.5b	16.5	2002	HD	OUT	EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	45	OHIO
2002OR16.5b	16.5	2002	HD	OUT	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP	1	OHIO
2002OR16.5b	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDIDAE	DERO	SP	50	OHIO
2002OR16.5b	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDIDAE	NAIS	COMMUNIS	20	OHIO
2002OR16.5b	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDIDAE	PRISTINA	SP	280	OHIO
2002OR16.5b	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDIDAE	SLAVINA	APPENDICULATA	20	OHIO
2002OR16.5b	16.5	2002	HD	OUT	NEOTAEONIOGLOSSA	HYDROPTILIDAE	AMNICOLA	SP	30	OHIO
2002OR16.5b	16.5	2002	HD	OUT	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	3	OHIO
2002OR16.5b	16.5	2002	HD	OUT	TRICHOPTERA	POLYCENTROPIDAE	CYRNELLUS	FRATERNUS	40	OHIO
2002OR16.5b	16.5	2002	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	40	OHIO
2002OR16.5b	16.5	2002	HD	OUT	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	180	OHIO

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2002OR16 5c	16.5	2002	HD	OUT	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	33	OHIO
2002OR16 5c	16.5	2002	HD	OUT	BASOMMATOPHORA	PLANORBIDAE	MENETUS	DILATATUS	35	OHIO
2002OR16 5c	16.5	2002	HD	OUT	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	22	OHIO
2002OR16 5c	16.5	2002	HD	OUT	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	305	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE		SP.	41	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLATESMYIA	MALLOCHI	50	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	ABLATESMYIA	RHAMPHIE	41	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	50	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	20	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	CHIRONOMIDAE	NEODESTUS	30	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	600	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	420	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	PSEUDOCHEIRONOMUS	SP.	40	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CHIRONOMIDAE	TANYTARSUS	SP.	10	OHIO
2002OR16 5c	16.5	2002	HD	OUT	DIPTERA	CAENIDAE	CAENIS	SP.	10	OHIO
2002OR16 5c	16.5	2002	HD	OUT	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	99	OHIO
2002OR16 5c	16.5	2002	HD	OUT	EPEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	SP.	5	OHIO
2002OR16 5c	16.5	2002	HD	OUT	EPEMEROPTERA	NAIDAE	NAIS	COMMUNIS	40	OHIO
2002OR16 5c	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDAE		SP.	160	OHIO
2002OR16 5c	16.5	2002	HD	OUT	HAPLOTAXIDA	NAIDAE		SP.	5	OHIO
2002OR16 5c	16.5	2002	HD	OUT	NEOTAEINOGLOSSA	HYDROBIIDAE	AMNICOLA		28	OHIO
2002OR16 5c	16.5	2002	HD	OUT	TRICHLADIDA	PLANARIIDAE	CYRNELLUS	FRATERNUS	5	OHIO
2002OR16 5c	16.5	2002	HD	OUT	TRICHLADIDA	GAMMARIDAE	DUGESIA	TIGRINA	94	OHIO
2002OR31 6a	31.6	2002	HD	REF	AMPHIPODA		GAMMARUS	SP.	187	OHIO
2002OR31 6a	31.6	2002	HD	REF	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	SP.	1	OHIO
2002OR31 6a	31.6	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	44	OHIO
2002OR31 6a	31.6	2002	HD	REF	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	310	OHIO
2002OR31 6a	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE		SP.	31	OHIO
2002OR31 6a	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	128	OHIO
2002OR31 6a	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	388	OHIO
2002OR31 6a	31.6	2002	HD	REF	DIPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	2084	OHIO
2002OR31 6a	31.6	2002	HD	REF	EPEMEROPTERA	NAIDAE	NAIS	SP.	1	OHIO
2002OR31 6a	31.6	2002	HD	REF	HAPLOTAXIDA	NAIDAE		SP.	30	OHIO
2002OR31 6a	31.6	2002	HD	REF	HAPLOTAXIDA	NAIDAE		SP.	120	OHIO
2002OR31 6a	31.6	2002	HD	REF	NEOTAEINOGLOSSA	HYDROBIIDAE	AMNICOLA	COMMUNIS	20	OHIO
2002OR31 6a	31.6	2002	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	60	OHIO
2002OR31 6a	31.6	2002	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	20	OHIO
2002OR31 6b	31.6	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	242	OHIO
2002OR31 6b	31.6	2002	HD	REF	BASOMMATOPHORA	PHYSIDAE	PHYSELLA	POLYMORPHA	1	OHIO
2002OR31 6b	31.6	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	CRYSTALLINA	340	OHIO
2002OR31 6b	31.6	2002	HD	REF	CLADOCERA	SIDAE	SIDA	SP.	31	OHIO
2002OR31 6b	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	LUCIFER	94	OHIO
2002OR31 6b	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEODESTUS	94	OHIO
2002OR31 6b	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	126	OHIO
2002OR31 6b	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.		

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Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2002OR31 5b	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	2795	OHIO
2002OR31 5b	31.6	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	10	OHIO
2002OR31 5b	31.6	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	2	OHIO
2002OR31 5b	31.6	2002	HD	REF	HAPLOTAXIDA	NAIDAE	DERO	SP	30	OHIO
2002OR31 5b	31.6	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	90	OHIO
2002OR31 5b	31.6	2002	HD	REF	HAPLOTAXIDA	NAIDAE	AMNICOLA	SP	2	OHIO
2002OR31 5b	31.6	2002	HD	REF	NEOTAEONIOGLOSSA	HYDROBIIDAE	ARGIA	SP	1	OHIO
2002OR31 5b	31.6	2002	HD	REF	ODONATA	COENAGRIONIDAE	HYDROPTILA	SP	40	OHIO
2002OR31 5b	31.6	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	CYRNELLUS	FRATERNUS	1	OHIO
2002OR31 5b	31.6	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	GAMMARUS	SP	220	OHIO
2002OR31 5c	31.6	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	31	OHIO
2002OR31 5c	31.6	2002	HD	REF	BASOMMATOPHORA	PLANORBIIDAE	MENETUS	DILATATUS	23	OHIO
2002OR31 5c	31.6	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	23	OHIO
2002OR31 5c	31.6	2002	HD	REF	GLADOCERA	SIDAE	SIDA	CRYSTALLINA	480	OHIO
2002OR31 5c	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	2	OHIO
2002OR31 5c	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	23	OHIO
2002OR31 5c	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	435	OHIO
2002OR31 5c	31.6	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	1832	OHIO
2002OR31 5c	31.6	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	SP	40	OHIO
2002OR31 5c	31.6	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	50	OHIO
2002OR31 5c	31.6	2002	HD	REF	OSTRACODA (CLASS)			SP	30	OHIO
2002OR31 5c	31.6	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	10	OHIO
2002OR31 5c	31.6	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	11	OHIO
2002OR31 5c	31.6	2002	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	30	OHIO
2002OR31 5c	31.8	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	DILATATUS	10	OHIO
2002OR31 5a	31.8	2002	HD	REF	BASOMMATOPHORA	PLANORBIIDAE	MENETUS	POLYMORPHA	6	OHIO
2002OR31 5a	31.8	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	CRYSTALLINA	50	OHIO
2002OR31 5a	31.8	2002	HD	REF	GLADOCERA	SIDAE	SIDA	SP	1	OHIO
2002OR31 5a	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	2	OHIO
2002OR31 5a	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP	2	OHIO
2002OR31 5a	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	1	OHIO
2002OR31 5a	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	12	OHIO
2002OR31 5a	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	FLAVUM	2	OHIO
2002OR31 5a	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCYRNELLUS	SP	10	OHIO
2002OR31 5a	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANTYARSUS	SP	3	OHIO
2002OR31 5a	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CAENIS	SP	10	OHIO
2002OR31 5a	31.8	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	202	OHIO
2002OR31 5a	31.8	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENONEMA	SP	1	OHIO
2002OR31 5a	31.8	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	SP	40	OHIO
2002OR31 5a	31.8	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	150	OHIO
2002OR31 5a	31.8	2002	HD	REF	NEOTAEONIOGLOSSA	HYDROBIIDAE	AMNICOLA	SP	31	OHIO
2002OR31 5a	31.8	2002	HD	REF	NEOTAEONIOGLOSSA	PLEUROCIDAE	PLEUROCIERA	CANALICULATA	1	OHIO
2002OR31 5a	31.8	2002	HD	REF	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE	SP	10	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2002OR31 8a	31.8	2002	HD	REF	TRICHOPTERA	HYDROTILIDAE	HYDROTILA	SP.	160	OHIO
2002OR31 8a	31.8	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	28	OHIO
2002OR31 8a	31.8	2002	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	40	OHIO
2002OR31 8b	31.8	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	50	OHIO
2002OR31 8b	31.8	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	11	OHIO
2002OR31 8b	31.8	2002	HD	REF	CLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	60	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	1	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	30	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	40	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	70	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	340	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	SP.	131	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	FLAVUM	10	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCYRNOMUS	SP.	100	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANYTARSUS	SP.	60	OHIO
2002OR31 8b	31.8	2002	HD	REF	DIPTERA	CAENIDAE	CAENIS	SP.	110	OHIO
2002OR31 8b	31.8	2002	HD	REF	EPEMEROPTERA	INTERPUNCTATUM	INTERPUNCTATUM	SP.	50	OHIO
2002OR31 8b	31.8	2002	HD	REF	EPEMEROPTERA	SP.	SP.	SP.	188	OHIO
2002OR31 8b	31.8	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	COMMUNIS	APPENDICULATA	200	OHIO
2002OR31 8b	31.8	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP.	20	OHIO
2002OR31 8b	31.8	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	SLAVINA	AMNICOLA	60	OHIO
2002OR31 8b	31.8	2002	HD	REF	NEOTAEINOGLLOSSA	PLEUROCIDAE	PLEUROCERA	CANALICULATA	11	OHIO
2002OR31 8b	31.8	2002	HD	REF	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE	SP.	10	OHIO
2002OR31 8b	31.8	2002	HD	REF	TRICHOPTERA	HYDROTILIDAE	HYDROTILA	SP.	310	OHIO
2002OR31 8b	31.8	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	23	OHIO
2002OR31 8b	31.8	2002	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	50	OHIO
2002OR31 8b	31.8	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	86	OHIO
2002OR31 8c	31.8	2002	HD	REF	BASOMMATOPHORA	ANCYLIDAE	FERRISSIA	RIVULARIS	11	OHIO
2002OR31 8c	31.8	2002	HD	REF	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	5	OHIO
2002OR31 8c	31.8	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	10	OHIO
2002OR31 8c	31.8	2002	HD	REF	CLADOCERA	SIDIDAE	SIDA	CRYSTALLINA	31	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	SP.	SP.	5	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	10	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	SP.	15	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	50	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	85	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	400	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	95	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	NANOCLADIUS	SP.	20	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	POLYPEDILUM	ILLINOENSE	5	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCYRNOMUS	SP.	30	OHIO
2002OR31 8c	31.8	2002	HD	REF	DIPTERA	CHIRONOMIDAE	RHEOTANYTARSUS	SP.	45	OHIO
2002OR31 8c	31.8	2002	HD	REF	EPEMEROPTERA	CAENIDAE	CAENIS	SP.	20	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2002OR31 8c	31.8	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE				15 OHIO
2002OR31 8c	31.8	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	115	OHIO
2002OR31 8c	31.8	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENONEMA	SP.	5	OHIO
2002OR31 8c	31.8	2002	HD	REF	HAPLOTAXIDA	NAIDAE		SP.	40	OHIO
2002OR31 8c	31.8	2002	HD	REF	HAPLOTAXIDA	NAIDAE	DERO	SP.	5	OHIO
2002OR31 8c	31.8	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	170	OHIO
2002OR31 8c	31.8	2002	HD	REF	HYDROIDA	HYDRIDAE	HYDRA	AMERICANA	10	OHIO
2002OR31 8c	31.8	2002	HD	REF	NEOTAEONIOGLOSSA	HYDROBIDAE	AMNICOLA	SP.	22	OHIO
2002OR31 8c	31.8	2002	HD	REF	NEOTAEONIOGLOSSA	PLEURO CERIDAE	PLEUROCERA	CANALICULATA	3	OHIO
2002OR31 8c	31.8	2002	HD	REF	OSTRACODA (CLASS)			SP.	6	OHIO
2002OR31 8c	31.8	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	271	OHIO
2002OR31 8c	31.8	2002	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	55	OHIO
2002OR31 8c	31.8	2002	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	80	OHIO
2002OR31 8c	31.8	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	132	OHIO
2002OR6 1b	6.1	2002	HD	REF	AMPHIPODA	PLANORBIIDAE	MENETUS	DILATATUS	10	OHIO
2002OR6 1b	6.1	2002	HD	REF	BASOMMATOPHORA	SIDAE		CRYSTALLINA	70	OHIO
2002OR6 1b	6.1	2002	HD	REF	CLADOCERA	CHIRONOMIDAE	ABLABESMYIA	MALLOCHI	4	OHIO
2002OR6 1b	6.1	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	4	OHIO
2002OR6 1b	6.1	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	7	OHIO
2002OR6 1b	6.1	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	317	OHIO
2002OR6 1b	6.1	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	1	OHIO
2002OR6 1b	6.1	2002	HD	REF	HAPLOTAXIDA	NAIDAE		SP.	20	OHIO
2002OR6 1b	6.1	2002	HD	REF	HAPLOTAXIDA	NAIDAE	DERO	SP.	60	OHIO
2002OR6 1b	6.1	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	50	OHIO
2002OR6 1b	6.1	2002	HD	REF	HAPLOTAXIDA	NAIDAE	STYLARIA	LACUSTRIS	10	OHIO
2002OR6 1b	6.1	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	5	OHIO
2002OR6 1b	6.1	2002	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	4	OHIO
2002OR6 1b	6.1	2002	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	19	OHIO
2002OR6 1c	6.1	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	80	OHIO
2002OR6 1c	6.1	2002	HD	REF	AMPHIPODA	PHYSIDAE	PHYSELLA	SP.	1	OHIO
2002OR6 1c	6.1	2002	HD	REF	CLADOCERA	SIDAE		CRYSTALLINA	10	OHIO
2002OR6 1c	6.1	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	30	OHIO
2002OR6 1c	6.1	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	50	OHIO
2002OR6 1c	6.1	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	540	OHIO
2002OR6 1c	6.1	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	2490	OHIO
2002OR6 1c	6.1	2002	HD	REF	DIPTERA	NAIDAE		SP.	50	OHIO
2002OR6 1c	6.1	2002	HD	REF	HAPLOTAXIDA	NAIDAE	DERO	SP.	20	OHIO
2002OR6 1c	6.1	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	20	OHIO
2002OR6 1c	6.1	2002	HD	REF	HAPLOTAXIDA	HYDRIDAE	HYDRA	AMERICANA	10	OHIO
2002OR6 1c	6.1	2002	HD	REF	HYDROIDA	HYDROBIDAE	AMNICOLA	SP.	4	OHIO
2002OR6 1c	6.1	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	10	OHIO
2002OR6 1c	6.1	2002	HD	REF	TRICHOPTERA	POLYCENTROPODIDAE	CYRNELLUS	FRATERNUS	48	OHIO
2002OR6 1c	6.1	2002	HD	REF	TRICHLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	121	OHIO
2002OR6 3a	6.3	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP.	256	OHIO

Appendix F.

Event Code	Rm	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2002OR6 3a	6.3	2002	HD	REF	BASOMMATOPHORA	ANCYLIDAE	FERRISSIA	RIVULARIS	5	OHIO
2002OR6 3a	6.3	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	2	OHIO
2002OR6 3a	6.3	2002	HD	REF	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	221	OHIO
2002OR6 3a	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE		SP	11	OHIO
2002OR6 3a	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	10	OHIO
2002OR6 3a	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	50	OHIO
2002OR6 3a	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	20	OHIO
2002OR6 3a	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	50	OHIO
2002OR6 3a	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	540	OHIO
2002OR6 3a	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCHIRONOMUS	SP	60	OHIO
2002OR6 3a	6.3	2002	HD	REF	DIPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	9	OHIO
2002OR6 3a	6.3	2002	HD	REF	EPEMEROPTERA	NAIDAE	DERO	SP	20	OHIO
2002OR6 3a	6.3	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	5	OHIO
2002OR6 3a	6.3	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	COMMUNIS	85	OHIO
2002OR6 3a	6.3	2002	HD	REF	NEOTAEONIOGLOSSA	HYDROPTILIDAE	AMNICOLA	SP	1	OHIO
2002OR6 3a	6.3	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	35	OHIO
2002OR6 3a	6.3	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	31	OHIO
2002OR6 3a	6.3	2002	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	26	OHIO
2002OR6 3b	6.3	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	297	OHIO
2002OR6 3b	6.3	2002	HD	REF	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	1	OHIO
2002OR6 3b	6.3	2002	HD	REF	CLADOCERA	SIDAE	DREISSENA	POLYMORPHA	12	OHIO
2002OR6 3b	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	SIDA	CRYSTALLINA	55	OHIO
2002OR6 3b	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE		SP	11	OHIO
2002OR6 3b	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	20	OHIO
2002OR6 3b	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	10	OHIO
2002OR6 3b	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	50	OHIO
2002OR6 3b	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP	330	OHIO
2002OR6 3b	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP	420	OHIO
2002OR6 3b	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CAENIS	DISTINCTUS	10	OHIO
2002OR6 3b	6.3	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	19	OHIO
2002OR6 3b	6.3	2002	HD	REF	HAPLOTAXIDA	NAIDAE	NAIS	SP	15	OHIO
2002OR6 3b	6.3	2002	HD	REF	HAPLOTAXIDA	NAIDAE	DERO	SP	10	OHIO
2002OR6 3b	6.3	2002	HD	REF	NEMATODA	NAIDAE	NAIS	COMMUNIS	55	OHIO
2002OR6 3b	6.3	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP	5	OHIO
2002OR6 3b	6.3	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	37	OHIO
2002OR6 3b	6.3	2002	HD	REF	TRICLADIDA	PLANARIIDAE	DUGESIA	TIGRINA	11	OHIO
2002OR6 3c	6.3	2002	HD	REF	AMPHIPODA	GAMMARIDAE	GAMMARUS	SP	250	OHIO
2002OR6 3c	6.3	2002	HD	REF	BASOMMATOPHORA	PLANORBIDAE	PLANORBIS	DILATATUS	9	OHIO
2002OR6 3c	6.3	2002	HD	REF	BIVALVIA	CORBICULIDAE	CORBICULA	FLUMINEA	5	OHIO
2002OR6 3c	6.3	2002	HD	REF	BIVALVIA	DREISSENIDAE	DREISSENA	POLYMORPHA	1	OHIO
2002OR6 3c	6.3	2002	HD	REF	CLADOCERA	SIDAE	SIDA	CRYSTALLINA	25	OHIO
2002OR6 3c	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE		SP	15	OHIO

Appendix F.

Event Code	Rm.	Year	Sample Method	Ref/Out	Order	Family	Genus	Species	Count	River
2002OR6.3c	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	CRICOTOPUS	BICINCTUS	10	OHIO
2002OR6.3c	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	LUCIFER	20	OHIO
2002OR6.3c	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	NEOMODESTUS	60	OHIO
2002OR6.3c	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	DICROTENDIPES	SP.	170	OHIO
2002OR6.3c	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	GLYPTOTENDIPES	SP.	630	OHIO
2002OR6.3c	6.3	2002	HD	REF	DIPTERA	CHIRONOMIDAE	PSEUDOCIRONOMUS	SP.	70	OHIO
2002OR6.3c	6.3	2002	HD	REF	EPEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	24	OHIO
2002OR6.3c	6.3	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	NAIS	SP.	40	OHIO
2002OR6.3c	6.3	2002	HD	REF	HAPLOTAXIDA	NAIDIDAE	AMNICOLA	COMMUNIS	60	OHIO
2002OR6.3c	6.3	2002	HD	REF	NEOTAEENIOGLOSSA	HYDROBIIDAE	AMNICOLA	SP.	1	OHIO
2002OR6.3c	6.3	2002	HD	REF	NEOTAEENIOGLOSSA	HYDROBIIDAE	AMNICOLA	SP.	12	OHIO
2002OR6.3c	6.3	2002	HD	REF	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA	SP.	45	OHIO
2002OR6.3c	6.3	2002	HD	REF	TRICHOPTERA	POLYCENTROPIDIDAE	CYRNELLUS	FRATERNUS	35	OHIO
2002OR6.3c	6.3	2002	HD	REF	TRICHOPTERA	PLANARIIDAE	DUGESIA	TIGRINA	11	OHIO

Appendix G.

Species (sort: <u>taxon</u> / <u>alpha</u>)	Best Evidence	# of Blocks	PO PR CO		
			PO	PR	CO
Canada Goose	●	CO	2	4	7
Wood Duck	●	CO	0	3	4
American Black Duck	●	PR	2	1	0
Mallard	●	CO	5	11	25
Ring-necked Pheasant	●	CO	19	13	6
Ruffed Grouse	●	CO	9	9	2
Wild Turkey	●	CO	7	1	5
Northern Bobwhite	●	CO	6	5	1
Great Blue Heron	⊗	PO	14	0	0
Green Heron	●	CO	11	4	1
Turkey Vulture	⊗	PO	30	0	0
Northern Harrier	⊗	PO	1	0	0
Sharp-shinned Hawk	●	CO	19	4	1
Cooper's Hawk	●	CO	14	3	1
Red-shouldered Hawk	●	CO	1	1	7
Broad-winged Hawk	●	CO	16	13	4
Red-tailed Hawk	●	CO	22	26	18
American Kestrel	●	CO	15	19	8
Sora	⊗	PO	1	0	0
Killdeer	●	CO	13	22	31
Spotted Sandpiper	●	CO	4	3	4
American Woodcock	●	CO	7	11	1
Rock Pigeon	●	CO	18	18	25
Mourning Dove	●	CO	13	31	33
Black-billed Cuckoo	●	CO	14	11	1
Yellow-billed Cuckoo	●	CO	21	9	5
Barn Owl	⊗	PO	2	0	0
Eastern Screech-Owl	●	CO	18	14	3
Great Horned Owl	●	CO	11	14	7
Barred Owl	●	PR	3	3	0
Common Nighthawk	●	CO	14	19	7
Whip-poor-will	●	CO	0	4	1
Chimney Swift	●	CO	26	24	20
Ruby-throated Hummingbird	●	CO	25	25	12
Belted Kingfisher	●	CO	14	18	4
Red-headed Woodpecker	⊗	PO	2	0	0
Red-bellied Woodpecker	●	CO	11	12	5
Downy Woodpecker	●	CO	14	29	26
Hairy Woodpecker	●	CO	22	21	6
Yellow-shafted Flicker	●	CO	14	31	29
Pileated Woodpecker	●	CO	13	9	3
Eastern Wood-Pewee	●	CO	16	40	10
Acadian Flycatcher	●	CO	10	28	12
Alder Flycatcher	●	PR	1	1	0
Willow Flycatcher	●	CO	8	24	7
Least Flycatcher	●	CO	7	20	1
Eastern Phoebe	●	CO	10	20	17

Great Crested Flycatcher	●	CO	13	8	7
Eastern Kingbird	●	CO	11	6	7
White-eyed Vireo	●	CO	8	26	6
Yellow-throated Vireo	●	CO	8	10	1
Warbling Vireo	●	CO	7	13	7
Red-eyed Vireo	●	CO	9	49	14
Blue Jay	●	CO	12	28	36
American Crow	●	CO	37	20	17
Horned Lark	●	CO	1	1	4
Purple Martin	●	CO	3	0	2
Tree Swallow	●	CO	7	6	10
Northern Rough-winged Swallow	●	CO	10	19	10
Bank Swallow	●	CO	7	1	1
Cliff Swallow	●	CO	4	0	3
Barn Swallow	●	CO	15	12	37
Carolina Chickadee	●	CO	11	12	5
Black-capped Chickadee	●	CO	11	33	24
Tufted Titmouse	●	CO	11	37	26
White-breasted Nuthatch	●	CO	26	23	16
Brown Creeper	⊙	PR	3	1	0
Carolina Wren	●	CO	17	34	16
House Wren	●	CO	6	31	36
Blue-gray Gnatcatcher	●	CO	12	23	22
Eastern Bluebird	●	CO	6	8	9
Veery	●	CO	2	11	3
Wood Thrush	●	CO	10	42	21
American Robin	●	CO	2	2	75
Gray Catbird	●	CO	10	25	38
Northern Mockingbird	●	CO	13	10	11
Brown Thrasher	●	CO	17	20	11
European Starling	●	CO	13	7	57
Cedar Waxwing	●	CO	22	24	20
Blue-winged Warbler	●	CO	10	22	10
Golden-winged Warbler	●	CO	2	7	4
Brewster's Warbler	●	CO	1	0	1
Northern Parula	⊙	PR	1	2	0
Yellow Warbler	●	CO	9	25	32
Chestnut-sided Warbler	●	CO	4	3	5
Black-throated Green Warbler	⊗	PO	1	0	0
Yellow-throated Warbler	⊙	PR	3	5	0
Pine Warbler	⊙	PR	0	1	0
Prairie Warbler	●	CO	4	9	9
Cerulean Warbler	●	CO	8	17	4
Black-and-white Warbler	●	CO	5	4	5
American Redstart	●	CO	15	8	13
Worm-eating Warbler	⊙	PR	1	3	0
Ovenbird	●	CO	12	10	4
Louisiana Waterthrush	●	CO	4	9	6
Kentucky Warbler	●	CO	10	16	7
Common Yellowthroat	●	CO	7	39	21
Hooded Warbler	●	CO	8	17	5
Yellow-breasted Chat	●	CO	7	30	8

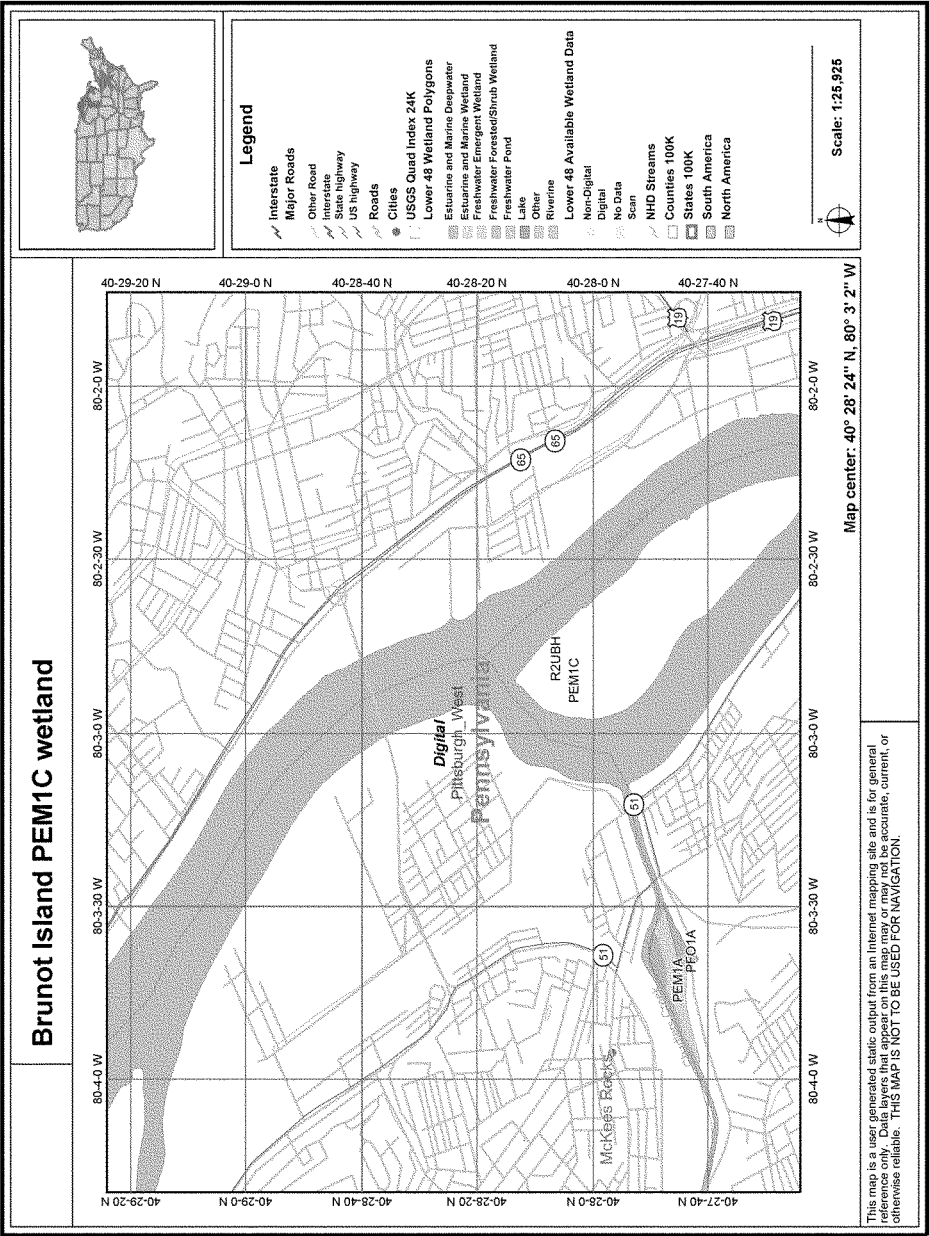
Summer Tanager	①	PR	0	2	0
Scarlet Tanager	●	CO	9	41	13
Eastern Towhee	●	CO	11	48	16
Chipping Sparrow	●	CO	10	21	46
Field Sparrow	●	CO	7	30	28
Vesper Sparrow	●	CO	1	2	4
Savannah Sparrow	●	CO	3	4	1
Grasshopper Sparrow	●	CO	3	4	5
Henslow's Sparrow	①	PR	1	1	0
Song Sparrow	●	CO	3	34	42
Swamp Sparrow	⊗	PO	4	0	0
Northern Cardinal	●	CO	6	36	36
Rose-breasted Grosbeak	●	CO	15	23	11
Indigo Bunting	●	CO	5	50	17
Bobolink	①	PR	0	2	0
Red-winged Blackbird	●	CO	4	34	31
Eastern Meadowlark	●	CO	7	19	4
Common Grackle	●	CO	17	14	43
Brown-headed Cowbird	●	CO	13	32	27
Orchard Oriole	●	CO	5	9	2
Baltimore Oriole	●	CO	8	20	36
Purple Finch	●	CO	5	10	4
House Finch	●	CO	10	16	48
American Goldfinch	●	CO	7	43	24
House Sparrow	●	CO	7	11	59

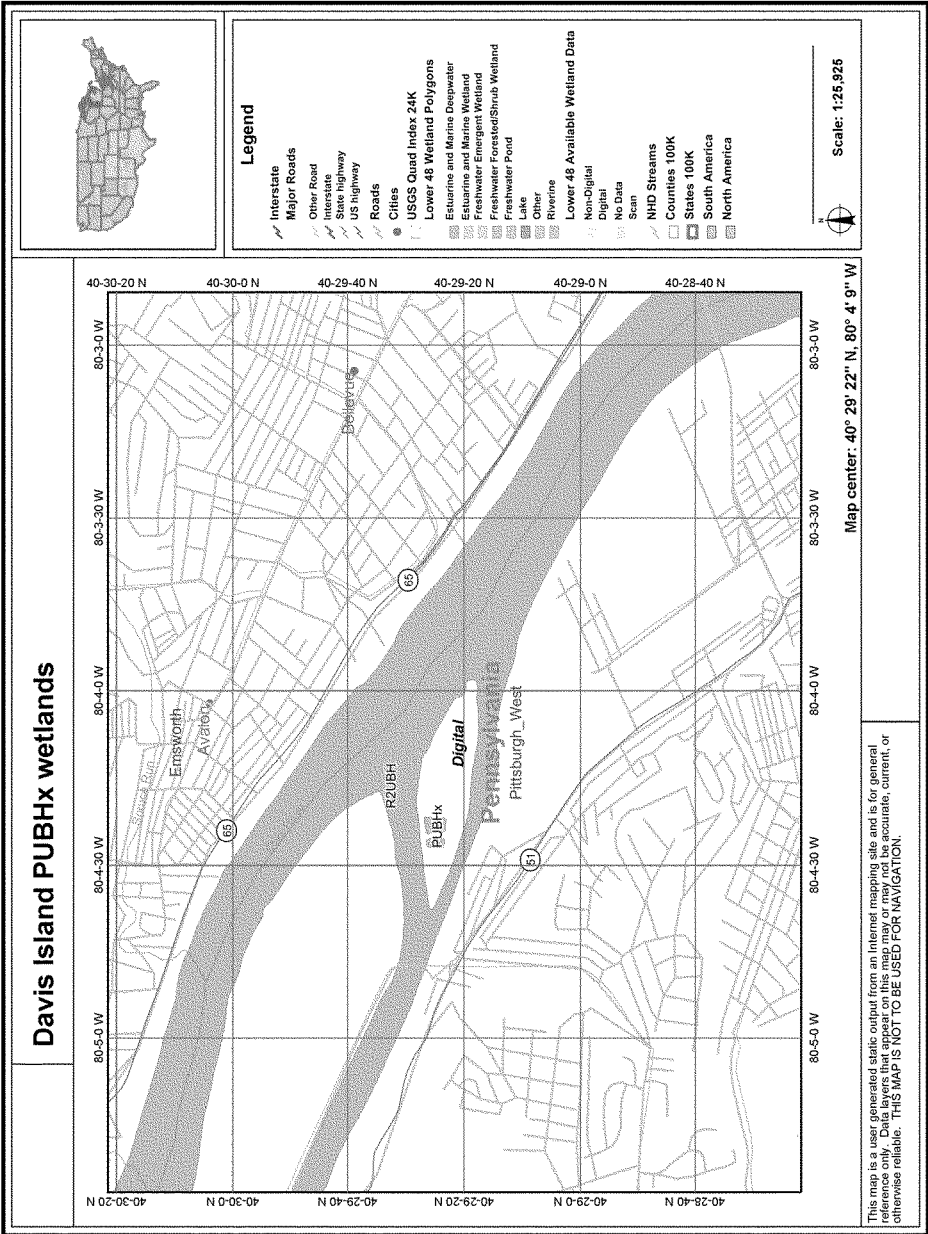
Beaver Species List					
Species	Best Evidence		# of Blocks		
(sort: <u>taxon</u> / <u>alpha</u>)			PO	PR	CO
Canada Goose	●	CO	3	2	8
Wood Duck	●	CO	1	4	7
Mallard	●	CO	3	7	12
Blue-winged Teal	⊗	PO	1	0	0
Ring-necked Pheasant	●	CO	6	3	5
Ruffed Grouse	●	CO	10	2	8
Wild Turkey	●	CO	0	0	6
Northern Bobwhite	●	CO	0	1	1
Pied-billed Grebe	●	CO	0	0	1
Great Blue Heron	●	CO	16	0	1
Green Heron	●	CO	12	1	2
Turkey Vulture	⊗	PO	26	0	0
Northern Harrier	⊗	PO	1	0	0
Sharp-shinned Hawk	①	PR	2	1	0
Cooper's Hawk	●	CO	4	1	2
Red-shouldered Hawk	●	CO	0	1	1
Broad-winged Hawk	●	CO	5	3	1
Red-tailed Hawk	●	CO	11	11	7
American Kestrel	①	PR	11	6	0
Common Moorhen	⊗	PO	2	0	0
Killdeer	●	CO	7	11	18
Spotted Sandpiper	①	PR	1	1	0

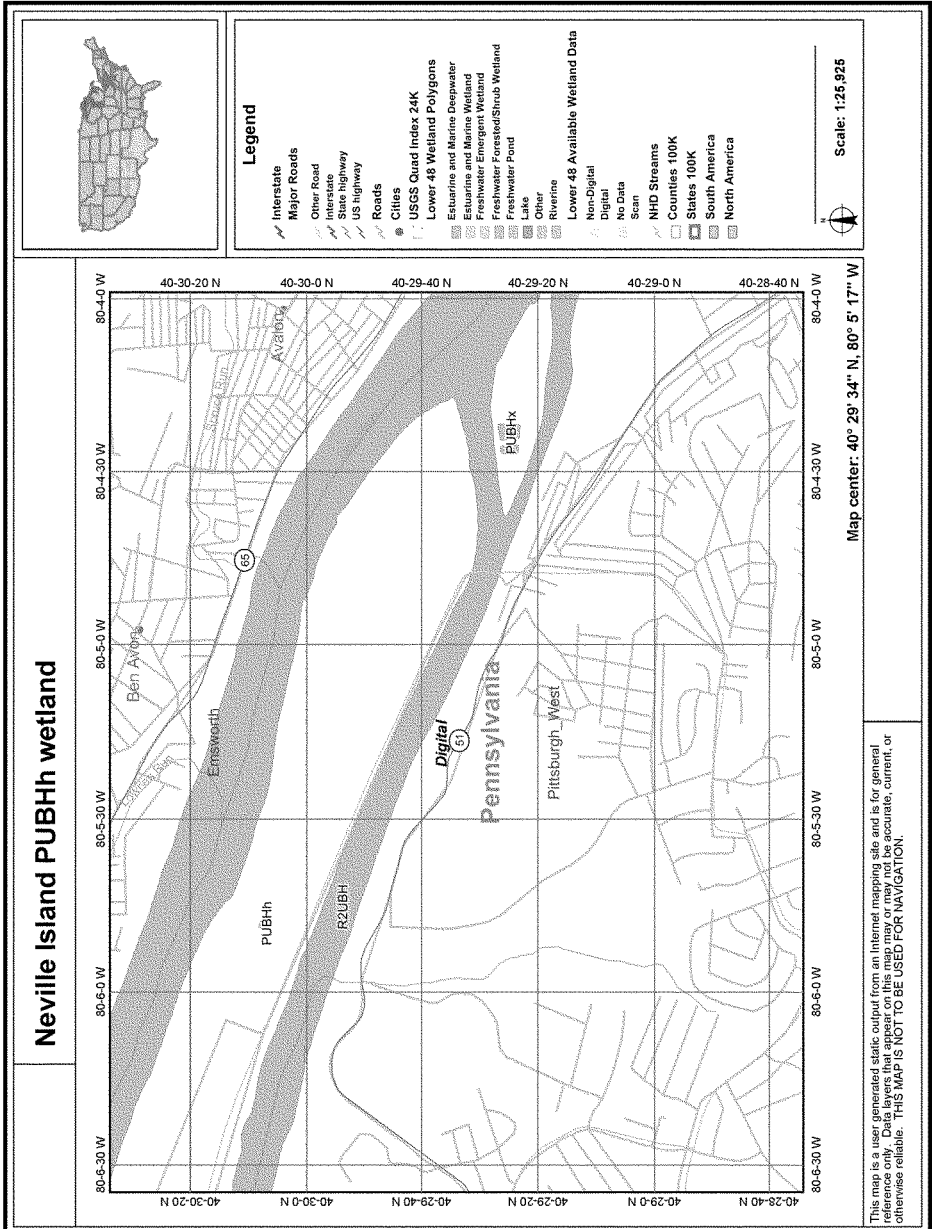
American Woodcock	①	PR	3	8	0
Rock Pigeon	●	CO	20	3	8
Mourning Dove	●	CO	11	18	15
Black-billed Cuckoo	●	CO	7	4	2
Yellow-billed Cuckoo	●	CO	4	6	3
Barn Owl	⊗	PO	1	0	0
Eastern Screech-Owl	●	CO	7	6	1
Great Horned Owl	①	PR	4	7	0
Barred Owl	①	PR	3	1	0
Long-eared Owl	●	CO	0	0	1
Common Nighthawk	●	CO	4	5	3
Whip-poor-will	①	PR	1	5	0
Chimney Swift	●	CO	17	11	15
Ruby-throated Hummingbird	●	CO	18	13	7
Belted Kingfisher	●	CO	15	9	4
Red-headed Woodpecker	⊗	PO	2	0	0
Red-bellied Woodpecker	●	CO	7	6	8
Downy Woodpecker	●	CO	17	12	7
Hairy Woodpecker	●	CO	15	7	4
Yellow-shafted Flicker	●	CO	16	16	12
Pileated Woodpecker	①	PR	3	7	0
Eastern Wood-Pewee	●	CO	11	24	7
Acadian Flycatcher	●	CO	9	20	3
Willow Flycatcher	●	CO	2	12	2
Least Flycatcher	①	PR	0	7	0
Eastern Phoebe	●	CO	9	7	17
Great Crested Flycatcher	●	CO	6	13	1
Eastern Kingbird	●	CO	7	9	3
White-eyed Vireo	●	CO	4	10	1
Yellow-throated Vireo	①	PR	3	10	0
Warbling Vireo	①	PR	3	6	0
Red-eyed Vireo	●	CO	3	30	12
Blue Jay	●	CO	12	13	19
American Crow	●	CO	19	12	13
Horned Lark	●	CO	1	3	1
Purple Martin	⊗	PO	2	0	0
Tree Swallow	●	CO	5	1	7
Northern Rough-winged Swallow	●	CO	7	2	8
Bank Swallow	●	CO	3	0	1
Cliff Swallow	●	CO	1	0	1
Barn Swallow	●	CO	5	5	37
Carolina Chickadee	●	CO	5	2	11
Black-capped Chickadee	●	CO	11	10	7
Tufted Titmouse	●	CO	10	18	17
Red-breasted Nuthatch	●	CO	0	0	1
White-breasted Nuthatch	●	CO	20	11	8
Carolina Wren	●	CO	9	11	4
House Wren	●	CO	7	12	24
Blue-gray Gnatcatcher	●	CO	11	8	8
Eastern Bluebird	●	CO	2	10	20
Veery	①	PR	3	3	0
Wood Thrush	●	CO	7	28	9

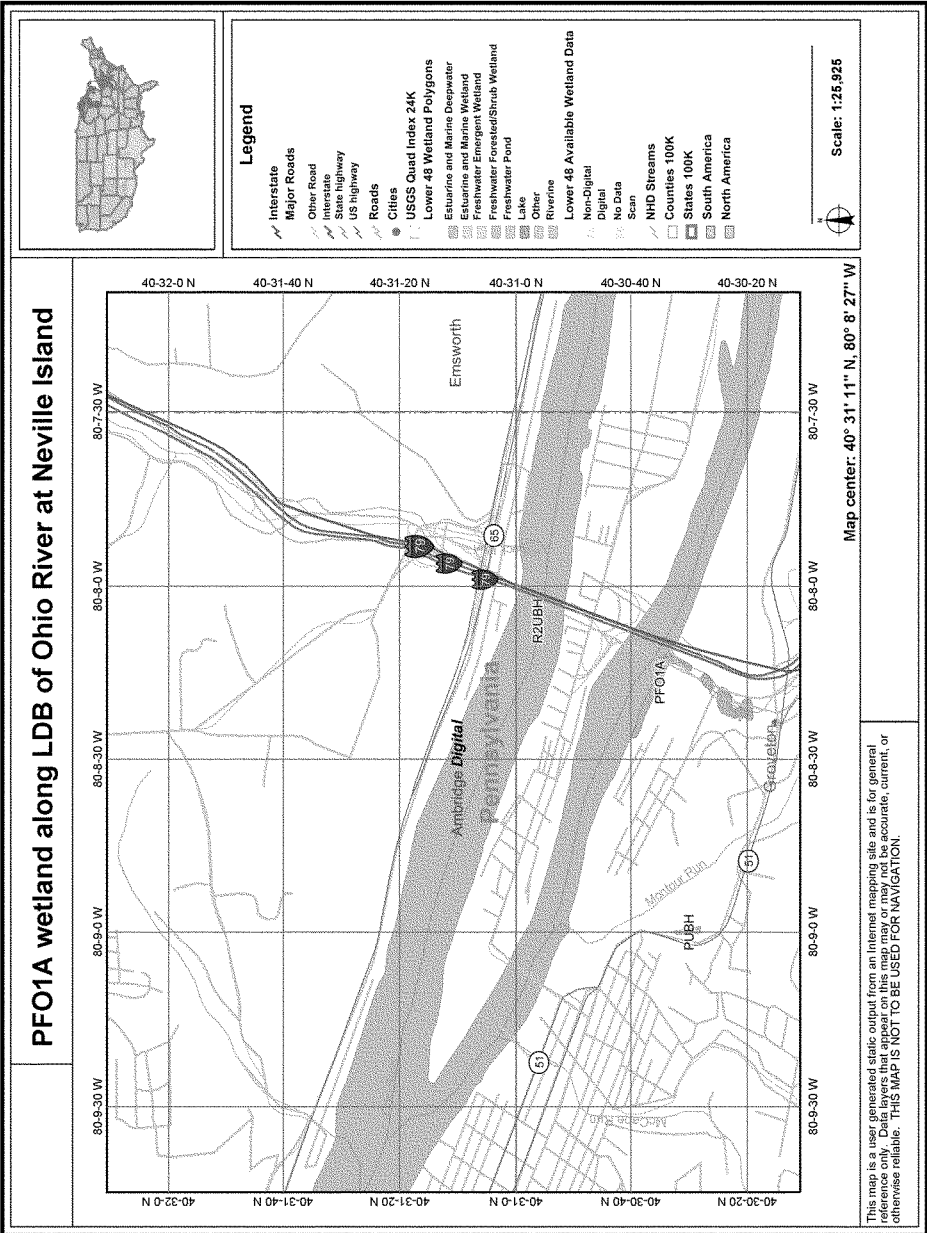
American Robin	●	CO	2	5	38
Gray Catbird	●	CO	7	19	18
Northern Mockingbird	●	CO	2	3	2
Brown Thrasher	●	CO	6	10	8
European Starling	●	CO	4	6	36
Cedar Waxwing	●	CO	14	14	9
Blue-winged Warbler	●	CO	6	17	2
Golden-winged Warbler	◐	PR	0	1	0
Northern Parula	◐	PR	0	1	0
Yellow Warbler	●	CO	8	20	5
Chestnut-sided Warbler	◐	PR	1	5	0
Black-throated Blue Warbler	◐	PR	0	1	0
Prairie Warbler	●	CO	0	6	1
Cerulean Warbler	◐	PR	3	13	0
Black-and-white Warbler	●	CO	2	2	1
American Redstart	◐	PR	3	10	0
Worm-eating Warbler	⊗	PO	1	0	0
Ovenbird	●	CO	3	12	1
Louisiana Waterthrush	◐	PR	6	4	0
Kentucky Warbler	●	CO	4	8	3
Common Yellowthroat	●	CO	5	28	10
Hooded Warbler	●	CO	5	9	1
Yellow-breasted Chat	●	CO	7	12	3
Summer Tanager	●	CO	0	0	1
Scarlet Tanager	●	CO	9	26	6
Eastern Towhee	●	CO	8	27	9
Chipping Sparrow	●	CO	9	5	33
Field Sparrow	●	CO	3	18	20
Savannah Sparrow	◐	PR	2	7	0
Grasshopper Sparrow	●	CO	1	4	2
Henslow's Sparrow	◐	PR	0	3	0
Song Sparrow	●	CO	8	14	25
Swamp Sparrow	●	CO	1	1	1
Northern Cardinal	●	CO	5	19	22
Rose-breasted Grosbeak	●	CO	6	11	4
Indigo Bunting	●	CO	4	32	9
Bobolink	◐	PR	0	5	0
Red-winged Blackbird	●	CO	5	22	17
Eastern Meadowlark	●	CO	8	14	9
Common Grackle	●	CO	11	11	24
Brown-headed Cowbird	●	CO	17	16	10
Orchard Oriole	●	CO	1	2	2
Baltimore Oriole	●	CO	3	13	16
Purple Finch	●	CO	3	2	1
House Finch	●	CO	7	15	19
American Goldfinch	●	CO	9	29	7
House Sparrow	●	CO	7	5	35

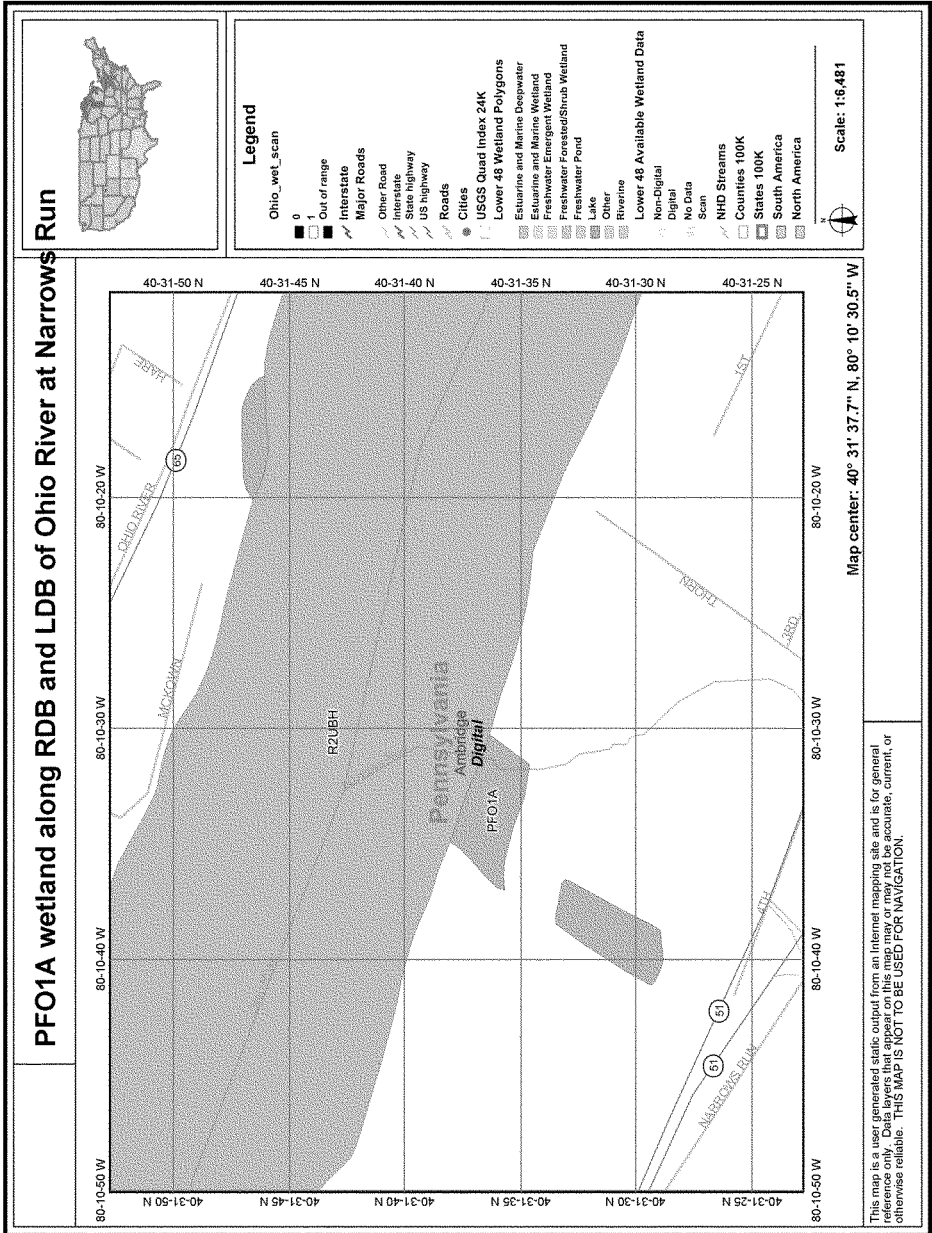
Breeding Evidence Codes	
Code	Code description (grouped by breeding category)
OB Category - Observed: not breeding evidence	
O	Species (male or female) observed during its breeding season, but not believed to be breeding in the block. Not in suitable nesting habitat.
PO Category - possible breeding evidence	
X	Species (male or female) observed in suitable nesting habitat during its safe dates.
PR Category - probable breeding evidence	
S	7 or more singing or territorial birds of a species detected within a block on one day.
A	Agitated behavior or anxiety calls from adult.
P	Pair observed in suitable nesting habitat within safe dates.
T	Territorial behavior or singing male present at same location on at least 2 different days, 7 days or more apart. Territoriality can be presumed from defensive encounters between individuals of the same species, or by observing a male singing from a variety of perches within a small area.
C	Courtship behavior or copulation.
N	Visiting probable nest site.
B	Nest building by wrens or excavation of holes by woodpeckers.
CO Category - confirmed evidence of breeding	
PE	Physiological evidence of breeding based on brood patch or cloacal protuberance. (For banders.)
NB	Nest building by any species except wrens and woodpeckers or adults carrying nesting material.
DD	Distraction display or injury feigning.
UN	Used nest found. Must be carefully identified if it is to be accepted.
FL	Recently fledged young or downy young. This includes dependent young only.
FS	Adult carrying fecal sac.
FY	Adult feeding recently fledged young.
ON	Adults entering or leaving a nest site in circumstances indicating occupied nest. To be used for nests which are too high (e.g. the tops of trees) or enclosed (e.g. chimneys) for the contents to be seen.
NE	Nest with egg(s), or eggshells on the ground.
NY	Nest with young seen or heard.
back to top	
Habitat Codes	
-- this atlas does not record habitat on the field card --	

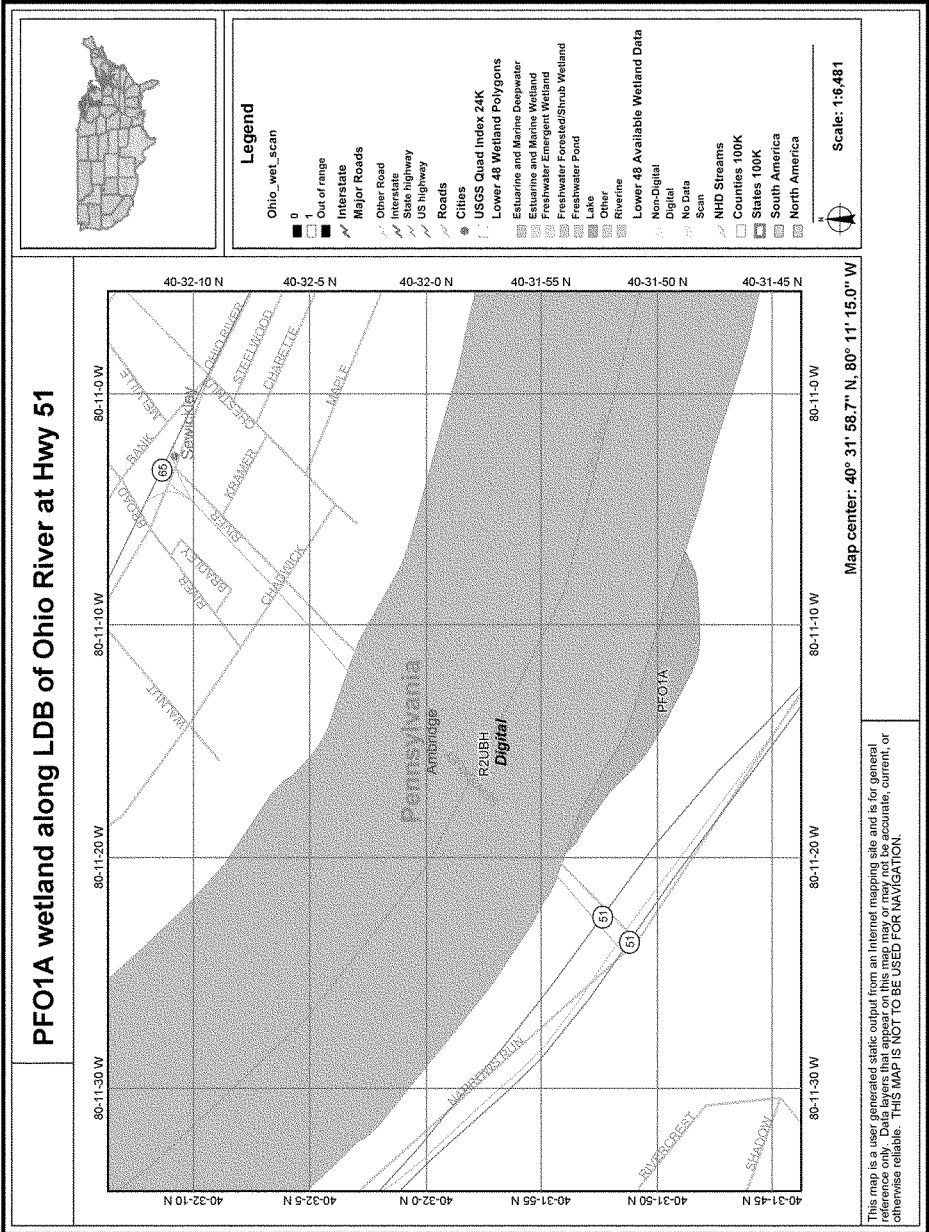


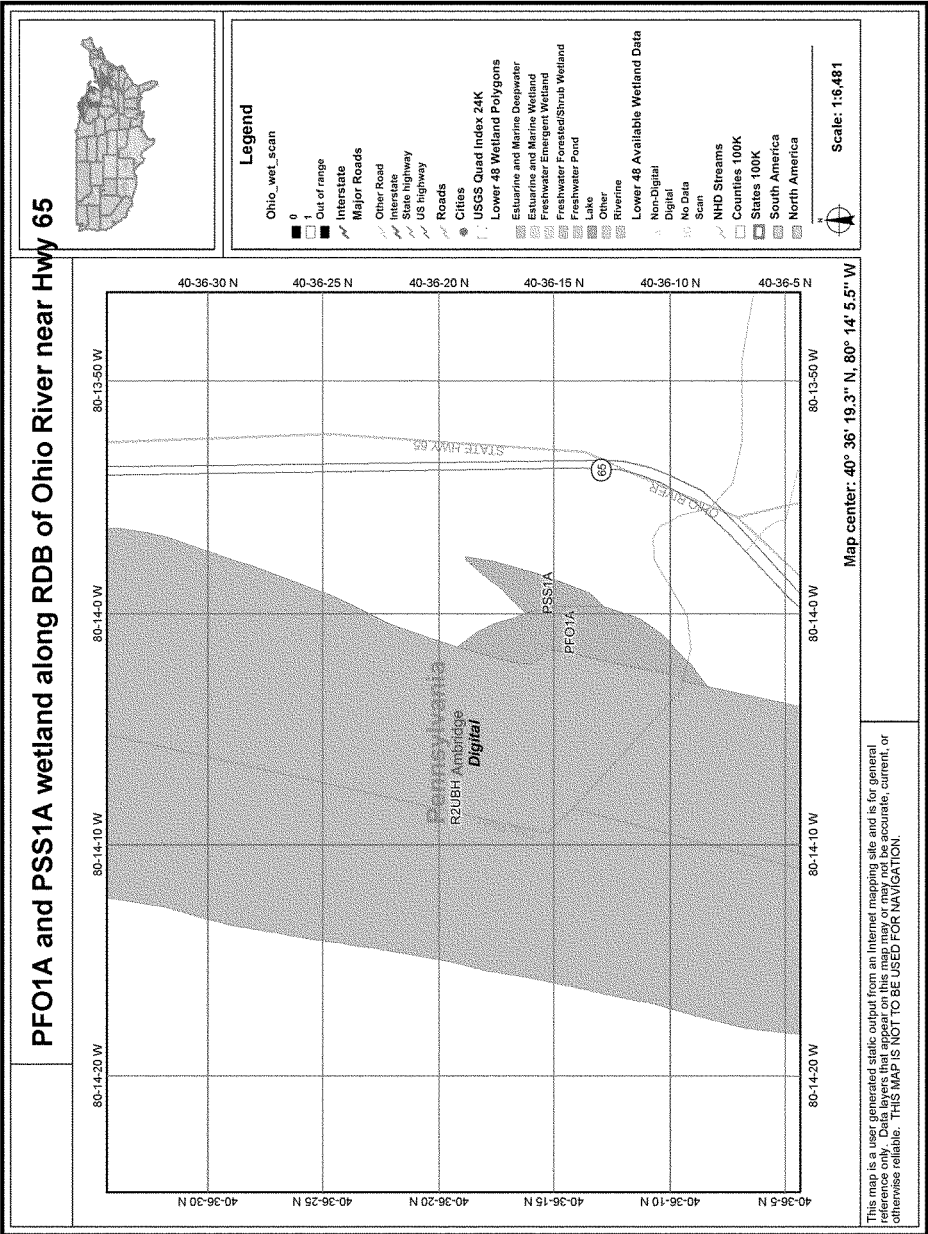


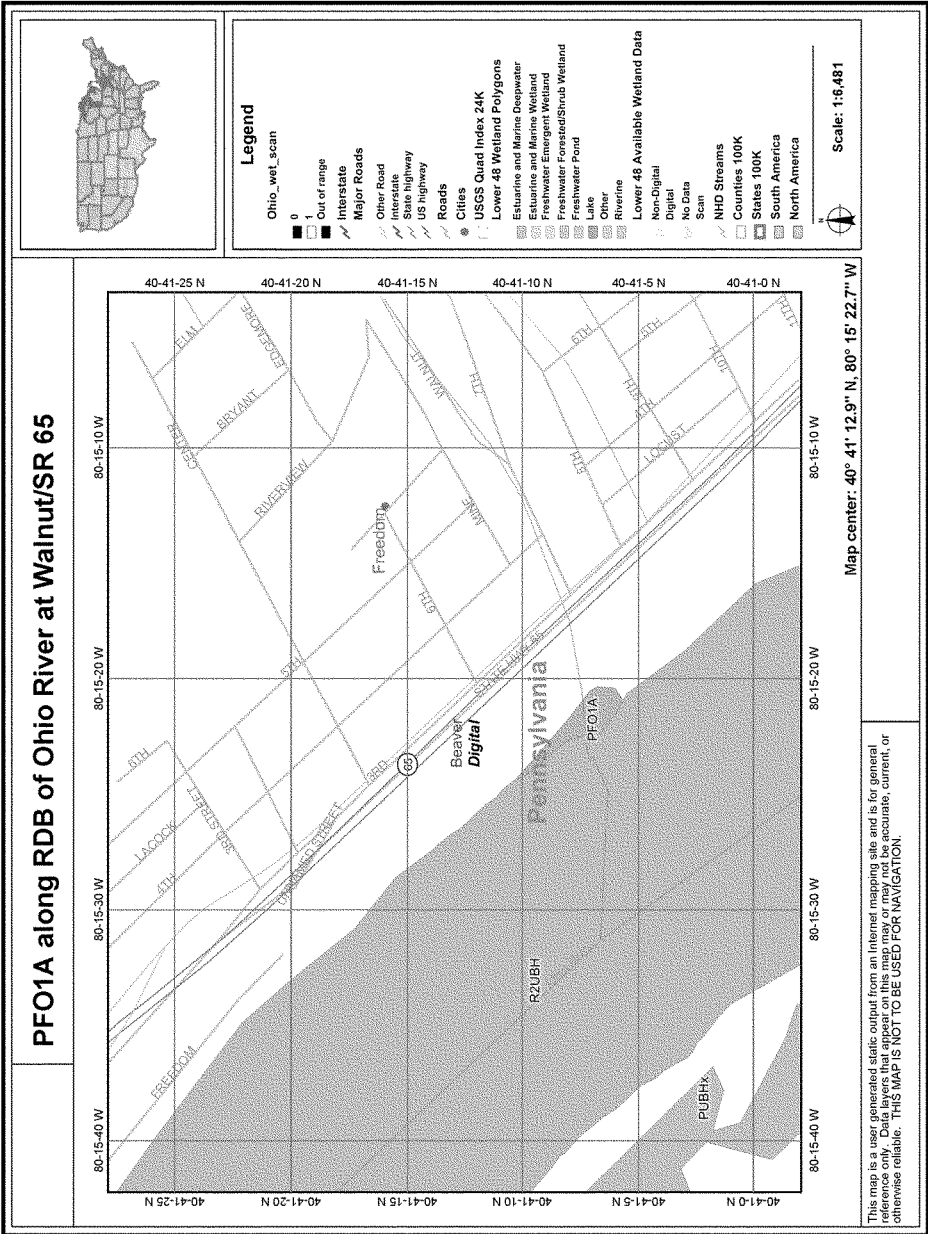


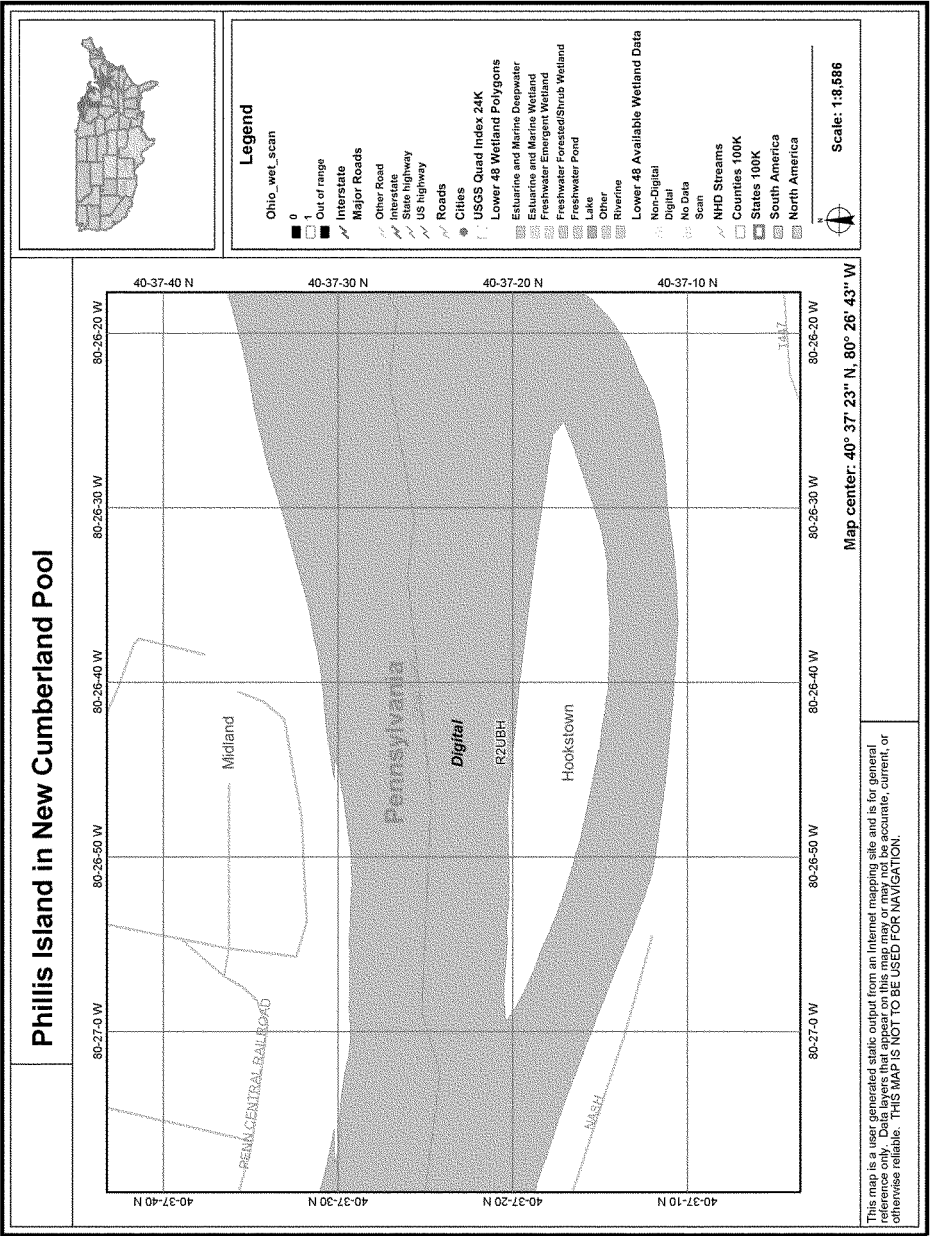


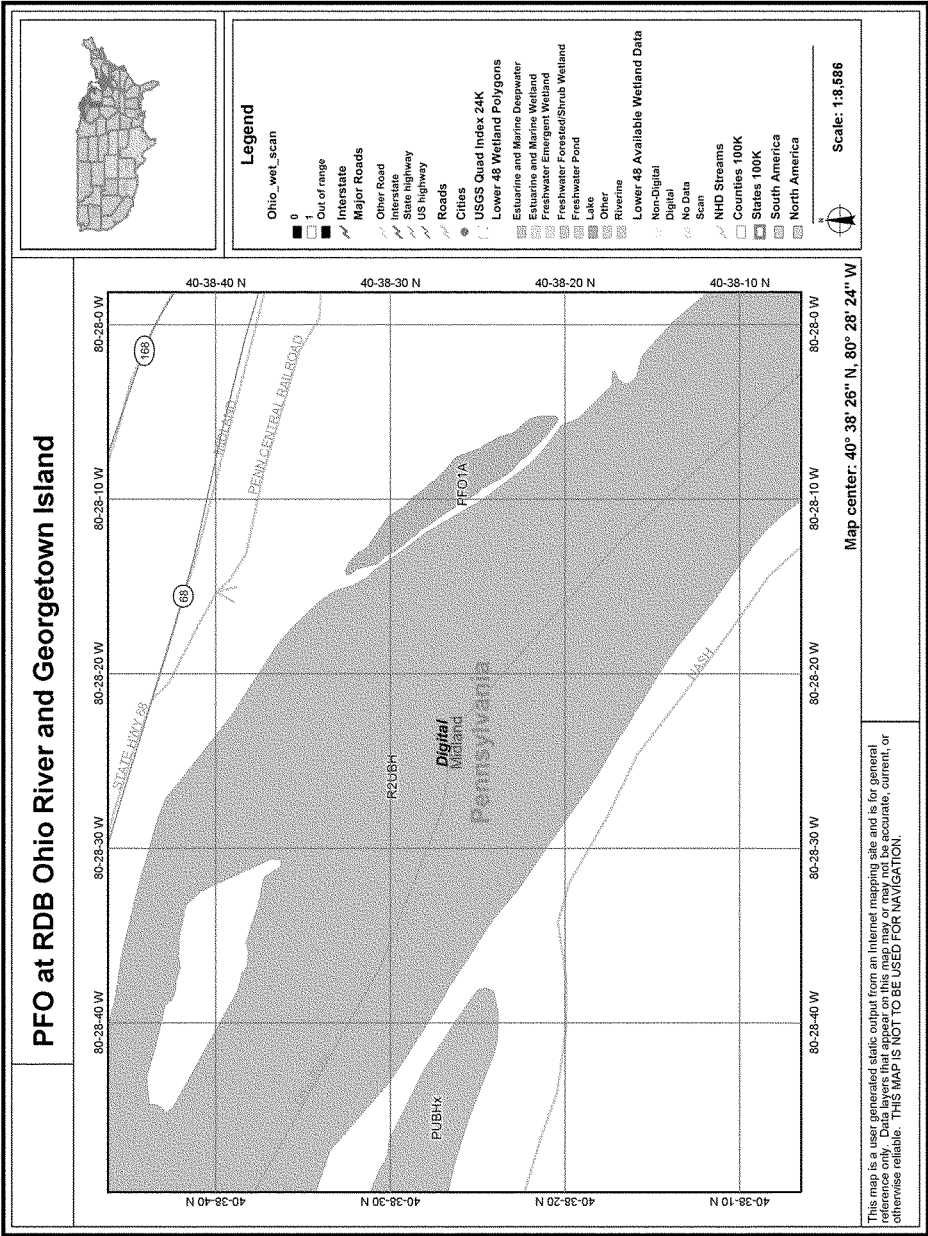












**MEMORANDUM OF AGREEMENT
SUBMITTED TO THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING
UPPER OHIO NAVIGATION STUDY, PENNSYLVANIA**

WHEREAS, the U.S. Army Corps of Engineers, Pittsburgh District (Corps), through the Upper Ohio Navigation Study, Pennsylvania, is recommending a modernization plan for replacement of lock chambers at Emsworth, Dashields, and Montgomery Locks and Dams in Allegheny and Beaver counties, Pennsylvania; and

WHEREAS a *Programmatic Agreement Regarding the Modernization of the Ohio River Navigation System* was executed June 20, 2009, among the Advisory Council on Historic Preservation, the U.S. Army Corps of Engineers, Huntington, Louisville and Pittsburgh District Offices, and the State Historic Preservation Officers of Illinois, Indiana, Kentucky, Ohio, Pennsylvania, and West Virginia; and

WHEREAS, under Programmatic Agreement Sections III.A.6. & B.1., the Corps has determined that the lock chamber replacements will have an adverse effect on Emsworth, Dashields, and Montgomery Locks and Dams, properties eligible for inclusion in the National Register of Historic Places; and

WHEREAS the Corps has documented the eligibility and effect determinations in the Upper Ohio Navigation Study, Pennsylvania, Feasibility Report and Integrated Environmental Impact Statement, and provided proper notification under 36 CFR § 800.8(c) and the SHPO concurred with the findings; and

WHEREAS archaeological properties will be addressed separately under Programmatic Agreement Section II, Identification and Treatment of Archaeological Properties; and

WHEREAS the Corps has consulted with the Rivers of Steel Heritage Corporation (RSHC), administrators of the Rivers of Steel National Heritage Area (RSNHA), and the Corps and SHPO has invited the RSHC to be a Consulting party in accordance with 33 CFR §§ 800.2(c)(5) and 800.3(f); and

WHEREAS the Corps prepared a Memorandum of Agreement (MOA) detailing mitigation plans, made the MOA available for Pennsylvania State Historic Preservation Officer (SHPO) and public review with the Environmental Impact Statement, and has taken all comments into account in accordance with Programmatic Agreement Section III.B.2.b.;

NOW, THEREFORE, the Corps and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

Stipulations

The Corps will ensure that the following measures are carried out:

1. Documentation.

Prior to the start of construction and subject to the availability of funds, the Corps will document Emsworth, Dashields, and Montgomery Locks and Dams in accordance with *The Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation* for inclusion in the Historic American Engineering Record (HAER). The Corps will consult with the National Park Service to establish the appropriate level of documentation.

The documentation will include contextual information on the Ohio River Navigation System, of which Emsworth, Dashields and Montgomery Locks and Dams are among the oldest operating facilities. Documentation will supplement existing HAER documentation on Emsworth Main Channel and Back Channel Dams, (HAER PA-637, 637-A, & 637-B), and reference other Ohio River navigation projects – Davis Island Lock and Dam (PA-65), Lock and Dam 4 (PA-227-A), Lock and Dam 12 (WV-89), and Gallipolis Locks and Dam (WV-58, 58-A, 58-B, & 58-C). The Corps will submit the documentation to the NPS for processing to the Library of Congress, and will provide copies of documentation to the SHPO and other appropriate archives as determined through consultation with the SHPO.

Photographic documentation will be completed prior to commencement of any construction activities.

2. Interpretation.

Subject to the availability of funds, the Corps will prepare and implement an interpretive plan comprised of the following components through consultation with the SHPO and the Rivers of Steel Heritage Corporation:

a. The Corps will prepare and publish a scholarly historical work relating to Emsworth, Dashields, and Montgomery Locks and Dams as part of the Ohio River Navigation System. Its theme will focus on the 1929 navigation system and related historical issues, as represented in the waterways engineering pattern established by the Corps Pittsburgh District with Davis Island Lock and Dam and the second generation Emsworth, Dashields, and Montgomery facilities. The specific themes will be formulated through consultation with the Chief of Engineers Office of History and the SHPO. The Corps will investigate and use, to the maximum extent allowed by federal law and Corps policy, professional historical journals and the Pennsylvania Historical and Museum Commission publication program to maximize circulation of the work in professional circles.

b. The Corps will prepare and publish a popular article about Emsworth, Dashields, and Montgomery Locks and Dams as the three facilities in Pennsylvania at the head of the Ohio River Navigation System. The Corps will coordinate with the SHPO regarding use of the

*Memorandum of Agreement
Upper Ohio Navigation Study, Pennsylvania
Emsworth, Dashields, and Montgomery Locks and Dams*

Pennsylvania Historical and Museum Commission publication program or other suitable means for publication.

c. The Corps will supplement its internet web site with interpretive information on the Ohio River Navigation System. A copy of the materials developed for the website will be provided to the SHPO and RSHC for review and comment. The Corps will also provide for the long-term maintenance of the web site.

d. The Corps will place interpretive signage in the vicinity of each of the lock and dam sites explaining the history and significance of the resources. The signage locations (within view of the resource as practical, given real estate constraints, and public accessibility) as well as a copy of the content will be provided to the SHPO and RSHC for review and comment. Additional interpretive opportunities, such as within the RSNHA, will be developed in coordination with the RHSC.

Reporting Requirements

Subject to the availability of funds, the Corps will provide the SHPO with an annual status report summarizing actions taken to comply with this agreement through completion of all stipulated measures. The initial report shall be submitted by April 30th of the year following signature of the MOA.

Review, Amendment, and Termination

This MOA shall become effective when signed by both the Corps and the SHPO. RSHC has been invited by the Corps and the SHPO to be a consulting party in the 106 process under 800.2(c)(5) and 800.3(f) and as such, is invited to concur in the MOA under 800.6(c)(3). This Agreement will expire five years after the date of last signature. This MOA may be extended for an additional three years by written agreement of the Parties.

This MOA may be modified or amended only by written, mutual agreement of the Parties. The Corps shall file a copy of any amended agreement with the Advisory Council.

At any time, one Party may request that the other Party consult to review implementation of the terms of this Agreement. If either Party to this Agreement determines that the terms cannot be or are not being carried out, the Parties shall consult to consider amending the agreement.

Either party may terminate this MOA by providing written notice to the other party. The termination shall be effective upon the sixtieth calendar day following notice, unless a later date is set forth. In the event of termination, the Corps shall request the comments of the Advisory Council under 36 CFR § 800.7(a).

The provisions of this MOA which require performance after the expiration or termination of this MOA shall remain in force notwithstanding the expiration or termination of this MOA.

*Memorandum of Agreement
Upper Ohio Navigation Study, Pennsylvania
Emsworth, Dashields, and Montgomery Locks and Dams*

If any provision of this MOA is determined to be invalid or unenforceable, the remaining provisions shall remain in force and unaffected to the fullest extent permitted by law and regulation.

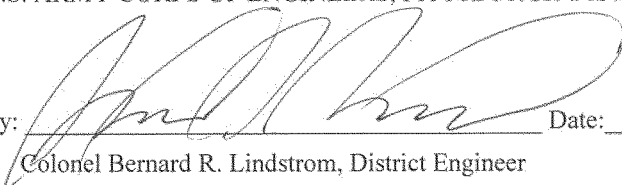
Nothing in this MOA is intended to or will be construed to create any rights or remedies for any third party and no third party is intended to be a beneficiary of this MOA.

Execution of this Memorandum of Agreement by the Corps and the Pennsylvania SHPO, its subsequent acceptance by the Advisory Council, and implementation of its terms, evidence that the Corps has afforded the Advisory Council an opportunity to comment on the Upper Ohio Navigation Study, Pennsylvania, and its effects on the historic lock and dam properties, and that the Corps has taken into account the effects of the undertaking on historic properties.

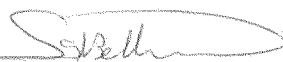
During the term of this Agreement, should the Federal Energy Regulatory Commission (FERC) issue a permit or license for a non-federal hydropower project at Emsworth, Dashields, or Montgomery Dams, the Corps shall inform FERC, as the federal lead agency for Section 106, National Historic Preservation Act, compliance, of the existence of this Agreement. Should the FERC project affect the Corps undertaking, or its ability to satisfactorily complete the conditions of this agreement, the Corps will first take steps to resolve this issue with the FERC, and failing timely resolution, shall consult to seek amendment of the agreement.

*Memorandum of Agreement
Upper Ohio Navigation Study, Pennsylvania
Emsworth, Dashields, and Montgomery Locks and Dams*

U.S. ARMY CORPS OF ENGINEERS, PITTSBURGH DISTRICT

By:  Date: 3 NOV 14
Colonel Bernard R. Lindstrom, District Engineer

STATE HISTORIC PRESERVATION OFFICER

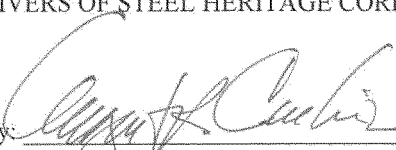
By:  Date: Nov 25, 2014
Serena Georgia Bellew, Deputy State Historic Preservation Officer
Pennsylvania Historical and Museum Commission
Bureau of Historic Preservation

ACCEPTED for the Advisory Council on Historic Preservation

By: _____ Date: _____

CONCURRING IN MOA:

RIVERS OF STEEL HERITAGE CORPORATION

By:  Date: 12 Dec 2014
August R. Carlino, President and Chief Executive Officer

Memorandum of Agreement
Upper Ohio Navigation Study, Pennsylvania
Emsworth, Dashields, and Montgomery Locks and Dams



Preserving America's Heritage

January 27, 2015

Ms. Deborah Campbell
Chief, Environmental and Cultural Resources Section
Department of the Army
Pittsburgh District, Corps of Engineers
William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, PA 15222-4186

***Ref: Proposed Modernization of the Locks and Dams on the Upper Ohio River
Upper Ohio Navigation Study
Allegheny and Beaver Counties, Pennsylvania***

Dear Ms. Campbell:

On January 9, 2015, the Advisory Council on Historic Preservation (ACHP) received the Memorandum of Agreement (MOA) for the above referenced project. In accordance with Section 800.6(b)(1)(iv) of the ACHP's regulations, the ACHP acknowledges receipt of the MOA. The filing of the MOA, and execution of its terms, completes the requirements of Section 106 of the National Historic Preservation Act and the ACHP's regulations.

We appreciate you providing us with a copy of this MOA and will retain it for inclusion in our records regarding this project. Should you have any questions or require additional assistance, please contact Brian Lusher at 202-517-0221, or via email at blusher@achp.gov.

Sincerely,

Raymond V. Wallace
Historic Preservation Technician
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

401 F Street, Suite 308 □ Washington, DC 20001-2637

Phone: 202-517-0200 □ Fax: 202-517-6381 □ achp@achp.gov □ www.achp.gov



Commonwealth of Pennsylvania
 Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
 Commonwealth Keystone Building, 2nd Floor
 400 North Street
 Harrisburg, PA 17120-0093
www.phmc.state.pa.us

Handwritten signature and date:
 12 Dec 2014

13 November 2014

Deborah Campbell
 Chief, Environmental and Cultural Resources Section
 Army Corps of Engineers, Pittsburgh District
 1000 Liberty Avenue, Suite 2200
 Pittsburgh, PA 15222

Re: ER# 1997-1617-042-Z
 COE: Memorandum of Agreement, Upper Ohio Navigation Study,
 Allegheny and Beaver Counties

Dear Ms. Campbell:

Thank you for submitting information concerning the above referenced project. The Bureau for Historic Preservation (the State Historic Preservation Office) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 *et seq.* (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

The Bureau for Historic Preservation has executed the enclosed Memorandum of Agreement for the project referenced above. Please have the Agreement executed by the remaining parties and forward the Agreement, along with supporting documentation, to the Advisory Council on Historic Preservation for acceptance.

If you need further information in this matter please consult Kira Heinrich at (717) 705-0700.

Sincerely,

Serena G. Bellew
 Director & Deputy State Historic Preservation Officer
 Bureau for Historic Preservation
 Pennsylvania Historical and Museum Commission

SGB/kmh



Pennsylvania Historical & Museum Commission
 Tom Corbett, Governor - Andrew L. Marko, Chairman - Jesse M. Vitaphone, Executive Director



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
PITTSBURGH DISTRICT, CORPS OF ENGINEERS
WILLIAM S. MOORHEAD FEDERAL BUILDING
1000 LIBERTY AVENUE
PITTSBURGH, PA 15222-4186

June 6, 2012

Environmental and Cultural Resources Section

Mr. Douglas C. McLearen
Chief, Division of Archaeology and Protection
PA Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, Pennsylvania 17120-0093

Dear Mr. McLearen:

Thank you for your review and comments dated March 24, 2011, on our draft Memorandum of Agreement (MOA) for Locks and Dams Modernization, Upper Ohio Navigation System, Allegheny and Beaver Counties (ER# 97-1617-042-K). I am enclosing a revised draft MOA that addresses some of your comments. Others will be addressed later, as explained below. We welcome any comments you may have on the enclosed revision.

Section 106 compliance for this undertaking is being addressed through the National Environmental Policy Act compliance process. Our current plan is to circulate the draft MOA and historic properties documentation for public review in the Cultural Resource Appendix of our Upper Ohio Navigation Study, Pennsylvania, Draft Feasibility Report and Integrated Environmental Impact Statement. Through the public review currently scheduled for mid-October through November 2012, you will have another opportunity to comment on our undertaking and the draft MOA.

Following public input, we will further revise the draft MOA as needed, and forward it with the Feasibility Study Report through the Congressional authorization process. We will hold finalization and signature of the MOA until the finalized recommended plan is authorized. Please address any comments or questions to Conrad Weiser at 412-395-7220.

Sincerely,

Deborah L. Campbell
Chief, Environmental and Cultural
Resources Section

Enclosure



Preserving America's Heritage

March 18, 2011

Mr. Bruce Kish
Environmental Protection Specialist
Pittsburgh District, U.S. Army Corps of Engineers
William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, PA 1522-4186

*Ref: Proposed Modernization to the Locks and Dams on the Upper Ohio River
(Upper Ohio Navigation Study)
Allegheny and Beaver Counties, Pennsylvania*

Dear Mr. Kish:

The Advisory Council on Historic Preservation (ACHP) recently received the additional information in support of your notification of adverse effects of the referenced project on properties listed on and eligible for listing in the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and you determine that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Pennsylvania SHPO, and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with the opportunity to review this undertaking. If you have any questions, please contact Tom McCulloch at 202-606-8554, or via email at tmcculloch@achp.gov.

Sincerely,

Raymond V. Wallace

Raymond V. Wallace
Historic Preservation Technician
Office of Federal Agency Programs



Commonwealth of Pennsylvania
 Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
 Commonwealth Keystone Building, 2nd Floor
 400 North Street
 Harrisburg, PA 17120-0093
www.phmc.state.pa.us

24 March 2011

Curtis N. Meeder
 U.S. Army Corps of Engineers
 Pittsburgh District
 1000 Liberty Avenue
 Pittsburgh, PA 15222-4186

TO EXPEDITE REVIEW USE
 BHP REFERENCE NUMBER

RE: ER# 97-1617-042-K
 COE: Draft MOA for Locks and Dams Modernization, Upper Ohio River Navigation System, Allegheny and Beaver Counties

Dear Mr. Meeder:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004. These regulations require consideration of the project's potential effect upon both historic and archaeological resources.

Thank you for providing the draft Memorandum of Agreement (MOA) for our review. We concur with the proposed mitigation; however there are some issues that should be clarified in or added to the MOA.

1. The Corps must either complete the identification of archaeological resources before the MOA is signed or include stipulations in the Agreement that develop a process by which archaeological identifications are completed. We requested additional Geomorphology testing for the presence or absence of buried cultural remains but have yet to receive a response.
2. The Corps states they consulted with the Steel Industry Heritage Corporation. We agree that they are a logical consulting party. Did the Corps invite any other entities to consult, such as the company(ies) that leases land for their hydropower plants on the Ohio or the county historical societies? These are also potential consulting parties. If the Corps invited them, it should be mentioned in a whereas clause that they were invited and declined. If they accepted, we are unaware of any comments they provided.

Page 2
C. Meeder
ER# 97-1617-042-K
24 March 2011

3. You should reference in a whereas clause that there is a Programmatic Agreement for the entire Ohio River Navigation System that all states along the river signed. The whereas clause should give a broader context for the agreement with Pennsylvania.

Finally, we recommend that you include a footer on each page that identifies the project.

If you need further assistance in this matter, contact Ann Safley at (717) 787-9121.

Sincerely

A handwritten signature in dark ink, appearing to read "Ann Safley for", is written over the typed name of Douglas C. McLearen.

Douglas C. McLearen, Chief
Division of Archaeology & Protection

DMcL/ras



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
 Bureau for Historic Preservation
 Post Office Box 1026
 Harrisburg, Pennsylvania 17108-1026

December 14, 2000

James A. Purdy
 U.S. Army Corps of Engineers
 Pittsburgh District
 1000 Liberty Avenue
 Pittsburgh, PA 15222-4186

Re: ER 00-3443-003-B
 COE: Rehabilitation of Emsworth Locks and Dams. Emsworth,
 Allegheny Co.

Dear Mr. Purdy:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999. These requirements include consideration of the project's potential effect upon both historic and archaeological resources.

It is the opinion of the State Historic Preservation Officer that the **Emsworth Locks and Dams** is eligible for listing in the National Register of Historic Places under criteria A for its association with the New Deal program and transportation systems/improvements as well as under criteria C for engineering.

In our opinion this project will have an effect on the Emsworth Locks and Dams, eligible for the National Register of Historic Places. Furthermore, it is our opinion that the replacement of the chain system to hydraulic system will adversely affect the historic and engineering qualities that make the property eligible. To comply with the regulations of the Advisory Council on Historic Preservation, you must follow the procedures outlined in 36 CFR 800.5 (c), when the effect is adverse. You will need to notify the Advisory Council of the effect finding and continue to consult with the Bureau for Historic Preservation to seek ways to avoid or reduce the effects on historic properties.

If you need further information please consult Ann Safley at (717) 787-9121.

Sincerely,

Dan G. Deibler
 Acting Director

cc: Advisory Council on Historic Preservation
 DGD/ras



Commonwealth of Pennsylvania
 Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
 Commonwealth Keystone Building, 2nd Floor
 400 North Street
 Harrisburg, PA 17120-0093
www.phmc.state.pa.us

25 April 2013

Bernard R. Lindstrom
 U.S. Army Corps of Engineers
 Pittsburgh District
 1000 Liberty Avenue
 Pittsburgh, PA 15222-4186

TO EXPEDITE REVIEW USE
 BHP REFERENCE NUMBER

RE: ER# 97-1617-042-M
 COE: Montgomery Locks and Dam Gate Replacement Project, Effect Report, Historic Resource Survey Form, Mitigation, and Draft MOA, Ohio River, Beaver Co.

Dear Mr. Lindstrom:

The Bureau for Historic Preservation (the State Historic Preservation Office) reviews projects in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004, and under the authority of the Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988). These requirements include consideration of project potential effects upon both historic and archaeological resources.

STRUCTURES: We concur with the findings of the agency that the Montgomery Locks and Dam is eligible for listing in the National Register of Historic Places. We also concur with your assessment of adverse effect the gate replacement will have on the National Register eligible Montgomery Locks and Dam.

ARCHAEOLOGY: There is a high probability that archaeological resources are located in this project area. In our opinion, the activity described in your proposal should have no effect on such resources. Should the scope of the project be amended to include additional ground disturbing activity this office should be contacted immediately and a Phase I Archaeological Survey may be necessary to locate all potentially significant archaeological resources.

We agree with the recommended mitigation plan described in the effects report and memorialized in the draft Memorandum of Agreement. We offer the following comments on the Memorandum of Agreement:

The title of the Agreement should read: Memorandum of Agreement between the Pittsburgh District Corps of Engineers and the Pennsylvania State Historic Preservation Officer Regarding the Montgomery Locks and Dam Gates Replacement Project, Ohio River, Beaver County, Pennsylvania.

Page 2
B. Lindstrom
ER# 97-1617-042-M
25 April 2013

In the 5th whereas clause, you refer to a Memorandum in the past tense. What MOA is this referring to? The only MOA we have is a draft for the modernization project that covers the lock chamber replacement at the three locks and dams in Pennsylvania, Emsworth, Dashfield, and Montgomery. We provided some comments on this but received no final agreement. The purpose of this whereas clause in this particular agreement is not clear.

In regards to the stipulations, you need to incorporate deadlines into each stipulation. The deadlines do not need to be date specific, but may say, within 2 years of the execution of this agreement, for instance.

Prior to resending this MOA to us, please e-mail the agreement in Word format to rsafley@pa.gov. Once we are satisfied with the agreement, the Corps must sign it before the SHPO will sign it. If you need further assistance in this matter, contact Ann Safley at (717) 787-9121.

Sincerely

A handwritten signature in black ink, appearing to read "Andrea L. MacDonald". The signature is fluid and cursive, with the first name "Andrea" and last name "MacDonald" clearly distinguishable.

Andrea L. MacDonald, Chief
Division of Preservation Services

ALMacD/ras

NPS Form 10-900
(Rev. 10-90)

OMB No. 1024-0018

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM**

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Emsworth Lock and Dam

other names/site number _____

2. Location

street & number Ohio River Mile 6.2 not for publication ☐

city or town Emsworth vicinity X

state Pennsylvania code PA county Allegheny code 003 zip code _____

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this _____ nomination _____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property _____ meets _____ does not meet the National Register Criteria. I recommend that this property be considered significant _____ nationally _____ statewide _____ locally. (_____ See continuation sheet for additional comments.)

Signature of certifying official

Date

State or Federal agency and bureau

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Emsworth Lock and Dam
Allegheny County, PA

Page 2

In my opinion, the property ____ meets ____ does not meet the National Register criteria. (____
See continuation sheet for additional comments.)

Signature of commenting or other official Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

____ entered in the National Register _____

____ See continuation sheet.

____ determined eligible for the _____

National Register

____ See continuation sheet.

____ determined not eligible for the _____

National Register

____ removed from the National Register _____

____ other (explain): _____

Signature of Keeper Date
of Action

5. Classification

Ownership of Property (Check as many boxes as apply)

____ private

____ public-local

____ public-State

 X public-Federal

Category of Property (Check only one box)

____ building(s)

____ district

____ site

 X structure

____ object

Number of Resources within Property

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Emsworth Lock and Dam
Allegheny County, PA

Contributing	Noncontributing
_____	_____ buildings
_____	_____ sites
__ 1 __	_____ structures
_____	_____ objects
__ 1 __	_____ Total

Number of contributing resources previously listed in the National Register __ 0 __

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.) __ Ohio River Navigation System _____

6. Function or Use

Historic Functions (Enter categories from instructions)

Cat: _____ Transportation _____	Sub: _____ Water-Related _____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Current Functions (Enter categories from instructions)

Cat: _____ Transportation _____	Sub: _____ Water-Related _____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. Description

Architectural Classification (Enter categories from instructions)

_____ N/A _____

Materials (Enter categories from instructions)

foundation _____ Reinforced Concrete _____
roof _____
walls _____ Reinforced Concrete _____
other _____

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "X" in one or more boxes for the criteria qualifying the property for National Register listing)

- ☒ A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- ☐ B Property is associated with the lives of persons significant in our past.
- ☒ C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

- ☐ A owned by a religious institution or used for religious purposes.
- ☐ B removed from its original location.
- ☐ C a birthplace or a grave.
- ☐ D a cemetery.
- ☐ E a reconstructed building, object, or structure.
- ☐ F a commemorative property.
- ☐ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)

☐ Transportation _____

☐ Commerce _____

☐ Engineering _____

Period of Significance 1919-1922

Significant Dates c. 1919

1922

1935

1938

Significant Person (Complete if Criterion B is marked above)

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Emsworth Lock and Dam
Allegheny County, PA

Page 6

Cultural Affiliation _____

Architect/Builder _____
_____ U.S. Army Corps of Engineers _____

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)

- ☒ preliminary determination of individual listing (36 CFR 67) has been requested.
☐ previously listed in the National Register
☐ previously determined eligible by the National Register
☐ designated a National Historic Landmark
☐ recorded by Historic American Buildings Survey # _____
☐ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data

- ☐ State Historic Preservation Office
☐ Other State agency
☒ Federal agency
☐ Local government
☐ University
☐ Other

Name of repository: _____

10 Geographical Data

Acreage of Property _____

UTM References (Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing	Zone	Easting	Northing
1	17	577152	4483845	3	_____	_____
2	_____	_____	_____	4	_____	_____

_____ See continuation sheet.

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Emsworth Lock and Dam
Allegheny County, PA

Page 8

11. Form Prepared By

name/title David C. Berg, Architectural Historian
organization Greenehorne & O'Mara date 08/2001
street & number 9001 Edmonston Road telephone (301) 982-2800
city or town Greenbelt state MD zip code 20770

Additional Information

Submit the following items with the completed form:

Continuation Sheets

Maps

A USGS map (7.5 or 15 minute series) indicating the property's location.

A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black and white photographs of the property.

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name U.S. Army Corps of Engineers
street & number 1000 Liberty Avenue, telephone _____
city or town Pittsburgh state PA zip code _____

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

NATIONAL REGISTER OF HISTORIC PLACES
 CONTINUATION SHEET

Section 7 Page 1 Emsworth Lock and Dam _____
 name of property
Emsworth, PA _____
 county and State

Emsworth Locks and Dams extends across the Ohio River at Mile Marker 6.81 and is situated between the towns of Emsworth and Ben Avon, Pennsylvania, about 6 miles north of Pittsburgh. The facility is accessible from a small service road and is in close proximity to Pennsylvania State Route 65.

The facility consists of two concrete gated dams, two locks, and a series of operations buildings. The locks and operation buildings are located on the north bank of the Ohio River. The lock on the land side of the facility measures 110' x 600' and is primarily used for barges and other large river craft. A second smaller lock measuring 56' x 360' is located on the river side of the facility and is primarily used for locking through pleasure craft and other small vessels. Both locks are reinforced concrete structures with steel mitered gates on each end of the lock. The land side lock has a concrete guide wall that extends for a number of feet up and downriver from the lock. One original lock building from the 1930s has survived. It is a two-story concrete structure with simple lines and a flat roof. Two other operations buildings on the property are built of textured concrete block and date from a rehabilitation of the facility that took place around 1988.

Emsworth dam is actually two dams. The main dam on the north side of the river stretches from the north bank of the river to Neville Island and measures about 75' x 967'. A series of large concrete piers supports a series of steel trusses at the top. Each of the 8 bays of the dam has a large steel gate that can be raised or lowered by machinery. There is also a small spillway on the north end of the dam. The piers of the dam stand approximately 45' above river level and are curved on the downriver side. At the top of each pier there is now a small metal-clad shed that contains operational equipment for the gates. A crane is mounted on top of the steel trusses at the top of the dam and can be moved on rails to any part of the dam. The dam ends at a large concrete embankment on the north shore of Neville Island.

The six-bay backwater dam measures 75' x 750' and stands approximately 45' above the Emsworth navigation pool of the Ohio River. The design of the backwater dam is otherwise identical to the main dam, which is 3500' upriver.

The concrete structure of the dam has not changed significantly since the construction of the gated dam from 1935-1938, but the dam gates and machinery were refitted or replaced in a 1988 rehabilitation. The installation of metal sheds on top of the concrete piers of the main dam and backwater dam is the most visible alteration that has taken place at the facility. The main operations building dating from the 1930s was also demolished as part of the 1988 rehabilitation, and a new operations building was constructed on the north bank of the river, adjacent to the 110' X 600' lock. The structure has a remarkably high level of integrity overall, considering its age and the heavy demands that are placed on the facility by locking activities and river conditions.

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section 8 Page 1 Emsworth Lock and Dam
name of property
 Emsworth, PA
county and State

Summary Paragraph

River navigation was an important factor in the economic development of the Ohio River Valley, and appropriations for improving river navigation began as early as 1824. The river's role as a transportation route in opening up the west and shipping goods downriver cannot be overstated. With the opening of the Louisville and Portland Canal in the 1830s, the entire stretch of the river could be navigated when the water was high, but by the 1850s, railroad competition was threatening the economic dominance of river transportation. Eventually, plans developed for a series of locks and dams along the Ohio to ensure a stable navigation pool year-round. Built between 1877 and 1885, Davis Island Dam was the first lock and dam built on the portion of the river that is now in the charge of the Pittsburgh District Army Corps of Engineers. An engineering marvel of its time, this dam established a river harbor and navigation pool in Pittsburgh.

The Pittsburgh District constructed Ohio River Lock and Dam 2 at River Mile 9.0 between 1898 and 1906, with the locks and operation buildings located on Neville Island. During World War I, it was decided to replace this structure and the Davis Island Dam with a more modern facility. Construction on a fixed-crest concrete dam at Emsworth began in 1919 and was completed by 1922. The dam featured a durable concrete fixed crest and two locks, as opposed to the single lock and movable crest Chanoine wicket dam at Lock and Dam 2. The construction of Emsworth Locks and Dams led to the demolition of Davis Island Dam and Ohio River Lock and Dam 2.

In 1935 plans were made for a concrete-gated dam at Emsworth to replace the concrete fixed-crest dam. Construction began in 1935 and was completed by 1938. The general configuration of the dam and its two locks has not changed significantly since 1938. Most of the changes have involved modernizing the locking equipment and other facilities. Maintenance was carried out on the locking mechanism from 1938 through the 1980s, and in 1988 the complex underwent a major rehabilitation. The lock gates were replaced, and the locking equipment and dam gates were altered to allow for electronic control. This resulted in the construction of a single metal shed on top of each pier of the gated dams. In addition, the 1938 power house building was demolished, and a new lock office building was constructed on the north bank of the Ohio. Recently, the lock walls and pavement were also raised one foot in response to recent flooding.

Emsworth Dam is historically significant. The original 1919-1922 dam was the first fixed-crest dam built by the Pittsburgh District on the Ohio River to replace its initial set of movable-crest dams built in the late nineteenth and early twentieth centuries. As it stands today, the current 1935-1938 gated dam is also the oldest dam of its type on the Pittsburgh District's portion of the Ohio River. The dam maintains a 9' navigation pool that stretches beyond downtown Pittsburgh and is vital to many of Pittsburgh's industries. The Emsworth navigation pool has been used for over 80 years by thousands of towboats moving chemicals, steel, manufactured goods, coal, sand, and other commodities up and down the Ohio River. Over 17 million tons of freight pass through these locks yearly, and the facility regularly locks over 500 towboats per month.

Section 8 Page 2 Emsworth Lock and Dam
name of property
Emsworth, PA
county and State

The Ohio River Navigation System has played an important role in the history of Pittsburgh and the surrounding area. Inexpensive river transportation has spurred industrial growth in western Pennsylvania and along the entire stretch of the Ohio River. The Ohio River was a vital route for the transportation of strategic materials during World War II and continues to be an important transportation artery. The Ohio River Navigation System is itself potentially eligible for the National Register, and Emsworth Locks and Dams, through its association with this historic transportation network, has considerable historic significance and is eligible for the National Register under Criterion A. The complex is also one of only two gated dams built in the 1930s that survives on the Ohio River, and is therefore also eligible for the National Register under Criterion C.

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Emsworth Lock and Dam
Allegheny County, PA

Page 12

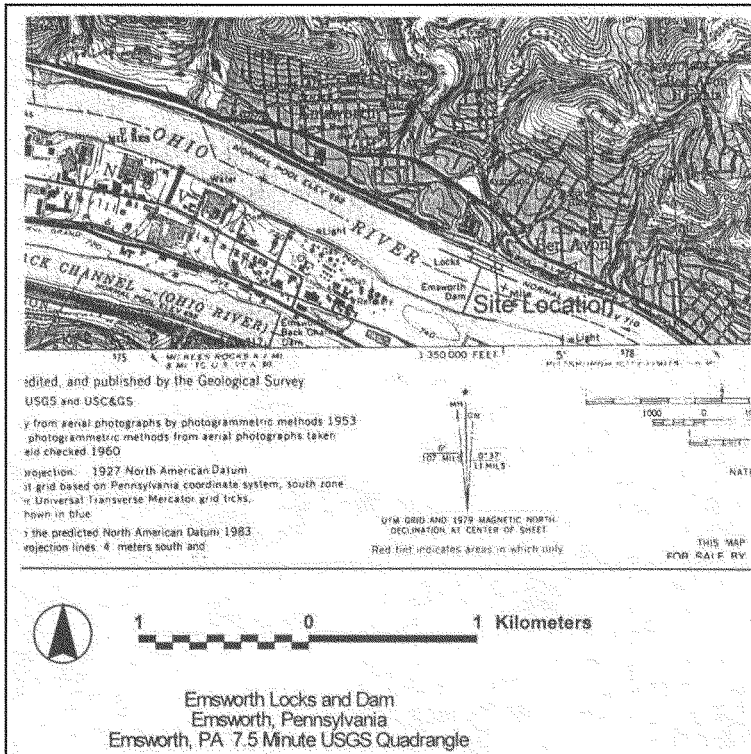
NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

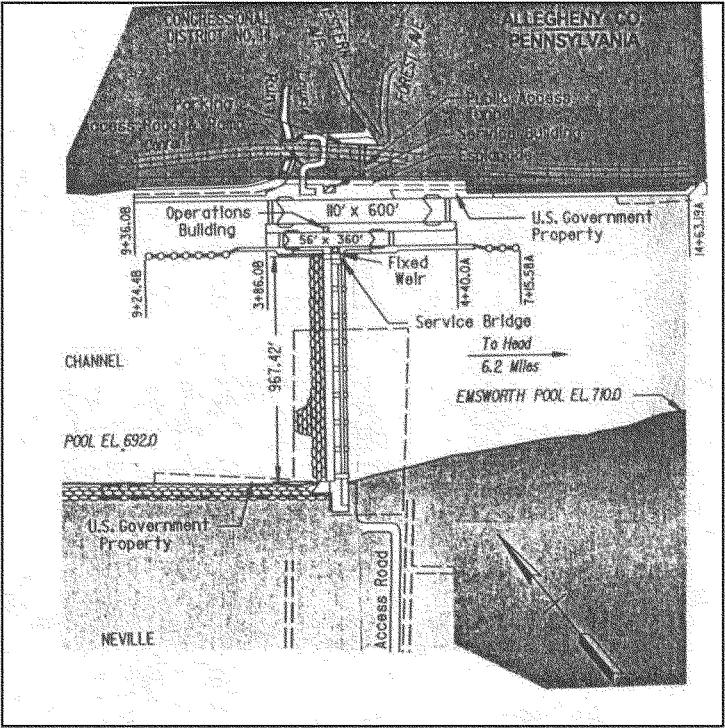
Section 10 Page 1 Emsworth Lock and Dam
name of property
Emsworth, PA
county and State

Boundary Description and Justification

Boundaries for this property consist of all USACE Federally owned property at the site, including the lock and dam, operations buildings, and other service buildings.

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Emsworth Lock and Dam
Allegheny County, PA





NPS Form 10-900
(Rev. 10-90)

OMB No. 1024-0018

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM**

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Dashields Lock and Dam

other names/site number _____

2. Location

street & number Ohio River Mile 13.3 not for publication

city or town Glenwillard vicinity X

state Pennsylvania code PA county Allegheny code 003 zip code

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register Criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)

Signature of certifying official

Date

State or Federal agency and bureau

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Dashields Lock and Dam
Allegheny County, PA

Page 2

In my opinion, the property ____ meets ____ does not meet the National Register criteria. (____
See continuation sheet for additional comments.)

Signature of commenting or other official Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

____ entered in the National Register _____

____ See continuation sheet.

____ determined eligible for the _____

National Register

____ See continuation sheet.

____ determined not eligible for the _____

National Register

____ removed from the National Register _____

____ other (explain): _____

Signature of Keeper Date
of Action

5. Classification

Ownership of Property (Check as many boxes as apply)

____ private

____ public-local

____ public-State

☒ public-Federal

Category of Property (Check only one box)

____ building(s)

____ district

____ site

☒ structure

____ object

Number of Resources within Property

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Dashields Lock and Dam
Allegheny County, PA

Contributing	Noncontributing
_____	_____ buildings
_____	_____ sites
__ 1 __	_____ structures
_____	_____ objects
__ 1 __	_____ Total

Number of contributing resources previously listed in the National Register __ 0 __

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.) __ Ohio River Navigation System _____

6. Function or Use

Historic Functions (Enter categories from instructions)

Cat: _____ Transportation _____	Sub: _____ Water-Related _____
_____	_____
_____	_____
_____	_____
_____	_____

Current Functions (Enter categories from instructions)

Cat: _____ Transportation _____	Sub: _____ Water-Related _____
_____	_____
_____	_____
_____	_____
_____	_____

7. Description

Architectural Classification (Enter categories from instructions)

_____ Other – Concrete Fixed Crest Dam _____

Materials (Enter categories from instructions)

foundation _____ Reinforced Concrete _____

roof _____

walls _____ Reinforced Concrete _____

other _____

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "X" in one or more boxes for the criteria qualifying the property for National Register listing)

- ☒ **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- ☐ **B** Property is associated with the lives of persons significant in our past.
- ☒ **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ **D** Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

- ☐ **A** owned by a religious institution or used for religious purposes.
- ☐ **B** removed from its original location.
- ☐ **C** a birthplace or a grave.
- ☐ **D** a cemetery.
- ☐ **E** a reconstructed building, object, or structure.
- ☐ **F** a commemorative property.
- ☐ **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)

☐ **Transportation** _____

Period of Significance _____ 1927-1951 _____

Significant Dates c. 1927 _____
_____ 1929 _____

Significant Person (Complete if Criterion B is marked above)

Cultural Affiliation _____

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Dashields Lock and Dam
Allegheny County, PA

Page 6

Architect/Builder _____

_____ U.S. Army Corps of Engineers _____

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)

- ☒ preliminary determination of individual listing (36 CFR 67) has been requested.
☐ previously listed in the National Register
☐ previously determined eligible by the National Register
☐ designated a National Historic Landmark
☐ recorded by Historic American Buildings Survey # _____
☐ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data

- ☐ State Historic Preservation Office
☐ Other State agency
☒ Federal agency
☐ Local government
☐ University
☐ Other

Name of repository: _____

10 Geographical Data

Acreage of Property _____

UTM References (Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing	Zone	Easting	Northing
1	18	567231	4488769	3	_____	_____
2	_____	_____	_____	4	_____	_____

_____ See continuation sheet.

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Dashields Lock and Dam
Allegheny County, PA

Page 8

11. Form Prepared By

name/title David C. Berg, Architectural Historian
organization Greenehorne & O'Mara date 08/2001
street & number 9001 Edmonston Road telephone (301) 982-2800
city or town Greenbelt state MD zip code 20770

Additional Information

Submit the following items with the completed form:

Continuation Sheets

Maps

A USGS map (7.5 or 15 minute series) indicating the property's location.

A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black and white photographs of the property.

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name U.S. Army Corps of Engineers
street & number 1000 Liberty Avenue, telephone _____
city or town Pittsburgh state PA zip code _____

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

The overall concrete structure of the dam 17as not changed significantly since its construction. The dam has remained largely the same, and the locks have retained their original size and configuration. A 1987-1990 rehabilitation of the dam led to the replacement of the lock gates and the conversion of the lock operation machinery to an electronic system. The 1987-1990 rehabilitation also resulted in the demolition of the original operations building and the construction of a new operations building and other service structures on the south bank of the Ohio. Overall, the structure has a remarkably high level of integrity considering its age and the heavy demands that are placed on the facility by locking activities and river conditions.

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Section 8 Page 1 Dashields Lock and Dam
name of property
Glenwillard, PA
county and State

River navigation was an important factor in the economic development of the Ohio River Valley, and appropriations to improve river navigation began as early as 1824. The river's role as a transportation route in opening up the west and shipping goods downriver cannot be overstated. With the opening of the Louisville and Portland Canal in the 1830s, the entire stretch of the river could be navigated in high water, but by the 1850s, railroad competition was threatening the economic dominance of river transportation. Eventually, it was decided to build a series of locks and dams along the Ohio to ensure a stable navigation pool all year long. Built between 1877 and 1885, Davis Island Dam was the first lock and dam built on the portion of the river that is now in the charge of the Pittsburgh District Army Corps of Engineers. This dam, an engineering marvel of its time, established a river harbor and navigation pool in Pittsburgh.

The Pittsburgh District constructed Ohio River Lock and Dam 2 at River Mile 9.0 between 1898 and 1906 and built Lock and Dam 3 between 1899 and 1907. The locks and operations buildings for Lock and Dam 3 were located on the south side of the river at Osborne, Pennsylvania, at River Mile 10.9. Lock and Dam 3 was a movable-crest wicket dam. The River and Harbors Act of 1918 authorized the construction of Dashields Dam to replace Ohio River Lock and Dam 3. Construction on Dashields Lock and Dam began in 1927 and was completed in 1929. Lock and Dam 3 was equipped with only one 110' by 600' lock, so the two-lock system at Dashields was a significant improvement. Dashields Locks and Dam's odd name was selected to honor David A. Shields, a member of the locally prominent Shields family and a postmaster at nearby Sewickley Bottom in the 19th century. The original intended name for the dam was D.A. Shields, but the name has been represented, for the most part, as "Dashields.

Dashields Dam is historically significant. As it stands today, the 1927-1929 fixed-crest dam is the only concrete fixed crest dam on the Pittsburgh District's portion of the Ohio River. The dam maintains a nine-foot navigation pool that extends 7.1 miles upriver to Emsworth Dam. This navigation pool is vital to many Pittsburgh area industries. The Dashields navigation pool has been used for over 70 years by thousands of towboats moving chemicals, steel, manufactured goods, coal, sand, and other commodities up and down the Ohio River. About 19 million tons of freight pass through these locks yearly, and the facility regularly locks over 500 towboats per month.

The Ohio River Navigation System has played an important role in the history of Pittsburgh and the surrounding area. Inexpensive river transportation has spurred industrial growth in western Pennsylvania and along the entire stretch of the Ohio River. The Ohio River was a vital route for the transportation of strategic materials during World War II and continues to be an important transportation artery. Dashields Locks and Dam, through its association with this historic transportation network, has considerable historic significance and is eligible for the National Register under Criterion A. The complex is also among the oldest lock and dam facilities that survive on the Ohio River.

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Dashields Lock and Dam
Allegheny County, PA

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NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

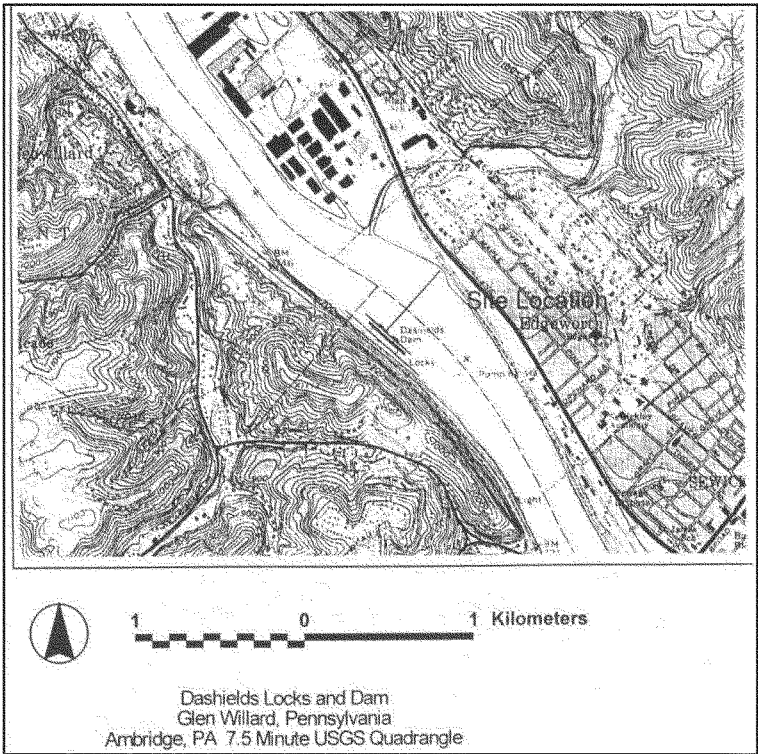
Section 10 Page 1 Dashields Lock and Dam
name of property
Glenwillard, PA
county and State

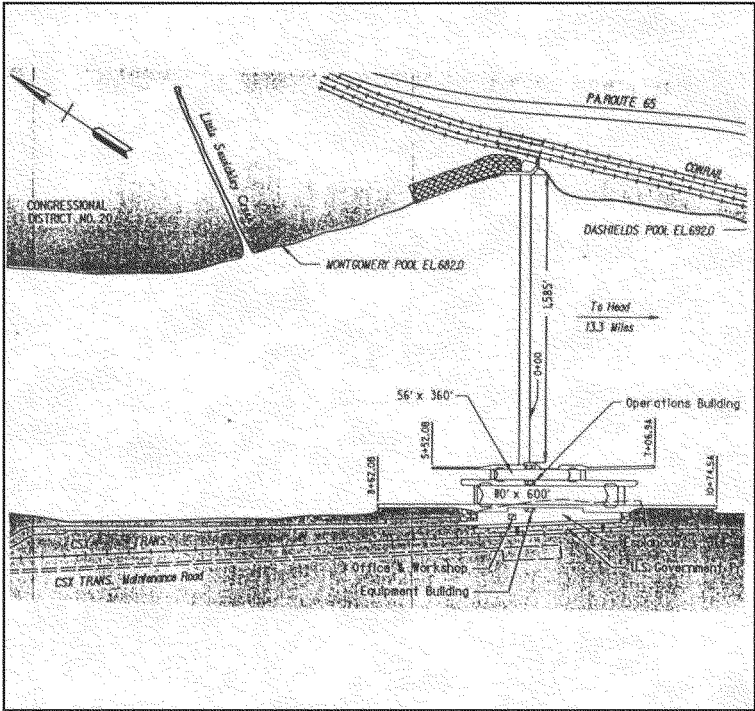
Boundary Description and Justification

Boundaries for this property consist of all USACE Federally owned property at the site, including the lock and dam, operations buildings, and other service buildings.

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Dashields Lock and Dam
Allegheny County, PA

Page 12





NPS Form 10-900
(Rev. 10-90)

OMB No. 1024-0018

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM**

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Montgomery Locks and Dam

other names/site number _____

2. Location

street & number Ohio River Mile 31.7 not for publication _____

city or town Shippingport vicinity X

state Pennsylvania code PA county Beaver code 007 zip code _____

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this _____ nomination _____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property _____ meets _____ does not meet the National Register Criteria. I recommend that this property be considered significant _____ nationally _____ statewide _____ locally. (_____ See continuation sheet for additional comments.)

Signature of certifying official

Date

State or Federal agency and bureau

In my opinion, the property ____ meets ____ does not meet the National Register criteria. (____
 See continuation sheet for additional comments.)

 Signature of commenting or other official Date

 State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

____ entered in the National Register _____

____ See continuation sheet.

____ determined eligible for the _____

National Register

____ See continuation sheet.

____ determined not eligible for the _____

National Register

____ removed from the National Register _____

____ other (explain): _____

 Signature of Keeper Date
 of Action

5. Classification

Ownership of Property (Check as many boxes as apply)

____ private

____ public-local

____ public-State

 X public-Federal

Category of Property (Check only one box)

____ building(s)

____ district

____ site

 X structure

____ object

Number of Resources within Property

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Montgomery Locks and Dam
Beaver County, PA

Page 3

Contributing	Noncontributing	
<u> 2 </u>	<u> </u>	buildings
<u> </u>	<u> </u>	sites
<u> 2 </u>	<u> </u>	structures
<u> </u>	<u> </u>	objects
<u> 4 </u>	<u> </u>	Total

Number of contributing resources previously listed in the National Register 0

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.) Ohio River Navigation System

6. Function or Use

Historic Functions (Enter categories from instructions)

Cat:	Transportation	Sub:	Water-Related
	Government		Public Works

Current Functions (Enter categories from instructions)

Cat:	Transportation	Sub:	Water-Related
	Government		Public Works

7. Description

Architectural Classification (Enter categories from instructions)

Other – Concrete Gated Dam
Power Facility
Operations building

Materials (Enter categories from instructions)

foundation	Reinforced Concrete
roof	
walls	Reinforced Concrete
other	

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- ☒ A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- ☐ B Property is associated with the lives of persons significant in our past.
- ☒ C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

- ☐ A owned by a religious institution or used for religious purposes.
- ☐ B removed from its original location.
- ☐ C a birthplace or a grave.
- ☐ D a cemetery.
- ☐ E a reconstructed building, object, or structure.
- ☐ F a commemorative property.
- ☐ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)

☐ Transportation _____

Period of Significance ☐ 1932-1951 _____

Significant Dates c. 1932 _____

_____ 1936 _____

_____ 1989 _____

Significant Person (Complete if Criterion B is marked above)

Cultural Affiliation _____

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Montgomery Locks and Dam
Beaver County, PA

Architect/Builder _____ U.S. Army Corps of Engineers _____
_____ Boothe and Flinn Company, Contractors ____

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)

- ☒ preliminary determination of individual listing (36 CFR 67) has been requested.
☐ previously listed in the National Register
☐ previously determined eligible by the National Register
☐ designated a National Historic Landmark
☐ recorded by Historic American Buildings Survey # _____
☐ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data

- ☐ State Historic Preservation Office
☐ Other State agency
☒ Federal agency
☐ Local government
☐ University
☐ Other

Name of repository: _____

10 Geographical Data

Acreage of Property _____

UTM References (Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing	Zone	Easting	Northing
1	17	551903	4499914	3	_____	_____
2	_____	_____	_____	4	_____	_____
☐ See continuation sheet.						

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Montgomery Locks and Dam
Beaver County, PA

Page 8

11. Form Prepared By

name/title David C. Berg, Architectural Historian

organization Greenehorne & O'Mara date 08/2001

street & number 9001 Edmonston Road telephone (301) 982-2800

city or town Greenbelt state MD zip code 20770

Additional Information

Submit the following items with the completed form:

Continuation Sheets

Maps

A USGS map (7.5 or 15 minute series) indicating the property's location.

A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black and white photographs of the property.

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name U.S. Army Corps of Engineers

street & number 1000 Liberty Avenue, telephone

city or town Pittsburgh state PA zip code

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

NATIONAL REGISTER OF HISTORIC PLACES
 CONTINUATION SHEET

Section 7 Page 1 Montgomery Locks and Dam
name of property
Beaver County, PA
county and State

Montgomery Locks and Dam extends across the Ohio River at Mile Marker 31.7 and is situated about five miles west of Beaver, Pennsylvania. The facility is reached from Pennsylvania State Route 18. The facility consists of a concrete gated dam, two locks, and a series of operations buildings. The locks and operation buildings are located on the south bank of the Ohio River. The lock on the land side of the facility measures 110' x 600'. This lock is primarily used for barges and other large river craft. A second smaller lock measuring 56' x 360' is located on the river side of the facility and this lock is primarily used for locking through pleasure craft and other small river vessels. The locks are both reinforced concrete structures with steel mitred gates at each end of the lock. The land side lock has a concrete guide wall that extends for a number of feet up and downriver from the lock. The original powerhouse is located at the south end of the dam, and is a two-story flat roof concrete roof structure. A small flat roof operations building also survives, and sits on the wall that separates the 600' and 360' locks. Both of these structures were part of the original 1932-1936 facility. A newer service building sits on the south shore of the river, and is surrounded by a concrete esplanade.

The dam consists of twelve piers with ten steel vertical lift gates 100' wide and 16' high, and two 109' wide sections of fixed concrete weir, one at the north end of the dam, and a second at the south end. The concrete piers support a steel truss superstructure on which is mounted a large crane. A series of steel flat roof shelters at the tops of the piers accommodate the equipment used to raise and lower the dam gates. The entire width of the dam is 1,376.75'.

The overall concrete structure of the dam has not changed significantly since the construction of the gated dam from 1932-1936. The lock guard walls were extended in the 1960s. A 1989 rehabilitation involved replacement of the original lock turbines, resurfacing of some of the concrete walls, raising of the lock walls by 1 foot, upgrading of the steel lock gates, and construction of a new service building on the shore of the river. Overall, the structure has a remarkably high level of integrity considering its age and the heavy demands that are placed on the facility by locking activities and river conditions.

NATIONAL REGISTER OF HISTORIC PLACES
 CONTINUATION SHEET

Section 8 Page 1 Montgomery Locks and Dam
name of property
Beaver County, PA
county and State

The Pittsburgh District constructed Ohio River Lock and Dams 4,5, and 6 between 1892 and 1910. Problems with temporarily deficient navigation pools in the area caused engineers of the U.S. Army Corps of Engineers Pittsburgh District to conclude that Locks and Dams 4, 5, and 6 should be replaced with a concrete gated dam. Construction of the new dam was authorized under the river and Harbors Act of 18 July 1918. The new complex, known as Montgomery Locks and Dam, named after nearby Montgomery Island, was built from 1932-1936 by the Booth and Flinn Company, supervised in part by engineer Don P. Keeler. The dam was a concrete structure with 10 vertical lift gates 100' wide and 16' tall. The new dam allowed for better control of the river's navigation pool in the area. The vertical lift gates used at Montgomery Locks and Dam were simple steel rectangular bulkheads that fit into slots in the concrete piers of the dam. Machinery at the tops of the piers is used to lift and lower these simple gates. The concept behind this type of gate design has existed since antiquity. The complex was also equipped with two concrete locks, each with two sets of steel mitred gates. One lock measures 110' by 600', while the other measures 56' by 360'. The locks allow river craft to pass through the project area, since Montgomery Dam's presence makes open channel navigation impossible.

Montgomery Locks and Dam was completed in the summer of 1936. Since then, the dam has been operated by the Pittsburgh District with few major changes. The guide walls that extend out from the landward wall of the 600' lock were extended in the 1960s, and a major rehabilitation of the facility in 1989 led to the upgrading of some of the dam gate machinery, installation of electrical controls for the dam gates, upgrading and replacement of some locking equipment, and the raising of the lock walls by 1'. A large service building was also constructed on the south shore as part of the 1989 rehab.

Montgomery Locks and Dam is historically significant. The original 1932-1936 dam was the first vertical lift gate dam built on the Ohio, and served as something of a prototype for the lift gate dam built at Emsworth. The Montgomery navigation pool has been used for over 60 years by thousands of towboats moving chemicals, steel, manufactured goods, coal, sand, and other commodities up and down the Ohio River. Montgomery is now one of only two vertical lift gate dams operating on the Ohio River.

The Ohio River Navigation System has played an important role in the history of Pittsburgh and the surrounding area. Inexpensive river transportation has spurred industrial growth in western Pennsylvania and along the entire stretch of the Ohio River. The Ohio River was a vital route for the transportation of strategic materials during World War II, and continues to be an important transportation artery. As a part of the Ohio River Navigation system,

Montgomery Locks and Dam has considerable historic significance, and is eligible for the National Register under Criterion A for its associations with the historic Ohio River Navigation System. The complex is also one of only two vertical lift gate dams built in the 1930s that survives on the Ohio River, and is therefore also eligible for the National Register under Criterion C for its engineering significance.

USDI/NPS NRHP Registration Form
Ohio River Navigation System
Montgomery Locks and Dam
Beaver County, PA

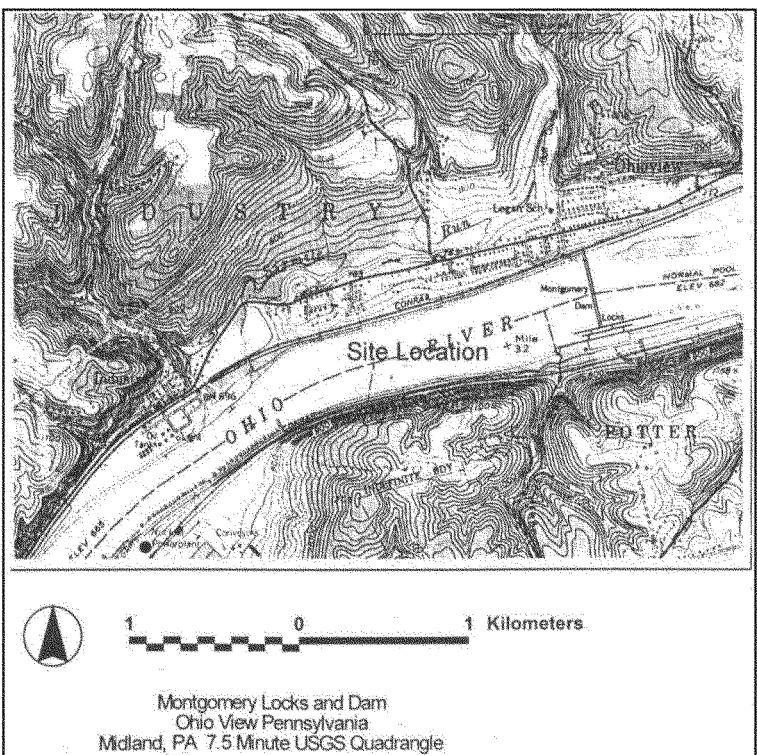
Page 11

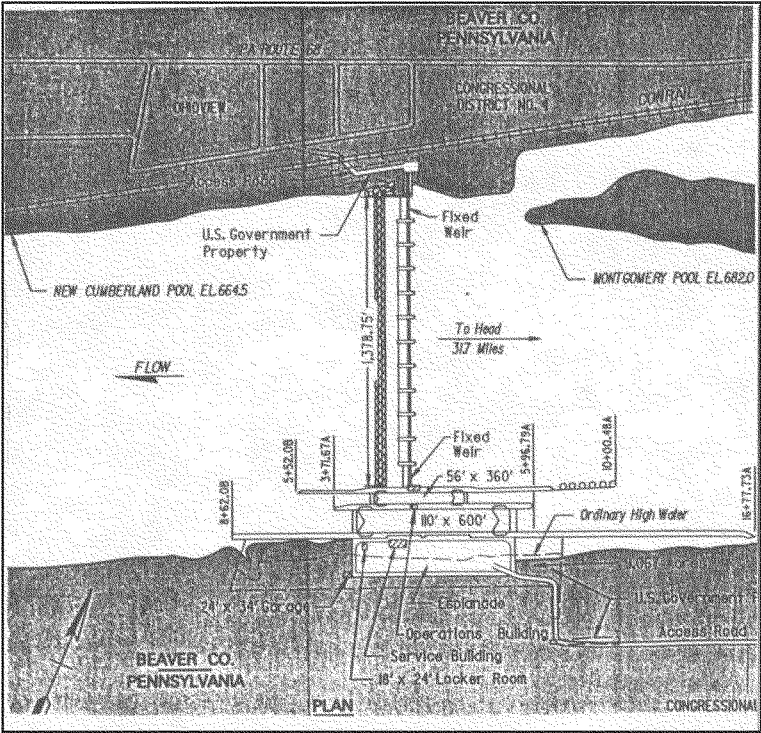
NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Section 10 Page 1 Montgomery Locks and Dam
name of property
Beaver County, PA
county and State

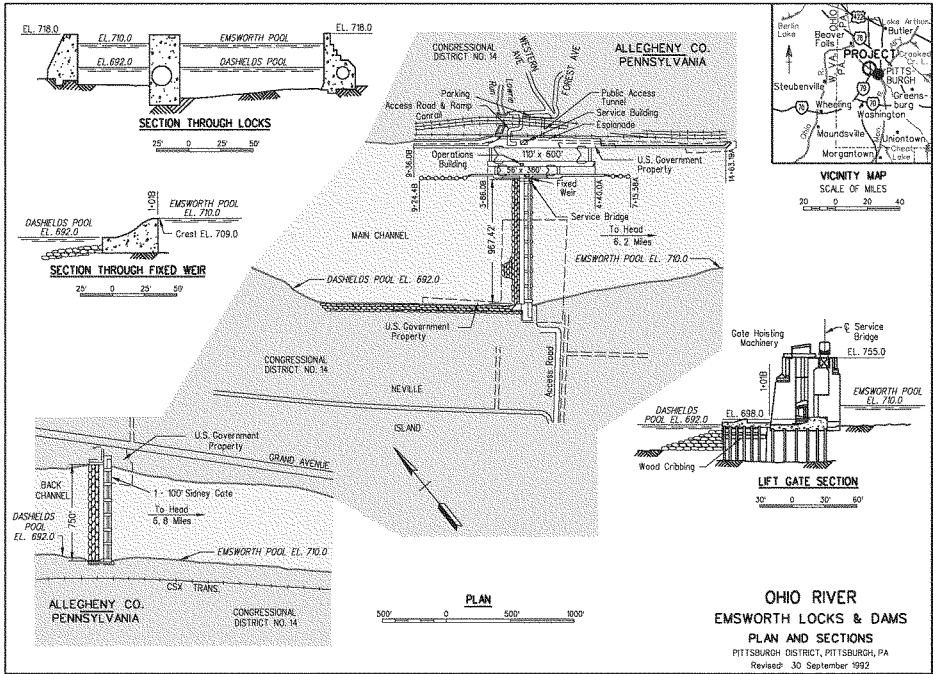
Boundary Description and Justification

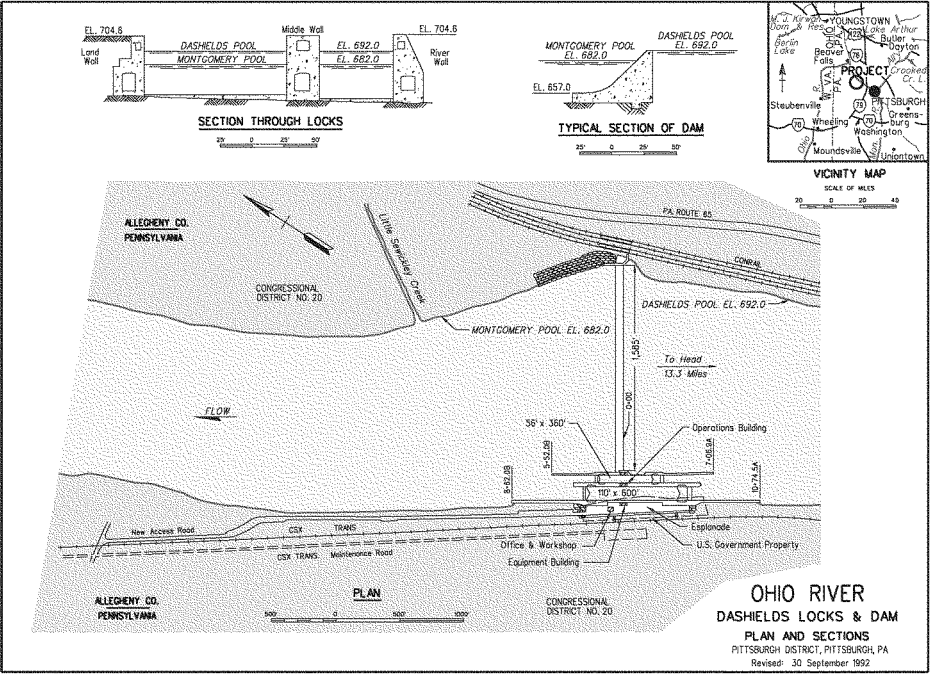
Boundaries for this property consist of all USACE Federally owned property at the site, including the lock and dam, power house, dwellings, and other service buildings.

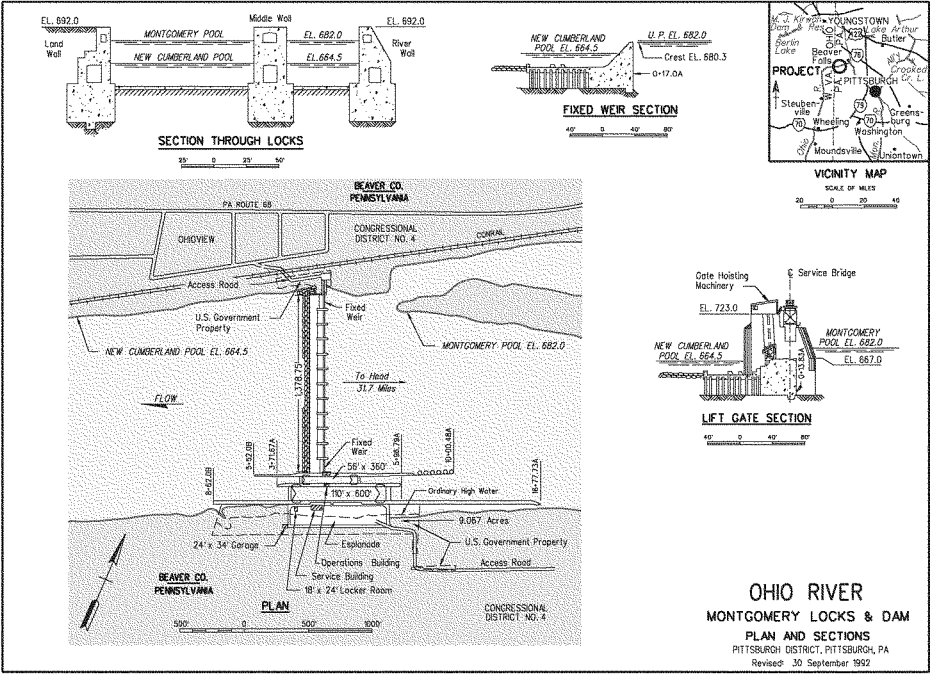




USDI/NPS NRHP Registration Form
Ohio River Navigation System
Montgomery Locks and Dam
Beaver County, PA







**Upper Ohio Work and Laydown Areas
Phase II Archaeological Investigations
Draft Excavation Plans**

Montgomery Primary Area 36BV131

Description: Multicomponent late 19th-early 20th century Historic with an unknown prehistoric occupation. The prehistoric component was previously recorded by amateur archaeologists but was never professionally investigated. A single prehistoric artifact was recovered from the Ph I. The Historic component is potentially represented by remnants of the Emerson house. Site size is approximately 152.4m x 28 m or 4267.2 m².

Phase II work plan:

Conduct archival research including chain-of-title, census records, and available tax assessment records. Also conduct research on the Emerson house. Do a more thorough investigation of the recordation of the prehistoric component of the site.

Excavate a maximum of 100 STPs on a 5 m interval grid to refine the site boundaries, locate features and possible out-buildings, identify artifact densities, and characterize soil horizons across the site.

Information from the STPs will be used to determine placement of a maximum of 20 1m x 1m test units to be used to define and characterize features and recover information to determine NRHP eligibility. An additional 10 1m x 1m test units will be utilized to characterize the stone foundation and determine method of construction and utilization of the structure.

Geomorphological Studies – Montgomery Primary

Description: Due to its location on lower terraces along the Ohio River, there is the potential for intact deeply buried cultural deposits to be located at this construction support area.

Testing Plan: Excavate a series of backhoe trenches across the Montgomery Primary study area to be evaluated by a qualified geomorphologist/geoarchaeologist to determine the potential for buried cultural deposits to be present. With a positive determination, archaeological deep testing within Sites 36BV357 and 36BV131 will be conducted in accordance with SHPO guidelines.

CONTINGENCY AREAS

Geomorphological Studies – Montgomery Secondary

Description: Due to its location on lower terraces along the Ohio River, there is the potential for intact deeply buried cultural deposits to be located at this construction support area.

Testing Plan: Excavate a series of backhoe trenches across the Montgomery Secondary study area to be evaluated by a qualified geomorphologist/geoarchaeologist to determine the potential for buried cultural deposits to be present. With a positive determination, archaeological deep testing will be conducted accordance with SHPO guidelines.

Dashields Secondary Area 36AL600

Description: Multicomponent Historic and Prehistoric site with intact buried Ab horizon beneath a layer of fill at a ballfield and park. Historic component is likely from the former Locktenders houses. Prehistoric component is dated to Late Archaic (Diagnostic - Brewerton Side Notched projectile point). Site size is approximately 76 m x 18 m or 1368 m².

Phase II work plan:

Conduct archival research including chain-of-title, census records, and available tax assessment records. Also conduct research on the Locktender's houses.

Excavate a maximum of 50 shovel test probes (STPs) at 5 m intervals across the site to characterize the extent of the buried Ab soil horizon, locate any extant remnants of the former locktender's houses and any other in-tact cultural features, and identify artifact densities across the site.

Information from the STPs will guide the placement of a maximum of 20 1m x 1m test units to be used to investigate any features and provide information to help make a determination of NRHP eligibility.

PHASE I CULTURAL RESOURCES ASSESSMENT

Upper Ohio Navigation Study Emsworth, Dashields, and Montgomery Locks and Dams Allegheny and Beaver Counties, Pennsylvania PHMC-BHP ER# 1997-1617-042-F

Prepared for:

Aerostar Environmental, Inc.
11181 St. Johns Industrial Parkway, N
Jacksonville, Florida 32246
and
U.S. Army Corps of Engineers, Pittsburgh District
2200 William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, PA 15222-4186

Prepared by:

GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, PA 15120-5005
(412) 476-2000

November 3, 2009 (Rev. 1/12/2010)



PHASE I CULTURAL RESOURCES ASSESSMENT

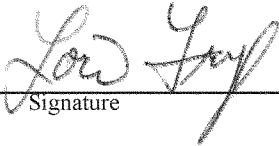
Upper Ohio Navigation Study
Emsworth, Dashields, and Montgomery Locks and Dams
Allegheny and Beaver Counties, Pennsylvania
PHMC-BHP ER# 1997-1617-042-F

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Abstract

From July to December 1, 2009, GAI conducted a cultural resource assessment as part of the Upper Ohio Navigation Study and Environmental Assessment, Emsworth, Dashields, and Montgomery Locks and Dams, Allegheny and Beaver counties, for the US Army Corps of Engineers, Pittsburgh District, and Aerostar Environmental Services, Inc. The Upper Ohio Navigation Study includes three Primary and three Secondary work and staging area locations, totaling 119.8 acres. The purpose of this study is to provide cultural resource characterizations of these six potential work and staging area locations for a National Environmental Policy Act Environmental Impact Statement, which will accompany analyses that discuss suitability of lands necessary to conduct proposed work at Emsworth, Dashields, and Montgomery Locks and Dams.

A pedestrian reconnaissance was conducted for all six study areas to assess ground conditions and identify any architectural resources. Three of the six areas were heavily disturbed by industrial activities and did not require cultural resources investigations. Portions of the remaining three areas (covering about 55 acres) appeared to have intact soils; these three areas were subjected to cultural resources investigations (limited subsurface archaeological investigations and an architectural survey).

Three archaeological sites (36AL600, 36BV131, and 36BV357) and an isolated find were identified and evaluated. Site 36AL600, located at the Dashields Secondary study area, is a Late Archaic campsite and a historic site measuring approximately 76x18 m (250x60 ft) within an intact buried A horizon. The historic artifacts may be associated with a former ca. 1920s locktender's house. It is recommended that Site 36AL600 is potentially eligible to the National Register of Historic Places (NRHP) under Criterion D. Avoidance is recommended or, if avoidance is not feasible, Phase II archaeological investigations should be conducted to determine site eligibility (both prehistoric and historic components) for the National Register.

Site 36BV357, situated within the Montgomery Primary study area, is a small 15 m (50 ft) in diameter lithic scatter of unknown temporal affiliation. This site does not possess the potential to contribute significant information to the prehistory of the Upper Ohio River Valley and fails to meet the minimum criteria for listing on the National Register. No additional work is recommended.

Site 36BV131 is situated south of the Montgomery Dam on a river terrace. This previously recorded prehistoric site was originally delineated to cover the floodplain and terraces between the river and a railroad line. Subsurface investigation produced a small quantity of prehistoric ($n=1$) and historic artifacts ($n=42$) within a 152.4x28 m (500x92 ft) area and one historic isolated find. The lack of features and paucity of artifacts limit the research value of the prehistoric component, and no additional work is recommended.

The historic component of Site 36BV131 includes a house foundation remnant, garage, and artifact scatter in the vicinity of a house depicted on a 1904 map and in the general vicinity of a house depicted on 1876 and 1877 maps. Based on photographs provided by the US Army Corps of Engineers, Pittsburgh District, this house was abandoned by 1932. A driveway that appears on both the 1939 and 1958 aerial photographs enters the area from the south and then runs from the front of the Unnamed Garage (recorded as an architectural resource over 50 years

old) toward the Kenyon-Emerick house foundation remnant (part of the historic archaeological site component of 36BV131). The Unnamed Garage was recommended not eligible under Criterion A-C (prior to its destruction by fire). Further research is needed to evaluate whether the historic component of this site possesses the potential to add important information to our understanding of the history of this region (Criterion D) during the late-nineteenth to early-twentieth century. The research should also address whether the archaeological component of the former Unnamed Garage is associated with the occupation of the former Kenyon-Emerick house or it represents a later historic component. Therefore, it is recommended that this site be avoided and if avoidance is not feasible, it is recommended that Phase II investigations be conducted to evaluate the historic component of this site under Criterion D.

The architectural and historical survey identified two resources within the Upper Ohio Navigation Study area. The property types include a railroad (the Pittsburgh and Ohio Valley Railway) and a garage (associated with Site 36BV131). Based on the National Register Criteria for Evaluation, neither resource is recommended eligible for NRHP listing. The Pittsburgh & Ohio Valley Railway does not stand out as exemplary in the history of transportation improvements, commerce, and corporate capitalism in southwestern Pennsylvania. The garage lacks integrity, historical significance, architectural merit, and historical association with significant events or individuals. No additional documentation is recommended for these two resources. Subsequent visits to the project area during October–December 2009 revealed that the unnamed garage was destroyed by fire and was not available for future examination.

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1.0 Introduction

The U.S. Army Corps of Engineers, Pittsburgh District (District), contracted with Aerostar Environmental Services, Inc. (AES) and its subconsultant, GAI Consultants, Inc. (GAI), to conduct a cultural resource assessment as part of the Upper Ohio Navigation Study—a feasibility planning study for alternatives to modernize the Emsworth, Dashiields and Montgomery Locks and Dams (L&D) facilities on the Ohio River. The Upper Ohio Navigation Study identified three Primary and three Secondary potential work and staging areas (study areas) in Allegheny and Beaver counties, Pennsylvania, near these three navigation facilities (Figures 1-3).

The purpose of this study is to provide cultural resource characterizations of these potential work and staging area locations for a National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS). The EIS will accompany the planning analyses that discuss identification and suitability of lands (Primary and Secondary work and staging areas) necessary to conduct any proposed work at these navigation facilities.

For the purpose of this study, the District obtained rights-of-entry for the 12 parcels that comprise the six study areas (Figures 4-6) (Table 1). Emsworth Primary study area consists of one 17.2-acre parcel located between the north bank of Neville Island and Neville Road just east of Emsworth Dam. Emsworth Secondary study area includes three parcels totaling 15.0-acres situated between the north bank of Neville Island and Neville Road to the west of Emsworth Dam. Three parcels, totaling 24.9 acres, comprise the Dashiields Primary study area, which is located northwest of Dashiields Dam between the north bank of the Ohio River and Ohio River Boulevard. Dashiields Secondary study area covers 8.2 acres in one parcel situated between the south bank of the Ohio River and Dashiields Lock Road.

Montgomery Primary study area consists of three parcels totaling 22.2-acres, generally located between Montgomery L&D and a railroad track on a terrace. Montgomery Secondary study area consists of one 32.3-acre parcel located along the south bank of the Ohio River east of Montgomery L&D.

Table 1. Study Locations and Cultural Resources Testing Required under SOW

Location	Number of Parcels	Total Size (ac.)	Cultural Resource Testing (as specified in the SOW)
Emsworth Primary	1	17.2	No Field Testing
Emsworth Secondary	3	15.0	No Field Testing
Dashiields Primary	3	24.9	3 backhoe trenches, about 30 Shovel Probes (SPs)
Dashiields Secondary	1	8.2	About 15 SPs
Montgomery Primary	3	22.2	About 40 SPs
Montgomery Secondary	1	32.3	No Field Testing
Total	12	119.8	3 backhoe trenches and about 85 shovel probes + up to 5 radial SPs

Figure 1. Overview of Emsworth Study Areas

Figure 2. Overview of Dashields Study Areas

Figure 3. Overview of Montgomery Study Areas

Figure 4. Emsworth Primary and Secondary Work Areas (light blue areas only). Source: USACE Statement of Work

Figure 5. Dashields Primary and Secondary Work Areas (light blue areas only). Source: USACE Statement of Work

**Figure 6. Montgomery Primary and Secondary Work Areas (light blue areas only).
Source: USACE Statement of Work**

The Area of Potential Effect (APE) for archaeological, architectural, and historical resources was defined in consultation with the District as the footprints of the six Primary and Secondary study areas. All six Primary and Secondary study areas were subjected to a pedestrian reconnaissance. Subsurface archaeological investigations were restricted to Dashiels Primary, Dashiels Secondary, and Montgomery Primary study areas, per the Statement of Work (SOW) (Appendix A). The architectural survey covered any structure or building within or immediately adjacent to the APE. The District specified that up-to-date Pennsylvania Historic Resource Survey (PHRS) forms for the three locks and dams (Emsworth, Dashiels and Montgomery) were on file at the Pennsylvania Bureau for Historic Preservation (BHP) and should be included in the report but not updated as part of this study (Appendix C).

Based on the SOW and the pedestrian reconnaissance, the cultural resources consultant agreed with the District's evaluation that the Primary and Secondary areas for Emsworth L&D and the Secondary area for Montgomery L&D were located in heavily disturbed industrial settings and did not warrant a cultural resources assessment survey. The remaining areas were subjected to subsurface archaeological testing. However, initial archaeological investigations at Dashiels Primary revealed that the area was covered by a thick slag deposit (typically capped with modern fill) that could not be penetrated by an excavator after one day of machine time. The District modified the contract to eliminate further attempts at subsurface archaeological testing (machine-excavated trenches and shovel probes) in this study area.

The cultural resource study, which includes the identification and preliminary evaluation of cultural resources at each of the sites, was performed in accordance with the SOW (Appendix A) between July 13-27 and November 24-December 1, 2009, and is consistent with the Phase I survey requirements of the Pennsylvania Bureau for Historic Preservation's (2008) Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations, and Section 106 of the National Historic Preservation Act (NHPA) of 1966. Each work area and associated property over 50 years old was assessed and reported separately within this cultural resources assessment study report.

Lori Frye, M.A., RPA, was the Principal Investigator and co-authored this report with Megan Otten, B.A., Architectural Historian, who conducted background research at the BHP (including the PASS files and National Register of Historic Places files), and conducted the architectural survey. Alyssa Trimmer, MPhil, RPA, conducted online background research (CRGIS files) and contributed to this report. Senior Staff Soil Scientist Dr. David Cremeens, CPSSC, supervised the geomorphic trench soundings. Mark A. Frank also contributed to this report, and Amanda Wasielewski prepared figures.

2.0 Environmental Setting

2.1 Physiography and Geology

The study areas fall within the unglaciated Pittsburgh Low Plateau section of the Appalachian Plateaus Province (Berg et al. 1989; Fenneman 1938; Thornbury 1965). Relatively flat lying, predominately clastic rocks that are higher in elevation and younger in age than surrounding provinces (Thornbury 1965) characterize the Appalachian Plateaus Province. The unglaciated Pittsburgh Low Plateau section is typified by undulating surfaces, narrow shallow valleys, and less folding and uplifting than adjacent sections of the Appalachian Plateau. Drainage patterns are generally dendritic with both the Allegheny and Beaver rivers serving as major drainageways for Late Wisconsin glacial outwash.

The sedimentary bedrock found in Allegheny and Beaver counties consists of sandstone, coal, shale, limestone, and siltstone, which may be visible along embankments. Bedrock geology for these areas falls within the Conemaugh Group, an upper Pennsylvanian-age deposit, and the Allegheny Group, a middle Pennsylvanian-age deposit (Socolow 1980). The Allegheny Group represents upper delta plain facies while the Conemaugh Group is associated with lower delta plain facies (Wagner et al 1970).

The Conemaugh Group is divided into the stratigraphically higher Casselman Formation and the lower Glenshaw Formation; Ames limestone separates these two formations. The Casselman Formation is comprised of a cyclic sequence of shale, sandstone, siltstone, marine limestone, and red beds (associated with slides) formed in a lower delta environment. Thin, non-persistent coal beds are also present. The Glenshaw Formation is identified by widespread marine limestone and shale units found in stratigraphic succession (Edmunds et al 1999).

2.2 Hydrology, Soils and Geomorphology

Soil surveys for Beaver and Allegheny counties indicate that the Ohio River valley is mapped with Pope Association in the floodplains, and Conotton Association on high terraces. Pope soils are well drained and began to form in the Late Holocene. Conotton soils are well drained to excessively drained soils that formed in glacial outwash materials on kames and terraces. In the Montgomery Primary Area, the soils fall within the Conotton gravelly loam, 8-15 percent slope (CoC), except on the west side of Squirrel Run, where the soils are part of the Weikert Rock outcrop complex, 25-80% slope (WeF) (Smith 1982). Soils in the Montgomery Secondary Area consist of Urban Land-Conotton complex, 3-8% slope (UfB). Urban Land, characterized by level to nearly level lands on the floodplain covered by over two feet of fill material (Urban Land-Conotton complex is also found at Emsworth Primary and Secondary, and Dashields Primary) (Newbury et al. 1981). At Dashields Secondary, the soils were mainly comprised of Rainsboro silt loam (RaB), 3-8 percent slope, but also include a small area of Gilpun-Upshur complex, very steep soils (Newbury et al. 1981).

2.3 Modern and Past Climates

During the Wisconsin glaciation of the Pleistocene, the Laurentide ice sheets reached their maximum extent in eastern North America between 21,000 and 17,000 B.P., extending as

far south as the northern Beaver County line in western Pennsylvania (Crowl and Sevon 1999:226).

The environment of southwestern Pennsylvania has undergone dramatic changes throughout the last 17,000 years. Palynological data revealed a boreal spruce forest dominated southwestern Pennsylvania 17,000 years ago (Delcourt and Delcourt 1980:145-147). North America experienced relatively rapid climatic warming between 14,000 and 11,000 years ago as pollen evidence indicates a Mixed Coniferous-Northern Hardwood, dominated by spruce and pine, migrated into much of the Midwest (Delcourt and Delcourt 1980:147; Gates 1993:84; Stingelin 1965). Data from New Paris No. 4, Bedford County, Pennsylvania (Guilday et al. 1964) and Hartstown Bog, Crawford County, Pennsylvania (Walker and Hartman 1960), suggest ameliorating boreal forest conditions at approximately 11,000 B.P. Similarly, at Mt. Davis Marsh near Meyersdale in Somerset County, Pennsylvania, pollen indicates the vegetation was dominated by spruce, pine, and fir (Stingelin 1965:50).

Cave and sinkhole deposits in Bedford and Centre Counties revealed that between 11,300 and 9000 BP, the climatic shift to a more temperate environment coincided with the disappearance of "Pleistocene megafauna" and introduction of more temperate mammal species (Guilday 1967; Kurten and Anderson 1980). Vertebrate and pollen remains found at Meadowcroft Rockshelter indicate that by 11,500 B.P. the region had temperate "Carolinian" fauna, as well as oak, hickory, and pine forest, suggesting the initial emergence of the Mixed Mesophytic forest (Adovasio et al. 1998:11). This more temperate climate marks the beginning of the Holocene.

The gradual climate warming and drying trend during the hypsithermal interval, between 10,000 and 5000 B.P., led to a decline in cool-adapted boreal forest species including at such paleoenvironmental sites as Mt. Davis Marsh, Tannersville Bog, and Potts Mountain Pond (Davis 1984:178; Joyce 1988:197).

The decreased precipitation and higher temperature lead to an increase in hardwood species migrating northward. An oak-hickory-hemlock-beech assemblage dominated this Mixed Hardwood Forest (Delcourt and Delcourt 1980:143, 150). By 4000 B.P., the climate was essentially the same as the modern climate.

Currently, the region has a humid, continental climate with warm summers and cold winters and a relatively even yearly distribution of precipitation (Newberry et al. 1981; Taylor et al. 1968; Trewartha 1967). In the Appalachian Plateaus Province, winters are cold, snowy, and cloudy with 35% to 40% possible sunshine. Allegheny County has an average daily high temperature of 83° F in July and an average daily low temperature of 19°F in January (Newberry et al. 1981). Annual precipitation ranges from 36-40 inches a year. Beaver County has a similar climate with an average temperature of 30°F in January and the annual precipitation averages 38 inches a year (Taylor et al. 1968).

2.4 Flora

The study areas fall within a massive Mixed Mesophytic forest (Braun 1950) that became entrenched during the Holocene (Guilday et al. 1964). These forests typically include canopies of beech, chestnut, maple, tulip trees, basswood, red oak, white oak, buckeye, and hemlock.

Smaller trees can include dogwood, redbud, sourwood, ironwood, magnolias, holly, hornbeam, and serviceberry (Braun 1950:43). These forests provided vast quantities of nut masts for Native American exploitation, including walnuts, butternuts, hickory nuts, and chestnuts.

2.5 Fauna

Prehistoric faunal assemblages in the Appalachians reveal a rich and diverse fauna for forager exploitation. White tailed deer was the most common species identified. Other species available for use by prehistoric populations include black bear, elk, bobcat, wolf, cougar, river otter, raccoon, squirrel, rabbit, fox, beaver, and woodchuck. Except for the extinction of certain large animals (elk, wolf, and cougar) and increases in other species populations, such as white-tailed deer, turkey, and woodchuck, the faunal composition of the area is little changed from early historic times (Shelford 1963). Avian and aquatic species also formed part of the subsistence base.

3.0 Cultural Setting

The following summaries of the prehistory of southwestern Pennsylvania, including Allegheny and Beaver counties, provide an archaeological and historical context for assessing potential site significance.

3.1 Paleoindian (11,500 to 10,000 BP)

The earliest occupation of North America occurred during the Paleoindian period prior to 8000 B.C. Radiocarbon dates of 10,000 BP to 11,000 BP have been recorded at Meadowcroft Rockshelter in southwestern Pennsylvania (Adovasio et al. 1978). Based on the distribution of diagnostic artifacts, typically made of exotic lithic raw materials, Paleoindian populations were highly mobile bands of hunters and gatherers who inhabited major river valleys and focused their travels along low-order stream and river valleys (Lantz 1984). Sites are marked by artifact scatters of fluted stone spear points and flake tools used for cutting and scraping tasks.

Lantz (1984) reports 210 sites with Paleoindian components in the drainage of the Upper Ohio Valley in western Pennsylvania. The majority of Paleoindian points and sites are found on lowland terraces of small tributaries in the glaciated portions of northern Pennsylvania. In unglaciated regions, such as in the present study area, Paleoindian sites were found in elevations that are more diverse and that exhibit less spatial patterning (Lantz 1985:180).

3.2 Archaic Period

3.2.3 Early Archaic (10,000 to 8000 BP)

The beginning of the Archaic period in eastern North America is generally associated with the onset of the Holocene, which directly followed the end of Pleistocene glaciation. This period is not well understood but it appears that groups were highly mobile and may have sustained a significant population increase (Carr 1998a:49, 60 and Stewart and Kratzer 1989). Sites are more common near the confluence of streams (Adovasio et al. 1998:18). The warmer, drier, climate meant that Early Archaic foragers did not have mega-fauna available and instead procured a more diversified set of resources than their Paleoindian ancestors.

A technological change in projectile point manufacture and forms, from fluted to notched and stemmed bifaces, is believed to represent changes in the hafting of these projectiles to dart or spear shafts. Early Archaic diagnostic projectile point types in the Upper Ohio Valley include Kirk corner-notched, Kirk stemmed, LeCroy, and Kanawha stemmed points (Raber et al. 1998).

3.2.4 Middle Archaic (8000 to 5000 BP)

The Middle Archaic is poorly understood. Middle Archaic settlement in western Pennsylvania likely consisted of base camps positioned on Holocene-age river terraces, smaller resource procurement stations (for plant and animal acquisition) in upland settings, and lithic reduction stations near outcrops of suitable stone for tool manufacture (Carr 1998b; Cowin 1991; George 1985; Stewart and Kratzer 1989). Carr (1998b:88) notes a significant population increase during the Middle Archaic based on PASS site file data. Point types indicative of the Middle

Archaic period typically include Stanly, Big Sandy II, and Otter Creek points, with rare examples of Morrow Mountain and Guilford type bifaces (Cowin 1991:46).

3.2.5 Late Archaic (5000 to 3000 BP)

The Late Archaic period witnessed major environmental changes, including a continued rise in sea level and the increased availability of estuarine resources. These environmental changes affected cultural changes, including continued population growth, an increased shift to logistically oriented subsistence/settlement patterns, and the establishment of exchange networks. Late Archaic Native American populations on the Appalachian Plateau developed a well-defined schedule of resource exploitation. Site types include large, perhaps multi-seasonal, base camps generally associated with larger rivers, suggesting intensified exploitation of riverine resources; small, short-term upland base camps; and extraction sites found in both upland and lowland areas (Stewart and Kratzer 1989).

Diagnostic artifacts of this time period include Lamoka, Steubenville stemmed and lanceolate points, Brewerton notched points, and varieties of broad-bladed and narrow-stemmed projectile points (Mayer-Oakes 1955; George 1985). There is also an increase in the use of “non-projectile point flaked stone” technologies, including expedient flake tool and non-lithic types. Adovasio et al. (1998:20) interpret these data to mean that there was “a greater array of functional activities and techno-economic strategies involving the base camps of this period.”

3.3 Woodland

3.3.1 Early Woodland (3000 BP to 2100 BP)

Diagnostic Early Woodland traits include the introduction and utilization of ceramic vessels and the increased reliance on horticulture and sedentism (Cowin 1985). The emergence of the Adena cultural complex in the Central Ohio Valley influenced groups eastward into New York and New Jersey, and directly involved populations in western Pennsylvania. Accretional burial mounds and other earthworks, constructed between 400 BC and AD 250 (Mayer-Oakes 1955; Dragoo 1963; Clay 1991), reflect Adena and Adena-related Early Woodland occupations in the upper Ohio Valley.

Ceramics generally function as cultural horizon markers for archaeologists who study the Woodland period. Early Woodland pottery is characterized as thick-walled, flat-bottomed, and coarse grit-tempered. Diagnostic projectile points include Adena and Cresap Stemmed points. Ethnobotanical remains from various Early Woodland sites suggest that, while domesticates were introduced, they were dominated by the use of widely available wild plant foods (Adovasio and Johnson 1981; Ballweber 1989).

3.3.2 Middle Woodland (2100 BP to AD 900)

The Middle Woodland period is characterized by an elaboration in burial ceremonialism, widespread interregional exchange, and increased importance of indigenous cultigens. The first use of maize as a cultigen may date to this period. After the end of Adena-related ceremonialism circa AD 250, the Hopewell complex flourished and brought cultures in western Pennsylvania directly and/or indirectly into its exchange networks (Kent et al. 1971). Large, multiseasonal base camps or villages focused on terraces above major streams, and smaller, seasonal base camps and extraction loci located in the uplands are typical of the Middle Woodland settlement

pattern (MacDonald 2003). Diagnostic projectile points include a variety of notched and expanding stemmed forms, while ceramic vessels continue to be grit tempered with cord marking a common surface treatment (MacDonald 2003).

3.3.3 Late Woodland (AD 900 to 1600)

The Late Woodland period in southwestern Pennsylvania was typified by a complex of cultural traits identified as Monongahela. Monongahela sites have been recorded across much of western Pennsylvania, with a core of settlement centered near the Monongahela and Youghiogheny rivers (Cowin 1985; Johnson et al. 1989). During this period, subsistence activities shifted to a heavy reliance on maize production. Large, multi-seasonal villages characterized Late Woodland settlement pattern. These villages were generally circular, were often fortified with a round or oval stockade, and were typically situated on upland hilltops and saddles. Houses were arranged around a central circular plaza and were abutted by large circular storage pits (Bennett and Porter 1986:17). Social organization became more complex during the Late Woodland period and led to the emergence of tribal societies. Chesser notched, Jack's Reef corner-notched, Levanna and Hamilton triangular points (Justice 1987), as well as Backstrum side-notched (George 1992), are all diagnostic projectile points of the Late Woodland.

3.4 Protohistoric and Contact Period (AD 1600-1758)

The Protohistoric/Contact period represents a change from the Late Woodland subsistence-settlement systems. Sites documenting the Monongahela/Protohistoric transition and the early Protohistoric/Contact period include the Foley Site and the Throckmorton Site (Nass 1995:81) in western Pennsylvania. These sites represent Monongahela-like lifeways on which increasing trade and conflict were superimposed. During Early Contact times, western Pennsylvania was occupied by a variety of Native American groups, most notably the Iroquois, the Shawnee, and the Delaware (Goddard 1978; Hunter 1978; Lounsbury 1978).

3.5 Historic Period (1758-1950)

Europeans first began exploring the upper Ohio Valley as early as the seventeenth century, and it was not long before both the French and the English held claims over the land west of the Appalachian Mountains. While both countries were involved in trading activities, the English also wanted to possess the land for agricultural uses, whereas the French focused primarily on trading, missionary, and military activities. Through their trading and missionary work, the French were able to establish relationships with the Native Americans, something that the English lacked (Bausman 1904: 37). The French and English began denying each other access to these lands, and consequently, the French and Indian War ensued.

The English victory in 1759 led many settlers to believe the lands west of the Alleghenies would open for settlement. However, Native Americans still occupied much of this land and were not willing to give it up. Therefore, early settlement was slow due to the constant threat of Indian conflict. In an attempt to further western settlement, U.S. General Anthony Wayne led an attack on the Native Americans of the Ohio Valley at the Battle of Fallen Timbers in 1794. The U.S. forces emerged victorious. The defeat of the Native Americans led to the signing of the Treaty of Greenville in 1795, which officially opened the western land to settlement.

Once this land was finally accessible, settlement increased dramatically. Residents in the quickly growing Pittsburgh area tired of having to travel to the Westmoreland and Washington County seats to conduct government affairs, thus prompting the Pennsylvania legislature to establish a new county. As such, Allegheny County was formed on September 24, 1788 out of Westmoreland and Washington counties. Due to its optimal location, Pittsburgh became the county seat in 1791 (Miller et al. 2000: 19). The first portion of Beaver County to be settled by Europeans was the area that lies south of the Ohio River (Bausman 1904: 168). One of the county's earliest settlers was Levi Dungan. He arrived with his family in 1772 and settled along Raccoon Creek (Bausman 1904: 152). On March 12, 1800, Beaver County was formed out of Allegheny and Washington counties and was named after the Beaver River. The county's size was reduced on March 20, 1849, when a part of its land was taken to form Lawrence County (Bausman 1904: 1).

Southwestern Pennsylvania is marked with numerous streams and rivers, which contributed to the success of Allegheny and Beaver counties in various ways. Land in the river valleys was fertile, and agriculture became a driving force of the economy. In the early-to-mid nineteenth century, corn and wheat were the principal agricultural crops of the area. However, barley, oats, rye, and corn also became significant products (Bausman 1904: 279). Neville Island became known for its agricultural produce. In addition, animal husbandry was a key agricultural interest, as both counties had lucrative cattle and wool industries. Farmers found a large wool market in the woolen mills near Pittsburgh (Miller et al. 2000: 22).

Manufacturing and industry along the waterways were pivotal, even early in the region's history. Early Beaver County industries included glass, pottery, and boat making. Multiple boatyards were located at the mouth of the Beaver River and produced keel, cotton boats, flatboats, and steamboats. Mills lined the waterways that flowed through Beaver County. These mills varied in type and included saw mills, paper mills, linseed oil mills, and woolen mills (Bausman 1904: 292, 296-297). Like Beaver County, important industries in Allegheny County included glass blowing and boat building. Additionally, Allegheny County was well known for its nail and wire manufacturing, iron smelting, tanning, and tool making (Fleming 1922:470-472).

Natural resources also proved profitable. The area was recognized for its sandstone, limestone, and fire clay. Coal was also prevalent. Cannel coal was particularly common in Beaver County and gained popularity due to its clean burning qualities. Allegheny County boasted abundant coal resources, primarily mined by six coal companies: Joseph Walton & Co., J.C. Risher & Co., the William H. Brown Company, O'Neil & Co., Redman & Fawcett, and George Lysle & Sons (Miller et al. 2000: 28). An oil boom began in Pennsylvania in 1859, and Allegheny and Beaver counties were among the counties that profited accordingly. Between 1859 and 1884, over 38,000 wells were in existence throughout western Pennsylvania. The first oil well in Beaver County was at Smith's Ferry, and another significant well was near Ohioview. These wells were among the most productive in the county (Bausman 1904: 287). By 1889, Beaver County was producing 600,000 to 1,125,000 barrels of oil annually (Taylor and Taylor 1997). In the 1880s, natural gas was tapped in Allegheny County. George Westinghouse, Jr. established the Philadelphia Company in 1884 and by 1885 was piping gas into Pittsburgh. Within three years, the Philadelphia Company had 600 miles of pipeline coursing through the county (Miller et al. 2000: 27).

Numerous county and state roads were constructed during the beginning of the nineteenth century. Two east-west thoroughfares were opened in 1818: the Pennsylvania Road and the National Road. The Pennsylvania Road, now Route 30, stretches from Pittsburgh to Philadelphia. Currently Route 40, the National Road extended from Wheeling, West Virginia, through Pennsylvania, to Cumberland, Maryland (Miller et al. 2000: 21). Various railroads established lines through Allegheny and Beaver counties. In 1852, the Pennsylvania Railroad opened a line connecting Pittsburgh and Harrisburg, and thus finally linking Philadelphia and Pittsburgh by rail (Treese 2003: 221). The Pittsburgh and Lake Erie Railroad was chartered in 1875 and stretched from Pittsburgh, Pennsylvania, to Haselton, Ohio. This line was instrumental in transporting coal and coke to western Pennsylvania steel mills. Other significant railroads constructed in southwestern Pennsylvania included the Pittsburgh, Youngstown, and Ashtabula Railroad, the Cleveland and Pittsburgh Railroad, and the Ohio and Pennsylvania Railroad (Bausman 1904: 238, 259, 265).

With the success of railroads, river transportation became endangered. As a result, efforts to improve navigation along the region's rivers increased. The first lock and dam constructed on the Ohio River, the Davis Island Lock and Dam, was completed in 1885. Attention then turned to improving the Allegheny and Monongahela Rivers and in 1893, the Corps of Engineers opened a permanent Pittsburgh office. The system of locks and dams constructed along the Ohio, Monongahela, and Allegheny rivers during the late-nineteenth and early-twentieth centuries ensured that the rivers would remain navigable year-round and permitted inexpensive water travel. This in turn bolstered the rapidly growing industries of the southwestern Pennsylvania region (USACE 2009).

The steel industry came to Allegheny and Beaver counties during the late-nineteenth century, after the development of the Bessemer process. Steel mills were erected in Beaver County at Midland by the Midland Steel Company, at Ambridge by American Bridge Company, and at Aliquippa by Jones & Laughlin (Beaver County Industrial Museum 2007). Entire towns were established around steel mills in Allegheny County. These steel towns included Homestead, Neville Island, Braddock, and Etna, among others (Miller et al. 2000:28). Such industry giants as the Carnegie Steel Corporation and the U.S. Steel Corporation were headquartered in Allegheny County.

Southwestern Pennsylvania emerged as an industrial and manufacturing leader on a worldwide scale. It continued its dominance through the first half of the twentieth century, due largely to the increased demands associated with World War I and II. By 1956, Allegheny County had 1,640 manufacturing plants in operation. Approximately 80,000 workers were employed by the steel industry, creating revenue of over two billion dollars. Food production and electrical machinery manufacturing were the second and third largest industries in Allegheny County. However, even combined, the two only employed approximately 45,000 people and generated a return of under \$800 million, nowhere close to competing with the titanic steel industry (Miller et al. 2000: 31).

However, the 1970s saw a decline in manufacturing and the 1980s brought a nationwide collapse of the steel industry. Over 400 steel mills closed, and more than 200,000 steel workers lost their jobs. Specifically, in Beaver County, 20,000 steel workers became unemployed and five steel mills were shut down, including Crucible, LTV, Babcock and Wilson Company,

American Bridge, and Armco (Beaver County Industrial Museum 2007). Within the past two decades, a shift in the economic base of southwestern Pennsylvania has occurred. The economy is no longer centered on manufacturing and industry, but is now focused on education, health care, technology, and professional services (Miller et al. 2000: 31). These growing industries and the Greater Pittsburgh Airport, helped to compensate for the industrial closings.

4.0 Background Research and Site Potential

Background research was undertaken to (1) identify known cultural resources in the immediate environs of the study areas and (2) to provide data that indicates areas that may be sensitive for cultural resources, prior to fieldwork. Each study area is discussed separately below.

4.1 Emsworth Primary

4.1.1 Archaeology

PASS files data indicate that no previously recorded archaeological sites occur within the study area and two recorded archaeological sites are located within a one-mile radius of the study area (Figure 7; Table 2). Neither of these sites is located on Neville Island. Both sites were recorded by local informants and not visited by professional archaeologists. According to the PASS form, Site 36AL294 was 100 percent destroyed. These sites do not provide information that would help assess the potential to find previously unrecorded sites within the island setting of this study area.

Table 2. Archaeological Sites within 1 Mile (1.6 km) of Emsworth Primary and Secondary Study Areas

Site Number	Study Areas	Site Type	Topographic Setting	Archaeological Components
36AL294	Emsworth Primary and Secondary	Open Habitation	Stream Bench	Undated Prehistoric
36AL299	Emsworth Primary and Secondary	Open Habitation	Terrace	Undated Prehistoric

4.1.2 Architecture

Review of data on file at PHMC-BHP and CRGIS on-line indicated that there are no previously recorded architectural or historical resources located within, or adjacent to, this study area (Figure 8).

4.2 Emsworth Secondary

4.2.1 Archaeology

PASS files data indicate that no previously recorded archaeological sites occur within the study area and two recorded archaeological sites within one-mile radius of the study area (see Figure 7; see Table 2). These sites, discussed under the Emsworth Primary section above, were not useful in assessing the archaeological potential in this study area.

4.2.2 Architecture

There is one previously recorded resource, Emsworth Locks and Dams (008715), located adjacent to the Emsworth Secondary study area (see Figure 8; Table 3). Constructed by 1922 and consisting of two dams, two locks, and three operations buildings, the Emsworth Locks and Dams has been determined eligible for NRHP listing.

Figure 7. Previously Recorded Archaeological Sites within One Mile of Emsworth Study Areas

Figure 8. Previously Recorded Architectural Resources Adjacent to Emsworth Study Areas

**Table 3. Previously Surveyed Architectural and Historical Resources—
Emsworth Secondary Study Area**

Key Number	Study Area	Name	Historical Function	Construction Date	NRHP Status
008715	Emsworth Secondary	Emsworth Locks & Dams	Locks & Dams	1922	Eligible

4.3 Dashields Primary

4.3.1 Archaeology

PASS files data indicate that no previously recorded archaeological sites occur within the study area; however, there are seven recorded archaeological sites (37AL7, 36AL61, 36AL210, 36AL319, 36AL386, 36AL387, and 36AL480) within a one-mile radius of the study area (Figure 9; Table 4). Site 36AL7, a 3.5-acre Late Woodland occupation, was situated on the north bank of the Ohio River less than 0.25 miles north of Dashields Primary study area; the site has been destroyed by industrial development (Davis 2007:70).

Table 4. Archaeological Sites within 1 Mile (1.6 km) of Dashields Primary and Secondary Study Areas

Site Number	Study Areas	Site Type	Topographic Setting	Archaeological Components
36AL7	Dashields Primary and Secondary	Village	Terrace	Woodland (W), Late Woodland (LW)
36AL61	Dashields Primary	Open Habitation	Ridgetop	Undated Prehistoric
36AL 210	Dashields Primary and Secondary	Open Habitation	Terrace	Undated Prehistoric
36AL319	Dashields Primary and Secondary	Open Habitation	Rise in Floodplain	Undated Prehistoric
36AL386	Dashields Primary and Secondary	Open Habitation	Terrace	Late Archaic (LA), W, Early Woodland (EW)
36AL387	Dashields Primary and Secondary	Open Habitation (and possible quarry)	Terrace	LA, W, EW, LW
36AL480	Dashields Primary and Secondary	Open Habitation, Brick Works	Terrace	Middle Archaic (MA), LA, Transitional Archaic (TA), EW, Middle Woodland (MW), Historic

Figure 9. Previously Recorded Archaeological Sites within One Mile of Dashields Study Areas

Site 36AL210 was subjected to Phase I and Phase II levels of investigation, which produced 4,131 prehistoric lithic and ceramic artifacts and 317 historic artifacts from this multicomponent site (Davis 2007:57). A possible prehistoric feature and two historic-era postholes were identified during the investigations. In general, the site lacked integrity and was not deemed eligible for listing on the National Register of Historic Places (Davis 2007:70).

Sites 36AL386 and 36AL387 were identified and tested within the Leetsdale Industrial Complex. Site 36AL386 is a multicomponent site dating from Early Woodland through the Late Prehistoric period. Site 36AL387 dates to a similar time period and both “were likely part of a diachronic series of settlements” but recorded as open habitation sites (Davis 1998:85). Both of these prehistoric habitation sites lack integrity and were recommended as not eligible for listing on the National Register of Historic Places.

Site 36AL480 is located on the T-1 to T-3 terraces of the Ohio River within the Leetsdale Industrial Complex and was investigated for the U.S. Army Corps of Engineers–Pittsburgh District as part of a concrete-casting facility and launch basin. This stratified site has Middle Archaic through Early Woodland components capped by a historic industrial brickworks component (ca. 1870-1910). This site had intact features indicating that this part of the industrial park had less intensive ground-disturbing activities in the past.

4.3.2 Architecture

Three previously identified architectural and historical resources are located adjacent to the Dashields Primary study area: Edgeworth Historic District (100731), Riter-Conley Manufacturing Company/Bethlehem Steel Company Building (102240), and Dashields Lock and Dam (117588). The resources are depicted in Figure 10 and summarized in Table 5. Of the three, only the Riter-Conley Manufacturing Company/Bethlehem Steel Company Building has been determined NRHP-eligible. Within the Edgeworth Historic District, 131 resources have been individually documented. Two of those resources are listed on the NRHP: the David Shields House/Newington (001759) and the Nicholas Way House (001785). Two of the resources are recommended eligible for listing: the William H. Singer Estate Outbuildings/Chestnut Hill/Edgehill Manor (010731), and the Edgeworth Bridge (010779).

**Table 5. Previously Surveyed Architectural and Historical Resources—
Dashields Primary Study Area**

Key Number	Study Area	Name	Historical Function	Construction Date	NRHP Status
100731	Dashields Primary	Edgeworth Historic District	Residential District	1870-1940	Undetermined
102240	Dashields Primary	Riter-Conley Manufacturing Company/Bethlehem Steel Company	Industrial Building	1903	Eligible
117588	Dashields Primary	Dashields Lock & Dam	Lock/Dam	1929	Undetermined

Although CRGIS depicts the boundaries of the Edgeworth Historic District and the Riter-Conley Manufacturing Company/Bethlehem Steel Company Building as falling within this study area, the boundaries are inaccurately defined. The individual PHRS forms for these two resources do not provide boundary descriptions, and a field visit verified that they do not fall within this study area. As such, there are no previously identified resources located within the Dashields Primary study area.

4.4 Dashields Secondary

4.4.1 Archaeology

PASS files data indicate that no previously recorded archaeological sites occur within the study area; however, there are six previously recorded archaeological sites (37AL7, 36AL210, 36AL319, 36AL386, 36AL387, and 36AL480) within a one-mile radius of the study area (see Figure 9; see Table 4). These were discussed above in the Dashields Primary section. None of these six previously recorded archaeological sites is located on the same side (southwest side) of the Ohio River as this study area. This may be due to the lack of professional archaeological surveys near the Dashields Secondary study area.

4.4.2 Architecture

Review of architectural files and information obtained through CRGIS revealed that there are no previously recorded architectural or historical resources located within the Dashields Secondary study area or adjacent to it (Figure 10).

4.5 Montgomery Primary

4.5.1 Archaeology

There are 15 previously recorded archaeological sites within a one-mile radius of the Montgomery Primary study area, including Site 36BV131 which covers most of this Primary study area, and Site 36BV55 which covers much of Montgomery Secondary study area (Figure 11; Table 6). Sites 36BV131 and 36BV55 were recorded by a local collector and not visited by professional archaeologists to confirm the information.

The 15 sites in the one-mile study radius are found in floodplain, terrace, hill and ridge top, and slope topographic settings (see Table 6). Eleven of these sites are prehistoric lithic scatters (open habitation) of unknown temporal affiliation. All four remaining sites with an assigned cultural affiliation (36BV9, 36BV266, 36BV269, 36BV305) are located on the opposite side (north side) of the Ohio River. Site 36BV9 is a multicomponent village site (Early Woodland through Late Woodland) that has been heavily disturbed, and possibly destroyed, by industrial-related activities. Site 36BV266 is a multicomponent (Late Archaic, Transitional Archaic, Middle Woodland) open habitation site. Site 36BV269 is a Middle Woodland earthwork, and Site 36BV305 represents a Late Woodland lithic scatter.

Figure 10. Previously Recorded Architectural Resources Adjacent to Dashields Study Areas

Figure 11. Previously Recorded Archaeological Sites within One Mile of Montgomery Study Areas

Table 6. Archaeological Sites within 1 Mile (1.6 km) of Montgomery Primary and Secondary Study Areas

Site Number	Study Areas	Site Type	Topographic Setting	Archaeological Components
36BV1	Montgomery Primary	Open Habitation with burials	Terrace	Undated Prehistoric
36BV9	Montgomery Primary and Secondary	Open Habitation (Village)	Floodplain	EW, MW, LW
36BV50	Montgomery Secondary	Open Habitation	Terrace	EA, TA, EW
36BV55	Montgomery Primary	Open Habitation	Floodplain	Undated Prehistoric
36BV58	Montgomery Secondary	Open Habitation	Floodplain	Undated Prehistoric
36BV91	Montgomery Primary	Open Habitation	Terrace	Undated Prehistoric
36BV94	Montgomery Secondary	Open Habitation	Floodplain	Undated Prehistoric
36BV95	Montgomery Secondary	Open Habitation	Floodplain	Undated Prehistoric
36BV96	Montgomery Secondary	Open Habitation	Terrace	Archaic
36BV97	Montgomery Primary	Open Habitation	Hilltop	Undated Prehistoric
36BV129	Montgomery Primary and Secondary	Open Habitation	Ridgetop	Undated Prehistoric
36BV131	Montgomery Primary and Secondary	Open Habitation	Terrace	Undated Prehistoric
36BV135	Montgomery Primary and Secondary	Open Habitation	Lower Slopes	Undated Prehistoric
36BV191	Montgomery Secondary	Lithic Reduction	Floodplain	Undated Prehistoric
36BV221	Montgomery Secondary	Open Habitation	Upland Flat	MA, LA
36BV230	Montgomery Secondary	Open Habitation; Historic Artifact Scatter	Floodplain	LA, Historic
36BV231	Montgomery Secondary	Open Habitation	Terrace	Undated Prehistoric
36BV266	Montgomery Primary and Secondary	Open Habitation	Middle slopes	A, LA, TA, W, MW
36BV269	Montgomery Primary and Secondary	Earthwork	Terrace	W, MW
36BV303	Montgomery Primary	Open Habitation Site	Rise in Floodplain	Undated Prehistoric
36BV304	Montgomery Primary	Open Habitation Site	Rise in Floodplain	Undated Prehistoric
36BV305	Montgomery Primary	Open Habitation Site	Rise in Floodplain	LW
36BV306	Montgomery Primary	Open Habitation Site	Floodplain	Undated Prehistoric
36BV354	Montgomery Primary	Open Habitation Site	Terrace	Undated Prehistoric

4.5.2 Architecture

Review of the architectural files at PHMC-BHP offices and information contained in CRGIS revealed that there is one previously recorded historical resource located adjacent to the Montgomery Primary study area: Montgomery L&D (Figure 12). The Montgomery L&D was constructed by 1936 and consists of a gated dam, two locks, and several operation buildings. The NRHP status of this resource remains undetermined.

**Table 7. Previously Surveyed Architectural and Historical Resources—
Montgomery Primary Study Area**

Key Number	Study Area	Name	Historical Function	Construction Date	NRHP Status
Unassigned	Montgomery Primary	Montgomery Locks and Dam	Locks and Dam	1936	Undetermined

4.6 Montgomery Secondary

4.6.1 Archaeology

Fifteen previously recorded archaeological sites are within a one-mile radius of the Montgomery Secondary study area, including Site 36BV131, which covers most of Montgomery Primary study area, and Site 36BV55, which covers much of Montgomery Secondary study area (see Figure 11; see Table 6). Both sites 36BV55 and 36BV131 were recorded by amateur collectors and were not visited by professional archaeologists.

These 15 sites are found in floodplain, terrace, hill and ridge top, upland flat, and slope topographic settings (see Table 6). The site type and temporal affiliation of these 15 sites varies. Seven of the previously recorded sites are undated prehistoric open habitation sites (lithic scatters). Site 36BV9 is an Early Woodland through Late Woodland village site. Site 36BV96 has a general Archaic component. Site 36BV50 has Early Archaic, Transitional Archaic, and Early Woodland components. Based on informant information, Site 36BV221 has both Middle Archaic and Late Archaic components. Site 36BV266 has Archaic, Late Archaic, Transitional Archaic, Woodland, and Middle Woodland components. Site 36BV269 is listed as an earthwork with a Woodland, possibly a Middle Woodland, temporal affiliation. Informant information indicated that Site 36BV191 is a possible lithic reduction site. Site 36BV230 is recorded as having both a Late Archaic lithic scatter and a historic artifact scatter.

4.6.2 Architecture

Based on information gathered through CRGIS and architectural files at PHMC-BHP, no previously recorded architectural or historical resources occur within the Montgomery Secondary study area, or adjacent to it (see Figure 12).

Figure 12. Previously Recorded Architectural Resources Adjacent to Montgomery Study Areas

4.7 Summary of Previously Recorded Resources

4.7.1 Archaeological Sites

Thirty-three sites are recorded within a one-mile radius of the six study areas. Most of these sites were recorded by collectors and never verified by archaeologists. As reflected in Tables 7, 9, and 11, these sites are found in a variety of site settings including terrace ($n=14$), floodplain ($n=12$), hill or ridge tops ($n=3$), slopes ($n=2$), upland flat ($n=1$) and bench ($n=1$). Based on this sample, terrace and floodplain settings along the Ohio River and its tributaries were more intensively utilized than other settings.

Site types found near the study areas are limited. Site types include a possible quarry (36AL387), a lithic reduction workstation (36BV191), village (36AL7 and 36BV9), earthworks (36BV269), and an open habitation site with burials (36BV1). There are also two sites with both prehistoric and historic components (36AL480 and 36BV230). The remaining sites are lithic scatters (open habitation sites). Based on the sample it appears that the most common type of sites in these areas are undated open habitation sites.

Site components provide data to understand better the use of the project vicinity over time. These 33 sites include 21 sites with undated prehistoric components. The remaining 12 sites account for 33 dated components. Of the prehistoric sites, there were six sites with Late Archaic components and five sites with Early Woodland components. The other components are less frequently represented and include Archaic ($n=2$), Early Archaic ($n=1$), Middle Archaic ($n=2$), Transitional Archaic ($n=3$), Woodland ($n=4$), Middle Woodland ($n=4$), and Late Woodland ($n=4$). Based on this site sample, it would appear that the region was more intensively utilized during the Late Archaic through Late Woodland periods.

4.7.2 Architectural Resources

Five previously identified architectural and historical resources are located adjacent to the study areas. These resources consist of three separate locks and dams facilities, a historic district, and an industrial building. Two resources, the Emsworth Locks and Dams (008715) and the Riter-Conley Manufacturing Company/Bethlehem Steel Company Building (102240), have been determined NRHP-eligible. None of the previously recorded architectural or historical resources occurs within the APE of the study areas.

4.8 Previous Cultural Resource Studies

To gain a more detailed insight into site types common in the project vicinity, research reports for five previous archaeological surveys within a 1-mile radius of the study areas were reviewed at the BHP, including two sanitary sewage line projects (Cosgrove 1993; Davis 2007), one concrete casting facility (Davis 2000), one bridge and roadway right-of-way survey (Davis and Wilks 2000), and one barge facility study (Davis 1998).

Christine Davis Consultants, Inc. (CDC) conducted a Phase I survey for expansion of a sewage treatment plant in Edgeworth and Leetsdale boroughs in 2007 (Davis 2007). This study included a Phase I study of two 5-ft wide sewage line segments and a 1,111 sq m (11,960 sq ft) wastewater treatment expansion location. One of the two segments (Part I) ran along the Norfolk Southern Railroad Right-of-Way (ROW) just north of the Dashields Primary area. This

segment, measuring 4,550 ft long, connected the Edgeworth Lane Pumping Station (Edgeworth Borough) with the Little Sewickley Creek Pumping Station (Leetsdale Borough). The second segment (Part II) ran from Leetsdale Sewage Treatment Plant approximately 2,200 ft before terminating in West Alley. Due to the disturbed nature of these two segments, no subsurface testing was undertaken. One previously identified site (36AL210) was located within the wastewater treatment expansion location (Part III). Phase II investigations at this site documented a possible prehistoric feature and two historic-era postholes. The study concluded that this site lacked integrity and was not eligible for listing on the National Register of Historic Places.

In 1998, CDC conducted a Phase I/II study for the Leetsdale Barge Loading/Unloading Facility (Davis 1998). This barge transportation facility is located in an industrial area on a terrace of the Ohio River. Two prehistoric sites were identified (36AL386 and 36AL387) on the second and third terraces of the Ohio River. Phase II testing indicated that both sites were sporadically occupied in the Late Archaic and from the Early Woodland through Late Prehistoric periods. Features were identified at both sites but the study concluded that both sites were heavily disturbed and lacked integrity.

In 2000, CDC conducted a Phase I study for the Leetsdale Bridge and accompanying roadway improvements (Davis and Wilks 2000). The study area for the archaeological investigation encompassed approximately six acres in Allegheny and Beaver counties, centered in Leetsdale Borough. This study did not identify any archaeological sites.

In 1992, KellyLynn Cosgrove conducted a Phase I survey for a proposed sanitary sewer line in Industry Borough, Beaver County. The sewer line covered 15,210 linear meters (49,000 linear feet) of which only 1500 m (4920 ft) were considered to have moderate to high potential for archaeological sites. Most of the sewer lines fell within modern housing developments. Locations with moderate to high potential for archaeological sites formed four discontinuous areas or loci. Four prehistoric archaeological sites were identified in Locus 2 (36BV303-36BV306). All four sites were located at the base of a steep slope and additional testing determined that all four sites lacked integrity. Site 36BV305 testing yielded a triangular Late Woodland biface. No diagnostic artifacts were recovered from the other three prehistoric sites.

CDC also conducted Phase I testing for the Leetsdale Concrete Casting Facility located on the T-1 to T-3 terraces of the Ohio River in Leetsdale Industrial Park (Davis 2000). This study documented a large stratified site (36AL480) on these terraces with an overlying historic era industrial brickworks component. Types of diagnostic artifacts recovered from the Phase I investigation include Brewerton Side Notched, Kiski Notched, Late Archaic Side Notched, LeCroy Bifurcated Stem, Memom/Trimble side notched (Weed 2004: 3-34). Subsequent excavations were undertaken by several firms for the US Army Corps of Engineers–Pittsburgh District. Excavations revealed numerous features and diagnostic artifacts within stratified occupations.

4.9 Historic Map Research

Twentieth-century historic USGS topographic maps and available aerial photographs within the Natural Resource Assessment report for this project were examined (Aerostar 2009: Appendix E). In addition, a historic county atlas map was examined for each study area for

information on their development in the late-nineteenth century. The map resources were used to: (1) assist in evaluating the potential of the study areas to contain structures and historic sites, (2) examine development of the areas over time, and (3) provide insights into past land use activities that may affect soil conditions. This report summarizes the historic and current land use information presented in the Natural Resource Assessment report, which is a separate report under this work order.

4.9.1 Emsworth Primary

The map review for Emsworth Primary study area included nine aerial photographs (dating from 1939-2006), six topographic maps (from 1908 to 1993) (see Aerostar 2009) and one historical atlas map (Hopkins 1876). In 1876, the Emsworth Primary study area was part of undeveloped land (agricultural field) located between a road traversing northwest to southeast across Neville Island and the Ohio River (Figure 13). The island was mainly agricultural farmlands in the late 1800s. The island's economy began to change by 1900 as industry moved on to the island. The government acquired 130 acres for an ordnance plant in 1918, and by 1921, most of the farms were gone and the island was dominated by industrial operations (Tatone et al. 2008:17).

The USGS map shows no development in Emsworth Primary study area in 1906, most likely indicating that it was still agricultural lands. Sometime between 1906 and 1920, the land usage changed. This area was used as part of a refinery complex in the 1920s-1950s (Aerostar 2009:7). The Emsworth L&D were under construction when the Flood of 1936 hit, washing away part of the island and construction machinery used for dam construction. According to the Natural Resource Assessment study report, Neville Island was severely eroded by the 1936 flood (Aerostar 2009:7). This part of the island was backfilled with river dredge material; the riverbank was then capped with stone.

Petroleum bulk-storage tanks are shown in the 1939 aerial photograph of the Emsworth Primary study area indicating the rapid recovery of the local industries after the Flood of 1936. The study area housed above-ground storage tanks at least as late as 1967. The 1967 aerial photograph shows small structures across much of the area but by 1969 only one structure, located on the northeast end near the river, remained and was present at least until 2005. The western part of this area was cleared during the 1940s and remained so until the 1990s. Chevron acquired the site in the 1990s and used the land to store petroleum contamination and hazardous waste (Aerostar 2009:7). More of the area was cleared in the early 2000s.

4.9.2 Emsworth Secondary

The map review for Emsworth Secondary study area included nine aerial photographs (dating from 1939-2006), six topographic maps (from 1908 to 1993) (see Aerostar 2009) and one historical atlas map (Hopkins 1876). The Emsworth Secondary study area was part of an undeveloped area (likely an agricultural field) in 1876, located between a road traversing Neville Island, and the Ohio River (see Figure 13).

USGS quadrangle maps and aerial photographs from the Natural Resource Assessment study report were reviewed to examine development of this area during the twentieth century. The railroad, built before 1939, runs along the southern edge of this area.

Figure 13. Emsworth Primary and Secondary Areas in 1876

Aerial photographs indicate agricultural land until sometime after 1949. By 1953, USGS topographic maps depict two clusters of structures within the study area. By 1967, most of the buildings were removed and the area reverted to fields and woodlots. Between 1967 and 1973, there was new industrial development in this area. Part of this area was located within Exxon's Bulk Storage facility from ca. 1979 to at least 2002.

4.9.3 Dashields Primary

The map review for Dashields Primary study area included 11 aerial photographs (dating from 1938-2006), six topographic maps (from 1908 to 1990) (see Aerostar 2009), and one historical atlas map (Hopkins 1876). Examination of the Hopkins (1876) atlas map and the USGS 15' Sewickley quadrangle map (1908) indicates that there were no structures within the parcels that make up the Dashields Primary area (Figures 14 and 15).

The aerial photograph indicates that, in 1938, both parcels (large triangular east parcel and the smaller west parcel) were cleared of vegetation. At this time, a road traversed the middle of the east parcel, and another road ran along the riverbank. Trees lined Sewickley Creek. It appeared that materials were stockpiled in this area in the late 1930s. The site became partially re-vegetated during the 1940s. Portions of the area were cleared in the 1970s. Over time, scrub growth and woodlots became established, although the presence of access roads indicates that activity remained. There was no vegetation in the eastern tip of the study area until sometime after 1993, but trees were growing in other parts of this parcel. The western parcel was cleared for industrial use ca. 1990. Previously established wooded sections near Sewickley Creek and the Ohio River were left to grow and mature.

4.9.4 Dashields Secondary

The map review for Dashields Secondary study area included 12 aerial photographs (dating from 1938-2006), six topographic maps (from 1908 to 1990) (see Aerostar 2009) and one historical atlas map (Hopkins 1876). At Dashields Secondary study area, there were two structures present in 1876 and in 1908 (see Figure 15; Figure 16). A review of twentieth-century aerial photographs and USGS quadrangle maps indicates that two additional structures (locktenders' houses) were constructed in the west end by 1939. One of the earlier structures was removed between 1939 and 1949. In 1939, the eastern portion of the study area and the west side of the access road were either wooded or covered in scrub growth, while the area around the houses was lawn. By 1960, the yard area diminished in size and trees became established on the eastern half of this area. The remaining houses were removed before 1975, and a wastewater treatment plant was constructed on the east end. The central and eastern portion remained wooded until sometime between 1985 and 1993. By 2005, there was a baseball field, parking lot, and picnic pavilion on the west side. There were three small structures and the sewage treatment plant on the west end. The treatment plant was removed by 2006, and only the Crescent Township maintenance buildings remained.

The District provided some information on this area including a detailed 1933 drawing of two locktenders' houses built within this study area (Figure 17). These two houses were excessed to the Township in 1973 and demolished shortly thereafter.

Figure 14. Dashiels Primary Area in 1876

Figure 15. Dashiels Primary and Secondary Area in 1908

Figure 16. Dashields Secondary Area in 1876

Figure 17. Dashields Lock, Locktenders' Houses in 1933

4.9.5 Montgomery Primary

The map review for Montgomery Primary study area included 10 aerial photographs (dating from 1939-2006), four topographic maps (from 1908 to 1979) (see Aerostar 2009), four photographs of Montgomery Dam construction provided by the District, one map of the Ohio River and vicinity (1877), and one historical atlas map (Caldwell 1876). Caldwell's (1876) atlas map indicates a possible structure in the study area vicinity (Figure 18, top). A clear view of the project area is depicted on an 1877 map indicating two structures in Montgomery Primary: one just west of Squirrel Run (Allen House) and one in the central part of the project area (R. Kenyon House) (Figure 18, bottom). Both structures are depicted on the 1904 USGS topographic map (Figure 19).

Montgomery Locks and Dam, located immediately north of Montgomery Primary study area, was completed in 1936. Construction of this navigation facility had a major impact on the Montgomery Primary study area. The mouth and lower reaches of Squirrel Run were moved to the west to channel this stream west of the lock wall. This likely resulted in the demolition of the Allen house if it was not already gone.

The Kenyon house depicted on the 1876 and 1877 maps (see Figure 18) was located on a terrace almost directly south of the dam. The District provided four scanned photographs that illustrate Montgomery Primary study area during dam construction activities. At that time, the riverbank was denuded of vegetation and stepped back (Photograph 1). Four construction-related buildings were built on the terrace and stairs led from the terrace down to the river construction area (Photograph 2). These work structures were located east of the R. Kenyon House depicted on the 1877 map. This house was referred to as the Emerick House in the 1930s (Photograph 3) and referred to in the remainder of this report as the Kenyon-Emerick House.

A close-up photograph of the Kenyon-Emerick House illustrates a two-story stone house that was one room deep and two rooms wide with a central door and a gable end chimney (Photograph 4). On the north (river) side of the house, there was a stone foundation and collapsed roof for a two-story addition but the addition had been removed. There are six broken windowpanes on the east side and at least one broken windowpane on the north side. The condition of the house at the time of the photograph (November 4, 1932) suggests that it was abandon at that time.

The area west of Squirrel Run has remained forested from 1939 to present. The area east of Squirrel Run was generally cleared of trees. A driveway enters central area from the south, just west of a garage currently standing on the property, and ran northwest past a structure depicted in the 1939 aerial photograph and headed towards the Kenyon-Emerick House before looping back to the entrance in the south. This driveway would have run along the south side of the temporary buildings created for dam construction activities. The railroad line was built sometime between 1939 and 1952 in the general location of a former road that ran along the river terrace from at least 1876-1939. The 1967 and 2006 aerial photographs indicate that the previously cleared areas were reverting to woods and scrub growth.

Figure 18. Montgomery Primary and Secondary Areas in 1876 (top) and 1877 (bottom)

Figure 19. Montgomery Primary and Secondary Areas in 1904

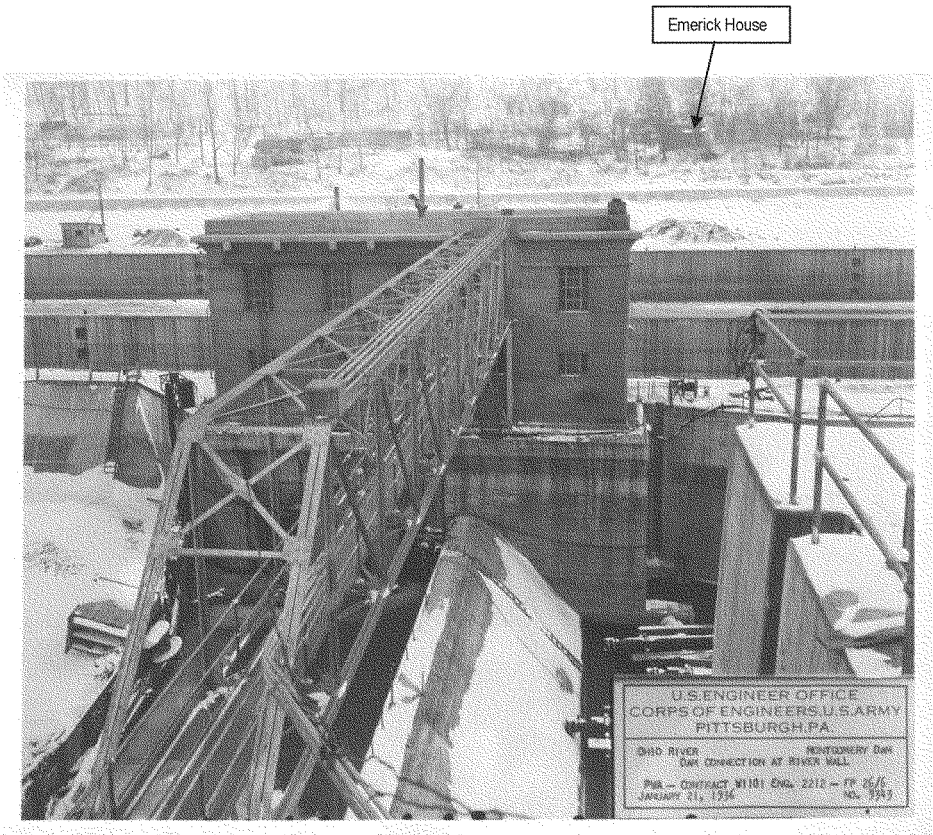


Photograph 1. Overview of Montgomery Dam Construction. View to South. Note construction buildings in background. (Photograph Courtesy of USACE, Pittsburgh District.)



U.S. ENGINEER OFFICE
CORPS OF ENGINEERS U.S. ARMY
PITTSBURGH, PA.
OHIO RIVER MONTGOMERY LOCKS
UPPER MIDDLE GATE IN PLACE
965 FOOT LOCK
CONTRACT #101 DOW 1730
JUNE 11, 1934 NO. 2310

Photograph 2. Overview of Montgomery Dam Construction on June 11, 1934. View to South. Note construction buildings in left background. (Photograph Courtesy of USACE, Pittsburgh District.)



Photograph 3. Overview of Montgomery Dam Construction on January 21, 1936. View to South. Note Emerick House in right background. (Photograph Courtesy of USACE, Pittsburgh District.)



*Photograph 4. Close-Up of Emerick House on November 4, 1932. View to Southwest.
(Photograph Courtesy of USACE, Pittsburgh District.)*

4.9.6 Montgomery Secondary

The map review for Montgomery Secondary study area included review of 11 aerial photographs (dating from 1939-2006), four topographic maps (from 1904 to 1979) (see Aerostar 2009) and one historical atlas map (Caldwell 1876). By 1876, a house was located in the northwestern corner of the site with a driveway entering this location from the south. This house was depicted in the 1904 quadrangle map and the 1939 aerial photograph. The aerial photographs illustrate that by 1952, the house was no longer present and the majority of the study area was commercially and industrially developed. Aerial photographs and topographic maps reveal extensive excavations and shoreline changes in the 1950s through the 1970s.

A review of the western 3.7-acre site aerial photograph indicates that in 1939, the site had been cleared and a road entered the site from the south (where the railroad is today). The site remained in the same condition (unaltered, and no development) until the cleared area became re-vegetated by the time of the 1967 aerial. The 2006 aerial shows the site remained undisturbed and is completely re-forested.

Based on the review of historical records and interviews, the Montgomery Secondary site was primarily undeveloped land with a road from at least 1904 to at least 1939, commercially/industrially developed from at least 1952 to at least 1967, developed with an excavation from at least 1969 to at least 1979, and has been developed with a synthetic gypsum plant since at least 1977.

4.10 Map Research Summary

Industrial development over the years has severely impacted all or parts of five of the six study areas. All or nearly all of Emsworth Primary and Emsworth Secondary study areas included extensive industrial development for petroleum related activities. There was also evidence of large-scale earthmoving activities on the west end of Emsworth Secondary. Spoil piles were also observed in the Dashields Primary western parcel and the western half of the Dashields Primary large eastern parcel. The east side of Dashields Secondary was disturbed by Crescent Township's sewage facilities and, more recently, the Township's maintenance buildings. The majority of Montgomery Secondary has been subjected to earthmoving activities and large open storage/spoil piles are visible on more recent aerial photographs.

There is a moderate to high potential to encounter intact soils in several locations including nearly all of Montgomery Primary study area, which has remained relatively undeveloped (except for railroad and dam construction activities). The west half of Dashields Secondary did not appear to be disturbed by industrial activity; however, this area was transformed from residential houses to a neighborhood park. The aerial photographs were also not useful in assessing the amount of ground disturbing activities in the eastern part (east side of Sewickley Creek) of Dashields Primary. This area had spoil piles present from circa 1938-1949.

4.11 Summary of Background Research

Background research was very informative regarding archaeological site potential. Previous archaeological studies, recorded site file data, and map research indicate:

- One previously recorded (amateur reported) archaeological site covers most of Montgomery Primary study area
- One previously recorded (amateur reported) archaeological site covers most of Montgomery Secondary study area
- A moderate to high potential for prehistoric archaeological sites exists in all three study areas
- A high potential for historic-era archaeological sites exists at Dashields Secondary and Montgomery Primary study areas
- Modern development has disturbed large areas along the Ohio River
- Industrial development has significantly impacted Emsworth Primary, Emsworth Secondary, the western tract of Dashields Primary, the western half of Dashields Secondary, and Montgomery Secondary. There is also an unknown amount of industrial disturbance in the eastern tract of Dashields Primary.

In conclusion, there appears to be a moderate to high potential for prehistoric sites in Dashields Primary, the eastern half of Dashields Secondary, and Montgomery Primary study areas, with a previously recorded prehistoric site falling within Montgomery Primary study area. There is also a moderate to high potential for historic sites within Dashields Secondary and Montgomery Primary areas.

5.0 Methodology

5.1 Background Research

The methodology for the cultural resources assessment survey included background research to: (1) identify previously recorded resources within and near the study areas; (2) develop an environmental and cultural context to aid in evaluation of identified resources; and (3) identify areas of no, low, moderate, and high potential for cultural resources. Historic research was conducted at the Pennsylvania Historical and Museum Commission (PHMC), Bureau for Historic Preservation (BHP) office in Harrisburg and the state's online Cultural Resources Geographic Information System (CRGIS) for cultural resources information, including reports on all previously surveyed areas as well as NRHP-listed resources located within, and adjacent to, the APE. Other sources consulted included published histories and architectural histories of Allegheny and Beaver counties, census data, newspapers, and historic maps of the study area. Additional research was conducted at the Library & Archives of the Historical Society of Western Pennsylvania (HSWP) at the Senator John Heinz History Center in Pittsburgh.

Pennsylvania Archaeological Site Survey (PASS) data were reviewed for prehistoric and historic sites within one mile of the six study areas (Emsworth, Primary, Emsworth, Secondary, Dashiels Primary, Dashiels Secondary, Montgomery Primary, and Montgomery Secondary). Architectural and historic resources within or immediately adjacent to all six study areas were also reviewed.

5.2 Archaeological Survey

Each area was subjected to a pedestrian reconnaissance, at which time existing conditions were noted and photographed. The results of the pedestrian reconnaissance combined with the background research were useful in targeting the archaeological and architectural field survey work. The archaeological survey included background research, pedestrian reconnaissance, photo-documentation, excavation of shovel probes (SPs), geomorphologic trench soundings, laboratory processing and analysis, and report preparation. The field study was conducted between July 13-27 and November 24-December 1, 2009.

On July 13, 2009, the project principal investigator conducted a ground reconnaissance of all study area to groundtruth preliminary assessments of archaeological potential based on background research. This was followed by limited subsurface testing consisting of systematic shovel testing at 15-meter (50-foot) intervals to identify sites, when possible. Shovel probes (SPs) measured 50 cm (1.5 ft) in diameter and were excavated by natural soil horizons, continuing at least 10 cm into culturally sterile subsoil. Excavated soils were screened through 6-mm (0.25-inch) hardware mesh for systematic artifact recovery. Results of excavations were recorded on standardized field forms (including profiles of SPs, provenience data, depth of soil horizons, soil descriptions, and a list of any recovered artifacts). SPs were backfilled after excavations. SP locations were recorded on study area design maps and, when foliage permitted, recorded with a GPS unit capable of submeter accuracy. Overview photographs of study areas and archaeological sites were taken for each area.

Three exploratory geomorphology trenches were required under the SOW in the Dashields Primary Study area. These geomorphic trenches were to permit the geomorphologist to assess the landform for prehistoric archaeological site potential and evaluate the potential for deeply buried archaeological resources. A Registered Professional Engineer (RPE) designed the trench sloping or benching system for geomorphology backhoe trenches. Information on the RPE-approved trench design was available on-site. In addition, Allegheny County required that a copy of the Erosion and Sedimentation Control (E&SC) plan be available on site during fieldwork. It was necessary to notify the Pennsylvania Fish and Boat Commission regarding our excavation plans. This resulted in a Pennsylvania Natural Diversity Inventory (PNDI) request and the E&SC plan was designed to take into account the PNDI results.

Geomorphology mechanical trenches were not to exceed 30 m in length (with a ramp on each end for ingress/egress) and 5.4 m in depth. The geomorphologist was to document (photographs, notes, profile maps) the stratigraphic profile of the A and B type soils (as defined in EM 385-1-1) on at least one end of each trench after the air quality was monitored. Once the trench excavation encountered unstable (Type C) soils, the remaining depth of the trench was excavated with vertical sidewalls down to Pleistocene soils, the water table, or maximum reach of the mechanical equipment (not to exceed 5.4 m in depth) and documented with notes and photographs.

Trench excavations were attempted in six locations using a Komatsu Model PC 160LC track excavator. The excavator could not penetrate through the thick slag fill deposits covering this study area. Access to this study area required vehicles to enter through a railroad underpass. The low height of the underpass precluded bringing a larger excavator into the study area. As a result, trench excavations were halted at the end of the first day (July 14, 2009).

GAI transported cultural materials from identified sites to its laboratory in Homestead, Pennsylvania, for cleaning, processing, and analysis. Once artifacts arrived, laboratory staff checked the field specimen (FS) log against labeled artifact bags for consistency and accuracy. Technicians then temporarily placed the artifact bags in numerical order according to FS number to facilitate tracking during the processing, analysis, and curation stages. Subsequently, cultural materials were cleaned and placed on artifact-drying racks. Lab staff then re-bagged the clean, dry artifacts into new, 4-mil polyethylene bags. Lab technicians then transferred provenience information onto the clean bags using a permanent ink marker (Sharpie®). An acid-free paper tag with complete provenience information was placed inside each artifact bag. Diagnostic specimens were individually bagged in separate plastic bags by FS number. Prehistoric lithic artifacts were subjected to descriptive and technological analyses, while historic artifacts were categorized as to their age and function, as discussed in more detail below.

As per the Pennsylvania State Museum Guidelines for Curation (2006), diagnostic artifacts were labeled with site and FS numbers. Artifacts collected during the project, as well as project field documents, will be curated at the Pennsylvania State Museum, pending donation by the landowners.

5.3 Architectural and Historical Survey

The architectural and historical resources survey consisted of background research, field survey, documentation of architectural and historical resources, and report preparation. The field survey phase of this project, conducted on July 24, 2009, involved a systematic survey of architectural and historical resources within the APE of the Upper Ohio Navigation Study. This field survey was conducted to identify architectural and historical resources that are potentially eligible for NRHP listing.

Pursuant to PHMC-BHP guidelines, these resources, including primary buildings and any contributing outbuildings, were digitally photographed and recorded on Pennsylvania Historic Resource Survey (PHRS) forms (Appendix C). The architectural style, condition, and important features of each resource were recorded, along with any major changes or alterations. Finally, each of the resources was mapped on USGS quadrangle maps of the study area.

The architectural and historical resources were evaluated for their significance according to NRHP criteria, the historic contextual background information collected for this project, and according to guidelines contained in *National Register Bulletin 15—How to Apply the National Register Criteria for Evaluation* (National Park Service 1998). In evaluating the surveyed architectural and historical resources, the integrity of each was assessed. Within the concept of integrity, the NRHP Criteria recognize seven aspects that, in various quantities, define integrity: location, design, setting, materials, workmanship, feeling, and association.

6.0 Cultural Resources Survey Results

Twelve parcels comprising the six study areas were examined during a project pedestrian reconnaissance. Disturbed areas, wetlands, and steep slopes were considered to have low to no potential for intact archaeological sites. The remaining areas were considered to have moderate to high potential for archaeological sites. Background research documented potential locations of structures or buildings over 50 years old, which was confirmed during the pedestrian reconnaissance.

Subsurface testing was conducted in three study areas: Dashields Primary, Dashields Secondary, and Montgomery Primary. These three areas encompassed about 55 acres of the total 119.8-acre study area. The purpose of this Phase I survey was to locate archaeological sites within areas that have a moderate to high probability for archaeological sites by utilizing subsurface testing and, whenever possible, surface collecting. The fieldwork was performed as weather permitted between July 13 and 17, 2009. Three archaeological sites were identified including one previously recorded site.

The field survey phase of the architectural and historical survey was conducted on July 24, 2009. This resulted in the identification of two resources greater than 50 years of age within the study area's APE. The findings of the architectural and historical survey are described by area below.

6.1 Emsworth Primary

6.1.1 Location

Emsworth Primary study area consists of a 17.2-acre parcel located on Neville Island between the Ohio River and Neville Road just east of Emsworth Dam (see Figures 1 and 4).

6.1.2 Historic Land Use

Emsworth Primary study area has been industrially developed with multiple above-ground petroleum storage tanks from sometime before 1939 until at least 1967. This area was commercially developed with clusters of small buildings from at least 1967 to 2005. The areas around the buildings were not maintained and began to revert to scrub growth and woods.

6.1.3 Current Land Use

This vacant lot was covered by scrub growth and young mixed hardwoods (Photographs 5 and 6). Monitoring wells dotted this area to monitor for contamination from past industrial activities at this location. A gas line currently runs through this area.

Photograph 5. Overview of Emsworth, Primary Study Area. View to Northeast.



This parcel was heavily disturbed by prior industrial activity. The Soil Survey designates this location as Urban Lands. Urban Lands are characterized by level-to-nearly-level lands on the floodplain covered by over two feet of fill material (Newbury et al. 1981:31).



Photograph 6. Emsworth Primary Study Area. View to Northeast.

6.1.4 Results

No previously recorded archaeological sites or standing structures are located within this area. No architectural or historical resources 50 years of age or older were identified in this study area. Based on the information presented in the Natural Resource Assessment report, including reviews of historic land use and the disturbed conditions observed during the pedestrian reconnaissance (see Aerostar 2009), it is recommended that no subsurface archaeological investigations are warranted.

6.2 Emsworth Secondary

6.2.1 Location

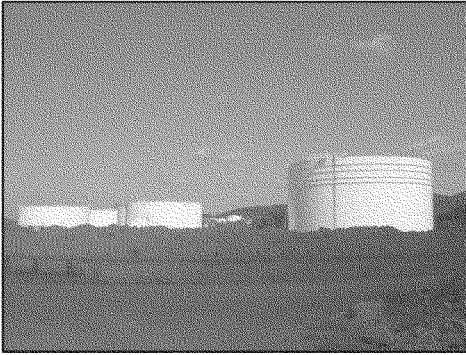
Emsworth Secondary study area consists of portions of three parcels (13 acres, 1.6 acres, and 0.4 acres) totaling 15.0-acres located on Neville Island between the Ohio River and Neville Road just west of Emsworth Dam (see Figure 1 and 4).

6.2.2 Historic Land Use

Emsworth Secondary study area was farmland through ca. 1950. The railroad along the southern edge of this area was built before 1939. There were clusters of structures in the area from ca. 1953-1967. Industrial development started sometime between 1967 and 1973. From at least 1985 to at least 2002, this area was developed as part of Exxon's Bulk Storage facility.

6.2.3 Current Land Use

At the time of the pedestrian reconnaissance, 250,000-gallon petroleum storage tanks were built and others were being constructed on the property (Photograph 7). Large-scale earthmoving activities were associated with these storage tank fields. There was a large concrete pad of unknown function that covered a large section of this area (Photograph 8). There were also piles of railroad ties and other railroad-related debris.



Photograph 7. Storage Tank (on right) in Emsworth Secondary Study Area. View to Northwest.



Photograph 8. Concrete Pad and Storage Pile in Emsworth Secondary Study Area. View to Southwest.

The southern parcels encompass a railroad line south of Emsworth Dam and Dickinson Fleet Services. Mixed hardwoods, weeds, and low-lying shrubs covered this lot. These parcels were heavily disturbed by prior industrial activity. The soils in this study area were characterized as Urban Lands (Newbury et al. 1981).

6.2.4 Results

No previously recorded archaeological sites are located within these three parcels. Based on the disturbed condition of this area, it is recommended that no subsurface archaeological investigations are warranted. The railroad line is over 50 years of age and was documented (Figure 20).

Figure 20. Location of Pittsburgh and Ohio Valley Railway near Emsworth Secondary

***Pittsburgh & Ohio Valley Railway
South Side of Neville Island, Adjacent to Neville Road
Neville Township
Allegheny County***

Constructed in 1899, the Pittsburgh & Ohio Valley Railway (P&OV) is a shortline railroad that runs a distance of 2.04 miles on the heavily industrialized Neville Island (Photograph 9). This switching line performs general freight service (Saylor 1964: 255-256). It connects with the Pittsburgh & Lake Erie Railroad (P&LE) and the Pittsburgh, Chartiers & Youghiogheny Railroad (PC&Y) (Harvey 2002: 67). During the early-twentieth century, the P&OV was owned by the U.S. Steel Corporation, after which the Pittsburgh Coke and Chemical Company acquired it. In December 1993, CSX purchased the line (Lewis 1996: 360).



Photograph 9. Pittsburgh & Ohio Valley Railway. View to the Northeast.

In the vicinity of the study area, the Pittsburgh & Ohio Valley Railway consists of a single-tracked alignment of steel rails on wood ties constructed on stone ballast. There are several at-grade crossings of this railroad in the study area vicinity; however, there are no other associated railroad structures or facilities (bridges, depots, shops, etc.) within the immediate area.

While this short line railroad is associated with the industries of Southwestern Pennsylvania, it functions as a service railroad, connecting industrial facilities on Neville Island. It is not significant as a primary piece of transportation infrastructure, as other lines in the region provide greater service to outside markets. Therefore, the P&OV is recommended not eligible for NRHP listing under Criterion A. No information could be located that connects this railroad to any individuals significant in the history of the region. As such, this resource is recommended not eligible for NRHP listing under Criterion B. This railroad line stands as a typical single-track alignment, and no ancillary structures of engineering or architectural significance are located within the study area vicinity. Due to this relative lack of design significance, this resource is recommended ineligible for NRHP listing under Criterion C. Since the Pittsburgh & Ohio Valley Railway is recommended ineligible for listing on the NRHP, no further work is required.

6.3 Dashiels Primary

6.3.1 Location

Dashiels Primary study area consists of three parcels totaling 24.9 acres located between the north bank of the Ohio River and Ohio River Boulevard northwest of Dashiels Dam (see Figures 2 and 5). The site is bordered to the south by the Ohio River, to the north by a railroad line and Ohio River Boulevard, and to the west by an industrial park. Little Sewickley Creek runs between the east parcel and the two west parcels.

6.3.2 Historic Land Use

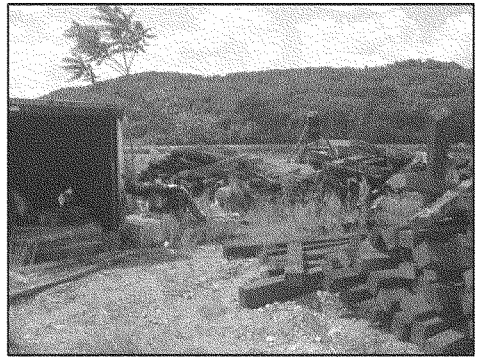
The eastern parcel of Dashields Primary study area was undeveloped in 1908. In the late 1930s, this area was used to stockpile materials and was accessed by a dirt road that crossed Sewickley Creek to the west. A railroad was constructed along the northeastern boundary sometime before 1960. Trees grew along the banks of Sewickley Creek and the Ohio River. From the 1970s to the present, it appears that the area was not maintained and was left to develop into scrub growth and woods.

The western parcel of Dashields Primary study area was undeveloped through 1959 although occasional roads traversed the area. Material was stockpiled in this area from ca. 1967-1980s. From the 1980s to the present, it appears that the area was not maintained allowing the vegetation succession process (scrub growth and woods) to begin again.

6.3.3 Current Land Use

The two smaller parcels comprising Dashields Primary study area fell within an industrial park and were heavily disturbed. Along the Ohio River, the large west parcel was used to offload barges. Large back-dirt piles, refuse, and 55-gallon drums were observed (Photograph 10). Trees and scrub growth covered parts of this parcel. All three land parcels fell within Urban Lands.

Photograph 10. Refuse Piles in Dashields Primary, West Parcel. View to Southeast.



The large parcel east of Sewickley Creek was used as a mulch stockpile area for Edgeworth Borough. Fill deposits, mulch piles, and steel, railroad ties, rocks, and other miscellaneous debris piles were visible. A sewage line (and lift station) is situated on the south side of the railroad right-of-way. There were mixed hardwoods forests along Sewickley Creek, along the railroad tracks, and near the road paralleling the Ohio River. The remaining areas either were cleared of vegetation or had scrub growth (Photograph 11). Some areas were unvegetated because slag was exposed on the ground surface.

Photograph 11. Overview of Dashields Primary. View to East. (Note: Jeep is located on a slag surface.)



6.3.4 Results

There were no resources over 50 years of age identified during the architectural and historical survey of Dashiels Primary. A railroad underpass, over 50 years of age, was observed while accessing Dashiels Primary via a borrough park (Photograph 12). However, this overpass will not be affected by the current undertaking, as access to this study area will be obtained through the industrial park.

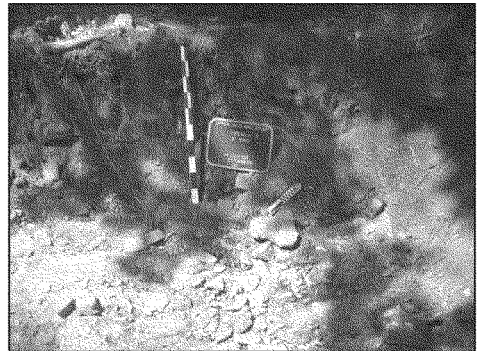


Photograph 12. Railroad Underpass. View to North.

As noted in the background research, two historic district boundaries are shown in part of this study area, but field verification indicated that these boundaries were not justified. No previously recorded archaeological sites or standing structures are located within these three parcels. Limited subsurface testing was recommended for the 24.9-acre parcel at Dashiels Primary study area. The project workplan subsurface testing strategy included three machine-excavated trenches and approximately 30 shovel probes to test the landform and characterize any intact soil stratigraphy beneath the fill deposits.

Prior to excavating any trenches, a Pennsylvania Natural Diversity Inventory (PNDI) was requested from the Pennsylvania Fish and Boat Commission. The workplan also required an excavation plan and an erosion and sediment control plan prior to trench excavations (Appendix E).

Excavations documented recent fill over industrial slag, which formed a barrier at least 6 ft thick (Photograph 13). Machine excavation failed to penetrate the slag deposits at any of the six locations (each end of three trench locations) where it was attempted in one day of excavation (Figure 21).



Photograph 13. Typical Machine-excavated Trench Sample. View to Northwest.

Figure 21. Dashields Primary Testing Locations

Several SPs were attempted in this area. One SP located inside the tree line reached a depth of 35 inches (89 cm) but was still within modern fill. Other attempted SPs in the field were stopped by slag after a few inches (see Figure 21). Subsequent discussions with District personnel led to a contract modification to eliminate this location from additional subsurface testing.

6.4 Dashields Secondary

6.4.1 Location

Dashields Secondary study area consists of portions of three parcels totaling 8.2-acres. This study area is situated northwest of Dashields Dam on a bluff on the south side of the Ohio River in the vicinity of Dashields Lock Road (see Figures 2 and 4). This area is bordered by the steep riverbank to the north and upland areas to the east, south and west. McCutcheon Road enters the northwestern end of the site from the south.

6.4.2 Historic Land Use

Dashields Secondary study area was residentially developed on the west side from sometime before 1876 to at least 1959. The eastern side was undeveloped at that time. By 1967, there was some industrial development as indicated by two above-ground storage tanks. The eastern side was part of a sewage treatment plant ca. 1975–2000s. The eastern section was also developed into a maintenance facility for Crescent Township. The western side was developed into a local park beginning in ca. 1980 with a pavilion, baseball field, playground, and parking facilities.

6.4.3 Current Land Use

This lot was covered by deciduous trees, low-lying brush, and a park (playground, baseball field [Photograph 14], and picnic pavilion) with mowed grasses, and a road maintenance facility for Crescent Township.

***Photograph 14. Baseball Field in Park.
View to Southwest.***



The area is accessed by McCutcheon Road, which enters the northwestern end of the site, turns southeast, and terminates at the road maintenance facility. The park area (west end) appears to be artificially leveled while the east end (road maintenance facility area) was heavily disturbed (Photograph 15). The soils in this location were generally mapped as Rainsboro silt loam, 3-8 percent slope with part of the edges falling within Gilpin-Upshur complex, very steep (Newbury et al. 1981).

Photograph 15. Road Maintenance Structure. View to South.



6.4.4 Results

No architectural or historical resources at least 50 years old were identified in this study area. No previously recorded archaeological sites or architectural resources are located within these three parcels. Although map research indicated that there were three houses in this study area in the late-nineteenth and early to mid-twentieth century, there were no longer any houses in this study area. The SOW required limited hand-excavation of about 15 shovel probes to test for archaeological sites within the park area.

Background research for Dashields Secondary study area indicated that the northwestern portion of this area (park) had a high potential for historic remains associated with the former ca. 1933-1973 locktenders' houses and a moderate to high potential for prehistoric sites. The SOW recommended excavation of at least 15 shovel probes. Eight shovel probes excavated at 15-meter intervals in one transect identified archaeological Site 36AL600; four of these probes produced artifacts (Figure 22).

Typical soil profiles consisted of one or two CA horizons (fill) comprised of brown (10YR5/3) silt loam overlying an Ab horizon (buried A horizon) composed of dark brown (10YR3/3) silt loam, capping yellow brown (10YR5/6) clay loam sterile subsoil (B horizon) (Figure 23). The depth of the fill was variable. The thickness of the buried A horizon varied between 10 cm and 35 cm, which is probably a result of past earthmoving activities. Most of the historic artifacts were located within the fill stratum, although in the first few SPs, excavators did not identify the presence of an intact Ab horizon until after the SP was excavated. All of the prehistoric artifacts were recovered from the Ab horizon.

Figure 22. Dashiels Secondary Testing Locations

Figure 23. Typical Soil Profiles, Dashields Secondary Study Area

Site 36AL600

Excavations documented Site 36AL600, a multicomponent site with a prehistoric lithic scatter or open habitation site and a historic artifact scatter found within a buried A horizon in the park area (Photograph 16; see Figure 22). The typical soil profile consisted of a CA horizon (fill) comprised of brown silt loam (10YR5/3) overlying an Ab horizon (buried A horizon) composed of dark brown silt loam (10YR3/3) capping yellow brown clay loam (10YR5/6) sterile subsoil (B horizon) (see Figure 23). Site 36AL600, discovered while digging shovel probes at Dashields Secondary, measured approximately 76x18 meters. Shovel testing at the site consisted of five positive shovel probes at 15-meter intervals. Of the 18 radial shovel probes excavated at 5-meter intervals around the four positive tests, three produced artifacts.



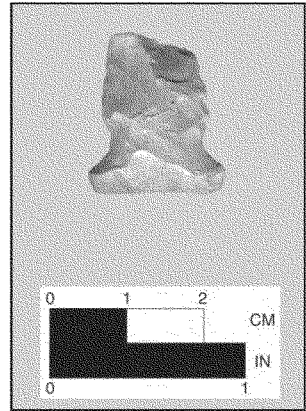
**Photograph 16. Overview of Site 36AL600.
View to Northwest.**

Excavations produced 11 prehistoric artifacts (Table 8) and 18 historic artifacts. Most of the historic artifacts were recovered from the fill deposits except for three whiteware sherds found in the Ab horizon within SP 1. The historic artifacts within the fill deposits (CA horizons) may be from secondary deposition are not considered part of this site. Prehistoric artifacts include one projectile point base, one biface, and nine debitage. The projectile point fragment appears to be a Late Archaic Brewerton side notched point (Photograph 17).

Table 8. Site 36AL600, Dashields Dam

Raw Material	Bifaces	Debitage	Total	%
Black Chert	1	5	6	54.5%
Tan Chert		1	1	9.1%
Gray Chert, Fossiliferous	1		1	9.1%
Laurel Chert		3	3	27.3%
TOTAL	2	9	11	100.0%

Recommendations. Site 36AL600 is a multicomponent site with a Late Archaic prehistoric component and a historic component found within an intact buried A horizon. This Late Archaic campsite component appears to possess good integrity. The site may have potential to add to our understanding of the prehistory of the region (Criterion D). Additional work would be necessary to assess its eligibility for listing to the National Register of Historic Places.

Photograph 17. Brewerton Side Notched Point Base.

6.5 Montgomery Primary

6.5.1 Location

Montgomery Primary study area consists of three parcels totaling 22.2 acres located between the south bank of the Ohio River by Montgomery L&D and the CSX Railroad which runs along the southern boundary (see Figures 3 and 6).

6.5.2 Historic Land Use

Montgomery Primary study area west of Squirrel Run has remained an undeveloped woodlot during most of the twentieth century. Evidence of a ca. 1876-1904 house located east of Squirrel Run may have been removed when the lower reaches of this stream was moved to the west to empty into the Ohio River downstream of the lock wall. The area east of Squirrel Run included the location of a former ca. 1876-1930s house. Later, a second structure was constructed in the area. The clearing around the houses (yards and fields) was maintained through the late 1960s. By the 1970s, the cleared yard and field areas showed evidence of reverting to scrub growth and woodlots. The railroad line was established along the southern limits of the project area by 1952.

6.5.3 Current Land Use

This wooded area had some open areas covered with scrub growth (Photograph 18). The parcels included the floodplain and terraces along the river, and were moderately disturbed by construction of the railroad line, Montgomery locks and dam, and access roads, in addition to flooding and erosion. Erosion and scouring was present along the northern limits of the study area as evidence by water rolled logs caught among the trees in the floodplain west of Squirrel Run.

*Photograph 18. Overview of Montgomery Primary. View to East.*

There were three structures present during the July survey including a driveway leading to a modern building (on District property on the northwest side of the project area), an abandoned mobile home, and an abandoned garage. The garage, which appeared to be over 50 years old, required documentation. (Note: This structure was destroyed by fire sometime after it was documented.) A railroad runs along the southern study limits (Photograph 19). The Montgomery Primary study area west of Squirrel Run is densely forested. East of Squirrel Run the study area is a mix of forest and open fallow field reverting to scrub growth. The riverbank has a sandy beach zone.



Photograph 19. Railroad along Montgomery Primary's Southern Boundary. View to South.

6.5.4 Results

Background research indicated that one previously recorded archaeological site covered most of this area. There is a high potential for unrecorded prehistoric and historic sites in the remainder of the area. This area had both architectural and archaeological resources.

The pedestrian reconnaissance indicated massive disturbances occurred on the north and northeast portion of the area west of Squirrel Run. No remains of the buildings associated with the dam construction were found, but the area east of this foundation was heavily disturbed with heavy equipment. There were two piles of construction debris observed during fieldwork, including an old dormer and a wood scatter under a pine tree. Modern 4x4-inch wood posts in these two locations suggest that these were salvaged construction materials.

Twenty-eight shovel probes excavated at 15-meter (50-foot) intervals across this study area (Figure 24). Excavations documented one prehistoric site west of Squirrel Run (36BV357), one isolated historic artifact find (SP 19), and re-identified Site 36BV131. Forty judgmental and radial SPs were excavated to define site limits of both sites and the isolated find, bringing the total to 68 shovel probes excavated in this study area.

Soil stratigraphy across Montgomery Primary study area varied (Figure 25). In general the stratigraphy consisted of brown to dark brown (10YR4/3 to 10YR3/3) silt loam to loam approximately 20-25 cm thick overlying yellowish-brown to dark yellowish-brown (10YR5/4 to 10YR4/4) silt or silt loam. All of the artifacts were recovered from the A horizon.

Figure 24. Montgomery Primary Testing Locations

Figure 25. Typical Soil Profiles, Montgomery Primary Study Area

Site 36BV357

Excavations of three shovel probes (SP 25-27) and three radial shovel probes west of Squirrel Run documented one prehistoric site, 36BV357. This site, located on a terrace 20 m north of the railroad tracks, measures approximately 15 m in diameter. The site area is eroded to the north, heavily disturbed to the east and west, and south of the site is moderate hillslope.

Excavations produced six prehistoric lithic debitage (biface reduction flakes and decortication flakes) from one shovel probe and two radial shovel probes (Photograph 20; Table 9). These debitage were produced from Uniontown, Monongahela, Gull River, and black chert. No temporally diagnostic artifacts were recovered.

Photograph 20. Two Biface Reduction Flakes from Site 36BV357.

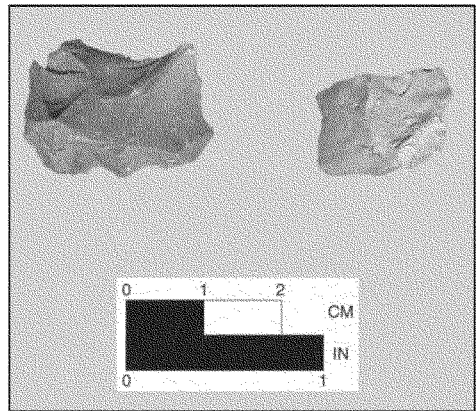


Table 9. Lithic Artifacts from Site 36BV357

Raw Material	Debitage	%
Black Chert	1	16.7%
Gull River	1	16.7%
Monongahela	2	33.3%
Uniontown	2	33.3%
TOTAL	6	100.0%

Recommendations. Site 36BV357 is a small (15 m diameter), low-density lithic scatter of unknown temporal affiliation. No features were identified. The area around the site was heavily eroded and disturbed. It is unlikely that this site would yield information that would significantly add to our understanding of the prehistory of this region. Therefore, it is recommended that this site does not meet the minimum criteria for listing on the National Register.

Site 36BV131

Site 36BV131 was originally reported by a collector as a large prehistoric scatter along the Ohio River. This site was never field checked by a professional archaeologist. SPs were excavated at 15m intervals across a terrace within this previously recorded site (Photograph 21). This study resulted in the identification of both prehistoric and historic artifacts within a much smaller area (152.4x28 m or 500x92 ft) than indicated on the original PASS form.

There were three positive SPs excavated at 15-m intervals along a terrace. Judgmental shovel probes were excavated around a stone house foundation, which appears to be the location of the former Kenyon-Emerick house. Radial shovel testing was conducted around positive SPs around the foundation remains. A surface collection was conducted around a stone house foundation also. Soil stratigraphy consisted of a thin (10-12 cm) very dark grayish-brown (10YR3/2) loam plowzone (Ap horizon) capping a brown (10YR4/3) silt loam AB horizon. All of the artifacts were recovered from the Ap or AB horizon (see Figure 25).



Photograph 21. Overview of Site 36BV131. View to West.

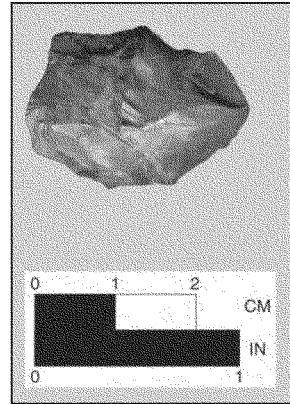
The former Kenyon-Emerick house was constructed of stone (see Photograph 4). A concentration of rock, some of which appeared to be cut stone, and partial remains of a foundation identified the former house location (Figure 26). The foundation remnant measured 19 x 26 ft (5.8 x 7.9 m) and was constructed of dry laid tabular stone. In some areas, the foundation consisted of several stacked stone rising about one foot (30 cm) above the ground surface while in other areas, no stacked stone courses were encountered. A few dressed stones were found scattered among the stone rubble. This location and the concentration of rocks is consistent with the former Kenyon-Emerick house (see Photograph 4), which has a dry laid foundation supporting a mortared stone house with a few dressed stones apparent around the doorway on the ground floor at the northeast corner (see Photograph 4). The stone rubble is concentrated around the foundation remnant and it appears that much of the construction stones and other construction debris were removed at some time in the past.

There were too many rocks around the foundation to excavate SPs successfully within or immediately adjacent to the identified foundation area. The SPs excavated around the identified foundation did not identify any additional remains of the former structure (see Figure 24). A few bottles were observed on the ground surface nearby.

Figure 26. Kenyon-Emerick Foundation Detail

Excavations produced 43 artifacts including one prehistoric artifact and 42 historic artifacts (Table 10). The prehistoric artifact was an indeterminate biface produced from Upper Mercer chert (Photograph 22).

Photograph 22. Upper Mercer Biface Fragment from Site 36BV131.



Historic artifacts include wire, wire nail, metal rod, ceramics, window glass, lamp chimney glass, plastic, and one bone fragment. Ten of the historic artifacts were temporally diagnostic, producing a mean date of 1922 for the historic component of the site (Table 11).

Table 10. Pattern Analysis for Site 36BV131

Class	Sub-Class	Ware Type/Object	Sum	% Sum
Activities	Activities-Other	Wire	1	2.3%
Activities Total			1	2.3%
Architecture	Nails, Spikes, etc.	Nail, indeterminate	2	4.7%
		Nail, wire	1	2.3%
	Window Glass	Window glass	10	23.3%
Architecture Total			13	30.2%
Faunal	Bone	Bone	1	2.3%
Faunal Total			1	2.3%
Furnishings	Lighting	Chimney lamp glass	2	4.7%
Furnishings Total			2	4.7%
Kitchen	Bottles/Jars	Beverage bottle	1	2.3%
		Bottle glass	9	20.9%
		Mason jar	2	4.7%
	Ceramics	Earthenware	1	2.3%
		Stoneware, buff	1	2.3%
		ironstone	1	2.3%
		Whiteware, handpainted	1	2.3%
		Whiteware, plain	3	7.0%
		Yellowware, plain	1	2.3%
Kitchen Total			20	46.5%
Unidentifiable	Indeterminate	Misc metal	1	2.3%
		Plastic, fragment	4	9.3%
Unidentifiable Total			5	14.0%
Grand Total			42	100.0%

Table 11. Dating Analysis for Site 36BV131

Class	Ware Type/Object	Ct	Begin Date	End Date	References
Architecture	Nail, Wire	1	1880	2008	Nelson 1968; IMAC 1984
Kitchen	Mason jar; Complete; Standardized screw thread; Clear; "Atlas Strong Shoulder Mason"	1	1919	2009	Deiss 1981
Kitchen	Dads Root Beer Bottle; Complete; Crown finish; Stippled, Clear; "Dad's, No Deposit, Half Gallon" "Patent Pending Copyright By Dads Root Beer Co Chicago Ill" Fairmont Glass Works	1	1933	1968	Toulouse 1971; Lief 1965
Kitchen	Ball Mason jar; Complete; Standardized screw thread; Clear; "Ball"	1	1919	2009	Deiss 1981; Toulouse 1971
Kitchen	Ironstone, plain; Body	1	1840	2009	Wetherbee 1980
Kitchen	Whiteware, plain; Body	3	1830	2009	Price 1979; Noel Hume 1980
Kitchen	Yellowware, plain; Body	1	1830	1900	Ketchum 1987
Kitchen	Whiteware, handpainted; Body; Med. Blue	1	1840	1860	Lofstrum et al 1982; Majewski & OBrien 1984
Mean Date:		1922			

Recommendations. Site 36BV131 is a previously recorded prehistoric site. The current investigation indicates that the site also has a late-nineteenth to twentieth-century historic component. This site is located in the vicinity of a structure that was depicted on an 1904 historic map and includes a stone house foundation, artifact scatter, and garage (garage was burned down between July and November 24, 2009) (see Figure 19). Additional research is needed to ascertain site size, reconstruct the chain-of-title, and determine whether the site possesses the potential to add important information to our understanding of the history of this region (Criterion D). Therefore, it is recommended that this site is avoided. If avoidance is not feasible, it is recommended that Phase II investigations are necessary to evaluate this site under Criterion D to determine its eligibility for listing in the National Register of Historic Places.

***Unnamed Garage (possibly associated with 36BV131)
Along Montgomery Dam Road
Potter Township
Beaver County***

This one-story wood-framed garage is located in the central portion of this area (Figure 27). It stands on a wood pier foundation, and its exterior walls are clad with weatherboard siding (Photograph 23). The gable front roof is covered with rolled asphalt and is trimmed with exposed rafter tails. The fenestration consists of two-light, fixed sash windows. However, the glass windowpanes are broken, and chain link fencing now covers the apertures. A shed roof addition had been appended to the rear (east elevation) of the garage, but has collapsed. It features vertical wood siding and rolled-asphalt roofing material. A second addition has been attached to the north elevation. It is clad in plywood and topped with a shed roof. Overall, this garage is severely deteriorated and nearly collapsing.



Photograph 23. Unnamed Garage along Montgomery Dam Road. View to the West.

Subsequent to the field visit, the garage was destroyed by fire (Photograph 24). A photograph of the burned rubble indicates that one of the foundation walls was set on cinderblocks.



Photograph 24. Remains of Unnamed Garage after Fire. View to the East.

Figure 27. Location of Unnamed Garage near Montgomery Primary

Evidence to tie this resource to any significant events in local history could not be identified. It is not associated with the nearby Montgomery L&D facility. As such, this garage is recommended ineligible for listing under Criterion A. This property is not associated with any significant individuals in local or state history and is therefore recommended as not NRHP-eligible under Criterion B. This vernacular building is an unexceptional and deteriorated example of a regularly found architectural type common throughout the region. Therefore, this resource is recommended ineligible for NRHP listing under Criterion C. No further work for the Unnamed Garage structure is recommended. The archaeological component of the Unnamed Garage needs to be evaluated for NRHP listing under Criterion D (as contributing to Site 36BV131).

6.6 Montgomery Secondary

6.6.1 Location

Montgomery Secondary study area consists of one 32.3-acre parcel located between the south bank of the Ohio River and Montgomery Dam Road east of the Montgomery L&D (see Figures 3 and 6).

6.6.2 Historic Land Use

The Montgomery Secondary study area was primarily undeveloped land surrounding a house from the late-nineteenth century to at least 1939. The area was commercially/industrially developed sometime between 1939 and 1952 to the present. Extensive earthmoving activities occurred along the river by 1952. Large excavations and material stockpiles were present in 1969. A synthetic gypsum plant has occupied the area since sometime before 1977.

6.6.3 Current Land Use

This lot was covered by mixed hardwoods and scrub growth around the periphery, but most of the parcel was part of a gypsum synthetic plant with a large materials stockpile and access roads (Photograph 25). Barge moorings were located along the riverbank. An undeveloped woodlot in the southeastern end of the parcel was a forested wetland area (Photograph 26).

Photograph 25. Gypsum Stockpile in Montgomery Secondary. View to Northeast.



Photograph 26. Overview of Montgomery Secondary. View to Southeast.



6.6.4 Results

No previously recorded archaeological sites or standing structures were documented within this area. No architectural or historical resources over 50 years old were observed. Based on the disturbed condition of this study, it is recommended that no subsurface archaeological investigations are warranted. There were no architectural or historical resources identified in the Montgomery Secondary study area that were 50 years of age or older.

7.0 Summary and Recommendations

From July through December 2009, a cultural resource assessment was conducted as part of the Upper Ohio Navigation Study, Pennsylvania, on behalf of AES and the District. Three Primary and three Secondary work and staging area locations totaling 119.8 acres in Allegheny and Beaver counties, Pennsylvania, comprise the study areas. There are two study areas for each L&D facility (Emsworth, Dashields, and Montgomery). The SOW required a walkover of all six locations and additional cultural resources investigations at Dashields Primary, Dashields Secondary, and Montgomery Primary study areas. The purpose of this study is to provide cultural resource characterizations of these six potential work and staging area locations for a NEPA EIS to accompany analyses that discuss suitability of lands necessary to conduct any proposed work at these three locks and dams.

7.1 Archaeological Investigations

Archaeological investigations included background research, a pedestrian reconnaissance, and limited subsurface testing. Background research indicated that all three study areas had a moderate to high potential for prehistoric sites. Map research suggests a high potential for historic sites at the Dashields Secondary and Montgomery Primary study areas. The survey documented three archaeological sites (36AL600 [in Dashields Secondary study area], 36BV131 [in Montgomery Primary study area], and 36BV357 [in Montgomery Primary study area]) and one isolated historic find (in Montgomery Primary study area).

Subsurface investigations at Dashields Primary study area revealed that this area was covered by modern fill overlying at least 6 ft of slag, which could not be penetrated with an excavator. After attempting to excavate through the slag for one day, the District was notified of the conditions. The contract was subsequently modified to eliminate further subsurface testing at this area.

Site 36AL600, a multicomponent site measuring approximately 76x18 m (250x60 ft), was documented within Dashields Secondary (park area). The site and surrounding area was artificially leveled then covered with fill deposits. An intact Ab horizon with prehistoric and historic artifacts was located beneath fill deposits. The prehistoric component consists of a Late Archaic campsite. The historic component may be associated with the former locktenders' houses. It is recommended that this site (prehistoric and historic components) is potentially eligible to the NRHP under Criterion D and should be avoided. If avoidance is not feasible, further archaeological investigations (Phase II) are recommended to evaluate site eligibility for the NRHP under Criterion D. Phase II investigations should include close-interval SPs, limited test unit excavation, and archival research. The archival research should include reconstructing the chain-of-title, census records, and available tax assessment records.

Site 36BV357 was identified west of Squirrel Run within Montgomery Primary study area. This is a small (15 m in diameter), low density, lithic scatter of unknown temporal affiliation. No features were identified. This site does not possess the potential to contribute significant information to our understanding of the prehistory of the Upper Ohio River Valley. It is recommended that this site does not meet the minimum criteria for listing to the NRHP. No additional work is recommended.

Site 36BV131 (152.4x28 m or 500x92 ft) is situated south of the Montgomery Dam on a high river terrace. This previously recorded prehistoric site was originally defined to cover the floodplain and terraces between the river and a railroad line. The floodplain and lower terraces were disturbed by construction of Montgomery Locks and Dam. Excavation of 68 shovel probes produced only one prehistoric artifact and 42 historic artifacts within a smaller area than the original identified site limits, and one isolated historic find. The prehistoric component produced only one artifact and no associated features. The lack of features and paucity of artifacts limit the research potential of the prehistoric component.

Site 36BV131 also has a ca. 1870s-1930s historic component. This site, located in the vicinity of a structure depicted on a 1904 map, includes a stone house foundation remnant, artifact scatter, and garage. The garage, recorded on a PHRS form, has since burned down. A driveway connects the house foundation remnant and the garage with the artifact scatter falling between these two locations. Additional research is needed to ascertain site size, reconstruct a chain-of-title to determine whether the former garage is associated with the site, and determine whether the site possesses the potential to add important information to our understanding of the history of this region (Criterion D). Therefore, it is recommended that this site be avoided and if avoidance is not feasible, it is recommended that Phase II investigations be conducted to evaluate the historic component of this site under Criterion D. Phase II investigations should include close-interval SPs, limited test unit excavation, and archival research. The archival research should include reconstructing the chain-of-title, census records, and available tax assessment records.

7.2 Architectural and Historical Survey

This 2009 survey resulted in the reconnaissance-level survey of two architectural and historical resources in the Upper Ohio Navigation Study area. The property types include a railroad and a garage. The two architectural and historical resources were evaluated for their significance according to NRHP Criteria, the historic contextual background data collected for this project, and applicable National Register guidelines. In evaluating the surveyed resources, both the historical significance and architectural integrity of each was assessed, utilizing the seven aspects of integrity as recognized by the NRHP. Table 12 presents a summary of the two identified architectural and historical resources.

Table 12. Architectural and Historical Resources in the Upper Ohio Navigation Study Area

Name	Location/ Address	Township/ County	Date	Historical Function	Recommendation
Pittsburgh & Ohio Valley Railway	South side of Neville Island, adjacent to Neville Road	Neville/ Allegheny	1899	Railroad	Not NRHP-Eligible
Unnamed Garage	Along Montgomery Dam Road	Potter/Beaver	c1950	Garage	Not NRHP-Eligible

Following evaluation of the two identified resources against the historic context of the region, and using the National Register Criteria for evaluation, it is recommended that neither of the resources is eligible for NRHP listing. The Pittsburgh & Ohio Valley Railway does not stand out as exemplary in the history of transportation improvements, commerce, and corporate capitalism in southwestern Pennsylvania. The Unnamed Garage (possibly associated with Site

36BV131) lacks integrity, historical significance, architectural merit, and historical association with significant events or individuals. No additional documentation is recommended for these two resources. (Note: The garage burned down since the structure was recorded and is not available for additional documentation.)

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APPENDIX A

PROJECT DOCUMENTATION

17 April 2009

STATEMENT OF WORK**CONTRACT NO. W912QR-08-D-0009, TASK ORDER NO. DV02****UPPER OHIO NAVIGATION STUDY, PENNSYLVANIA
POTENTIAL WORK AND LAYDOWN AREA
ENVIRONMENTAL AND CULTURAL RESOURCE ASSESSMENTS****1. BACKGROUND**

The Upper Ohio Navigation Study, Pennsylvania, is a feasibility planning study for alternatives to modernize the three locks and dam facilities on the Ohio River in Pennsylvania, viz. Emsworth, Dashields and Montgomery locks and dams. This study will examine and compare future conditions with and without modernization alternatives to determine the most cost effective, environmentally acceptable alternative. A National Environmental Policy Act (NEPA) environmental impact statement will accompany the planning analyses. Included in the planning analyses are the identification and suitability of lands necessary to conduct any proposed work at these navigation facilities.

Six separate sites have been identified by the Pittsburgh District as potential work and staging areas, consisting of a Primary and Secondary site in the vicinity of each of the three navigation facilities. Each site may involve multiple property owners. The boundaries of each site are shown in Figures 1, 2 and 3. On the figures, the Primary and Secondary work area sites to be investigated under this Task Order are designated by label and shaded in light blue color. The other lines, numbers and colors on these figures designate other property boundaries or real estate issues not relevant to this work.

The work to be conducted under this Task Order includes the environmental and cultural resource characterization of these Primary and Secondary work area sites to support preparation of the Navigation Study's environmental impact statement under NEPA. This work may be classified into three main areas: a Phase I Environmental Site Assessment (ESA), a NEPA environmental assessment, and a cultural resource survey. While the Task Order specifies independent reporting of the three separate environmental and cultural resource components, the research for these components involves a certain amount of overlap. The Contractor will be expected to plan and conduct their work to avoid unnecessary duplication in these areas of overlap.

The Phase I Environmental Site Assessment will be conducted to assess the sites' potential for environmental liability concerns prior to obtaining a federal interest in real estate for project purposes. The purposes of the other assessments to be conducted, the NEPA environmental assessment and the cultural resource survey under the National Historic Preservation Act, include the identification and preliminary evaluation of the significance of natural and cultural resources at each of the sites. This information will be necessary for the navigation study to

assess the significance of alternative impacts involving the use of one or more of these sites, in furtherance of compliance with environmental and cultural resource protection legislation.

2. CONTRACTOR RESPONSIBILITIES

A. General.

The Contractor shall furnish all personnel, equipment, materials, supplies, labor, transportation, shipping, communications and services required to accomplish the work specified under this scope of work (SOW). The Contractor shall be responsible for any and all materials and deliverables covered by this scope of work until they are delivered to and accepted by the District.

Site Access. The Contractor shall not obtain any real estate rights on behalf of the Federal Government to conduct this work. All necessary real estate rights-of-entry will be acquired by the District on behalf of the Contractor. Refer to "3. Government Rights and Responsibilities, Site Access" for a list of rights-of-entry.

Quality Control. A goal of the District is to ensure that quality products, satisfying the customer expectations, are delivered on schedule and within budget. The Contractor shall support this goal through developing a Quality Control Plan (QCP) to ensure that technical quality and schedules are achieved in the products produced as a result of each task order. The basic elements of a QCP include procedures for assigning independent technical review personnel, establishing a review process with checkpoints, defining important elements for review, and documenting the results of the review. Guidelines for the QC process are found in ER 1110-1-12, Engineering and Design Quality Management, 30 September 2006.

Coordination.

Contractor's personnel shall be expected to work in close coordination with the Contracting Officer (CO), his authorized representative, or other assigned District personnel. The primary point of contact for this Task Order is Conrad Weiser, 412-395-7220. The technical point-of-contact for the Phase I ESA component is Michael Debes, Project Engineer, 412-395-7327; for the cultural resource component is Deb Campbell, Archaeologist, 412-395-7218.

The Contractor shall provide brief monthly progress reports following award of the Task Order. These reports may be submitted electronically. The Contractor shall routinely maintain a written record of all conferences, meetings, discussions, and other communications with others on matters relative to the assigned work, and submit a copy of these records to the District point of contact within five business days.

The Contractor is responsible for initiating timely coordination with the District to discuss and expedite solution of perceived problems or issues.

Safety. The Contractor will be responsible for the safe conduct of all work under this SOW, in adherence to the latest version of the US Army Corps of Engineers Safety and Health

Requirement Manual EM 385-1-1 (available at <http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/toc.htm>).

Publishing Restrictions. Neither the Contractor nor a Contractor's representative shall release or publish any information, sketch, photograph, report, or other material of any nature obtained or prepared under this contract without specific written approval of the Contracting Officer or his authorized representative. Records of archaeological site locations are considered to be internal documents and are not for public distribution. All reports, drawings, maps, photographs, notes, and other material developed in the performance of this Task Order shall be and remain the sole properties of the Government and may be used on any other work without additional compensation to the Contractor. The Contractor agrees not to assert any rights and not to establish any claim with respect thereto.

Travel and Per Diem. Reimbursement for travel and per diem will be according to prevailing federal rates established by the General Services Administration [<http://www.gsa.gov>] as reported in the Joint Travel Regulation.

B. Specific Tasks.

Task 1. Prepare Quality Control Plan

The Contractor will develop a Quality Control Plan (QCP) to ensure that technical quality and schedules are achieved in the products produced under this Task Order. The basic elements of a QCP include procedures for assigning independent technical review personnel, establishing a review process with checkpoints, defining important elements for review, and documenting the results of the review. Guidelines for the QC process are found in ER 1110-1-12, Engineering and Design Quality Management, 30 September 2006. The schedule, at a minimum, will assign delivery dates for each of the reports listed in Task 6. The Plan will be submitted in accordance with the specifications under Task 6. "Report Preparation and Submittals".

Task 2. Participate in a Site Walk

Appropriate Contractor personnel shall attend and fully participate with District personnel in a one (1) day site walk of all sites – primary and secondary at the Emsworth, Dashields and Montgomery locks and dams. The intent of this site walk is to allow for the Contractor to become familiar with the sites. The completion of this Task will precede initiation of field work scheduled under other tasks.

Task 3.A. Conduct the Phase I Environmental Site Assessment

The Phase I ESA should utilize the procedures outlined in ASTM Practice E 1527, titled *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The Phase I ESA will identify, to the extent feasible, recognized potential environmental concerns in connection with the property. The site assessment findings provide environmental site clearance for real property transactions. The intent is to demonstrate "due diligence" in conducting "all appropriate inquiry" in order to provide a basis for a legal defense

under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

The Phase I Environmental Site Assessment activities, as a minimum, are as follows:

- a. Environmental Database Search – Perform a database search 1-mile radius from each of the primary and secondary properties at each navigation facility.
- b. Physical inspection of the project area - Conduct a walkover of each site and adjacent parcels to the properties [to the extent allowable under federal rights-of-entry]. Interview local officials and people on or near the project site, as appropriate.
- c. Aerial photographs – Determine past and current property uses of property.
- d. Sanborn maps – Determine past property uses.
- e. Deed Searches – Conduct a Property Title History Report.
- f. Landowner contacts – Call, mail the questionnaire, and/or interview the landowner requesting information pertaining to the land that they own.
- g. Regulatory Information Review – If appropriate, review records from the Pennsylvania Department of Environmental Protection (PADEP) and other agencies.

Note: Chevron (primary property owner upstream of the Emsworth Main Channel Dam Left Abutment) has offered to make their environmental records on their involved property available to the District. The Contractor will contact Chevron prior to conducting any records research or field survey to obtain a copy of these records. Chevron POC: Michele Dygan, 770-984-4127.

Task 3.B. Phase II Environmental Site Assessment Recommendations

The Phase I ESA Report will present written justification for or against conducting a Phase II site investigation. State if a Phase II Site Investigation is recommended or not recommended. If recommended, formulate a sampling program that includes the type and level of testing required for a Phase II Site Investigation that would satisfactorily encompass the concerns identified in the Phase I study. In addition, based on the Phase I results, prepare an opinion on what potential remediation costs may entail and include a general magnitude of potential cost.

Task 4. Prepare a NEPA Environmental Assessment.

The Contractor shall perform an overview-level environmental assessment of all lands identified in this SOW and prepare a report describing the study, methodologies, and findings. Each of the sites is to be treated separately in the report. This assessment shall be conducted at a general level of effort sufficient to determine the presence and approximate extent of any significant natural resources. Significance is broadly defined to include resources protected under federal or state law, resources having public recognition as being important, and resources considered to have scientific or educational value.

The assessment shall include a records research and a field investigation. Evidences of historic and present disturbances/development will be documented in the report. The Contractor shall attempt to interview the land owners to identify and document any long term plans that would affect the future condition of their properties.

The Contractor will identify the potential for federal- and state-listed threatened and endangered species to occur at the studied sites through consultation with the Pennsylvania Natural Diversity Index and the appropriate resource agencies. If any potential species are identified through consultation, the Contractor will make an effort in field investigations to identify the presence or potential for presence of that species.

The field investigation will be conducted at a level of detail sufficient to describe general topography, habitat types, dominant and typical vegetative cover, wildlife habitat values, and land use. Particular attention will be given to identification and characterization of federally recognized or regulated resources: flood plains, prime farmland, wetlands, threatened and endangered species, etc.

The Contractor shall prepare site maps that delineate the different habitat types (e.g. riparian, upland, stream, wetland, etc.), and identify acreages of each. These maps will be included in the report, and will be prepared and submitted compatible with ArcView for incorporation into the District's GIS database.

Task 5. Perform a Cultural Resource Assessment.

The Contractor shall perform a cultural resources assessment of all lands identified in this SOW and prepare a report describing the study, methodologies, and findings. The assessment will consist of a Phase I records research and a limited field investigation consistent with the requirements of the Pennsylvania Bureau for Historic Preservation for this level of study. Each of the work areas and any associated historic properties are to be assessed and reported separately in the study report.

The Contractor will designate a Principal Investigator (PI) who will be responsible for the validity and professional quality of the cultural resource work, and who will be the primary point of contact for the routine administration and coordination. Contractor personnel employed to perform the specified work will meet the relevant qualifications as specified in *Archeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines (Federal Register Vol. 48, No. 190)*.

Field investigations. The limited field investigations shall consist of a combination of pedestrian reconnaissance and excavations consisting of a limited series of 50cm shovel probes (SP) supplemented with backhoe trenches in designated areas. All areas with available rights-of-entry are to be fully covered with pedestrian reconnaissance.

The proposed excavation plan, shown on Figures 4, 5 and 6, is based on available information. The Contractor may suggest alterations to this plan following the records research and other field work. All field excavations will be recorded using GPS coordinates, and prepared and submitted compatible with ArcView for incorporation into the District's GIS database.

All standing structures or objects will be inventoried and photographically recorded. All structures or objects having an estimated age of 50 years or more shall be documented on a Pennsylvania Historic Sites Survey Form.

Field excavation summary:

Emsworth (Primary) – no field testing (Chevron property)

Emsworth (Secondary) – no testing

Dashields (Primary) – three backhoe trenches, limited shovel probes (30±) in non-fill areas (Edgeworth property), no testing Buncher property)

Dashields (Secondary) - 15± shovel probes Crescent Twp park

Montgomery (Primary) – shovel probes (40±)

Montgomery (Secondary) – no testing (industrial, apparent fill)

Reporting. The cultural resource report will document all sources of information consulted in the records research. The discussion and conclusions section of the report shall include an assessment of the cultural resource potential for each survey area and landform. If further testing is indicated, the Contractor shall recommend the types and level of testing necessary to complete a full Phase I and/or Phase II investigation. Should the Contractor determine that any site(s) may be eligible for listing to the National Register of Historic Places, they will first consult with the District before making any recommendations in the report or consulting with the PaBHP. The authority for recommending determinations of eligibility rests with the Pittsburgh District Engineer.

Task 6. Report Preparation and Submittals.

The Contractor will prepare and submit separate reports for:

- a. Quality Control Plan,
- b. Phase I Environmental Site Assessment and Phase II ESA Recommendations,
- c. NEPA Environmental Assessment, and
- d. Cultural Resource Survey.

The Contractor shall prepare and submit each report in draft and final versions. The draft version shall be complete in all respects to allow for a single, complete review by the District. Any significant deficiency in the content of the draft report will constitute sufficient reason for non-acceptance. The draft and final reports shall be submitted in both hard copy and electronic copy for review.

Specifications for each report are summarized below:

a. Quality Control Plan:

- Draft – One (1) hard copy, unbound with removable corner clip for review.
- Final – Three (3) bound hard copies, and provide electronic copy (1) on CD and separately as a scanned PDF file (1).

b. Phase I Environmental Site Assessment Report and Phase II ESA Recommendations

- 95% complete report - Six (6) copies unbound with removable corner clip for review. The report shall be typed double spaced in Times New Roman, 12 pt font, with one-inch margins. The hard copies shall be printed single-sided. The Contractor will summarize/discuss the methods and findings collected in Phase I ESA (Task 3.A., Conduct the Phase I Environmental Site Assessment).
- Final Report - Eleven (11) copies, one (1) copy unbound, ten (10) copies in binders. The final report shall be typed single spaced in Times New Roman, 12pt font, with one-inch margins. The hard copy shall be printed two-sided. Provide electronic copies of the native electronic files, (1) on CD and one (1) copy separately as a scanned PDF file.

c. NEPA Environmental Assessment

- The draft report shall be double spaced in Times New Roman 12pt font, or equivalent, with one-inch margins, and printed two-sided. Five (5) bound hard copies. Binding may be of any suitable type. One (1) electronic copy on CD in MS Word and one (1) copy separately as a scanned PDF file.
- The final report shall be single spaced in Times New Roman 12pt font or equivalent, with one-inch margins, and printed two-sided. Five (5) hard copies: One (1) hard copy unbound, and four (4) copies bound. Binding may be of any suitable type. Provide electronic copy (1) on CD and one (1) copy separately as a scanned PDF file.

d. Cultural Resource Report

- The draft report shall be double spaced in Times New Roman 12pt font, or equivalent, with one-inch margins, and printed two-sided. Five (5) bound hard copies. Binding may be of any suitable type. One (1) electronic copy on CD in MS Word and one (1) copy separately as a scanned PDF file.
- The final report shall be single spaced in Times New Roman 12pt font or equivalent, with one-inch margins, and printed two-sided. Five (5) hard copies: One (1) hard copy unbound, and four (4) copies bound. Binding may be of any suitable type. Provide electronic copy (1) on CD and one (1) copy separately as a scanned PDF file.

3. GOVERNMENT RIGHTS AND RESPONSIBILITIES

Work Products. All reports, drawings, maps, photographs, notes, and other materials developed in the performance of work conducted under this SOW will remain the sole property of the Government. The Contractor may be required to use materials developed under one task order in another task order without additional compensation. The Contractor agrees not to assert any rights and not to establish any claims with respect thereto, and hereby agrees to furnish and provide access to all retained materials on the request of the Contracting Officer.

Site Access. All real estate rights-of-entry that are necessary for the proper conduct of the specified work will be acquired by the Pittsburgh District on behalf of the Contractor. The Contractor will not separately obtain any real estate rights on behalf of the Federal Government to conduct this work. A list of properties and status of the rights-of-entry are in Table 1. Copies of the Rights-of-Entry and relevant correspondence follow in Appendix A.

Table 1. Rights-of-Entry

L/D Facility	P/S* Site	Owner	ROE Effective Date	ROE Period
Multiple	P&S	CSX Transportation Inc.	16 Mar 09	24 mos.
Emsworth	Primary	Chevron		*
Emsworth	Secondary	Pittsburgh Terminals Corp.	16 Mar 09	24 mos.
Emsworth	Secondary	FedEx		
Dashields	Primary	The Buncher Co.	20 Mar 09	24 mos. **
Dashields	Primary	Borough of Edgeworth	17 Feb 09	24 mos.
Dashields	Secondary	Township of Crescent	16 Jan 09	24 mos.
Montgomery	Primary	Jerome Oliver	18 Feb 09	6 mos.
Montgomery	Secondary	PF Technologies	16 Apr 09	24 mos.

* Advance notice sufficient

** Advance notice and approvals required

Inspection. The performance of the Contractor and quality of the work delivered, including services rendered and the documentation in support thereof, shall meet generally accepted professional standards. They shall be subject to the inspection, review, and acceptance by the District. The CO or his representative may at all reasonable times inspect or otherwise evaluate the work being performed hereunder and the premises in which it is being performed. If the District performs any inspection or evaluation on the premises of the Contractor, the Contractor will provide all reasonable facilities and assistance for the safety and convenience of the District representatives in the performance of their duties. All inspections and evaluations will be performed in such a manner as will not unduly delay the work.

4. SCHEDULE AND PAYMENT

The following schedule is to be followed after Receipt of Task Order:

Working Days after Receipt of Task Order	Task
4	Participate in a site walk with the USACE
5	Complete and submit a draft Quality Control Plan and Task Order Schedule (Task 6.a.)
10	Complete and submit a final Quality Control Plan and Task Order schedule (Task 6.a.)
25	Complete and submit 95% Phase I Environmental Site Assessment Report (Task 6.b.)
40	Corps conducts and completes review of 95% Phase I Environmental Site Assessment Report.
48	Complete the incorporation of 95% Corps comments into Phase I report. Complete the Phase I ESA Report based on the findings of the investigation; state if a Phase II Site Investigation is recommended or not recommended. If appropriate, complete formulation of a sampling program for a Phase II site investigation. Submit copies of the report. (Task 6.b.)
50	Complete and submit draft NEPA environmental assessment (Task 6.c.)
60	Complete and submit draft cultural resource report (Task 6.d.)
65	Corps conducts and completes review of NEPA EA
75	Corps conducts and completes review of cultural resource report
75	Final NEPA EA due (Task 6.c.)
80	Final cultural resource report due (Task 6.d.)

Note: The Phase I Environmental Site Assessment Report is scheduled to be completed before the NEPA and cultural resource reports. This will allow for the findings of the Phase I ESA to be incorporated into these other reports

Payment. Progress and final payments will be made in accordance with the requirements of the basic contract.

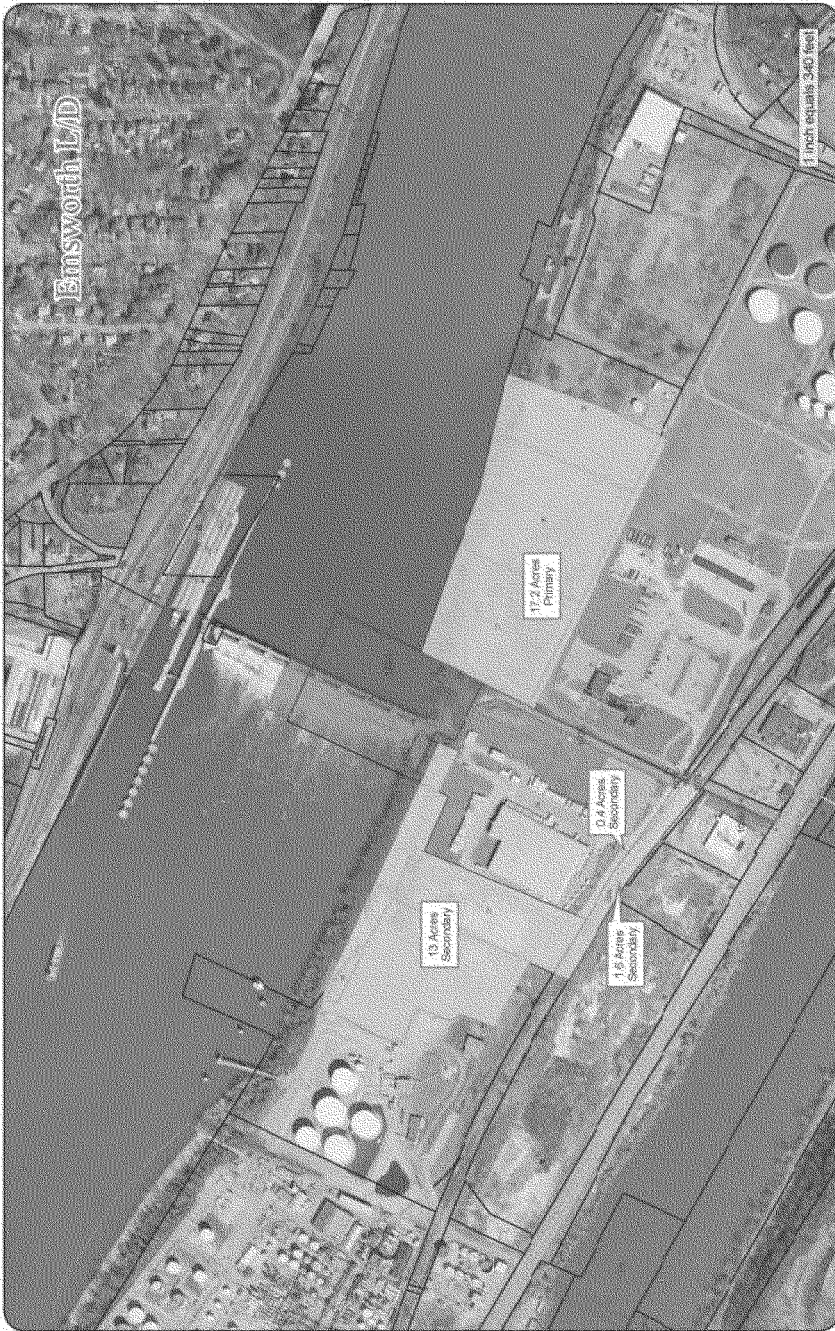


Figure 1. Emsworth Primary and Secondary Work Areas (Light blue areas only)

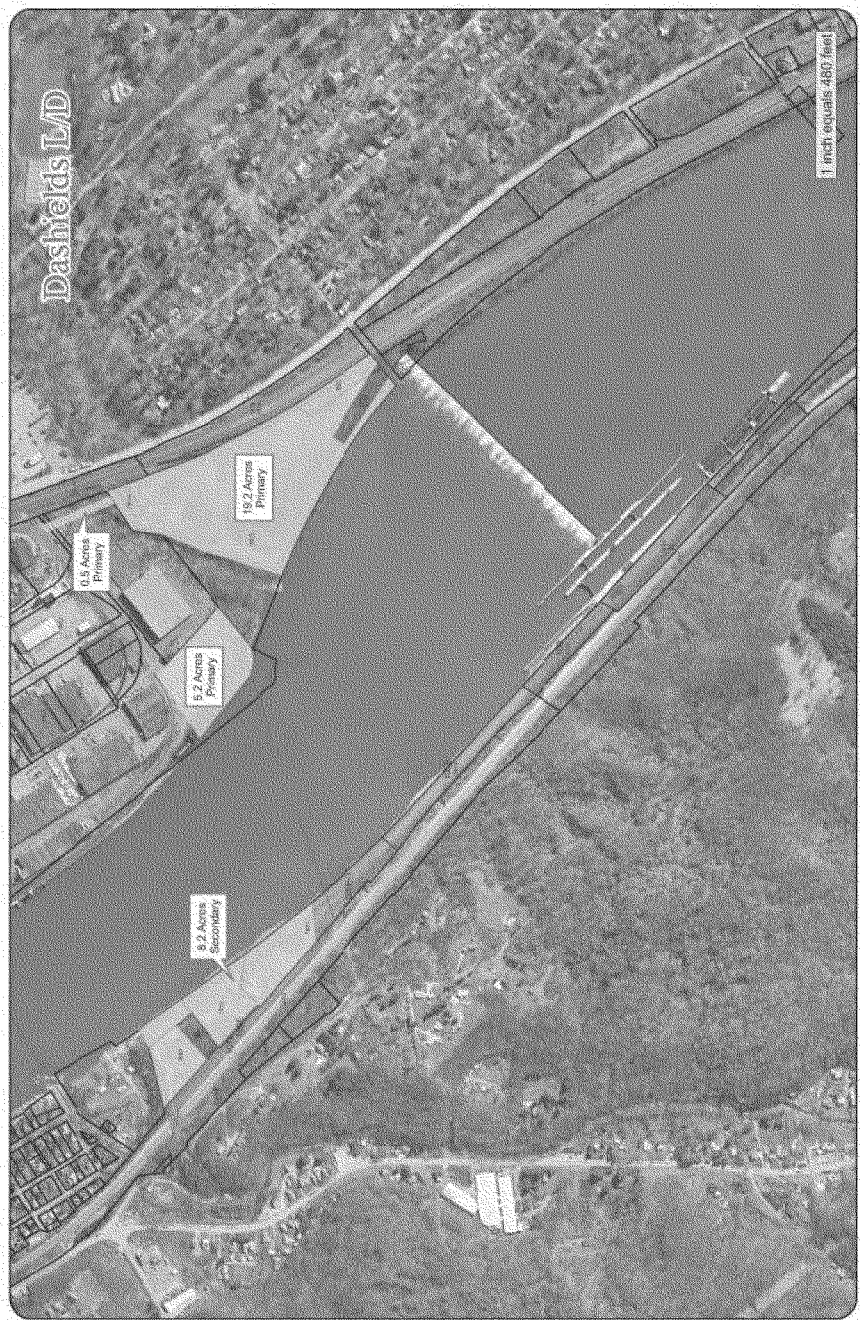


Figure 2. Dashiels Primary and Secondary Work Areas (Light blue areas only)

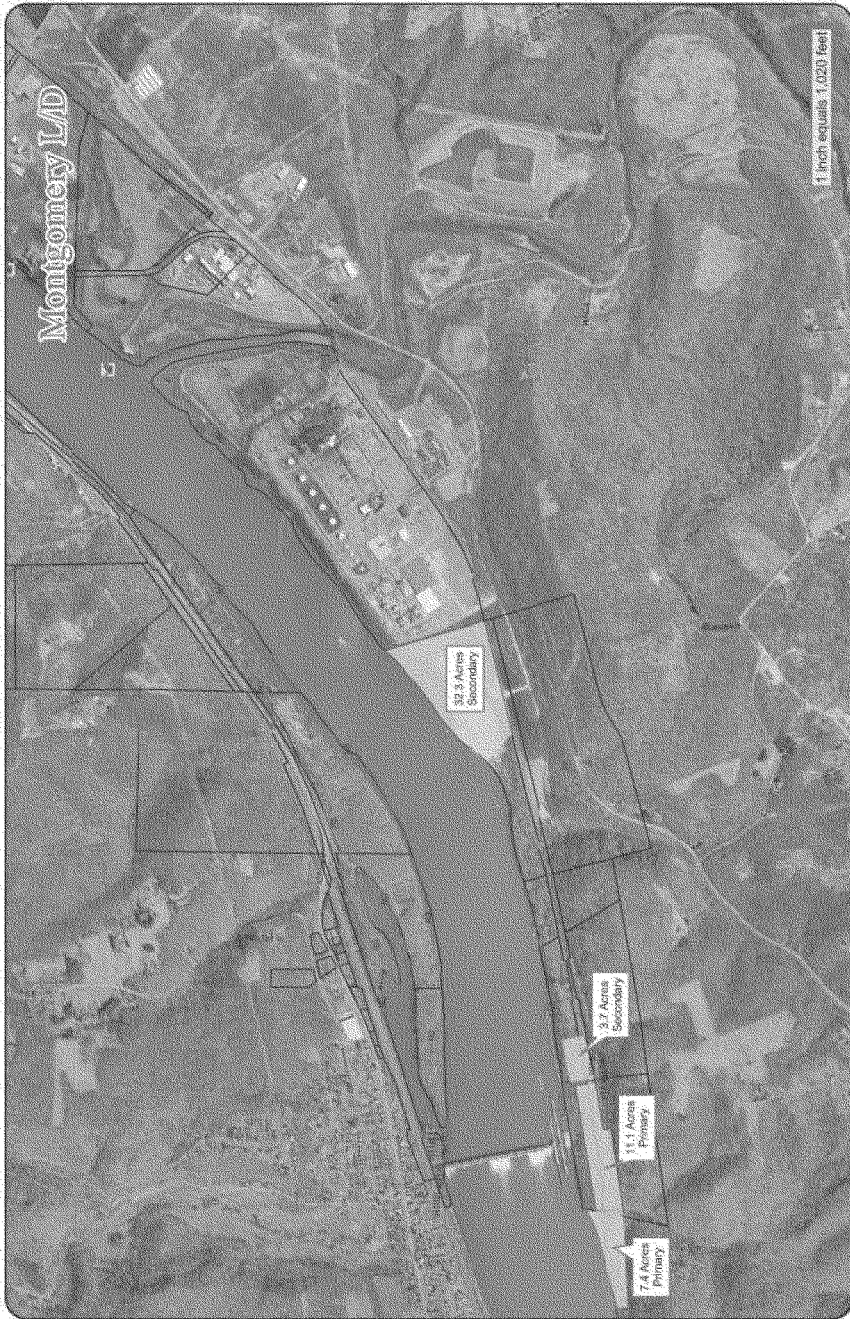


Figure 3. Montgomery Primary and Secondary Work Areas (Light blue areas only)

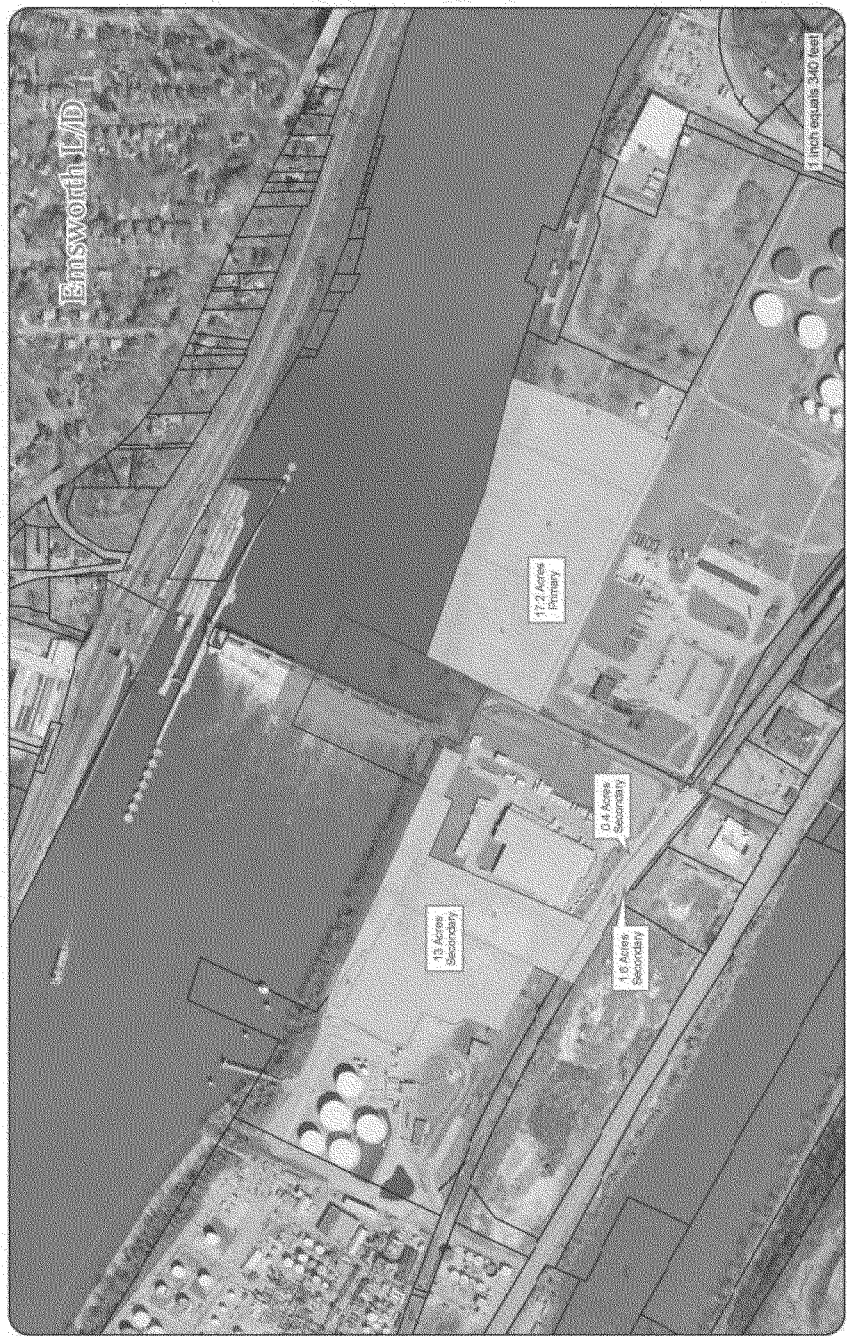


Figure 4. Emsworth Primary and Secondary Work Areas (No cultural resource testing recommended)

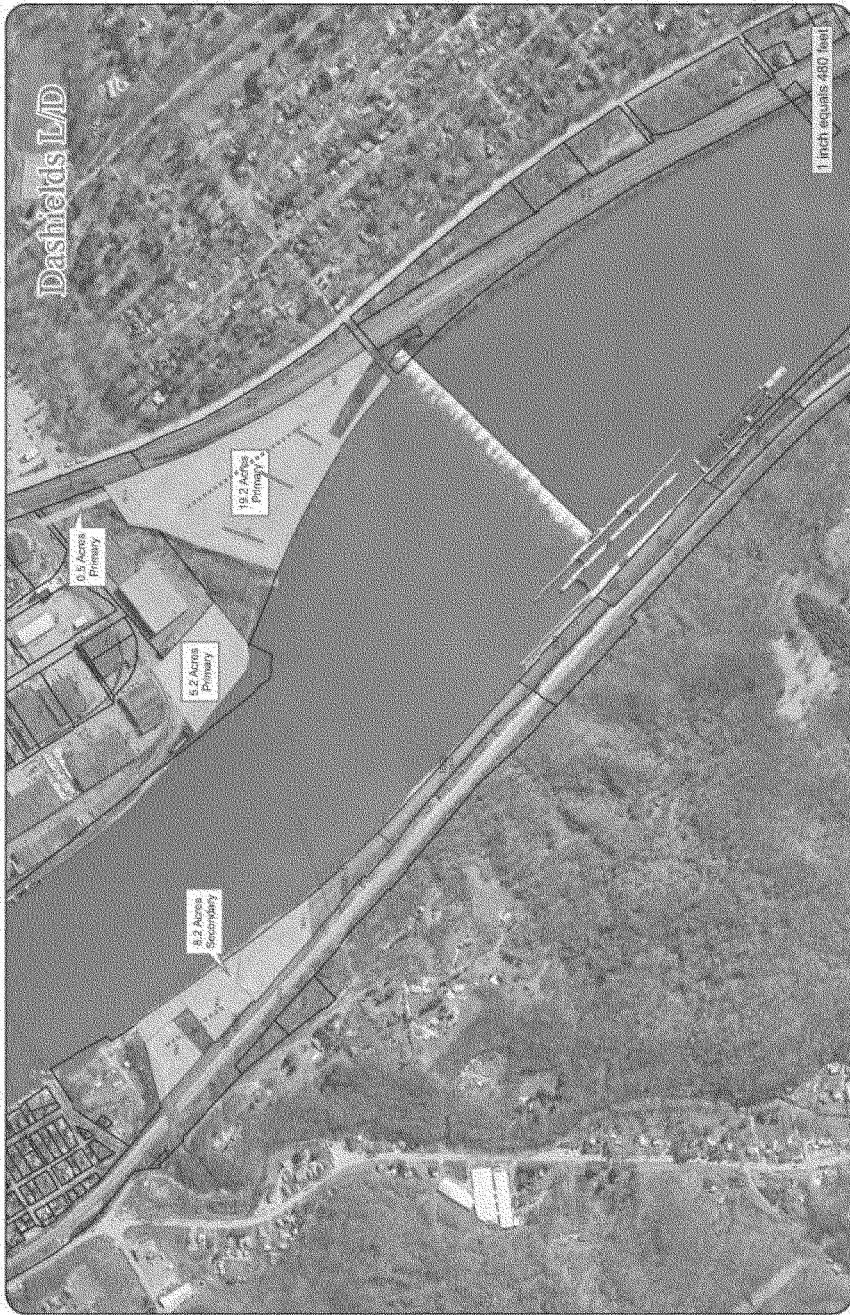


Figure 5. Dashields Primary and Secondary Work Areas (Cultural resource testing shown as solid and dotted red lines)

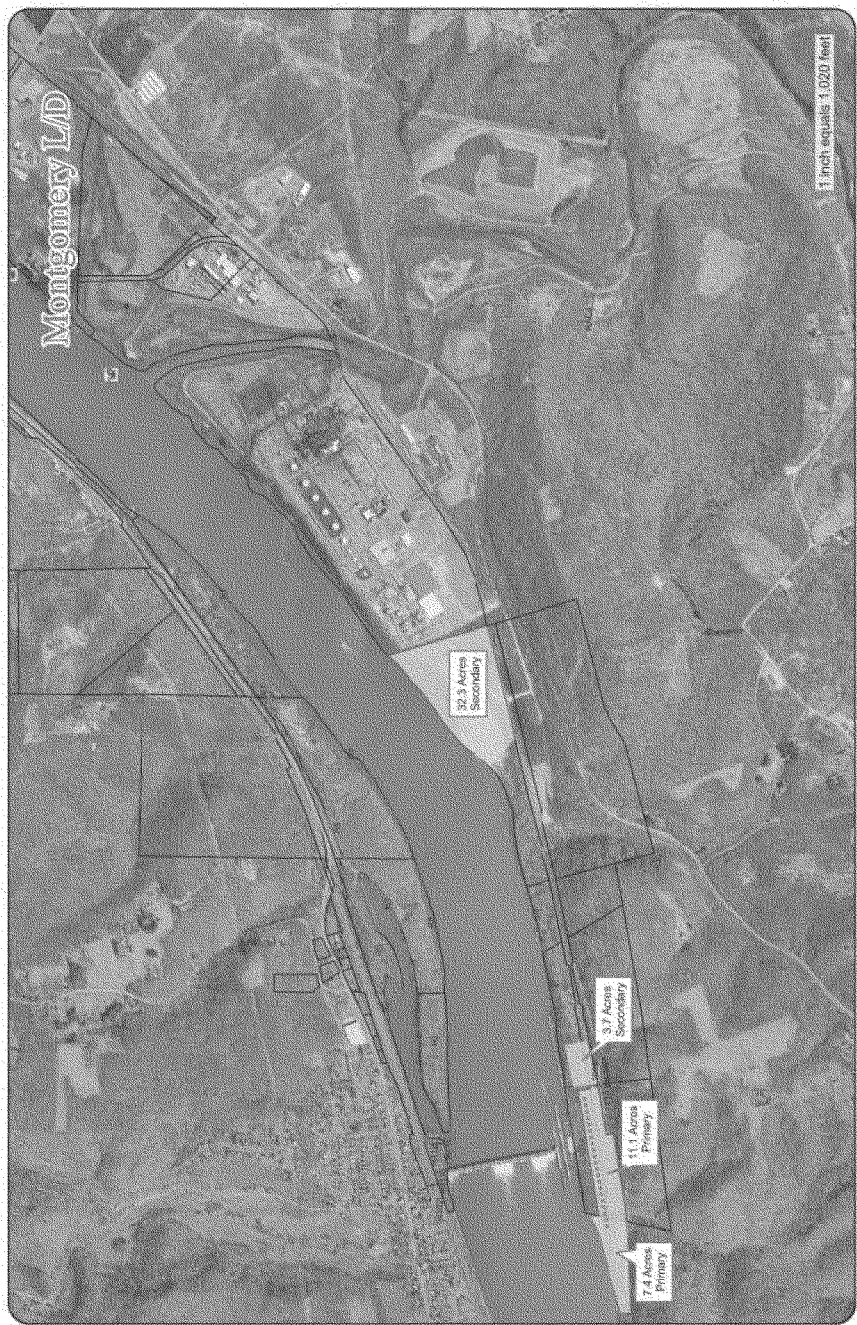


Figure 6. Montgomery Primary and Secondary Work Areas (Cultural resource testing shown as dotted red line, Primary only)



Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office
Archaeological Report Summary Form

ER #
DATE 9/29/2009

PROJECT CHECKLIST: Please fill out a copy of this checklist and include it with your initial report submission, (including with management summaries or draft reports). This form may be downloaded and expanded as needed, but please do not eliminate any fields.

1. **Report Title** Phase I Cultural Resources Assessment Upper Ohio Navigation Study Emsworth, Dashields, and Montgomery Locks and Dams Allegheny and Beaver Counties, Pennsylvania

2. **PI** Lori A. Frye (☒ MA, ☐ PhD) / **Firm** or Institution GAI, Consultants

3. **Report Date** (Month/Day/Year) September 29, 2009

4. **Number of Pages** 75

5. **Agency Name** U.S. Army Corps of Engineers Federal ☒ State ☐

6. **Project Area County/Municipality** (list all)

County	Municipality
Allegheny, Beaver	Potter and Moon Townships

7. **Project Area Drainage(s)**, (list all)

Sub-basin	Watershed
Ohio River	D

8. **Project Area Physiographic Zone(s)** (list All) (Use DCNR Map 13 compiled by W.D. Sevon, Fourth Edition, 2000.)

Physiographic Zone
Pittsburgh Low Plateau Section

9. **Report Type** (some reports are combinations, check as many as apply to this report)

- | | |
|---|---|
| ☐ Phase IA/Sensitivity Study | ☒ Historic Structures |
| ☒ Phase I | ☐ Geomorphology |
| ☐ Phase II | ☐ Determination of Effects |
| ☐ Phase III | ☐ Other _____ |

10. **Total Project Area** 48.48 hectares

11. **Low Probability/Disturbed Areas** 26.1 hectares = 53.8 % of project area

12. **Phase I Methods used for total project** (check as many as apply)

Archaeological Report Summary Form

ER# _____

DATE 9/29/2009

- ☒ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

13. Total Number of Sites Encountered/Phase I 3

Total Sites Tested/Phase II _____

Total Sites Excavated/Phase III _____

14. Updated PASS Information: Please complete an updated PASS form **for each site** reported by this report. Updated forms need only include the new information and the site number and name.

15. PASS Site Specific Information: In addition, the following pages must also be completed **for each site**. Complete only the portions that pertain to the current report. If the report is a stand-alone Phase II, you do not need to fill in the Phase I methods, since they should have been included in the summary form for the previous report.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36BV0131

A. Phase I Methods (how the site was located - check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

B. Phase II Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

C. Phase III Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone ____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Archaeological Report Summary Form ER# _____

DATE 9/29/2009

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☐ ineligible, ☒ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☐ ineligible☐ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☐ other (specify): _____**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State
Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

- ☐ curation agreement enclosed
☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by ____ (date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

- ☐ expanded documentation enclosed for items retained
☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

- ☐ letter from owner indicating desire to retain collection

- or -

- ☐ agency or representative discussed donation option with owner on ____ (date)

- and -

- ☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36BV0357

A. Phase I Methods (how the site was located - check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

B. Phase II Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

C. Phase III Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible,
 ☐ ineligible,
 ☒ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☐ ineligible☐ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☐ other (specify): _____**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed

- or -

☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

- ☐ curation agreement enclosed
☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by ____ (date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

- ☐ expanded documentation enclosed for items retained

- ☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

- ☐ letter from owner indicating desire to retain collection

- or -

- ☐ agency or representative discussed donation option with owner on ____ (date)

- and -

- ☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36AL0600

A. Phase I Methods (how the site was located - check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

B. Phase II Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

C. Phase III Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Archaeological Report Summary Form ER# _____

DATE 9/29/2009

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☐ ineligible, ☒ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☐ ineligible☐ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☐ other (specify): _____**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State Museum guidelines

-- collection will be submitted by _____(date)

Archaeological Report Summary Form

ER # _____

DATE 9/29/2009

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

- ☐ curation agreement enclosed
☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

- ☐ expanded documentation enclosed for items retained
☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

- ☐ letter from owner indicating desire to retain collection

- or -

- ☐ agency or representative discussed donation option with owner on _____(date)

- and -

- ☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

FINDING OF NO ADVERSE EFFECT DOCUMENTATION

DISPOSAL OF EXCESS FEDERAL PROPERTY DASHIELDS LOCKS AND DAM ALLEGHENY COUNTY, PENNSYLVANIA

1. PROJECT DESCRIPTION.

The Pittsburgh District, US Army Corps of Engineers (District), proposes to dispose as excess property about 0.58 acres of land in the vicinity of Dashields Locks and Dam on the Ohio River, Allegheny County, Pennsylvania (Exhibit 1). This land was part of a larger 2.59-acre parcel formerly acquired around 1933 for construction of the locktenders' dwellings. These dwellings and about two acres of land were exccessed in 1973 to the Township of Crescent. The 0.58-acre parcel is situated between the exccessed land and the Township's sewage treatment plant. Although originally retained for District use, primarily project parking and access, the recent construction of a permanent access road to the project has made this parcel excess to project needs. Crescent Township has expressed the desire to acquire this parcel in fee.

2. HISTORIC PROPERTIES DESCRIPTION.

The property has no known historic properties. The locktenders' dwellings and garage, built in 1933, were exccessed with the two-acre parcel in 1973 and razed by the Township to create a baseball field. The 0.58-acre parcel, now occupied by a parking area and the ballfield's outfield, was formerly the dwellings' vegetable garden, and has no historic archeological potential associated with our navigation system (Exhibit 2). However, any earlier historic and prehistoric archeological potential of this parcel has not been evaluated through field testing. Despite surface disturbances, there is a high archeological potential for buried deposits due to its situation along the Ohio River.

3. HISTORIC PROPERTIES IDENTIFICATION.

Efforts to identify historic properties consisted of a search of District records for Dashields Locks and Dam, archeological site files, and consultation with the Pennsylvania Bureau for Historic Preservation. Due to the small acreage involved, the potential high cost and disturbance of surveying for deeply buried deposits, the District opted to pursue historic preservation covenants rather than total identification and evaluation of historic properties.

4. APPLICATION OF CRITERIA OF EFFECT.

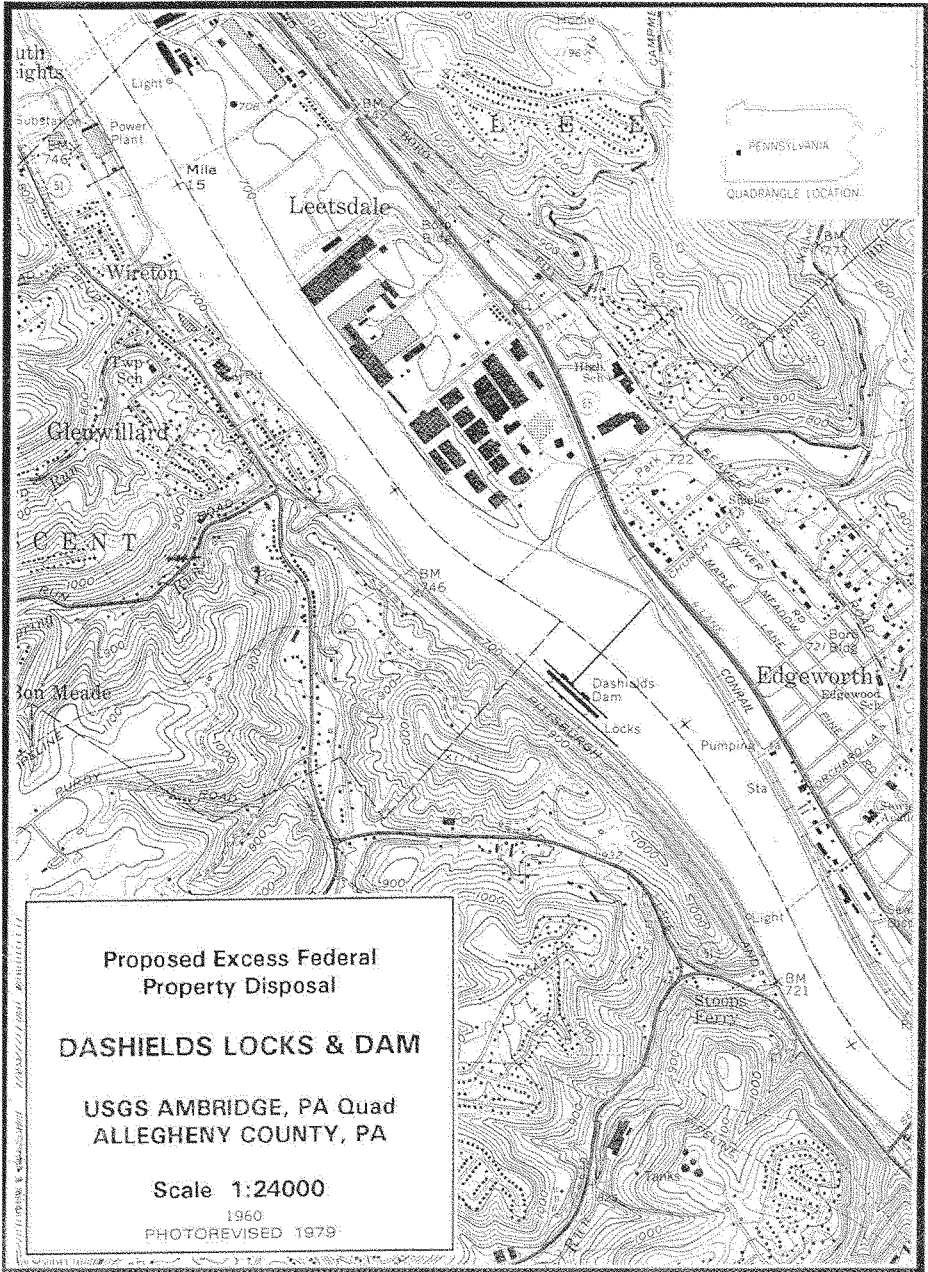
Under 36 CFR 800.9 (c)(3), the exccessing of the subject parcel will have no adverse effect on historic properties as the proposed historic preservation covenants will provide adequate restrictions or conditions in the deed transfer to insure preservation of the property's significant historic features. The proposed covenants (Exhibit 3) were developed using the guidance in the Council's *PREPARING AGREEMENT DOCUMENTS: How to*

Write Determinations of No Adverse Effect, Memoranda of Agreement, and Programmatic Agreements Under 36 CFR Part 800, with little modification.

5. VIEWS OF THE STATE HISTORIC PRESERVATION OFFICER AND OTHERS.

The District consulted with the Pennsylvania Bureau for Historic Preservation in the identification process and in development of the historic preservation covenants. They have concurred with the use of the proposed covenants and in the no adverse effect determination (Exhibit 4).

Pittsburgh District
US Army Corps of Engineers
29 September 1994



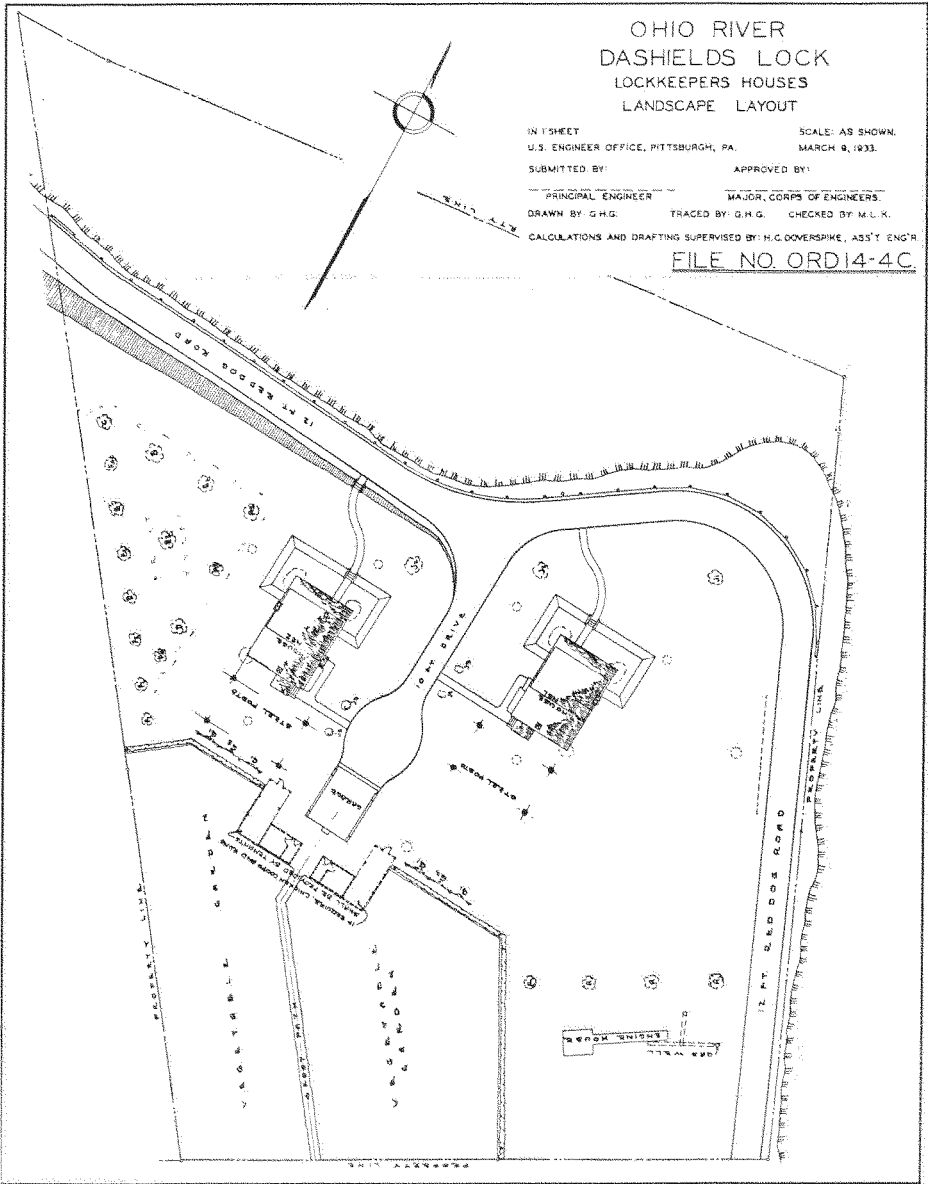
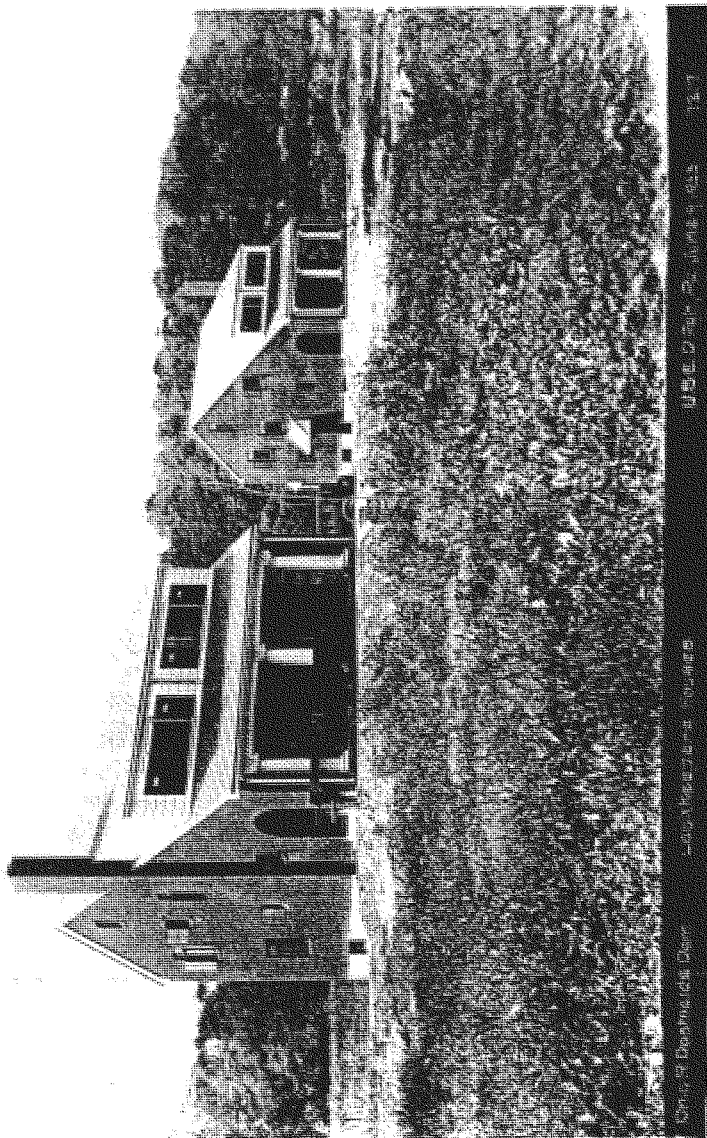


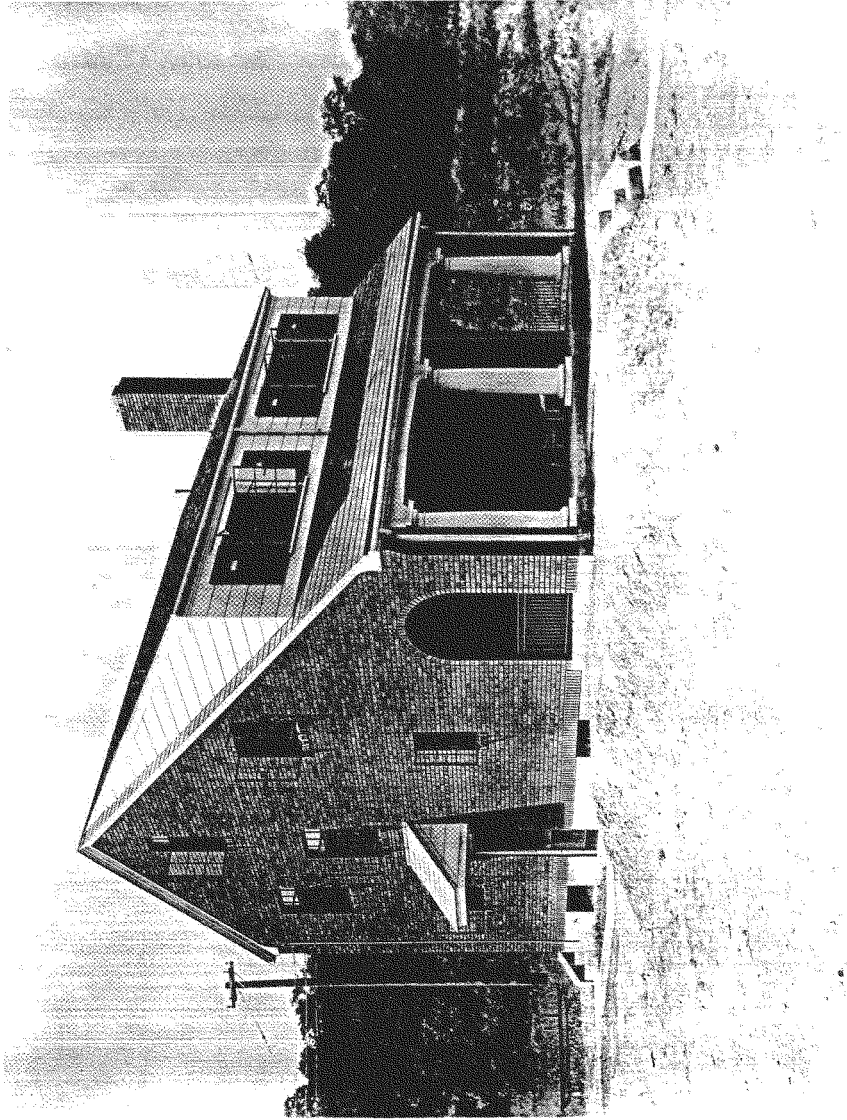
EXHIBIT 2



THE NEW YORK STATE SCHOOL FOR THE DEAF

NEW YORK STATE SCHOOL FOR THE DEAF

NEW YORK STATE SCHOOL FOR THE DEAF



THE BRICK BUILDING AT THE
SCHOOL HOUSE
IN THE TOWN OF
MOUNTAIN VIEW
BUILT IN 1908

APPENDIX B
PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY FORMS

SITE NAME Dashields Dam SITE NUMBER 36-AL-0600 DATE 09/28/2009

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME Dashields Dam SITE NUMBER 36AL0600 UPDATE? ☒ Y ☐ N

PUBLISHED REFERENCES (Including compliance reports.) ER# 1997-1617-042-F

COUNTY Allegheny TWP. Moon NEAREST TOWN Glenwillard

Site Characteristics

SITE AREA 1800 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

STRATIFIED? ☐ UNKNOWN ☐ NO
☒ YES : ☐ TOP STRATUM VISIBLE OR ☒ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- | | |
|---|--|
| ☐ Unknown | ☐ Auger probing |
| ☐ Collector interview | ☒ Shovel testing |
| ☐ Collector interview with field check | ☐ Systematic test units |
| ☐ Non-systematic surface survey | ☐ Extensive excavation |
| ☐ Systematic surface survey | |
| ☐ Systematic shovel testing | |
| ☐ Remote sensing | |

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
☐ None
☐ Low potential for organic preservation
☐ Conditions favorable for organic preservation, none documented
☐ Organic material recovered, unknown quality of preservation
☐ Organic material recovered, poor quality of preservation
☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
☐ Open habitation, prehistoric
☐ Rockshelter/Cave
☐ Quarry
☒ Lithic Reduction
☐ Village (including historic Indian)
☐ Shell Midden
☐ Earthwork
☐ Petroglyph/Pictograph
☐ Burial Mound
☐ Cemetery
☐ Other specialized aboriginal site
☐ Isolated flute point locus

- ☐ Isolated find (diagnostic artifact)
☐ Paleontological site
☐ Path

Historic

- ☐ Historic and Prehistoric
☒ Domestic Site
☐ Military Site
☐ Industrial Site
☐ Shipwreck Site
☐ Commercial Site
☐ Religious Site
☐ Unknown/other/multiple types
☐ Farmstead

SITE NAME Dashields Dam SITE NUMBER 36-AL-0600 DATE 09/28/2009

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
☐ Paleoindian
☐ Early ☐ Middle ☐ Late
☒ Archaic
☐ Early ☐ Middle ☒ Late
☐ Transitional Tradition
☐ Woodland
☐ Early ☐ Middle ☐ Late
☐ Proto Historic

Historic

- ☐ Unknown Historic ☐ 1800-1900
☐ Contact-Historic ☐ 1800-1825 ☐ 1825-1850
☐ 1550-1600 ☐ 1850-1875 ☐ 1875-1900
☐ 1600-1650 ☒ 1900- ☐ 1900-1925 ☒ 1925-1950
☐ 1650-1700 ☒ 1950-1975 ☐ 1975+
☐ 1700-1800
 ☐ 1700-1725 ☐ 1725-1750
 ☐ 1750-1775 ☐ 1775-1800

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- | | |
|---|--|
| ☒ Diagnostic lithic artifacts | ☒ Historical Documentation |
| ☐ Ceramic types | ☐ Radio Carbon Dates (list below) |

RADIO CARBON DATES _____ $\pm$ _____
 _____ $\pm$ _____

FEATURES? ☒ NONE FOUND ☐ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery

Quantity	Historic Features
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
	Foundation

Quantity	Historic Features
	Ice House
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker

SITE NAME Dashields Dam SITE NUMBER 36-AL-0600 DATE 09/28/2009

Quantity	Historic Features
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy

Quantity	Historic Features
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or

Quantity	Historic Features
	Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☐ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
11	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common
---	-----------------

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above. Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Prehistoric Artifact Types	Material Type		Prehistoric Artifact Types	Material Type	
	Adzes			Antler & Bone Artifacts	

SITE NAME Dashields Dam SITE NUMBER 36-AL-0600 DATE 09/28/2009

Prehistoric Artifact Types	Material Type			Prehistoric Artifact Types	Material Type		
	Bannerstones				Hoes		
	Celts				Human Bone		
	Ceramics (Prehistoric)				Netsinkers		
B	Chipped Stone Tools	1 projectile point base (Brewerton), 1 biface			Non-Artifactual Bone or Antler		
	Clay Pipes (Prehistoric)				Non-Artifactual Floral Remains		
	Cordage				Non-Artifactual Shell		
	Core				Pestles/Grinding/Pitted Stones		
	Fire Cracked Rock				Shell Artifacts		
	Gorgets/Pendants/Non-Utilitarian Lithics				Seatite Bowls/Fragments		
	Grooved Axes			B	Stone Debitage	9 chert	
	Ground & Polished Stone Tools				Stone Pipes		
	Hammerstones				Wooden Artifacts		

Historic (Include Quantities by Group as appropriate from table below):

Architectural	Farm Tools	Kitchen (Domestic)
Personal	Arms/Weapons	Industrial Tools

Examples:

D	Glass	50 Architectural / 29 Kitchen
G	Metal	Architectural

Quantity	Historic Artifact	Group
	Brick	
	Buttons	
3	Ceramics (Historic)	Kitchen
	Clay Pipes (Historic)	
	Coins	
	Glass	
	Glass Trade Beads	
	Gunflints	

Quantity	Historic Artifact	Group
	Jewelry	
	Metal	
	Non-diagnostic ceramics	
	Redware	
	Strike-a-Light	
	Textiles	
	Toys	

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above. Examples:

7	Broadspears	5 rhyolite / 2 argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
-----	Paleoindian Points	-----
	Pre-Clovis	

Quantity	Prehistoric Point Types	Material
	Clovis	
	Mid-Palco (Folsom)	

SITE NAME Dashields Dam SITE NUMBER 36-AL-0600 DATE 09/28/2009

Quantity	Prehistoric Point Types	Material
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
-----	Early Archaic Points	-----
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
-----	Middle Archaic Points	-----
	Bifurcate Points	
	Middle Archaic	
	Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
-----	Late Archaic Points	-----
	Piedmont Tradition	
		1 Brewerton projectile point base
B	Laurentian Tradition	
	Steubenville	

Quantity	Prehistoric Point Types	Material
-----	Transitional Tradition	-----
	Koens Crispins/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
-----	Early Woodland Points	-----
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
-----	Middle Woodland Points	-----
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
-----	Late Woodland Points	-----
	Triangles (Late Woodland)	
-----	Proto Historic Points	-----
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include "grit", "grog" or "shell".)

Quantity	Prehistoric Ceramics	Temper
-----	Early Woodland Ceramics	-----
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior	
	Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-Conical/Globular)	
	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	
-----		-----
	Abott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	

Quantity	Prehistoric Ceramics	Temper
	Grit Tempered Net	
	Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net	
	Impressed-Conical/Globular	
	Watson Cord Marked	
-----	Late Woodland Ceramics	-----
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemsons Island/Princess Point Series	
	Early Ontario Iroquois	
	Eric Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	

SITE NAME Dashields Dam SITE NUMBER 36-AL-0600 DATE 09/28/2009

Quantity	Prehistoric Ceramics	Temper
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	

Quantity	Prehistoric Ceramics	Temper
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Ceramics

Quantity	Historic Ceramics
	American Stoneware (Blue and Gray)
	Basalt
	Chinese Porcelain
	Cream-Colored Ware
	Creamware
	Dry-Bodied (Engine Turned)
	English Brown Stoneware

Quantity	Historic Ceramics
	English Porcelain
	Fulham
	Ironstone
	Jackfield
	Nottingham
	Pearlware (All Decoration Types)
	Rhenish
	Rockingham

Quantity	Historic Ceramics
	Scratch Blue/Brown Salt-Glaze Stoneware
	Tin-Glazed Earthenware
	Whieldon
	White Salt-Glaze Stoneware
3	White Ware (Transitional)
	Yellowware

Physical Data and Site Condition Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Rainsboro Silt Loam SOIL MAPPING UNIT RaB

Most common other mapped SOIL UNIT(S) within 500 meters Gilpin-Upslur Complex (GOF) (may list two)

MAP ELEVATION (Site Elevation: 760 ft) _____ SLOPE PERCENTAGE 3%-8% SLOPE DIRECTION Northeast

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Casselman Most predominant other BEDROCK(S) within 5 km Vanport and Glenshaw (may list two)

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau Section (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE _____)

TOPOGRAPHIC SETTING (check the one that best describes the setting):

- ☐ Island
☐ Beach
☐ Floodplain
☐ Rise in Floodplain
☒ Terrace (Pleistocene along river)

- ☐ Lower Hillslope
☐ Middle Hillslope
☐ Upper Hillslope
☐ Stream Bench (along low order stream)

- ☐ Hill/Ridge Toe
☐ Upland Flat
☐ Hilltop
☐ Ridge Top
☐ Saddle

SITE NAME Dashields Dam SITE NUMBER 36-AL-0600 DATE 09/28/2009

IMMEDIATE VEGETATION grasses PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE baseball field POSSIBILITY OF DESTRUCTION Unknown

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Tributary of Flaugherty Run

NEAREST WATER: Distance 45.7 m Elevation 750ft Direction Northeast Order 2 Type Perennial River

2ND NEAREST WATER: Distance 153.6 m Elevation 698ft Direction Northwest Order 2 Type Perennial Stream

NEAREST PERRENIAL STREAM CONFLUENCE:

Distance 238.4 m Elevation 698 ft Direction North northwest Order below confluence 2

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

- ☐ Do not represent a stream confluence.
- ☒ Site is located upstream from the confluence and between the 2 water sources.
- ☐ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☐ None of the above apply.

COMMENTS Dashields Dam is a prehistoric lithic scatter, possibly dating to the Late Archaic period and historic domestic remains associated with two former locktenders houses. This site is capped by mixed fill (CA horizon) with historic artifacts in both the CA horizon and Ab horizon. The prehistoric component is restricted to the Ab horizon. The origin of historic artifacts in the CA horizon are unknown but may be associated with the historic component. This site, located on a bluff overlooking the Ohio River, is situated within a playground and extends beneath a baseball field.

**ATTACH PHOTOGRAPHS OR DRAWINGS OF DIAGNOSTIC ARTIFACTS WITH SCALE.
IDENTIFY LITHIC MATERIAL TO ARTIFACTS USING DESCRIPTION OR KEY.**

GENERAL SITE PHOTOGRAPHS OR EXCAVATION PHOTOGRAPHS OR DRAWINGS MAY ALSO BE INCLUDED.

We encourage the inclusion of as many illustrations as possible.



Photograph 1 Crew digging Shovel Test Pits in baseball diamond



Photograph 2 Typical Shovel Test Pit

SITE NAME Dashields Dam SITE NUMBER 36-AL-0600 DATE 09/28/2009**ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)**7.5 QUAD NAME Ambridge

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

U.T.M. COORDINATES: ZONE 17 NORTHING 05 66 332 EASTING 44 89 679**ATTACH SEPARATE SKETCH MAP OF SITE AND/OR PORTION OF 7.5 MIN USGS MAP WITH SITE BOUNDARIES INDICATED.**OWNER Glenwillard Boat Club, the United States of America, and the Township of Crescent ADDRESS _____

TAX PARCEL ID _____ TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☒ FEDERAL ☐ STATE ☒ LOCALCOLLECTION LOCATIONS Temporary: GAI Consultants, 385 East Waterfront Drive, Homestead PA, 15120
Permanent: Pennsylvania Bureau for Historic Preservation, Commonwealth Keystone Building, 2nd Floor, 400 North Street, Harrisburg PA**INFORMANTS** _____**RECORDING REASON**

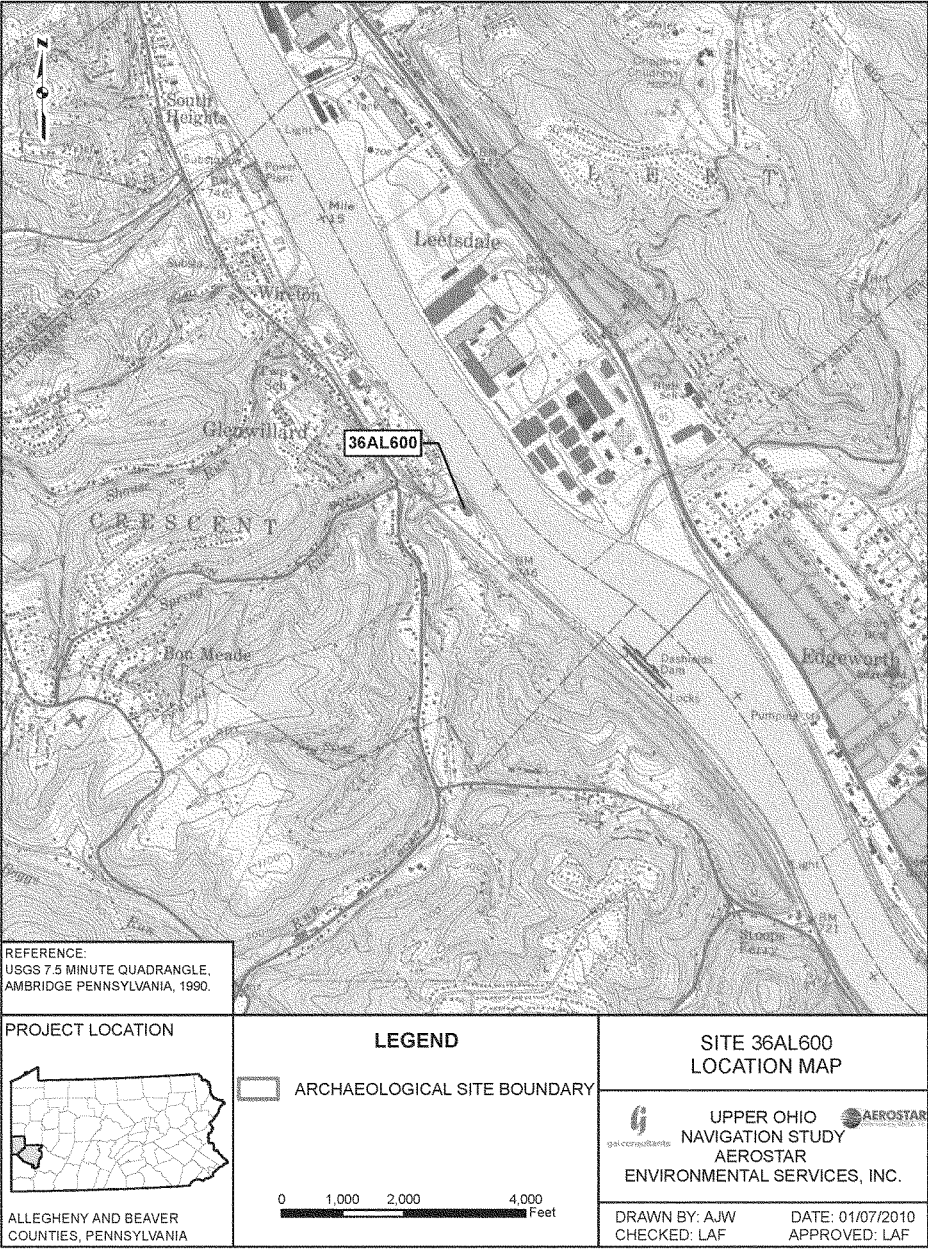
- ☐
- Informant Interview/Amateur Survey
-
- ☒
- State or Federal Compliance Survey
-
- ☐
- PHMC Grant

- ☐
- Non-PHMC institution affiliated research
-
- ☐
- PHMC Research
-
- ☐
- Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION _____SUBMITTED BY GAI Consultants, Inc. ADDRESS 385 East Waterfront DriveCITY Homestead STATE PA DATE 09/14/2009PHONE NUMBER 412-476-2000 x1205 EMAIL ADDRESS lfrvc@gaiconsultants.com**S.P.A. CHAPTER AFFILIATION** _____**INSTITUTIONAL AFFILIATION** _____**ADMINISTRATIVE COMMENTS** _____**Remember!** Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093



SITE NAME Montgomery Dam SITE NUMBER 36-BV-0131 DATE 09/28/2009

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME Montgomery Dam SITE NUMBER 36BV0131 UPDATE? ☒ Y ☐ N ☐
 PUBLISHED REFERENCES (Including compliance reports.) ER# 1997-1617-042-F
 COUNTY Beaver TWP. Potter NEAREST TOWN Monaca

Site Characteristics

SITE AREA 7296 SQUARE METERS BASIS: ☒ COMPUTED ON THE GROUND OR ☐ COMPUTED ON MAP

STRATIFIED? ☒ UNKNOWN ☐ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☒ Previously Recorded (update)

- | | |
|---|--|
| ☐ Unknown | ☐ Auger probing |
| ☐ Collector interview | ☒ Shovel testing |
| ☐ Collector interview with field check | ☐ Systematic test units |
| ☐ Non-systematic surface survey | ☐ Extensive excavation |
| ☐ Systematic surface survey | |
| ☐ Systematic shovel testing | |
| ☐ Remote sensing | |

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
☐ None
☐ Low potential for organic preservation
☐ Conditions favorable for organic preservation, none documented
☐ Organic material recovered, unknown quality of preservation
☐ Organic material recovered, poor quality of preservation
☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
☐ Open habitation, prehistoric
☐ Rockshelter/Cave
☐ Quarry
☒ Lithic Reduction
☐ Village (including historic Indian)
☐ Shell Midden
☐ Earthwork
☐ Petroglyph/Pictograph
☐ Burial Mound
☐ Cemetery
☐ Other specialized aboriginal site
☐ Isolated flute point locus

- ☐ Isolated find (diagnostic artifact)
☐ Paleontological site
☐ Path

Historic

- ☐ Historic and Prehistoric
☒ Domestic Site
☐ Military Site
☐ Industrial Site
☐ Shipwreck Site
☐ Commercial Site
☐ Religious Site
☐ Unknown/other/multiple types
☐ Farmstead

CHRONOLOGY (check all that apply)

Prehistoric

- ☒ Unknown Prehistoric
 ☐ Transitional Tradition
☐ Paleoindian
 ☐ Woodland
 ☐ Early ☐ Middle ☐ Late
 ☐ Proto Historic
☐ Archaic
 ☐ Early ☐ Middle ☐ Late

Historic

- ☐ Unknown Historic ☒ 1800-1900
☐ Contact-Historic ☐ 1800-1825 ☐ 1825-1850
☐ 1550-1600 ☐ 1850-1875 ☒ 1875-1900
☐ 1600-1650
☐ 1650-1700 ☒ 1900-
☐ 1700-1800 ☒ 1900-1925 ☒ 1925-1950
 ☐ 1950-1975 ☐ 1975+
 ☐ 1700-1725 ☐ 1725-1750
 ☐ 1750-1775 ☐ 1775-1800

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts ☒ Historical Documentation
☐ Ceramic types ☐ Radio Carbon Dates (list below)

RADIO CARBON DATES _____ ± _____
 _____ ± _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other: Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar

Quantity	Historic Features
	Cemetery
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed

Quantity	Historic Features
2	Fortification Foundation
	Ice House
	Iron Furnace
	Kiln
	Midden

SITE NAME Montgomery Dam SITE NUMBER 36-BV-0131 DATE 09/28/2009

Quantity	Historic Features
	Millrace
	Monument/Boundary Marker
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
	Pit

Quantity	Historic Features
	Posthole/Postmold
	Privy
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox

Quantity	Historic Features
	Standing Building or Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☐ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
1	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common
---	-----------------

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above. Examples:

	D	Stone Debitage	52 rhyolite / 26 chert
	2	Grooved Axes	sandstone
Prehistoric Artifact Types	Material Type		

SITE NAME Montgomery Dam SITE NUMBER 36-BV-0131 DATE 09/28/2009

Prehistoric Artifact Types	Material Type			Prehistoric Artifact Types	Material Type		
	Adzes				Hoes		
	Antler & Bone Artifacts				Human Bone		
	Bannerstones				Netsinkers		
	Celts				Non-Artifactual Bone or Antler		
	Ceramics (Prehistoric)				Non-Artifactual Floral Remains		
	Chipped Stone Tools				Non-Artifactual Shell		
	Clay Pipes (Prehistoric)				Pestles/Grinding/Pitted Stones		
	Cordage				Shell Artifacts		
	Core				Seatite Bowls/Fragments		
	Fire Cracked Rock			B	Stone Debitage	1	chert
	Gorget/Pendants/Non-Utilitarian Lithics				Stone Pipes		
	Grooved Axes				Wooden Artifacts		
	Ground & Polished Stone Tools						
	Hammerstones						

Historic (Include Quantities by Group as appropriate from table below):

Architectural	Farm Tools	Kitchen (Domestic)
Personal	Arms/Weapons	Industrial Tools

Examples:

D	Glass	50 Architectural / 29 Kitchen
G	Metal	Architectural

Quantity	Historic Artifact	Group
	Brick	
	Buttons	
B	Ceramics (Historic)	Kitchen
	Clay Pipes (Historic)	
	Coins	
B	Glass	Kitchen/Architecture
	Glass Trade Beads	
	Gunflints	

Quantity	Historic Artifact	Group
	Jewelry	
B	Metal	4 Architectural
B	Non-diagnostic ceramics	
	Redware	
	Strike-a-Light	
	Textiles	
	Toys	

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above. Examples:

7	Broadspears	5 rhyolite / 2 argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
-----	Paleoindian Points	-----

Quantity	Prehistoric Point Types	Material
	Pre-Clovis	

SITE NAME Montgomery Dam SITE NUMBER 36-BV-0131 DATE 09/28/2009

Quantity	Prehistoric Point Types	Material
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
-----	Early Archaic Points	-----
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
-----	Middle Archaic Points	-----
	Bifurcate Points	
	Middle Archaic	
	Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
-----	Late Archaic Points	-----
	Piedmont Tradition	
	Laurentian Tradition	

Quantity	Prehistoric Point Types	Material
	Steubenville	
-----	Transitional Tradition	-----
	Koens Crispins/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
-----	Early Woodland Points	-----
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
-----	Middle Woodland Points	-----
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
-----	Late Woodland Points	-----
	Triangles (Late Woodland)	
-----	Proto Historic Points	-----
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include "grit", "grog" or "shell".)

Quantity	Prehistoric Ceramics	Temper
-----	Early Woodland Ceramics	-----
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-Conical/Globular)	
	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	
-----		-----
	Abott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	

Quantity	Prehistoric Ceramics	Temper
	Grit Tempered Net	
	Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net	
	Impressed-Conical/Globular	
	Watson Cord Marked	
-----	Late Woodland Ceramics	-----
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemsons Island/Princess Point Series	
	Early Ontario Iroquois	
	Eric Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	

SITE NAME Montgomery Dam SITE NUMBER 36-BV-0131 DATE 09/28/2009

Quantity	Prehistoric Ceramics	Temper
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	

Quantity	Prehistoric Ceramics	Temper
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Ceramics

Quantity	Historic Ceramics
	American Stoneware (Blue and Gray)
	Basalt
	Chinese Porcelain
	Cream-Colored Ware
	Creamware
	Dry-Bodied (Engine Turned)
	English Brown Stoneware

Quantity	Historic Ceramics
	English Porcelain
	Fulham
1	Ironstone
	Jackfield
	Nottingham
	Pearlware (All Decoration Types)
	Rhenish
	Rockingham

Quantity	Historic Ceramics
	Scratch Blue/Brown Salt-Glaze Stoneware
	Tin-Glazed Earthenware
	Whieldon
	White Salt-Glaze Stoneware
	White Ware (Transitional)
1	Yellowware

Physical Data and Site Condition Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Conotton gravelly Loam SOIL MAPPING UNIT CoC

Most common other mapped SOIL UNIT(S) within 500 meters Weikert-Rock outcrop complex (WeF) (may list two)

MAP ELEVATION (Site Elevation: 765 ft) _____ SLOPE PERCENTAGE 8%-15% SLOPE DIRECTION North

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Glenshaw Most predominant other BEDROCK(S) within 5 km Vanport and Casselman (may list two)

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau Section (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE _____)

TOPOGRAPHIC SETTING (check the one that best describes the setting):

- ☐ Island
- ☐ Rise in Floodplain
- ☐ Middle Hillslope
- ☐ Beach
- ☒ Terrace (Pleistocene along river)
- ☐ Upper Hillslope
- ☐ Floodplain
- ☐ Lower Hillslope

SITE NAME Montgomery Dam SITE NUMBER 36-BV-0131 DATE 09/28/2009

- ☐ Stream Bench (along low order stream)
☐ Hill/Ridge Toe

- ☐ Upland Flat
☐ Hilltop
☐ Ridge Top

- ☐ Saddle

IMMEDIATE VEGETATION Mixed Hardwoods and Low Lying Brush PERCENTAGE OF SITE STILL INTACT UnknownPRIMARY DISTURBANCE Railroad & dam construction POSSIBILITY OF DESTRUCTION Unknown

Water Drainage Area Information Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Squirrel RunNEAREST WATER: Distance 60 m Elevation 680 ft Direction North Order 2 Type Perennial River2ND NEAREST WATER: Distance 100 m Elevation 700 ft Direction West Order 1 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 395.0 m Elevation 666 ft Direction West Order below confluence 2

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

- ☐ Do not represent a stream confluence.
☒ Site is located upstream from the confluence and between the 2 water sources.
☐ Site is located upstream from the confluence, but not between the 2 water sources.
☐ Site is located downstream from the confluence.
☐ None of the above apply.

COMMENTS: This is a low density prehistoric artifact scatter and historic domestic site found along an eroded terrace of the Ohio River. A stone foundation from the former ca.1870-1930s Kenyon-Emerick house was located on a small bench. An abandoned building (recorded on a PHRS form as Unnamed Garage) is nearby. A driveway runs past the garage towards the foundation. The artifact scatter is between the foundation and garage. The site is much smaller than that reported on the original site form by an avocational archaeologist. All artifacts were recovered within the Ap horizon. On a follow-up visit to the site, the garage was burned down and now represents a second foundation associated with the site.

**ATTACH PHOTOGRAPHS OR DRAWINGS OF DIAGNOSTIC ARTIFACTS WITH SCALE.
 IDENTIFY LITHIC MATERIAL TO ARTIFACTS USING DESCRIPTION OR KEY.**

GENERAL SITE PHOTOGRAPHS OR EXCAVATION PHOTOGRAPHS OR DRAWINGS MAY ALSO BE INCLUDED.

We encourage the inclusion of as many illustrations as possible.



Photograph 1 Burned Unnamed Garage Area



Photograph 2 Intact Foundation Remnant of Former Kenyon-Emerick House

SITE NAME Montgomery Dam SITE NUMBER 36-BV-0131 DATE 09/28/2009**ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)**7.5 QUAD NAME Midland EDITION 1954 UP 10cm ACROSS 4cm

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

U.T.M. COORDINATES: ZONE 17 NORTHING 4499795 EASTING 0552118**ATTACH SEPARATE SKETCH MAP OF SITE AND/OR PORTION OF 7.5 MIN USGS MAP WITH SITE BOUNDARIES INDICATED.**OWNER John P. and Jerome P. Oliver, and CSX Transportation, Inc. ADDRESS J. Oliver, 1768 N. Main St. Butler, PA: CSX Transportation, attn. Becky Snyder, 500 Water St. (C910), Jacksonville, FL 32202

TAX PARCEL ID _____ TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCALCOLLECTION LOCATIONS Temporary: GAI Consultants, 385 East Waterfront Drive, Homestead PA, 15120
Permanent: Pennsylvania Bureau for Historic Preservation, Commonwealth Keystone Building, 2nd Floor, 400 North Street, Harrisburg PA

INFORMANTS _____

RECORDING REASON

- ☐
- Informant Interview/Amateur Survey
-
- ☒
- State or Federal Compliance Survey
-
- ☐
- PHMC Grant

- ☐
- Non-PHMC institution affiliated research
-
- ☐
- PHMC Research
-
- ☐
- Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION _____

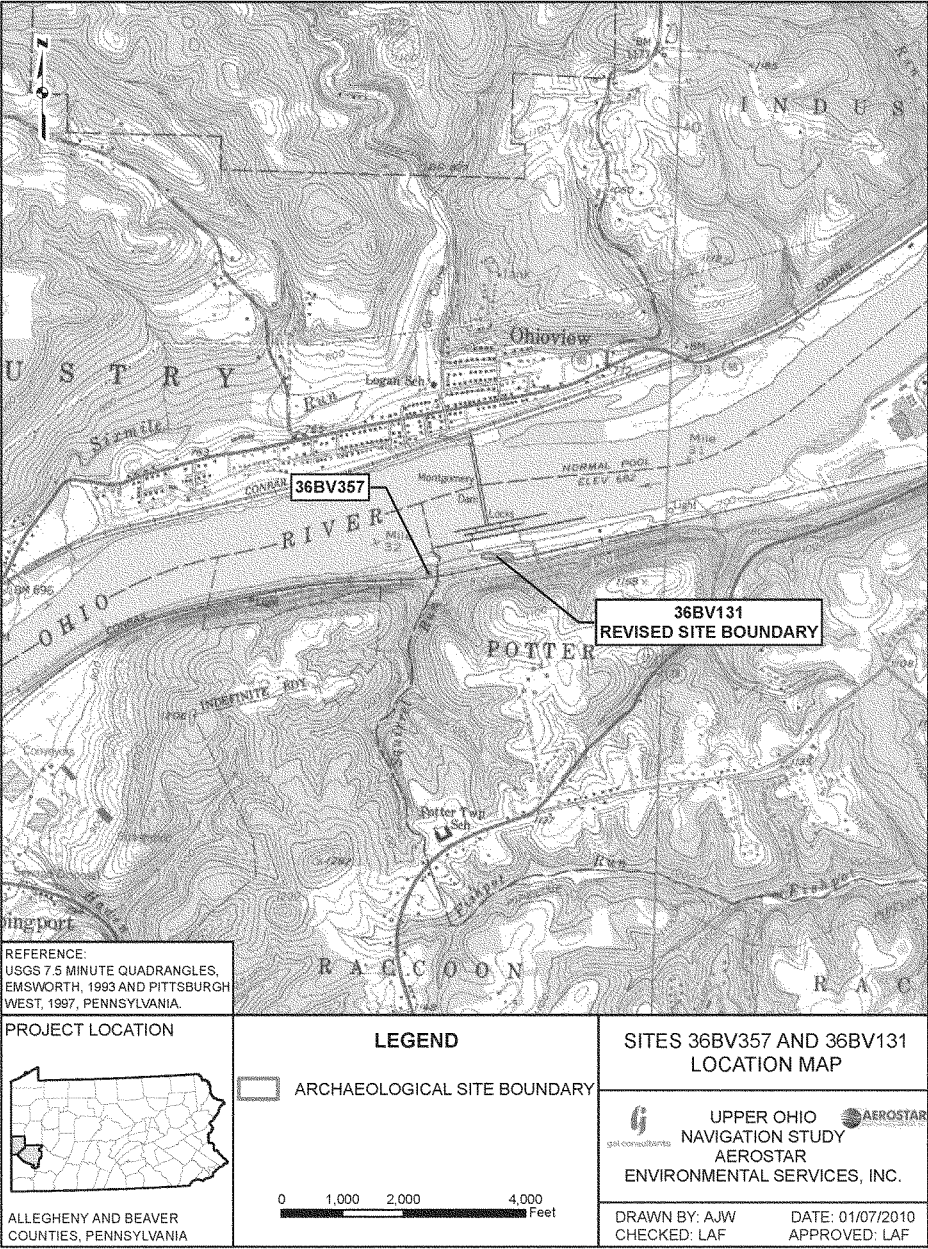
SUBMITTED BY GAI Consultants, Inc. ADDRESS 385 East Waterfront DriveCITY Homestead STATE PA DATE 09/14/2009PHONE NUMBER 412-476-2000 x1205 EMAIL ADDRESS lfrye@gaiconsultants.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION _____

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.Completed forms should be sent to:
Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093



SITE NAME Montgomery Dam 2 SITE NUMBER 36-BV-0357 DATE 09/28/2009

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME Montgomery Dam 2 SITE NUMBER 36BV0357 UPDATE? ☒ Y ☐ N

PUBLISHED REFERENCES (Including compliance reports.)

ER# 1997-1617-042-FCOUNTY BeaverTWP PotterNEAREST TOWN Monaca

Site Characteristics

SITE AREA 25 SQUARE METERS BASIS: ☒ COMPUTED ON THE GROUND OR ☐ COMPUTED ON MAPSTRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILESITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- | | |
|---|--|
| ☐ Unknown | ☐ Auger probing |
| ☐ Collector interview | ☒ Shovel testing |
| ☐ Collector interview with field check | ☐ Systematic test units |
| ☐ Non-systematic surface survey | ☐ Extensive excavation |
| ☐ Systematic surface survey | |
| ☐ Systematic shovel testing | |
| ☐ Remote sensing | |

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
☐ None
☐ Low potential for organic preservation
☐ Conditions favorable for organic preservation, none documented
☐ Organic material recovered, unknown quality of preservation
☐ Organic material recovered, poor quality of preservation
☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
☐ Open habitation, prehistoric
☐ Rockshelter/Cave
☐ Quarry
☒ Lithic Reduction
☐ Village (including historic Indian)
☐ Shell Midden
☐ Earthwork
☐ Petroglyph/Pictograph
☐ Burial Mound
☐ Cemetery
☐ Other specialized aboriginal site
☐ Isolated flute point locus

- ☐ Isolated find (diagnostic artifact)
☐ Paleontological site
☐ Path

Historic

- ☐ Historic and Prehistoric
☐ Domestic Site
☐ Military Site
☐ Industrial Site
☐ Shipwreck Site
☐ Commercial Site
☐ Religious Site
☐ Unknown/other/multiple types
☐ Farmstead

CHRONOLOGY (check all that apply)

Prehistoric

- ☒ Unknown Prehistoric
- ☐ Paleoindian
- ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
- ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
- ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
- ☐ 1700-1725 ☐ 1725-1750
- ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
- ☐ 1800-1825 ☐ 1825-1850
- ☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-
- ☐ 1900-1925 ☐ 1925-1950
- ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☐ Historical Documentation
- ☐ Ceramic types
- ☐ Radio Carbon Dates (list below)

RADIO CARBON DATES _____ ± _____
_____ ± _____

FEATURES? ☒ NONE FOUND ☐ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel

Quantity	Historic Features
	Cellar
	Cemetery
	Cistern
	Dam
	Ditch

Quantity	Historic Features
	Fence/line
	Flower Garden/Bed
	Fortification
	Foundation
	Ice House

SITE NAME Montgomery Dam 2 SITE NUMBER 36-BV-0357 DATE 09/28/2009

Quantity	Historic Features
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker
	Oil Well
	Other, Historic _____
	Oven

Quantity	Historic Features
	Pipeline
	Pit
	Posthole/Postmold
	Privy
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck

Quantity	Historic Features
	Springhouse/Springbox
	Standing Building or Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☐ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
6	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common
---	-----------------

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above. Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

SITE NAME Montgomery Dam 2 SITE NUMBER 36-BV-0357 DATE 09/28/2009

	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorget/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
B	Stone Debitage	6 chert
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

Architectural	Farm Tools	Kitchen (Domestic)
Personal	Arms/Weapons	Industrial Tools

Examples:

D	Glass	50 Architectural / 29 Kitchen
G	Metal	Architectural

Quantity	Historic Artifact	Group
	Brick	
	Buttons	
	Ceramics (Historic)	
	Clay Pipes (Historic)	
	Coins	
	Glass	
	Glass Trade Beads	
	Gunflints	

Quantity	Historic Artifact	Group
	Jewelry	
	Metal	
	Non-diagnostic ceramics	
	Redware	
	Strike-a-Light	
	Textiles	
	Toys	

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above. Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
-----	Paleoindian Points	-----
	Pre-Clovis	

Quantity	Prehistoric Point Types	Material
	Clovis	
	Mid-Paleo (Folsom)	

SITE NAME Montgomery Dam 2 SITE NUMBER 36-BV-0357 DATE 09/28/2009

Quantity	Prehistoric Point Types	Material
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
-----	Early Archaic Points	-----
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
-----	Middle Archaic Points	-----
	Bifurcate Points	
	Middle Archaic	
	Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
-----	Late Archaic Points	-----
	Piedmont Tradition	
	Laurentian Tradition	
	Steubenville	

Quantity	Prehistoric Point Types	Material
-----	Transitional Tradition	-----
	Koens Crispins/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
-----	Early Woodland Points	-----
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
-----	Middle Woodland Points	-----
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
-----	Late Woodland Points	-----
	Triangles (Late Woodland)	
-----	Proto Historic Points	-----
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include "grit" , "grog" or "shell".)

Quantity	Prehistoric Ceramics	Temper
-----	Early Woodland Ceramics	-----
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-Conical/Globular)	
-----	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	-----
	Abott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net	

Quantity	Prehistoric Ceramics	Temper
	Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net	
	Impressed-Conical/Globular	
	Watson Cord Marked	
-----	Late Woodland Ceramics	-----
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemsons Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle	

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Quantity	Prehistoric Ceramics	Temper
	Undifferentiated	
	Meade Island Series	
	Minguanan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	

Quantity	Prehistoric Ceramics	Temper
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Ceramics

Quantity	Historic Ceramics
	American Stoneware (Blue and Gray)
	Basalt
	Chinese Porcelain
	Cream-Colored Ware
	Creamware
	Dry-Bodied (Engine Turned)
	English Brown Stoneware

Quantity	Historic Ceramics
	English Porcelain
	Fulham
	Ironstone
	Jackfield
	Nottingham
	Pearlware (All Decoration Types)
	Rhenish
	Rockingham

Quantity	Historic Ceramics
	Scratch Blue/Brown Salt-Glaze Stoneware
	Tin-Glazed Earthenware
	Whieldon
	White Salt-Glaze Stoneware
	White Ware (Transitional)
	Yellowware

Physical Data and Site Condition Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Conotton gravelly Loam SOIL MAPPING UNIT Coc

Most common other mapped SOIL UNIT(S) within 500 meters Weikert-Rock outcrop complex (WeF) (may list two)

MAP ELEVATION (Site Elevation: 760 ft) _____ SLOPE PERCENTAGE 8%-15% SLOPE DIRECTION North

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Glenshaw Most predominant other BEDROCK(S) within 5 km Vanport and Casselman (may list two)

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau Section (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE _____)

TOPOGRAPHIC SETTING (check the one that best describes the setting):

☐ Island

☐ Beach

☐ Floodplain

☐ Rise in Floodplain

☒ Terrace (Pleistocene along river)

☐ Lower Hillslope

☐ Middle Hillslope

☐ Upper Hillslope

SITE NAME Montgomery Dam 2 SITE NUMBER 36-BV-0357 DATE 09/28/2009

- ☐ Stream Bench (along low order stream)
☐ Hill/Ridge Toe

- ☐ Upland Flat
☐ Hilltop
☐ Ridge Top

- ☐ Saddle

IMMEDIATE VEGETATION Mixed Hardwoods and low brush PERCENTAGE OF SITE STILL INTACT UnknownPRIMARY DISTURBANCE Railroad & rechannelization of Squirrel Run POSSIBILITY OF DESTRUCTION Unknown

Water Drainage Area Information Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Squirrel RunNEAREST WATER: Distance 60 m Elevation 800 ft Direction East Order 1 Type Perennial Stream2ND NEAREST WATER: Distance 116.7 m Elevation 666 ft Direction North Order 2 Type Perennial River

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 137.8 m Elevation 666 ft Direction North Order below confluence 3

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

- ☐ Do not represent a stream confluence.
☐ Site is located upstream from the confluence and between the 2 water sources.
☐ Site is located upstream from the confluence, but not between the 2 water sources.
☒ Site is located downstream from the confluence.
☐ None of the above apply.

COMMENTS: This is a low density prehistoric lithic scatter found along a low, eroded wooded terrace south of the Ohio River, and west of Squirrel Run. The area surrounding the site is either disturbed or steep slopes.

ATTACH PHOTOGRAPHS OR DRAWINGS OF DIAGNOSTIC ARTIFACTS WITH SCALE. IDENTIFY LITHIC MATERIAL TO ARTIFACTS USING DESCRIPTION OR KEY.

GENERAL SITE PHOTOGRAPHS OR EXCAVATION PHOTOGRAPHS OR DRAWINGS MAY ALSO BE INCLUDED.

We encourage the inclusion of as many illustrations as possible.



Photograph 1 Typical Shovel Test Pit (STP 26)



Photograph 2 Crew digging Shovel Test Pit

SITE NAME Montgomery Dam 2 SITE NUMBER 36-BV-0357 DATE 09/28/2009**ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)**7.5 QUAD NAME Midland EDITION 1954 UP 9.5cm ACROSS 5cm

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-U.T.M. COORDINATES: ZONE 17 NORTHING 4499652 EASTING 0551698**ATTACH SEPARATE SKETCH MAP OF SITE AND/OR PORTION OF 7.5 MIN USGS MAP WITH SITE BOUNDARIES INDICATED.**OWNER CSX Transportation, Inc. ADDRESS CSX Transportation, Inc., attn: Becky Snyder, 500 Water Street (C910),
Jacksonville, FL 32202

TAX PARCEL ID _____ TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCALCOLLECTION LOCATIONS Temporary: GAI Consultants, 385 East Waterfront Drive, Homestead PA 15120
Permanent: Pennsylvania Bureau for Historic Preservation, Commonwealth Keystone Building, 2nd Floor, 400 North Street,
Harrisburg PA

INFORMANTS _____

RECORDING REASON

- ☐
- Informant Interview/Amateur Survey
-
- ☒
- State or Federal Compliance Survey
-
- ☐
- PHMC Grant

- ☐
- Non-PHMC institution affiliated research
-
- ☐
- PHMC Research
-
- ☐
- Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION _____

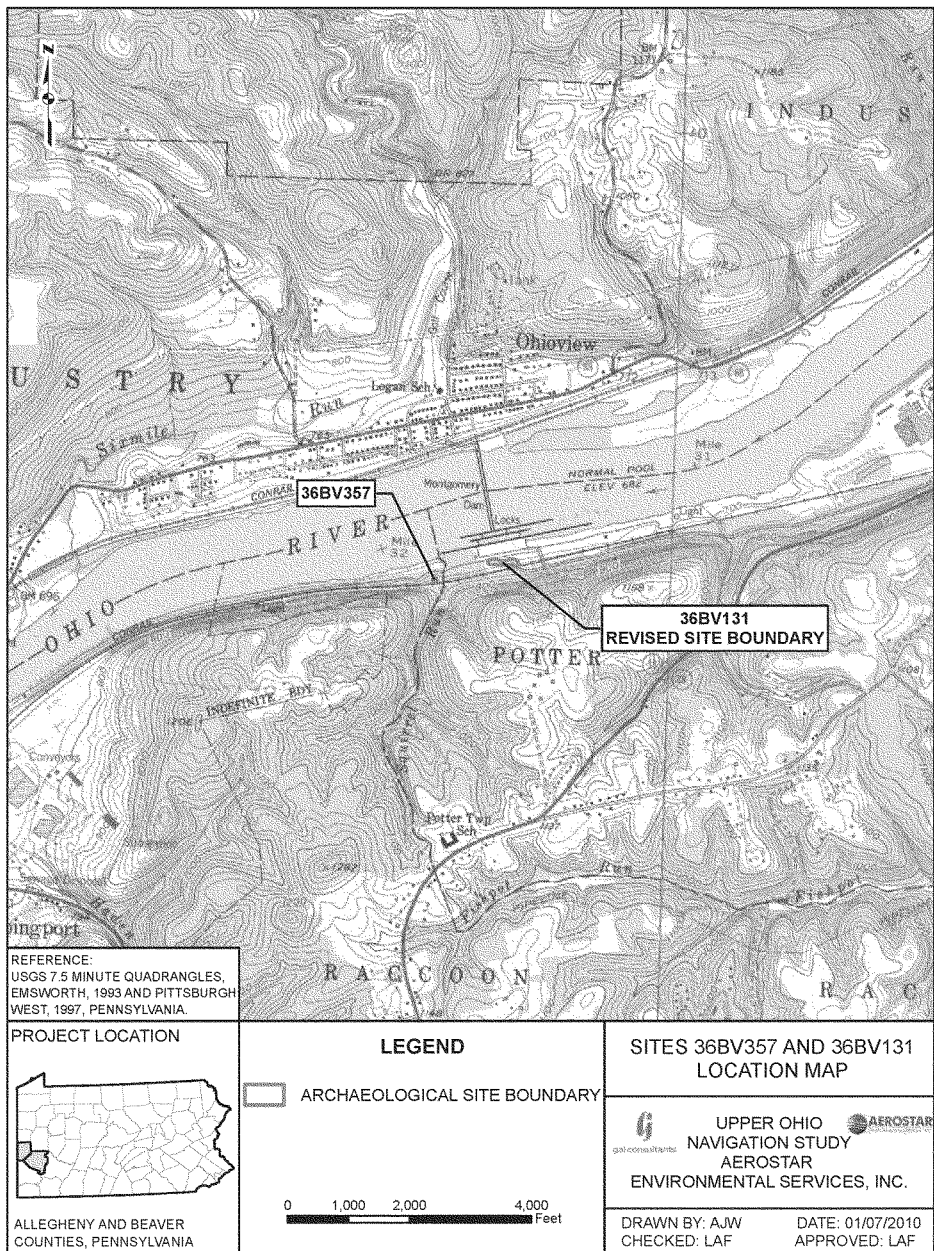
SUBMITTED BY GAI Consultants, Inc. ADDRESS 385 East Waterfront DriveCITY Homestead STATE PA DATE 09/14/2009PHONE NUMBER 412-476-2000 x1205 EMAIL ADDRESS l.frye@gaiconsultants.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION _____

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.Completed forms should be sent to:
Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093



APPENDIX D

ARTIFACT CATALOGS

36AL0600 Dashields Dam Historic Catalog

Fs	Stp	Strat	Lev	Elev	Count	Class	Sub-Class	Ware Type/Object	Form	Beg Date	End Date	Reference
1	1	I	1	0.25 cmbs	1	Kitchen	Ceramics	whiteware, plain	base, footring	1830	2008	Price 1979; Noel Hume 1980
1	1	I	1	0.25 cmbs	2	Kitchen	Ceramics	whiteware, plain	body	1830	2008	Price 1979; Noel Hume 1980
					3	TOTAL						

36AL0600 Dashields Dam Lithic Catalog

Fs	Stp	Strat	Elev	Count	Weight	Material Type	Class	Type	Cortex	Length	Width	Thick	Point Type	Comments
2	2	II	24-59 cmbs	1	1.53	Black Chert	Biface	Ind Biface Frag	Absent	6.6				maybe Onondaga Chert
3	R2	III	35-52 cmbs	2	0.54	Black Chert	Debitage	Biface Reduction	Absent					maybe Onondaga Chert
3	R2	III	35-52 cmbs	1	0.28	Black Chert	Debitage	Flake Fragments	Cobble					maybe Onondaga Chert
3	R2	III	35-52 cmbs	1	0.49	Tan Chert	Debitage	Early Reduction	Cobble					
4	4	III	41-52 cmbs	1	0.26	Black Chert	Debitage	Biface Reduction	Absent					maybe Onondaga Chert
4	4	III	41-52 cmbs	1	0.28	Black Chert	Debitage	Flake Fragments	Absent					maybe Onondaga Chert
5	R2	III	34-52 cmbs	1	2.16	Gray Chert, Fossiliferous	Biface	Projectile Points	Absent		18.3	5.6	Brewerton Side-notched	Late Archaic, tip missing
6	R6	IV	45-56 cmbs	2	0.22	Laurel Chert	Debitage	Flake Fragments	Absent					
7	5	III	46-56 cmbs	1	0.32	Laurel Chert	Debitage	Flake Fragments	Absent					
				11	TOTAL									

36BV131 Montgomery Dam Historic Catalog

Fs	Stp	Strat	Lev	Elev	Count	Class	Sub-Class	Ware Type/Object	Decor/Man Tech	Color	Motif; Emb; Marks	Form	Beg	End	Reference
2	R4	1	1	0-20 cmbsgs	1	Activities	Activities-Other	Wire							
2	R4	1	1	0-20 cmbsgs	1	Faunal	Bone	Bone							
2	R4	1	1	0-20 cmbsgs	1	Unidentifiable	Indeterminate	Metal rod							
3	14	1	1	0-20 cmbsgs	1	Architecture	Nails,Spikes,Etc.	Nail, wire					1880	2008	Nelson 1968; IMAC 1984
5		Surface	0		1	Kitchen	Bottles/Jars	Beverage Bottle	Crown finish; Stippled, Embossed	clear	"Dad's, No Deposit, Half Gallon" "Patent Pending Copyright By Oats-Rout Beer Co Chicago Ill" Fairmont Glass Works	Whole bottle	1933	1968	Toulouse 1971; Lief 1965
5		Surface	0		1	Kitchen	Bottles/Jars	Mason jar	Embossed; Standardized screw thread	clear	"Atlas Strong Shoulder Mason"	Whole jar	1919	2009	Deiss 1981
6		Surface	0		1	Kitchen	Bottles/Jars	Mason jar	Embossed; Standardized screw thread	clear	"Ball"	Whole jar	1919	2009	Deiss 1981; Toulouse 1971
7	J1	A	0	0-75 ft	1	Architecture	Nails,Spikes,Etc.	Nail, indeterminate							
7	J1	A	0	0-75 ft	2	Architecture	Window Glass	Window glass		clear					
7	J1	A	0	0-75 ft	1	Furnishings	Lighting	Chimney lamp glass		clear		body			
7	J1	A	0	0-75 ft	1	Furnishings	Lighting	Chimney lamp glass		clear		rim			
7	J1	A	0	0-75 ft	3	Kitchen	Bottles/Jars	Bottle glass		clear		body			
8	J2	A	0	0-5 ft	6	Architecture	Window Glass	Window glass		clear					
8	J2	A	0	0-5 ft	1	Kitchen	Ceramics	Eathenware		tan		handle			
9	J3	A	0	0-5 ft	1	Architecture	Nails,Spikes,Etc.	Nail, indeterminate							
10	J1 R1	A	0	0-75 ft	1	Kitchen	Bottles/Jars	ironstone	Chip			body	1840	2009	Wetherbee 1980
11	J1 R2	A	0	0-6 ft	1	Architecture	Window Glass	Window glass		clear					
11	J1 R2	A	0	0-6 ft	2	Kitchen	Ceramics	Whiteware, plain				body	1830	2009	Price 1979; Noel Hume 1980
11	J1 R2	A	0	0-6 ft	1	Kitchen	Ceramics	Whiteware, plain	Chip			body	1830	2009	Price 1979; Noel Hume 1980

Fs	Stp	Strat	Lev	Elev	Count	Class	Sub-Class	Ware Type/Object	Décor/Man Tech	Color	Motif: Emb: Marks	Form	Beg	End	Reference
12	J1 R5	A	0	0-5 ft	1	Architecture	Window Glass	Window glass		tinted					
12	J1 R5	A	0	0-5 ft	1	Kitchen	Ceramics	Yellowware, plain				body	1830	1900	Ketchum 1987
13	J1 R6	A	0	0-85 ft	1			NCM							
13	J1 R6	A	0	0-85 ft	6	Kitchen	Bottles/Jars	Bottle glass		light blue		base			
13	J1 R6	A	0	0-85 ft	1	Kitchen	Ceramics	Stoneware, buff	Gray saltglaze ext & red wash int			body			
13	J1 R6	A	0	0-65 ft	4	Unidentifiable	Indeterminate	Plastic, fragment		white					
14	J1 R8	A	0	0-85 ft	1	Kitchen	Ceramics	Whiteware, handpainted	Indeterminate motif	medium blue		body	1840	1860	Lafrenum et al 1982; Majewski & Obrien 1984
					43	TOTAL									

36BV131 Montgomery Dam Lithic Catalog

Fs	Area	Stp	Strat	Lev	Elev	Count	Weight	Material Type	Class	Type	Cortex	Thick	Comments
1	Test Area B		13	1	1	0-18 cmbs	1 4.9	Upper Mercer-Conthodon	Biface	Int Biface Frag	Absent	8	possibly a biface split

36BV0357 Montgomery Dam 2 Lithic Catalog

Fs	Stp	Strat	Lev	Elev	Count	Weight	Material Type	Class	Type	Cortex
1	26	II	2	12-23 cmbgs	1	0.31	Uniontown	Debitage	Flake Fragments	Absent
2	R1	II		23-43 cmbgs	1	10.16	Gull River	Debitage	Decortication Flakes	Cobble
2	R1	II		23-43 cmbgs	1	0.74	Uniontown	Debitage	Flake Fragments	Absent
2	R1	II		23-43 cmbgs	1	0.16	Black Chert	Debitage	Flake Fragments	Absent
3	R2	II		14-25 cmbgs	2	2.58	Monongehela	Debitage	Biface Reduction	Absent
					6	TOTAL				

Isolated Find Catalog

Fs	Stp	Strat	Lev	Elev	Count	Class	Sub-Class	Ware Type/Object
4	19	I	1	0-10 cmbgs	1	Unidentifiable	Indeterminate	Misc metal

Non-site Catalog

Fs	Stp	Strat	Lev	Elev	Count	Class	Sub-Class	Ware Type/Object	Manufacturing Tech	Color	Motif, Embossment, Makers Mark	Form	Beg Date	End Date	Reference
1	1	1	1	0-90 cmbs	1	Kitchen	Bottles/Jars	Bottle glass, indeterminate	standardized screw threads	cobalt	"Made in U.S.A." "Genuine Phillips" Hazel Atlas "11Z"	bottle, whole	1920	1960	IMAC 1984; Toulouse 1971
1	1	1	1	0-90 cmbs	1	Kitchen	Ceramics	Hardpaste Porcelain, Underglaze Decal 1897-present		blue, light, green, medium, pink, yellow	"11-CC" "Syracuse" "China"	bowl			
1	1	1	1	0-90 cmbs	1	Activities	Writing	inkwell/inkstand bottle	incised, machine made, stippled	clear	"Parker" "Made in USA" "Z" or "99 CC" "Z", "A" with circle around it, American Glassworks or Armstrong Cork Co. (Same insignia, diff dates)	inkwell	1908	1935	Toulouse 1971
1	1	1	1	0-90 cmbs	6	Kitchen	Kitchenware - other	lid or cover, jar				lid			
1	1	1	1	0-90 cmbs	1	Activities	Activities-Other	lipstick/balm container		gray, pink, white, opaque	"Made in USA" "Patent Pending"				
1	1	1	1	0-90 cmbs	1	Personal	Pharmaceutical	pharmaceutical bottle/jar	cup bottom mold, machine made, standardized screw threads	clear	Dosing lines on front of bottle, "1Z" in circle on neck, "Illinois", Owens Illinois, "18" "9" on either sides of mark	bottle	1932	1943	Toulouse 1971
1	1	1	1	0-90 cmbs	1	Personal	Pharmaceutical	pharmaceutical bottle/jar		clear	"TCW Co." "Type Z" "9" "USA" T.C. Watson Co. Millvale, NJ	bottle	1888	2008	Toulouse 1971
1	1	1	1	0-90 cmbs	1	Activities	Toys	Toys, General		blue, medium, yellow					

APPENDIX E
EXCAVATION DOCUMENTS



Upper Ohio Navigation Study, Pennsylvania

Excavation/Trenching Plan

This Excavation/Trenching Plan has been prepared in conformance with Section 25 of the US Army Corps of Engineers Safety and Health Requirement Manual EM 385-1-1, dated September 15, 2008.

- A. Conditions. Three backhoe trenches (geomorphology mechanical trenches) are to be excavated in a disused, former industrial site along the east bank of the Ohio River immediately downstream of Dashields Dam to enable the geomorphologist to assess the landforms for prehistoric archeological site potential and to evaluate the potential for deeply buried archeological resources.
- B. Credentials of the Competent Person. The designated competent persons are Dr. David Cremeens, who is a certified professional soil scientist with over twenty years of experience in performing soil investigations of this type, and F. Michael Anderson, GAI's Corporate Safety Officer. Their resumes are attached. Mr. Anderson will remain topside while Dr. Cremeens does his work within the excavations.
- C. Area of Proposed Work. The locations of the trenches are shown by the three nearly parallel, solid red lines in the area on the east river bank that is denoted "19.2 Acres, Primary" (Figure 1). The trenches will not exceed 30 meters in length with a ramp at either end for ingress/egress.
- D. Projected Depth of the Excavation. Typically, the trench excavations to be entered by the geomorphologist are not expected to exceed 2 to 3 meters in depth. Also, the trenches will extend no deeper than the water table or to such depth that instability of the side slopes or trench bottom precludes their further deepening. In any case, the trenches are not expected to exceed 5 meters in depth.
- E. Projected Soil Type and Method of Testing to Determine Soil Type. The projected soil types are expected to be similar to those encountered in trenches excavated earlier within the same landform on the east bank of the Ohio River, approximately one mile to the north. At that location, in terms defined in Table 25-1 of EM 385-1-1, a sequence of Type A and B soils was found to overlie deeper-lying Type C soils, (Gray & Pape, 2002; Geoarcheology Research Associates, Inc, 2009). For purposes of this Excavation Plan, it is assumed that the competent person will enter the trench only where Type A and B soils are present. The competent person will not enter the trench where Type C soils are present, although the trench may extend into Type C soils, in which case those soils will be viewed from outside the trench. The competent person will classify the soils as the excavation proceeds using visual characteristics, the plasticity/wet thread test,

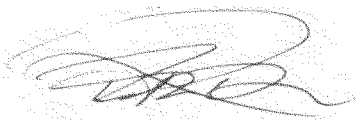
and the pocket penetrometer to estimate the unconfined compressive strength of soils that exhibit cohesive characteristics. The competent person will be vigilant for conditions exposed in the excavation that could potentially influence the stability of the excavation or otherwise promote a dangerous workplace. These conditions include, for example, seeps, running sand, soft soil zones, pre-existing slip surfaces/discontinuities, concrete slabs and rubble, reinforcing bars, and the like.

- F. Planned Method of Shoring, Sloping, and Benching. As required by Article 25.C.01 of EM 385-1-1, slopes and benches will be excavated in accordance with OSHA (29 CFR 1926, Subpart P, Appendix B). The base width of each trench is anticipated to be 1.5 meters, or the width of an excavator bucket. Trenches in Type A and/or Type B soils that are no more than 1.5 meters (5 feet) in depth, and for which the competent person determines there to be no potential for cave-in, will be provided with a means of egress (a ladder or ramp), but no protective system. Trenches in Type A and/or Type B soils that exceed 1.5 meters in depth but are no deeper than 6 meters (and typically will be no deeper than 2 to 3 meters) will be provided with a means of egress and will be excavated with a multiple bench system so as to maintain overall side slopes no steeper than 1H:1V (45 degrees). Refer to the accompanying sketch (Figure 2). The Registered Professional Engineer who prepared this plan will be consulted in the event that a technical decision is required as to the degree of flattening required to achieve stable conditions. Diversion ditches will be excavated as necessary to prevent surface water from entering an excavation. It is emphasized that the excavations will have no vertically lowered portions in Type C soils unless the excavation has first been vacated by the competent person and the vertically lowered section is viewed from outside the excavation.
- G. Planned Method for Confined Space Entry, Trench Access and Egress and Atmospheric Monitoring Process. The excavation is not exposed to members of the public or vehicles and equipment. Where the trench excavation is over 1.2 meters (4 feet) in depth, ladders or other means of egress, such as ramps at least 4 feet wide, will be provided so as to require no more than 25 feet of lateral travel. At least two means of exit will be provided for personnel working in an excavation. Should the width of the excavation exceed 100 feet, two or more means of exit will be provided on each side of the excavation. The atmosphere will be monitored within any excavation greater than four (4) feet in depth using an air monitoring device.
- H. Location of Utility Shut-Offs. No utilities are located within the excavation area or within a distance laterally of at least ten times the planned depth of the trench.
- I. Proposed Methods of Preventing Damage to Overhead Utility Lines, Trees Designated to Remain, and Other Man-Made Facilities or Natural Features

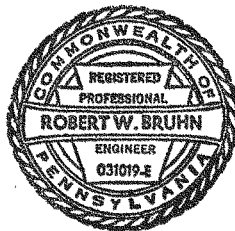
Designated to Remain Within or Adjacent to the Construction Rights of Way. No overhead utility lines, trees, or features designated to remain (either man-made or natural) are present within the area where the trenches are to be excavated.

- J. Plan for Management of Excavated Soil/Asphalt/Concrete. Materials excavated from the trenches are anticipated to consist primarily of soil and rock particles, but may include some concrete or other such materials. These materials will be stockpiled alongside the trench during the course of the excavation. The stockpiled material will be placed no closer than five feet to the edge of the pit at a slope no steeper than the angle of repose of the material. The material will be returned to the pit upon completion of the investigation. The material will be placed in the pit in one to two foot lifts and will be tamped by the excavator bucket.
- K. Plan for Traffic Control. No traffic will be present within the area of investigation except for vehicles associated with the investigation itself. All vehicles will be prohibited from approaching the any closer than 50 feet to the edge of the excavation and associated stockpiles of excavated material by a series of traffic cones and yellow ribbon surrounding the work area.
- L. Digging Permits (Excavation Permits). The Contractor will make the required Pennsylvania One Call for utility location and will review any utility location information from the Corps. (The PA One Call reference number is 20091892711.) Present information is that no utilities are present onsite. It is understood that no excavation permit will be required for this investigation.
- M. Certification of UXO clearance. This site is not known or suspected to contain explosives, unexploded munitions, or military ordnance. Surface and subsurface clearance by qualified explosive ordnance disposal personnel is not required.
- N. For Cofferdams. Not applicable.

Prepared by,
GAI Consultants, Inc.



Robert W. Bruhn, P.E.



PE0301019E
(Exp 9/30/2009)

References

Geoarcheology Research Associates, Inc (2009). Interim Geomorphological Report for Archeological Site 36AL480, Including Areas 1, 2, 3 South, Casting Basin, Back Channel, and Phase II Blocks, Leetsdale Industrial Park, Leetsdale, Allegheny County, Pennsylvania. Prepared for Greenhorne & O'Mara, Inc. under contract to US Army Corps of Engineers, Pittsburgh District, March 2009.

Gray & Pape (2002). Geomorphology of Archaeological Site 36AL480 at Leetsdale Industrial Park, Leetsdale, Allegheny County, Pennsylvania. Prepared for US Army Corps of Engineers, Pittsburgh District by Gray & Pape, Inc., Cincinnati, OH, March 11, 2002.

FIGURES

FIGURE 1

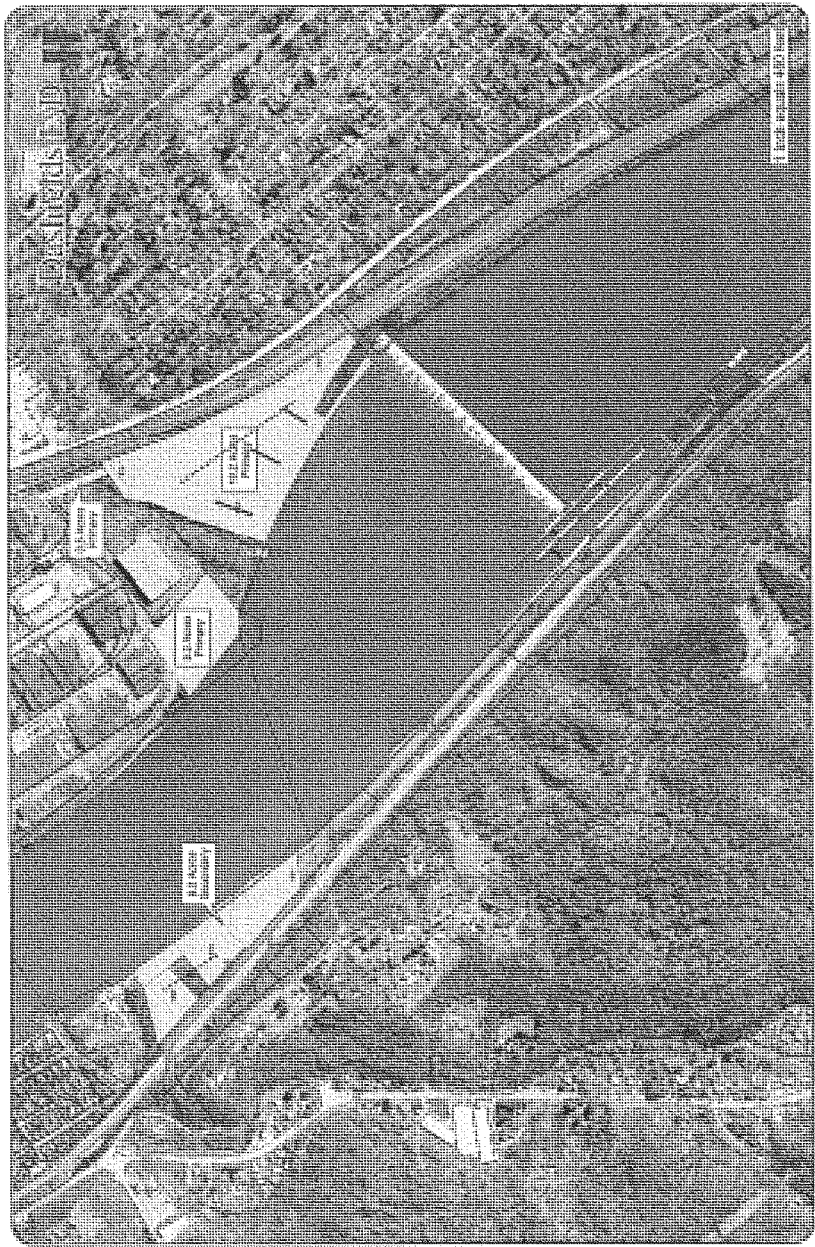


Figure 1. Dashiels Primary and Secondary Work Areas (Cultural resource testing shown as solid and dotted red lines)

Figure 2

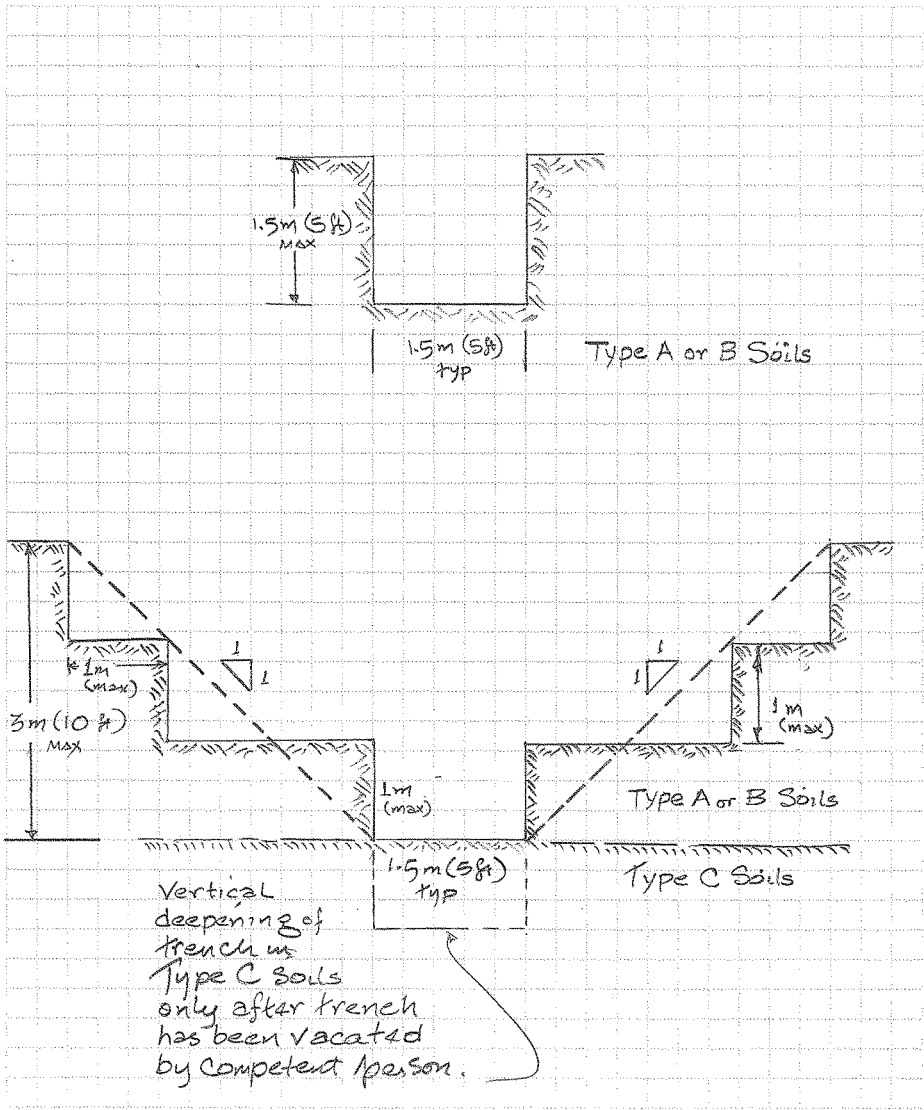


gai consultants

SUBJECT TYPICAL TRENCH PROFILE

BY [Signature] DATE 4 July 09 PROJ. NO. _____

CHKD. BY _____ DATE _____ SHEET NO. _____ OF _____



Erosion and Sedimentation Control Plan

**AEROSTAR Environmental Services, Inc.
Upper Ohio Navigation Study Project
Edgeworth Borough, Allegheny County, Pennsylvania**

**AEROSTAR Project 0109-251-19
GAI Project C070839.03, Task 005.02
July 2009**

**Prepared For: AEROSTAR Environmental Services, Inc.
11181 St. Johns Industrial Parkway North
Jacksonville, Florida 32246**

**Prepared By: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005**



Erosion and Sedimentation Control Plan, AEROSTAR Environmental Services, Inc.
Upper Ohio Navigation Study Project, Edgeworth Borough, Allegheny County, Pennsylvania

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Erosion and Sedimentation Control Plan, AEROSTAR Environmental Services, Inc.
Upper Ohio Navigation Study Project, Edgeworth Borough, Allegheny County, Pennsylvania

1.0 PROJECT OVERVIEW

1.1 Project Description and Purpose

This Erosion and Sedimentation Control Plan (E&SCP) sets forth a work plan for a portion of the construction of AEROSTAR Environmental Services, Inc. (AEROSTAR's) proposed Upper Ohio Navigation Study Project (Project), located in Edgeworth Borough, Allegheny County, Pennsylvania (PA). The Project involves three archeological digs consisting of backhoe trenches that will not exceed 20 meters in length, six meters in width, and four meters in depth.

The purpose of this E&SCP document is to minimize and/or avoid potential adverse environmental impacts due to the construction activities associated with archeological test digs. The proposed practices are intended to maintain, to the fullest extent practicable, the integrity of sensitive resources such as wetlands and streams or protected habitats, if any, located within the work areas. This document was prepared in accordance with the PA Department of Environmental Protection's (PaDEP's) *Erosion and Sediment Pollution Control Program Manual*, dated April 2000;

The Upper Ohio Navigation Study, PA, is a feasibility planning study for alternatives to modernize the Dashields lock and dam facility on the Ohio River in PA. The Phase I limited archaeological field investigation of the site area will include three backhoe trenches and approximately 30 shovel pit tests. It is also assumed that the total dimensions of each backhoe trench will not exceed 20 meters in length, six meters in width, and four meters in depth.

1.2 Acreage Disturbed

The total area to be disturbed is approximately 2.8 acres.

1.3 Project Date

Construction is scheduled for the summer of 2009.

1.4 Plan Preparers

The principal preparers of this E&SCP are Mr. Allan D. Schuck, Engineer-in-Training, and Mr. Kevin P. Resnik, Engineer-in-Training, of GAI Consultants, Inc. (GAI), Pittsburgh Office, 385 East Waterfront Drive, Homestead, PA (412-476-2000). Mr. Schuck has over five years of environmental compliance experience, including the preparation and review of E&SCPs. Mr. Resnik has less than one year of environmental compliance experience.

2.0 FACILITY DESCRIPTION

2.1 Topographic Features

The Project site is characterized by flat to moderately sloped areas adjacent to the Ohio River. The existing site is made up of open areas with good vegetation and wooded areas. Stormwater runoff normally follows well-established natural watercourses throughout the area. The location of this Project area is indicated on the United States Geological Survey topographic map provided on Figure 1, Project Location Map.

2.2 Soils

Based on the *Soil Survey of Allegheny County, Pennsylvania* (United States Department of Agriculture, Soil Conservation Service, 2000), the soils in the Project area are classified as URB - Urban Land-Rainsboro complex, gently sloping.

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The Urban land-Rainsboro complex, URB, is a moderately well drained soil with a very deep depth to bedrock. This soil has no flooding potential. URB is not prime farmland. The soil is classified as partially hydric with components typical of flood plains and depressions. This soil has a moderate erosion hazard rating.

Locations of soils are provided on the Soils Map (Figure 2).

2.3 Past, Present, and Proposed Land Uses and Alterations

The Project area contains wooded and open land areas with good vegetative cover. The proposed Project will consist of three archeological dig locations. The ground disturbance will be temporary and there will be no permanent changes to the topography of the land. An existing access road will be used to access the Project location. No upgrades to the access road are anticipated.

2.4 Amount of Runoff

Runoff volume generated from disturbed areas will be low to moderate and primarily dependent on pre-existing moisture conditions.

The runoff will be corrected with sediment barriers. Filter fabric fence will be installed down gradient of construction activities and soil stockpiles to minimize any accelerated sediment runoff; therefore, no permanent adverse effects are anticipated during construction.

2.5 Recycling and Disposal Methods

Litter will be controlled by picking up the garbage at the end of each day. Any other debris that should arise will be collected at the end of the day.

2.6 Plan Drawings

Erosion and Sediment control locations are provided on Figure 3. Best Management Practices (BMP) details and figures are provided on Figure 3.1.

3.0 CONSTRUCTION SEQUENCE

3.1 General Construction Sequence

This E&SCP is a standard plan used on-site and historically typical of E&SCPs submitted to County Conservation Districts. E&S control locations are shown on Figure 3. E&S control details are shown on Figure 3.1.

1. A copy of the E&SCP must be available at the Project site at all times.
2. At least three days prior to starting any earth disturbance activities, GAI will notify the Pennsylvania One Call System Incorporated at 1-800-242-1776.
3. Temporary sediment barriers, including appropriately sized filter fabric fence will be placed down slope of work areas and around stockpile locations prior to any excavation work to ensure, to the maximum extent practicable, that no significant erosion of native soils or sedimentation occurs.
4. Any water encountered within the Project area during construction will be removed by using pumps, hoses, and pumped water filter bags, and will be discharged to a well vegetated, upland area.
5. Earthwork and excavation may begin.

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6. Waste or excess materials not suitable for the on-site stockpile or backfill shall be disposed of at a PaDEP-approved waste site. Materials will be re-used or recycled as possible, including topsoil and other materials, as appropriate. Any off-site stockpile/spoil piles shall be at a PaDEP-approved site with an approved E&S Plan.
7. Disturbed areas will be restored according to the seeding, mulch, and fertilizer specifications listed in Section 4.0, Best Management Practices.
8. Disturbed areas will be inspected after each runoff event. Temporary sediment barriers will be maintained, until perennial vegetation has become established with a uniform coverage of density of 70 percent or more within the disturbed ROW. Once this coverage has been obtained, filter fabric will be removed from the work area. Areas disturbed during the removal of the sediment barriers will be stabilized immediately.

4.0 BEST MANAGEMENT PRACTICES

4.1 BMP Installation and Removal Sequence

This is a typical installation and removal sequence for general excavation in upland areas. BMP locations are provided on Figure 3. BMP details are shown on Figure 3.1.

1. Installation of the Filter Fabric Fence

The filter fabric fence shall be installed downslope of the disturbed work areas. The filter fabric fence shall be installed at existing level grade by using two-inch by two-inch wooden support stakes driven a minimum of 18 inches into the earth and spaced a maximum of eight feet apart. Both ends of each fence section shall be extended at least eight feet upslope at 45 degrees to the main fence alignment. The filter fabric fence shall remain in place until final stabilization is achieved.

2. Revegetation

All disturbed areas will be seeded with plant species that have a high germination capacity within seven days after the excavated material is replaced. The disturbed soil will be conditioned to achieve moisture and temperature conditions that are conducive to rapid germination and growth.

Lime and fertilizer will be applied at recommended amounts according to the Penn State Agronomy Guide. Seeding will be performed with broadcast seeding equipment followed by a mulch covering. The following application rates will be used:

Item	Uplands	
Permanent Seed and Mulch Application Rates		
Seed ¹	Kentucky 31 Tall Fescue ²	35 pounds per acre
Seed	Empire Birdsfoot Trefoil (1/2 Empire, 1/2 Viking)	10 pounds per acre of inoculated seed
Seed	Redtop (if Redtop is unavailable, use Timothy) ²	2 pounds per acre
Seed	Annual Ryegrass ²	7 pounds per acre
Lime	Agricultural Grade	6 tons per acre without a soil test
Fertilizer	10-20-20	1/2 ton per acre without a soil test
Mulch	Cereal Straw or	3 tons per acre
	Hydromatting-Bonded Fiber Matrix	3,000 to 4,000 pounds per acre ³

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Temporary Seed and Mulch Application Rates		
Seed	Annual Ryegrass	48 pounds per acre
Mulch	Cereal Straw	3 tons per acre

Notes:

- ¹ All seed is pure live seed.
- ² Annual ryegrass is utilized as a temporary cover crop.
- ³ Based upon manufacturer's specifications and topography.

4.2 BMP Maintenance Plan

GAI personnel will be present during construction activities to inspect BMPs, at a minimum, weekly and within 24 hours after each measurable runoff event (greater than one-half-inch in 24 hours). BMP details are provided on Figure 3.1. BMPs will be maintained as follows:

- Damaged BMPs will be repaired or replaced as soon as practicable, but no more than 72 hours after discovering damage.
- Equipment, soil stockpiles and other materials are to remain upslope of BMPs during maintenance activities.
- Stockpile slopes will be 2:1 or flatter and stockpiles will not exceed 35 feet in height.
- Sediment will be removed from filter fabric fence, once accumulations have reached one-half the above ground height of the fence.
- Filter bags will be replaced once they are half full.
- Pumped water filter bags will be inspected daily. If a problem is detected, pumping shall cease immediately and not resume until the problem is corrected.
- Any section of the filter fabric fence that has been topped or undermined by natural forces will be replaced as soon as practicable, but no more than 72 hours after discovering damage.
- At the end of each construction day, all sediment deposited on paved roadways shall be removed and returned to the construction site.
- Sediment will be removed and placed in an upland construction area, spread out, and revegetated by seeding and mulching or disposed of. All waste or excess materials not suitable for the on-site stockpile shall be disposed of at a PaDEP-approved waste site. Materials will be re-used or recycled as possible, including topsoil and other materials as appropriate. Any off-site stockpile/spoil piles shall be at a PaDEP approved site with an approved E&S Plan.

GAI personnel will be responsible for the maintenance of the work area, once final stabilization has taken place.

Work will be performed according to the Preparedness, Prevention, and Contingency Plan for Construction Activities provided in Appendix A.

Erosion and Sedimentation Control Plan, AEROSTAR Environmental Services, Inc.
 Upper Ohio Navigation Study Project, Edgeworth Borough, Allegheny County, Pennsylvania

5.0 REFERENCES

- Pennsylvania Department of Conservation and Natural Resources, Bureau of Topographic Geologic Survey. 2006. *PAMAP Program LIDAR Processing/Contour Enhancement Lines of Pennsylvania*. <http://www.pasda.psu.edu/default.asp>.
- Pennsylvania Department of Environmental Protection, Office of Water Management. 2000. *Erosion and Sediment Pollution Control Program Manual*. Bureau of Watershed Management, Division of Waterways, Wetlands and Erosion Control. April 15, 2000.
- United States Department of Agriculture, Natural Resources Conservation Service. 2005. *Soil Survey Geographic (SSURGO) Database for Allegheny County, Pennsylvania*. Fort Worth, Texas.
- United States Department of Agriculture, Soil Conservation Service. 2000. *Soil Survey of Allegheny County, Pennsylvania*. Washington, DC.
- United States Geological Survey Topographic Quadrangle (7.5-Minute Series). 1990. *Ambridge, Pennsylvania* (1:24,000).

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Upper Ohio Navigation Study Project, Edgeworth Borough, Allegheny County, Pennsylvania

APPENDIX A

**PREPAREDNESS, PREVENTION, AND
CONTINGENCY PLAN FOR CONSTRUCTION ACTIVITIES**

APPENDIX A

PREPAREDNESS, PREVENTION, AND CONTINGENCY PLAN FOR CONSTRUCTION ACTIVITIES

SPILL PREVENTION METHODS

Construction activities related to archeological digs sometimes require storage of hazardous and non-hazardous products and wastes. All efforts will be made to prevent spills of any amount of these products. The scope of this plan is intended to cover activities related to construction of archeological digs. The following items will be followed to help avoid spills and minimize the impact of spills that accidentally occur:

- Bulk quantities of both diesel fuel and gasoline may be stored at the work area in aboveground tanks, which will be diked or be of double-wall secondary containment design, or smaller containers. No underground tanks will be used. A Material Safety Data Sheet for each hazardous material will be on site.
- Fuel will be stored at the equipment staging area within secondary containment and as much as practical all equipment will be refueled there. Any equipment that must be refueled in the field will be fueled from tanks carried to the work area.
- Lesser quantities of fuel and solvents and lubricants (i.e., motor oils, hydraulic fluid) may be stored at the work area as necessary to service equipment provided that this storage does not conflict with other parts of this plan. Secondary containment will be provided for these storage areas.
- All fuel storage areas will be located at least 200 feet from active private water wells, and at least 400 feet from municipal water wells. Equipment servicing, lubricating, and refueling will also be in accordance with these requirements whenever possible.
- Use of hazardous materials for vehicle maintenance will follow the same requirements mentioned above for equipment refueling. Impervious or sorbent materials will be placed under the work area before the work begins. Additional sorbent materials will also be readily available. Waste materials created during maintenance (i.e., used oil) will be collected for proper disposal. The work site and the vehicle will be inspected after the maintenance work is complete to ensure that all hazardous materials are properly contained. All waste material, including partially used or empty containers, discarded parts, dirty rags, and used sorbent material, as well as discarded hazardous materials containers (i.e., oil cans, grease tubes) will be collected and placed in open-top drums for proper disposal.
- All motor fuel, lube oil, chemicals, and other polluting substances will be tightly sealed and clearly labeled during transportation and storage.
- Fuel trucks, pumps, mechanics' vehicles, and contractor personnel vehicles will be equipped with spill kits containing absorbent materials approved for petroleum products.
- Runoff resulting from construction equipment washing operations will not be permitted to directly enter any waterbody or wetland area.

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Upper Ohio Navigation Study Project, Edgeworth Borough, Allegheny County, Pennsylvania

- Construction equipment, vehicles, materials, hazardous materials, chemicals, fuels, lubricating oils, and petroleum products will be parked, stored, or serviced 100 feet from all waterbodies and wetlands when not in use and when possible.
- Any materials, equipment, hazardous materials, chemicals, fuels, lubricating oils, and petroleum products that must be used within 100 feet of a waterbody or wetland to support the work will only be used within the secondary containment protection and will be stored within temporary secondary containment during work hours. No materials, hazardous materials, chemicals, fuels, lubricating oils, or petroleum products that are not contained within equipment will be stored within 100 feet of a waterbody or wetland. All other sections of this plan will be followed for spill prevention and mitigation and cleanup methods.

MITIGATION AND CLEANUP METHODS

In the event of a spill into or in the vicinity of waterbodies or wetlands, the following will occur:

- the source will be immediately stopped;
- the spill will be contained by placing sorbent booms or constructing dikes;
- the spill will be collected with sorbent materials, skimmed off water surfaces with booms, and/or the contaminated soil will be excavated; and
- the waste materials will be properly disposed in accordance with state and federal requirements.

The affected areas will be restored as closely as possible to their previous condition. All spills must be reported immediately to AEROSTAR:

Mr. Rick Levin, PG, Senior Project Manager 904-565-2820 (office)
352-214-3110 (cell)

The Environmental Department will contact State and/or Federal environmental agencies (if applicable) for notification requirements. If personnel in the Environmental Department cannot be contacted, then the AEROSTAR Project Manager should make the necessary notifications.

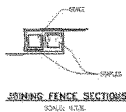
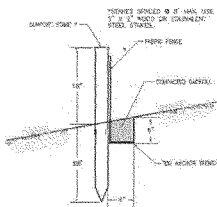
STATE AND FEDERAL AGENCY CONTACT INFORMATION

Pennsylvania

- PaDEP Central Office (Harrisburg): 800-541-2050
(available 24 hours a day, seven days per week)
- PaDEP Southwestern Regional Office: 412-442-4000
- Allegheny County Emergency Management Coordinator: 412-473-2550

Federal

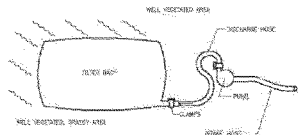
- National Response Center: 800-424-8802



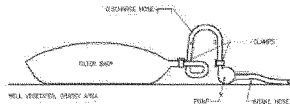
- NOTES:
1. FILTER FABRIC FENCE MUST BE INSTALLED AS SHOWN. EXTERIOR PANEL BOTH ENDS OF EACH FENCE SECTION MUST EXTEND AT LEAST A FEET SPACED AS THE FENCE TO THE NEXT FENCE ALLOWANCE.
 2. SEDIMENT MUST BE REMOVED WHEN AUTOMATION REACHES THE ABOVE-GROUND HEIGHT OF THE FENCE.
 3. ANY FENCE SECTION WHICH HAS BEEN UNDERGOING OUT-PORTED MUST BE IMMEDIATELY REPLACED WITH A GOOD FENCE OUTLET.

STANDARD FILTER FABRIC FENCE, 18" HEIGHT

SCALE: N.T.S.



PLAN VIEW



ELEVATION VIEW

PUMPED WATER FILTER BAG

N.T.S.

DRAFT

FIGURE 3.1
EROSION AND SEDIMENTATION
CONTROL STANDARD DETAILS



AEROSTAR ENVIRONMENTAL
SERVICES, INC.
UPPER OHIO NAV STUDY

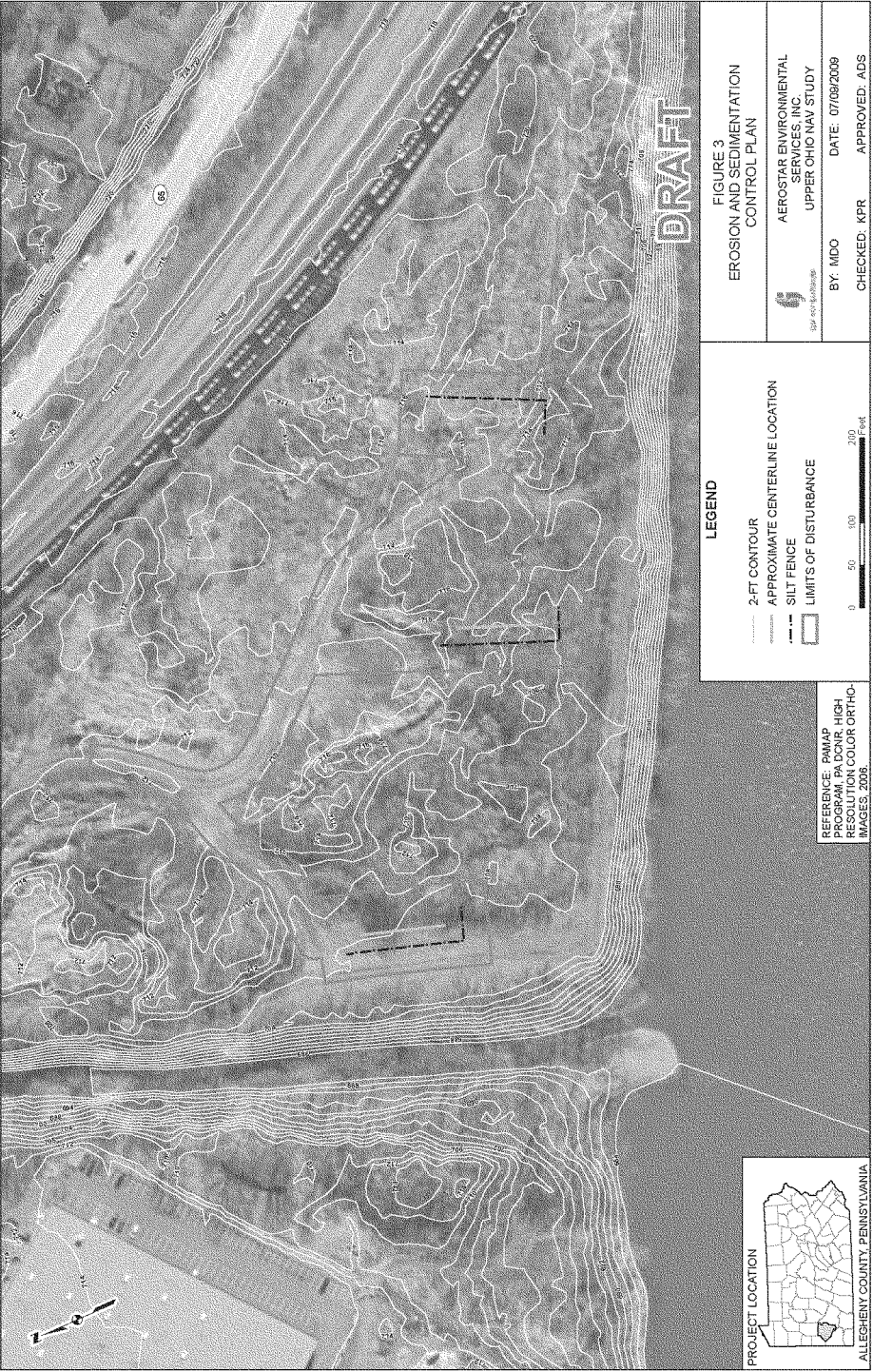
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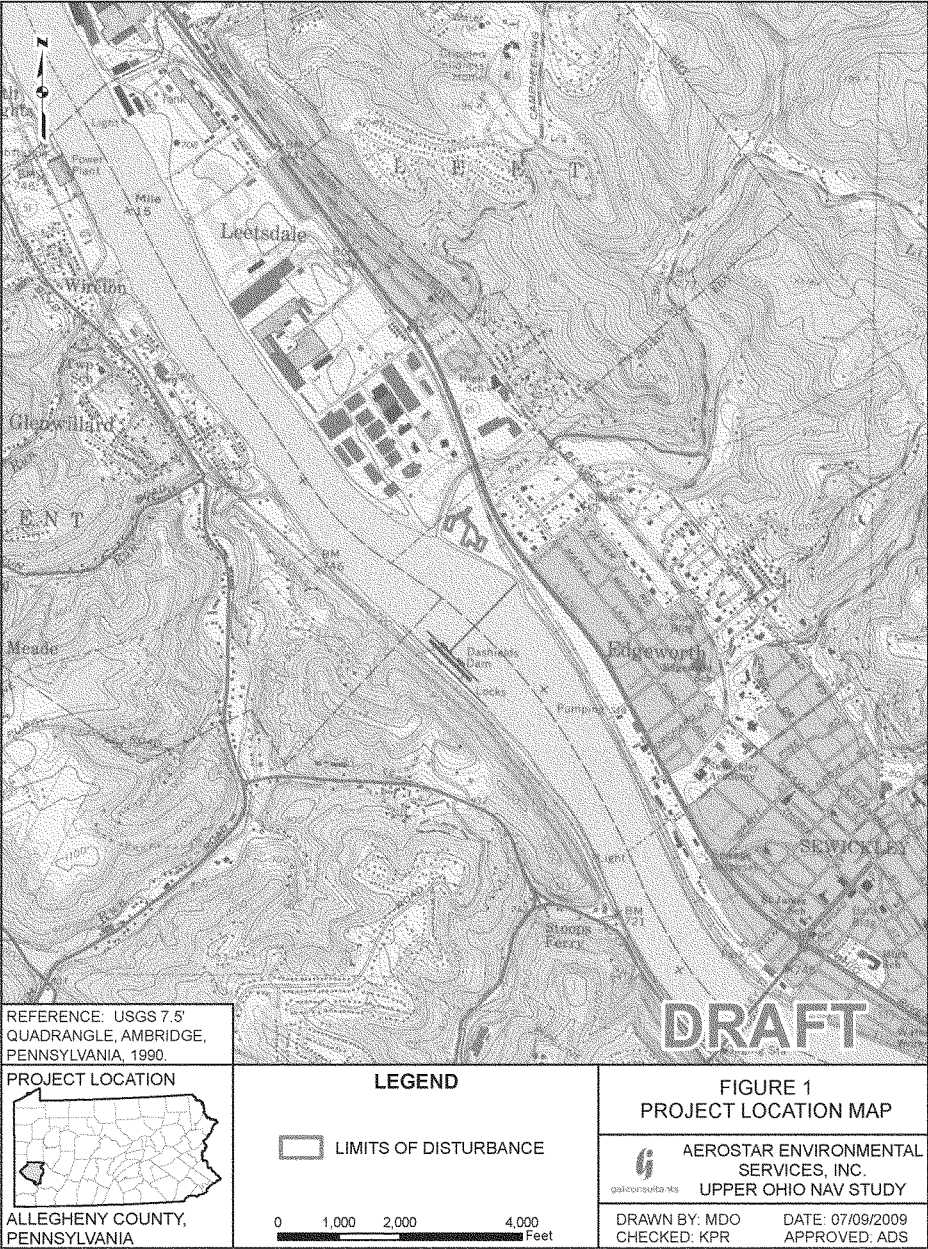
DATE: 07/09/2009

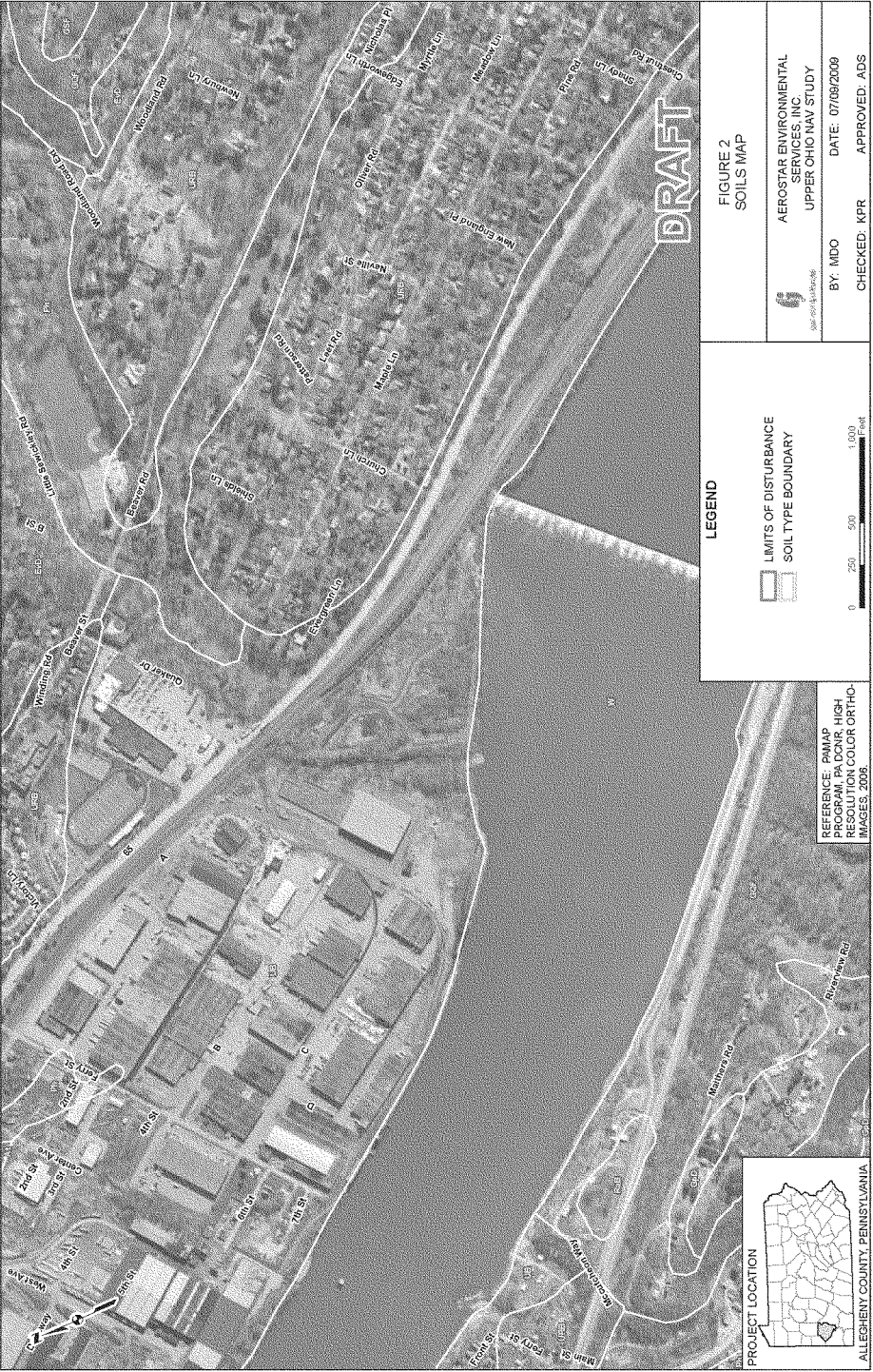
CHECKED: KPR

APPROVED: ADS

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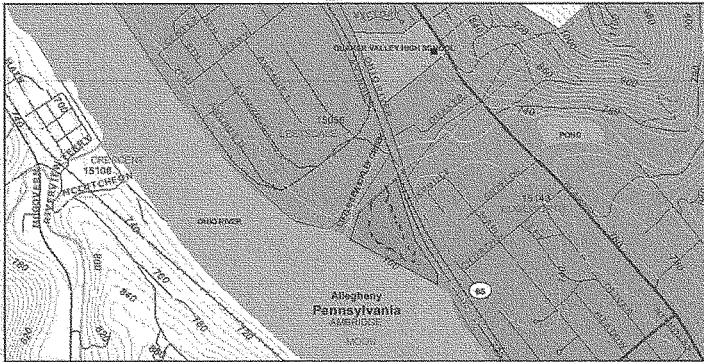






PNDI Project Environmental Review Receipt

Project Search ID: 20090707200759

1. PROJECT INFORMATIONProject Name: **Upper Ohio Nav Study**Date of review: **7/7/2009 4:39:07 PM**Project Category: **Development, Other**Project Area: **13.7 acres**County: **Allegheny Township/Municipality: Edgeworth**Quadrangle Name: **AMBRIDGE**ZIP Code: **15143**Decimal Degrees: **40.55291 N, -80.2026 W**Degrees Minutes Seconds: **40° 33' 10.5" N, -80° 12' 9.4" W****2. SEARCH RESULTS**

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
U.S. Fish and Wildlife Service	Conservation Measure	No Further Review Required, See Agency Comments

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for one year** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt.

PA Game Commission

RESPONSE: No impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: No impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

PFBC Species:

Scientific Name: *Alosa chrysochloris*

Common Name: Skipjack Herring

Current Status: Threatened

Proposed Status: Threatened

Scientific Name: *Leptodea fragilis*

Common Name: Fragile Papershell

Current Status: Special Concern Species*

Proposed Status: Special Concern Species*

Scientific Name: *Potamilus alatus*

Common Name: Pink Heelsplitter

Current Status: Special Concern Species*

Proposed Status: Special Concern Species*

Scientific Name: *Villosa iris*

Common Name: Rainbow Mussel

Current Status: Special Concern Species*

Proposed Status: Endangered

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

U.S. Fish and Wildlife Service

RESPONSE: Conservation Measure: Voluntary implementation of the following recommendations will contribute to the conservation and recovery of endangered and threatened species. -- In order to maintain or improve water quality for endangered aquatic species, retain (or restore, if not already present) a 100- to 300-foot wide buffer on each side of the waterway (river, stream, creek) or waterbody (lake). Avoid construction, earth disturbance, and chemical application in this buffer. The buffer should be vegetated with native plant species. When adequately vegetated, this upland buffer will act to stabilize the streambanks (preventing or minimizing erosion), and filter pollutants (e.g., sediment, fertilizers, pesticides, road salt, oil). Where streambanks have become badly eroded (e.g., due to removal of native riparian vegetation), streambank fencing and/or bioengineering restoration techniques are recommended (geotextile, root wads, vegetative stabilization), rather than riprapping the streambanks; removing gravel bars; or attempting to dredge, ditch, channelize, or widen the stream.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.

** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

Check-list of Minimum Materials to be submitted:

- ☐ **SIGNED** copy of this Project Environmental Review Receipt
- ☐ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
- ☐ Project location information (name of USGS Quadrangle, Township/Municipality, and County)
- ☐ USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.

- ☐ A basic site plan (particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
- ☐ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
- ☐ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams
- ☐ The DEP permit(s) required for this project

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt, a completed PNDI form and a USGS 7.5 minute quadrangle map with the project boundaries delineated on the map. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <http://www.naturalheritage.state.pa.us>.

PA DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) RECEIPT FOR PNDI REVIEW



5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA.
17105-8552
Fax: (717) 772-0271

U.S. Fish and Wildlife Service

Endangered Species Section
315 South Allen Street, Suite 322, State College, PA.
16801-4851
NO Faxes Please.

PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax: (717) 787-6957

7. PROJECT CONTACT INFORMATION

Name: KEVIN RESNIK
Company/Business Name: GRI CONSULTANTS INC
Address: 385 EAST WATERFRONT DRIVE
City, State, Zip: HOMESTEAD PA 15012
Phone: (412) 476-2000 Fax: (412) 476-2020
Email: K.RESNIK@GRICONSULTANTS.COM

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

KR
applicant/project proponent signature

7/8/09
date



Pennsylvania Fish & Boat Commission

RECEIVED
AUG 14 2009

Division of Environmental Services
Natural Diversity Section
450 Robinson Lane
Belleville, PA 16823-9620
(814) 359-5237 Fax: (814) 359-5175

GAI CONSULTANTS INC.
PROJ. NO 0090839.03

August 13, 2009

IN REPLY REFER TO
SIR # 32308

BRIAN CLAUTO
GAI CONSULTANTS
385 EAST WATERFRONT DRIVE
HOMESTEAD, PA 15120-5005

RE: Species Impact Review (SIR) - Rare, Candidate, Threatened and Endangered Species
UPPER OHIO NAVIGATION STUDY
PNDI Search Number (if available): 20090707200759
EDGEWORTH Township/Borough, ALLEGHENY County, Pennsylvania

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code. The absence of recorded information from our files does not necessarily imply actual conditions on site. Future field investigations could alter this determination. The information contained in our files is routinely updated. A Species Impact Review is valid for one year only.

☒ **NO ADVERSE IMPACTS EXPECTED FROM THE PROPOSED PROJECT**

Except for occasional transient species, rare, candidate, threatened or endangered species under our jurisdiction are not known to exist in the vicinity of the project area. Therefore, no biological assessment or further consultation regarding rare species is needed with the Commission. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

☒ An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

If you have any questions regarding this review, please contact the biologist indicated below:

☒ Chris Urban	814-359-5113	☐ Tina Walther	814-359-5186
☒ Nevin Welte	412-586-2334	☐ Bob Morgan	814-359-5129

I am enclosing a copy of our "SIR Request Form", which is to be used for all future species impact review requests. Please make copies of the attached form and use with all future project reviews. Thank you in advance for your cooperation and attention to this important matter of species conservation and habitat protection.

SIGNATURE:

Christopher A. Urban

DATE: August 13, 2009

Christopher A. Urban
Chief, Natural Diversity Section

Our Mission:

www.fish.state.pa.us

To protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities.

COMMONWEALTH OF PENNSYLVANIA
FISH AND BOAT COMMISSION
 NATURAL DIVERSITY SECTION
SPECIES IMPACT REVIEW (SIR) REQUEST FORM

- A. This form provides the site information necessary to perform a computer database search for species of special concern listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, the Pennsylvania Fish and Boat Code or the Wildlife Code.
- B. Use only *one form* for each proposed project or location. Complete the information below and mail form to:

Natural Diversity Section
 Division of Environmental Services
 PA Fish and Boat Commission
 450 Robinson Lane
 Bellefonte, PA 16823

- C. This form, a cover letter including a project narrative, and accompanying maps should be sent to the above address for environmental reviews that *only* concern *reptiles, amphibians, fishes and aquatic invertebrates*. Reviews for other natural resources must be submitted to other appropriate agencies.
- D. The absence of recorded information from our databases and files does not necessarily imply actual conditions on site. Future field investigations could alter this determination. The information contained in our files is routinely updated. A review is valid for one year.
- E. *Please send us only one (1) copy of your request* – either by fax or by mail – not both. Mail is preferred to improve legibility of maps. Facsimile submission will not improve our response turn-around time.
- F. *Allow 30 days for completion of the review from the date of PFBC receipt*. Large projects and workload may extend this review timeframe.
- G. *In any future correspondence with us following your receipt of the SIR response, please refer to the assigned SIR number at the top left of our cover letter.*
- H. **FORMS THAT ARE NOT COMPLETED IN FULL WILL NOT BE REVIEWED.**

PLEASE PRINT OR TYPE: If available, provide the potential conflict PNDI Search Number: _____

PFBC response should be sent to: _____

Company/Agency: _____ Form Preparer: _____

Address: _____ Phone (8:00 AM to 4:00 PM): _____

Project Description: _____

Indicate if the project is: Transportation ☐ or Non-transportation ☐ (check one)

Will the proposed project encroach directly or indirectly (e.g., runoff) upon wetlands or waterways? Circle one for each:

Wetlands: Yes No Unknown Waterways: Yes No Unknown

County: _____ Township/Municipality: _____

Name of the United States Geological Survey (U.S.G.S.) 7.5 Minute Quadrangle Map where project is located: _____

Project size (in acres): _____

Attach an 8.5" by 11" photocopy (**DO NOT REDUCE**) of the section of the U.S.G.S. Quadrangle Map which identifies the project location. On this map, indicate the location of the project center (if linear, depict both ends) and outline the approximate boundaries of the project area.

Specify latitude/longitude of the project center. **Latitude:** _____ ° / _____ ' " N

Indicate latitude/longitude in degrees-minutes-seconds format only. **Longitude:** _____ ° / _____ ' " W

Three steps are needed to convert from decimal degrees to degrees-minutes-seconds: (1) Degrees will be the whole number. (2) To get minutes, multiply the decimal degree portion by 60. (3) Multiply the decimal minute portion by 60 to get seconds.

Example: (Latitude) $40.93748 = 40^{\circ}$; $0.93748 \times 60 = 56.2488' = 56'$; $0.2488 \times 60 = 14.928 = 15'' = 40^{\circ}56'15''$ N

(Longitude) $75.94740 = 75^{\circ}$; $0.94740 \times 60 = 56.844' = 56'$; $0.844 \times 60 = 50.64 = 51'' = 75^{\circ}56'51''$ W

FOR PFBC USE ONLY

SIR#	Quad Name	Data Source	Search Result-Potential Species Conflict	Action

July 17, 2009

Project C070839.03

Pennsylvania Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane
Bellefonte, Pennsylvania 16823-7437

PNDI Number 20090707200759
Threatened and Endangered Species Consultation
Upper Ohio Navigation Study
Aerostar Environmental Services, Inc.
Allegheny County, Pennsylvania

Dear Sir or Madam:

On behalf of Aerostar Environmental Services, Inc (Aerostar), GAI Consultants, Inc. (GAI) is requesting a review of the Upper Ohio Navigation Study (Project) in Edgeworth Borough, Allegheny County, Pennsylvania. The project involves a feasibility study to modernize three U.S. Army Corps of Engineers (USACE) lock and dam structures on the Ohio River. Project activities include archaeological investigations at the Dashields Lock and Dam (Dashields L&D) primary storage area located northeast of the town of Edgeworth. The Project area is shown on the attached Project Location Map (Attachment 1). A copy of the Project's Pennsylvania Natural Diversity Inventory Project Environmental Review Form (Attachment 2) is included for reference.

The Project area is located in an upland area north of Dashields L&D that was previously used for disposal of industrial fill (slag) and demolition debris. Photos of the area are contained in Attachment 3. No streams or wetlands were identified within the study area at this location. Existing public and private roads will be used for access during Project activities.

Project activities at Dashields L&D include drilling a series of four-inch-diameter boreholes through the industrial fill material to determine whether the potential exists for any prehistoric or historic resources on the site that may be eligible for inclusion on the National Register of Historic Places. These activities will be conducted as part of the environmental impact statement under the National Environmental Policy Act.

A preliminary search was conducted using the Pennsylvania Natural Diversity Inventory Environmental Project Planning Database, which resulted in "Potential Impact" under the Pennsylvania Fish and Boat Commission's jurisdiction within the project area. Potential impacts include the following aquatic species: Skipjack Herring (*Alosa chrysochloris*); Fragile Papershell (*Leptodea fragilis*); Pink Heelsplitter (*Potamilus alatus*); and Rainbow Mussel (*Villosa iris*). The U.S. Fish and Wildlife Service recommended a voluntary conservation measure to maintain, at minimum, a 100-foot vegetated buffer between the project work area and adjacent water resources. No additional potential impacts were identified under the PNDI review.

Aerostar will implement a project-specific Erosion and Sedimentation Control Plan (E&SCP) during Project activities and will maintain an approximate 100-foot-wide vegetated buffer between the Project area and adjacent water resources. A copy of the E&SCP is included as Attachment 4.

Following implementation of the E&SCP and by maintaining a vegetated buffer between the project area and adjacent water resources, it is anticipated that Project activities will not result in any impacts to aquatic species of concern.

PNDI Number 20090707200759
Threatened and Endangered Species Consultation
July 17, 2009

Page | 2

Please contact either Mr. Brian Clauto or me at 412-476-2000, should you have any questions or require additional information.

Respectfully submitted,
GAI Consultants, Inc.

George Reese, C.E.
Environmental Manager

GTR:bmc

cc: Rick Levin, Aerostar

Attachments



Photo 1: view Northwest



Photo 2: View North



Photo 3: View Northeast near entrance

APPENDIX F
GAI PROJECT PERSONNEL RESUMES

Lori A. Frye, M.A., RPA
Lead Archaeologist

Education

1976
19 2 F
1992

Certification

Areas of Specialization

F
2
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F

Historical Archaeology Teaching Experience

F
F 1999
2000
F 2001

Project Manager/Principal Investigator (Sample of Projects)

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Principal Investigator (Report Author)

200

2004

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Project Manager/Principal Investigator, 1994-2003 Examples

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4

David L. Cremeens, Ph.D., CPSSc*Senior Staff Soil Scientist***Education**

A.A. Life Science 1977, St. Louis Community College

B.S. Agriculture 1979, University of Missouri

M.S. Pedology, Minor in Geology 1983, Michigan State University

Ph.D. Pedology, Minor in Geochemistry 1989, University of Illinois

Registrations/Certifications

Certified Professional Soil Scientist, No. 02949, Obtained 1/01/2007, Expires 12/31/2008

Affiliations

Geological Society of America (GSA), Member, Archaeological Geology Division Chair 2003-2005

Soil Science Society of America, Member

Pennsylvania Association of Professional Soil Scientists, Member

West Virginia Association of Professional Soil Scientists, Member, President 1998-1999

American Quaternary Association, Member

Society for American Archaeology, Associate Member, Geoarchaeology Interest Group, Co-Chair 2001-2003

Previous Employment

University of Illinois, 1983-1989

Michigan State University, 1980-1983

Utah State University for Utah Department of Agriculture, 1979-1980

University of Missouri, 1977-1979

Summary

Dr. Cremeens specializes in soils and geomorphology investigations related to surficial processes, with emphasis on soil mapping and inventories, environmental site assessments, industrial foundation construction monitoring, contaminated soil remediation, soil borrow and utilization, waste water disposal, permit applications, geoarchaeology, and geotechnical exploration. He has extensive experience in pedology, geomorphology, geoarchaeology and environmental/geotechnical studies throughout the United States, and in Ontario, India, and the Dominican Republic.

Dr. Cremeens' soils and landscape investigation experience includes soil formation processes and design and re-vegetation of disturbed landscapes and urban soils. He is experienced in wetland delineation utilizing Global Positioning Survey (GPS) and Geographic Information System (GIS) software applications. Dr. Cremeens is proficient in the characterization of prehistoric and historic archaeological sites. He has taught soil science and pedology at the university level.

Professional Experience**Soil Scientist**

- Dominion H-162 Pipeline Replacement Project in Kanawha and Clay Counties, West Virginia for Dominion Transmission. Environmental permitting and survey for 26.5-miles of replacement natural gas pipeline. Responsible for geoarchaeology reconnaissance.
- Reiker Hill Road RSW Landfill, AEP Conesville Power Plant in Muskingum County, Ohio for American Electric Power. Siting and design project for a new landfill (Site 3 Landfill) for Flue Gas Desulfurization (FGD) by-products. Responsible for soil borrow investigations.
- Rockies Express Pipeline-East Project in Warren County, Ohio for Caprock Environmental Services, LLC. Phase III archaeological data recovery excavations in Ohio in support of the Rockies Express Pipeline-East



- Project. The project area consisted of a concentration of historic artifacts above and surrounding house foundation remains. During previous Phase I and II explorations, over 2,500 artifacts were uncovered from shovel test pits (STP), dating to historic-period occupations. The potential for undiscovered features was high, so a Phase III investigation was deemed necessary, as avoidance or preservation was not considered feasible. GAI determined that the site demonstrated sufficient horizontal and vertical integrity to meet the criteria for eligibility to the National Register of Historical Place (NRHP). Responsible for geoarchaeology evaluation of the Phase III archaeological data recovery at Site 33Wa797.
- Reliant Energy Keystone FGDS Retrofit, Keystone Power Station in Armstrong County, Pennsylvania for Reliant Energy and Shaw, Stone and Webster, Inc. Civil testing services, including soils, concrete, and asphalt testing and field construction monitoring. Responsible for QA field monitoring / inspection of auger cast piles and caissons.
 - Hardy Transmission Project in Greene County, Virginia for Columbia Gas Transmission. Phase I and II cultural resources investigation of the 50-mile corridor Hardy Transmission and Storage project. Responsible for geoarchaeology evaluation of the Site 44GN115 data recovery project.
 - Limestone Run AML Reclamation Project in Armstrong County, Pennsylvania for Allegheny Energy. Bid documents and National Pollution Discharge Elimination System (NPDES) for Allegheny Energy Limestone Run Abandoned Mine Lands (AML) reclamation project. Responsible for access / haul road geotechnical soil evaluation.
 - Dominion HUB II Project in Chemung County, New York for Dominion Transmission. Federal Energy Regulatory Commission (FERC) certificate and permitting for 8-mile natural gas pipeline. Responsible for wetland delineation, stream identification, and geoarchaeology reconnaissance.
 - Trans-Allegheny Interstate Line (TrAIL) Project in Pennsylvania and Virginia for Power Engineers, Inc. A sensitivity study was performed by GAI for the proposed construction of 114 miles of 500kV power transmission line in West Virginia, along with associated access roads, staging and pulling / tensioning areas. Using data from recorded archaeological sites within one mile of the proposed right-of-way (ROW), GAI developed a model for classifying a particular location relative to its sensitivity or potential for the presence of previously unknown archaeological resources. Responsible for geoarchaeology evaluation for Phase I cultural resources survey.
 - Ohio Storage Expansion Project in Fairfield, Hocking, Ashland and Holmes Counties, Ohio for Columbia Gas Transmission. Cultural resources services. Responsible for geoarchaeology evaluation of Phase I and II archaeological survey.
 - Edwardsport Mine Stabilization, Edwardsport Generating Station in Knox County, Indiana for Duke Energy. Subsidence Mitigation, including developing grouting specifications and monitoring grouting at new power plant. Responsible for QA/QC.
 - Bell Bend Nuclear Power Plant in Luzerne County, Pennsylvania for UniStar Nuclear Development, LLC. Phase IB archaeological survey and supplemental architectural and historical surveys at the 630-acre Bell Bend project area. Responsible for geoarchaeology evaluation for Phase 1A and 1B cultural resources investigations.
 - Curley Hollow Solid Waste Management Facility in Wise County, Virginia for Dominion Energy. Dominion Southwest Virginia Coal-Fired Project. Design and permitting of Coal Combustion By-Products (CCB) Landfill. Responsible for soil borrow investigation and groundwater monitoring.
 - Keystone Pipeline in Armstrong County, Pennsylvania for Reliant Energy Northeast Management Company. Design of a wastewater discharge pipeline. Responsible for Phase 1a evaluation of archaeological potential and wetlands.
 - Calvert Cliffs Nuclear Power Plant in Calvert County, Maryland for UniStar Nuclear Development, LLC. Cultural resources survey and National Register of Historic Places (NRHP) evaluation of resources in the Area of Potential Effect (APE) of proposed project activities. Responsible for geoarchaeology evaluation for Phase I and II cultural resources investigations.
 - Mt. Storm Power Station in Grant County, West Virginia for Dominion Energy. Responsible for clay liner and cover soil borrow study.
 - Clinch River Proposed Disposal Site in Russell County, Virginia for American Electric Power. Design and permitting services for a landfill site. Responsible for geoarchaeology evaluation of uplands during Phase 1A and 1B archaeology investigation.

- Cove Point Expansion Pipeline Project in Charles County, Maryland for Dominion Transmission Corporation. Phase III data recovery investigations at prehistoric archaeological Site 18Ch654 (Phillip's Meadow) to resolve adverse effects of Cove Point Expansion TL-532 pipeline construction to this National Register of Historic Places (NRHP) eligible site. Responsible for geoarchaeology evaluation of the Phillips Meadow Site.
- Ft. Ethan Allen historic site in Arlington County, Virginia for Arlington Heritage Alliance. Cultural Landscape Documentation Report (CLR) as a result of studies conducted at Fort Ethan Allen Park (4.37 acres). The focus of this study was Fort Ethan Allen in general and, specifically, that portion of the fort owned by Arlington County and located within Fort Ethan Allen Park. Responsible for geoarchaeology evaluation for the cultural landscape documentation.
- Great Bend Power Plant Project in Meigs County, Ohio for American Electric Power. Cultural resource investigations for the proposed Integrated Gasification Combined Cycle (IGCC) generation facility overlooking the Ohio River at Great Bend, Ohio. Phase I archeological investigations included a reconnaissance-level study of the 1200-acre project area to evaluate archeological potential and to make recommendations for avoidance of recorded sites. Phase II NRHP evaluations identified six previously documented and two newly identified sites; five of these sites were recommended NRHP-eligible under Criterion D, and warranted avoidance or data recovery to resolve adverse effects. Responsible for geoarchaeology evaluation for Phase I and Phase II archaeological investigation.
- Big Sandy Pipeline Project in Johnson and Floyd Counties, Kentucky for Equitable Resources Company. Equitable contracted GAI to collect, gather, and analyze the environmental and cultural resources data for the 68-mile gas pipeline in eastern Kentucky and to prepare the FERC Exhibit F Environmental Resource Reports for documentation, National Pollution Discharge Elimination System (NPDES) permitting, 404/401 permitting, and noise impact studies. GAI also developed the applicant-prepared environmental assessment. Additional services provided by GAI included threatened and endangered species field studies, wetland mitigation and stream stabilization design, and construction stakeout survey. Responsible for geoarchaeology evaluation for Phase II Rockshelters archaeological investigation.
- Big Sandy Pipeline Project in Carter, Lawrence, Johnson and Floyd Counties, Kentucky for Equitable Resources Company. Responsible for soil geomorphology investigation.
- Great Island, Clinton County, Pennsylvania and Lock Haven, Pennsylvania for PPL Gas Utilities. When a proposed project approached a previously identified site, GAI Consultants, Inc. (GAI) prepared a synthesis as alternative mitigation. Pennsylvania Archaeological Site Survey (PASS) files data were synthesized, as well as research report information, to summarize the prehistory of the Central West Branch Susquehanna River subbasin in north-central Pennsylvania. Great Island and the City of Lock Haven were the focal points from which a broad prehistoric context for the entire Subbasin 9 was provided. Responsible for geomorphology evaluation.
- Proposed New Coal Combustion By-Products (CCB) Landfill in Putnam County, West Virginia for Appalachian Power Company. Coal ash landfill design project for expansion of Quarrier Landfill Area C into an adjacent valley. Responsible for soil and geotechnical evaluation, clay borrow evaluation, mapping, soil sampling and laboratory analysis.
- Cove Point Expansion Phase II Archaeological Investigation in Charles, Prince Georges and Calvert Counties, Maryland for Dominion Transmission Corporation. Environmental services for over 150 miles of natural gas pipeline through Maryland, West Virginia, Pennsylvania, and New York at the LNG Terminal in Cove Point, Maryland. Work included environmental permitting and mitigation for temporary and permanent impacts from the project. GAI collected, gathered, and analyzed the environmental and cultural resources data for the FERC Exhibit F Environmental Resource Reports in Maryland, West Virginia, New York, and Pennsylvania. Responsible for soil geomorphology investigation.
- Hardy Storage Project Phase II Archaeological Investigation in Shenandoah, Rockingham and Greene Counties, Virginia for Columbia Gas Transmission. Phase I and II cultural resources investigation of the 50-mile corridor Hardy Transmission and Storage project. Responsible for soil geomorphology investigation.
- Brandywine Pozzolan Storage Site in Prince Georges County, Maryland for Mirant Mid-Atlantic, LLC. Design and permitting projects for Phase 1 Vertical Expansion and Phase 2 Lateral Expansion of the Brandywine Pozzolan storage sites. Responsible for soil resource evaluation and wetland delineation.
- Phase I Archaeology Investigation in Meade County, Kentucky for the University of Kentucky. Responsible for soil geomorphology investigation.

- Lost River Valley in Lost River, West Virginia for Columbia Gas Transmission Corp. Phase I and II cultural resources investigation of the 50-mile corridor Hardy Transmission and Storage project. Responsible for geomorphology and pedology evaluation.
- BPB Mitchell Project Site in Marshall County, West Virginia for Lockwood Greene/BPB America, Inc. Phase I and II site investigations. Responsible for geoaerchaeology reconnaissance to assess surface and buried site potential and assess test unit stratigraphy at BPB Site 1.
- Kanawha River Bank in Mason County, West Virginia for Madison Coal and Supply Company and American Electric Power. Riverbank stabilization project for a Phase I/II Cultural Resources Investigation for Site 46Ms284. Responsible for detailed geomorphological assessment (backhoe trenching, profile recording) to characterize stratigraphic context of archeological remains, alluvial stratigraphy and landforms.
- IGCC East Plant Siting in Kentucky, Ohio, West Virginia for American Electric Power Company. Preliminary engineering for a proposed 600-MW IGCC power plant to be located in one of three states. Responsible for geoaerchaeological reconnaissance at the prospective plant sites to assess near-surface and buried archeological potential as part of the Phase IA Cultural Resources Investigation; and geomorphological survey (backhoe trenching, profile description) at plant parcel to refine archeological sensitivity assessments as part of a Phase IB Archeological Investigation at the Mountaineer Plant site in Mason County, West Virginia.
- 90-mile Natural Gas Pipeline Corridor in Steuben, Chemung, Tioga, and Broome Counties, New York for Millennium Pipeline Corporation, LP. Responsible for wetland and stream characterization and delineation.
- Harrison Power Station CCB Landfill Site in Harrison County, Shinnston, West Virginia for Allegheny Energy. Coal Combustion By-Product (CCB) landfill expansion project requiring West Virginia Department of Environmental Protection (WVDEP) regulations compliance assistance, permitting, comprehensive study of site development alternatives, groundwater studies, monitoring well network design and well installation, and construction monitoring. Responsible for clay borrow Quality Assurance (QA) in support of the CCB landfill expansion and construction.
- Dominion Mid-Atlantic Project Cove Point Pipeline in Maryland, Pennsylvania and Virginia for Dominion Resources Services, Inc. Environmental permitting project to provide Federal Energy Regulatory Commission (FERC) Exhibit F reports; and local, state, and federal permitting for pipeline expansion utilizing a Geographic Information System (GIS) database. Responsible for geoaerchaeology reconnaissance and wetland delineation for the natural gas pipeline corridor in Calvert, Prince George and Charles Counties, Maryland and Clinton, Centre and Mifflin Counties, Pennsylvania.
- Cable Corridor in Sullivan and Orange Counties, New York for Columbia Gas Transmission Corporation. Environmental studies and permitting project for cathodic protection anode and cable installation. Responsible for environmental survey and permit preparation.
- Romney Bridge Replacement (US 50) over the Potomac River in Hampshire County for the West Virginia Department of Transportation, Division of Highways. Cultural resources project under an open end agreement to provide Phase I and II archaeological surveys and architectural investigations of the preferred alternative, including National Register of Historic Places (NRHP) eligibility for the bridge (slated for replacement). Responsible for geomorphology and pedology evaluation of South Branch Potomac River valley floor.
- Pipeline Corridor in Cattaraugus County, New York and McKean and Potter Counties, Pennsylvania for Dominion Transmission, Inc. Environmental studies project for a 22-mile natural gas pipeline. Responsible for wetland delineation and geoaerchaeology reconnaissance.
- Tower Sites in Wythe County, Virginia for American Electric Power, Inc. Responsible for geotechnical drilling and soil evaluation for transmission line tower sites.
- Andres Power Plant in Punta Caucedo Andres, Boca Chica, Dominican Republic for Allegheny Energy. Construction project for a LNG terminal. In 2002, responsible for water quality monitoring for turbidity using a field nephelometer during dredging operations on a coral reef environment.
- Wyoming/Jackson Ferry Transmission Line in Virginia and West Virginia for American Electric Power. Engineering and environmental consulting project for planning, design, and construction of a proposed 90-mile, 765 kV transmission line in compliance with federal and state permitting agencies requirements.
- Armstrong Power Station CCB Landfill in Washington Township, Armstrong County, Pennsylvania for Allegheny Energy Supply. Disposal site expansion project for a new Coal Combustion By-Product (CCB)

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- landfill at the power station. In 2002, responsible for soil resource and wetland evaluation, including site reconnaissance, drilling, test pit evaluation and mapping of soil resources, and wetlands.
- Armstrong Power Station Abandoned Clay Mine Working in Washington Township, Armstrong County, Pennsylvania for Allegheny Energy Supply. Geotechnical evaluation project for a clay mine stabilization study. Responsible for reconnaissance and geotechnical drilling to evaluate abandoned clay mine workings in association with the siting of a residual waste landfill.
 - Armstrong Power Station in Washington Township, Armstrong County, Pennsylvania for Michael Baker, Inc. Responsible for soil science investigation in conjunction with a soil borrow study for the ash disposal site.
 - Hatfield's Ferry Power Station in Greene County, Pennsylvania for Civil and Environmental Consultants, Inc. Soil borrow study project. Responsible for soil science investigation in conjunction with a soil borrow study at Hatfield's Ferry Power Station.
 - Hatfield's Ferry Power Station in Greene County, Pennsylvania for Allegheny Energy. Residual waste landfill expansion. Responsible for geotechnical drilling, monitoring well installation, and soil resource mapping.
 - Hatfield's Ferry Power Station in Greene County, Pennsylvania for Allegheny Energy. Coal Combustion By-product (CCB) disposal facility expansion project. Responsible for hydrogeological investigations associated with the expansion of the facility, including soil boring, rock coring, monitoring well installation and development, soil resource inventory, geotechnical sample collection, and wetland delineation.
 - Keystone Power Station, Armstrong County, Pennsylvania for Reliant Energy. Inspection of Keystone SCR Micropile Installation. Responsible for inspecting depth, batter, and quality control for drilling, pile installation, and grouting of 270 micropiles, including grout sample collection and coordination.
 - Los Mina Power Plant, Santo Domingo, Dominican Republic for Allegheny Energy Supply. Phase II environmental investigations. Responsible for site reconnaissance, drilling and monitoring well installation, and soil and surface sediment collection.
 - Summerset at Frick Park Residential Development at Nine Mile Run in Pittsburgh, Pennsylvania for the Urban Redevelopment Authority of Pittsburgh. Brownfield project for a 238-acre brownfield site requiring grading, infrastructure planning, design, and permitting for a 713-unit multi-phased residential development on an abandoned riverside slag dump. Pittsburgh's largest and most noteworthy residential development since WWII and received the following awards: 2002 ESWP Award of Distinction in the Environmental Reclamation Category; 2003 Governor's Award for Environmental Excellence in the Land Use Category; and 2003 PA ACED Diamond Award for Engineering Excellence. Responsible for geotechnical boring inspection for subsurface investigation associated with grading, and for a vegetation establishment study for Phase I. Responsible for site reconnaissance, mapping, sampling, laboratory analyses of on-site materials, and specifications for blending a soil on site and for fertilization. Responsible for seeding, planting, erosion control, monitoring construction, and seeding and fertilizer placement.
 - Mitchell Power Station in Courtney, Pennsylvania for Allegheny Energy Supply. Engineering and permitting project for a CCB landfill expansion at the power station located on the Monongahela River, requiring a ground water and geotechnical site investigation plan, geologic and hydrogeologic investigations, ground water monitoring and sampling, and a borrow site soil study.
 - Follansbee-Weirton Road (WV2) in Brooke County, Follansbee, West Virginia for Whitney, Bailey, Cox & Magnani and the West Virginia Department of Transportation, Division of Highways. Cultural resources project for data recovery in advance of a highway widening project, requiring geomorphic and soils studies to reconstruct landscape evolution. Awarded the West Virginia Department of Transportation, Division of Highways 2001 Engineering Excellence Award, in the Planning and Environmental Category. Responsible for detailed soils description and laboratory analysis, geomorphology analysis, and burial and shell midden analysis for the Phase III mitigation of the upland site in the northern panhandle of West Virginia.
 - Harrison Power Station in Harrison County, West Virginia for Allegheny Energy Services. Residual waste disposal area permitting and development project for expansion. From 1994 to 2004, responsible for inventorying soil resources, and mapping soil and sampling available materials for clay liner, cover soil, and general fill throughout the 750-acre property; and coordinated and supervised engineering laboratory evaluation of materials. Responsible for geotechnical exploration via subsurface drilling, including coring, rock classification, and down-hole camera monitoring.
 - Fisher Overpass over South Branch Valley Railroad in Hardy County, Moorefield, West Virginia for West Virginia Department of Transportation, Division of Highways. Cultural resources project for a Phase 1

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- archaeological survey to prepare for construction of the proposed overpass and a temporary roadway to be used during construction. Responsible for geomorphological reconnaissance and soil evaluation.
- Warwick Mine Complex in Greene County, Pennsylvania for Duquesne Light Company. Mine sealing and reclamation project requiring a comprehensive site investigation plan to facilitate data collection (mapping, subsurface conditions. Innovative technologies such as the beneficial use of approved discarded materials (coal combustion by-products, bulk grading materials, mine soil amendments) were also investigated. Responsible for soil resource evaluation.
 - Homer City Power Station in Indiana County, Homer City, Pennsylvania for ABB Astom Power. Subsurface investigation project. Responsible for geotechnical boring and rock coring inspection associated with a foundation analyses.
 - Singrauli Coalfields, Uttar and Madhya Pradesh, India for Burns and Roe Corporation BFET/USAID/NTPC. Geotechnical and environmental feasibility project to evaluate geotechnical and environmental site conditions relative to fly ash haulback to selected mine sites. Responsible for developing preliminary plans for ash haulback to an abandoned mine and an active mine.
 - Gettysburg National Military Park in Adams County, Pennsylvania for the National Park Service. Historic cultural landscape analysis project for a Codori / Trostle Thicket pilot study at the park. In 1999, responsible for mapping and delineating buried soils associated with historic ground surfaces, including sampling soils and analyzing the samples for pollen, indicating that this is a viable technique for use in historic landscape reconstruction.
 - Lindsay Site in Niagara County, New York for Binghamton University Public Archaeology Facility. Phase III mitigation for an upland site. Responsible for detailed soils description and geomorphology reconnaissance.
 - SR 4034 Erie East Side Access Highway in Erie County, Erie, Pennsylvania for the Pennsylvania Department of Transportation (PennDOT), District 1-0. Highway design project for preliminary and final design of 4.9 miles of new 4-lane arterial highway, and 2.4 miles of widening, relocating, and re-aligning side roads. Responsible for geotechnical boring inspection using PennDOT specifications.
 - Pine Creek Flood Area in Etna Borough, Allegheny County, Pennsylvania for the Allegheny County Department of Economic Development. Flood stage control project along Pine Creek requiring engineering, final design, and construction monitoring services. Responsible for geomorphology and soils evaluation.
 - SR 0219, Section C08 (Bradford Bypass Extension) in Bradford, McKean County, Pennsylvania for the Pennsylvania Department of Transportation, District 2-0. Final design project for a 2-lane, 0.8-mile highway bypass extension including a partial interchange. Responsible for geotechnical drilling for road and bridge construction, and for soil boring, rock coring, geotechnical sample collection, and vane shear testing.
 - Shaker Crossing Site RMSC Nda118 in Livingston County, New York for Rochester Museum and Science Center. Phase III mitigation project. In 1999, responsible for soil geomorphology reconnaissance and evaluation of deep trenches across the site.
 - Ramsay Site in Dutchess County, New York for the Binghamton University Public Archaeology Facility. Phase III mitigation project for the historic site. Responsible for detailed soil profile descriptions of test units, and soil geomorphology reconnaissance of the project area.
 - Proposed Gettysburg Museum and Visitors Center in Gettysburg National Military Park, Gettysburg, Pennsylvania for the Gettysburg National Battlefield Museum Foundation. Phase IA Investigation. Responsible for geomorphological reconnaissance to delineate areas suitable for testing.
 - SR 0219, Section C08, Bradford Bypass Extension, in Bradford, McKean County for the Pennsylvania Department of Transportation, District 2-0. Final design for a 2-lane, 0.8-mile highway bypass extension including a partial interchange. Responsible for geotechnical and hydrogeology.
 - South Bend Compressor Station in Armstrong County, Pennsylvania for CNG Transmission Corporation. Environmental studies project for valve installations.
 - Coverts Crossing Bridge in Lawrence County for the Pennsylvania Department of Transportation (PennDOT), District 11-0. Cultural resources project to provide archaeological excavation and public outreach for a bridge replacement. Awarded the 2002 FHWA, Pennsylvania Division, Inaugural Historic Preservation Excellence Award.
 - Cabbage Pond Mill Site 7S-C-61 in Sussex County for the Delaware Department of Transportation (DelDOT). Cultural resources project to determine the significance of an 18th to mid-20th century gristmill site identified during construction to replace a bridge over a pond, requiring immediate response to the unexpected

archaeological find, and extensive teamwork and coordination with DelDOT, Delaware State Historic Preservation Office, and the construction contractor. Responsible for geomorphology reconnaissance and soil-sediment evaluation.

- Millennium Pipeline from Lake Erie to Westchester, New York for Millennium Pipeline Corporation, LP. Environmental research for a proposed 422-mile natural gas pipeline extending from Lake Erie into New York requiring extensive environmental research and field-team collection of GIS data using ARC/INFO and ArcView. Data collection was completed within a 4-month fast-track schedule and data was used to develop a Federal Energy Regulatory Commission (FERC) environmental report. Responsible for operating GPS equipment and data collection hardware, and identifying wetlands based on soils, vegetation, and hydrology.
- Yorktown Power Station Ash Facility in Yorktown, Virginia for Virginia Power. Site closure project to provide "clean" closure of the site and redesign the site entrance intersection.
- Abandoned Mine Lands in Southwestern Pennsylvania for Duquesne Light Company. Siting and design project for beneficial use fills using Coal Combustion By-Products (CCBs) at abandoned mine lands (AMLs), requiring a database of AML sites and characteristics, GIS map preparation and analysis, data collection using GPS, and field reconnaissance of potential sites.
- Gateway Connector at East Marion County Park in Fairmont, West Virginia for the West Virginia Department of Transportation, Division of Highways. Impact assessment project to address impacts to the park resulting from construction of the 1-mile expressway from Interstate 79 to the City of Fairmont.
- Fort Necessity National Battlefield in Fayette County, Pennsylvania for the National Park Service. Responsible for detailed soils description and geomorphological analyses.
- Latrobe Steel Pipeline in Westmoreland County, Pennsylvania for Clinton Gas Marketing, Inc. Environmental studies project requiring environmental and cultural resources surveys for 15.5 miles of natural gas pipeline.
- Former Underground Storage Tank Site in Ouachita Parish, Louisiana for a major chemical corporation (confidential). Contaminated soil and groundwater remediation project. From 1991 to 1995, responsible for field investigation, laboratory analyses, and remediation of solvent contaminated soil and groundwater.
- Gettysburg National Military Park Sewer in Gettysburg, Pennsylvania for the National Park Service. Archaeological monitoring project for development of a proposed park-wide sewer system, the largest single archaeological project ever conducted at Gettysburg National Military Park. Archaeological testing and data recovery, investigations at 30 prehistoric and historic sites, analysis and cataloging of 29,000 artifacts, and the contribution of substantial and important information to the park's overall archaeological database.
- Mt. Storm Power Station Residual Waste Disposal Site in Mt. Storm, West Virginia for Virginia Power. Environmental waste management project to permit, design, and monitor a residual waste disposal site. Responsible for soil borrow material investigation for the design and permitting of the 200-acre Flue Gas Desulfurization (FGD) by-product disposal facility at the Mt. Storm Station. Responsible for soil mapping and sampling of available materials over a 1,100-acre area.
- Warren Power Station Ash Disposal Site in Warren, Pennsylvania for Pennsylvania Electric Company. Permitting project to re-permit a residual waste disposal facility, requiring Phase I investigations to address exclusionary criteria, environmental assessment, soils, geology, and groundwater.
- GPU Industrial Waste Disposal Sites in western Pennsylvania for GENCO-GPU, Inc. Site location and conceptual design project to evaluate alternative site locations for residual waste disposal sites requiring geotechnical and hydrogeologic site investigations, and soil borings and monitoring well installations. Responsible for evaluating soil resources for use as clay liner and cover soils as part of a Residual Waste Permit application for two generating station ash sites. Investigated fly ash cover soil mixtures for final cover design and developed a revegetation plan for three generating station ash disposal sites.
- Tolsia Highway, US 52, in Wayne and Mingo Counties for the West Virginia Department of Transportation, Division of Highways. Cultural resources project for Phase I, II, and III cultural resource investigations.
- Appalachian Corridor L, US 19, in Nicholas and Braxton Counties for the West Virginia Department of Transportation, Division of Highways. Environmental assessment project for a 24-mile, 4-lane partially controlled access highway including a 16-acre wetland mitigation site, and Phase I/II/III cultural resources investigations. The fast-track EIS was completed in less than 2 years.
- Blue Marsh Lake, (Tract 1037) in Berks County, Jefferson Township, Pennsylvania for U.S. Army Corps of Engineers. Phase I cultural resources investigation project for a 37-acre parcel in advance of disposal of the

- property (Tract 1037) that included a circa 1870s farmstead and a railroad bed associated with the 19th-century South Mountain Railroad.
- Resource Conservation and Recovery Act (RCRA) Cap Closure of Soft Sludge Impoundment in Butler County for AK Steel (ARMCO, Inc.) Construction of an RCRA cap for closure of a 25-acre sludge impoundment of industrial waste over extremely soft industrial wastes. Responsible for soil borrow material investigation, soil mapping and sampling of available materials over a 70-acre area. Developed vegetation specifications.
 - Abandoned Slate Quarries for Metropolitan Edison. Developed and assisted in the spray irrigation and agricultural utilization of two million gallons of cadmium and lead-contaminated wastewater associated with the closing of two abandoned slate quarries. Responsible for determining areas suitable for spray irrigation, determining background levels of metals in the soil, on-site monitoring of soil moisture contents during irrigation, closure of the quarries, and follow-up soil and vegetation sampling.
 - Southern Alleghenies Municipal Waste Landfill in Davidsville, Cambria County, Pennsylvania for Chambers Development Corp. Landfill permitting and design project to modify an existing municipal waste disposal site to conform to Pennsylvania Department of Environmental Protection (PaDEP) regulations. Responsible for developing a soil management plan for the landfill in central Pennsylvania that required 1.6 million cubic yards of soil material. The plan included an excavation removal sequence plan, a processing methodology for the materials required, and a QA/QC plan.
 - Harrison Power Station Wastewater Treatment Plant in Haywood and Shinnston, West Virginia for Allegheny Energy Supply. Wastewater treatment plant conceptual design project.
 - Pleasants Power Station Landslide in Willow Island, West Virginia for Allegheny Energy. Landslide investigation and repair project for a 300'-wide, 500'-long landslide affecting the power station's ash disposal area haul road. Responsible for inspecting SCR micropile installation including depth, batter, and quality control in the drilling, pile installation and grouting of 20 micropiles.
 - Springdale Power Plant in Allegheny County, Pennsylvania for Allegheny Energy. Mine stabilization project at the abandoned power plant. Responsible for inspecting equipment, grout, fly ash and water usage, grout consistency via the slurry cone test, and progress of mine stabilization.
 - Homer City Power Station in Indiana County, Homer City, Pennsylvania for Reliant Energy. Auger cast pile installation project. Responsible for inspecting 48"-diameter auger hole for auger cast pile.
 - Geotechnical boring inspection for developing recommendations for foundations and earth works associated with building addition. JSA/May Company, Youngstown, Ohio.
 - Investigated fly ash or scrubber sludge use as an alternative final cover material capable of sustaining vegetation during final reclamation of a coal refuse disposal site. A Coal Company in Kentucky.
 - Analyzed fly ash amended soil cover and subsequent development of a revegetation specification for the expansion of a fly ash disposal site's final design. Potomac Electric Power Company.
 - Geotechnical exploration via subsurface drilling for the lower tributary valley expansion of the Pigotts Run disposal area, Harrison Power Station, Harrison County, West Virginia. Coring, rock classification, and down-hole camera monitoring. Allegheny Power.
 - Research specialist for Contaminated Lands Reclamation Project on Group 61 Site (U.S. Army Superfund) at Joliet Army Ammunition Plant, Joliet, Illinois, involved University of Illinois, U.S. Army Construction Engineering Research Laboratory (CERL), and U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). University of Illinois.
 - Remediation of solvent contaminated soil including monitoring groundwater quality and soil contamination level at an ink printing facility in northern Louisiana. Confidential Client.
 - Environmental site assessments including Phase I reconnaissance, Phase II site studies with soil and groundwater testing, and Phase III remediation throughout the U.S. and Canada.
 - Developed a plan for the landfarm-bioremediation of 1200 cubic yards of fuel-contaminated soils, including delineating a suitable area according to North Carolina regulations and sampling and analyze contaminated soils. Truck Stops of America.

Publications

- 2009 George, S.E, D.L. Cremeens, C.G. Scott, D.E. Buck, and L.S. Hart. 2009. Missouri Ozark Fens: Hydrogeologic and ecological setting and soil characteristics. *Wetlands* (in prep).

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- 2009 Cremeens, D.L., J.A. Parobek, C. Miller and S. Flinn 2009. Permanent vegetation establishment on a former slag disposal pile in Pittsburgh, Pennsylvania, USA. *Urban Forestry and Urban Greening* (in prep).
- 2009 Cremeens, D.L. and J.P. Hart. 2009. Holocene alluvial geoarchaeology of the Memorial Park Site (36Cn164), West Branch Susquehanna River, Pennsylvania. *Archaeology of Eastern North America* (in press).
- 2009 MacDonald, D.H., Manzano, B., Lothrop, J.C., Cremeens, D.L., Parker, K., and B. Shreckengost, 2009. With mica we mourn: Late prehistoric mortuary practices at Clark Rockshelter, Kentucky. *Midcontinent Journal of Archaeology* (in press).
- 2009 Cremeens, D.L. and J.C. Lothrop 2009. Geoarchaeology of a strath terrace in the upper Ohio Valley, West Virginia. *Soil Science Society of America Journal* 73:390-402.
- 2009 Darmody, R.G., W.L. Daniels, J.C. Marlin, and D.L. Cremeens. 2009. Topsoil: What is it and who cares? In: R.I. Barnhisel (ed.) *Revitalizing the Environment: Proven solutions and innovative approaches*. Proceedings of the American Society of Mining and Reclamation, Lexington, KY (in review).
- 2009 Lothrop, J.C., Bradley, J.W., and D.L. Cremeens. 2009. Aspects of Paleoindian settlement in the Ohio Valley and New England. In *Early Paleoindian Colonization of the North American Mid-Continent* D. Amick (ed.) (in prep).
- 2009 Cremeens, D.L., and J.K. Stein, 2009. Historical archaeology, urban archaeology, and geoarchaeology. Introduction. In *Geoarchaeology of Historic and Urban Contexts* Gilbert and Schuldenrein (eds.) Univ. Press of Florida (in prep).
- 2006 MacDonald, D.H., Lothrop, J.C., Cremeens, D.L. and Munford, B.A 2006. Holocene land-use, settlement patterns, and lithic raw material use in central West Virginia. *Archaeology of Eastern North America* 34: 121-140.
- 2005 Cremeens, D.L., R.G. Darmody, S.E. George 2005. Upper slope landforms and age of bedrock exposures in the St. Francois Mountains, Missouri: A comparison to relict periglacial features in the Appalachian Plateau of West Virginia. *Geomorphology* 70: 71-84.
- 2005 MacDonald, D.H. and Cremeens, D.L. 2005. Holocene Lithic Raw Material use at Skink Rockshelter (Site 46N445), Nicholas County, West Virginia. In *Uplands Archaeology in the East Symposia VIII & IX*, C. Nash and M.B.
- 2005 Cremeens, D.L. D.H. MacDonald, J.C. Lothrop, B.A. Munford, and K.E. Parker. 2005. Holocene land-use, settlement patterns, and stone tool production in the Muddlety Creek Valley (Corridor L), central West Virginia. *Archaeology of Eastern North America* (in review).
- 2005 Cremeens, D.L. 2005. Pedology of a loess-mantled terrace strath in the upper Ohio Valley. *Geomorphology* (in prep).
- 2005 Cremeens, D.L. 2005. Micromorphology of Cotiga Mound, West Virginia. *Geoarchaeology: An International Journal* 20: 581-597.
- 2004 Cremeens, D.L. 2004. Geoarchaeology. Highlights Issue of *Geotimes*, July, 2004: 39-40.
- 2003 Cremeens, D.L., J.S. Kite, and R.D. Mandel. 2003. Introduction. *Geoarchaeology: An International Journal* 18: 681-683.
- 2003 Cremeens, D.L., J.A. Parobek, C. Miller and S. Pfaff. 2003. From Slag Heap to Community Forest. In *Engineering Green, Proceedings of the 2003 National Urban Forest Conference*, C. Kollin (ed.) American Forests, Washington, DC. (pp. 170-172).
- 2003 Cremeens, D.L., D.H. MacDonald, and J.C. Lothrop. 2003. Holocene Colluvial Soils and Geoarchaeology in the Unglaciated Appalachian Plateau: Two Examples from West Virginia, USA. *Geoarchaeology: An International Journal* 18:799-826.
- 2003 Cremeens, D.L. and J.P. Hart. 2003. Introduction. Chapter 1 in *Geoarchaeology of Landscapes in the Glaciated Northeast*, D.L. Cremeens and J.P. Hart (eds.) New York State Museum Bulletin 497, University of the State of New York, Albany. (pp. 1-3).
- 2003 Cremeens, D.L. and J.P. Hart, (eds.). 2003. *Geoarchaeology of Landscapes in the Glaciated Northeast*. New York State Museum Bulletin 497, University of the State of New York, Albany.

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- 2003 Cremeens, D.L. 2003. Geoarchaeology of Upland Soils on Stable Geomorphic Surfaces: Mature Soil Model for the Glaciated Northeast. Chapter 4 in Geoarchaeology of Landscapes in the Glaciated Northeast, D.L. Cremeens and J.P. Hart (eds.) New York State Museum Bulletin 497, University of the State of New York, Albany. (pp. 49-60).
- 2002 Cremeens, D.L., S.E. George, and R.G. Dannody. 2002. Block streams and blockfields in the St. Francois Mountains, Missouri: possible periglacial indicators. Geomorphology (in prep).
- 2002 Cremeens, D.L., D.H. MacDonald, and J.C. Lothrop. 2002. Holocene Colluvial Soils and Geoarchaeology in the Unglaciated Appalachian Plateau: Two Examples from Southern West Virginia. Geoarchaeology (in press).
- 2002 Cremeens, D.L. and D.H. MacDonald. 2002. Archaeology and Geomorphology of the Coverts Crossing (36LR75) and Coverts Bridge (36LR228) Sites, Lawrence County, Pennsylvania. Pennsylvania Archaeologist 72: 17-50
- 2001 Cremeens, D.L., and J.C. Lothrop. 2001. Geomorphology of Regolith in the Unglaciated Appalachian Plateau: Implications for Prehistoric Archaeology. Chapter in Archaeology of the Appalachian Highlands, L.P. Sullivan and S.C. Prezzano (eds), University of Tennessee Press, Knoxville, pp.31-48.
- 2000 Cremeens, D.L. 2000. Pedology of the Regolith-Bedrock Boundary: an Example from the Appalachian Plateau of Northern West Virginia. Southeastern Geology 39: 329-339.
- 2000 Cremeens, D. L. Geoarchaeology of Colluvial Soils in the Appalachian Plateau presented at the Geological Society of America Annual Meeting, November 13-16, 2000, Reno, Nevada.
- 2000 Cremeens, D. L. and J.C. Lothrop. Colluvial Geoarchaeology in the Appalachian Plateau of West Virginia" presented at the West Virginia Archaeological Council Meeting, Charleston, West Virginia, April 29, 2000.
- 1999 Cremeens, D.L. 1999. Abandoned Meanders of the Teays-age Big Sandy Valley, West Virginia: Terraces, Soils, and Quaternary Geology. Geological Society of America, Abstracts with Programs, Vol. 31, No.7, Oct. 1999.
- 1999 Cremeens, D. L. 1999. Soils and Quaternary Geology of the Big Sandy Valley. Southeast Friends of the Pleistocene Annual Meeting, Carter Caves, Kentucky. Field Guide printed locally.
- 1998 Cremeens, D.L., J.P. Hart, and R.G. Darmody. 1998. Complex Pedostratigraphy of a Terrace Fragipan at the Memorial Park Site, Central Pennsylvania. Geoarchaeology: An International Journal, Vol. 13, No. 6, 339-359.
- 1998 Cremeens, D.L., J.C. Lothrop, K. Parson, and K.W. Mahoney. Prehistoric Archaeology of the Tolsia Highway, presented at the West Virginia Archaeological Society Meetings in Moundsville, W.Va., October 17, 1998.
- 1998 Cremeens, D. L. Archaeological Context in the Pedological Environment presented at the Geological Society of America Annual Meeting in Toronto, Canada, October 26-29, 1998.
- 1998 Cremeens, D. L. and J.C. Lothrop. Geomorphology of Regolith in the Unglaciated Appalachian Plateau: Implications for Prehistoric Archaeology, presented at the Middle Atlantic Archaeological Conference in Cape May, N.J., April 2-5, 1998.
- 1997 Cremeens, D. L., D. B. Landers, and S.R. Frankenberg. 1997. Geomorphic Setting and Stratigraphy of Cotiga Mound, Mingo County, West Virginia. Geoarchaeology: An International Journal, Vol. 12, No. 5, 459-477.
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- 1995 Cremeens, D.L., and J.P. Hart. 1995. On Chronostratigraphy, Pedostratigraphy, and Archaeological Context. In *Pedological Perspectives in Archaeological Research*, Soil Science Society of America, Special Publication No. 24, pp. 15-33., Madison, WI.
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- 1995 Cremeens, D. L. Use of Coal Combustion by Products to Reduce Cover Soil Volume in Reclamation. Presented at the NAAMLP meetings in French Lick, IN, October 15-18, 1995.
- 1995 Cremeens, D. L. Pedology of the Regolith - Bedrock Boundary in the Appalachian Plateau of West Virginia. Presented at the GSA Southeast Section, Knoxville, TN, April 6-7, 1995.
- 1994 Cremeens, D.L., E.J. Ciolkosz, N.C. Thurman, W.J. Waltman, and M.D. Svoboda. 1994. Argillic Horizons in Pennsylvania Soils. *Agronomy Series*, No. 131, February 1994, Agronomy Department, Pennsylvania State University, University Park, Pennsylvania.
- 1994 Cremeens, D.L. 1994. Summary. In *Whole Regolith Pedology*. Cremeens, D.L., R.B. Brown, and J.H. Huddleston, editors. *Soil Society of America Special Publication* 34, Am. Soc. Agron., Madison, WI.
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- 1993 Cremeens, D.L., S.L. Brantley, A.C. Blai, I. McInness, and R.G. Darmody. 1993. Natural Etching Rates of Feldspar and Hornblende. *Aquatic Science* 55: 262-272.
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- Report Author. Supplemental Phase I Archaeological and Geomorphological Survey, Areas II and III Water and Sewer Project, Bedford Township, Bedford County, Pennsylvania, for Bedford Township Municipal Authority and Stiffler, McGraw & Associates, Inc.
- Report Author. Phase I Archaeological Survey, NIJUS003 Pipeline Project, Center and Morris Townships, Greene County, Pennsylvania, for EQT Gathering, Inc.
- Report Co-Author. Phase Ib Archaeological Survey, Rural Valley Pipeline Project, Armstrong, Westmoreland, Elk, and McKean Counties, Pennsylvania, for Dominion Transmission, Inc.
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- Graphics. Phase II Investigations of the Dun Glen Hotel Site for the Fire Suppression System, Fayette County, West Virginia, for National Park Service-NERI.

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DRAFT

**PHASE I CULTURAL RESOURCES ASSESSMENT
UPPER OHIO NAVIGATION STUDY
ECOSYSTEM RESTORATION
ALLEGHENY AND BEAVER COUNTIES, PENNSYLVANIA**

PHMC-BHP ER# 1997-1617-042

CONTRACT NO. W912QR-08-D-0009

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Submitted to
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February 2010

**DRAFT PHASE I CULTURAL RESOURCES ASSESSMENT
UPPER OHIO NAVIGATION STUDY
ECOSYSTEM RESTORATION
ALLEGHENY AND BEAVER COUNTIES, PENNSYLVANIA**

**PHMC-BHP ER# 1997-1617-042
GAI PROJECT NO. C070839.04**

CONTRACT NO. W912QR-08-D-0009

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ABSTRACT

The U.S. Army Corps of Engineers, Nashville District (Nashville District) contracted with Aerostar Environmental Services, Inc. (AES) and its subconsultant, GAI Consultants, Inc. (GAI), to conduct a Phase I cultural resource assessment of nine Study Areas (SAs) (SA 5, 6, 7, 10, 11, 13, 14, 16, and 18) for a feasibility study of aquatic ecosystem restoration projects as part of the Upper Ohio Navigation Study in Pennsylvania. These nine SAs, totaling 184 acres, are located in Allegheny and Beaver counties. The cultural resource study, conducted in September-December 2009, was performed in accordance with the Statement of Work (SOW).

Cultural resource investigations for all SAs included background research and a preliminary site view (eight aquatic SAs by boat and one aquatic and terrestrial SA viewed by boat and walkover). The SOW specified that a literature review was required to identify known submerged vessels or recorded archaeological sites and mapped resources that might be affected by potential fill placement for the eight aquatic study areas (SA 5, 6, 7, 10, 11, 13, 16, and 18), six (SA 5, 7, 10, 13, 16, and 18) of which will have a tie-in to the riverbank at an undetermined location. Limited subsurface testing was required at SA 14 (Montgomery Slough), the only terrestrial study area.

The literature research indicated that three study areas might impact previously recorded archaeological sites: SA 5, SA14, and SA 16. SA 5 has a high potential to contain intact archaeological remains associated with the former Davis Island Lock and Dam--a NRHP-listed resource. Two previously recorded prehistoric archaeological sites that extend up to the eroded riverbank were documented on SA 16 (Phillis Island). A previously recorded stratified prehistoric village site (36BV9) covered most of SA 14.

Abstract

The site view and background research determined that none of these study areas has above-grade architectural resources over 50 years old.

Recommendations varied by SA; however, if a study area is selected for an ecosystem project, then a review of interpreted side-scan sonar images is recommended, prior to any ground-disturbing activities, to investigate the potential for submerged cultural resources. In addition, ground reconnaissance and limited subsurface testing are recommended at riverbank tie-in locations for SAs 5, 7, 10, 13, 16, and 18 after the tie-in location has been determined. No subsurface testing is recommended for SA10 if the ground reconnaissance indicates that the tie-in location along the riverbank falls within a waste dump site.

Background research determined that a stratified prehistoric Early to Late Woodland village site (36BV9) covers most of SA 14. The majority of SA14 is heavily disturbed and/or covered by thick fill deposits. Excavations near the northern extent of SA 14 revealed that part of the site is intact within a buried A (Ab) horizon. It is recommended that this part of Site 36BV9 be avoided. If avoidance is not feasible, Phase II testing is recommended to evaluate Site 36BV9 for listing to the National Register of Historic Places under Criterion D.

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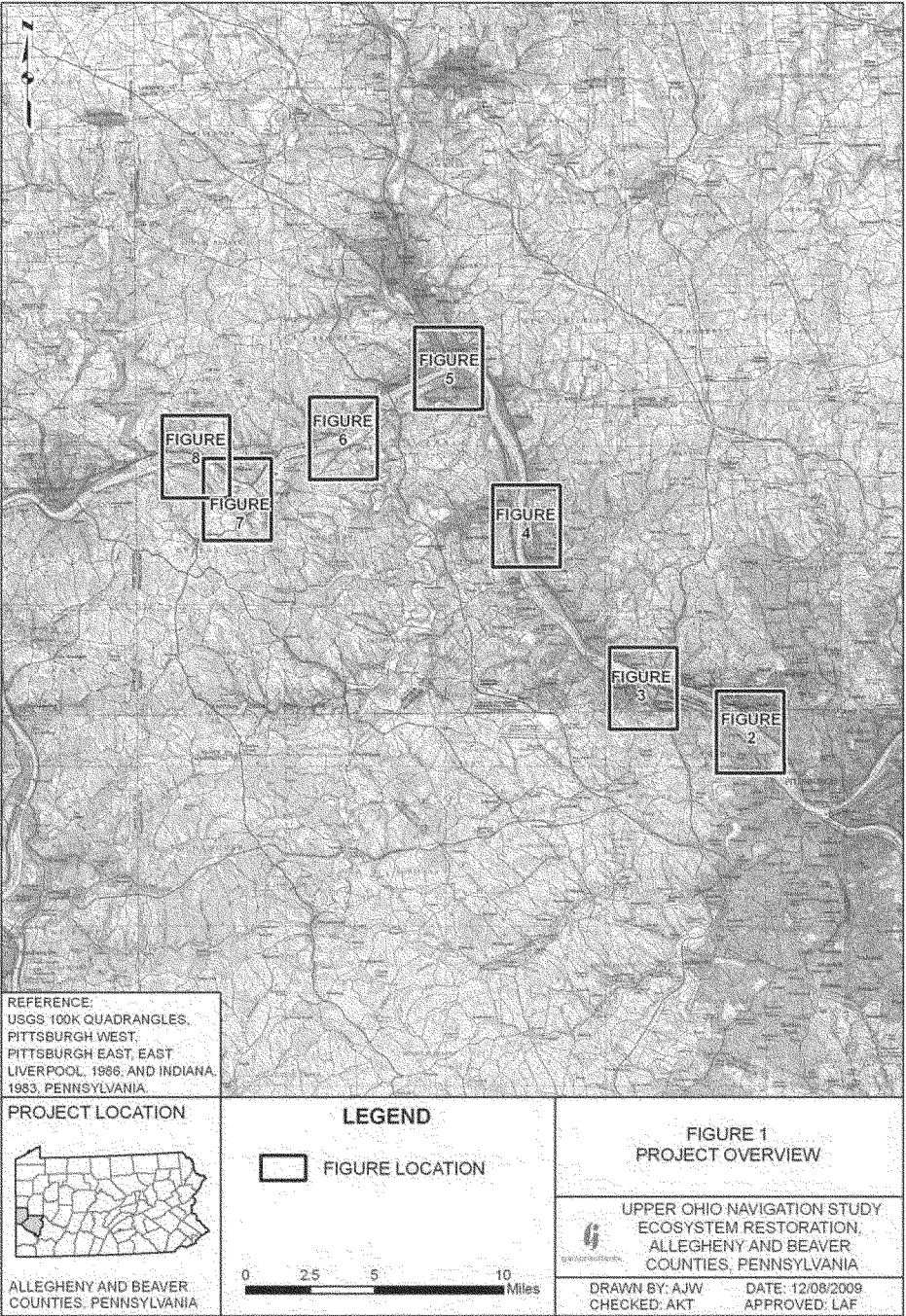
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CHAPTER 1. INTRODUCTION

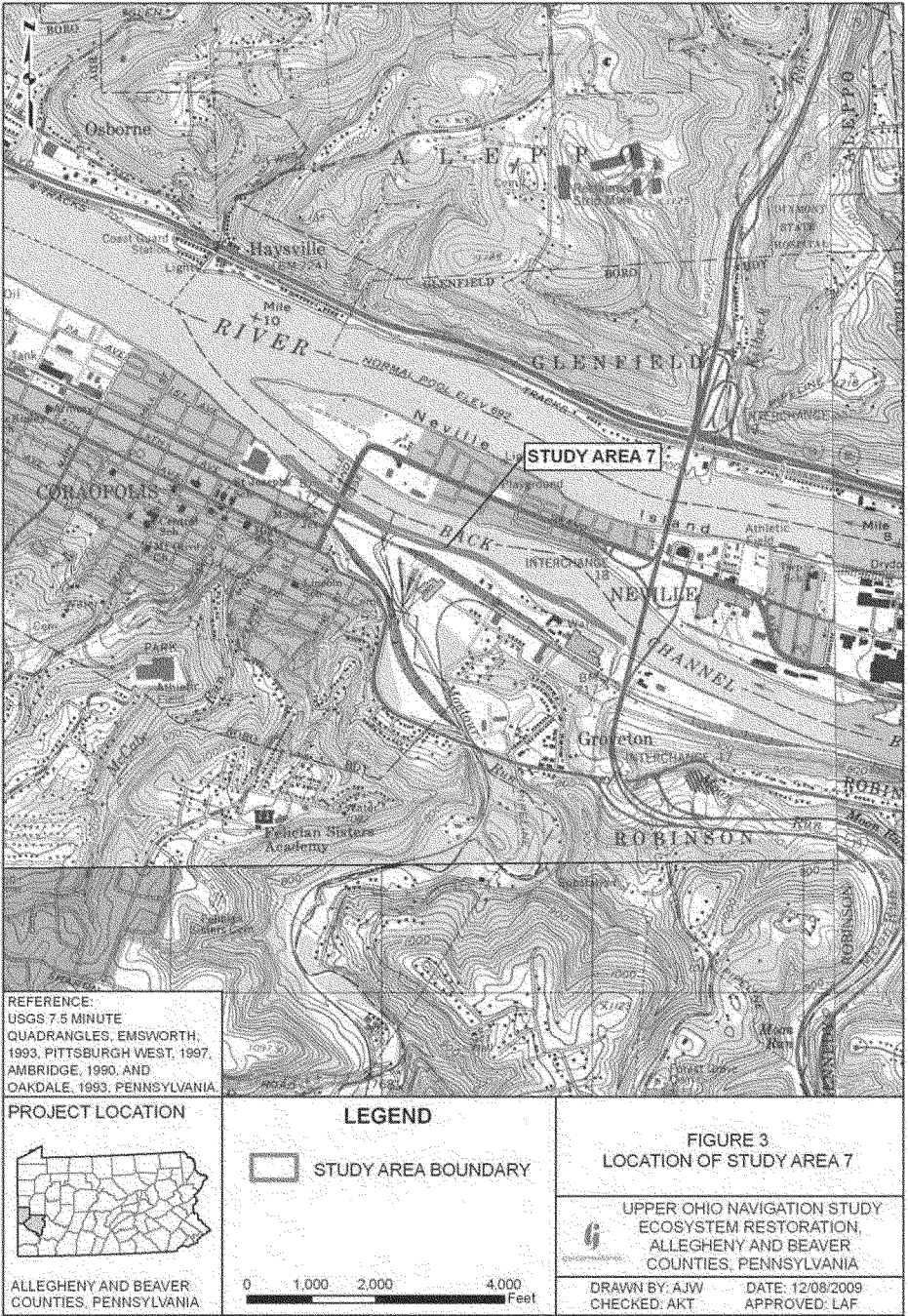
The Nashville District is conducting a feasibility planning study for modernization of three locks and dam facilities (Emsworth, Dashields, and Montgomery Locks and Dams) on the Ohio River in Pennsylvania as part of the Upper Ohio Navigation Study. It was determined that the feasibility planning study shall also include consideration of ecosystem restoration planning, which will be presented as a separate appendix in the overall Upper Ohio Navigation project's feasibility study for the National Environmental Policy Act (NEPA), Environmental Impact Statement (EIS). The Nashville District identified 16 proposed project sites or study areas (SAs) with a high potential for providing desired aquatic ecosystem restoration benefits in the Upper Ohio River. The Nashville District contracted with AES and its subconsultant, GAI, to conduct a Phase I cultural resource assessment study of the nine SAs that possess the highest potential for ecosystem restoration benefits within the Upper Ohio Navigation Study corridor in Allegheny and Beaver counties, Pennsylvania (Figures 1-8).

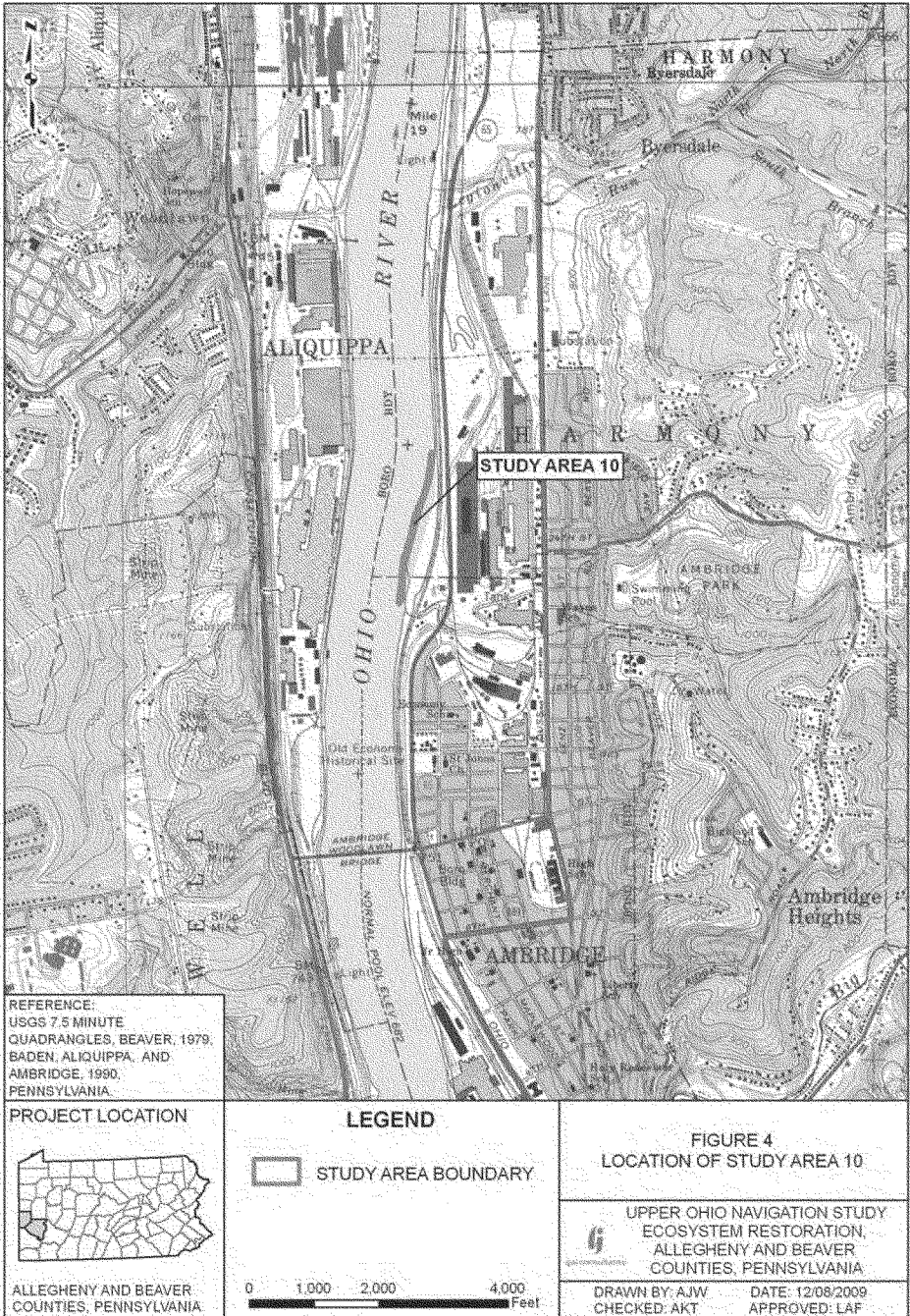
Eight of the SAs (5, 6, 7, 10, 11, 13, 16, and 18) involve fill placement below ordinary high water and required only a literature review and site viewing from the river to identify known submerged vessels, mapped resources, and/or recorded cultural resources that might be affected by potential fill placement. SAs 6 and 11 are located entirely within the river and do not involve a tie-in to the shoreline. SA 14 may involve modifications to floodplains or terraces, and required background research, pedestrian reconnaissance, and limited subsurface testing.

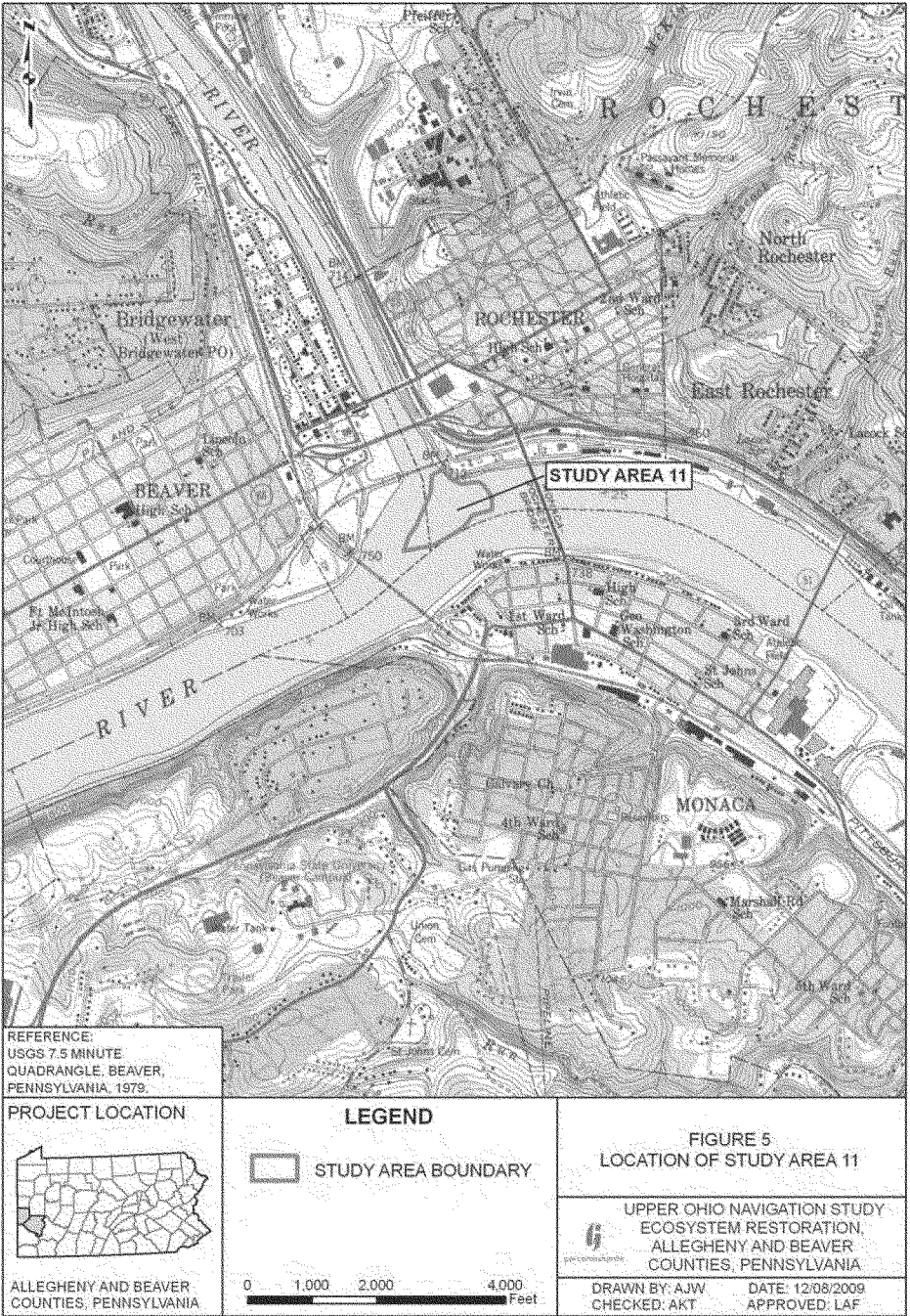
The project was conducted between September and December 2009. The fieldwork was conducted October 5-9, 2009.

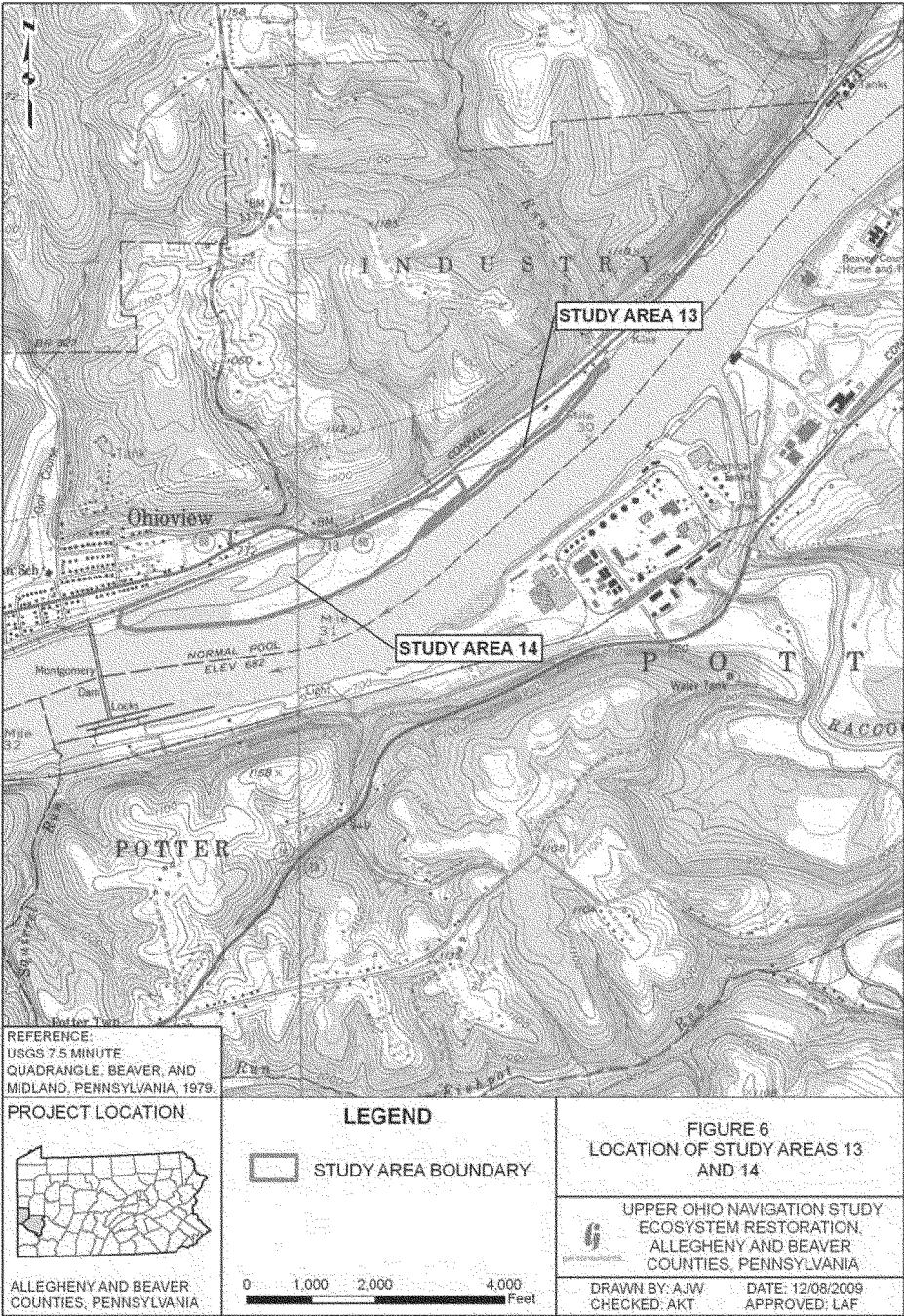


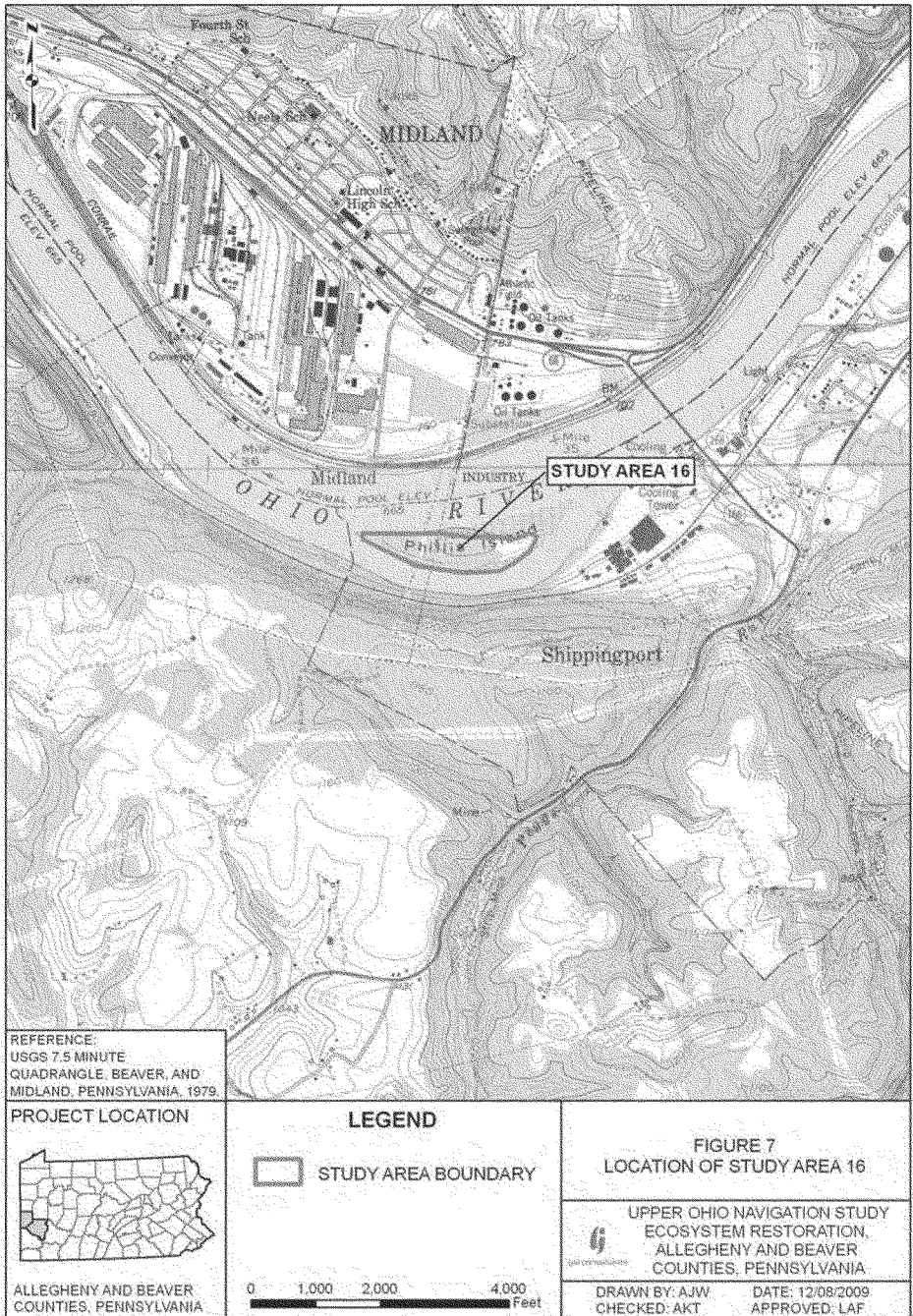


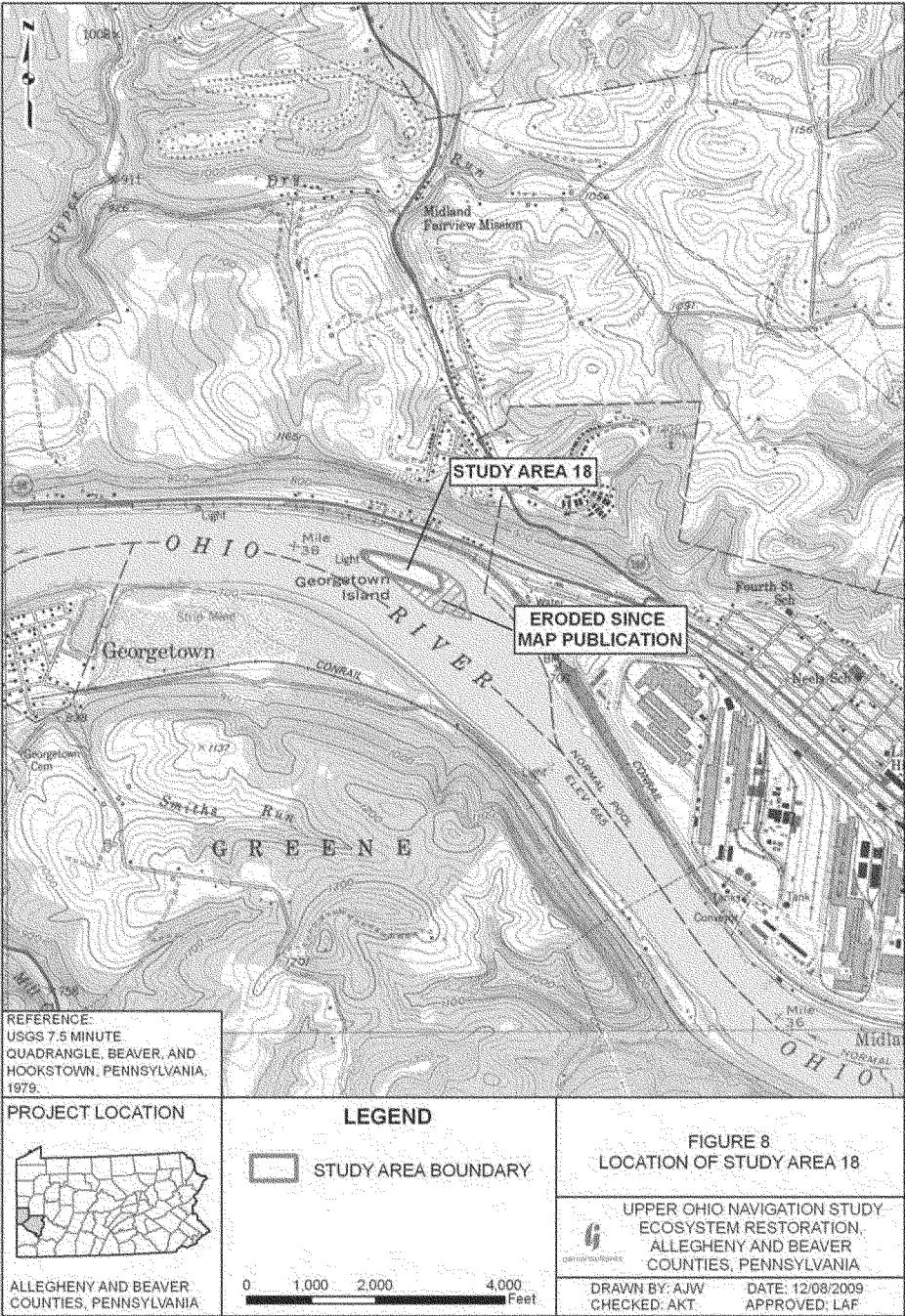












Introduction

The SA boundaries are not finalized at this time. Therefore, Phase I background research included a review of cultural resources within a 0.25-mile radius of each SA's area of potential effects (APE). The purpose of this Phase I cultural resources assessment study is to provide information on these nine potential ecosystem restoration SAs in compliance with federal regulations and to provide data that can be factored into the ecosystem benefit analysis.

The Statement of Work (SOW) included a review of interpreted side-scan sonar images on file at the U.S. Army Corps of Engineers, Pittsburgh District (Pittsburgh District) to consider potential aquatic cultural resources. It was later determined that the side-scan sonar images on file at the Pittsburgh District had not been interpreted and, consequently, the review of side-scan sonar data is not included in this report. The map research included the review of a 1939 aerial photograph, 1876 atlas map, 1877 map of the Ohio River, and several USGS topographic quadrangle maps. In addition, other atlas maps, an 1828 map of the Ohio River, and other aerial photographs were reviewed when available.

Project Study Areas

The SAs varied in size and location. SAs 5, 6, and 7 are located in Allegheny County, while the remaining six areas are located in Beaver County. SA 5 consists of an approximately 2.41-acre parcel located on the western bank of the Ohio River opposite Davis Island and north of McKees Rocks. SA 6 consists of a 17.79-acre parcel located entirely within the Ohio River (see Figure 2). SA 7 is comprised of an approximately 9.78-acre parcel located on the southwestern bank of the Ohio River, south of Neville Island (see Figure 3). SA 10 consists of a 2.98-acre parcel located on the eastern bank of

the Ohio River near the mouth of Economy Run (see Figure 4). SA 11 is a 19.62-acre parcel located entirely within the river at the confluence of the Beaver and Ohio rivers (see Figure 5). SA 13 consists of an 8.37-acre parcel located on the northern bank of the Ohio River just west of where Fourmile Run empties into the Ohio. SA 14 is comprised of an approximately 89.67-acre parcel situated between SA 13 and Montgomery Dam (see Figure 6). SA 14 includes the only terrestrial portion of the project. SA 16 consists of an approximately 26.44-acre parcel surrounding Phillis Island, near the town of Midland (see Figure 7), while SA 18 consists of a 7.26-acre parcel surrounding Georgetown Island, near the town of Georgetown (see Figure 8). Each study area is assessed and reported separately within this Phase I cultural resources assessment study report.

The terrestrial component of the project varies by study area. SAs 6 and 11 are located entirely within the river and do not involve a tie-in to the shoreline. Six of the SAs (5, 7, 10, 13, 16, and 18) involve fill placement below ordinary high water with a terrestrial tie-in located along the riverbank. The remaining area (SA 14) includes terrestrial and submerged activities.

Area of Potential Effect (APE)

The APE for archaeological, architectural, and historical resources was defined in consultation with the Nashville District as the footprints of the nine proposed ecosystem restoration areas, which comprise approximately 184.31 acres (Table 1).

Introduction

Table 1. Study Locations and Cultural Resources Testing Required under SOW

Location	Planned Activity	Approx. Area (acres*)	Cultural Resource Tasks (as specified in the SOW)
SA 5	Foreshore dike parallel to bank creating enhanced aquatic habitat between bank and dike	2.41	Background Research; No Field Testing
SA 6	Substrate enhancement and contouring to create enhanced aquatic habitat	17.79	Background Research; No Field Testing
SA 7	Foreshore dike parallel to bank creating enhanced aquatic habitat between bank and dike	9.78	Background Research; No Field Testing
SA 10	Foreshore dike parallel to bank creating enhanced aquatic habitat between bank and dike	2.98	Background Research; No Field Testing
SA 11	Substrate enhancement and contouring to create enhanced aquatic habitat at gravel bar at mouth of Beaver River	19.62	Background Research; No Field Testing
SA 13	Foreshore dike parallel to bank creating enhanced aquatic habitat between bank and dike	8.37	Background Research; No Field Testing
SA 14	Improve wetlands, remove invasive species, plant native species	89.67	Background Research; Up to 16 Judgmental STPs
SA 16	Ring dike parallel to island bank to create enhanced aquatic habitat between dike and island bank	26.44	Background Research; No Field Testing
SA 18	Ring dike parallel to island bank to create enhanced aquatic habitat between dike and island bank	7.26	Background Research; No Field Testing
Total		184.31	Background Research of 9 SAs; Up to 16 Judgmental STPs

Regulatory Guidelines

The cultural resource assessment study is part of a NEPA EIS report and is subject to applicable federal regulations. The study meets Section 106 of the National Historic Preservation Act (NHPA) of 1966 guidelines. The cultural resource assessment, which was performed in accordance with the SOW, also meets the requirements of the Pennsylvania Bureau for Historic Preservation's (2008) *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations*.

Project Staff

This project was undertaken under the supervision of Lori Frye, M.A., RPA, Principal Investigator, and Alyssa K. Trimmer, M.A., RPA, Field Director. Field crew

included Joe Fedor and Corry Laughlin. Colleen Dugan conducted background research and analyzed the artifacts. Amanda Wasielewski prepared report figures.

Report Organization

The report is divided into six chapters. Chapter 1 provides an introduction to the project. Chapters 2 and 3 discuss the environmental and cultural settings, respectively. Chapter 4 describes the methods used to complete this investigation. The results are presented in Chapter 5 followed by a summary of the findings and recommendations in Chapter 6.

The report also includes five appendices. Appendix A provides a copy of the PHMC Report Summary Form. The Scope of Work is presented in Appendix B. The revised PASS for Site 36Bv9 is located in Appendix C. The artifact catalog for this site is located in Appendix D. The resumes of key personnel are presented in Appendix E.

Introduction

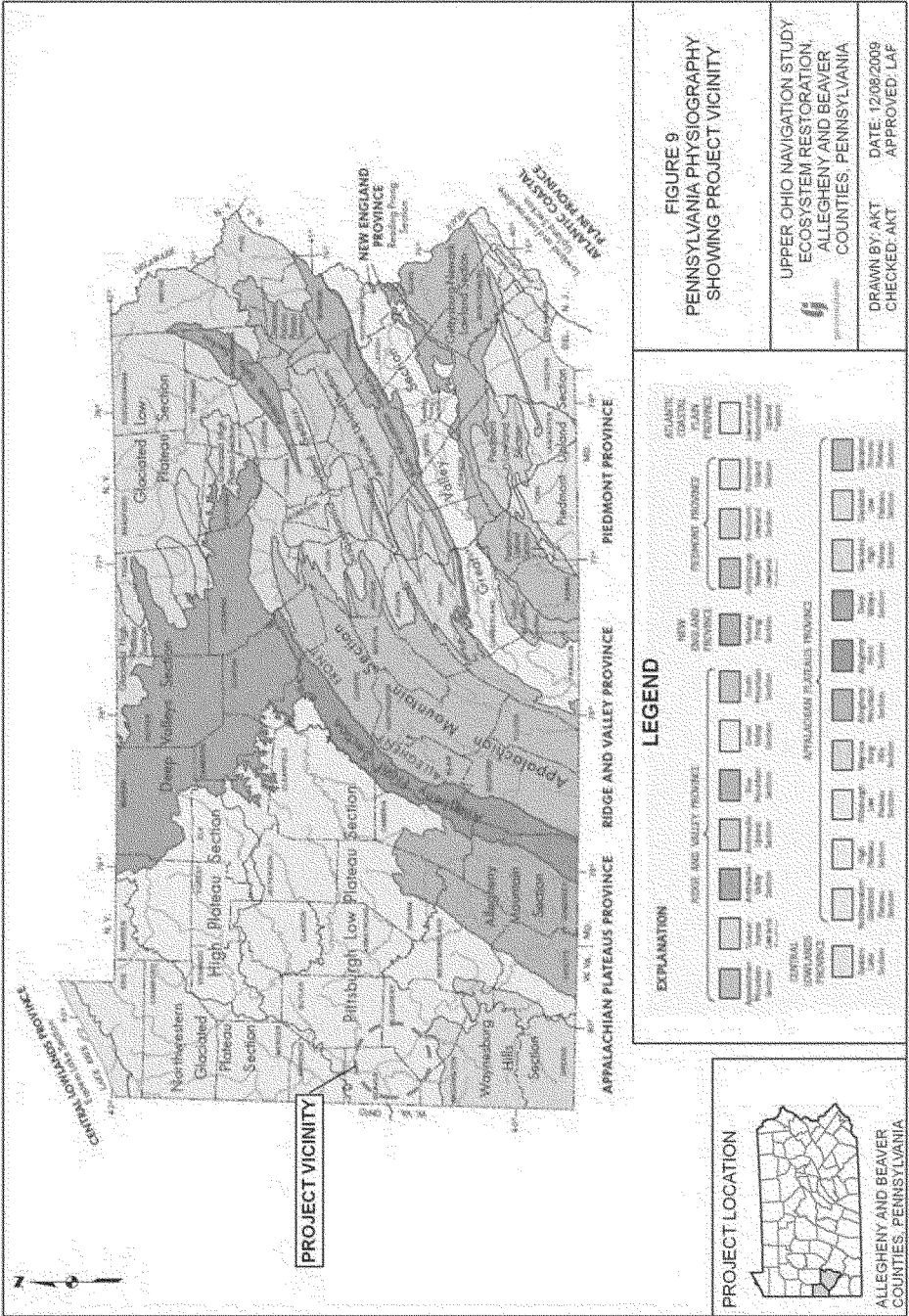
CHAPTER 2. ENVIRONMENTAL SETTING

Physiography and Geology

The SAs fall within the unglaciated Pittsburgh Low Plateau section of the Appalachian Plateaus Province (Berg et al. 1989; Fenneman 1938; Thornbury 1965; Sevon 2000) (Figure 9). The Appalachian Plateaus Province is characterized by relatively flat-lying predominately clastic rocks that are higher in elevation and younger in age than surrounding provinces (Thornbury 1965). Undulating surfaces, narrow shallow valleys, and less folding and uplifting than adjacent sections of the Appalachian Plateau typify the unglaciated Pittsburgh Low Plateau section. Drainage patterns are generally dendritic with both the Allegheny and Beaver rivers serving as major drainageways for Late Wisconsin glacial outwash.

The sedimentary bedrock found in Allegheny and Beaver counties consists of sandstone, coal, shale, limestone, and siltstone, which may be visible along embankments. Bedrock geology for these areas falls within the Conemaugh Group (an upper Pennsylvanian-age deposit) and the Allegheny Group (a middle Pennsylvanian-age deposit) (Socolow 1980). The Allegheny Group represents upper delta plain facies, while the Conemaugh Group is associated with lower delta plain facies (Wagner et al. 1970).

The Conemaugh Group is divided into the stratigraphically higher Casselman Formation and the lower Glenshaw Formation; Ames limestone separates these two formations. The Casselman Formation is comprised of a cyclic sequence of shale, sandstone, siltstone, marine limestone, and red beds (associated with slides) formed in a lower delta environment. Thin, non-persistent, coal beds are also present. The Glenshaw



Formation is identified by widespread marine limestone and shale units found in stratigraphic succession (Edmunds et al. 1999).

Hydrology, Soils and Geomorphology

The study areas are situated within the Ohio River channel, except for SA 14, which is located where a stream enters the Ohio River. Many large tributaries empty into the Ohio River within the 38-mile Upper Ohio Navigation Study area. Most notable is the Beaver River, which empties into the Ohio River near River Mile 25.5. Chartiers Creek and Raccoon Creek are also major drainages that empty into the Ohio River.

There are numerous islands within the Ohio River—a remnant of the braided river channel present before the construction of locks and dams. The pools behind these navigation structures affect erosion of the islands and riverbanks. The Ohio River has been subjected to major floods, which result in both scouring and soil deposition on the riverbanks and the islands. Flooding may have made many of the small islands uninhabitable. Brunot Island, Davis Island, and Neville Island are higher and are suitable for a variety of activities. Neville Island, for instance, known for its fertile agricultural fields and quality produce in the nineteenth century, shifted to use as an industrial area during the twentieth century due to its easy access to river transportation.

Eight of the nine SAs fall within the Ohio River channel and do not have associated soil types. The Ohio River valley is mapped with Pope Association in the floodplains and Conotton Association on high terraces. Pope (Po) soils are well drained and began to form in the Late Holocene. Conotton (Co) soils are well drained to excessively drained soils that formed in glacial outwash materials on kames and terraces.

Environmental Setting

Philo (Ph) silt loams are moderately well drained level to relatively level soils consisting of alluvial soils derived from sedimentary rock found on floodplains.

Industrial development contributed to the dumping of waste material along the riverbank. Areas in the soil survey designated as Dumps (Du) soils refer to industrial waste deposits and may be barren due to the toxic nature of the steel, chemical, or other industrial waste material.

After the 1936 flood on the Ohio River, fill was brought in to stabilize shorelines in some areas. These fill deposits are designated as Urban Lands (Ub) in the U.S. Department of Agriculture county soil surveys if there is more than two feet of fill. This designation is also used in urban areas with disturbed soils.

Modern and Past Climates

During the Wisconsin glaciation of the Pleistocene, the Laurentide ice sheets reached their maximum extent in eastern North America between 21,000 and 17,000 B.P., extending as far south as the northern Beaver County line in western Pennsylvania (Crowl and Sevon 1999:226).

The environment of southwestern Pennsylvania has undergone dramatic changes throughout the last 17,000 years. Palynological data revealed a boreal spruce forest-dominated southwestern Pennsylvania 17,000 years ago (Delcourt and Delcourt 1980:145-147). North America experienced relatively rapid climatic warming between 14,000 and 11,000 years ago; pollen evidence indicates a Mixed Coniferous-Northern Hardwood, dominated by spruce and pine, migrated into much of the Midwest during the same period (Delcourt and Delcourt 1980:147; Gates 1993:84; Stingelin 1965).

Cave and sinkhole deposits in Bedford and Centre counties revealed that between 11,300 and 9000 BP, the climatic shift to a more temperate environment coincided with the disappearance of “Pleistocene megafauna” and the introduction of more temperate mammal species (Guilday 1967; Kurten and Anderson 1980). Vertebrate and pollen remains found at Meadowcroft Rockshelter indicate that by 11,500 B.P., the region had temperate “Carolinian” fauna, as well as oak, hickory, and pine forest, suggesting the initial emergence of the Mixed Mesophytic forest (Adovasio et al. 1998:11). This more temperate climate marks the beginning of the Holocene.

The gradual climate warming-and-drying trend during the hypsithermal interval (10,000 - 5000 B.P.) led to a decline in cool-adapted boreal forest species and an increase in hardwood species. An oak-hickory-hemlock-beech assemblage dominated this Mixed Hardwood Forest (Delcourt and Delcourt 1980:143, 150). By 4000 B.P., the climate was essentially the same as the modern climate.

Currently, the region has a humid continental climate with warm summers and cold winters, and a relatively even yearly distribution of precipitation (Newberry et al. 1981; Taylor et al. 1968; Trewartha 1967). In the Appalachian Plateaus Province, winters are cold, snowy, and cloudy with a 35% to 40% possibility for sunshine. Allegheny County has an average daily high temperature of 83° F in July, and an average daily low temperature of 19°F in January (Newberry et al. 1981). Annual precipitation ranges from 36-40 inches a year. Beaver County has a similar climate with an average temperature of 30°F in January, and the annual precipitation averages 38 inches a year (Taylor et al. 1968).

Environmental Setting

Flora

The SAs fall within a massive Mixed Mesophytic forest (Braun 1950) that became entrenched during the Holocene (Guilday et al. 1964). These forests typically include canopies of beech, chestnut, maple, tulip trees, basswood, red oak, white oak, buckeye, and hemlock. Smaller trees include dogwood, redbud, sourwood, ironwood, magnolias, holly, hornbeam, and service berry (Braun 1950:43). These forests provided vast quantities of nut masts for Native American exploitation, including walnuts, butternuts, hickory nuts, and chestnuts.

Fauna

Prehistoric faunal assemblages in the Appalachians reveal a rich and diverse fauna for forager exploitation. White-tailed deer was the most common species identified. Other species available for use by prehistoric populations included black bear, elk, bobcat, wolf, cougar, river otter, raccoon, squirrel, rabbit, fox, beaver, and woodchuck. Except for the extinction of certain large animals (elk, wolf, and cougar) and increases in other species populations (white-tailed deer, turkey, and woodchuck), the mammal composition of the area is little changed from early historic times (Shelford 1963).

Avian and aquatic species also formed part of the subsistence base. The waterways attract ducks and geese. The river is also home to more than 20 families of fish including gar, lampreys, sturgeon, paddlefish, bowfin, mooneye, tarpan, herring, suckers, catfish, pike, mudminnows, trout, burbot, perch, killfish, bass, sunfish, and drum fish, along with various mollusk species.

CHAPTER 3. CULTURAL SETTING

The following summaries of the prehistory of southwestern Pennsylvania, including Allegheny and Beaver counties, provide an archaeological and historical context for assessing potential site significance.

Paleoindian (11,500 to 10,000 BP)

The earliest occupation of North America occurred during the Paleoindian period prior to 8000 B.C. Radiocarbon dates of 10,000 BP to 11,000 BP have been recorded at Meadowcroft Rockshelter in southwestern Pennsylvania (Adovasio et al. 1978). Based on the distribution of diagnostic artifacts, typically made of exotic lithic raw materials, Paleoindian populations were highly mobile bands of hunters and gatherers who inhabited major river valleys and focused their travels along low-order streams (Lantz 1984). Sites are marked by artifact scatters of fluted-stone spear points and flake tools used for cutting and scraping tasks.

Lantz (1984) reports 210 sites with Paleoindian components in the drainage of the Upper Ohio Valley in western Pennsylvania. The majority of Paleoindian points and sites are found on lowland terraces of small tributaries in the glaciated portions of northern Pennsylvania. In unglaciated regions, Paleoindian sites are found in more diverse elevations and exhibit less spatial patterning (Lantz 1985:180).

Archaic Period

Early Archaic (10,000 to 8000 BP)

The beginning of the Archaic period in eastern North America is generally associated with the onset of the Holocene, which directly followed the end of Pleistocene glaciation. This period is not well understood, but it appears that groups were highly

Environmental Setting

mobile and may have sustained a significant population increase (Carr 1998a: 49, 60 and Stewart and Katzer 1989). Sites are more common near the confluence of streams (Adovasio et al. 1998:18). The warmer, drier, climate meant that Early Archaic foragers did not have megafauna available and instead procured a more diversified set of resources than their Paleoindian ancestors.

A technological change in projectile point manufacture and forms, from fluted to notched and stemmed bifaces, is believed to represent changes in the hafting of these projectiles to dart or spear shafts. Early Archaic diagnostic projectile point types in the Upper Ohio Valley include Kirk corner-notched, Kirk stemmed, LeCroy, and Kanawha stemmed points (Raber et al. 1998).

Middle Archaic (8000 to 5000 BP)

The Middle Archaic is poorly understood due to a paucity of documented Middle Archaic sites in Southwestern Pennsylvania. Middle Archaic settlement in western Pennsylvania likely consisted of base camps positioned on Holocene-age river terraces, smaller resource procurement stations (for plant and animal acquisition) in upland settings, and lithic reduction stations near outcrops of suitable stone for tool manufacture (Carr 1998b; Cowin 1991; George 1985; Stewart and Kratzer 1989). Carr (1998b: 88) notes a significant population increase during the Middle Archaic based on PASS site file data. Point types indicative of the Middle Archaic period typically include Stanly, Big Sandy II, and Otter Creek points, with rare examples of Morrow Mountain and Guilford type bifaces (Cowin 1991:46).

Late Archaic (5000 to 3000 BP)

The Late Archaic period experienced major environmental changes, including a continued rise in sea level and an increased availability of estuarine resources. These environmental changes affected cultural changes, including continued population growth, an increased shift to logistically oriented subsistence/settlement patterns, and the establishment of exchange networks. Late Archaic Native American populations on the Appalachian Plateau developed a well-defined schedule of resource exploitation. Site types included large, perhaps multi-seasonal, base camps generally associated with larger rivers, suggesting intensified exploitation of riverine resources; small, short-term upland base camps; and extraction sites are found in both upland and lowland areas (Stewart and Kratzer 1989).

Diagnostic artifacts of this time period include Lamoka, Steubenville stemmed and lanceolate points, Brewerton notched points, and varieties of broad-bladed and narrow-stemmed projectile points (Mayer-Oakes 1955; George 1985). There was also an increase in the use of “non-projectile point flaked stone” technologies, including expedient flake tool and non-lithic types. Adovasio et al. (1998:20) interpret these data to mean that there was “a greater array of functional activities and techno-economic strategies involving the base camps of this period.”

Woodland Period***Early Woodland (3000 BP to 2100 BP)***

Diagnostic Early Woodland traits include the introduction and use of ceramic vessels and an increased reliance on horticulture and sedentism (Cowin 1985). The emergence of the Adena cultural complex in the Central Ohio Valley influenced groups

Environmental Setting

eastward into New York and New Jersey, and directly involved populations in western Pennsylvania. Adena and Adena-related Early Woodland occupations in the upper Ohio Valley are reflected by accretional burial mounds and other earthworks constructed between 400 BC and AD 250 (Mayer-Oakes 1955; Dragoo 1963; Clay 1991).

Ceramics generally function as cultural horizon markers for archaeologists who study the Woodland period. Early Woodland pottery is characterized as thick-walled, flat-bottomed, and coarse grit-tempered. Diagnostic projectile points include Adena and Cresap Stemmed points. Ethnobotanical remains from various Early Woodland sites suggest that while domesticates were introduced, they were dominated by the use of widely available wild plant foods (Adovasio and Johnson 1981; Ballweber 1989).

Middle Woodland (2100 BP to AD 900)

The Middle Woodland period is characterized by an elaboration in burial ceremonialism, widespread interregional exchange, and increased importance of indigenous cultigens. The first use of maize as a cultigen may date to this period. After the end of Adena-related ceremonialism circa AD 250, the Hopewell complex flourished and brought cultures in western Pennsylvania directly and/or indirectly into its exchange networks (Kent et al. 1971). Large multiseasonal base camps or villages on terraces above major streams, and smaller seasonal base camps and extraction loci in the uplands, are typical of the Middle Woodland settlement pattern (MacDonald 2002). Diagnostic projectile points include a variety of notched and expanding stemmed forms, while ceramic vessels continue to be grit-tempered, with cordmarking a common surface treatment (MacDonald 2002).

Late Woodland (AD 900 to 1600)

The Late Woodland period in southwestern Pennsylvania was typified by a complex of cultural traits identified as Monongahela. Monongahela sites have been recorded across much of western Pennsylvania, with a core of settlement centered near the Monongahela and Youghiogheny rivers (Cowin 1985; Johnson et al. 1989). During this period, subsistence activities shifted to a heavy reliance on maize production. Characteristic of a Late Woodland settlement pattern, large multi-seasonal villages (generally circular and often fortified with a round or oval stockade) were typically situated on upland hilltops and saddles. Houses were arranged around a central circular plaza and were abutted by large circular storage pits (Bennett and Porter 1986:17). Social organization became more complex during the Late Woodland period and led to the emergence of tribal societies. Chesser notched, Jack's Reef corner-notched, Levanna and Hamilton triangular points (Justice 1987), as well as Backstrum side-notched (George 1992), are all diagnostic projectile points of the Late Woodland.

Protohistoric and Contact Period (AD 1600-1758)

The Protohistoric/Contact period represents a change from the Late Woodland subsistence-settlement systems. Sites documenting the Monongahela/Protohistoric transition and the early Protohistoric/Contact period include the Foley Site and the Throckmorton Site (Nass 1995:81) in western Pennsylvania. These sites represent Monongahela-like lifeways on which increasing trade and conflict were superimposed. During Early Contact times, western Pennsylvania was occupied by a variety of Native American groups, most notably the Iroquois, the Shawnee, and the Delaware (Goddard 1978; Hunter 1978; Lounsbury 1978).

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Historic Period (1758-1950)

Europeans first began exploring the upper Ohio Valley as early as the seventeenth century, and it was not long before both the French and the English held claims over the land west of the Appalachian Mountains. While both countries were involved in trading activities, the English also wanted to possess the land for agricultural uses, whereas the French focused primarily on trading, missionary, and military activities. Through their trading and missionary work, the French were able to establish relationships with the Native Americans, something that the English lacked (Bausman 1904: 37). The French and English began denying each other access to these lands and, consequently, the French and Indian War ensued.

The English victory in 1759 led many settlers to believe the lands west of the Alleghenies would open for settlement. However, Native Americans still occupied much of this land and were not willing to give it up. Therefore, early settlement was slow due to the constant threat of Indian conflict. In an attempt to further western settlement, U.S. General Anthony Wayne led an attack on the Native Americans of the Ohio Valley at the Battle of Fallen Timbers in 1794. The U.S. forces emerged victorious. The defeat of the Native Americans led to the signing of the Treaty of Greenville in 1795, which officially opened the western land to settlement.

Allegheny County was formed on September 24, 1788, out of Westmoreland and Washington counties. Pittsburgh became the county seat in 1791 (Miller et al. 2000: 19). The first portion of Beaver County to be settled by Europeans was the area that lies south of the Ohio River (Bausman 1904: 168). On March 12, 1800, Beaver County was formed out of Allegheny and Washington counties and was named after the Beaver River.

Land in the Ohio and Beaver River valleys was fertile, and agriculture became a driving force of the economy. In the early-to-mid nineteenth century, corn and wheat were the principal agricultural crops of the area. However, barley, oats, rye, and corn also became significant products (Bausman 1904: 279). Farmers found a large wool market in the woolen mills near Pittsburgh (Miller et al. 2000: 22).

Natural resources also proved profitable to the region. The area was recognized for its sandstone, limestone, fire clay, and coal extractive industries. An oil boom began in Pennsylvania in 1859, and Allegheny and Beaver counties were among the counties that profited accordingly. In the 1880s, natural gas was tapped in Allegheny County.

Transportation networks facilitated settlement of the area and were important to the industrial development of Allegheny and Beaver counties. The Pennsylvania Road (now Route 30), which opened in 1818, stretched from Pittsburgh to Philadelphia. The National Road (now Route 40), which also opened in 1818, extended from Wheeling, West Virginia, through Pennsylvania, to Cumberland, Maryland (Miller et al. 2000: 21). In 1852, the Pennsylvania Railroad opened a line connecting Pittsburgh to Philadelphia through Harrisburg (Treese 2003: 221). Other significant railroads constructed in southwestern Pennsylvania include the Pittsburgh and Lake Erie Railroad; Pittsburgh, Youngstown, and Ashtabula Railroad; Cleveland and Pittsburgh Railroad; and Ohio and Pennsylvania Railroad (Bausman 1904: 238, 259, 265). The Davis Island Lock and Dam, the first lock and dam constructed on the Ohio River, was completed in 1885. Other navigation improvements quickly followed.

Southwestern Pennsylvania emerged as an industrial and manufacturing leader on a worldwide scale. In Beaver County, boat building became an important industry,

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producing keelboats, cotton boats, flatboats, and steamboats. Important early industries in Allegheny County included glass manufacturing, boat building, nail and wire manufacturing, iron smelting, tanning, and tool making (Fleming 1922:470-472). The steel industry was established in Allegheny and Beaver counties during the late-nineteenth century, after the development of the Bessemer process. Southwestern Pennsylvania continued its industrial dominance through the first half of the twentieth century, due largely to the increased demands associated with World Wars I and II.

The late-twentieth century saw changes in the local economy. The 1970s saw a decline in manufacturing, and the 1980s brought a nationwide collapse of the steel industry. Over 400 steel mills closed, and more than 200,000 steel workers lost their jobs. Today, the economy of Southwestern Pennsylvania is centered on education, health care, technology, and professional services (Miller et al. 2000: 31).

CHAPTER 4. METHODOLOGY

The cultural resources assessment study included background research, field view, and limited subsurface testing.

Background Research

In advance of fieldwork, GAI conducted background research at the Pennsylvania Historical and Museum Commission-Bureau for Historic Preservation (BHP) in Harrisburg and the state's online Cultural Resources Geographic Information System (CRGIS). Background research was undertaken to: (1) identify previously recorded resources within and near the nine study areas; (2) develop an environmental and cultural context to aid in evaluation of identified resources; and (3) provide data to indicate areas that may be sensitive for cultural resources. The research included examining reports on previously surveyed areas, Pennsylvania Archaeology Site Survey (PASS) forms, Pennsylvania Historic Resource Survey (PHRS) forms, and National Register of Historic Places (NRHP) listings located within or immediately adjacent to the nine Study Area APEs. Published histories, environmental studies, and architectural histories for Allegheny and Beaver counties were also consulted.

Another important part of the background research included a review of available maps and aerial photographs for each SA to: (1) assist in evaluating the potential of the SAs to contain structures and historic-era archaeological sites, (2) examine development of the areas over time, and (3) provide insights into past land use activities that may affect soil conditions. Cartographic research typically included review of 1828 maps of the Ohio River and immediate vicinity (provided by the USACE, Pittsburgh District), at least three USGS topographic maps, 1876 Allegheny and Beaver County atlas maps,

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1877 mapping of the Ohio River and immediate vicinity, and 1939 aerial photographs available on the World Wide Web. Additional atlas maps were available for study areas falling within Allegheny County. Eleven aerial photographs were available for SA 14.

Fieldwork

On October 6-7, 2009, GAI, AES, Nashville District and Pittsburgh District personnel conducted a field view of the project areas. Eight of the SAs (5, 6, 7, 10, 11, 13, 16, and 18) were aquatic locations viewed by boat, while the only terrestrial SA (SA 14) was subjected to a pedestrian reconnaissance. Each SA was photographed.

GAI archaeologists conducted a pedestrian reconnaissance and limited subsurface testing of SA 14 (Montgomery Slough) on October 7, 2009. SA 14 background research indicated the presence of a large multi-component Woodland village site (36BV9), which was reportedly destroyed by late-twentieth century activities.

Subsurface archaeological investigations consisted of auger probes and judgmentally placed STPs excavated to identify cultural materials and establish whether intact soils were present within the project area. STPs measured 50 cm (1.5 ft) in diameter and were excavated by natural soil horizons, continuing at least 10 cm into culturally sterile subsoil. Excavated soils were screened through 6 mm (0.25-inch) hardware mesh for systematic artifact recovery. Close-interval (5-meter) STPs were excavated around positive STPs.

Excavation results were recorded on standardized field forms (including profiles of STPs, provenience data, depth of soil horizons, soil descriptions, and a list of any recovered artifacts). STPs were backfilled after excavations, and locations were

documented on SA design maps and recorded with a GPS unit capable of submeter accuracy.

Laboratory Analysis

GAI transported artifacts from Site 36BV9 to its laboratory in Homestead, Pennsylvania, for cleaning, processing, and analysis. Once artifacts arrived, laboratory staff checked the field specimen (FS) log against labeled artifact bags for consistency and accuracy. Technicians then temporarily placed the artifact bags in numerical order according to FS number to facilitate tracking during the processing, analysis, and curation stages. Subsequently, cultural materials were cleaned and placed on artifact-drying racks. Lab staff then re-bagged the clean, dry artifacts into new, 4-mil polyethylene bags. Provenience information was transferred onto the clean bags using a permanent ink marker (Sharpie®). An acid-free paper tag with complete provenience information was placed inside each artifact bag. Prehistoric lithic artifacts were subjected to descriptive and technological analyses. Artifacts collected during the project, as well as project field documents, will be curated at the Pennsylvania State Museum, pending landowner donation.

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CHAPTER 5. RESULTS

Results of the background research and field investigations are presented below by Study Area. Eight of the SAs (5, 6, 7, 10, 11, 13, 16, and 18) involved fill placement below ordinary high water and required only a literature review to identify any known submerged vessels or archaeological sites that might be affected by potential fill placement. SA 14 may involve modifications to the floodplain or terraces and required limited field investigations in addition to background research. Table 2 provides a summary of archaeological resource potential for each study area. Each SA is discussed separately below.

Table 2. Summary of Archaeological Resource Potential for Study Areas

SA	Recorded Archaeological Site in APE	Recorded Structure in APE	Mapped Resource in APE	Potential Cultural Resources in Immediate Vicinity	Comments
5	Davis Island Lock and Dam	No	Davis Island Lock and Dam	Davis Island Lock and Dam remains	Davis Island Lock and Dam remains may be present on river bottom and riverbank
6	No	No	No		
7	No	No	Ca. 1828 lock and dam	Ca. 1828 lock and dam	Previous cultural resources report indicates a high potential for prehistoric archaeological sites along the shoreline at northwest end of SA7.
10	No	No	No		Unspecified prehistoric open habitation site (36BV277) in nearby floodplain
11	No	No	No		Unspecified prehistoric open habitation site (36BV80) in nearby floodplain
13	No	No	No		
14	36BV9	No	No		Early Woodland (EW), Middle Woodland (MW), and Late Woodland (LW) Village in floodplain of SA 14
16	36BV334 and 36BV60	No	No	36BV334 and 36BV60	36BV334 - Unspecified prehistoric open habitation site on island 36BV60 – Early Archaic open habitation site on island
18	No	No	No		

Results

Study Area 5

Project Description

SA 5 is a proposed submerged foreshore dike located on the back channel of the Ohio River near Davis Island (see Figure 2) that would create enhanced aquatic habitats between the dike and shoreline. The proposed submerged dike is approximately 0.66 miles long (River Mile 4.5-5.2) and will tie in to the shoreline at its upstream terminus and run parallel to the shoreline for the remaining length of the structure. The project area encompasses approximately 2.41 acres and will have minimal shoreline impacts at a tie-in point for the dike. The tie-in point to the shore has not yet been established; therefore, the immediate shoreline paralleling the extent of the proposed foreshore dike was examined during background research.

Background Research

Literature research was undertaken at BHP for information regarding previous cultural resource investigations and recorded cultural resources in the vicinity of SA 5. No cultural resources surveys have been conducted within or immediately adjacent to SA 5. PASS files data indicate that no previously recorded archaeological sites occur within the SA or its immediate vicinity. PHRS and NRHP files indicate that there is one previously-recorded former historic architectural resource (now archaeological remains) at SA 5. The NRHP-listed Davis Island Lock and Dam site, consisting of remaining portions of the first lock and dam on the Ohio River, is significant for its contributions to engineering, transportation, and industry. The Davis Island Lock and Dam was designed between 1874 and 1878, completed in 1885, and removed in 1922; its structural remains

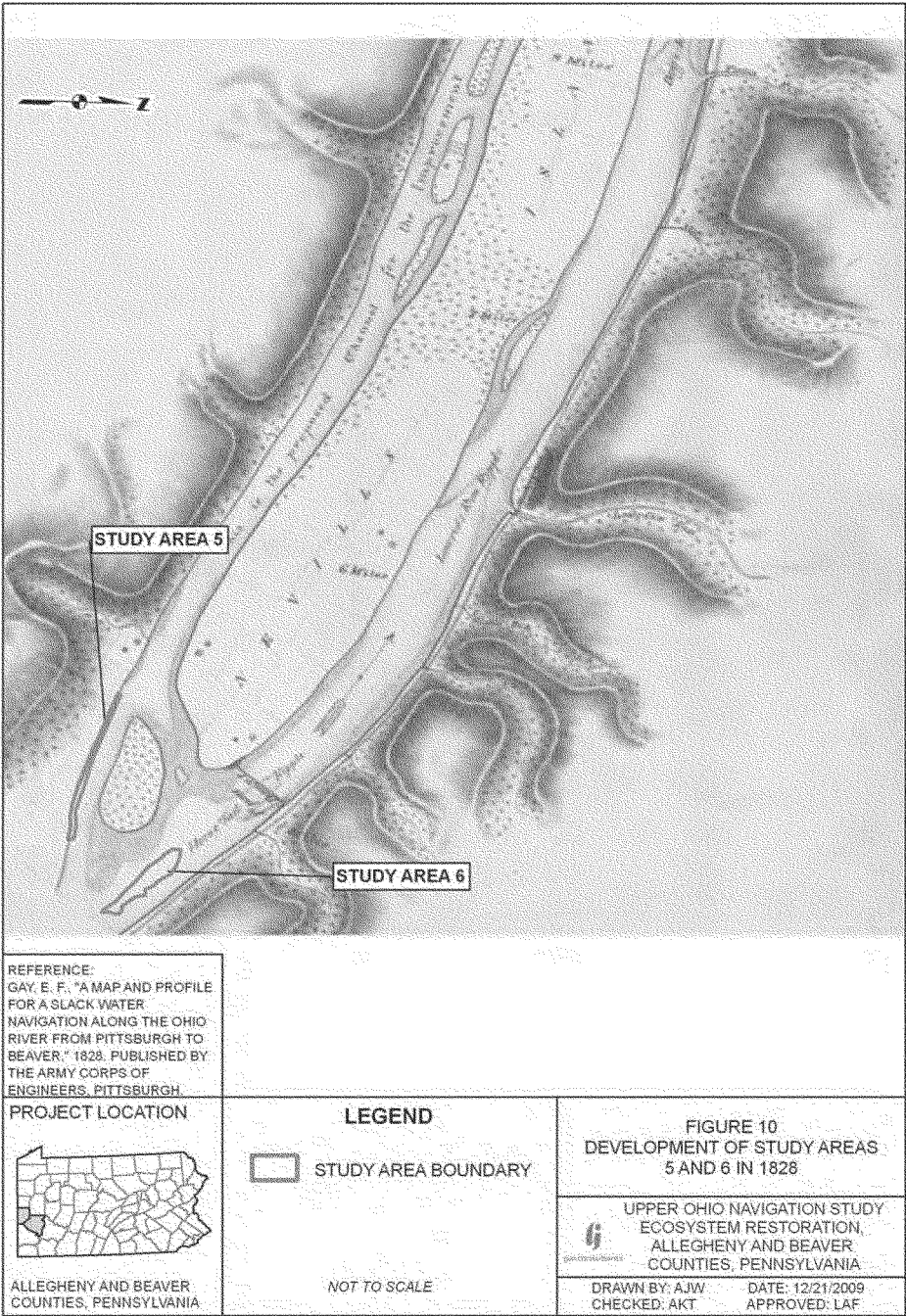
were listed on the NRHP in 1980. Features observed after the removal of this structure complex were included on the NRHP nomination form.

Three USGS topographic maps (1906, 1948, and 1997), two maps of the Ohio River and immediate vicinity (Gay 1828; Hayes 1877), and five historical atlas maps (Hopkins 1876, 1886, 1890, 1905, 1917) were reviewed for SA 5. The area was undeveloped in 1828 (Figure 10). In 1876, there was no development along the river's edge and only two structures shown near, but not within, the study area (Figure 11). By 1877, only one of those two structures remained (Figure 12). The former location of part of the Davis Island Dam and south riverbank retaining wall are depicted in the 1906 USGS quadrangle map (Figure 13). From 1906 to the present, the only other structure mapped within the immediate vicinity of the project area is the railroad, which paralleled the shoreline and is extant today. Since the construction of the railroad, the area has experienced additional industrial growth, but none within the riverine project area or immediate riverbank (see Figure 2).

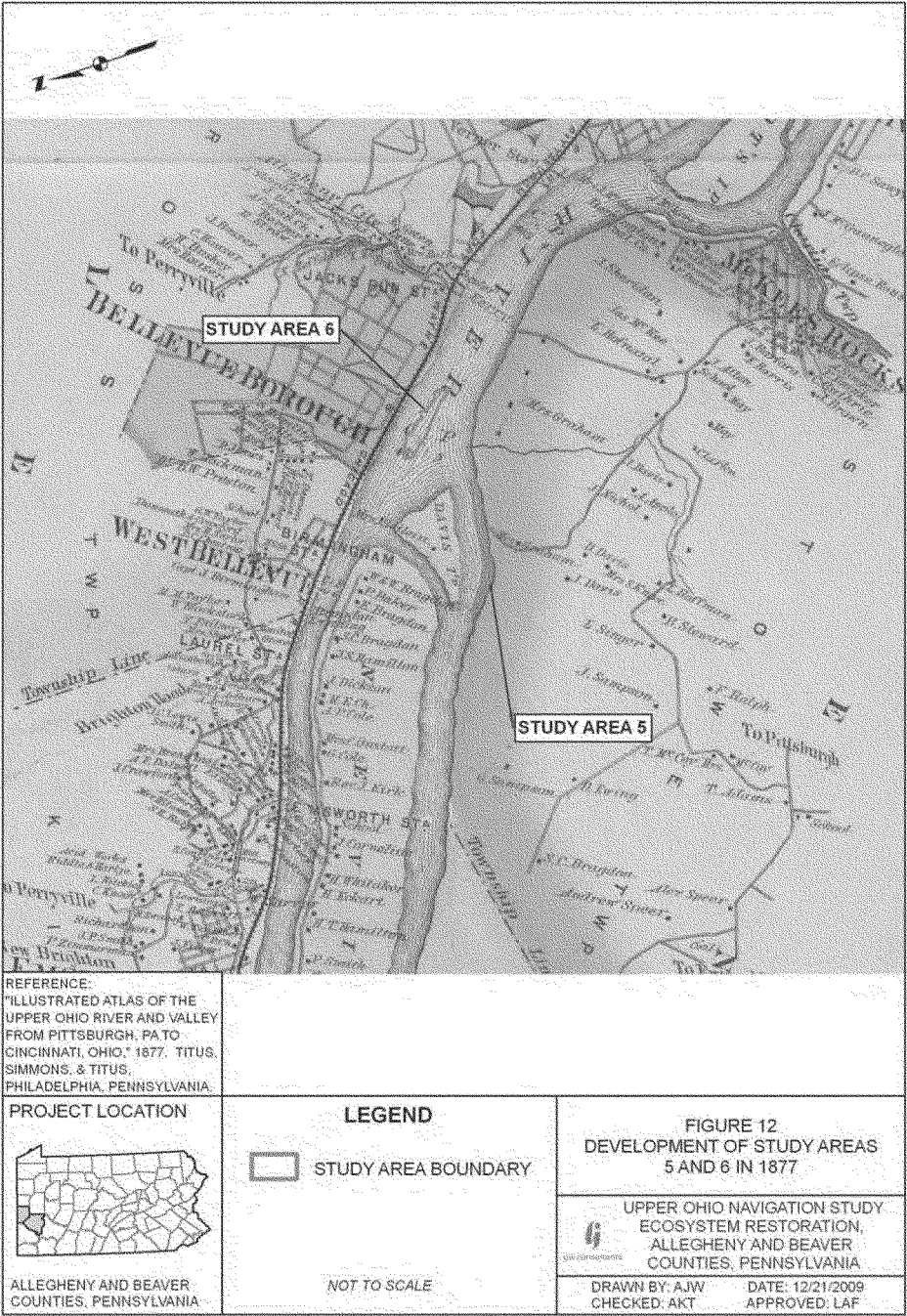
The area along the shoreline is mapped as Urban Lands (UB) (Newbury et al. 1981). This may be due to construction activities associated with the construction of Davis Island Lock and Dam and/or fill placed along the riverbank after the 1936 flood.

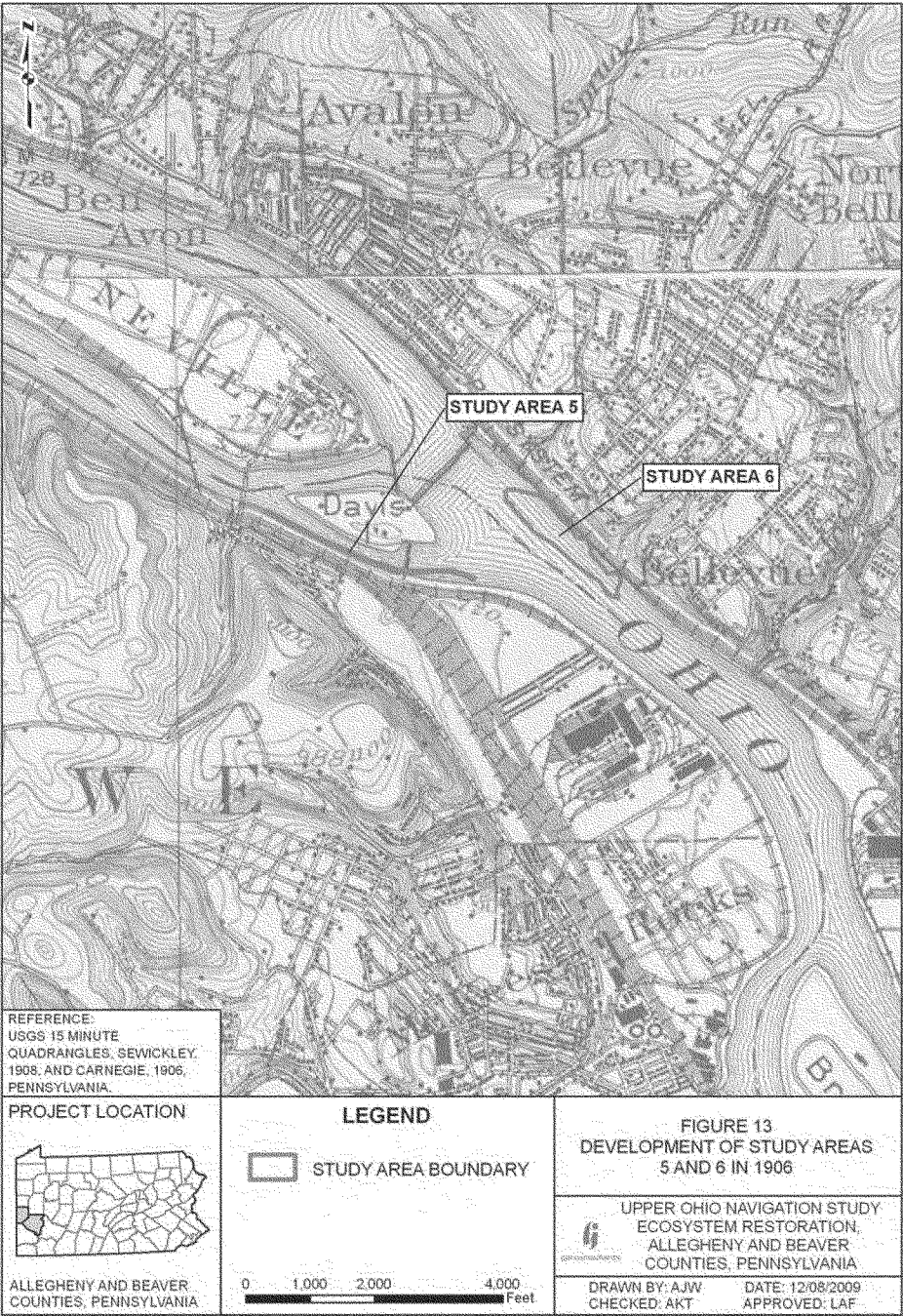
Site View

Study Area 5 was viewed by boat on October 7, 2009. There was no visible evidence of remains associated with Davis Island Lock and Dam on the riverbank, but vegetation obscured much of the view (Photograph 1).



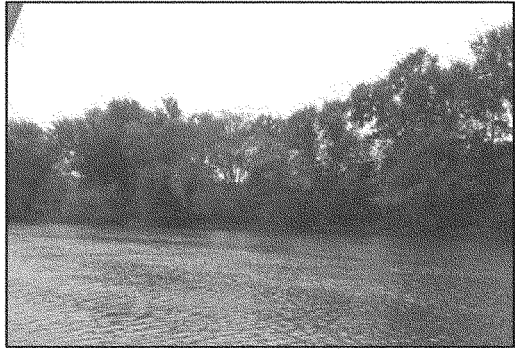






Results

***Photograph 1. Overview of SA 5.
View Southeast.***



Summary

Remnants of this NRHP-listed former Davis Island Lock and Dam may be present in Study Area 5. Therefore, this area is considered to have high potential for intact archaeological resources associated with this lock and dam in both the river channel and the riverbank. A ground reconnaissance and a review of interpreted side-scan sonar images are recommended to identify the location of any intact remains associated with the NRHP-listed Davis Island Lock and Dam site that fall within the SA 5 APE. Subsurface testing is recommended at the tie-in location if intact soils are present.

Study Area 6

Project Description

Study Area 6 is located in the Ohio River near the northeast bank from River Mile 3.9 to River Mile 5.0 (see Figure 2). This area was selected for possible contouring and substrate improvements to enhance spawning habitats. The APE, which will parallel the shoreline, is entirely within the river and will have no shoreline impacts. The project area covers approximately 17.79 acres.

Background Research

Literature research was undertaken at the BHP office for information regarding previous cultural resource investigations and recorded cultural resources in the vicinity of SA 6. No cultural resource surveys have been conducted within or immediately adjacent to SA 6. PASS and PHRS files indicate that no previously recorded archaeological sites or standing structures are located within the APE of SA 6. The NRHP files indicate that one NRHP-listed archaeological site (Davis Island Lock and Dam site) is near but not within the APE. As discussed above, the Davis Island Lock and Dam site consists of remnant construction features of the first lock and dam on the Ohio River, which was constructed in 1885.

Three USGS topographic maps (1906, 1948, and 1997), two maps of the Ohio River (Gay 1828; Hayes 1877), one 1939 aerial photograph, and five historical atlas maps (Hopkins 1876, 1886, 1890, 1905, 1917) were reviewed. SA 6, undeveloped in 1828 (see Figure 10), experienced industrial development by 1876, including railroad tracks and the nearby Bellvue Station (see Figure 11). By 1885, the Davis Island Lock and Dam was completed. This navigation structure was removed in 1922 and was situated outside of SA 6 (see Figure 13). From 1948 to present, the only mapped structure within the immediate vicinity of the project area is a lighthouse on the riverbank and a railroad line that parallels the shoreline (see Figure 2). These resources do not extend into SA 6.

The area along the shoreline is mapped as Urban Lands (Ub) (Newbury et al. 1981). This may be due to construction activities associated with Davis Island Lock and Dam, or fill placed along the riverbank for the railroad grade, or to raise or repair the riverbank after a flood.

Results

Site View

Study Area 6 was viewed by boat on October 7, 2009. The entire APE is submerged.

Summary

There are no known recorded cultural resources or mapped historic-era resources associated with SA 6. No additional archaeological investigations are recommended except to review interpreted side-scan sonar images to confirm that there are no submerged resources (boats or barges) over 50 years of age within this study area.

Study Area 7

Project Description

SA 7, centered on River Mile 8.7-9.8, is located on the southwest bank of the Ohio River in the back channel created by Neville Island (see Figure 3). This area is the location of a proposed foreshore dike approximately 1.14 miles in length that will tie in to the shoreline at its upstream terminus and parallel the shore for the remaining length of the structure. Moon Run empties into the Ohio River at the east end of the study area. The project area encompasses approximately 9.78 acres and will only have minimal shoreline impacts at the tie-in point for the dike. The tie-in point to the shore has not yet been established; therefore, the immediate shoreline paralleling the extent of the proposed foreshore dike was examined during background research.

Background Research

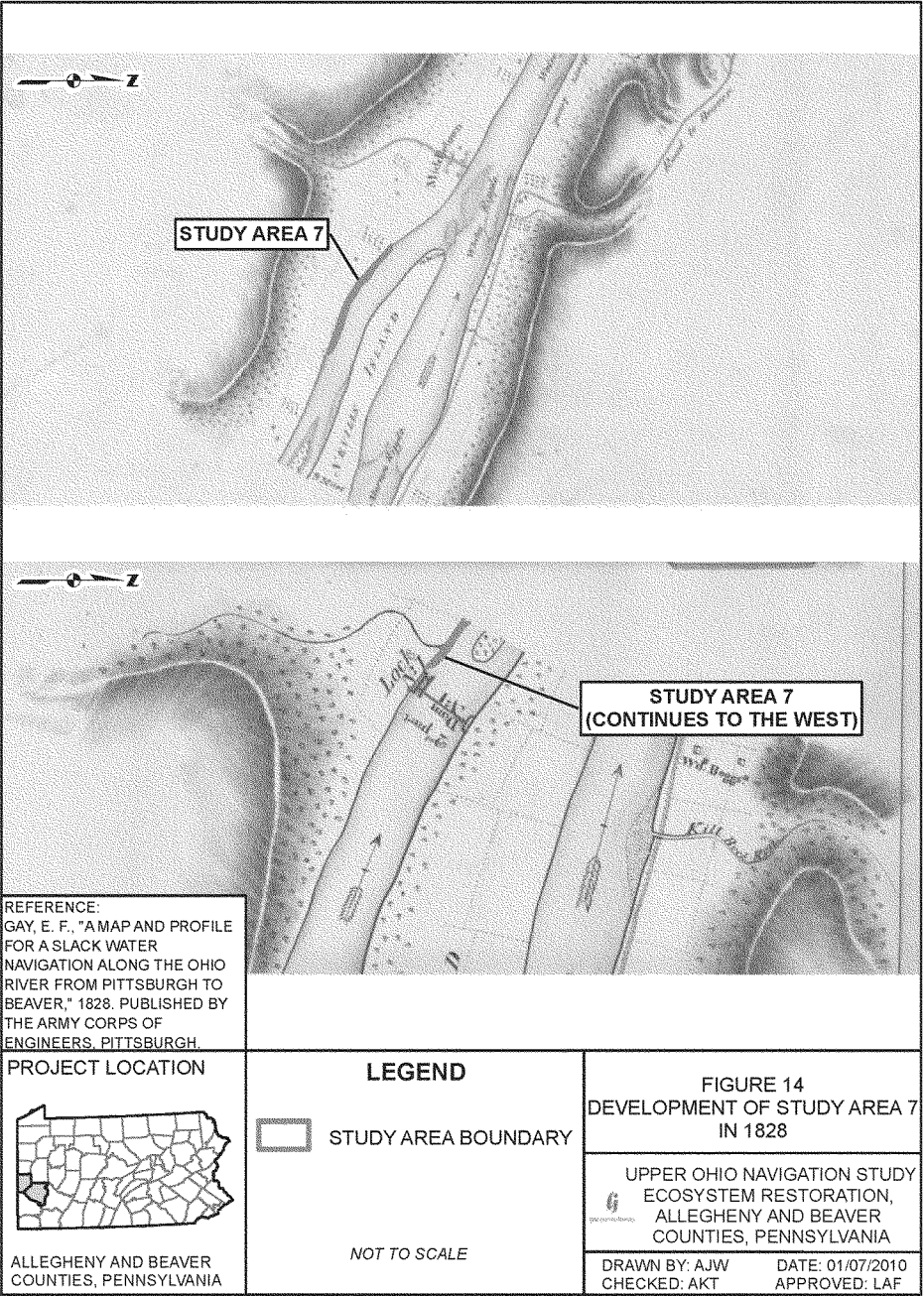
Literature research was undertaken at the BHP office in Harrisburg for information regarding previous cultural resource investigations and recorded cultural

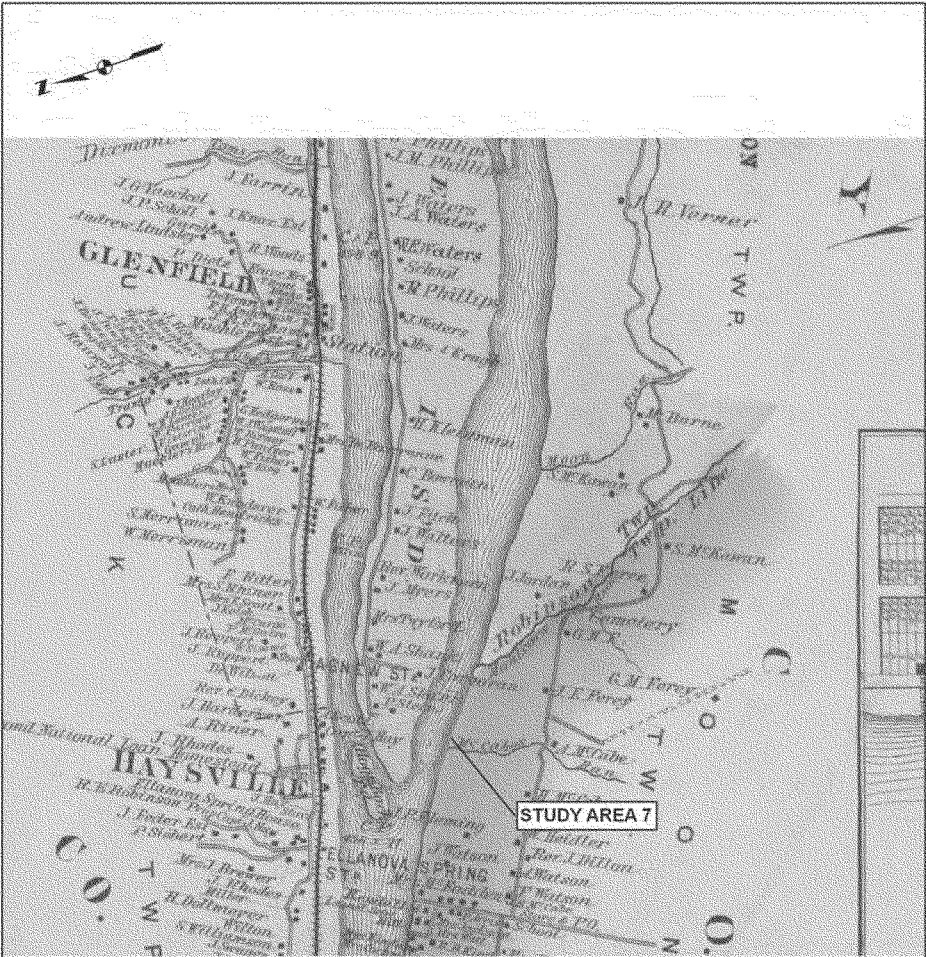
resources in the vicinity of SA 7. PASS, PHRS, and NRHP files indicate that no previously recorded cultural resources occur within SA 7 or its immediate vicinity.

One previous cultural resources survey was conducted within the immediate vicinity of SA 7. This survey (ER No. 1990-0673-003), conducted by Cultural Heritage Research Services (CHRS) on behalf of the Federal Highways Administration consisted of a Phase IA literature review for the Coraopolis Bridge, located at the northwestern extent of SA 7. Background research for the project indicated a high potential for prehistoric-era archaeological materials within the project area. However, the presence of hazardous materials prevented subsurface testing by CHRS.

Three topographic maps (1906/8, 1948, 1990), two maps of the Ohio River and its immediate vicinity (Gay 1828; Hayes 1877), one 1939 aerial photograph, and five historical atlas maps (Hopkins 1876, 1886, 1890, 1905, 1917) were reviewed for SA 7. Two houses were depicted on the 1828 map but were located away from the shoreline; however, a lock and dam are shown just east of Moon Run near the eastern terminus of SA7 (Figure 14, top and bottom). The 1876 and 1877 maps indicate that the SA 7 vicinity was sparsely developed with no structures in the immediate vicinity of the shoreline and no riverine resources in this location (Figure 15). From 1906/8 to the present, a railroad line parallels the shoreline and about 10 houses and an industrial complex are set further back from the riverbank (Figure 16). None of these structures is mapped on the shoreline or immediately adjacent to SA 7.

Based on map research, SA 7 has a low potential to impact historic-era archaeological resources except on the eastern end where a dam was constructed in the early-nineteenth century.





REFERENCE:
"ILLUSTRATED ATLAS OF THE
UPPER OHIO RIVER AND VALLEY
FROM PITTSBURGH, PA TO
CINCINNATI, OHIO," 1877. TITUS,
SIMMONS, & TITUS.
PHILADELPHIA, PENNSYLVANIA.

PROJECT LOCATION



ALLEGHENY AND BEAVER
COUNTIES, PENNSYLVANIA

LEGEND



STUDY AREA BOUNDARY

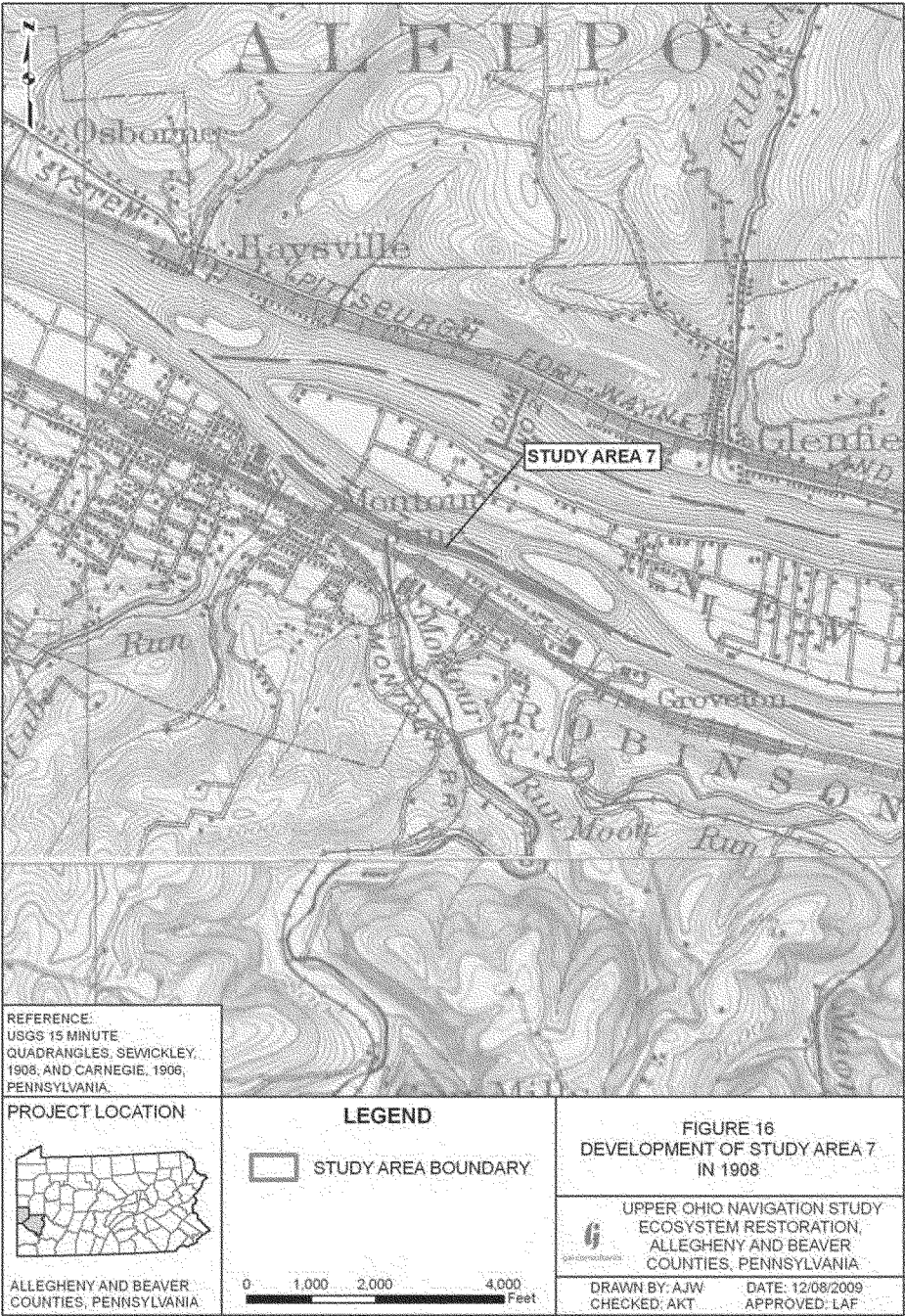
NOT TO SCALE

FIGURE 15
DEVELOPMENT OF STUDY AREA 7
IN 1877

UPPER OHIO NAVIGATION STUDY
ECOSYSTEM RESTORATION,
ALLEGHENY AND BEAVER
COUNTIES, PENNSYLVANIA

DRAWN BY: AJW
CHECKED: AKT

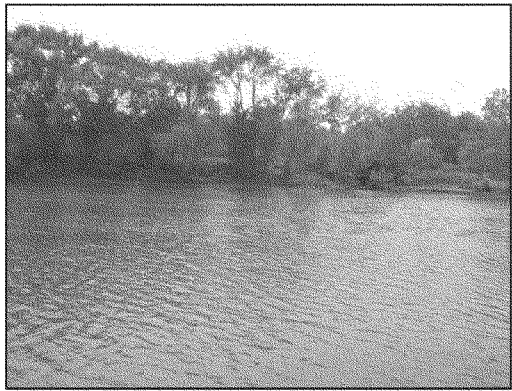
DATE: 12/21/2009
APPROVED: LAF



A review of the Allegheny County Soil Survey (Newbury et al. 1981) along the shoreline near SA7 indicates that the soils are mapped as Urban Lands (Ub). This may be due to industrial activities on the island or fill placed along the riverbank after the 1936 flood. Therefore, it is unlikely that the tie-in will impact intact cultural resources on the riverbank.

Site View

Study Area 7 was viewed by boat on October 7, 2009. There was no visible evidence of any archaeological remains along the shoreline but vegetation obscured much of the view (Photograph 2).



*Photograph 2. Overview of SA 7.
View Southeast.*

Summary

There are no recorded archaeological resources and one possible mapped historic-era resource (a ca. 1828 lock and dam near the eastern terminus of SA7) associated with SA 7. A previous cultural resource study indicated that the shoreline in the west terminus of the project area had a high potential for prehistoric archaeological resources, but hazardous materials in the soil prevented subsurface testing. Limited subsurface testing at the tie-in point and a review of interpreted side-scan sonar images are recommended to confirm that there are no terrestrial or submerged archaeological resources present prior to any ground-disturbing activities.

Results

Study Area 10

Project Description

SA 10 is located near the eastern bank of the Ohio River from River Mile 17.6-17.9 (see Figure 4). This area is the location of a proposed foreshore dike approximately 0.46 miles in length, which will tie in to the shoreline at its upstream terminus and parallel the shore for the remaining length of the structure. The project area covers nearly 3.0 acres and will have minimal shoreline impacts at a tie-in point for the dike. The tie-in point to the shore has not yet been established; therefore, the immediate shoreline paralleling the extent of the proposed foreshore dike was examined during background research.

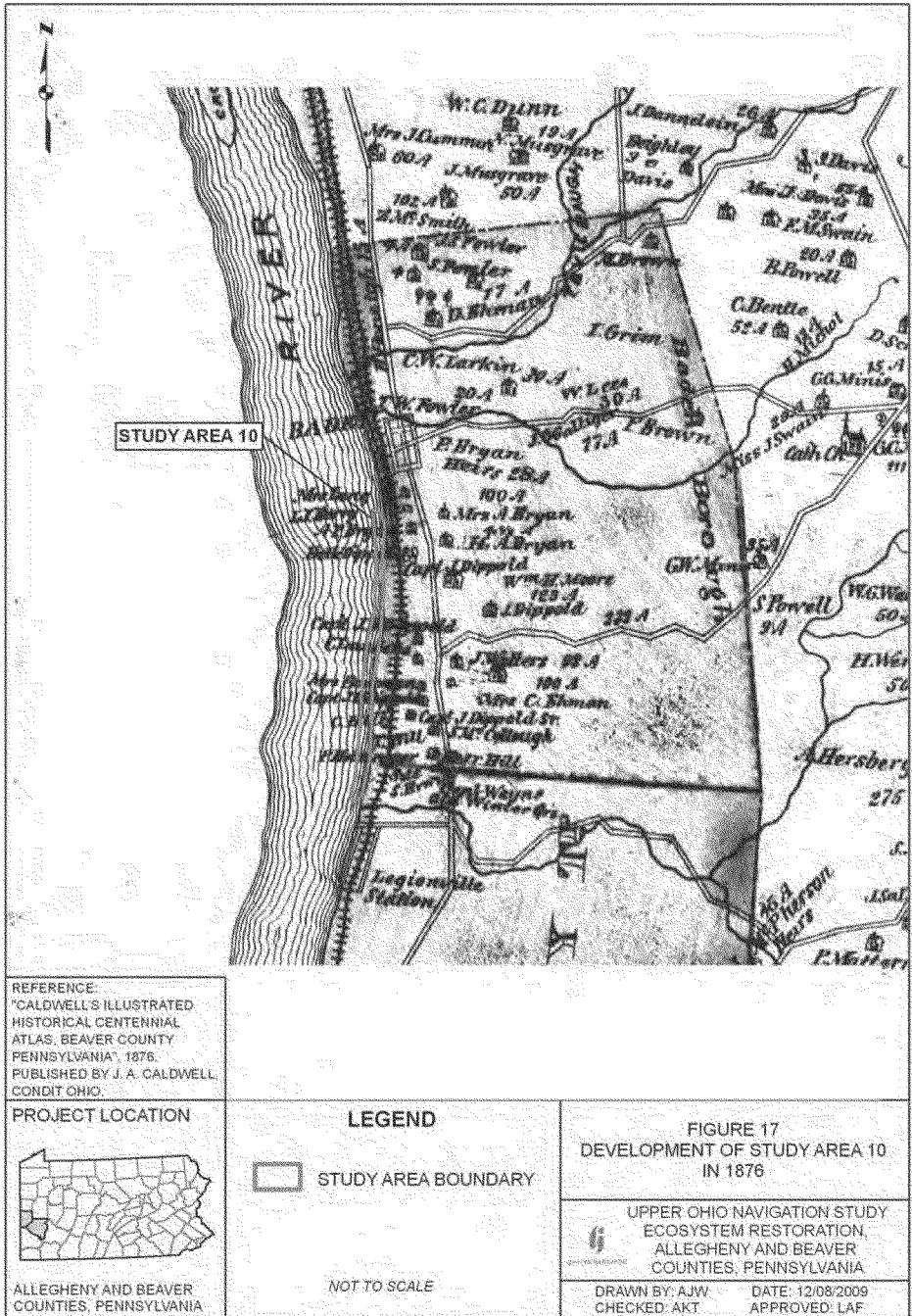
Background Research

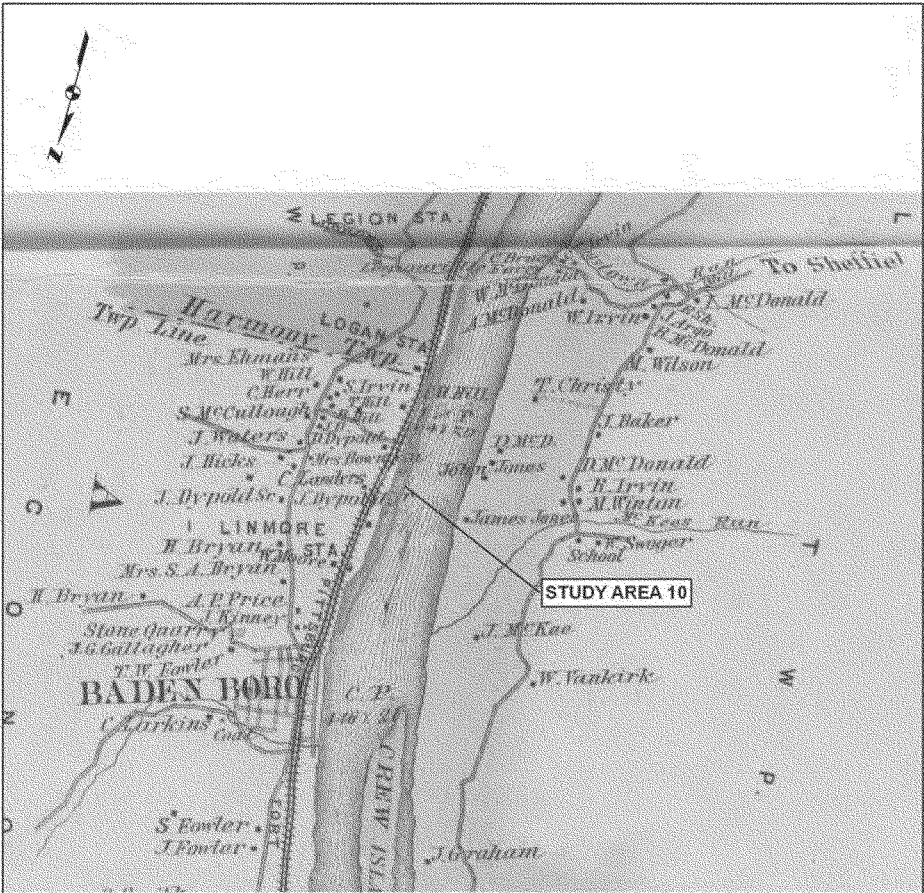
Literature research was undertaken at the BHP office for information regarding previous cultural resource investigations and recorded cultural resources in the vicinity of SA 10. PHRS and NRHP files indicate that there are no previously recorded architectural or historical resources located within SA 10 or close enough to the shoreline to be impacted by planned site activities. PASS files data indicate that no previously recorded archaeological sites occur within the SA; however, there is one previously recorded archaeological site (36BV277) within the immediate vicinity of SA 10 but set back from the riverbank (see Table 2). Identified by a collector, Site 36BV277 is an unassigned prehistoric-era site occupying the Ohio River floodplain immediately north of SA 10. It is difficult to ascertain the extent of the site and its current condition due to local development in the area.

Three previous cultural resources surveys (ER Nos. 1985-0066-007, 1989-0300-007, and 2000-0181-007) conducted near SA 10 were associated with Old Economy Village in Ambridge. Heberling Associates, Inc (HAI) conducted two previous surveys: excavations of the Granary Building (ER No. 1985-0066-007) and a Phase I survey for installation of new drainage lines adjacent to the Robertson House (ER No. 2000-0181-007). The remaining survey (ER No. 1989-0300-007), conducted by Marianna Thomas Architects, Clio Group, Inc., and a team of unnamed consultants, consisted of a survey of historic structures and archaeological investigation of the garden area.

Three USGS topographic maps (1904/8, 1953, and 1990), two maps of the Ohio River (Gay 1828; Hayes 1877), a 1939 aerial photograph, and one historical atlas map (Caldwell 1876) were reviewed. In 1828, there was no development along the Ohio River between Economy and Baden. By 1876, the Pennsylvania and Cleveland railroad line ran parallel to the river in this general vicinity (Figure 17). The 1877 map depicts two houses between the railroad line and riverbank on the north end of SA 10 (Figure 18). By 1904/8, the expanded rail lines occupied the area up to the riverbank (Figure 19). The railroad lines still occupy this area (see Figure 4). Based on map research, SA 10 has a low potential to impact historic-era archaeological resources.

Soil survey maps indicate the shoreline along SA10 is comprised of Dump (Du) deposits. There is no potential for an intact archaeological site within the industrial waste deposits. A field visit should be conducted to confirm that there are no intact soils at the tie-in location. If intact soils are present, subsurface testing may be necessary.





REFERENCE:
"ILLUSTRATED ATLAS OF THE
UPPER OHIO RIVER AND VALLEY
FROM PITTSBURGH, PA TO
CINCINNATI, OHIO," 1877. TITUS,
SIMMONS, & TITUS,
PHILADELPHIA, PENNSYLVANIA.

PROJECT LOCATION



ALLEGHENY AND BEAVER
COUNTIES, PENNSYLVANIA

LEGEND



STUDY AREA BOUNDARY

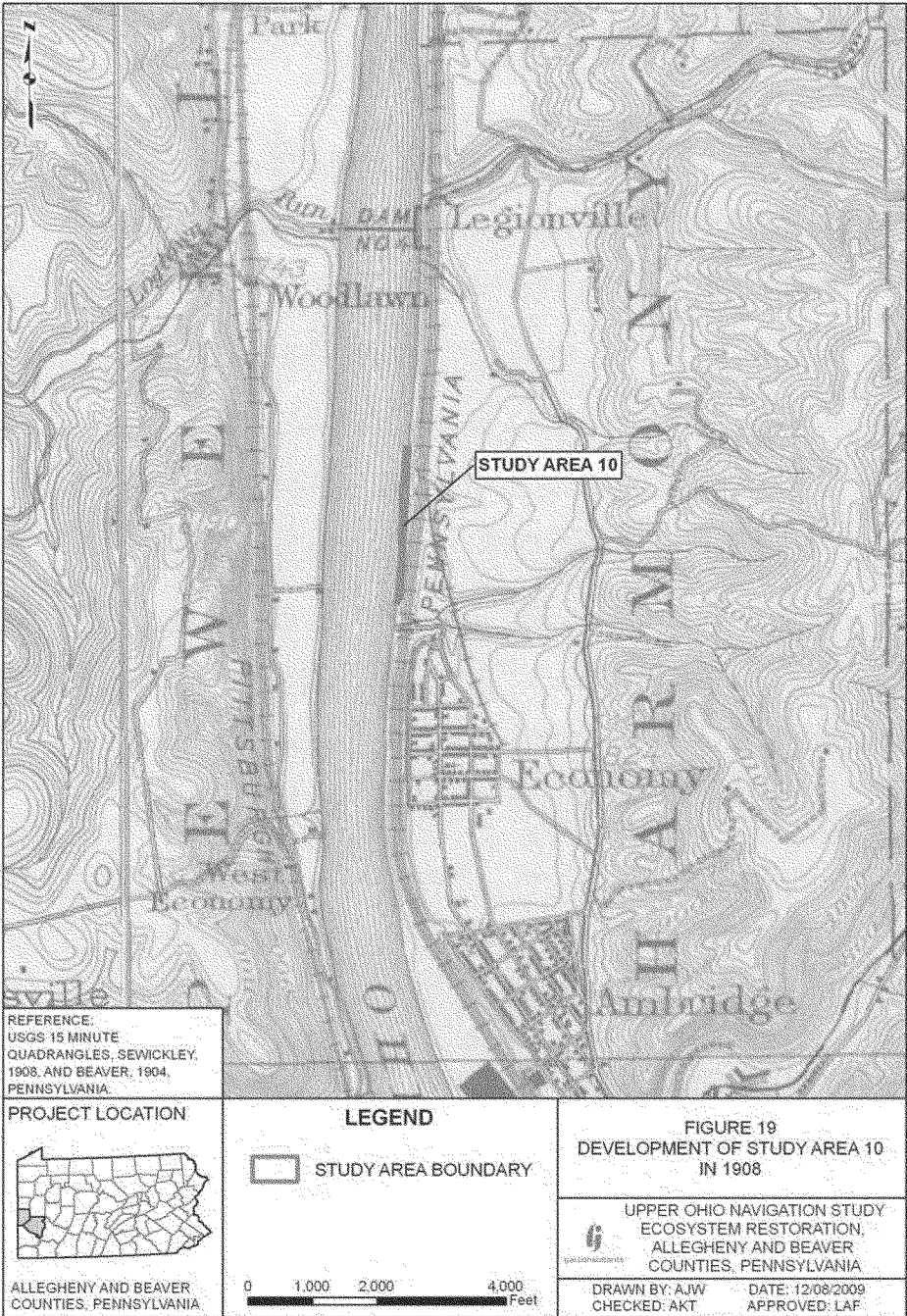
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FIGURE 18
DEVELOPMENT OF STUDY AREA 10
IN 1877

UPPER OHIO NAVIGATION STUDY
ECOSYSTEM RESTORATION,
ALLEGHENY AND BEAVER
COUNTIES, PENNSYLVANIA

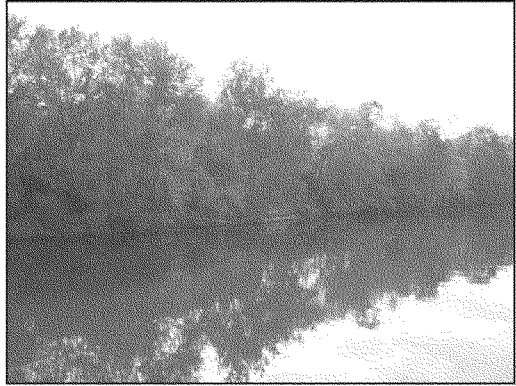
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DATE: 12/21/2009
APPROVED: LAF



Site View

Study Area 10 was viewed by boat on October 7, 2009. There was no visible evidence of any archaeological remains or industrial dumps along the shoreline but vegetation obscured much of the view (Photograph 3).



*Photograph 3. Overview of SA 10.
View Southeast.*

Summary

There are no known recorded archaeological or architectural resources or mapped historic-era resources along the riverbank in the APE for SA 10. Two ca.-1877 houses once located between the river and the single railroad line were impacted by construction of additional railroad lines in the area. Site 36BV277, a prehistoric archaeological site, is near the shoreline along much of the study area. Limited ground reconnaissance (and possible subsurface testing of intact soils) at the tie-in point and a review of interpreted side-scan sonar images are recommended to confirm that there are no terrestrial or submerged archaeological resources present prior to any ground-disturbing activities.

Results

Study Area 11

Project Description

SA 11 is located on a gravel bar entirely within the river at the confluence of the Beaver and Ohio rivers at River Mile 25.5 (see Figure 5). This study area, measuring approximately 19.62 acres, was selected for proposed gravel bar enhancements. Any contouring and substrate enhancements will be within the river and will not impact any terrestrial resources.

Background Research

Literature research was undertaken at BHP for information regarding previous cultural resource investigations and recorded cultural resources in the vicinity of SA 11. PHRS and NRHP files indicate that there are no previously recorded architectural or NRHP-eligible resources located within SA 11. PASS files data indicate that no previously recorded archaeological sites within the APE of SA 11. One previously recorded archaeological site (36BV80) is on the nearby terrace overlooking the mouth of the Beaver River (see Table 2). Site 36BV80 (Rochester Site), a Late Woodland period village site, was excavated by members of the Beaver Valley and Erie chapters of the Society for Pennsylvania Archaeology (SPA). The excavations produced burials, shell-tempered ceramics, triangular projectile points, and European trade goods, which suggest that this Protohistoric village site dates to ca. 1700 (Davis 1992). The site will not be impacted by planned activities at SA 11.

Christine Davis Consultants, Inc. (CDC) conducted two cultural resources surveys in the vicinity of SA 11. In 1991, CDC conducted a Phase IA archaeological survey to assess archaeological site potential on a 27-acre linear tract of land at the confluence of

the Beaver and Ohio Rivers for the Community Development Program of Beaver County (ER No. 1991-3653-007) (Davis 1992). In 2003, CDC completed a Phase IA archaeological survey to assess archaeological site potential on a parcel immediately west of the confluence of the Beaver and Ohio rivers for the Beaver County Corporation for Economic Development (ER No. 2004-0259-007) (Davis 2003). No subsurface testing was conducted for these two studies.

Three topographic maps (1904, 1953, and 1979), two maps of the Ohio River and its immediate vicinity (Gay 1828, Hayes 1877), a 1939 aerial photograph, and one historical atlas map (Caldwell 1876) of SA 11 were reviewed. Since this study area is entirely within the river, map research focused on riverine cultural resource activities. There was no development in this area in 1828 (Figure 20). By 1876 and 1877, the high terrace overlooking SA 11 was the location of a town (Rochester), but there were no construction features within SA 11 (Figures 21 and 22). By 1904, a railroad and highway bridge had been built across the Ohio River, but not within the project area (Figure 23). Subsequent maps do not show any construction activities in this riverine location.

The soil survey information indicates that the shoreline in this vicinity falls within Urban Land-Arents complex soils (Smith 1982). This soil complex indicates that there may be fill deposits along the riverbank near SA 11.

Site View

SA 11 was viewed by boat on October 6, 2009. The entire APE is submerged (Photograph 4).

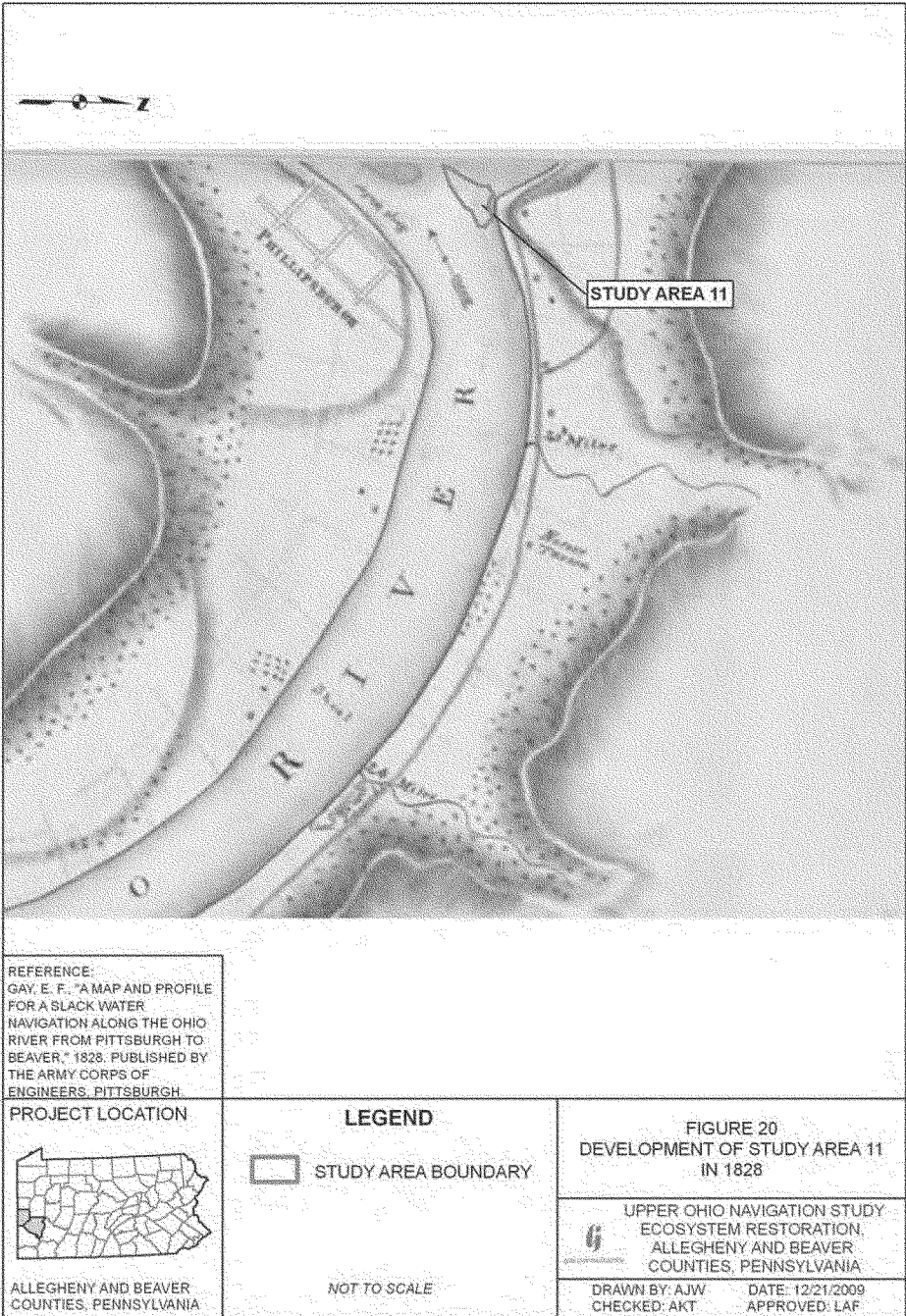
Results

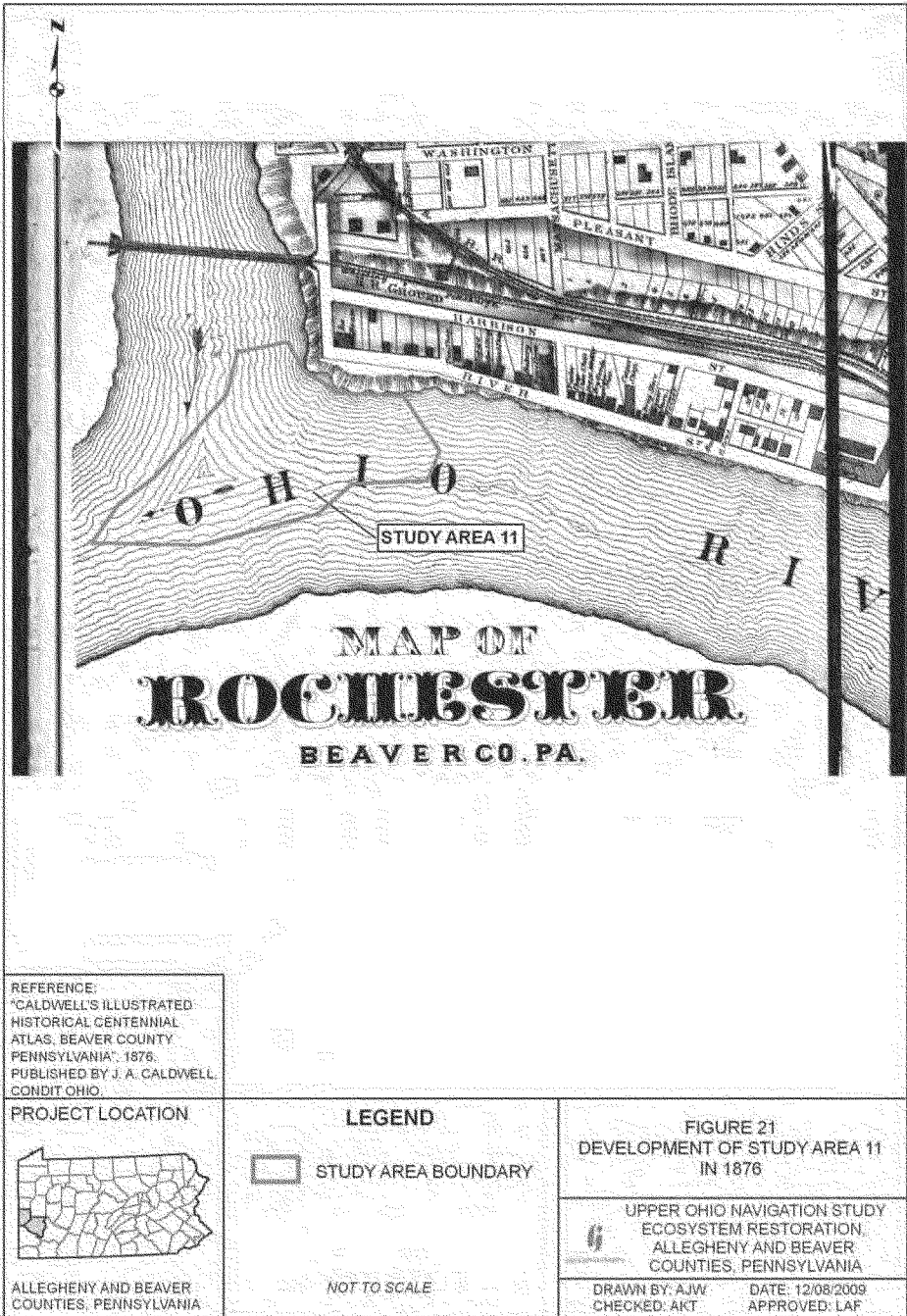
*Photograph 4. Overview of SA
11 (in Ohio River). View
Northeast.*

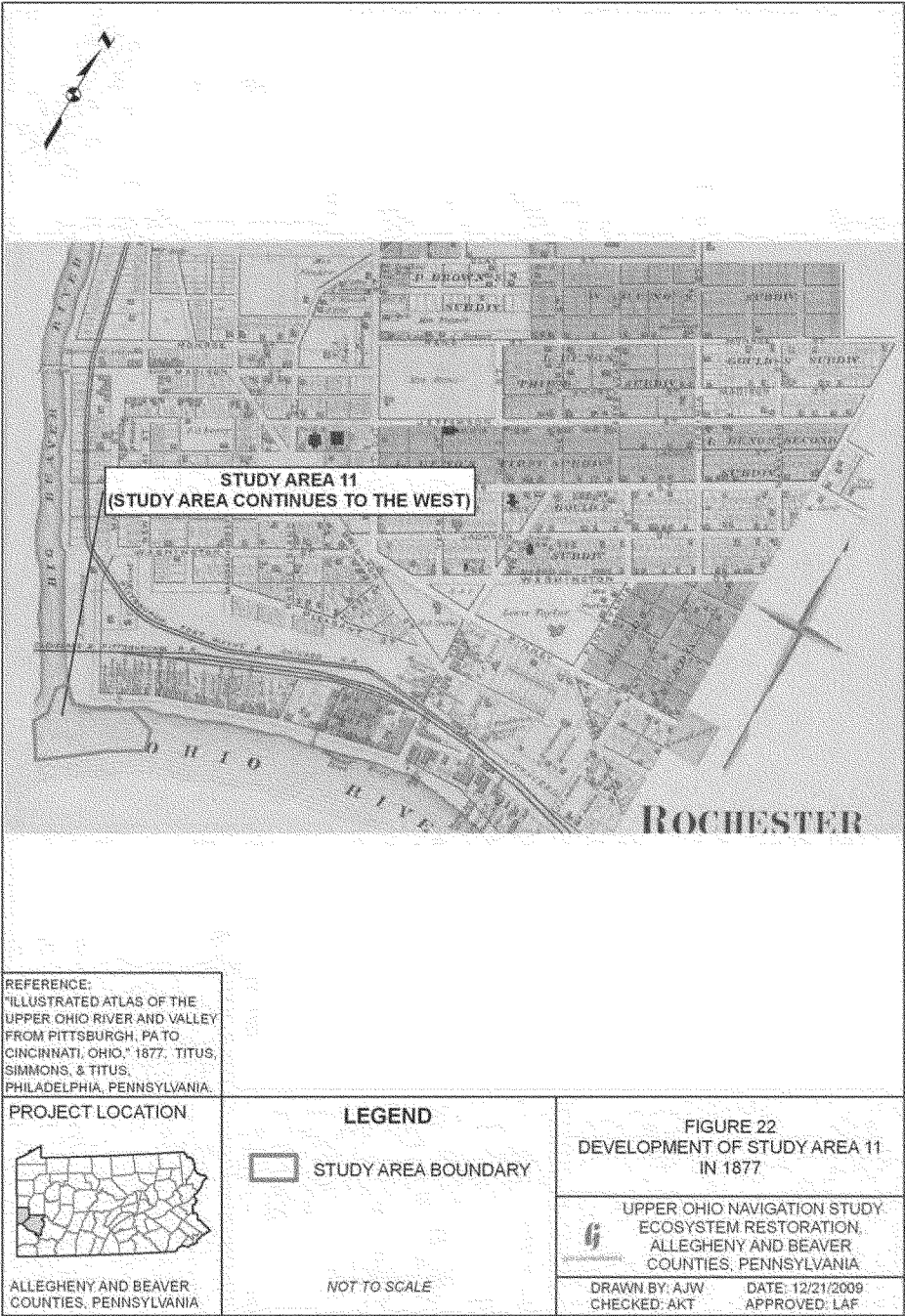


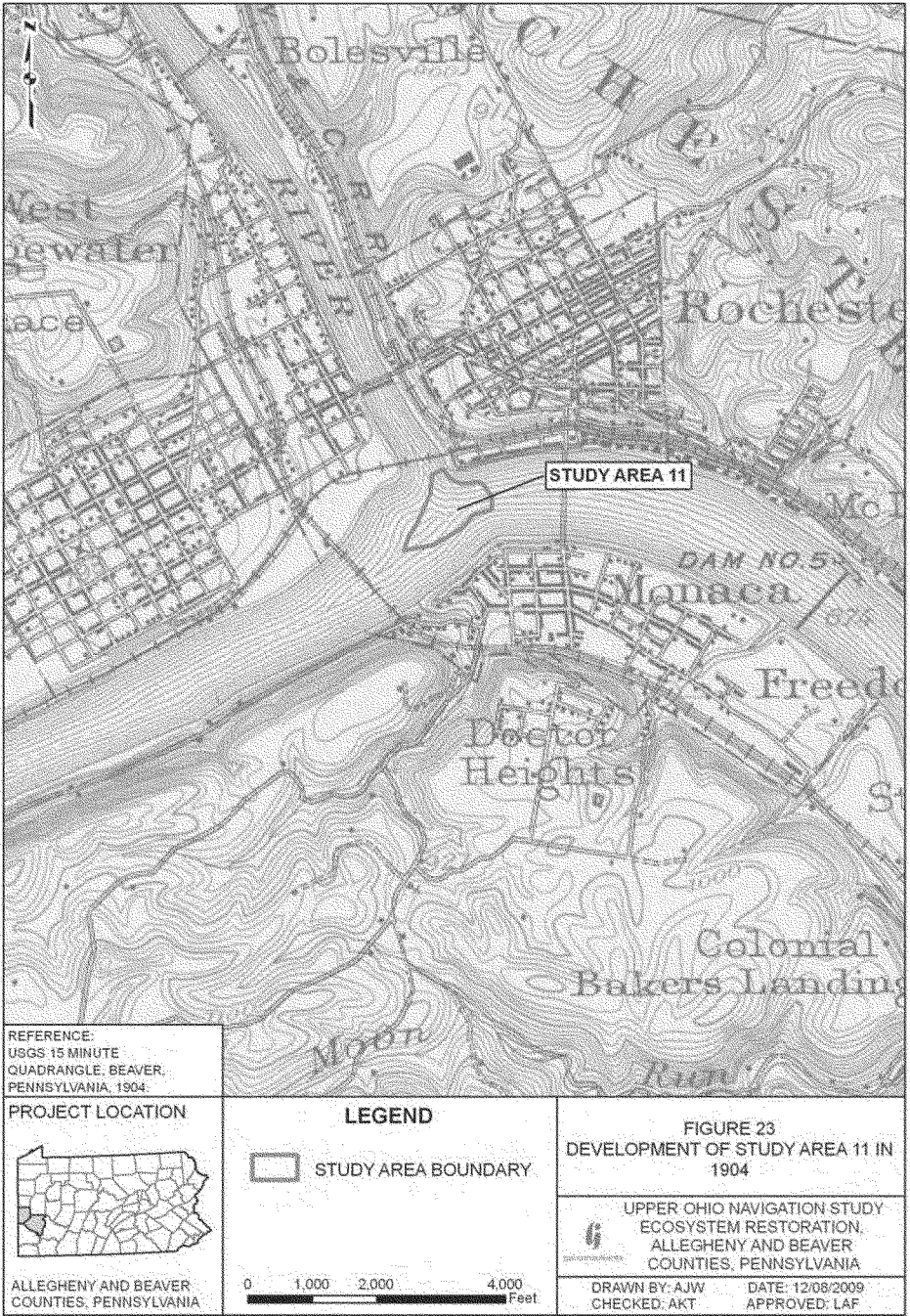
Summary

The APE for Study Area 11 is located entirely within the Ohio River. There are no known recorded archaeological or architectural resources, or mapped historic-era resources, associated with SA 11. No additional archaeological investigations are recommended except to review interpreted side-scan sonar images to confirm that there are no submerged resources over 50 years of age within this riverine APE.









Study Area 13

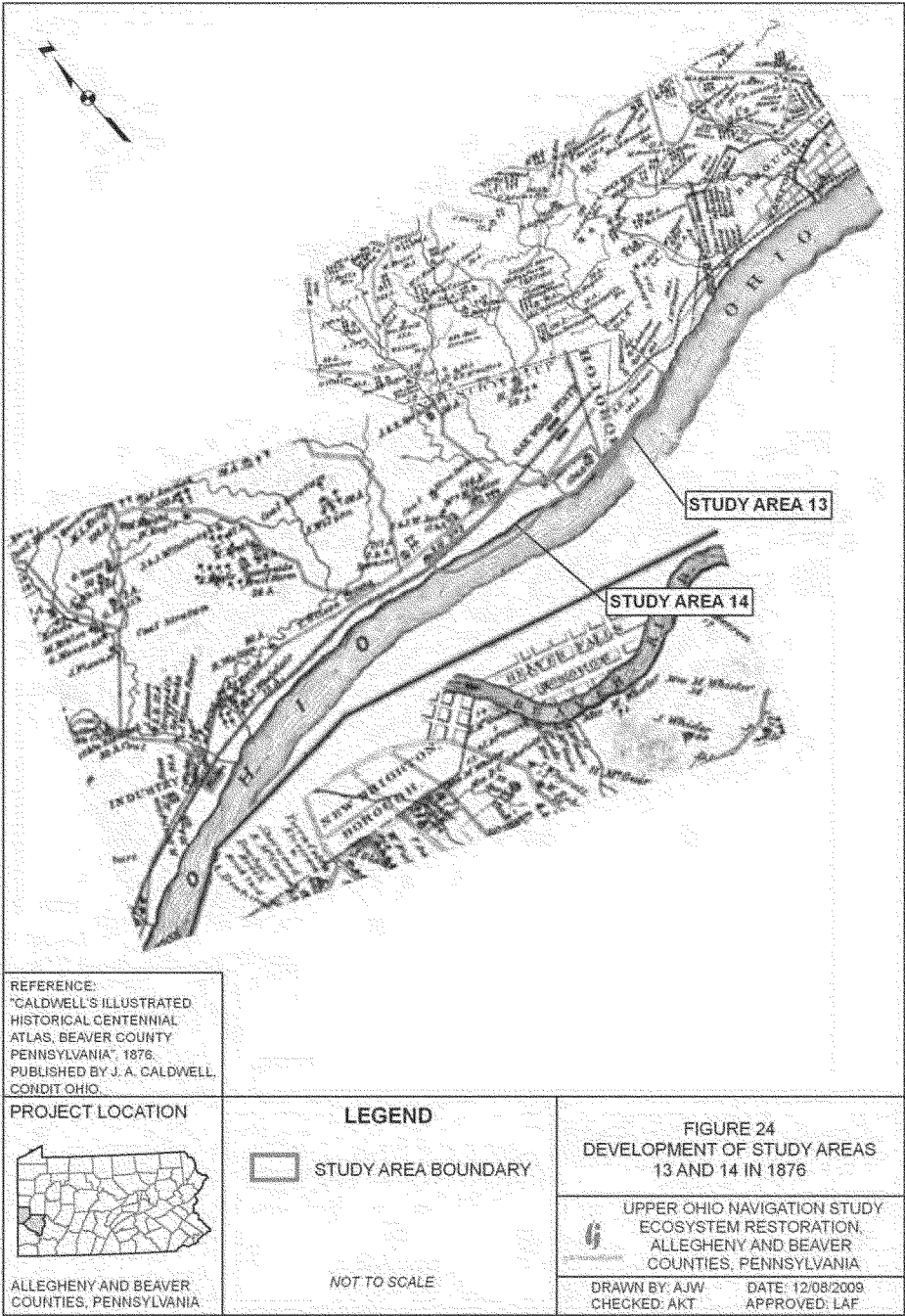
Project Description

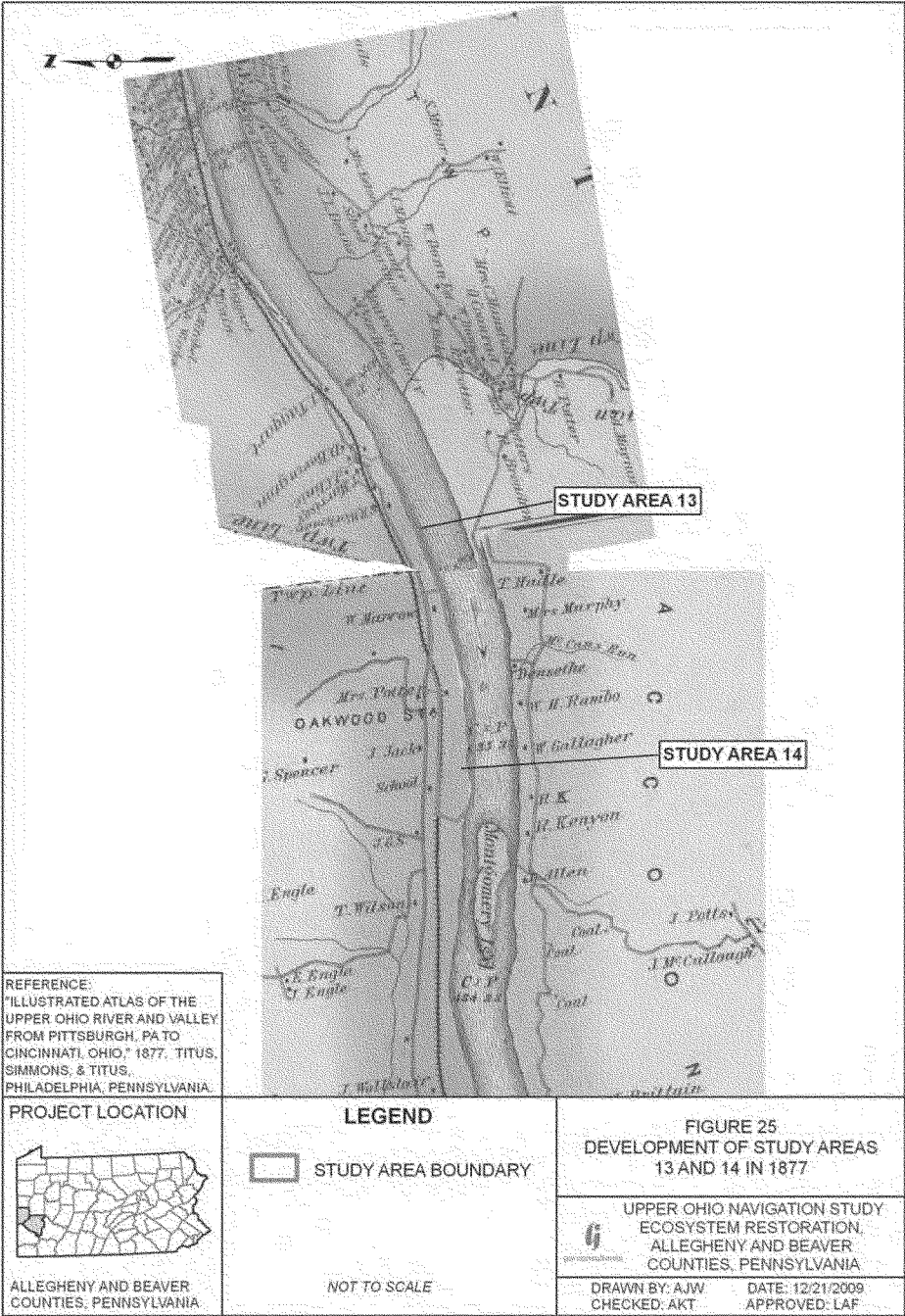
SA 13 is located near the north bank of the Ohio River, near the town of Ohioview (see Figure 6). This area is the location of a proposed foreshore dike approximately 0.75 miles in length, which will tie in to the shoreline at its upstream terminus and parallel the shore for the remaining length of the structure. The project area measures approximately 8.37 acres and will only have minimal shoreline impacts at a tie-in point for the dike. The tie-in point to the shore has not yet been established; therefore, the immediate shoreline paralleling the extent of the proposed foreshore dike was examined during background research. The soil survey indicates the soils on the riverbank are Philo silt loam (Smith 1982).

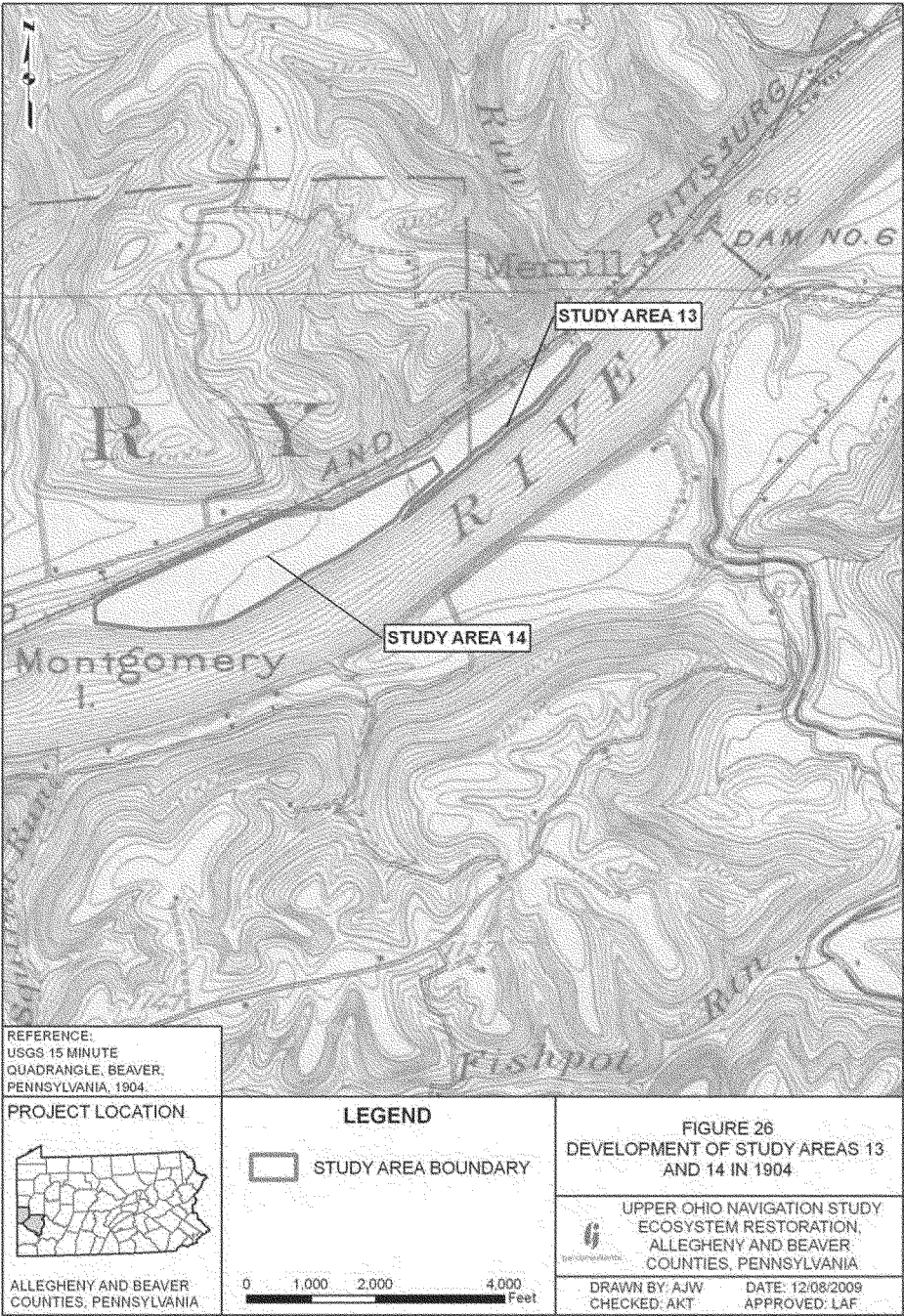
Background Research

Literature research was undertaken at the BHP office for information regarding previous cultural resource investigations and recorded cultural resources in the vicinity of SA 13. PASS files data demonstrate that no previously recorded archaeological sites occur within SA 13 or its immediate vicinity. PHRS and NRHP files indicate that there are no previously recorded architectural or historical resources located within or adjacent to SA 13.

Three topographic maps (1904, 1953, 1979), two maps of the Ohio River and vicinity (Gay 1828, Hayes 1877), one 1939 aerial photograph, and one historical atlas map (Caldwell 1876) were reviewed. In 1876 and 1877, the SA 13 vicinity was completely undeveloped (Figure 24 and 25). By 1904, the only development was a single structure located near Fourmile Run, set back considerably from the shore (Figure 26).





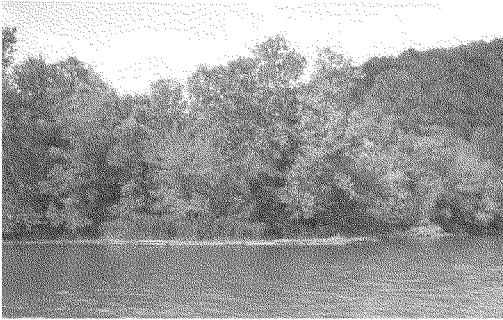


By 1953, three structures were constructed on the shore side of the railroad tracks but outside of the APE for SA 13.

Site View

SA 13 was viewed by boat on October 6, 2009. There was no visible evidence of any archaeological remains along the shoreline. Vegetation and floating logs along the

shoreline obscured much of the view (Photograph 5). Part of the shoreline was also eroded (Photograph 6).



Photograph 5. Overview of Shoreline along SA 13. View Northeast.

Photograph 6. Eroded Shoreline along SA 13. View North.



Summary

There are no known recorded archaeological or architectural resources or mapped historic-era resources within the APE of SA 13. Limited subsurface testing at the tie-in point and a review of interpreted side-scan sonar images are recommended to confirm

Results

that there are no terrestrial or submerged archaeological resources present prior to any ground-disturbing activities.

Study Area 14

Project Description

SA 14, located on the northern bank of the Ohio River at River Mile 31.0-31.9, was accessed by a dirt road off State Route 68 (Midland Beaver Road). This study area (referred to as Montgomery Slough) is the only study area that includes a substantial terrestrial component. The landform currently consists of a marshy floodplain with an inlet on the west end. Montgomery Dam raised the water level of the river behind the dam (Montgomery Pool) and submerged part of a stream and stream valley, creating the inlet and a swampy peninsula of land along the Ohio River (see Figure 6). Ecosystem improvements proposed for SA 14 include wetland improvements, removal of invasive species, and planting of native species, and may include placement of dredged materials in this location.

Current Conditions

Much of SA 14 was used to dispose of dredged fill from the river. In the mid-1970s, the land was prepared for fill deposition by scraping off the upper soil and using this material to construct a levee system to contain the sludge-like fill (Amockwi Chapter #17, Society for Pennsylvania Archaeology [SPA] 1980:80). Dredge material was placed within the SA 14 APE from 1975 until 2004 (USACE nd). Over time, the dredge disposal areas were ringed by large stone or concrete walls and reached heights of 15 to 25 feet above the original land surface (Amockwi Chapter #17, SPA 1980:80; USACE nd). Haul roads were cut through the area to facilitate the dredge disposal operation. In

addition, concrete debris from the realignment of a road just north of the APE was buried on the northern part of SA 14 (USACE nd) (Photograph 7). As a result of past activities, the east and south sides of the APE are irregular and hummocky, part of the northern end is disturbed, and wetlands are situated at its western extent and north of the inlet (USACE nd).

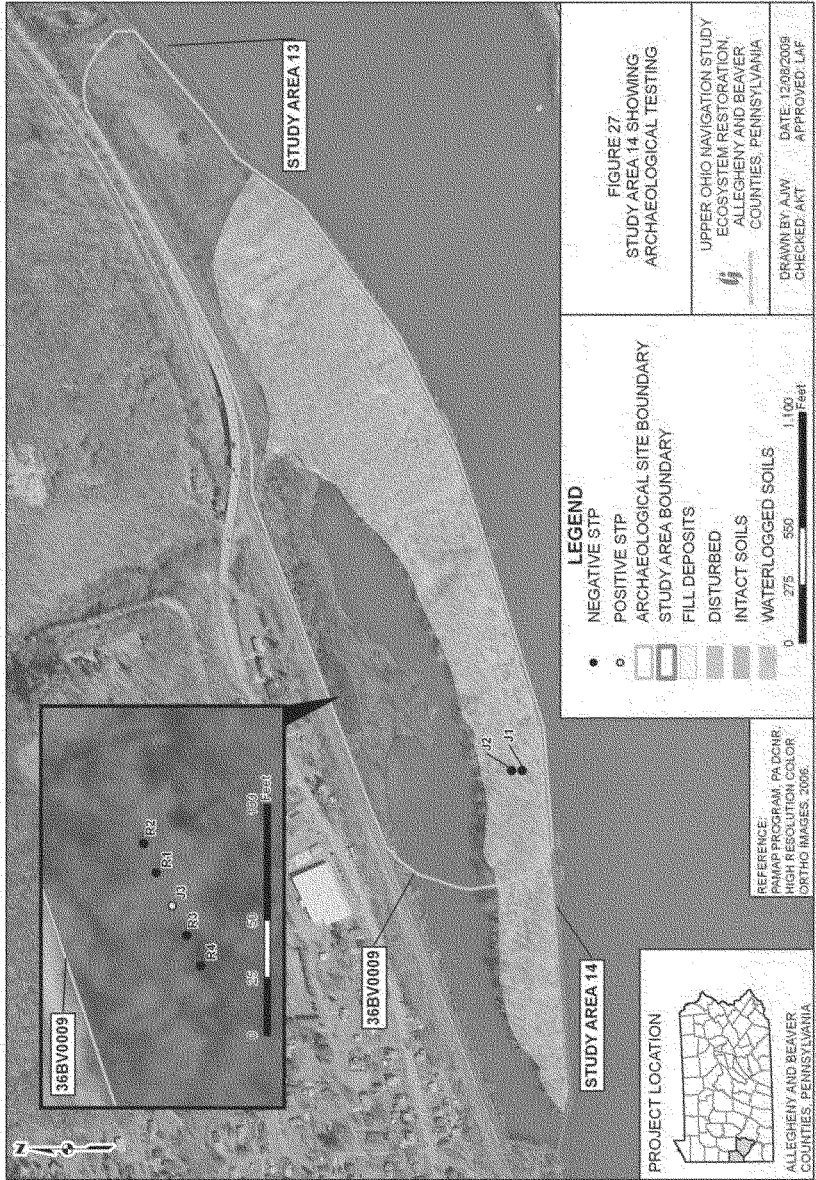
Photograph 7. Overview of North Side of SA 14. View East. (Photograph Courtesy of Aerostar Environmental Services, Inc.)



Background Research

Literature research was undertaken at the BHP office in Harrisburg for information regarding previous cultural resource investigations and recorded cultural resources in the vicinity of SA 14. No modern cultural resource surveys were undertaken within SA 14. Review of PHRS and NRHP files indicates that there are no previously recorded architectural or historical resources located within or adjacent to SA 14.

PASS file research indicates that a previously recorded large, multicomponent prehistoric village site (36BV9) covers most of the APE for SA 14 (Figure 27). Previous studies by local avocational archaeologists at the site generated chipped stone, groundstone, and ceramic artifacts and documented hearth and burial features from the Early through Late Woodland period (Mayer Oakes 1955; Faingert and Doyle 1977; Amockwi Chapter #17, SPA 1980:80).



According to an account by avocational archaeologists from Amockwi Chapter #17, SPA, the upper four feet of part of the site was stripped off and used to build levees for dredged sludge deposits. These archaeologists reported that there were intact remains below the surface of the stripped areas (Amockwi Chapter #17, SPA 1980:80). Based on this information, there is a high potential for intact portions of the site outside of the fill deposits and disturbed areas.

The map review for SA 14 included four USGS topographic maps (1904, 1953, 1969, 1979), eleven aerial photographs (1939, 1952, 1967, 1975, 1977, 1982, 1988, 1993, 1995, and 2006), one map of the Ohio River and vicinity (Hayes 1877), and one historical atlas map (Caldwell 1876). During 1876 and 1877, this vicinity was sparsely developed. The Pittsburgh and Cleveland railroad line was built along the northern boundary of the study area. Two houses (W. Marrow and Mrs. Potter residences) are depicted within the APE (see Figures 24 and 25). By 1904, these dwellings were no longer present (see Figure 26). Based on map research, there is a potential to find archaeological remains of these two late-nineteenth-century occupations along the northern limits of the APE.

Aerial photographs reveal changes in development and vegetation within the APE during the twentieth century. In 1939, the western peninsula area and northern edge was sparsely wooded, while the east end was open grassland. Sometime between 1952 and 1960, the grasslands on the peninsula area reverted to scrub growth, but the east end of the project area remained mostly open fields (Photograph 8). By 1953, there was an access road leading to the peninsula area. The 1975 aerial photograph shows a large square area in the eastern part of the peninsula, which is likely the location of the levee

Results

constructed to hold the dredged fill. The eastern half of the APE was also used for dredge material disposal.



Photograph 8. Overview of Field in Center of Disturbed Eastern Portion of SA 14. View East.

Soils in Study Area 14 are mapped as Conotton, Pope, and Philo silt loams. Pope silt loams are well drained level to relatively level soils comprised of recent alluvium found on floodplains, while Philo silt loams are moderately well drained level to relatively level soils comprised of alluvium derived from sedimentary rock found on floodplains. Although both soils are generally well drained, Pope silt loams are significantly deeper and sandier than Philo silt loams and therefore slightly less apt to maintain standing water. Conotton soils, located on a terrace on the northern limits of SA14, are well drained to excessively drained soils that formed in glacial outwash materials on kames and terraces.

Field Investigations

Field investigations included a ground reconnaissance and limited use of a soil probe to examine soils, followed by selective shovel test pit excavations (Photographs 9 and 10). The pedestrian reconnaissance and soil probe activities evaluated the potential for intact soils (and archaeological remains) in SA 14. The field investigations divided

the project area into four general areas: fill deposits, disturbed, intact soils, and waterlogged or marshy soils (see Figure 27).



Photograph 9. Soil Probe Inserted to Handle in Fill.



Photograph 10. Soil Probe with Fill Soils.

Aerial photographs indicated that the peninsula remained forested from at least as early as 1939. Pedestrian reconnaissance revealed that most of this forest had relatively young trees (Photograph 11). An area within the boundary of Site 36BV9 on the peninsula was selected for confirmation that fill deposits covered this area.

Results

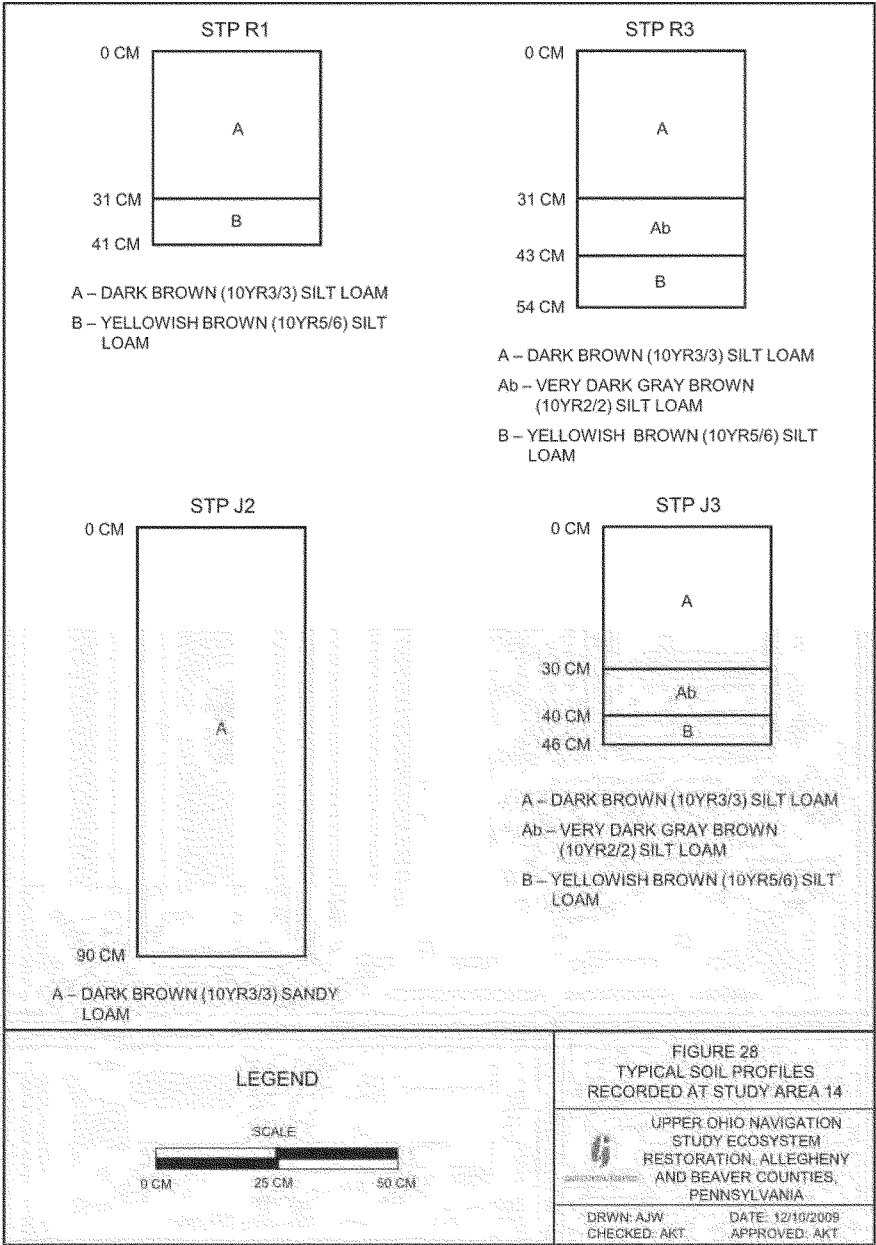
Photograph 11. Overview of Forest on Peninsula of SA 14. View West. (Photograph Courtesy of Aerostar Environmental Services, Inc.)



STPs J1 and J2 were excavated within Site 36BV9 limits of the peninsula area at 15-meter (50-foot) intervals (see Figure 27). Both shovel test pits fell within fill deposits. The soil stratigraphy in these two STPs revealed dark brown sandy loam fill (CA horizon) to a depth of over 90 cm (Figure 28). No artifacts were recovered from excavations in this fill. Although not apparent in the aerial photographs, this area was covered with fill deposits in the past.

The upland shrub and herbaceous plant habitat located along an access road on the north side of the APE was heavily disturbed and hummocky with localized areas that appeared to be undisturbed (see Photograph 7). Based on background research and pedestrian reconnaissance, these undisturbed areas had a high potential for intact soils and archaeological remains.

STP J3 was excavated in a relatively undisturbed area in this northern portion of SA 14 (Figure 28). Excavation produced three prehistoric artifacts (one piece of local Monongahela chert debitage and two pieces of sandstone fire cracked rock) from an intact buried A (Ab) horizon. Four radial STPs excavated at 5-meter (15-foot) intervals



Results

east and west of STP J3 were negative. Radial STPs were not excavated to the north due to the presence of the railroad bed, or to the south due to the presence of wetlands.

Two typical soil profiles were encountered during excavation in this northern area. STPs R1 and R2 revealed an A-B soil horizon sequence consisting of a dark brown silt loam A horizon to an average depth of 31 cm overlying a yellowish-brown silt loam B horizon. Excavation of STPs J3 and radials R3 and R4 to the west revealed a soil stratigraphy of dark brown silt loam A horizon to an average depth of 31 cm underlain by a very dark grayish-brown silt loam buried A (Ab) horizon to an average depth of 41 cm. This Ab horizon was underlain by a B horizon comprised of yellowish-brown silt loam (see Figure 28). Excavations confirmed that portions of Site 36BV9, a multicomponent site spanning the Early through Late Woodland periods, remained intact within the northern portion of the SA 14.

The riparian area located between open water and the north APE boundary contained waterlogged soils that were not evaluated at this time. The disturbed area (on the eastern half of SA 14) has deep fill deposits across the area. It was not possible to assess the potential for intact cultural resources beneath the fill. The thick fill layer forms a protective layer between the intact buried soils and any surface activities. The palustrine emergent wetlands found where the stream empties into the open water area appear to be a low-lying area with intact soils. This area could not be assessed with subsurface testing due to the wet nature of the soils. The open water area would have been the stream drainageway and low stream terrace prior to the creation of Montgomery Pool. Site 36BV9 is located on either side of the open water area and may also be present within the submerged soils in the open water area. It was not possible to evaluate the

open water area within Study Area 14. The stream area was considered to have no potential for intact archaeological resources.

Based on the results of the pedestrian reconnaissance and soil probes, subsurface testing was conducted within the limits of Site 36BV9 within the bottomland hardwood forest and what appeared to be a relatively undisturbed area within the upland shrub and herbaceous plant vegetation area.

Summary

During background research, one previously recorded archaeological site (36BV9), and two potential nineteenth-century domestic archaeological sites were identified within the APE of Study Area 14. There are currently no structures over 50 years of age within SA 14. Activities on this industrial-owned property over the last 40 to 50 years have severely affected the integrity of the soils and archaeological resources contained within these soils. The limited Phase I fieldwork documented that portions of Site 36BV9 appear to be intact on the north side of the APE. No evidence of nineteenth-century domestic remains was identified. Therefore, an intensive archaeological investigation should be conducted to evaluate intact portions of 36BV9 in areas planned for ground-disturbing activities. A series of soil borings are recommended to investigate the potential for intact submerged portions in the open water and wetland areas, if these areas will be impacted.

Study Area 16

Project Description

SA 16 is located around Phillis Island, an island on a bend on the Ohio River, at River Mile 35.0-35.7 (see Figure 7). This proposed foreshore dike/ring dike, measuring

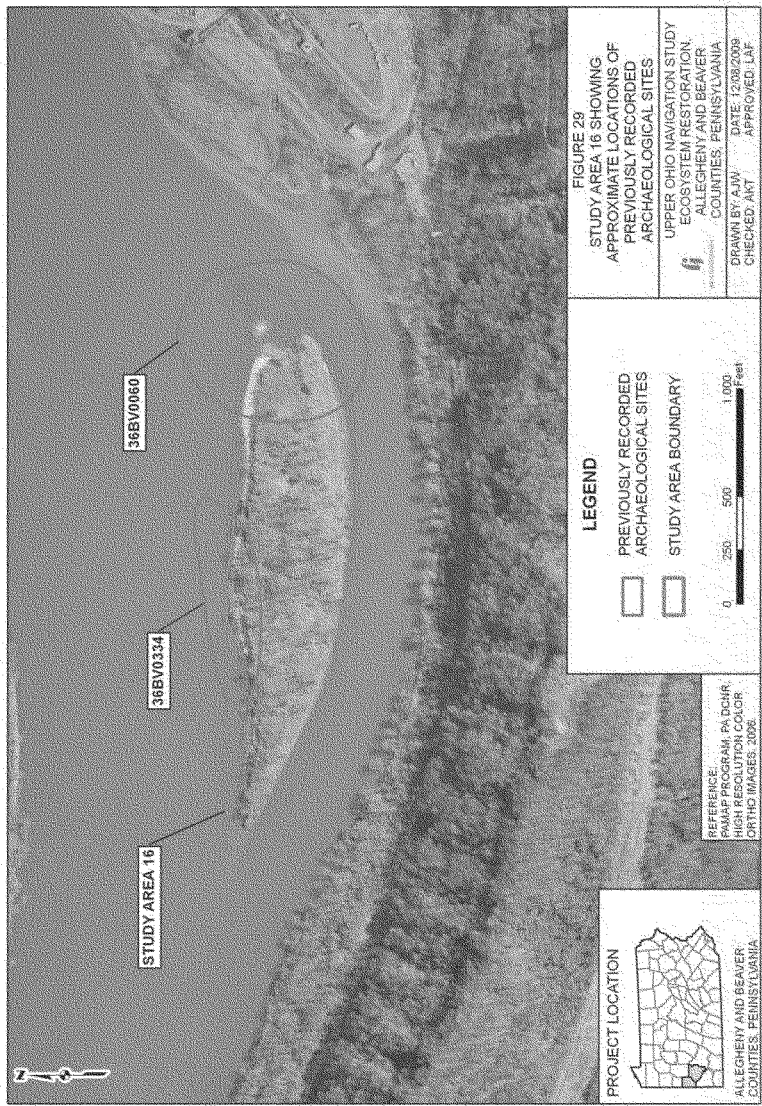
Results

approximately 0.52 miles in length, encircles the island. The project area measures approximately 26.44 acres and will only have minimal shoreline impacts at the tie-in point for the dike. The tie-in point to the shore has not yet been established; therefore the immediate shoreline paralleling the extent of the proposed foreshore dike was examined during background research. Erosion to the island is severe, reducing the size of the island from 48.1 acres in 1951 to 20.1 acres in 2004 (based on aerial photograph information provided by the Pittsburgh District).

Background Research

Literature research was undertaken at BHP's office in Harrisburg for information regarding previous cultural resource investigations and recorded cultural resources in the vicinity of SA 16. PHRS and NRHP files indicate that there are no previously recorded architectural or historical resources located within or adjacent to SA 16. PASS files revealed two previously recorded archaeological sites (36BV334 and 36BV60) on Phillis Island (Figure 29). Site 36BV334, an unassigned prehistoric open habitation site, is located on the northern edge of the island. Site 36BV60, an Early Archaic period open habitation site identified by a collector, is situated on the eastern edge of the island (see Table 2).

There was one previously recorded archaeological survey (ER No. 2006-0942-042) conducted on Phillis Island. Archaeological and Historical Consultants, Inc. (AHC) conducted a Phase I archaeological survey of Ohio River islands, including Phillis Island, on behalf of the U.S. Fish and Wildlife Service in 1997 (Diamanti and Stiteler 2005). This survey identified Site 36BV334 and confirmed that Site 36BV60 had been badly



Results

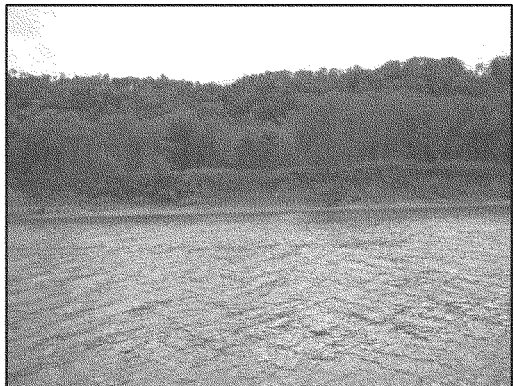
damaged by erosion. Both sites continue to be impacted by erosion of Phillis Island (see Figure 29).

The map review for SA 16 included three USGS topographic maps (1904, 1954, 1979), a 1939 aerial photograph, one map of the Ohio River and vicinity (Hayes 1877), and one historical atlas map (Caldwell 1876). In 1876 and 1877, Thomas Moore resided on Phillis Island (Figures 30 and 31). No shoreline structures or structures extending past the water's edge (i.e., docks, ports) are mapped within the project area, although Moore would have needed a boat for transportation. The 1997 archaeological survey conducted by ACH did not identify any historic-era archaeological resources (Diamanti and Stiteler 2005). By 1904, no structures are depicted on Phillis Island (Figure 32). SA 16 APE, which encircles the current island limits, illustrates how much of the island eroded away since 1904 (see Figure 32). The island appears to have remained uninhabited during the twentieth century.

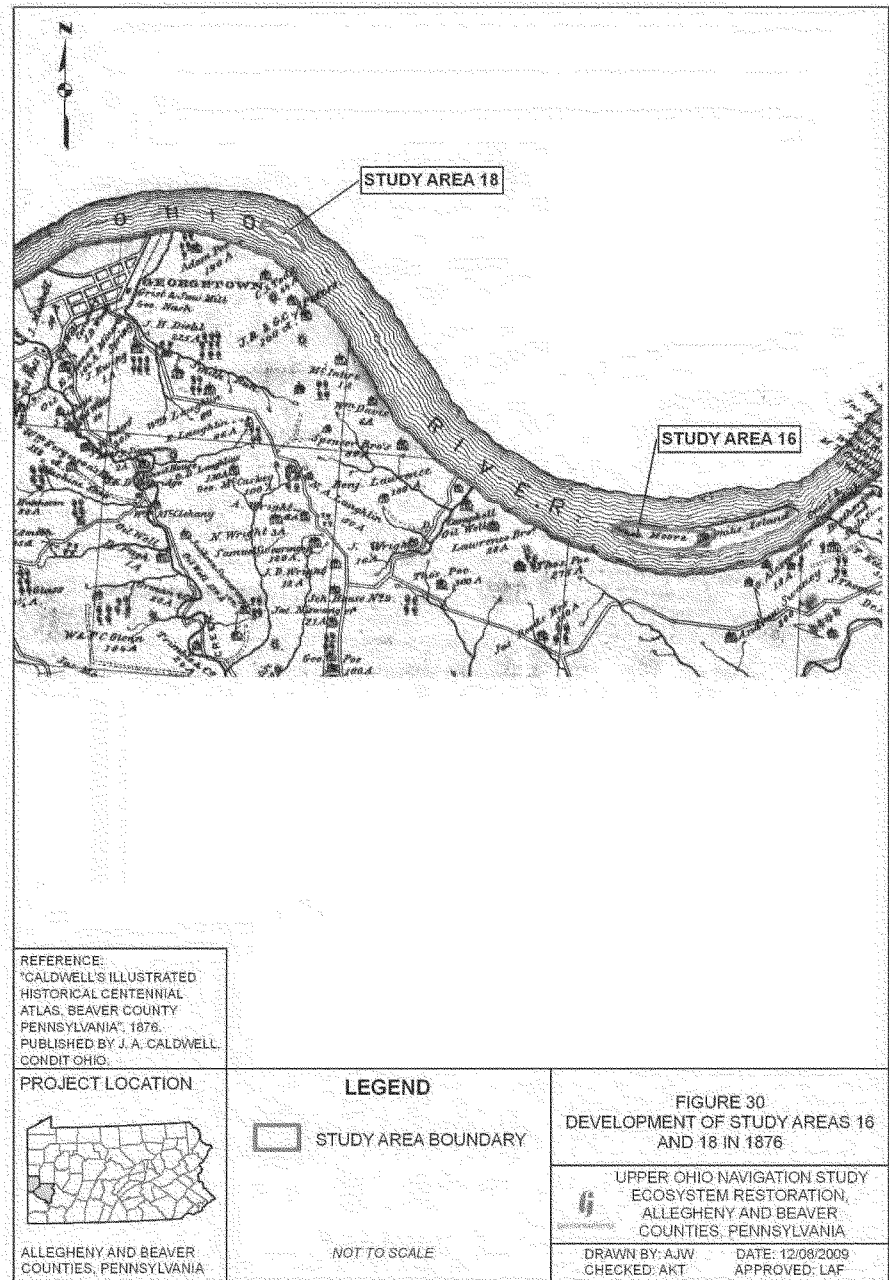
Site View

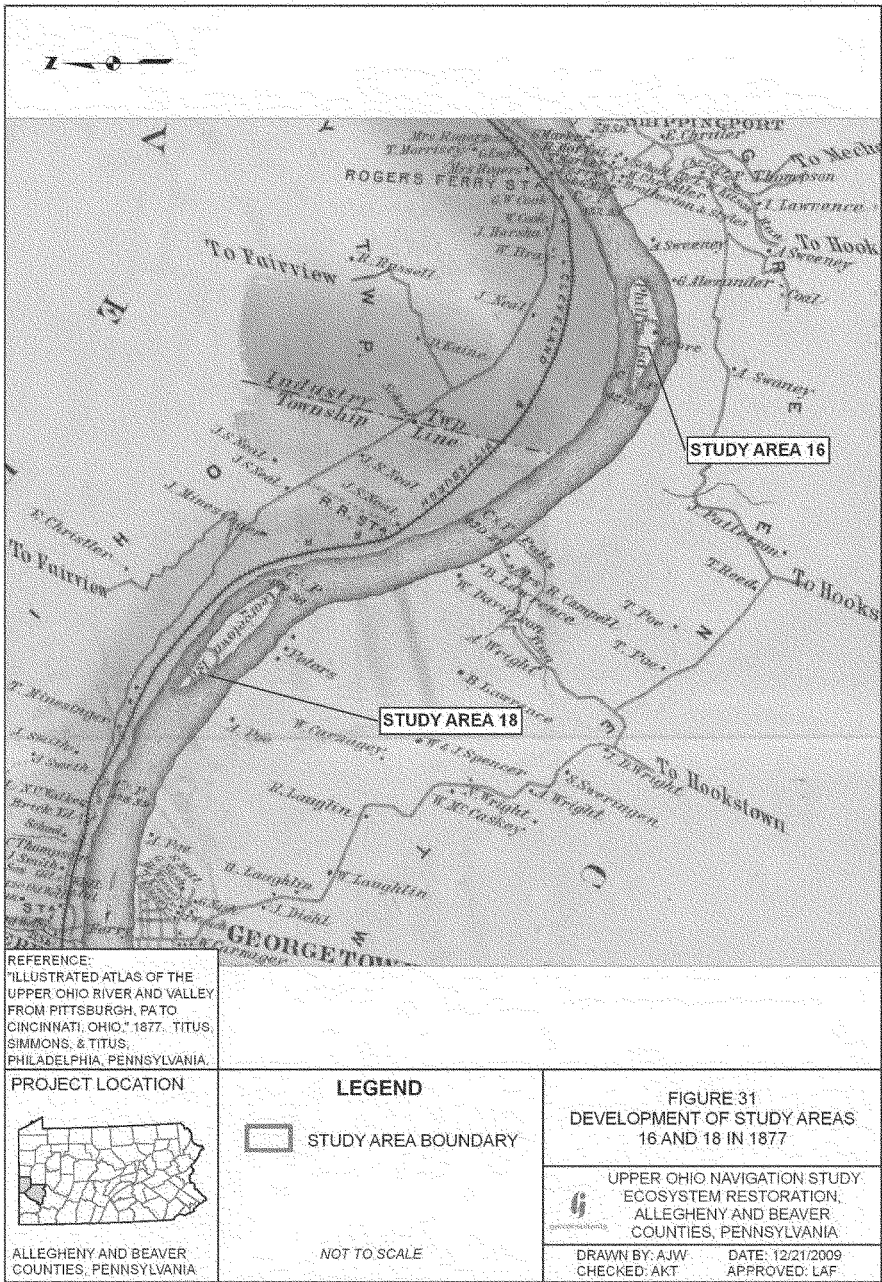
Study Area 16 was viewed by boat on October 6, 2009. There was no visible evidence of any archaeological remains along the shoreline. Erosion was clearly visible on the northeastern end of the island. Vegetation obscured much of the view on the southern and western banks (Photograph 12).

Photograph 12. Overview of SA 16 showing Shoreline Erosion. View South.

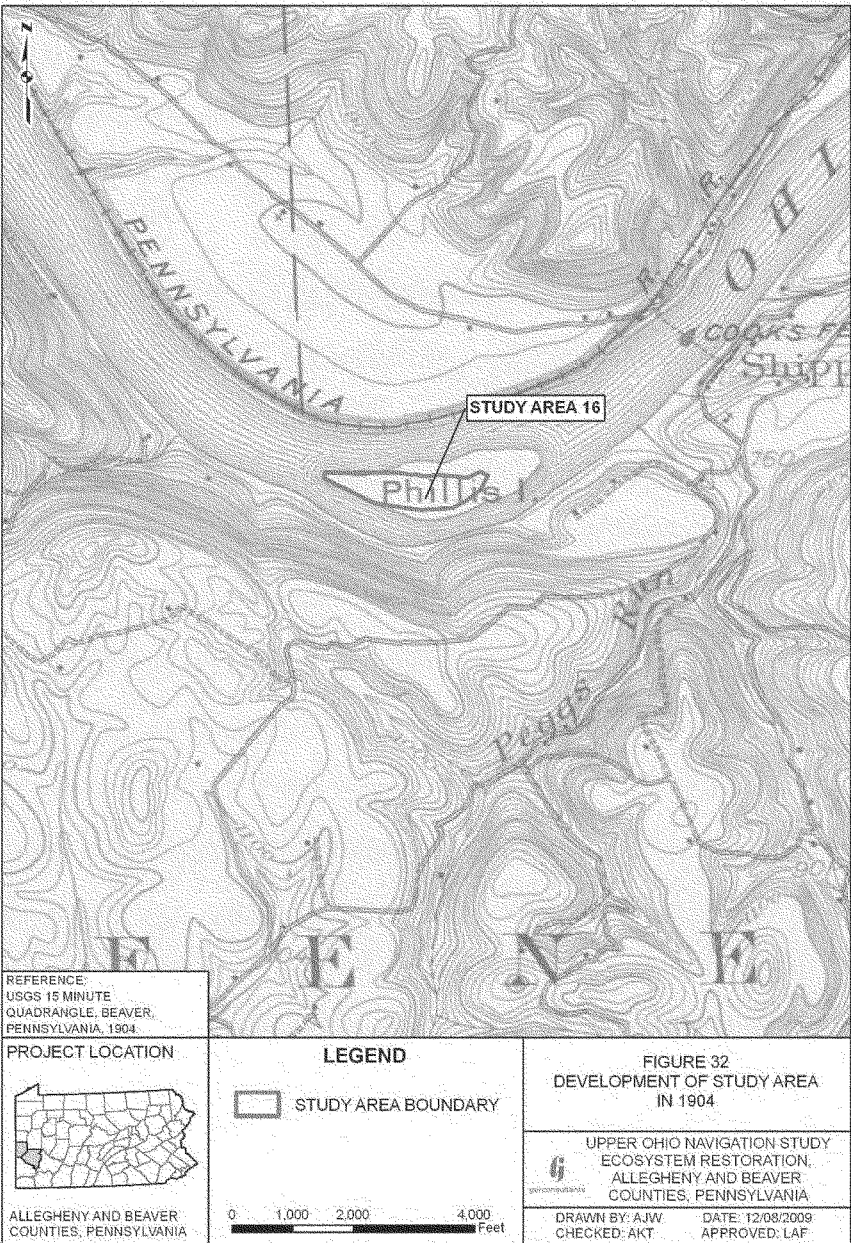


Results





Results



Results

Summary

There are no recorded architectural or NRHP-eligible resources or mapped historic-era resources within the APE of SA 16. Map research indicates there is a potential for a ca. 1877 domestic archaeological site on the island but erosion may have washed remains of this site away. There are two recorded archaeological sites on the island. Depending upon the tie-in location there is a potential to impact a recorded archaeological site. Limited subsurface testing at the dike tie-in point and a review of interpreted side-scan sonar images are recommended to confirm that there are no terrestrial or submerged archaeological resources present prior to any ground-disturbing activities.

Study Area 18

Project Description

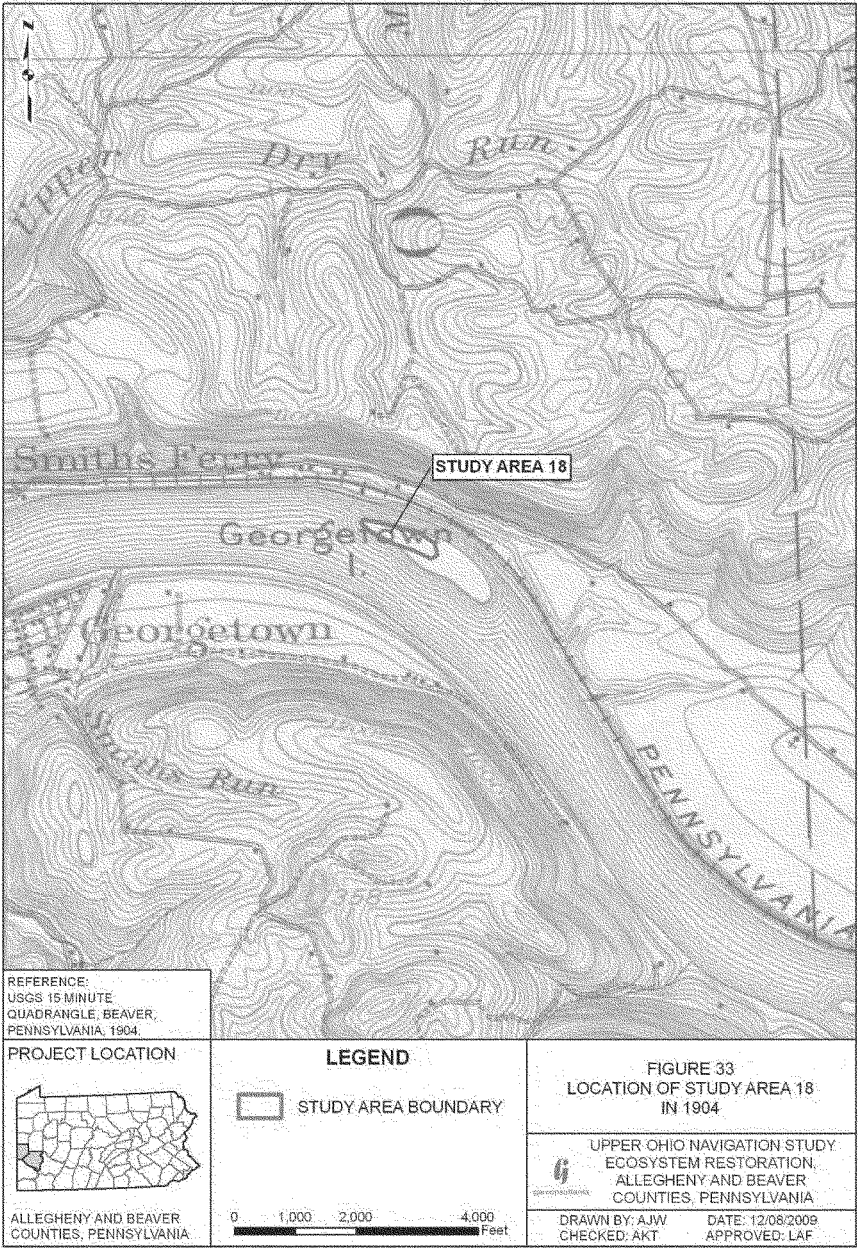
SA 18 is located around Georgetown Island, at River Mile 37.5-37.8 (see Figure 8). This proposed foreshore dike/ring dike, measuring approximately 0.25 miles in length, encircles Georgetown Island. The project area measures approximately 7.26 acres and will only have minimal shoreline impacts at the tie-in point for the dike. The tie-in point to the shore has not yet been established; therefore the immediate shoreline paralleling the extent of the proposed foreshore dike was examined during background research. Erosion to the island is severe, reducing the size of this island from 41.1 acres in 1951 to 4.9 acres in 2004 (based on aerial photograph information provided by the Pittsburgh District).

Background Research

Literature research was undertaken at the BHP office in Harrisburg for information regarding previous cultural resource investigations and recorded cultural resources in the vicinity of SA 18. PASS, PHRS, and NRHP files indicate that no previously recorded cultural resources are located within SA 18 or its immediate vicinity (Georgetown Island).

Research determined that one previous archaeological investigation was undertaken on Georgetown Island. AHC conducted a Phase I archaeological survey of Ohio River islands on behalf of the U.S. Fish and Wildlife Service in 1997, including Georgetown Island (ER No. 2006-0942-042). The archaeological investigation for Georgetown Island was limited to background research (Diamanti and Stiteler 2005).

Map research for SA 18 included review of three topographic maps (1904, 1954, 1979), one 1939 aerial photograph, one map of the Ohio River and immediate vicinity (Hayes 1877), and one historical atlas map (Caldwell 1876). Georgetown Island does not appear on the 1876 atlas map, but is depicted on 1877 mapping (see Figures 30 and 31). There was no development shown on the island in 1877 and none indicated on the 1904 aerial photograph (Figure 33). An island lighthouse is depicted on topographic mapping in 1954 and 1979, although this structure is no longer visible (see Figure 8). Therefore, with the exception of a mid-to-late twentieth-century lighthouse, no historic-era resources are anticipated in SA 18.



Site View

Study Area 18 was viewed by boat on October 6, 2009. There were snags in the river between the island and the north bank. There was also large debris along the riverbank. Vegetation obscured much of the view of the banks of Georgetown Island (Photograph 13).



Photograph 13. Overview of SA 18 at North End of Georgetown Island. View West.

Summary

There are no recorded archaeological, architectural, NRHP-eligible resources or mapped historic-era resources within the APE of SA 18. The only cultural resource investigation undertaken for Georgetown Island was limited to background research. Limited subsurface testing at the dike tie-in point and a review of interpreted side-scan sonar images are recommended to confirm that there are no terrestrial or submerged archaeological resources over 50 years of age present prior to any ground-disturbing activities.

CHAPTER 6. SUMMARY AND RECOMMENDATIONS

In October 2009, a cultural resource assessment was conducted by GAI as part of the Upper Ohio Navigation Study, Pennsylvania, Ecosystem Restoration Appendix, on behalf of AES and the Nashville District. Nine proposed ecosystem restoration study areas totaling 184 acres in Allegheny and Beaver counties, Pennsylvania, were included in this survey. The purpose of this study was to assess the cultural resource potential of these nine potential ecosystem restoration areas. For eight of the study areas (5, 6, 7, 10, 11, 13, 16 and 18) the proposed activities involve fill placement below ordinary high water. A literature review and site view were conducted to identify known submerged vessels, recorded architectural and archaeological resources, and mapped resources that might be affected by potential fill placement. For the only study area with a substantial terrestrial component, literature review, site view, and limited subsurface testing was required under the SOW.

Interpreted side-scan sonar images were not available for this study. A review of these images for the nine study areas is recommended before beginning any of these ecosystem restoration projects.

There was no potential for architectural structures over 50 years of age within any of the nine APEs. There were no recorded archaeological resources or mapped historic-era resources associated with SA 6 and SA 11, which are located entirely within the river. No additional archaeological investigations are recommended except to review interpreted side-scan sonar images to confirm that there are no submerged resources over 50 years of age within these study areas.

There are no recorded archaeological resources or mapped historic-era resources associated with SA 10, SA 13, and SA 18. Limited archaeological investigation of the riverbank tie-in location (pedestrian reconnaissance and judgmentally placed STPs), and review of interpreted side-scan sonar images, are recommended prior to any ground-disturbing activities.

SA 5 has a high potential to contain intact archaeological remains (on the river bottom and along the riverbanks) associated with the former Davis Island Lock and Dam, a NRHP-listed resource. A ground reconnaissance of the riverbank tie-in location and review of interpreted side-scan sonar images are recommended prior to any ground-disturbing activities.

There was a mapped historic-era resource associated with SA 7's eastern terminus (a ca. 1828 dam). A previous archaeological Phase IA recommended testing along the shoreline in the vicinity of a bridge replacement; however, the area was not investigated due to hazardous waste disposal in the area. The soil survey indicates that fill was deposited along the riverbank in the study area vicinity. In addition to review of interpreted side-scan sonar images, pedestrian reconnaissance, and geomorphology survey, limited subsurface testing (if necessary) at the tie-in location is recommended.

A previously recorded stratified Early Woodland through Late Woodland stratified prehistoric village site (36BV9) covers most of SA 14. Limited subsurface testing indicated that most of the site is disturbed or buried by past fill activities, but an intact area of Site 36BV9 was identified along the north side of SA 14. GAI recommends that intact portions of Site 36BV9 (north side of study area) be avoided. If avoidance is

Summary and Recommendations

not feasible, then GAI recommends evaluating the site for its potential for listing to the NRHP under Criterion D.

SA 16 is the location of a proposed ring dike surrounding Phillis Island. Two previously recorded prehistoric archaeological sites were documented on the island, but erosion has destroyed portions of these sites (and the island). It is unlikely that the submerged proposed ring dike will impact intact archaeological deposits, but it will help protect the intact portion of these sites on the island by halting or greatly reducing the rate of erosion. Depending upon the tie-in location, there is a potential to impact an archaeological site. Limited subsurface testing at the dike tie-in point and a review of interpreted side-scan sonar images are recommended to confirm that there are no terrestrial or submerged archaeological resources present prior to any ground-disturbing activities.

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APPENDIX A
PHMC Report Summary Form



Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office
Archaeological Report Summary Form

ER# 1997-1617-042
DATE 12/29/2009

PROJECT CHECKLIST: Please fill out a copy of this checklist and include it with your initial report submission, (including with management summaries or draft reports). This form may be downloaded and expanded as needed, but please do not eliminate any fields.

- Report Title** Phase I Cultural Resources Assessment, Upper Ohio Navigation Study Environmental Restoration, Allegheny and Beaver Counties, Pennsylvania
- PI** Lori A. Frye, M.A., RPA (☒ MA, ☐ PhD) / **Firm** or Institution GAI Consultants, Inc.
- Report Date** (Month/Day/Year) December 30, 2009
- Number of Pages** 120
- Agency Name** US Army Corps of Engineers Federal ☒ State ☐
- Project Area County/Municipality** (list all)

County	Municipality
Allegheny	Stowe Township
Allegheny	Bellevue Township
Allegheny	Robinson Township
Beaver	Harmony Township
Beaver	Rochester Township
Beaver	Industry Township
Beaver	Shippingport Township
Beaver	Ohioville Township

- Project Area Drainage(s)**, (list all)

Sub-basin	Watershed
The Ohio (20)	Upper Ohio River (G)

- Project Area Physiographic Zone(s)** (list All) (Use DCNR Map 13 compiled by W.D. Sevon, Fourth Edition, 2000.)

Physiographic Zone
Appalachian Plateaus (Pittsburgh Low Plateau)

- Report Type** (some reports are combinations, check as many as apply to this report)
☒ Phase IA/Sensitivity Study

Archaeological Report Summary Form ER# 1997-1617-042 DATE 12/29/2009

- | | |
|--|---|
| ☐ Phase I | ☐ Geomorphology |
| ☐ Phase II | ☐ Determination of Effects |
| ☐ Phase III | ☐ Other _____ |
| ☐ Historic Structures | |

10. **Total Project Area** 74.5 hectares (184 acres)
11. **Low Probability/Disturbed Areas** 19.5 hectares = 26 % of project area
12. **Phase I Methods used for total project** (check as many as apply)
- ☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____
13. **Total Number of Sites Encountered/Phase I** 1
- Total Sites Tested/Phase II _____
- Total Sites Excavated/Phase III _____

14. Updated PASS Information: Please complete an updated PASS form **for each site** reported by this report. Updated forms need only include the new information and the site number and name.

15. PASS Site Specific Information: In addition, the following pages must also be completed **for each site**. Complete only the portions that pertain to the current report. If the report is a stand-alone Phase II, you do not need to fill in the Phase I methods, since they should have been included in the summary form for the previous report.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36BV0009

A. Phase I Methods (how the site was located - check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

B. Phase II Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

C. Phase III Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☐ ineligible☐ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☐ other (specify): _____**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☐ artifacts washed/marked/cataloged following State

Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

- ☐ curation agreement enclosed
☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

- ☐ expanded documentation enclosed for items retained
☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

- ☐ letter from owner indicating desire to retain collection

- or -

- ☐ agency or representative discussed donation option with owner on _____(date)

- and -

- ☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

APPENDIX B
Scope of Work

28 August 2009

STATEMENT OF WORK**CONTRACT NO. W912QR-08-D-0009, TASK ORDER NO. XXX****UPPER OHIO NAVIGATION STUDY, PENNSYLVANIA
ENVIRONMENTAL RESTORATION APPENDIX INCLUDING
PLAN FORMULATION AND EVALUATION
And LIMITED ENVIRONMENTAL AND CULTURAL RESOURCE ASSESSMENTS****1. BACKGROUND**

The Upper Ohio Navigation Study, Pennsylvania, is a feasibility planning study for alternatives to modernize the three locks and dam facilities on the Ohio River in Pennsylvania, viz. Emsworth, Dashields and Montgomery locks and dams. During the Feasibility Scoping Meeting for this study, inclusion of aquatic ecosystem restoration (ER) planning was a topic of discussion. As the result of Corps Headquarters' comments during the Feasibility Scoping Meeting, the Pittsburgh District initiated ER planning efforts to be lead by the Nashville District as part of the overall navigation study. This task order will examine existing resource conditions at each site and compare future conditions with and without ER alternatives to develop ecosystem restoration potential within the study area and identify "best buy" alternatives. This planning effort will be documented in an ER Appendix that will be incorporated into the overall Feasibility Study and its accompanying National Environmental Policy Act (NEPA) environmental impact statement. Included in this planning analysis is additional characterization of the suitability of lands necessary to conduct any proposed ER projects at these sites.

As part of the ER planning efforts to date, 16 separate project sites (in 14 distinct areas) have been identified by the Corps- Nashville District as having the greatest potential for providing desired aquatic ER benefits that address needs identified by an Inter-Agency group. Table 1 lists potential ER sites and provides basic information about location (pool, river mile, bank), possible ER methods, and characterization needed. The boundaries of each site are shown in maps that are provided in Appendix A. Five sites (Sites # 1, 4, 14, 15, 17) involve floodplain or island terraces which require certain tasks and eleven sites (Sites 2, 5, 6, 7, 9, 10, 11, 12, 16, 18, 19) involve aquatic fill placement at or below ordinary high water and require slightly less performance of some tasks.

The work to be conducted under this Task Order includes the development of the ER Appendix including plan formulation, alternative development, aquatic benefits projections, description of models and methods used, and evaluation of incremental costs and cost effectiveness analysis. Development of this appendix will require close coordination between the AE and Corps – Nashville District throughout the process to ensure necessary information and products are provided by each party and formulation decisions are sound and policy compliant. The environmental characterization of the potential flood plain restoration sites includes a Phase I

Environmental Site Assessment (ESA), a cultural resource survey, and a vegetation survey that includes species composition and percent cover. Research for these task order components may involve a certain amount of overlap. The Contractor will be expected to plan and conduct their work to avoid unnecessary duplication in areas of overlap.

The Phase I Environmental Site Assessment will be conducted to assess the sites' potential for environmental liability concerns prior to obtaining a federal interest in real estate for project purposes. The purposes of the other assessments to be conducted include the identification and preliminary evaluation of the significance of natural and/or cultural resources at each of the sites. This information will be necessary for the navigation study to assess the significance of ER alternatives involving the use of one or more of these sites, in furtherance of compliance with environmental and cultural resource protection legislation.

2. CONTRACTOR RESPONSIBILITIES

A. General.

The Contractor shall furnish all personnel, equipment, materials, supplies, labor, transportation, shipping, communications and services required to accomplish the work specified under this scope of work (SOW). The Contractor shall be responsible for any and all materials and deliverables covered by this scope of work until they are delivered to and accepted by the District.

Site Access. The Contractor shall not obtain any real estate rights on behalf of the Federal Government to conduct this work. All necessary real estate rights-of-entry will be acquired by the District on behalf of the Contractor.

Quality Control. A goal of the District is to ensure that quality products, satisfying the customer expectations, are delivered on schedule and within budget. The Contractor shall support this goal through developing a Quality Control Plan (QCP) to ensure that technical quality and schedules are achieved in the products produced as a result of each task order. The basic elements of a QCP include procedures for assigning independent technical review personnel, establishing a review process with checkpoints, defining important elements for review, and documenting the results of the review. Guidelines for the QC process are found in ER 1110-1-12, Engineering and Design Quality Management, 30 September 2006.

Coordination. Contractor's personnel shall be expected to work in close coordination with the Contracting Officer (CO), his authorized representative, or other assigned District personnel. The primary point of contact for this Task Order is Chip Hall, 615-736-7666 (alternative - Tim Higgs, 615-736-7863). The technical point-of-contact for the cultural resource component is Valerie McCormack, Archaeologist, 615-736-7847.

The Contractor shall provide brief weekly progress reports following award of the Task Order. These reports may be submitted electronically. The Contractor shall routinely maintain a written record of all conferences, meetings, discussions, and other communications with others on

matters relative to the assigned work, and submit a copy of these records to the District point of contact within five business days.

The Contractor is responsible for initiating timely coordination with the District to discuss and expedite solution of perceived problems or issues.

Safety. The Contractor will be responsible for the safe conduct of all work under this SOW, in adherence to the latest version of the US Army Corps of Engineers Safety and Health Requirement Manual EM 385-1-1 (available at <http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/toc.htm>).

Publishing Restrictions. Neither the Contractor nor a Contractor's representative shall release or publish any information, sketch, photograph, report, or other material of any nature obtained or prepared under this contract without specific written approval of the Contracting Officer or his authorized representative. Records of archaeological site locations are considered to be internal documents and are not for public distribution. All reports, drawings, maps, photographs, notes, and other material developed in the performance of this Task Order shall be and remain the sole properties of the Government and may be used on any other work without additional compensation to the Contractor. The Contractor agrees not to assert any rights and not to establish any claim with respect thereto.

Travel and Per Diem. Reimbursement for travel and per diem will be according to prevailing federal rates established by the General Services Administration [<http://www.gsa.gov>] as reported in the Joint Travel Regulation.

B. Specific Tasks.

Task 1. Prepare Quality Control Plan

The Contractor will develop a Quality Control Plan (QCP) to ensure that technical quality and schedules are achieved in the products produced under this Task Order. The basic elements of a QCP include procedures for assigning independent technical review personnel, establishing a review process with checkpoints, defining important elements for review, and documenting the results of the review. Guidelines for the QC process are found in ER 1110-1-12, Engineering and Design Quality Management, 30 September 2006. The schedule, at a minimum, will assign delivery dates for each of the reports listed in Task 6. The Plan will be submitted in accordance with the specifications under Task 6. "Report Preparation and Submittals".

Task 2. Participate in a Site Visit

Appropriate Contractor personnel shall attend and fully participate with District personnel in a two (2) day site visit of all sites. This is anticipated to take two days and will require boat access to reach island sites. (Note: The Contractor will be required to provide their own boat.) The intent of these site visits is to allow for the Contractor to become familiar with the sites. The completion of this Task will precede initiation of field work (or be in conjunction with)

scheduled under other tasks. Site visits to sites 1, 4, 14, 15, 17 (to conduct vegetation surveys discussed in more detail in Task 4) should be started as soon as possible.

Task 3.A. Conduct the Phase I Environmental Site Assessment

This task is pertinent to Sites 1, 4, 14, 15, and 17 (listed in Table 1) where activities may involve modifications to floodplain or island terraces. The Phase I ESA should utilize the procedures outlined in ASTM Practice E 1527, titled *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The Phase I ESA will identify, to the extent feasible, recognized potential environmental concerns in connection with the property. The site assessment findings provide environmental site clearance for real property transactions. The intent is to demonstrate “due diligence” in conducting “all appropriate inquiry” in order to provide a basis for a legal defense under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

The Phase I Environmental Site Assessment activities, as a minimum, are as follows:

- a. Environmental Database Search – Perform a database search 1-mile radius from each of the potential flood plain restoration properties.
- b. Physical inspection of the project area - Conduct a walkover of each site and adjacent parcels to the properties [to the extent allowable under federal rights-of-entry]. Interview local officials and people on or near the project site, as appropriate.
- c. Aerial photographs – Determine past and current property uses of property.
- d. Sanborn maps – Determine past property uses.
- e. Deed Searches – Conduct a Property Title History Report.
- f. Landowner contacts – Call, mail the questionnaire, and/or interview the landowner requesting information pertaining to the land that they own.
- g. Regulatory Information Review – If appropriate, review records from the Pennsylvania Department of Environmental Protection (PADEP) and other agencies.

Task 3.B. Phase II Environmental Site Assessment Recommendations

The Phase I ESA Report will present written justification for or against conducting a Phase II site investigation. State if a Phase II Site Investigation is recommended or not recommended. If recommended, formulate a sampling program that includes the type and level of testing required for a Phase II Site Investigation that would satisfactorily encompass the concerns identified in the Phase I study. In addition, based on the Phase I results, prepare an opinion on what potential remediation costs may entail and include a general magnitude of potential cost.

Task 4. Prepare Ecosystem Restoration Appendix

This task is pertinent to all 16 ecosystem restoration sites in Table 1. This task is to be lead by GAI Corporation, a sub-contractor to Aerostar due to previous experience with this project and this task. This task involves development and preparation of the ecosystem restoration appendix and will require close coordination with Corps staff and a detailed knowledge of Corps Planning policy and regulations. It will involve further refinement of products produced to date by the

Nashville District. Potential ER sites cover a range of restoration methods aimed to provide aquatic habitat types that are limited within the study area. The Corps has developed preliminary designs for sites listed in Table 1 and these will be refined by Corps engineering elements. A brief fact sheet for each site will be provided that further describes existing conditions, anticipated restoration alternatives for each site, and additional information pertinent to development of ER site evaluation. Formulation and evaluation may lead to modifications of designs to maximize aquatic benefits and/or reduce costs. Corps will provide cost estimate information required in this effort. Other sources of information to be utilized include ORSANCO reports for each pool, State or Corps water quality information, pertinent Corps Ohio River documents and surveys (Sand and Gravel EIS, mussel surveys, bathymetry and substrate information collected by Pittsburgh District). The following are sub-tasks that are part of this effort:

1. Plan Formulation: Use Phase 1A NER Report (provided by Corps) and Initial site fact sheet to further development alternatives for each site. At a minimum, the alternatives listed on the site fact sheet shall be considered.
2. Existing Habitat Conditions: Use models described later, develop existing habitat conditions for targeted fish species and describe general habitat for all riparian and/or aquatic species.
3. Project Habitat Changes (Four Time Intervals with and without ER Project): This involves projecting model parameters over time both with and without ER alternatives to assess future habitat conditions. This requires knowledge of natural processes, and how natural resources and manmade influences would alter or develop in the site area as time progresses.
4. Aquatic Ecosystem Benefits Analysis: Estimate Habitat Units (HU) resulting with and without ER alternatives in place.
5. Other considerations: In addition to aquatic changes, discuss how other uses of the river would be affected including but not limited to commercial navigation, recreation, non-aquatic wildlife, and aesthetics. Discuss any regulatory considerations (environmental or cultural) that would have to be cleared prior to construction and any long-term operation and maintenance considerations.
6. Perform Cost-Effectiveness/Incremental Cost-Analysis (CE/ICA): After being provided cost information for each alternative from the Corps, perform a CE/ICA using IWR-Suite software. This will rank project by project benefits produced and identify those alternatives that produced the most habitat per unit cost (i.e., the "Best Buy" Plans). Least cost plans will also be identified.
7. ER Appendix Reports: Each step of the evaluation shall be coordinated with Corps staff to get concurrence of future direction. An Initial draft ER Appendix Report summarizing the evaluation shall be submitted for review and comment. A Final Draft ER Appendix will incorporate Corps comments (both Nashville and Pittsburgh Districts and local

sponsor input) by the end of November 2009 (tentative schedule now is for In Progress Review in early January, this will probably allow for additional work in December to tie up loose ends).

All evaluation methods shall conform to Corps Planning regulations and policy, including model certification requirements. The contractor shall meet multiple times with Corps staff to develop initial and in-progress reviews (anticipate five meetings in person at a location in the Nashville vicinity). Approved (already Corps-certified) Habitat Suitability Indices (HSI) for fish listed on the EDM Fish Passage Lists are to be used to evaluate project benefits. Fish species to be used are those most likely to utilize the post-restoration habitat condition being desired (largemouth bass or bluegill for shallow areas and walleye for deep sites, etc). A key aspect of this is development of input data to run the HSI model. Existing habitat conditions for each site will be developed, then with and without project conditions projected for four time intervals (Initial, 5 yr, 25 yr, and 50 yr).

The Contractor shall perform an overview-level environmental assessment of all potential flood plain restoration sites identified in this SOW and prepare a report describing the study and methodologies. Each of the sites is to be treated separately in the report. This assessment shall be conducted at a general level of effort sufficient to determine the presence and approximate extent of any significant natural resources. Significance is broadly defined to include resources protected under federal or state law, resources having public recognition as being important, and resources considered to have scientific or educational value.

The assessment shall include a records research and a field investigation. Evidences of historic and present disturbances/development, such as utilities or other structures, will be documented in the report. The Contractor shall attempt to interview the land owners to identify and document any long term plans that would affect the future condition of their properties, including their willingness to work with the Corps on potential ER projects which would require long term conservation agreements or conveying property to a local sponsor.

The Contractor will identify the potential for federal- and state-listed threatened and endangered species to occur at the studied sites through consultation with the Pennsylvania Natural Diversity Index and the appropriate resource agencies. If any potential species are identified through consultation, the Contractor will make an effort in field investigations to identify the presence or potential for presence of that species.

The field investigation will be conducted at a level of detail sufficient to describe general topography, habitat types, dominant and typical vegetative cover, wildlife habitat values, and land use. Particular attention will be given to identification and characterization of federally recognized or regulated resources: flood plains, prime farmland, wetlands, threatened and endangered species, etc. Also, detail will be given to identification of vegetation species and their percent cover, also including location within the various vegetative layers (i.e., ground cover, seedling, saplings, canopy, and presence of exotic species). These vegetation surveys are pertinent to Sites 1, 4, 14, 15, and 17 (listed in Table 1) where activities may involve modifications to floodplain or island terraces and should be conducted as soon as possible.

The Contractor shall prepare site maps that delineate the different habitat types (e.g. riparian, upland, stream, wetland, etc.), and identify acreages of each. These maps will be included in the report, and will be prepared and submitted compatible with ArcView for incorporation into the District's GIS database.

Task 5. Perform a Cultural Resource Assessment.

This task is pertinent to Sites 1, 4, 14, 15, and 17 (listed in Table 1) where activities may involve modifications to floodplain or island terraces. For all other sites involving fill placement below ordinary high water, only a literature review is required to identify any known submerged vessels that might be affected by potential fill placement. Detailed cultural resources surveys of the bank face that might be affected by connections to foreshore dikes (Sites 5, 7, 10 12, 16, 18) will be deferred until specific tie-in locations are known. The Contractor shall perform a cultural resources assessment of all potential restoration sites identified in this SOW. The Contractor shall present the cultural resource assessment in a cultural resources report that describes the study, methodologies, and findings. The cultural resources assessment will consist of records research and limited field investigation consistent with the requirements of the Pennsylvania Bureau for Historic Preservation (PaBHP) for a Phase I cultural resources report. Each of the work areas and any associated historic properties are to be assessed and reported separately in the study report.

The Contractor shall designate a Principal Investigator (PI) who shall be responsible for the validity and professional quality of the cultural resource work, and who shall be the primary point of contact for the routine administration and coordination. Contractor personnel employed to perform the specified work shall meet the relevant qualifications as specified in Archeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines (Federal Register Vol. 48, No. 190).

Field investigations. The limited field investigations shall consist of a combination of pedestrian reconnaissance and excavations consisting of a limited series of 50cm shovel probes (SP). All areas with available rights-of-entry are to be fully covered with pedestrian reconnaissance.

All standing structures or objects will be inventoried and photographically recorded. All structures or objects having an estimated age of 50 years or more shall be documented on a Pennsylvania Historic Sites Survey Form.

Reporting. The cultural resource report shall document all sources of information consulted in the records research. The discussion and conclusions section of the report shall include an assessment of the cultural resource potential for each survey area and landform. If further testing is indicated or would have to be performed at a future date (once final site designs are conducted), the Contractor shall recommend the types and level of testing necessary to complete a full Phase I and/or Phase II investigation. Should the Contractor determine that any site(s) may be eligible for listing to the National Register of Historic Places, they will first consult with the District before making any recommendations in the report or consulting with the PaBHP. The authority for recommending determinations of eligibility rests with the Pittsburgh District Engineer.

Task 6. Report Preparation and Submittals.

The Contractor will prepare and submit separate reports for:

- a. Quality Control Plan,
- b. Phase I Environmental Site Assessment and Phase II ESA Recommendations,
- c. Ecosystem Restoration Appendix,
- d. Cultural Resource Survey.

The Contractor shall prepare and submit each report in draft and final versions, except for the ER Appendix which is detailed elsewhere. The draft version shall be complete in all respects to allow for a single, complete review by the District. Any significant deficiency in the content of the draft report will constitute sufficient reason for non-acceptance. The draft and final reports shall be submitted in both hard copy and electronic copy for review.

Specifications for each report are summarized below:

- a. Quality Control Plan:
 - Draft – One (1) hard copy, unbound with removable corner clip for review.
 - Final – Three (3) bound hard copies, and provide electronic copy (1) on CD and separately as a scanned PDF file (1).
- b. Phase I Environmental Site Assessment Report and Phase II ESA Recommendations
 - 95% complete report - Six (6) copies unbound with removable corner clip for review. The report shall be typed double spaced in Times New Roman, 12 pt font, with one-inch margins. The hard copies shall be printed single-sided. The Contractor will summarize/discuss the methods and findings collected in Phase I ESA (Task 3.A., Conduct the Phase I Environmental Site Assessment).
 - Final Report - Eleven (11) copies, one (1) copy unbound, ten (10) copies in binders. The final report shall be typed single spaced in Times New Roman, 12pt font, with one-inch margins. The hard copy shall be printed two-sided. Provide electronic copies of the native electronic files, (1) on CD and one (1) copy separately as a scanned PDF file.
- c. Ecosystem Restoration Appendix
 - The initial (Corps review) and final (Corps second review and sponsor review) draft report shall be double spaced in Times New Roman 12pt font, or equivalent, with one-inch margins, and printed two-sided. Five (5) bound hard copies. Binding may be of any suitable type. One (1) electronic copy on CD in MS Word and one (1) copy separately as a scanned PDF file.

- The final report shall be single spaced in Times New Roman 12pt font or equivalent, with one-inch margins, and printed two-sided. Five (5) hard copies: One (1) hard copy unbound, and four (4) copies bound. Binding may be of any suitable type. Provide electronic copy (1) on CD and one (1) copy separately as a scanned PDF file.

Cultural Resource Report

- The draft report shall be double spaced in Times New Roman 12pt font, or equivalent, with one-inch margins, and printed two-sided. Five (5) bound hard copies. Binding may be of any suitable type. One (1) electronic copy in MS Word and one (1) copy separately as a PDF file.
- The final report shall be single spaced in Times New Roman 12pt font or equivalent, with one-inch margins, and printed two-sided. Five (5) hard copies: One (1) hard copy unbound, and four (4) copies bound. Binding may be of any suitable type. Provide one (1) electronic copy in MS Word and one (1) copy separately as a PDF file.

3. GOVERNMENT RIGHTS AND RESPONSIBILITIES

Work Products. All reports, drawings, maps, photographs, notes, and other materials developed in the performance of work conducted under this SOW will remain the sole property of the Government. The Contractor may be required to use materials developed under one task order in another task order without additional compensation. The Contractor agrees not to assert any rights and not to establish any claims with respect thereto, and hereby agrees to furnish and provide access to all retained materials on the request of the Contracting Officer.

Site Access. All real estate rights-of-entry that are necessary for the proper conduct of the specified work will be acquired by the Pittsburgh District on behalf of the Contractor. The Contractor will not separately obtain any real estate rights on behalf of the Federal Government to conduct this work. A list of properties and status of the rights-of-entry are in Appendix A. For sites within the Ohio Islands National Wildlife Refuge (Phyllis and Georgetown Islands, Sites 15-18), a Special Use Permit is anticipated to cover the activities described in the Scope.

Inspection. The performance of the Contractor and quality of the work delivered, including services rendered and the documentation in support thereof, shall meet generally accepted professional standards. They shall be subject to the inspection, review, and acceptance by the District. The CO or his representative may at all reasonable times inspect or otherwise evaluate the work being performed hereunder and the premises in which it is being performed. If the District performs any inspection or evaluation on the premises of the Contractor, the Contractor will provide all reasonable facilities and assistance for the safety and convenience of the District representatives in the performance of their duties. All inspections and evaluations will be performed in such a manner as will not unduly delay the work.

4. SCHEDULE AND PAYMENT

The following schedule is to be followed after Receipt of Task Order:

Working Days after Receipt of Task Order	Task
16	Participate in a site visit with the USACE
5	Complete and submit a draft Quality Control Plan and Task Order Schedule (Task 6.a.)
15	Complete and submit a final Quality Control Plan and Task Order schedule (Task 6.a.)
43	Complete and submit 95% Phase I Environmental Site Assessment Report (Task 6.b.)
55	Corps conducts and completes review of 95% Phase I Environmental Site Assessment Report.
63	Complete the incorporation of 95% Corps comments into Phase I report. Complete the Phase I ESA Report based on the findings of the investigation; state if a Phase II Site Investigation is recommended or not recommended. If appropriate, complete formulation of a sampling program for a Phase II site investigation. Submit copies of the report. (Task 6.b.)
65	Complete and submit initial draft ecosystem restoration appendix (Task 6.c.)
75	Complete and submit draft cultural resource report (Task 6.d.)
80	Corps conducts and completes review of NEPA EA
90	Corps conducts and completes review of cultural resource report
90	Final Draft Ecosystem Restoration Appendix (Task 6.c.)
95	Final cultural resource report due (Task 6.d.)

Note: The Phase I Environmental Site Assessment Report is scheduled to be completed before the ER Appendix and cultural resource reports. This will allow for the findings of the Phase I ESA to be incorporated into these other reports

Payment. Progress and final payments will be made in accordance with provisions of the basic contract.

TABLE 1

(tasks required does not match AE tasks discussed in SOW, this lists other data sources that are being sought, some of which would be performed under this scope of work)

Upper Ohio Feasibility Study Ecosystem Restoration Sites				
Site	Pool	± River Mile (s)	Project Type	Tasks Required
1. Brunot Island Floodplain Restoration (FR)	Emsworth	1.5 - 2.9	VP Wetlands, invasive removal, native plantings, etc.	Cultural Resources (CR), Vegetation Survey (Veg), ESA, Utility Location (Ut)
2. Sauger Spawning Habitat Enhancement (SS), d/s of Brunot Island	Emsworth	3	Contouring and Substrate Enhancement	Substrate Data, Water Quality, Velocity
4. Davis Island FR	Emsworth	4.5 - 5.2	VP Wetlands, invasive removal, native plantings, etc.	Cultural Resources (CR), Vegetation Survey (Veg), ESA, Utility Location (Ut)
5. Davis Island Foreshore Dike, LB of Back Channel	Emsworth	4.5 - 5.2	Dike built parallel to bank, creating aquatic habitat behind dike	Velocity, Substrate, CR at Tie-ins
6. SS, d/s of Neville Island	Emsworth	3.9 - 5	Contouring and Substrate Enhancement	Substrate Data, Water Quality, Velocity
7. Neville Island Foreshore Dike, LB of Back Channel	Dashields	3.8 - 9	Dike built parallel to bank, creating aquatic habitat behind dike	Velocity, Substrate, CR at Tie-ins
8. SS, d/s of Dasheids Dam	Montgomery	14.5	Contouring and Substrate Enhancement	Substrate Data, Water Quality, Velocity
10. FD RB	Montgomery	17.6 - 17.9	Dike built parallel to bank, creating aquatic habitat behind dike	Velocity, Substrate, CR at Tie-ins
11. Gravel Bar at Mouth of Beaver Creek	Montgomery	25.5	Contouring and Substrate Enhancement	Substrate Data, Water Quality, Velocity
12. Foreshore Dike, LB	Montgomery	27.2 - 27.9	Dike built parallel to bank, creating aquatic habitat behind dike	Velocity, Substrate, CR at Tie-ins
14. Montgomery Slough	Montgomery	31 - 31.8	VP Wetlands, invasive removal, native plantings, suction dredging	Cultural Resources (CR), Vegetation Survey (Veg), ESA, Utility Location (Ut)
15. FR, Phyllis Island	New Cumberland	35 - 35.7	VP Wetlands, invasive removal, native plantings, etc.	Cultural Resources (CR), Vegetation Survey (Veg), ESA, Utility Location (Ut)
16. FD/Ring Dike, Phyllis Island	New Cumberland	35 - 35.7	Dike built parallel to bank, creating aquatic habitat behind dike	Velocity, Substrate, CR at Tie-ins
17. FR, Georgetown Island	New Cumberland	37.5 - 37.8	VP Wetlands, invasive removal, native plantings, etc.	Cultural Resources (CR), Vegetation Survey (Veg), ESA, Utility Location (Ut)
18. FD/Ring Dike, Georgetown Island	New Cumberland	37.5 - 37.8	Dike built parallel to bank, creating aquatic habitat behind dike	Velocity, Substrate, CR at Tie-ins
19. Gravel Bar Enhancement, RB	Dashields	12.9 - 13.15	Contouring and Substrate Enhancement	Substrate Data, Water Quality, Velocity

APPENDIX B

MAPS OF SITES
(to be provided via FTP site)

APPENDIX C
PASS Site Form – Site 36Bv9 (revised)

SITE NAME Industry SITE NUMBER 36- BV-0009 DATE 12/29/2009

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME Industry SITE NUMBER 36BV0009 UPDATE? ☒ Y ☐ N
 PUBLISHED REFERENCES (Including compliance reports.) Phase I Cultural Resources Assessment, Upper Ohio Navigational
Study Ecosystem Restoration, Allegheny and Beaver Counties, Pennsylvania ER# 1997-1617-042
 COUNTY Beaver TWP. Industry NEAREST TOWN Ohioview

Site Characteristics

SITE AREA (approximately) 350.000 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒
 COMPUTED ON MAP

STRATIFIED? ☒ UNKNOWN ☐ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☒ Previously Recorded (update)

☐ Unknown	☐ Auger probing
☐ Collector interview	☐ Shovel testing
☐ Collector interview with field check	☐ Systematic test units
☐ Non-systematic surface survey	☐ Extensive excavation
☐ Systematic surface survey	
☐ Systematic shovel testing	
☐ Remote sensing	

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☒ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated flute point locus

- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☐ Unknown/other/multiple types
- ☐ Farmstead

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian

☐ Early ☐ Middle ☐ Late
- ☐ Archaic

☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☒ Woodland

☒ Early ☒ Middle ☒ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800

☐ 1700-1725 ☐ 1725-1750

☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900

☐ 1800-1825 ☐ 1825-1850

☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-

☐ 1900-1925 ☐ 1925-1950

☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☒ Ceramic types
- ☐ Historical Documentation
- ☒ Radio Carbon Dates (list below)

RADIO CARBON DATES 2470 ± 120

±

FEATURES? ☒ NONE FOUND ☐ YES (identify below) If count is not known, use a “P” for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery

Quantity	Historic Features
	Cistern
	Dam
	Ditch
	Fence/line
	Flower Garden/Bed
	Fortification
	Foundation

Quantity	Historic Features
	Ice House
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker

SITE NAME Industry SITE NUMBER 36- BV-0009 DATE 12/29/2009

Quantity	Historic Features
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy

Quantity	Historic Features
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or

Quantity	Historic Features
	Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
1	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
2	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common
---	-----------------

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above. Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	

Quantity	Prehistoric Artifact Types	Material Type
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	

SITE NAME Industry SITE NUMBER 36- BV-0009 DATE 12/29/2009

Quantity	Prehistoric Artifact Types	Material Type
	Core	
2	Fire Cracked Rock	Sandstone
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	

Quantity	Prehistoric Artifact Types	Material Type
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
1	Stone Debitage	Monongahela chert
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

Architectural	Farm Tools	Kitchen (Domestic)
Personal	Arms/Weapons	Industrial Tools

Examples:

D	Glass	50 Architectural / 29 Kitchen
G	Metal	Architectural

Quantity	Historic Artifact	Group
	Brick	
	Buttons	
	Ceramics (Historic)	
	Clay Pipes (Historic)	
	Coins	
	Glass	
	Glass Trade Beads	
	Gunflints	

Quantity	Historic Artifact	Group
	Jewelry	
	Metal	
	Non-diagnostic ceramics	
	Redware	
	Strike-a-Light	
	Textiles	
	Toys	

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above. Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
-----	Paleoindian Points	-----
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	

Quantity	Prehistoric Point Types	Material
	Fluted Point	
-----	Early Archaic Points	-----
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	

SITE NAME Industry SITE NUMBER 36- BV-0009 DATE 12/29/2009

Quantity	Prehistoric Point Types	Material
	Charleston	
-----	Middle Archaic Points	-----
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
-----	Late Archaic Points	-----
	Piedmont Tradition	
	Laurentian Tradition	
	Steubenville	
-----	Transitional Tradition	-----
	Koens Crispins/Savannah River	
	Broadspears	

Quantity	Prehistoric Point Types	Material
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
-----	Early Woodland Points	-----
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
-----	Middle Woodland Points	-----
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
-----	Late Woodland Points	-----
	Triangles (Late Woodland)	
-----	Proto Historic Points	-----
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include "grit", "grog" or "shell".)

Quantity	Prehistoric Ceramics	Temper
-----	Early Woodland Ceramics	-----
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper- Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper- Conical/Globular)	
	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	
-----	Abott Zoned	-----
	Grit Tempered Exterior Cordmarked- Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	
	Watson Cord Marked	

Quantity	Prehistoric Ceramics	Temper
-----	Late Woodland Ceramics	-----
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemsons Island/Princess Point Series	
	Early Ontario Iroquois	
	Eric Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguanan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked- Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somersset	

SITE NAME Industry SITE NUMBER 36- BV-0009 DATE 12/29/2009

Quantity	Prehistoric Ceramics	Temper
	Phase	
	Oak Hill Series	
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	

Quantity	Prehistoric Ceramics	Temper
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Ceramics

Quantity	Historic Ceramics
	American Stoneware (Blue and Gray)
	Basalt
	Chinese Porcelain
	Cream-Colored Ware
	Creamware
	Dry-Bodied (Engine Turned)
	English Brown Stoneware

Quantity	Historic Ceramics
	English Porcelain
	Fullham
	Ironstone
	Jackfield
	Nottingham
	Pearlware (All Decoration Types)
	Rhenish
	Rockingham

Quantity	Historic Ceramics
	Scratch Blue/Brown Salt-Glaze Stoneware
	Tin-Glazed Earthenware
	Whieldon
	White Salt-Glaze Stoneware
	White Ware (Transitional)
	Yellowware

Physical Data and Site Condition Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Pope silt loam SOIL MAPPING UNIT Po
Most common other mapped SOIL UNIT(S) within 500 meters Philo silt loam (may list two)
MAP ELEVATION 680 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION South
SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pcc-Pennsylvanian Casselman Formation
Most predominant other BEDROCK(S) within 5 km Pa-Pennsylvanian Allegheny Group Pcg-Pennsylvania Glenshaw Formation
PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau Section (21) (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE _____)

TOPOGRAPHIC SETTING (check the one that best describes the setting):

- ☐ Island
- ☐ Beach
- ☒ Floodplain
- ☐ Rise in Floodplain
- ☐ Terrace (Pleistocene along river)
- ☐ Lower Hillslope
- ☐ Middle Hillslope
- ☐ Upper Hillslope
- ☐ Stream Bench (along low order stream)
- ☐ Hill/Ridge Toe
- ☐ Upland Flat
- ☐ Hilltop
- ☐ Ridge Top
- ☐ Saddle

IMMEDIATE VEGETATION Woods PERCENTAGE OF SITE STILL INTACT Unknown
PRIMARY DISTURBANCE Infilling, heavy equipment POSSIBILITY OF DESTRUCTION Unknown

SITE NAME Industry SITE NUMBER 36-BV-0009 DATE 12/29/2009**Water Drainage Area Information** Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.SUBBASIN Ohio River WATERSHED B MAJOR STREAM Ohio River MINOR STREAM _____NEAREST WATER: Distance adjacent Elevation 680ft Direction South Order 2 Type Perennial Stream2ND NEAREST WATER: Distance 1.181 ft / 360 m Elevation 680ft Direction Northeast Order 1 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 1.181 ft / 360 m Elevation 680ft Direction Northeast Order below confluence 2

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

- ☐ Do not represent a stream confluence.
☐ Site is located upstream from the confluence and between the 2 water sources.
☐ Site is located upstream from the confluence, but not between the 2 water sources.
☒ Site is located downstream from the confluence.
☐ None of the above apply.

COMMENTS

Site 36BV0009 is a previously recorded site which was investigated during the Upper Ohio Navigational Study, Ecosystem Restoration Project in 2009. During this survey, Site 36BV0009 was investigated to determine whether or not portions of the site remain intact and could be impacted by future ecosystem restoration efforts in the area. Information contained in this form is an update to existing site records and does not include artifact information from previous excavations at the site.

A pedestrian reconnaissance and limited use of a soil probe indicated that the vast majority of Site 36BV0009 (particularly portions to the south and west) had been infilled with dredged material and disturbed from the infilling process (hauling heavy loads of sediment through wet soils), while the eastern extent of the site had been scoured and disturbed as a result of road construction and demolition. However, the northwestern portion of the site (upland shrub and riparian areas), between the railroad tracks and inlet, appeared to have intact soils, which had not been infilled as with other portions of the landform.

Based on the results of the pedestrian reconnaissance, seven judgmentally placed STPs in two different portions of SA 14. Two STPs (J1 and J2), placed in the southern peninsula area, fell within fill deposits. The soil stratigraphy in this area revealed a dark brown (10YR 3/3) sandy loam excavated to a depth of 90 cm without reaching a change in soil stratigraphy. No artifacts were recovered from excavations in this area. Judgmentally placed STPs excavated in the northwestern portion of SA 14, revealed intact soils including a buried A (Ab) horizon.

Excavations confirmed that portions of Site 36BV0009, a multicomponent site spanning the Early through Late Woodland periods, remain intact within the northwestern portion of the SA 14. Shovel testing at the site consisted of one positive STP and four radial STPs excavated at a regular 5-meter (15-foot) intervals to the east and west of the initial, positive STP (see Figure 6). STP J3 produced three temporally non-diagnostic artifacts: one piece of local Monongahela chert debitage and two pieces of sandstone fire cracked rock (FCR). Four radial STPs were excavated to the east and west of STP J3, none of which resulted in the recovery of artifacts. Further STPs were not excavated to the north due to the presence of the railroad bed or to the south due to the presence of waterlogged soils.

Two typical soil profiles were encountered during excavation in this area. To the east, excavations demonstrated an A-B soil horizon sequence consisting of a dark brown (10YR 3/3) silt loam A horizon to an average depth of 31 cm overlying a yellowish brown (10YR 5/6) silt loam B horizon excavated to an average depth of 42 cm. To the west, excavation of STPs J3, R3 and R4 revealed a dark brown (10YR 3/3) silt loam A horizon to an average depth of 31 cm underlain by a very dark grayish brown (10YR 2/2) silt loam buried A (Ab) horizon to an average depth of 41 cm. This Ab horizon was underlain by the same yellowish brown (10YR 5/6) silt loam subsoil encountered in the eastern STPs (see Figure 32). Given the recovery of artifacts from a buried A horizon at the northern extent of SA 14/Site 36BV0009, it is possible that intact cultural features associated with the site are present within this area.

**ATTACH PHOTOGRAPHS OR DRAWINGS OF DIAGNOSTIC ARTIFACTS WITH SCALE.
IDENTIFY LITHIC MATERIAL TO ARTIFACTS USING DESCRIPTION OR KEY.**

We encourage the inclusion of as many illustrations as possible.

7.5 QUAD NAME	Midland	EDITION	UP	ACROSS
---------------	---------	---------	----	--------

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)-OR-

U.T.M. COORDINATES: ZONE 17 NORTHING 45 00 595 EASTING 05 52 804

ATTACH SEPARATE SKETCH MAP OF SITE AND/OR PORTION OF 7.5 MIN USGS MAP WITH SITE BOUNDARIES INDICATED.

[illegible]

TAX PARCEL ID	TAX MAP DATE
---------------	--------------

☐ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS Temporary: GAI Consultants, 385 East Waterfront Drive, Homestead PA, 15120
Permanent: Pennsylvania Bureau for Historic Preservation, Commonwealth Keystone Building, 2nd Floor, 400 North Street, Harrisburg PA

INFORMANTS

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
☒ State or Federal Compliance Survey
☐ PHMC Grant
☐ Non-PHMC institution affiliated research
☐ PHMC Research
☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION

SUBMITTED BY GAI Consultants, Inc. ADDRESS 385 East Waterfront Drive

CITY Homestead STATE PA DATE 15120

PHONE NUMBER 412-476-2000 EMAIL ADDRESS a.trimmer@gaiconsultants.com

S.P.A. CHAPTER AFFILIATION

INSTITUTIONAL AFFILIATION

ADMINISTRATIVE COMMENTS

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:
Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093



Overview of Cleared, Disturbed Eastern Portion of Site 36BV0009. View East.

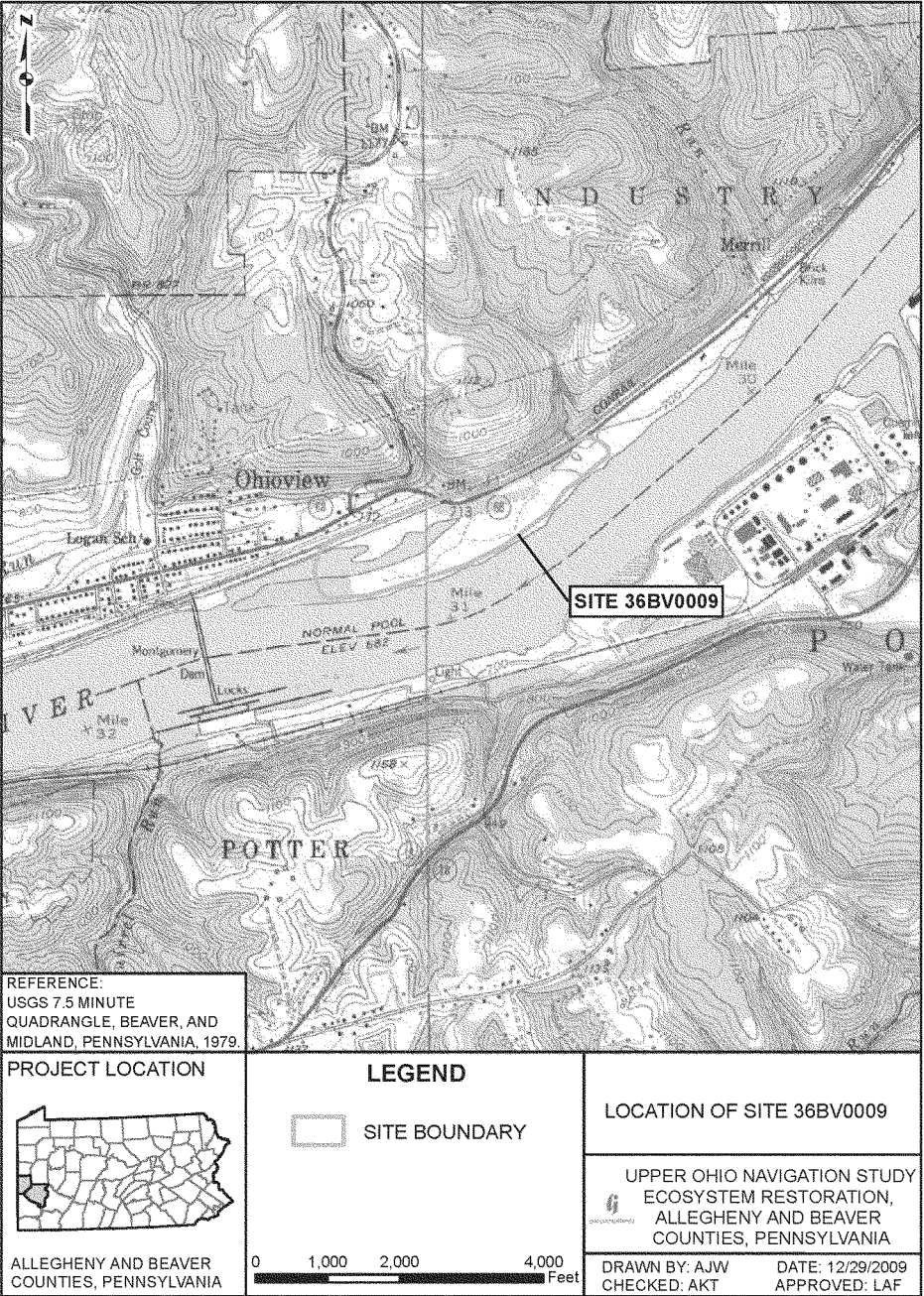


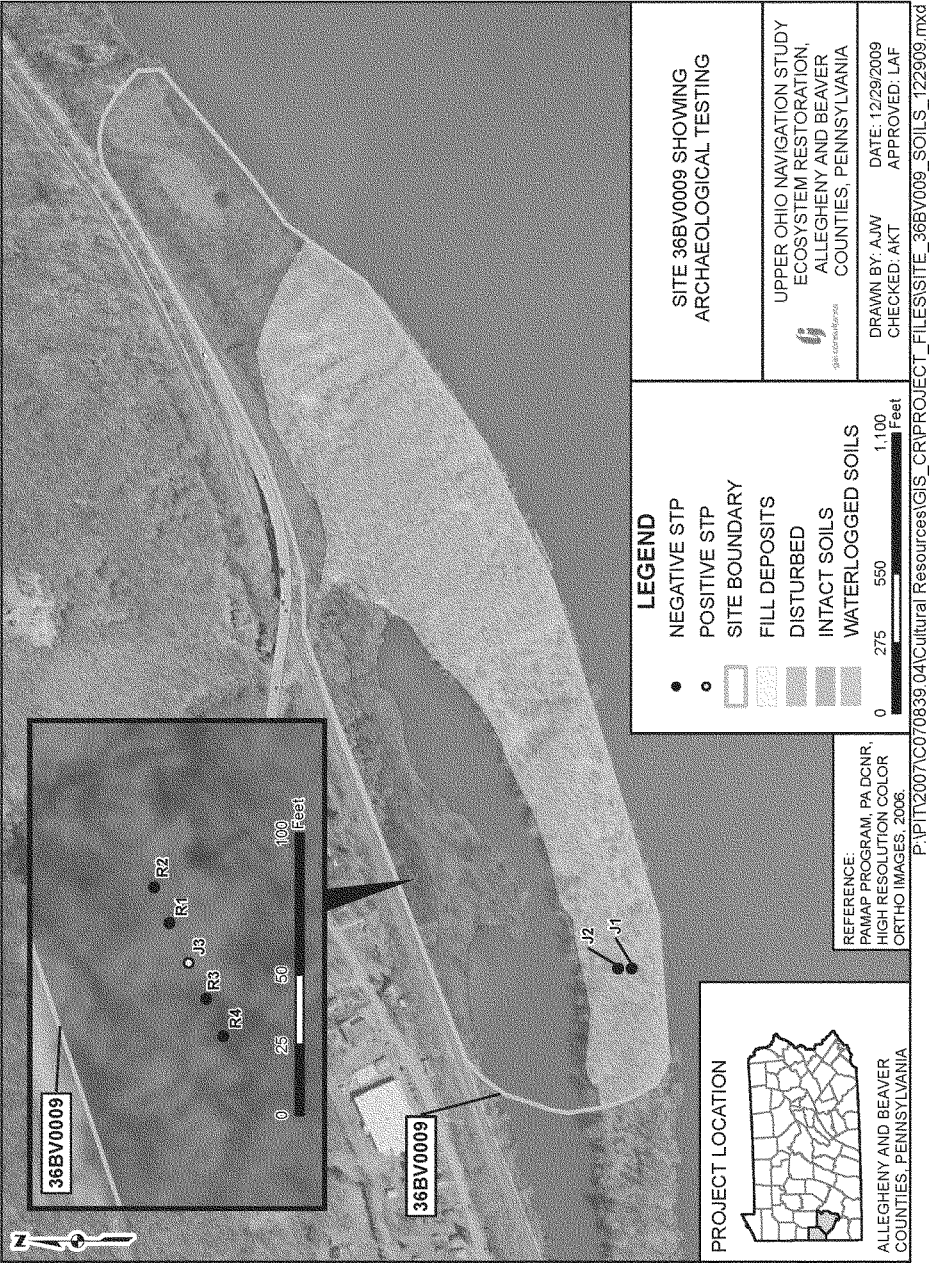
Uneven Infilled Southern Portion of Site 36BV0009 Showing Non-native Vegetation. View North.

SITE NAME Industry SITE NUMBER 36-BV-0009 DATE 12/29/2009



Overview of Hummocky, Disturbed Terrain at Site 36BV0009. View East.





36BV0009 Lithic Catalog

Fs	Area	North	East	Sp	Tu	Trench	Feature	Strat	Horizon	Lev	Elev	Count	Weight	Material	Class	Type	Lgth	With	Thick	Point Type	Comments
1	NW			J3				2	A		0-30	2	14.36	Sandstone	Fire Cracked Rock						
1	NW			J3				2	A		0-30	1	0.51		Debitage	Flake Fragments					

3 Total Artifact Count

APPENDIX D
Artifact Catalog

36BV0009 Lithic Catalog

Fs	Area	North	East	Sp	Tu	Trench	Feature	Strat	Horizon	Lev	Elev	Count	Weight	Material	Class	Type	Lgth	Wth	Thick	Point Type	Comments
1	NW			J3			2	2	A		0-30	2	14.36	Sandstone	Fire Cracked Rock						
1	NW			J3			2	2	A		0-30	1	0.51		Debitage	Flake Fragments					

3 Total Artifact Count

APPENDIX E
GAI Project Personnel (Resumes)

Lori A. Frye, M.A., RPA*Lead Archaeologist***Education**

- 1976 B.A. University of Pittsburgh, Anthropology Department, emphasis Archaeology
 1982 M.A. Western Kentucky University, Folk Studies Department, emphasis Historic Preservation
 1992 M.A. Arizona State University, Anthropology Department, emphasis Archaeology

Areas of Specialization

Historic archaeology, oral history interviews, prehistoric and historic ceramic analysis, cultural resource management, Eastern Woodlands archaeology

Historical Archaeology Teaching Experience

Adjunct Faculty, Mt. St. Mary's College, History Department, Emmittsburg, Maryland

- Fall 1999 Industrial Archaeology
 Winter 2000 Industrial Archaeology Lab
 Fall 2001 Historical Archaeology

Project Manager/Principal Investigator**2007**

- Phase III Data Recovery Excavations at Site 18Cv151 Calvert County, Maryland, Cove Point Expansion Project. Report prepared for Dominion Transmission, Inc., Clarksburg, West Virginia.
- Fort Ethan Allen Cultural Landscape Documentation Report, Arlington, Virginia. Client: Arlington Heritage Alliance, Arlington, Virginia.
- Archaeological Data Recovery at Nuttallburg Mine Conveyor, New River Gorge National River, Fayette County, West Virginia. Client: National Park Service, Denver Service Center, Denver, Colorado.

2006

- Phase IB Archaeological Survey for the Proposed Westmoreland Distribution Park II, Parcel B, East Huntingdon and Hempfield Townships, Westmoreland County, Pennsylvania. Client: Westmoreland County Industrial Development Corporation, Greensburg, Pennsylvania.
- Phase I Cultural Resource Survey, Proposed SL 2057/SL 2492 Pipeline Replacement Project, Lagrange and Lagrange Township, Lorain County, Ohio. Client: Columbia Gas Transmission.
- Phase I Archaeological Survey for the Proposed D-36 Pipeline Replacement Project, New Riegel, Seneca County, Ohio. Report prepared for Columbia Gas Transmission, Charleston, West Virginia.

2005

- Phase Ib Archaeological Survey, 189-acre Parcel within Proposed Westmoreland Distribution Park, East Huntingdon Township, Westmoreland County, Pennsylvania. Client: Westmoreland County Industrial Development Corporation, Greensburg, Pennsylvania.
- Phase I Archaeological Survey, Westmoreland Technology Park, Phase 2, Lot 19, Hempfield Township, Westmoreland County, Pennsylvania. Client: Westmoreland County Industrial Development Corporation, Greensburg, Pennsylvania.
- Phase I Archaeological Survey, Cove Point Expansion Project, PL-1 Natural Gas Pipeline Replacement Section, Hamilton Township, Franklin County, Pennsylvania. Client: Dominion Transmission, Inc., Clarksburg, West Virginia.
- Phase I Archaeological Survey for Proposed SR-513 Pipeline, Salt Creek Township, Hocking County, Ohio. Client: Columbia Gas Transmission, Charleston, West Virginia.



- Phase IA Cultural Resources Investigation, AEP IGCC Plant Siting Studies, Ohio, West Virginia, and Kentucky. Client: American Electric Power.
- Phase II Cultural Resource Assessment, Site 36Ju117, Petersheim Site, Cove Point Expansion Project, Perulack Compressor Station, Juniata County, Pennsylvania. Client: Dominion Transmission, Inc., Clarksburg, West Virginia.
- Phase I Cultural Resource Survey, Proposed SL 2057/SL 2492 Pipeline Replacement Project, Lagrange and Lagrange Township, Lorain County, Ohio. Client: Columbia Gas Transmission in 2006.
- Phase I Cultural Resource Survey, Proposed E-460 Pipeline Replacement Project, Starr Township, Hocking County, Ohio. Client: Columbia Gas Transmission in 2005.
- Phase IA Cultural Resources Investigation, AEP IGCC Plant Siting Studies, Ohio, West Virginia, and Kentucky. Client: American Electric Power in 2005
- Phase IB Archaeological Investigation, Proposed IGCC Mountaineer Plant Site, Mason County, West Virginia. Client: American Electric Power in 2005
- Phase I Survey E-2 Pipeline Replacement, Starr Township, Hocking County, Ohio. Client: Columbia Gas Transmission in 2005.
- Phase I Survey for SR 513 Pipeline Replacement, Salt Creek Township, Hocking County, Ohio. Client: Columbia Gas Transmission in 2005.
- Phase I Survey, Westmoreland Technology Park, Phase 2, Lot 19, Hempfield Township, Westmoreland County, PA. Client: Westmoreland County Industrial Development Corporation, Greensburg, Pennsylvania in 2005.
- Phase I and Phase II Investigations at Site 36Ju117, Cove Point Expansion Project, Perulack Compressor Station, Juniata County, Pennsylvania. Client: Dominion Transmission, Inc., Clarksburg, West Virginia in 2005.

Principal Investigator (Report Author)

- Phase III Archaeological Investigations for the Proposed Norfolk Southern Railway Company's Saltsburg to Clarksburg Rail Line, Armstrong Township, Indiana County, Pennsylvania: The Reed Site. Client: Norfolk Southern Railway Company in 2005.

2004

- Phase I Survey, Grading Area and Haul Road Project. Client: Westmoreland County Industrial Development Corporation, Westmoreland County, PA.
- Phase I Survey, BBH Site Location. Client: Kanawha Eagle Coal, Cabin Creek District, Kanawha County, West Virginia
- Phase IA Survey, Westmoreland Distribution Park Phase 2. Client: Westmoreland County Industrial Development Corporation, Westmoreland County, PA
- Phase I Survey, Cove Point Expansion Project, 40 Mile Transmission Line. Client: Dominion Transmission, Inc., St. Mary's, Charles, and Prince George Counties, Maryland.
- Phase I Survey, Pipeline Corridor Project. Client: Great Lakes Energy Partners Pipeline Project, Oakland and Plum Townships, Venango County, Pennsylvania.
- Phase I Survey, Pipeline Corridor Project. Client: Great Lakes Energy Partners Pipeline Project Complanter Township, Venango County, Pennsylvania.
- Phase I Survey, Sewerline Survey Project. Client: Senate Engineering, Mahoning Township, Armstrong County, Pennsylvania.
- Phase I Survey, Sewerline Survey Project. Client: Dana R. Boob Surveying and Engineering, Brockway Area Sewer Authority Project Horton Township, Snyder Township, and Brockway Borough, Elk and Jefferson County, Pennsylvania
- Phase I Survey, Sewer Facilities Project. Client: Hill Engineering, Inc., Borough of Ellwood City, Wayne Township, Lawrence County, Pennsylvania.

- Phase I Survey, Sewerline Survey Project. Client: Stiffler, McGraw and Associates, Inc., Frankstown Township Blair County, Pennsylvania.
- Phase I Survey, Trails End Re-Entry Project. Client: USDA, Allegheny National Forest, Wetmore and Hamlin Townships, McKean County, Pennsylvania.
- Phase I Archaeological Investigations and Historical Structure Investigations. Client: Bentworth School District, Somerset Township, Washington County, Pennsylvania.
- Phase I Survey, Allegheny Portage Trace Trail Corridor (6-10). Client: National Park Service, Allegheny Portage National Historic Site, Gallitzin, Pennsylvania

Project Manager/Principal Investigator, 1994-2003 Examples

- Report on Archaeological Excavations, Wager Farmstead Site 36Mg307, Pennsylvania Act 70 Project, Pennsylvania Bureau for Historic Preservation, Montgomery County, PA.
- Effects Report and Recommended Data Recovery Plan, Site 36A1480, Locks and Dams 2, 3, and 4, Monongahela River Project, Leetsdale, Allegheny County, Pennsylvania, US Army Corps of Engineers, Pittsburgh District.
- Reassessment of Archaeological Sites, Falls Lake Reservoir Cultural Resources Planning Project, US Army Corps of Engineers, Wilmington District, Durham, Granville, and Wake Counties, NC.
- Archaeological Survey and Excavation at Site 46Jf245, a Civil War encampment, Cranes Meadow Housing Development Project, Cranes Meadow Limited Partnership, Jefferson County, WV.
- Phase I Survey, Furnace Town Historic Site Visitor's Center Project, Furnace Town Foundation, Inc., Worcester County, MD. Determination of Eligibility Assessments, Bluestone Dam and County Route 23, Horizon Research Consultants, Summers County, WV
- Phase I/II Archaeological Investigations at Fenby Farm Quarry and Lime Kiln Site (18Cr163/CARR 260), Westminster, Carroll County, MD.
- Phase I Intensive Survey, Proposed Western Elementary School #3, Howard County Public School System, Howard County, MD.
- Phase I Survey, New Design Bridge and Road Modification Project, Frederick County Department of Public Works, Bureau of Highways and Transportation, Frederick County, Maryland.
- Phase I Survey Juniata Woolen Mill, Bedford County. An archaeological Reconnaissance Survey north of the Juniata Woolen Mill, Snake Spring Township for Juniata Woolen Mill, Inc.
- Phase I Survey, Lower Georges Creek, Grays Landing Lock and Dam Project, Woolpert Consultants, Springhill and Nicholson Townships, Fayette County, PA.
- Phase II/III Excavations of Gallatin Sawmill site (36Fa428), Grays Landing Lock and Dam Project, Woolpert Consultants, Fayette County, PA.
- Phase II Assessment Eight Historical Sites, Eastern Portion of Segment II of the Proposed U.S. 30 Relocation Project, Dansard, Grohnke, and Long, Ltd., Hancock and Wyandot Counties, Ohio.
- Phase II Assessment of the Tile House Site, Eastern Portion of Segment I of the Proposed U.S. 30 Relocation Project, Dansard, Grohnke, and Long, Ltd., Hancock County, Ohio.
- Phase III Excavations of Young Site 33At668, Proposed Bridge Crossing of Hamley Run on S.R. 691 Project, Ohio Department of Transportation, Athens County, OH.
- Phase I Survey, Juniata Woolen Mill parking lot Project, Juniata Woolen Mill, Inc., Snake Spring Township, Bedford County, PA.
- Phase I Survey, Proposed Riverview Terrace Property Development Project, Cuyahoga Metropolitan Housing Authority, Cleveland, Cuyahoga County, Ohio
- Phase I Survey, Proposed Relocation of U.S. Route 30 Project, McCoy and Associates, Inc., Crawford and Richland Counties, Ohio.
- Phase I Survey, Mill Creek Mall Expansion Project, The Cafaro Company, Erie County, Pennsylvania.
- Phase I Inventory Survey, Naval Submarine Base Cultural Resources Planning Project, Naval Facilities Engineering Command, San Diego, California.

Publications:

- 1995 A Cultural Resource Survey and Geomorphological Investigation of Loci 3, 4, 5, and 6 along Lower Georges Creek in Springhill and Nicholson Townships, Fayette County, Pennsylvania. Co-authored with Ronald C. Carlisle and J. Steven Kite. US Army Corps of Engineers, Pittsburgh District.
- 1995 Archaeological Assessment and Data Recovery of the Gallatin Sawmill at 36 Fa 428: The Eberhart Grist Mill, Dam, and Gallatin Sawmill. Co-authored with Ronald C. Carlisle, J. Steven Kite, Paula Zitzler, and Eric Davis. US Army Corps of Engineers, Pittsburgh District.
- 1992 Phase I Historic Properties Investigations, Youghiogheny River Lake Project, Fayette and Somerset Counties, Pennsylvania and Garrett County, Maryland. Co-authored with John P. Nass, Jr., John Roger Wright, and Rory Krupp. U S Army Corps of Engineers, Pittsburgh District.
- 1991 Coding System Manual for the East Liverpool, Ohio Urban Archaeology Project. ODOT Archaeological Series, No. 1.
- 1990 1990 Volume: Investigations into southeastern Utah Archaic, Phase III Archaeological Investigations of Two Small Sites Located Along U.S. 191, Holy Oak Lane to Blue Hill, San Juan County, Utah. John W. Hohman and John A. Hotop (eds.). Contributor. Studies in Western Archaeology No. 2. Louis Berger, East Orange. Pt. i-xiii, 1-289.
- 1986 Radiocarbon Dating of Archaeological Samples from Maryland. Co-authored with Hettie L. Boyce. Department of Natural Resources, Maryland Geological Survey, Archeological Studies No. 4.

Alyssa Kay Trimmer*Archaeologist***Education**

M.A., (MPhil) Archaeological Science, 2008, Cambridge University
 B.A., Anthropology, 2003, University of Pittsburgh

Relevant Training/Courses

Section 106 Essentials Training, 2009
 Section 106 Review, 2002

Registrations

Registered Professional Archaeologist, 2008 - 2010

Areas of Specialization

Ms. Trimmer worked at GAI as an archaeological technician and lab assistant for 15 months before attending and graduating Cambridge University. Her Masters Thesis is entitled "The Impact of Site Formation Processes and the Preservation of Agricultural Signatures in Three Typical English Soil Types in Thin Section." While attending Cambridge, Alyssa's additional training included geoaarchaeology, micromorphology, zooarchaeology, paleobotany, biomolecular archaeology, and GIS.

Professional Experience**2009**

- Report Co-Author. Phase Ib Cultural Resources Investigation, Lightburn Extraction Plant, TL-593, TL-594, and TL-595 Project, Lewis County, West Virginia for Dominion Resources Services Inc.
- Report Co-Author. Phase III Archaeological Evaluation of Site 33PE174 for the Rockies Express Pipeline-East (REX-East) Project, Perry County, Ohio for Caprock Environmental Services, LLC.
- Report Author. Interim Management Summary, Phase I Archaeological Investigations, Welton Springs Substation, Potomac-Appalachian Transmission Highline (PATH) Project, Hardy County, West Virginia, for Power Engineers.
- Report Author. Phase I Archaeological Investigation, Cobb Expansion Project, Kanawha County, West Virginia, for Columbia Gas Transmission.
- Report Figures. Phase I Cultural Resources Survey, Kempton Substation, Potomac-Appalachian Transmission Highline (PATH), Frederick County, Maryland, for Power Engineers.
- Report Author. Phase I Archaeological Survey, Line 1360 Upgrade Project, West Finley and Donegal Townships, Washington County, Pennsylvania, for Columbia Gas Transmission.
- Report Author. Phase I Cultural Resources Survey, Line 1570 Upgrade Project, Washington and Greene Counties, Pennsylvania, for Columbia Gas Transmission.
- Report Author. Supplemental Phase I Archaeological and Geomorphological Survey, Areas II and III Water and Sewer Project, Bedford Township, Bedford County, Pennsylvania, for Bedford Township Municipal Authority and Stiffler, McGraw & Associates, Inc.
- Report Author. Phase I Archaeological Survey, NJUS003 Pipeline Project, Center and Morris Townships, Greene County, Pennsylvania, for EQT Gathering, Inc.
- Report Co-Author. Phase Ib Archaeological Survey, Rural Valley Pipeline Project, Armstrong, Westmoreland, Elk, and McKean Counties, Pennsylvania, for Dominion Transmission, Inc.
- Report Author. Phase Ib Archaeological Survey, NJUS001 (MD-146) Pipeline Project, Amwell Township, Washington County, Pennsylvania, for EQT Production Company.
- Report Co-Author. Phase Ib Archaeological Survey, Rural Valley Pipeline Project, Armstrong, Westmoreland, Elk, and McKean Counties, Pennsylvania, for Dominion Transmission, Inc.

- Graphics and Report Contributions. Co-Principal Investigator. Supplemental Phase Ib Archaeological Survey, NIJUS-0002 MD-101 Pipeline Project, Morris Township, Greene County, Pennsylvania, for Equitable Gathering, LLC.
- Report Author. Supplemental Phase Ib Archaeological Survey, NIJUS-0002 MD-101 Pipeline Project, Morris Township, Greene County, Pennsylvania, for Equitable Gathering, LLC.
- Graphics. Phase II Investigations of the Dun Glen Hotel Site for the Fire Suppression System, Fayette County, West Virginia, for National Park Service-NERI.

2008

- Report Author / Graphics. Technical Report, Phase I Archaeological Survey, Rural Valley Pipeline Project, Armstrong, Elk, and McKean Counties, Pennsylvania, for Dominion Transmission, Inc.
- Report Author. Phase I Archaeological Survey, Loyalhanna Substation Expansion Project, City of Latrobe, Westmoreland County, Pennsylvania, for Allegheny Power.
- Report Author. Phase Ib Archaeological Survey, MD-101 Pipeline Project, Morris Township, Greene County, Pennsylvania, for Equitable Gathering, LLC.
- Assistant Geomorphologist, Letter Report and Graphics. Phase Ia Cultural Resources Investigations, H-162 Pipeline Replacement, Kanawha and Clay Counties, West Virginia, for Dominion Transmission, Inc.
- Technical Editing. Phase I Archaeological and Architectural Survey, Phase II Archaeological Investigation, Ohio Storage Expansion Project, Crawford and Weaver Storage Fields, Fairfield, Hocking, Ashland, and Holmes Counties, Ohio, for Columbia Gas Transmission.
- Technical Editing. Phase Ib Archaeological Survey, North of Muddlety Complex Surface Mines Project, Nicholas County, West Virginia, for Britton Engineering, Inc.
- Archaeological Technician. Phase Ib Survey for Ohio Storage Expansion Project, Fairfield, Hocking, Ashland, and Holmes Counties, Ohio, for Columbia Gas Transmission.
- Graphics. Management Summary, Phase Ib Cultural Resources Investigation Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, for Areva NP, Inc and UniStar Nuclear Development, LLC.
- Graphics. Phase Ib / II Archaeological Investigations, Fairmont to I-79 Gateway Corridor and Interchange, Alternatives A and A1, City of Fairmont, Marion County, West Virginia, for HNTB Corporation and West Virginia Department of Transportation.
- Graphics (Spatial Analysis). Technical Report, Archaeological Data Recovery at the Overby Site (46Wa112), US Route 52 Tolsia Highway Project, Wayne County, West Virginia, for Kimley-Horn & Associates and West Virginia Department of Transportation, Division of Highways.
- Report Author / Graphics. Abbreviated Report, Phase I Archaeological Survey, State Route 3003, Section 450, Tunnelton Bridge Replacement, Conemaugh Township, Indiana County, Pennsylvania, for Pennsylvania Department of Transportation Engineering District 10-0.
- Report Author. Management Summary, Phase I Archaeological Survey NIJUS 0009 Pipeline Project, Greene County, Pennsylvania for Equitable Gathering Company.

2006-2007

- Archaeological Technician. Responsibilities to GAI Consultants from May 2006 to September 2007 included cleaning, labeling, and cataloging artifacts, general lab organization; fieldwork including shovel testing, test units, pedestrian survey, and feature excavation; digital manipulation of maps and figures prepared for client reports, writing and editing sections of client reports; and geoarchaeological surveying and assessment of landforms and archaeological potential.
- Archaeological Technician / Geoarchaeological Assistant. Phase Ia Survey for H-162 Pipeline Replacement Project, Kanawha and Clay Counties, West Virginia, for Dominion Transmission, Inc.
- Archaeological Technician. Phase Ib/II Survey for Integrated Gasification Combined Cycle generation facility at Great Bend, Meigs County Ohio, for American Electric Power.
- Archaeological Technician. Phase Ib Survey for Falling Water Development Project, Monongalia County, West Virginia, for Backwater Properties, LLC.

- Archaeological Technician. Archaeological Data Recovery of the Philip's Meadow Site (18Ch654), Charles County Maryland, for Dominion Cove Point, LNG, LP.
- Graphics (3-D Modeling). Fort Ethan Allen Cultural Landscape Documentation Report, Arlington, Virginia. Arlington Heritage Alliance, Arlington, Virginia
- Graphics (Spatial Analysis). Technical Report, Phase III Data Recovery Excavations at Site 18Cv151, Calvert County, Maryland, for Dominion Cove Point, LNG, LP.
- Graphics. Letter Report, Phase Ia Archaeological and Geomorphological Investigation SR 3034, Section 001, South Branch of Blacklick Creek (Beula) Bridge Replacement, Cambria Township, Cambria County, Pennsylvania, for Pennsylvania Department of Transportation.
- Graphics. Phase I Addendum Report II, Big Sandy Pipeline Project, Supplemental Archaeological Survey, Carter, Lawrence, Johnson, and Floyd Counties, Kentucky, for Equitrans.
- Graphics. Phase I Addendum Report III, Big Sandy Pipeline Project, Willard Speedway Staging Area, Carter County, Kentucky, for Equitrans.

PROGRAMMATIC AGREEMENT
AMONG

THE U.S. ARMY CORPS OF ENGINEERS, PITTSBURGH, HUNTINGTON
AND LOUISVILLE DISTRICTS,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, AND
THE STATE HISTORIC PRESERVATION OFFICERS OF PENNSYLVANIA,
OHIO, WEST VIRGINIA, KENTUCKY, INDIANA, AND ILLINOIS
REGARDING
THE MODERNIZATION OF
THE OHIO RIVER NAVIGATION SYSTEM

WHEREAS, the U.S. Army Corps of Engineers, Pittsburgh, Huntington and Louisville Districts (Corps), propose to modernize the existing Ohio River Navigation System, consisting of Locks and Dams located in Pennsylvania, West Virginia, Ohio, Kentucky, Indiana, and Illinois; and

WHEREAS, the Corps has determined that modernization of the Ohio River Navigation System and concomitant environmental mitigation efforts (Project) may have an effect upon properties included in or eligible for inclusion in the National Register of Historic Places (National Register) and has consulted with the Advisory Council on Historic Preservation (Council) and the State Historic Preservation Officers of Pennsylvania, West Virginia, Ohio, Kentucky, Indiana, and Illinois (SHPOs) pursuant to Section 800.14 of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (NHPA, 16 U.S.C. 470f), and Section 110(f) of the same Act (16 U.S.C. 470h-2(f)); and,

WHEREAS, pursuant to 36 CFR 800.2, the Corps conducted a series of public and agency meetings between July 10, 2001 and August 7, 2001, throughout the project area, designed to give all interested parties an opportunity to comment on the overall Project; and

WHEREAS, the Project shall be defined as those activities undertaken by the Corps that are required to modernize Locks and Dams, including all construction staging areas, all flowage easement acquisitions, all disposal sites, all publicly owned shoreside facilities relocated at Federal expense, and all environmental mitigation; and as defined excludes activities undertaken by the private sector as a consequence of the Project, which may affect historic

properties, the Section 106 obligations of which will be addressed separately through Department of the Army permitting authority under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344);

WHEREAS, the Corps, in order to facilitate the assessment of Project effects, has prepared a National Register of Historic Places-level contextual report, which has been coordinated through the SHPOs; and

WHEREAS, the Corps, has conducted a historic architectural survey of all extant and former Corps lock and dam facilities along the Ohio River, through consultation with the SHPOs; and has completed the appropriate state inventory forms for agency review. The final report will be completed and distributed by the Winter of 2005/06; and

NOW, THEREFORE, the Corps, the Council and the SHPOs agree that the Project shall be administered in accordance with the following stipulations to satisfy the Corps' Section 106 responsibility for all individual undertakings of the Project.

Stipulations

The Corps shall ensure that the following measures are carried out:

I. Completion of Historic Property Surveys

A. The Corps shall ensure that historic property surveys will be performed in the Project's area of potential effects as defined in the Council's regulations at 36 CFR Section 800.16(d). The objective of these surveys is to identify both recorded and unrecorded potentially historic properties within the area of potential effects that may be affected by the Project either directly or indirectly, and determine whether they meet the criteria for inclusion to the National Register of Historic Places as specified in the Department of Interior's regulation at 36 CFR Part 60.4.

B. Historic property surveys will be performed in accordance with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation

and other applicable professional standards as described below.

II. Identification and Treatment of Archaeological Properties

A. Identification and Evaluation

1. Phase I archaeological survey will be performed on all lands that will be disturbed by the Project. The surveys will be conducted in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and take into account the National Park Service publication The Archaeological Survey: Methods and Uses (1978), and specific state guidelines.

2. All surveys shall be conducted in consultation with the SHPO who has jurisdiction where the surveys will take place. All reports will meet the standards of the appropriate SHPO and shall be submitted to that SHPO for review and comment.

3. Where the Phase I archaeological survey results in the identification of a historic property, but yields insufficient information to properly determine the National Register of Historic Places eligibility for that property, a Phase II archaeological testing program will be developed and coordinated with the appropriate SHPO. The goal of the Phase II testing program will be to glean sufficient information about the property to make an eligibility determination.

4. The Corps, in consultation with the appropriate SHPO and following the Secretary of Interior's Standards for Evaluation, shall apply the National Register Criteria to properties that may be affected by this project. If the Corps and the appropriate SHPO agree that a property is eligible under the criteria, the property shall be considered eligible for the National Register for purposes of this Agreement. If the Corps and the appropriate SHPO agree that the criteria are not met, the property shall be considered not eligible for the National Register for purposes of this Agreement. If there is no agreement between the Corps and the appropriate SHPO on National Register eligibility, or if the Council so requests, prior to the start of any work at the site the Corps shall submit

the property for a formal determination of eligibility from the Keeper of the National Register, National Park Service, whose determination shall be final.

5. For those archaeological properties which the Corps and appropriate SHPO agree are not eligible for the National Register, no further archaeological investigations will be required, and the proposed project may proceed in those areas. If the survey results in the identification of properties that the Corps and the appropriate SHPO determine to be eligible for the National Register, such properties shall be treated in accordance with Stipulation II(B) below.

6. NAGPRA

a. Federal Fee Title Lands.

i. In the event that Native American human remains, associated and unassociated funerary objects, sacred objects, and/or objects of cultural patrimony are encountered during any phase of the project on tribal land, or federal fee title lands, or on lands in which the federal real property interests are virtually equal to fee title, the burial discovery is subject to NAGPRA, Section 3 (Public Law 101-601-Nov.16, 1990) and the Department of the Interior's NAGPRA Regulations (43 CFR Part 10).

ii. The Corps and appropriate federally recognized tribal entity shall notify the appropriate SHPO and the Council of the outcome of tribal consultation and disposition.

iii. The SHPOs and the Council shall be consulted to amend the provisions of this agreement if the NAGPRA tribal consultation and subsequent disposition impairs the Corps' ability to execute this agreement.

b. Non Fee Title Lands

In the event that Native American human remains, associated and unassociated funerary objects, sacred objects, and/or objects of cultural patrimony are encountered during any phase of the project on state, local, or private lands, the burial discovery is subject to state burial laws.

B. Determination of Effect and Treatment

The Corps, in consultation with the appropriate SHPO and the Council, shall determine the effect the Project will have on each listed or eligible archaeological properties and develop a treatment plan for any archaeological properties that will be adversely affected by the Project.

a. Preservation In Place

i. Wherever feasible, preservation in place shall be the preferred treatment. Such properties shall be avoided either through project design changes, use of temporary fencing or barricades, or other measures to protect sites.

ii. The Corps, in consultation with the appropriate SHPO, shall develop and implement a plan for long term protection of archaeological sites avoided and preserved in situ on lands affected by the Project.

iii. The Preservation plan will be submitted to the appropriate SHPO and the Council for 60 days (from receipt of documentation) for review and approval. The parties shall consult to resolve any objections to the preservation plan as proposed prior to implementation. If no response is received from the SHPO or the Council after 60 days (from receipt of documentation), the plan shall be implemented as submitted.

b. Archaeological Data Recovery

i. For those eligible archaeological sites that the Corps, the appropriate SHPO, and the Council agree cannot be avoided, a data recovery plan for the retrieval of significant archaeological information will be developed and implemented.

ii. A data recovery plan that addresses substantive research questions will be developed in consultation with the appropriate SHPO for the recovery of relevant archaeological data. The plan shall be consistent with the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48 FR 44734-37) and take into account the Council's publication, Treatment of Archaeological Properties and the appropriate

state publication. It shall specify, at a minimum, the following:

(a). The property, properties, or portions of properties where data recovery is to be carried out;

(b). The research questions to be addressed through the data recovery, with an explanation of their relevance and importance;

(c). The methods to be used, with an explanation of their relevance to the research questions;

(d). The appropriate treatments and methodologies, and consultation procedures to be employed if any materials specific to NAGPRA are encountered;

(e). A proposed schedule for the submission of progress reports to the SHPO.

iii. The data recovery plan shall be submitted to the appropriate SHPO and the Council for 60 days (from receipt of documentation) for review and approval. The parties shall consult to resolve any objections to the data recovery plan as proposed. The data recovery plan shall then be implemented. If no response is received from the SHPO or the Council after 60 days (from receipt of documentation), the plan shall be implemented as submitted.

iv. The data recovery plan will be carried out by or under the direct supervision of an archaeologist(s) who meets, at minimum, the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-9).

v. An adequate program of site security to protect the site from vandalism during data recovery will be developed in consultation with the appropriate SHPO and then implemented.

vi. Curation and Dissemination of Information:

(a). In consultation with the appropriate SHPO, all materials and records resulting from the survey, evaluation, and data recovery conducted for the Project will be curated in accordance with 36 CFR Part 79. The Corps will curate all materials in a repository meeting federal standards within the appropriate state. All

material and records recovered from non-Federally owned land shall be maintained in accordance with 36 CFR Part 79 until their analysis is complete and, if necessary, are returned to their owners.

(b). The Corps shall ensure that all final archaeological reports resulting from actions pursuant to this Agreement will be provided to the SHPOs, the Council, and upon request, to other interested parties. All such reports will be responsive to contemporary standards and to the Department of the Interior's Format Standards for Final Reports of Data Recovery Programs (42 FR 5377-79). Precise locational data will be withheld from the general public or provided under a separate appendix to the reports if the Corps and the appropriate SHPO agree to the data's release.

III. Identification and Treatment of Above-Ground Historic Properties

A. Identification and Evaluation

1. The Corps, in consultation with the appropriate SHPO, shall ensure that a historical architectural survey will be conducted in those areas affected by the Project but not previously investigated as part of the Ohio River Navigation System. This survey will be conducted by a qualified architectural historian who meets, at minimum, the standards set forth in the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-9).

2. All of the areas surveyed will be clearly identified and the rationale used in eliminating areas from the survey (e.g. because either no above ground facilities will be located in view of extant structures, no flowage easements will be acquired, etc.), will be described. The criteria to be used in eliminating survey areas will be established in consultation with the appropriate SHPOs.

3. Particular attention will be given in the survey to the visual integrity (setting) of identified historic properties, and how the setting may be affected by view of the navigation structures or other Project-related activities.

4. The Corps will ensure that the architectural survey meets the standards of the appropriate SHPO, and is consistent with the recommended approaches in the Secretary

of the Interior's Standards and Guidelines for Identification (48 FR 44720-3) and the Council's and National Park Service's publication Identification of Historic Properties (1988).

5. As necessary to supplement the review of above-ground historic property documentation, the appropriate SHPO may conduct an inspection of National Register-listed or eligible properties. The appropriate SHPO shall report each determination, along with the rationale for their decision.

6. The Corps, in consultation with the appropriate SHPO and following the Secretary of Interior's Standards for Evaluation, shall apply the National Register Criteria to properties that may be affected by this Project. If the Corps and the appropriate SHPO agree that a property is eligible under the criteria, the property shall be considered eligible for the National Register for purposes of this agreement. If the Corps and the appropriate SHPO agree that the criteria are not met, the property shall be considered not eligible for the National Register for purposes of this Agreement. If the Corps and the appropriate SHPO do not agree on eligibility, or if the Council so requests, the Corps shall obtain a determination from the Keeper of the National Register, whose determination shall be final.

B. Determination of Effect and Treatment

1. The Corps, in consultation with the appropriate SHPO and the Council, shall determine the effect the Project will have on each Register-listed or eligible historic building, structure, landscape, or archaeological site.

2. The Corps, in consultation with the appropriate SHPO and the Council, shall develop proper treatments for Register-listed and eligible historic buildings, structures, landscapes, and archaeological sites that will be adversely affected by the Project.

a. The preferred alternative is avoidance of effects to historic properties. If, in consultation with the appropriate SHPO and the Council, all parties agree this is not feasible, the Corps will develop and implement plans to minimize or reduce the effect.

b. The Corps shall prepare Memoranda of Agreement (MOA) that detail mitigation plans that are developed in consultation with the appropriate SHPO and the Council. Plans will also be made available for review and comment to interested parties, affected landowners, and appropriate local interest groups. Any such comments shall be made available to the appropriate SHPO and the Council and shall be taken into account by the parties to this agreement. The appropriate SHPO and Council shall have 60 days from receipt of adequate information in which to review and comment on the MOA. If the appropriate SHPO or the Council fails to respond within 60 days, that party shall be deemed to have consented to the matter proposed. The MOA shall contain dispute resolution language that will guide consultation if there is a disagreement over adequacy, appropriateness, or extent of a mitigation plan. If the disagreement cannot be resolved, it will be handled in accordance with Stipulation V. G. below.

IV. Public Outreach And Education

The Corps, on a case-by-case basis, will consult with the appropriate SHPO regarding the appropriateness and level of effort for a public outreach and education program. This consultation will occur through the development of MOAs for individual undertakings within the overall study reach.

V. Review of this Programmatic Agreement

A. The terms of this Agreement shall remain in effect through the completion of the project in the year 2060 unless changes have been negotiated and approved as specified below.

B. The signatories to this Agreement shall consult every five years through the life of the project to review implementation of the terms of this Agreement. Prior to the review, a report shall be provided to the signatories detailing how obligations pursuant to this Agreement have been carried out. The report shall also be made available for public inspections (information regarding the location of archaeological sites shall be withheld). If revisions to this Agreement are needed, the signatories to this Agreement will amend the agreement in accordance with Section V. E. below.

C. The Council and the SHPOs may monitor activities carried out pursuant to this Agreement, and the Council will review such activities if so requested. The Corps shall cooperate with the Council and the SHPOs in carrying out their respective monitoring and review responsibilities.

D. This Agreement will be circulated for public and agency review as part of an Environmental Impact Statement (EIS) being prepared for the project under the National Environmental Policy Act (NEPA) and Section 106 of the NHPA. In consultation with the SHPOs, the Corps shall develop additional means to inform the interested public of the existence of this Agreement, and about how the obligations under the terms of the Agreement are to be met. Copies of this Agreement and relevant documentation prepared under it shall be made available for public inspection (information regarding the locations of archaeological sites shall be withheld). Any comments received from the public under this Agreement shall be taken into account.

E. This agreement may be amended by a consensus of the parties to this Agreement. Any party to this Agreement may request that it be amended, whereupon the parties will consult in accordance with 36 CFR Section 800.14 to consider such amendment. Amendments shall be in writing and signed by all parties to this agreement.

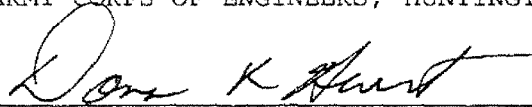
F. Any party to this Agreement may terminate it by providing thirty days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the Corps will comply with 36 CFR Subpart B, Sections 800.3 through 800.8 with regard to individual undertakings covered by this Agreement.

G. Should any party to this Agreement submit an objection in writing to the Corps regarding any action taken or proposed with respect to implementation of this Agreement, the Corps shall consult with the objecting party and attempt to resolve the objection. If the Corps determines that the objection cannot be resolved, the further comments of the Council shall be requested in accordance with 36 CFR Part 800.7 with reference to the

subject of the dispute. Responsibility to carry out all other actions under this Agreement that are not the subject of the dispute will remain unchanged.

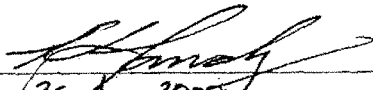
H. Execution and implementation of this Programmatic Agreement evidences that the Corps has satisfied its Section 106 responsibilities for all individual undertakings of the Project, and that the Corps has afforded the Council an opportunity to comment on the undertaking and its effects on historic properties.

U.S. ARMY CORPS OF ENGINEERS, HUNTINGTON DISTRICT

By: Date: 9 OCT, 08

Dana R. Hurst, Colonel, Corps of Engineers, District Engineer

U.S. ARMY CORPS OF ENGINEERS, LOUISVILLE DISTRICT

By: Date: 26 Apr 2009

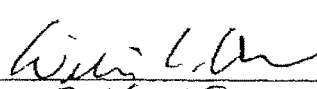
Keith A. Landry, Colonel, Corps of Engineers, District Commander

U.S. ARMY CORPS OF ENGINEERS, PITTSBURGH DISTRICT

By: Date: 24 SEPTEMBER 2008

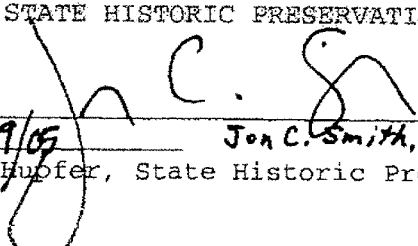
Michael P. Crall, Colonel, Corps of Engineers, District Engineer

ILLINOIS STATE HISTORIC PRESERVATION OFFICER

By: Date: 7-19-05

William L. Wheeler, State Historic Preservation Officer

INDIANA STATE HISTORIC PRESERVATION OFFICER

By: Date: 8/29/05 Jon C. Smith, Deputy SHPO

Kyle J. Huffer, State Historic Preservation Officer

KENTUCKY STATE HISTORIC PRESERVATION OFFICER

By: David L. MorganDate: 1-11-06

David L. Morgan, State Historic Preservation Officer

OHIO STATE HISTORIC PRESERVATION OFFICER

By: M. J. EpsreinDate: 6.9.08 Mark J. Epsrein~~Dr. William K. Laidlaw, Jr., State Historic Preservation Officer~~

PENNSYLVANIA STATE HISTORIC PRESERVATION OFFICER

By: Jean Huetler DSHPO forDate: 8-29-05

Barbara Franco, State Historic Preservation Officer

WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICER

By: Randall Reid-SmithDate: July 18, 2008

Randall Reid-Smith, State Historic Preservation Officer

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: John M. FowlerDate: 6/30/09

John M. Fowler, Executive Director

FOR CONTINUATION OF HOUSE DOCUMENT 115-22

**UPPER OHIO NAVIGATION STUDY, PA FINAL FEASIBILITY REPORT
AND INTEGRATED ENVIRONMENTAL IMPACT STATEMENT**

SEE PART 5