

**Cuyahoga River Upstream of Southerly WWTC  
August 11, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 743 miles<sup>2</sup>  
River Mile: 10.75**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad          | 7             | 0.426              | --                         | 0        | --                                |
| <i>Ictiobus bubalus</i><br>Smallmouth buffalo               | 3             | 10.020             | --                         | 1        | lesion                            |
| <i>Carpionodes cyprinus</i><br>Central quillback carpsucker | 1             | 0.850              | --                         | 0        | --                                |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redhorse       | 7             | 0.400              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker         | 70            | 4.856              | Moderately Intolerant      | 1        | lesion                            |
| <i>Catostomus commersonii</i><br>Common white sucker        | 10            | 1.740              | Highly Tolerant            | 1        | lesion                            |
| <i>Cyprinus carpio</i><br>Common carp                       | 14            | 36.960             | Highly Tolerant            | 0        | --                                |
| <i>Carassius auratus</i><br>Goldfish                        | 1             | 0.200              | Highly Tolerant            | 0        | --                                |
| <i>Notemigonus crysoleucas</i><br>Golden shiner             | 1             | 0.042              | Highly Tolerant            | 0        | --                                |
| <i>Notropis cornutus</i><br>Common shiner                   | 1             | 0.070              | --                         | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner              | 7             | 0.062              | --                         | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish               | 10            | 9.370              | --                         | 2        | eroded barbel                     |
| <i>Ictalurus natalis</i><br>Yellow bullhead                 | 6             | 0.640              | Highly Tolerant            | 1        | lesion                            |
| <i>Pylodictis olivaris</i><br>Flathead Catfish              | 1             | 4.100              | --                         | 1        | deformed head                     |
| <i>Morone americana</i><br>White perch                      | 3             | 0.144              | --                         | 0        | --                                |

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|   |            |               |                          |          |    |
|---|------------|---------------|--------------------------|----------|----|
| <i>Ambloplites rupestris</i><br>Northern rockbass       | 1          | 0.068         | --                       | 0        | -- |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 6          | 1.174         | Moderately<br>Intolerant | 0        | -- |
| <i>Lepomis cyanellus</i><br>Green sunfish               | 1          | 0.033         | Highly<br>Tolerant       | 0        | -- |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 3          | 0.054         | Moderately<br>Tolerant   | 0        | -- |
| <i>Lepomis gibbosus</i><br>Pumpkinseed sunfish          | 3          | 0.088         | Moderately<br>Tolerant   | 0        | -- |
| <i>Percina caprodes</i><br>Northern logperch darter     | 1          | 0.044         | Moderately<br>Intolerant | 0        | -- |
| <i>Aplodinotus grunniens</i><br>Freshwater drum         | 2          | 1.375         | Moderately<br>Tolerant   | 0        | -- |
| Totals  | <u>159</u> | <u>72.716</u> |                          | <u>7</u> |    |

\*DELT anomalies were observed on 4.403 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 40 (Good)  
 Modified Index of Well-Being (MIwb) 8.7 (Good)  
 Shannon Diversity Index, wt. 2.193  
 Shannon Diversity Index, no. 1.681  
 N 246  
 B 65.91

**Cuyahoga River Upstream of Southerly WWTC  
September 8, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 743 miles<sup>2</sup>  
River Mile: 10.75**

| <u>Species</u>   | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|--|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad     | 27            | 0.480              | --                         | 0        | --                                |
| <i>Moxostoma erythrurum</i><br>Golden redbreast        | 2             | 1.365              | Moderately Intolerant      | 1        | deformed body                     |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redbreast | 3             | 0.222              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker    | 77            | 5.594              | Moderately Intolerant      | 0        | --                                |
| <i>Catostomus commersonii</i><br>Common white sucker   | 15            | 2.480              | Highly Tolerant            | 1        | lesion                            |
| <i>Cyprinus carpio</i><br>Common carp                  | 7             | 14.194             | Highly Tolerant            | 0        | --                                |
| <i>Carassius auratus</i><br>Goldfish                   | 1             | 0.200              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner         | 12            | 0.080              | --                         | 0        | --                                |
| <i>Pimephales notatus</i><br>Bluntnose minnow          | 1             | 0.010              | Highly Tolerant            | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish          | 6             | 4.371              | --                         | 0        | --                                |
| <i>Morone americana</i><br>White perch                 | 8             | 0.385              | --                         | 0        | --                                |
| <i>Pomoxis nigromaculatus</i><br>Black crappie         | 1             | 0.038              | --                         | 0        | --                                |
| <i>Ambloplites rupestris</i><br>Northern rock bass     | 2             | 0.122              | --                         | 0        | --                                |
| <i>Micropterus dolomieu</i><br>Smallmouth bass         | 10            | 2.022              | Moderately Intolerant      | 0        | --                                |
| <i>Micropterus salmoides</i><br>Largemouth bass        | 1             | 0.004              | --                         | 0        | --                                |

**Cuyahoga River Upstream of Southerly WWTC  
September 8, 2006**

|   |            |               |                          |          |    |
|---|------------|---------------|--------------------------|----------|----|
| <i>Lepomis cyanellus</i><br>Green sunfish               | 2          | 0.038         | Highly<br>Tolerant       | 0        | -- |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 32         | 0.634         | Moderately<br>Tolerant   | 0        | -- |
| <i>Lepomis gibbosus</i><br>Pumpkinseed sunfish          | 11         | 0.185         | Moderately<br>Tolerant   | 0        | -- |
| <i>HYBRID</i><br>Bluegill X Pumpkinseed                 | 2          | 0.012         | --                       | 0        |    |
| <i>HYBRID</i><br>Green SF X Pumpkinseed                 | 4          | 0.058         | --                       | 0        |    |
| <i>Percina caprodes</i><br>Northern logperch darter     | 3          | 0.040         | Moderately<br>Intolerant | 0        | -- |
| <i>Etheostoma blenniodes</i><br>Greenside darter        | 1          | 0.010         | Moderately<br>Intolerant | 0        | -- |
| <i>Aplodinotus grunniens</i><br>Freshwater drum         | 2          | 1.296         | Moderately<br>Tolerant   | 0        | -- |
| Totals  | <u>230</u> | <u>33.840</u> |                          | <u>2</u> |    |

\*DELT anomalies were observed on 0.87 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 40 (Good)  
 Modified Index of Well-Being (MIwb) 8.9 (Good)  
 Shannon Diversity Index, wt. 2.333  
 Shannon Diversity Index, no. 1.896  
 N 380  
 B 32.93

**Cuyahoga River Upstream of Southerly WWTC  
October 9, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 743 miles<sup>2</sup>  
River Mile: 10.75**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad    | 10            | 0.902              | --                         | 0        | --                                |
| <i>Moxostoma erythrurum</i><br>Golden redbhorse       | 4             | 0.242              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker   | 50            | 5.390              | Moderately Intolerant      | 0        | --                                |
| <i>Catostomus commersonii</i><br>Common white sucker  | 17            | 3.812              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinus carpio</i><br>Common carp                 | 6             | 16.330             | Highly Tolerant            | 0        | --                                |
| <i>Notropis atherinoides</i><br>Common Emerald shiner | 21            | 0.052              | --                         | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner        | 15            | 0.038              | --                         | 0        | --                                |
| <i>Notropis stramineus</i><br>Sand shiner             | 3             | 0.018              | Moderately Intolerant      | 0        | --                                |
| <i>Pimephales notatus</i><br>Bluntnose minnow         | 1             | 0.004              | Highly Tolerant            | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish         | 11            | 12.788             | --                         | 1        | eroded barbels                    |
| <i>Ictalurus natalis</i><br>Yellow bullhead           | 2             | 0.032              | Highly Tolerant            | 0        | --                                |
| <i>Labidesthes sicculus</i><br>Brook silverside       | 1             | 0.006              | Moderately Intolerant      | 0        | --                                |
| <i>Morone americana</i><br>White perch                | 1             | 0.060              | --                         | 0        | --                                |
| <i>Pomoxis nigromaculatus</i><br>Black crappie        | 1             | 0.050              | --                         | 0        | --                                |
| <i>Micropterus dolomieu</i><br>Smallmouth bass        | 12            | 3.170              | Moderately Intolerant      | 0        | --                                |

**Cuyahoga River Upstream of Southerly WWTC  
October 9, 2006**

|   |            |               |                        |          |    |
|---|------------|---------------|------------------------|----------|----|
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 9          | 0.250         | Moderately<br>Tolerant | 0        | -- |
| <i>Lepomis gibbosus</i><br>Pumpkinseed sunfish          | 8          | 0.250         | Moderately<br>Tolerant | 0        | -- |
|   | <hr/>      | <hr/>         |                        |          |    |
| Totals  | <u>172</u> | <u>43.394</u> |                        | <u>1</u> |    |

\*DELT anomalies were observed on 0.581 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 38 (Marginally Good)  
 Modified Index of Well-Being (MIwb) 8.7 (Marginally Good)  
 Shannon Diversity Index, wt. 2.328  
 Shannon Diversity Index, no. 1.602  
 N 290  
 B 46.31

**Cuyahoga River Downstream of Southerly WWTC  
August 11, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 744 miles<sup>2</sup>  
River Mile: 10.10**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad      | 1             | 0.250              | --                         | 0        | --                                |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redhorse   | 5             | 0.975              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker     | 23            | 1.375              | Moderately Intolerant      | 0        | --                                |
| <i>Catostomus commersonii</i><br>Common white sucker    | 6             | 2.562              | Highly Tolerant            | 2        | eroded tail                       |
| <i>Cyprinus carpio</i><br>Common carp                   | 19            | 37.190             | Highly Tolerant            | 1        | eroded tail                       |
| <i>Carassius auratus</i><br>Goldfish                    | 3             | 1.650              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner          | 3             | 0.030              | --                         | 0        | --                                |
| <i>Notropis stramineus</i><br>Sand shiner               | 4             | 0.032              | Moderately Intolerant      | 0        | --                                |
| <i>Ictalurus natalis</i><br>Yellow bullhead             | 6             | 0.992              | Highly Tolerant            | 1        | lip lesion                        |
| <i>Morone americana</i><br>White perch                  | 2             | 0.212              | --                         | 0        | --                                |
| <i>Pomoxis nigromaculatus</i><br>Black crappie          | 5             | 0.460              | --                         | 1        | eroded tail                       |
| <i>Ambloplites rupestris</i><br>Northern rockbass       | 2             | 0.150              | --                         | 0        | --                                |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 13            | 2.190              | Moderately Intolerant      | 1        | deformed jaw                      |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 8             | 0.110              | Moderately Tolerant        | 0        | --                                |
| <i>Lepomis gibbosus</i><br>Pumpkinseed sunfish          | 3             | 0.150              | Moderately Tolerant        | 0        | --                                |

**Cuyahoga River Downstream of Southerly WWTC  
August 11, 2006**

|   |            |               |                          |          |    |
|---|------------|---------------|--------------------------|----------|----|
| <i>HYBRID</i><br>Bluegill X Pumpkinseed             | 2          | 0.040         | --                       | 0        |    |
| <i>HYBRID</i><br>Green SF X Pumpkinseed             | 1          | 0.032         | --                       | 0        |    |
| <i>Percina caprodes</i><br>Northern logperch darter | 4          | 0.072         | Moderately<br>Intolerant | 0        | -- |
|   | <hr/>      | <hr/>         |                          |          |    |
| Totals  | <u>110</u> | <u>48.472</u> |                          | <u>6</u> |    |

\*DELT anomalies were observed on 5.455 % of the fish collected.

Index of Biotic Integrity (IBI) = 34 (Fair)

Modified Index of Well-Being (MIwb) 7.3 (Fair)

Shannon Diversity Index, wt. 2.512

Shannon Diversity Index, no. 1.047

N 142

B 11.59



**Cuyahoga River Downstream of Southerly WWTC  
September 8, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 744 miles<sup>2</sup>  
River Mile: 10.10**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad      | 14            | 1.994              | --                         | 0        | --                                |
| <i>Moxostoma erythrurum</i><br>Golden redbhorse         | 1             | 0.072              | Moderately Intolerant      | 0        | --                                |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redbhorse  | 1             | 0.572              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker     | 35            | 2.400              | Moderately Intolerant      | 0        | --                                |
| <i>Catostomus commersonii</i><br>Common white sucker    | 8             | 2.950              | Highly Tolerant            | 1        | eroded tail                       |
| <i>Cyprinus carpio</i><br>Common carp                   | 8             | 10.050             | Highly Tolerant            | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner          | 8             | 0.042              | --                         | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish           | 4             | 4.127              | --                         | 0        | --                                |
| <i>Ictalurus natalis</i><br>Yellow bullhead             | 2             | 0.100              | Highly Tolerant            | 1        | lesion                            |
| <i>Pylodictis olivaris</i><br>Flathead Catfish          | 1             | 2.200              | --                         | 0        | --                                |
| <i>Morone americana</i><br>White perch                  | 17            | 1.104              | --                         | 0        | --                                |
| <i>Ambloplites rupestris</i><br>Northern rockbass       | 3             | 0.322              | --                         | 0        | --                                |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 27            | 4.594              | Moderately Intolerant      | 0        | --                                |
| <i>Lepomis cyanellus</i><br>Green sunfish               | 3             | 0.040              | Highly Tolerant            | 0        | --                                |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 20            | 0.320              | Moderately Tolerant        | 0        | --                                |

**Cuyahoga River Downstream of Southerly WWTC  
September 8, 2006**

|   |            |               |                          |          |    |
|---|------------|---------------|--------------------------|----------|----|
| <i>Lepomis gibbosus</i><br>Pumpkinseed sunfish      | 7          | 0.160         | Moderately<br>Tolerant   | 0        | -- |
| <i>HYBRID</i><br>Green SF X Pumpkinseed             | 2          | 0.060         | --                       | 0        |    |
| <i>Percina caprodes</i><br>Northern logperch darter | 1          | 0.020         | Moderately<br>Intolerant | 0        | -- |
| <i>Etheostoma caeruleum</i><br>Rainbow darter       | 1          | 0.004         | Moderately<br>Intolerant | 0        | -- |
|   | <hr/>      | <hr/>         |                          |          |    |
| Totals  | <u>163</u> | <u>31.131</u> |                          | <u>2</u> |    |

\*DELT anomalies were observed on 1.227 % of the fish collected.

Index of Biotic Integrity (IBI) = 40 (Good)

Modified Index of Well-Being (MIwb) 9.0 (Good)

Shannon Diversity Index, wt. 2.413

Shannon Diversity Index, no. 2.081

N 246

B 33.65

**Cuyahoga River Downstream of Southerly WWTC  
October 9, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 744 miles<sup>2</sup>  
River Mile: 10.10**

| <u>Species</u>   | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|--|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad     | 15            | 2.410              | --                         | 0        | --                                |
| <i>Salmo gairdneri</i><br>Rainbow trout                | 1             | 0.510              | --                         | 0        | --                                |
| <i>Moxostoma erythrurum</i><br>Golden redbhorse        | 3             | 3.150              | Moderately Intolerant      | 0        | --                                |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redbhorse | 2             | 1.350              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker    | 20            | 1.740              | Moderately Intolerant      | 0        | --                                |
| <i>Catostomus commersonii</i><br>Common white sucker   | 15            | 5.900              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinus carpio</i><br>Common carp                  | 9             | 22.230             | Highly Tolerant            | 1        | deformed eye                      |
| <i>Notropis atherinoides</i><br>Common Emerald shiner  | 22            | 0.050              | --                         | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner         | 10            | 0.042              | --                         | 0        | --                                |
| <i>Notropis stramineus</i><br>Sand shiner              | 64            | 0.158              | Moderately Intolerant      | 0        | --                                |
| <i>Notropis volucellus</i><br>Mimic Shiner             | 1             | 0.004              | Common Intolerant          | 0        | --                                |
| <i>Ericymba buccata</i><br>Silverjaw minnow            | 1             | 0.004              | --                         | 0        | --                                |
| <i>Pimephales notatus</i><br>Bluntnose minnow          | 11            | 0.020              | Highly Tolerant            | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish          | 19            | 27.380             | --                         | 1        | deformed tail                     |
| <i>Ictalurus natalis</i><br>Yellow bullhead            | 2             | 0.092              | Highly Tolerant            | 0        | --                                |

**Cuyahoga River Downstream of Southerly WWTC  
October 9, 2006**

|   |            |               |                          |          |              |
|---|------------|---------------|--------------------------|----------|--------------|
| <i>Labidesthes sicculus</i><br>Brook silverside         | 1          | 0.004         | Moderately<br>Intolerant | 0        | --           |
| <i>Morone americana</i><br>White perch                  | 2          | 0.100         | --                       | 0        | --           |
| <i>Ambloplites rupestris</i><br>Northern rockbass       | 3          | 0.162         | --                       | 0        | --           |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 24         | 3.800         | Moderately<br>Intolerant | 1        | deformed fin |
| <i>Micropterus salmoides</i><br>Largemouth bass         | 1          | 0.030         | --                       | 0        | --           |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 9          | 0.210         | Moderately<br>Tolerant   | 0        | --           |
| <i>Lepomis gibbosus</i><br>Pumpkinseed sunfish          | 3          | 0.054         | Moderately<br>Tolerant   | 0        | --           |
| Totals  | <u>238</u> | <u>69.400</u> |                          | <u>3</u> |              |

\*DELT anomalies were observed on 1.261 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 34 (Fair)  
 Modified Index of Well-Being (MIwb) 9.3 (Very Good)  
 Shannon Diversity Index, wt. 2.487  
 Shannon Diversity Index, no. 1.649  
 N 396  
 B 81.1

**Cuyahoga River Upstream of Big Creek  
August 11, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 749 miles<sup>2</sup>  
River Mile: 7.55**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad      | 4             | 0.400              | --                         | 0        | --                                |
| <i>Moxostoma erythrurum</i><br>Golden redbhorse         | 1             | 0.070              | Moderately Intolerant      | 0        | --                                |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redbhorse  | 1             | 0.450              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker     | 9             | 0.224              | Moderately Intolerant      | 0        | --                                |
| <i>Catostomus commersonii</i><br>Common white sucker    | 2             | 0.850              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinus carpio</i><br>Common carp                   | 12            | 29.710             | Highly Tolerant            | 1        | eroded tail                       |
| <i>Carassius auratus</i><br>Goldfish                    | 1             | 0.400              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner          | 1             | 0.030              | --                         | 0        | --                                |
| <i>HYBRID</i><br>Common Carp x Goldfish                 | 1             | 0.820              | Highly Tolerant            | 0        |                                   |
| <i>Ctenopharyngodon idella</i><br>Grass carp            | 1             | 8.620              | --                         | 0        | --                                |
| <i>Morone americana</i><br>White perch                  | 1             | 0.030              | --                         | 0        | --                                |
| <i>Pomoxis nigromaculatus</i><br>Black crappie          | 2             | 0.140              | --                         | 1        | eroded mouth                      |
| <i>Ambloplites rupestris</i><br>Northern rockbass       | 1             | 0.120              | --                         | 0        | --                                |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 6             | 0.720              | Moderately Intolerant      | 0        | --                                |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 1             | 0.072              | Moderately Tolerant        | 0        | --                                |

**Cuyahoga River Upstream of Big Creek  
August 11, 2006**

|   |           |               |                          |          |    |
|---|-----------|---------------|--------------------------|----------|----|
| <i>Percina caprodes</i><br>Northern logperch darter | 1         | 0.034         | Moderately<br>Intolerant | 0        | -- |
| <i>Neogobius melanostomus</i><br>Round goby         | 1         | 0.030         | --                       | 0        | -- |
|   | <hr/>     | <hr/>         |                          |          |    |
| Totals  | <u>46</u> | <u>42.720</u> |                          | <u>2</u> |    |

\*DELT anomalies were observed on 4.348 % of the fish collected.

Index of Biotic Integrity (IBI) = 30 (Fair)

Modified Index of Well-Being (MIwb) 6.1 (Poor)

Shannon Diversity Index, wt. 2.336

Shannon Diversity Index, no. 1.039

N 54

B 4.52

**Cuyahoga River Upstream of Big Creek  
September 8, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 749 miles<sup>2</sup>  
River Mile: 7.55**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad      | 59            | 3.240              | --                         | 0        | --                                |
| <i>Ictiobus bubalus</i><br>Smallmouth buffalo           | 1             | 1.350              | --                         | 0        | --                                |
| <i>Moxostoma anisurum</i><br>Silver Redhorse            | 1             | 1.000              | Moderately Intolerant      | 0        |                                   |
| <i>Moxostoma erythrurum</i><br>Golden redhorse          | 1             | 0.162              | Moderately Intolerant      | 0        | --                                |
| <i>Catostomus commersonii</i><br>Common white sucker    | 4             | 1.500              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinus carpio</i><br>Common carp                   | 30            | 87.700             | Highly Tolerant            | 0        | --                                |
| <i>Carassius auratus</i><br>Goldfish                    | 1             | 1.810              | Highly Tolerant            | 1        | deformed tail                     |
| <i>Notropis atherinoides</i><br>Common Emerald shiner   | 2             | 0.020              | --                         | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner          | 12            | 0.090              | --                         | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish           | 3             | 3.000              | --                         | 0        | --                                |
| <i>Morone americana</i><br>White perch                  | 3             | 0.160              | --                         | 0        | --                                |
| <i>Ambloplites rupestris</i><br>Northern rockbass       | 4             | 0.584              | --                         | 0        | --                                |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 11            | 2.920              | Moderately Intolerant      | 0        | --                                |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 3             | 0.056              | Moderately Tolerant        | 0        | --                                |
| <i>Neogobius melanostomus</i><br>Round goby             | 1             | 0.020              | --                         | 0        | --                                |

**Cuyahoga River Upstream of Big Creek  
September 8, 2006**

|        |               |                |          |
|--------|---------------|----------------|----------|
|        | <u>      </u> | <u>      </u>  |          |
| Totals | <u>136</u>    | <u>103.612</u> | <u>1</u> |

\*DELT anomalies were observed on 0.735 % of the fish collected.

Index of Biotic Integrity (IBI) = 30 (Fair)

Modified Index of Well-Being (MIwb) 6.8 (Fair)

Shannon Diversity Index, wt. 1.816

Shannon Diversity Index, no. 0.749

N 194

B 24.84



**Cuyahoga River Upstream of Big Creek  
October 9, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 749 miles<sup>2</sup>  
River Mile: 7.55**

| <u>Species</u>   | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution<br/>Tolerance</u> | <u>#</u> | <u>DELT<br/>Anomalies<br/>Description</u> |
|--|---------------|--------------------|--------------------------------|----------|---|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad     | 38            | 2.412              | --                             | 0        | --  |
| <i>Ictiobus bubalus</i><br>Smallmouth buffalo          | 1             | 1.850              | --                             | 0        | --  |
| <i>Moxostoma erythrum</i><br>Golden redbreast          | 2             | 0.150              | Moderately<br>Intolerant       | 0        | --  |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redbreast | 1             | 0.144              | Moderately<br>Intolerant       | 0        | --  |
| <i>Hypentelium nigricans</i><br>Northern hog sucker    | 3             | 0.180              | Moderately<br>Intolerant       | 0        | --  |
| <i>Catostomus commersonii</i><br>Common white sucker   | 11            | 4.384              | Highly<br>Tolerant             | 0        | --  |
| <i>Minytrema melanops</i><br>Spotted Sucker            | 1             | 0.072              | --                             | 0        |   |
| <i>Cyprinus carpio</i><br>Common carp                  | 22            | 49.730             | Highly<br>Tolerant             | 2        | deformed tail,<br>deformed head           |
| <i>Notropis atherinoides</i><br>Common Emerald shiner  | 13            | 0.040              | --                             | 0        | --  |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner         | 2             | 0.014              | --                             | 0        | --  |
| <i>Notropis stramineus</i><br>Sand shiner              | 1             | 0.004              | Moderately<br>Intolerant       | 0        | --  |
| <i>Ctenopharyngodon idella</i><br>Grass carp           | 1             | 17.240             | --                             | 0        | --  |
| <i>Ictalurus punctatus</i><br>Channel catfish          | 10            | 7.920              | --                             | 1        | eroded barbel                             |
| <i>Ictalurus natalis</i><br>Yellow bullhead            | 1             | 0.250              | Highly<br>Tolerant             | 0        | --  |
| <i>Pomoxis nigromaculatus</i><br>Black crappie         | 1             | 0.050              | --                             | 0        | --  |

**Cuyahoga River Upstream of Big Creek  
October 9, 2006**

|   |            |               |                          |          |    |
|---|------------|---------------|--------------------------|----------|----|
| <i>Ambloplites rupestris</i><br>Northern rockbass | 3          | 0.382         | --                       | 0        | -- |
| <i>Micropterus dolomieu</i><br>Smallmouth bass    | 24         | 6.400         | Moderately<br>Intolerant | 0        | -- |
| <i>HYBRID</i><br>Bluegill X Pumpkinseed           | 1          | 0.052         | --                       | 0        |    |
|   | <hr/>      | <hr/>         |                          |          |    |
| Totals  | <u>136</u> | <u>91.274</u> |                          | <u>3</u> |    |

\*DELT anomalies were observed on 2.206 % of the fish collected.

Index of Biotic Integrity (IBI) = 30 (Fair)

Modified Index of Well-Being (MIwb) 8.1 (Fair)

Shannon Diversity Index, wt. 2.158

Shannon Diversity Index, no. 1.456

N 200

B 39.24

**Cuyahoga River Downstream of Big Creek  
August 11, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 786 miles<sup>2</sup>  
River Mile: 7.00**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad      | 9             | 0.800              | --                         | 0        | --                                |
| <i>Moxostoma erythrurum</i><br>Golden redhorse          | 1             | 1.500              | Moderately Intolerant      | 0        | --                                |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redhorse   | 9             | 2.243              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker     | 9             | 0.732              | Moderately Intolerant      | 1        | eroded tail                       |
| <i>Catostomus commersonii</i><br>Common white sucker    | 2             | 0.622              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinus carpio</i><br>Common carp                   | 10            | 30.390             | Highly Tolerant            | 1        | lesion                            |
| <i>Carassius auratus</i><br>Goldfish                    | 1             | 0.234              | Highly Tolerant            | 0        | --                                |
| <i>Notropis atherinoides</i><br>Common Emerald shiner   | 1             | 0.004              | --                         | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner          | 13            | 0.093              | --                         | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish           | 1             | 0.650              | --                         | 0        | --                                |
| <i>Ictalurus natalis</i><br>Yellow bullhead             | 1             | 0.190              | Highly Tolerant            | 0        | --                                |
| <i>Morone americana</i><br>White perch                  | 1             | 0.150              | --                         | 0        | --                                |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 20            | 2.238              | Moderately Intolerant      | 0        | --                                |
| <i>Lepomis cyanellus</i><br>Green sunfish               | 1             | 0.030              | Highly Tolerant            | 0        | --                                |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 1             | 0.012              | Moderately Tolerant        | 0        | --                                |

**Cuyahoga River Downstream of Big Creek  
August 11, 2006**

|                                     |       |                          |   |
|-------------------------------------|-------|--------------------------|---|
|                                     | 80    | 39.888                   | 2 |
| *DELT anomalies were observed on    | 2.5   | % of the fish collected. |   |
| Index of Biotic Integrity (IBI) =   | 34    | (Fair)                   |   |
| Modified Index of Well-Being (MIwb) | 7.0   | (Fair)                   |   |
| Shannon Diversity Index, wt.        | 2.17  |                          |   |
| Shannon Diversity Index, no.        | 1.037 |                          |   |
| N                                   | 128   |                          |   |
| B                                   | 16.54 |                          |   |

**Cuyahoga River Downstream of Big Creek  
September 8, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 786 miles<sup>2</sup>  
River Mile: 7.00**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad      | 111           | 4.520              | --                         | 0        | --                                |
| <i>Moxostoma erythrurum</i><br>Golden redbhorse         | 1             | 0.072              | Moderately Intolerant      | 0        | --                                |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redbhorse  | 4             | 1.270              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker     | 20            | 1.406              | Moderately Intolerant      | 0        | --                                |
| <i>Catostomus commersonii</i><br>Common white sucker    | 6             | 1.700              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinus carpio</i><br>Common carp                   | 4             | 17.220             | Highly Tolerant            | 0        | --                                |
| <i>Notropis atherinoides</i><br>Common Emerald shiner   | 9             | 0.070              | --                         | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish           | 3             | 5.970              | --                         | 1        | eroded lip                        |
| <i>Ictalurus natalis</i><br>Yellow bullhead             | 2             | 0.262              | Highly Tolerant            | 0        | --                                |
| <i>Morone americana</i><br>White perch                  | 3             | 0.290              | --                         | 0        | --                                |
| <i>Ambloplites rupestris</i><br>Northern rockbass       | 2             | 0.360              | --                         | 1        | eroded fin                        |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 10            | 3.000              | Moderately Intolerant      | 0        | --                                |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 1             | 0.020              | Moderately Tolerant        | 0        | --                                |
| <i>Percina caprodes</i><br>Northern logperch darter     | 1             | 0.012              | Moderately Intolerant      | 0        | --                                |
| <i>Neogobius melanostomus</i><br>Round goby             | 1             | 0.010              | --                         | 0        | --                                |

**Cuyahoga River Downstream of Big Creek  
September 8, 2006**

|   |            |               |    |          |
|---|------------|---------------|----|----------|
| <i>Salvelinus namaycush</i><br>Lake Trout | 1          | 3.800         | -- | 0        |
|   | <hr/>      | <hr/>         |    |          |
| Totals                                    | <u>179</u> | <u>39.982</u> |    | <u>2</u> |

\*DELT anomalies were observed on 1.117 % of the fish collected.

Index of Biotic Integrity (IBI) = 28 (Fair)

Modified Index of Well-Being (MIwb) 8.1 (Fair)

Shannon Diversity Index, wt. 1.519

Shannon Diversity Index, no. 1.815

N 326

B 41

**Cuyahoga River Downstream of Big Creek  
October 9, 2006**

**Collection Distance: 0.5 km  
Collection Method: Boat Electroshocking  
Drainage Area: 786 miles<sup>2</sup>  
River Mile: 7.00**

| <u>Species</u>  | <u>Number</u> | <u>Weight (kg)</u> | <u>Pollution Tolerance</u> | <u>#</u> | <u>DELT Anomalies Description</u> |
|---|---------------|--------------------|----------------------------|----------|-----------------------------------|
| <i>Dorosoma cepedianum</i><br>Eastern gizzard shad      | 118           | 5.834              | --                         | 0        | --                                |
| <i>Salmo gairdneri</i><br>Rainbow trout                 | 1             | 0.652              | --                         | 0        | --                                |
| <i>Moxostoma macrolepidotum</i><br>Shorthead redhorse   | 2             | 0.900              | Moderately Intolerant      | 0        | --                                |
| <i>Hypentelium nigricans</i><br>Northern hog sucker     | 13            | 1.532              | Moderately Intolerant      | 1        | eroded tail                       |
| <i>Catostomus commersonii</i><br>Common white sucker    | 11            | 5.215              | Highly Tolerant            | 0        | --                                |
| <i>Cyprinus carpio</i><br>Common carp                   | 3             | 14.970             | Highly Tolerant            | 0        | --                                |
| <i>Notropis atherinoides</i><br>Common Emerald shiner   | 142           | 0.326              | --                         | 0        | --                                |
| <i>Cyprinella spiloptera</i><br>Spotfin shiner          | 1             | 0.002              | --                         | 0        | --                                |
| <i>Pimephales notatus</i><br>Bluntnose minnow           | 2             | 0.005              | Highly Tolerant            | 0        | --                                |
| <i>Ictalurus punctatus</i><br>Channel catfish           | 3             | 3.630              | --                         | 0        | --                                |
| <i>Labidesthes sicculus</i><br>Brook silverside         | 8             | 0.028              | Moderately Intolerant      | 0        | --                                |
| <i>Morone americana</i><br>White perch                  | 1             | 0.090              | --                         | 0        | --                                |
| <i>Micropterus dolomieu</i><br>Smallmouth bass          | 7             | 2.230              | Moderately Intolerant      | 1        | tumor                             |
| <i>Lepomis macrochirus</i><br>Northern bluegill sunfish | 1             | 0.008              | Moderately Tolerant        | 0        | --                                |
| <i>Lepomis gibbosus</i><br>Pumpkinseed sunfish          | 1             | 0.010              | Moderately Tolerant        | 0        | --                                |

**Cuyahoga River Downstream of Big Creek  
October 9, 2006**

|   |   |       |                        |   |             |
|---|---|-------|------------------------|---|-------------|
| <i>Aplodinotus grunniens</i><br>Freshwater drum | 1 | 1.600 | Moderately<br>Tolerant | 1 | eroded tail |
|---|---|-------|------------------------|---|-------------|

|        |                   |                   |  |                   |  |
|--------|-------------------|-------------------|--|-------------------|--|
|        | <u>          </u> | <u>          </u> |  | <u>          </u> |  |
| Totals | <u>315</u>        | <u>37.032</u>     |  | <u>3</u>          |  |

\*DELT anomalies were observed on 0.952 % of the fish collected.

|                                     |       |  |        |  |  |
|-------------------------------------|-------|--|--------|--|--|
| Index of Biotic Integrity (IBI) =   | 30    |  | (Fair) |  |  |
| Modified Index of Well-Being (MIwb) | 8.2   |  | (Fair) |  |  |
| Shannon Diversity Index, wt.        | 1.416 |  |        |  |  |
| Shannon Diversity Index, no.        | 1.827 |  |        |  |  |
| N                                   | 594   |  |        |  |  |
| B                                   | 32.2  |  |        |  |  |