# TABLE 1

## ONONDAGA LAKE BASELINE MONITORING PROGRAM OBJECTIVES, PROGRAM ELEMENTS, AND DATA USES RELEVANT TO BOOKS 1, 2 AND 3 FOR 2011

| Program Objective | Program Element | Data Use (as Baseline for Remedy Effectiveness) |
|---|---|---|
| Establish baseline chemical and physical conditions | Sport and prey fish sampling | Provide basis to measure achievement of PRG2 (fish tissue target concentrations) |
| | Lake water sampling | Provide basis to measure achievement of PRG3 (surface water quality standards) |
| | | Provide basis to measure success in controlling key processes (e.g., mercury methylation, sediment resuspension from the in-lake waste deposit, mercury release from profundal sediment) |
| Provide additional data for future understanding of remedy effectiveness in achieving PRGs | Other biota sampling[a] | Assess biological factors that may contribute to variability in fish mercury concentrations |
| Provide additional data for future understanding of remedy effectiveness in achieving PRGs | Tributary surface water sampling | Provide basis to measure effectiveness of upland Honeywell remedies by quantifying loadings of mercury entering Onondaga Lake |

Adapted from Table 1 of Baseline Monitoring Scoping Document (Parsons, Exponent, and QEA, 2010)

[a]Other than adult sport fish and prey fish (i.e zooplankton)

PRG - preliminary remediation goal

**TABLE 2**

**SUMMARY OF BASELINE MONITORING WORK COMPLETED DURING 2011 AS BOOKS 1, 2 AND 3**

| WORK PLAN AND MEDIA | LOCATIONS | PRIMARY ACTIVITY (April through November) |
|---|---|---|
| **BOOK 1 Deep Basin Water and Zooplankton Monitoring** | | |
| Surface Water | South Deep (3 to 5 water depths) | Collected and analyzed monthly, biweekly or weekly grab samples for multiple parameters, including total mercury and methylmercury. |
| | 10 locations | Collected weekly rapid profiling measurements for nitrate, sulfide, and six other parameters as well as monthly water samples near the lake bottom for mercury analyses. |
| Zooplankton | South Deep and North Deep | Monthly to biweekly sampling and analyses for total mercury and methylmercury. In addition, identified taxa for zooplankton sampled at South Deep. |
| Sediment Traps | South Deep | Monthly to biweekly sampling and analyses for total suspended solids, fixed and volatile suspended solids, particulate carbon, total and acidified calcium and total mercury. |
| **BOOK 2 Fish Monitoring** | | |
| Adult Sport Fish | SMUs 2 through 7 (8 locations) | Collected and analyzed a total of 100 adult fish during June from four fish species (25 brown bullhead, 25 walleye, 25 pumpkinseed, and 25 smallmouth bass). Assessed fish age, population, and community composition, including fish gut content. Also assessed fish movements using telemetry. |
| Prey (forage) Fish | SMUs 2 through 7 (same 8 locations as for adult sport fish) | Collected and analyzed three composites of prey fish collected during August from each of eight locations (24 composites) and 16 composites of alewife collected in May (40 prey fish composites total). |
| Phytophilous invertebrates | SMUs 2 through 7 (8 locations) | Identified taxa in three replicate samples of phytophilous macroinvertebrates collected in August from each of eight locations. |
| **BOOK 3 Tributary Monitoring** | | |
| Surface Water | Onondaga Creek and Ninemile Creek (3 locations) | Biweekly sampling and storm event sampling at two locations along Ninemile Creek and at one location along Onondaga Creek from June through November. |

Note: Fall turnover occurred in Onondaga Lake during 2011 on or about November 3.

# TABLE 3
# 2011 ONONDAGA LAKE BOOK 1 WATER COLUMN WORK SUMMARY

| Date | Water column | | Zooplankton: South Deep and North Deep | Sediment Trap Mercury South Deep (10-meter water depth) | Dissolved Gas Measurements |
|---|---|---|---|---|---|
| | South Deep and North Deep | ISUS profiling 10 locations | | | |
| May 23 | 3 depths | ◊ | □ | ○ | |
| June 6 | 3 depths | ◊ | □ | ○ | ⦿ |
| June 20 | 3 depths | ◊ | □ | ○ | |
| June 22 | 1 depth | ◊ | | | |
| June 27 | 6 depths | | | | |
| July 5 | 6 depths | ◊ | □ | ○ | ⦿ |
| July 11 | 6 depths | | | | |
| July 18 | 6 depths | | □ | ○ | |
| July 20 | 1 depth | ◊ | | | |
| July 26 | 6 depths | | | | |
| August 1 | 6depths | ◊ | □ | ○ | ⦿ |
| August 8 | 6 depths | ◊ | | | |
| August 15 | 6 depths | ◊ | □ | ○ | |
| August 17 | 1 depth | ◊ | | | |
| August 22 | 6 depths | | | | |
| August 29 | 6 depths | | □ | ○ | |
| September 6 | 6 depths | ◊ | □ | ○ | ⦿ |
| September 12 | 6 depths | ◊ | □ | ○ | |
| September 19 | 6 depths | ◊ | □ | ○ | |
| September 21 | 1 depth | 12 locations | | | |
| September 26 | 6 depths | ◊ | □ | ○ | |
| October 3 | 6 depths | | □ | ○ | ⦿ |
| October 10 | 6 depths | | □ | ○ | |
| October 13 | 1 depth | 12 locations | | | |
| October 17 | 6 depths | ◊ | □ | ○ | |
| October 24 | 6 depths | ◊ | □ | ○ | |
| October 31 | 4 depths | ◊ | □ | | |
| November 7 | 3 depths | ◊ | □ | ○ | ⦿ |
| November 21 | 3 depths | ◊ | □ | ○ | |

Sediment traps were deployed for seven days. Trap recovery dates are shown in this table.
Nitrate addition also included ISUS monitoring at approximately 20 additional profundal zone locations.
Lake turnover occurred on or about November 3.

**TABLE 4A**

**2011 DISSOLVED MERCURY WATER CONCENTRATIONS: SOUTH DEEP AT 2-METER DEPTH**

| Sample Date | DISSOLVED MERCURY ng/L (average of field duplicates) | Data Qualifier |
|---|---|---|
| 5/23/2011 | 0.52 | |
| 6/6/2011 | 0.50 | U |
| 6/20/2011 | 0.58 | |
| 7/5/2011 | 0.62[(a)] | |
| 7/18/2011 | 0.52 | J |
| 8/1/2011 | 0.54 | J |
| 8/15/2011 | 0.88* | |
| 8/29/2011 | 0.63 | |
| 9/6/2011 | 0.73* | |
| 9/12/2011 | 0.48 | |
| 9/19/2011 | 0.76* | |
| 9/26/2011 | 0.35 | J |
| 10/3/2011 | 0.37 | J |
| 10/10/2011 | 0.20 | J |
| 10/17/2011 | 0.19 | J |
| 10/24/2011 | 0.17 | J |
| 10/31/2011 | 0.26 | J |
| 11/7/2011 | 0.26 | J |
| 11/21/2011 | 0.51 | J |

* Exceeds New York State surface water quality
Nondetects at half
(a) Sample collected at the 1 meter water depth.
J - estimated value

**TABLE 4B**

**2011 DISSOLVED MERCURY WATER CONCENTRATIONS: NORTH DEEP AT 2-METER DEPTH**

| Sample Date | DISSOLVED MERCURY ng/L | Data Qualifier |
|---|---|---|
| 5/23/2011 | 0.34 | J |
| 6/6/2011 | 0.49 | U |
| 6/20/2011 | 0.25 | U |
| 7/5/2011 | 0.35 | J |
| 7/18/2011 | 0.38 | J |
| 8/1/2011 | 0.12 | U |
| 8/15/2011 | 0.64 | |
| 8/29/2011 | 0.61 | |
| 9/6/2011 | 0.45 | J |
| 9/12/2011 | 0.37 | J |
| 9/19/2011 | 0.81* | |
| 9/26/2011 | 0.24 | J |
| 10/3/2011 | 0.26 | J |
| 10/10/2011 | 0.17 | J |
| 10/17/2011 | 0.28 | J |
| 10/24/2011 | 0.21 | J |
| 10/31/2011 | 0.06 | UJ |
| 11/7/2011 | 0.52 | |
| 11/21/2011 | 0.49 | J |

* Exceeds New York State surface water quality
Nondetects at half
J - estimated value

## Table 4C
## Mercury Concentrations in Surface Water Near the Lake Bottom at 12 Locations
## (Concentration (ng/l) One Meter Above Lake Bottom)

| 2011 Date | North Deep ISUS-27 | South Deep ISUS-11 | ISUS-5 | ISUS-9 | ISUS-14 | ISUS-18 | ISUS-21 | ISUS-22 | ISUS-23 | ISUS-26 | ISUS-29 | ISUS-32 | Average Concentrations at 10 Locations[1] | Range at 10 Locations[1] Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Mercury** | | | | | | | | | | | | | | | |
| 6/22/11 | 1.1 | 1.4 | 1.8 | 1.3 | 1.8 | 1.6 | 2 | 1.2 | 1.8 | 1.6 | 1.4 | 1.2 | 1.57 | 1.2 | 2 |
| 7/20/11 | 0.43 | 0.87 | 2.2 | 1.5 | 0.61 | 0.48 | 0.38 | 0.49 | 0.33 | 0.32 | 0.52 | 0.68 | 0.75 | 0.32 | 2.2 |
| 8/17/11 | 1 | 1.3 | 2.8 | 1.4 | 4.4 | 0.87 | 0.91 | 1.2 | 1.1 | 0.87 | 0.78 | 1.4 | 1.57 | 0.78 | 4.4 |
| 9/21/11 | 1 | 1.2 | 4.8 | 5.3 | 1.7 | 1.3 | 2 | 1.2 | 1.2 | 0.89 | 1.3 | 0.68 | 2.04 | 0.68 | 5.3 |
| 10/13/11 | 0.59 | 0.95 | 1.4 | 0.71 | 0.5 | 0.85 | 0.66 | 0.54 | 0.66 | 0.51 | 0.6 | 0.51 | 0.69 | 0.5 | 1.4 |
| **Methyl Mercury** | | | | | | | | | | | | | | | |
| 6/22/11 | 0.063 | 0.067 | 0.064 | 0.061 | 0.067 | 0.12 | 0.086 | 0.063 | 0.05 | 0.058 | 0.045 | 0.046 | 0.07 | 0.045 | 0.12 |
| 7/20/11 | 0.13 | 0.14 | 0.06 | 0.071 | 0.08 | 0.11 | 0.068 | 0.1 | 0.082 | 0.09 | 0.078 | 0.074 | 0.08 | 0.06 | 0.11 |
| 8/17/11 | 0.23 | 0.16 | 0.086 | 0.079 | 0.14 | 0.14 | 0.084 | 0.22 | 0.13 | 0.26 | 0.12 | 0.11 | 0.14 | 0.079 | 0.26 |
| 9/21/11 | 0.1 | 0.12 | 0.11 | 0.044 | 0.09 | 0.17 | 0.12 | 0.14 | 0.11 | 0.088 | 0.074 | 0.064 | 0.10 | 0.044 | 0.17 |
| 10/13/11 | 0.085 | 0.063 | 0.027 | 0.042 | 0.034 | 0.091 | 0.085 | 0.078 | 0.07 | 0.087 | 0.076 | 0.063 | 0.07 | 0.027 | 0.091 |

[1] These 10 locations are all of the locations listed above except South Deep and North Deep.

Note: Total mercury and methylmercury analyses were also conducted for samples from two other ISUS locations (ISUS-19 and ISUS-45) collected on September 21 and October 13. Those results are as follows for one meter above the lake bottom:

| | ISUS-19 | ISUS-45 |
|---|---|---|
| Total Mercury | | |
| 9/21/2011 | 1.3 | 0.97 |
| 10/13/2011 | 0.65 | 0.69 |
| Methylmercury | | |
| 9/21/2011 | 0.082 | 0.054 |
| 10/13/2011 | 0.06 | 0.071 |

# TABLE 5

## MERCURY CONCENTRATIONS IN ZOOPLANKTON SAMPLES COLLECTED AT SOUTH DEEP AND NORTH DEEP IN 2011

| Field Sample ID | Date | Total mercury (mg/kg wet weight) | Methylmercury (mg/kg wet weight) | Methylmercury (Percent of Total Mercury) |
|---|---|---|---|---|
| **South Deep Results** | | | | |
| OL-1410-01 | 5/23/11 | 0.13 | 0.0012 | 0.9% |
| OL-1415-01 | 6/6/11 | 0.25 | 0.0032 | 1.35 |
| OL-1424-01 | 6/20/11 | 0.07 | 0.0008 | 1.1% |
| OL-1436-01 | 7/5/11 | 0.055 | 0.0017 | 3.1% |
| OL-1447-01 | 7/18/11 | 0.24 | 0.0021 | 0.9% |
| OL-1460-01 | 8/1/11 | 0.28 | 0.0098 | 3.5% |
| OL-1470-01 | 8/15/11 | 0.14 | 0.0034 | 2.4% |
| OL-1472-01 | 8/15/11 | 0.118 | 0.0065 | 5.5% |
| OL-1484-01 | 8/29/11 | 0.17 | 0.0065 | 3.8% |
| OL-1491-01 | 9/6/11 | 0.11 | 0.0035 | 3.2% |
| OL-1604-01 | 9/12/11 | 0.1 | 0.007 | 7.0% |
| OL-1608-01 | 9/19/11 | 0.22 | 0.0078 | 3.5% |
| OL-1617-01 | 9/26/11 | 0.18 | 0.0056 | 3.1% |
| OL-1619-01 | 9/26/11 | 0.0875 | 0.0052 | 5.9% |
| OL-1624-01 | 10/3/11 | 0.14 | 0.0095 | 6.8% |
| OL-1631-01 | 10/10/11 | 0.13 | 0.013 | 10% |
| OL-1637-01 | 10/18/11 | 0.35 | 0.0069 | 2.0% |
| OL-1644-01 | 10/24/11 | 0.085 | 0.0083 | 9.8% |
| OL-1649-01 | 10/31/11 | 0.1 | 0.0073 | 7.3% |
| OL-1656-01 | 11/7/11 | 0.082 | 0.011 | 13% |
| OL-1664-01 | 11/21/11 | 0.052 | 0.01 | 19% |

## TABLE 5 (CONTINUED)

## MERCURY CONCENTRATIONS IN ZOOPLANKTON SAMPLES COLLECTED AT SOUTH DEEP AND NORTH DEEP IN 2011

| Field Sample ID | Date | Total mercury (mg/kg wet weight) | Methylmercury (mg/kg wet weight) | Methylmercury (Percent of Total Mercury) |
|---|---|---|---|---|
| **North Deep Results** | | | | |
| OL-1410-02 | 5/23/11 | 0.054 | 0.00036 | 0.7% |
| OL-1415-02 | 6/6/11 | 0.13 | 0.0026 | 2.0% |
| OL-1424-02 | 6/20/11 | 0.19 | 0.00085 | 0.4% |
| OL-1436-02 | 7/5/11 | 0.11 | 0.0031 | 2.8% |
| OL-1447-02 | 7/18/11 | 0.13 | 0.0037 | 2.8% |
| OL-1460-02 | 8/1/11 | 0.18 | 0.0088 | 4.9% |
| OL-1470-02 | 8/15/11 | 0.1 | 0.0033 | 3.3% |
| OL-1484-02 | 8/29/11 | 0.17 | 0.0053 | 3.1% |
| OL-1491-02 | 9/6/11 | 0.1 | 0.004 | 4.0% |
| OL-1604-02 | 9/12/11 | 0.079 | 0.0045 | 5.7% |
| OL-1608-02 | 9/19/11 | 0.23 | 0.0044 | 1.9% |
| OL-1617-02 | 9/26/11 | 0.17 | 0.0071 | 4.2% |
| OL-1624-02 | 10/3/11 | 0.19 | 0.0081 | 4.3% |
| OL-1631-02 | 10/10/11 | 0.25 | 0.0056 | 2.2% |
| OL-1637-02 | 10/18/11 | 0.25 | 0.003 | 1.2% |
| OL-1644-02 | 10/24/11 | 0.15 | 0.0068 | 4.5% |
| OL-1649-02 | 10/31/11 | 0.28 | 0.012 | 4.3% |
| OL-1656-02 | 11/7/11 | 0.049 | 0.0088 | 18% |
| OL-1664-02 | 11/21/11 | 0.056 | 0.0094 | 17% |

## TABLE 6
## 2011 SEDIMENT TRAP MERCURY AND CORRESPONDING TOTAL SUSPENDED SOLIDS RESULTS
## (Traps set at 33 ft (10-meter water depth)

| Location | Trap Deploy Date | Trap Recover Date | Deployment Duration (Days) | Sample Volume (ml) | Slurry Mercury Results (µg/L) | Mercury Average (µg/L) | Triplicate TSS Results (mg/L) | TSS Average (mg/L) | TSS Deposition (mg per m2 per day) | Mercury Concentration (mg/kg) | Mercury Deposition (µg per m2 per day) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SD | 05/16/11 | 05/23/11 | 7 | 144 | 0.69 | 0.69 | 1172 / 760 / 1276 | 1069 | 4760 | 0.65 | 3.14 |
| SD | 05/31/11 | 06/06/11 | 6 | 146 | 1.40 | 1.40 | 3240 / 3184 / 3152 | 3192 | 16493 | 0.44 | 7.51 |
| SD | 06/13/11 | 06/20/11 | 7 | 141 | 0.92 | 0.92 | 1264 / 1556 / 2272 | 1697 | 7359 | 0.54 | 4.10 |
| SD | 06/27/11 | 07/05/11 | 8 | 138 | 1.60 | 1.60 | 2168 / 2116 / 1780 | 2021 | 7554 | 0.79 | 6.01 |
| SD | 07/11/11 | 07/18/11 | 7 | 144 | 3.50 | 3.50 | 3704 / 3588 / 4072 | 3788 | 16730 | 0.92 | 15.80 |
| SD | 07/25/11 | 08/01/11 | 7 | 136 | 1.40 | 1.40 | 1924 / 1764 / 2843 | 2177 | 9426 | 0.64 | 6.00 |
| SD | 08/08/11 | 08/15/11 | 7 | 153 | 0.92 | 0.92 | 1096 / 1020 / 1236 | 1117 | 5294 | 0.82 | 4.45 |
| SD | 08/22/11 | 08/29/11 | 7 | 134 | 1.30 | 1.30 | 1080 / 1172 / 1716 | 1323 | 5659 | 0.98 | 5.47 |
| SD | 08/29/11 | 09/06/11 | 8 | 140 | 1.20 | 1.20 | 1668 / 1284 / 1360 | 1437 | 5462 | 0.83 | 4.64 |
| SD | 09/06/11 | 09/12/11 | 6 | 140 | 0.78 | 0.78 | 1836 / 2144 / 2164 | 2048 | 10853 | 0.38 | 4.01 |
| SD | 09/12/11 | 09/19/11 | 7 | 140 | 0.84 | 0.84 | 1208 / 1184 / 1200 | 1197 | 5235 | 0.70 | 3.70 |
| SD | 09/19/11 | 09/26/11 | 7 | 152 | 0.78 | 0.78 | 804 / 1068 / 992 | 955 | 4312 | 0.82 | 3.74 |
| SD | 09/26/11 | 10/03/11 | 7 | 146 | 0.53 | 0.53 | 648 / 752 / 756 | 719 | 3154 | 0.74 | 2.42 |
| SD | 10/03/11 | 10/10/11 | 7 | 136 | 1.00 | 1.00 | 1084 / 956 / 1112 | 1051 | 4506 | 0.95 | 4.30 |
| SD | 10/10/11 | 10/17/11 | 7 | 133 | 0.62 | 0.62 | 1600 / 1320 / 1304 | 1408 | 5987 | 0.44 | 2.56 |
| SD | 10/17/11 | 10/24/11 | 7 | 133 | 1.20 | 1.20 | 1756 / 1660 / 1780 | 1732 | 7683 | 0.69 | 5.10 |
| SD | 10/31/11 | 11/07/11 | 7 | 144 | 0.65 | 0.65 | 1600 / 1844 / 1584 | 1676 | 7552 | 0.39 | 2.95 |
| SD | 11/14/11 | 11/21/11 | 7 | 137 | 2.00 | 2.00 | 3092 / 3132 / 2976 | 3067 | 13042 | 0.65 | 8.48 |
| Arithmetic Mean | | | - | - | - | - | - | - | 7840 | 0.7 | 5.2 |

SD - South Deep

TSS - total suspended solids.

Mercury concentration = Mercury average divided by TSS average times a units conversion of 1,000. Concentrations are based on dry weight.

Calculations of TSS and mercury deposition include the surface area of the sediment traps (45 square centimeters).

**Table 7**
**Summary of Book 2 2011 Fish Tissue Chemical Concentrations Measured in Onondaga Lake (wet weight basis)**

| Parameter | Prep | Species | Sample Size | Number of Detections | Arithmetic Mean[1] | Min | Max | Standard Deviation[2] | Standard Error[3] |
|---|---|---|---|---|---|---|---|---|---|
| Mercury (mg/kg) | whole body | Prey fish | 40 | 40 | 0.2809 | 0.095 [4] | 0.96 [4] | 0.1786 | 0.0282 |
| | fillet | Brown bullhead | 25 | 25 | 0.3212 | 0.11 | 0.59 | 0.1344 | 0.0269 |
| | fillet | Pumpkinseed | 25 | 25 | 0.2542 | 0.021 | 0.67 | 0.1524 | 0.0305 |
| | fillet | Smallmouth bass | 25 | 25 | 1.3444 | 0.26 | 2.8 | 0.6827 | 0.1365 |
| | fillet | Walleye | 25 | 25 | 1.8308 | 0.3 | 4.1 | 1.0155 | 0.2031 |
| Total PCBs (mg/kg) | fillet | Brown bullhead | 12 | 11 | 0.0589 | 0.016 U | 0.12 | 0.0329 | 0.0095 |
| | fillet | Pumpkinseed | 12 | 6 | 0.0416 | 0.011 | 0.170U | 0.0326 | 0.0094 |
| | fillet | Smallmouth bass | 12 | 11 | 0.5942 | 0.16 U | 1.2 | 0.3126 | 0.0902 |
| | fillet | Walleye | 12 | 12 | 1.3775 | 0.12 | 3.2 | 0.817 | 0.2359 |
| Sum of DDT and metabolites (mg/kg) | fillet | Brown bullhead | 12 | 10 | 0.0074 | 0.0017 U | 0.0483 | 0.0133 | 0.0038 |
| | fillet | Pumpkinseed | 12 | 11 | 0.0075 | 0.017 U | 0.0216 | 0.0078 | 0.0023 |
| | fillet | Smallmouth bass | 12 | 12 | 0.0535 | 0.0081 | 0.114 | 0.0277 | 0.008 |
| | fillet | Walleye | 12 | 12 | 0.074 | 0.0094 | 0.2982 | 0.0814 | 0.0235 |
| Hexachlorobenzene (mg/kg) | fillet | Brown bullhead | 9 | 8 | 0.0071 | 0.0017 U | 0.03 | 0.0091 | 0.003 |
| | fillet | Pumpkinseed | 10 | 8 | 0.0012 | 0.0003 U | 0.0031 | 0.0009 | 0.0003 |
| | fillet | Smallmouth bass | 11 | 11 | 0.0091 | 0.0007 | 0.023 | 0.0071 | 0.0021 |
| | fillet | Walleye | 12 | 12 | 0.0229 | 0.0034 | 0.044 | 0.0112 | 0.0032 |
| Percent Lipid (% by weight) | fillet | Brown bullhead | 12 | 12 | 0.3467 | 0.07 | 0.77 | 0.2618 | 0.0756 |
| | fillet | Pumpkinseed | 12 | 12 | 0.4758 | 0.079 | 1.2 | 0.3957 | 0.1142 |
| | fillet | Smallmouth bass | 12 | 11 | 1.995 | 0.099 U[5] | 10 [5] | 2.6861 | 0.7754 |
| | fillet | Walleye | 12 | 12 | 2.99 | 0.78 | 5.1 | 1.4807 | 0.4274 |

1. U = non-detect (1/2 laboratory reporting limit was used to calculate the mean)
2. Standard Deviation is an estimate of the spread or variability of the data
3. Standard Error is the standard deviation divided by the square root of the sample size
4. The minimum and maximum mercury concentrations for alewife (a prey fish subset) were 0.17 and 0.27 mg/kg respectively.
   Alewife made up 16 of the 40 prey fish composite samples collected and analyzed.
5. The min and max percent lipid results for smallmouth bass appear to be anomolies and will not be used when quantifying lipid-normalized organic chemical concentrations.

**TABLE 7A**

**CALCULATED DIOXIN/FURAN HUMAN/MAMMALIAN TEQs IN 2011 BOOK 2 FISH TISSUE SAMPLES**

| Location ID | Field Sample ID | Fish Type | Date Sampled | TEQ (full dl) (ng/kg) | TEQ (half dl) (ng/kg) | TEQ (ND=0) (ng/kg) |
|---|---|---|---|---|---|---|
| OL-STA-20158 | OL-1503-03F | Walleye | 6/1/2011 | 7.4 | 5.9 | 4.3 |
| OL-STA-20158 | OL-1504-19F | Brown bullhead | 6/8/2011 | 7.9 | 6.2 | 4.5 |
| OL-STA-20158 | OL-1506-01F | Smallmouth bass | 6/28/2011 | 6.4 | 4.3 | 2.2 |
| OL-STA-20158 | OL-1507-01F | Smallmouth bass | 6/29/2011 | 9.7 | 8.1 | 6.4 |
| OL-STA-40212 | OL-1500-02F | Pumpkinseed | 5/25/2011 | 13.8 | 6.9 | 0.02 |
| OL-STA-40212 | OL-1501-03F | Walleye | 5/25/2011 | 13.5 | 12.2 | 10.8 |
| OL-STA-40212 | OL-1501-05F | Walleye | 5/25/2011 | 6.1 | 4.0 | 1.8 |
| OL-STA-50057 | OL-1500-09F | Pumpkinseed | 5/25/2011 | 11.1 | 5.6 | 0.15 |
| OL-STA-50057 | OL-1500-13F | Brown bullhead | 5/25/2011 | 8.8 | 4.7 | 0.52 |
| OL-STA-50057 | OL-1500-18F | Smallmouth bass | 5/25/2011 | 6.0 | 4.4 | 2.7 |
| OL-STA-50057 | OL-1501-01F | Walleye | 5/25/2011 | 9.7 | 5.0 | 0.38 |
| OL-STA-50058 | OL-1502-06F | Pumpkinseed | 5/26/2011 | 15.6 | 7.8 | 0.07 |
| OL-STA-50058 | OL-1502-09F | Brown bullhead | 5/26/2011 | 10.0 | 5.1 | 0.20 |
| OL-STA-50058 | OL-1502-20F | Smallmouth bass | 5/26/2011 | 5.9 | 3.8 | 1.6 |
| OL-STA-50059 | OL-1503-02F | Walleye | 6/1/2011 | 9.0 | 6.8 | 4.7 |
| OL-STA-50059 | OL-1506-04F | Smallmouth bass | 6/28/2011 | 10.2 | 8.4 | 6.6 |
| OL-STA-60225 | OL-1502-01F | Pumpkinseed | 5/26/2011 | 27.4 | 13.7 | 0.00 |
| OL-STA-60225 | OL-1502-03F | Brown bullhead | 5/26/2011 | 9.9 | 5.1 | 0.20 |
| OL-STA-70124 | OL-1504-10F | Brown bullhead | 6/8/2011 | 9.9 | 5.4 | 0.91 |
| OL-STA-70124 | OL-1504-13F | Pumpkinseed | 6/8/2011 | 10.0 | 5.1 | 0.18 |

Notes:

dl - detection limit

TEQ - toxicity equivalent quotient calculated using human and mammalian toxic equivalency factors (TEFs) from Van den Berg et al. (2006)

Table 8. Summary of Fish Gut Contents in Onondaga Lake - 2011.

| | **Count** | |
|---|---|---|
| **Species/Taxa** | **Smallmouth bass (N=25)** | **Walleye (N=25)** |
| Amphipoda | | |
| Fish | | |
| Alewife | | 3 |
| Unidentified | 5 | 1 |
| Number Empty | 20 | 21 |

Empty cells indicate species not found in gut contents.
N is the number of fish for which gut contents were assessed.
Count is the total number of individuals encountered in all fish samples.

Table 9

Summary Of Species Collected By Gear Type - May - October 2011

| | Common Name | Scientific Name | Trap Net | Gill Net | Electroshocker | Seining |
|---|---|---|---|---|---|---|
| 1 | Alewife | *Alosa pseudoharengus* | x | | | |
| 2 | Banded killifish | *Fundulus diaphanus* | x | | | x |
| 3 | Black crappie | *Pomoxis nigromaculatus* | x | | | |
| 4 | Bluegill | *Lepomis macrochirus* | x | | x | x |
| 5 | Bluntnose minnow | *Pimephales notatus* | x | | | x |
| 6 | Bowfin | *Amia calva* | x | | | |
| 7 | Brook silverside | *Labidesthes sicculus* | | | | x |
| 8 | Brook stickleback | *Culaea inconstans* | x | | | |
| 9 | Brown bullhead | *Ameiurus nebulosus* | x | | | x |
| 10 | Brown trout | *Salmo trutta* | | x | | |
| 11 | Chain pickerel | *Esox niger* | x | | x | |
| 12 | Channel catfish | *Ictalurus punctatus* | x | x | | |
| 13 | Common carp | *Cyprinus carpio* | x | x | | x |
| 14 | Creek chub | *Semotilus atromaculatus* | x | | | |
| 15 | Emerald shiner | *Notropis atherinoides* | x | | | |
| 16 | Fathead minnow | *Pimephales promelas* | x | | | |
| 17 | Freshwater drum | *Aplodinotus grunniens* | x | x | | |
| 18 | Gizzard shad | *Dorosoma cepedianum* | x | x | | |
| 19 | Golden shiner | *Notemigonus crysoleucas* | x | | | x |
| 20 | Goldfish | *Carassius auratus* | x | | | |
| 21 | Green sunfish | *Lepomis cyanellus* | x | | x | x |
| 22 | Lake sturgeon | *Acipenser fulvescens* | | x | | |
| 23 | Largemouth bass | *Micropterus salmoides* | x | | x | x |
| 24 | Logperch | *Percina caprodes* | x | | | x |
| 25 | Longnose gar | *Lepisosteus osseus* | x | x | | |
| 26 | Northern pike | *Esox lucius* | x | x | x | x |
| 27 | Pumpkinseed | *Lepomis gibbosus* | x | | x | x |
| 28 | Quillback | *Carpiodes cyprinus* | | x | | |
| 29 | Rock bass | *Ambloplites rupestris* | x | | | x |
| 30 | Round goby | *Neogobius melanostomus* | x | | | x |
| 31 | Rudd | *Scardinius erythrophthalmus* | x | | | |
| 32 | Shorthead redhorse | *macrolepidotum* | x | x | | |
| 33 | Silver redhorse sucker | *Moxostoma anisurum* | | x | | |
| 34 | Smallmouth bass | *Micropterus dolomieu* | x | x | x | x |
| 35 | Tadpole madtom | *Noturus gyrinus* | | | | x |
| 36 | Tesselated darter | *Etheostoma olmstedi* | x | | | x |
| 37 | Tiger muskellenge | *masquinongy* | x | | x | |
| 38 | Walleye | *Sander vitreus* | x | x | x | |
| 39 | White perch | *Morone americana* | x | x | | |
| 40 | White sucker | *Catostomus commersoni* | x | x | | x |
| 41 | Yellow bullhead | *Ameiurus natalis* | x | | | |
| 42 | Yellow perch | *Perca flavescens* | x | | | x |
| | | **Total Number of Species** | **36** | **15** | **9** | **19** |

**Table 10**
**Summary of Number of Individuals Per Species Captured in Trap Nets June-October 2011**

| | | Station Description (Station Identifier OL-STA) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | **Metro (70124)** | **Harbor Brook (70124)** | **Rte 690 (20158)** | **Wastebeds 1-8 (30093)** | **Ninemile (40212)** | **Permanent Habitat Module (50057)** | **Maple Bay (50057)** | **Willow Bay (50057)** | **Marina (50058)** | **Iron Bridge (50059)** | **Total Fish Captured** |
| Alewife | *Alosa pseudoharengus* | 329 | 18 | 15 | 826 | 4 | 124 | 24 | 29 | 40 | 80 | 1489 |
| Banded killifish | *Fundulus diaphanus* | 51 | 83 | 10 | 68 | 85 | 17 | 38 | 3 | 108 | | 463 |
| Black crappie | *Pomoxis nigromaculatus* | | | | | 2 | | 1 | | 1 | 1 | 5 |
| Bluegill | *Lepomis macrochirus* | 29 | 207 | 120 | 5 | 73 | 206 | 42 | 43 | 47 | 80 | 852 |
| Bluntnose minnow | *Pimephales notatus* | 6 | 6 | | 1 | | 1 | 2 | | | | 16 |
| Bowfin | *Amia calva* | 10 | 11 | 11 | 15 | 2 | 8 | 33 | 3 | 2 | 5 | 100 |
| Brook stickleback | *Culaea inconstans* | 1 | | | | | 1 | | | | | 2 |
| Brown bullhead | *Ameiurus nebulosus* | 8 | 38 | 6 | 5 | 7 | 21 | 11 | 50 | 18 | 13 | 177 |
| Chain pickerel | *Esox niger* | | | | | | | 1 | | | | 1 |
| Channel catfish | *Ictalurus punctatus* | | 11 | 1 | 4 | 3 | | | 2 | | | 21 |
| Common carp | *Cyprinus carpio* | 2 | 6 | 9 | 3 | | 7 | 2 | 15 | 1 | 18 | 63 |
| Creek chub | *Semotilus atromaculatus* | | | | | | | 1 | | | | 1 |
| Emerald shiner | *Notropis atherinoides* | 4 | | | | | | | | | | 4 |
| Fathead minnow | *Pimephales promelas* | 1 | | 3 | | | | 1 | | | | 5 |
| Freshwater drum | *Aplodinotus grunniens* | 4 | 2 | | 3 | | 1 | 1 | 1 | 1 | | 13 |
| Gizzard shad | *Dorosoma cepedianum* | 1082 | 53 | 4 | 390 | 9 | 3 | 1 | 2 | 3 | 3 | 1550 |
| Golden shiner | *Notemigonus crysoleucas* | 11 | 8 | 3 | 1 | 2 | 6 | 20 | 8 | 7 | 9 | 75 |
| Goldfish | *Carassius auratus* | | | | | | | | | 1 | | 1 |
| Green sunfish | *Lepomis cyanellus* | | | | | | | | | 1 | | 1 |
| Largemouth bass | *Micropterus salmoides* | 11 | 8 | 22 | 10 | 144 | 29 | 10 | 26 | 100 | 66 | 426 |
| Logperch | *Percina caprodes* | | | | 1 | 1 | | | | | | 2 |
| Longnose gar | *Lepisosteus osseus* | 3 | 24 | 1 | | | 80 | 8 | | 3 | 5 | 124 |
| Northern pike | *Esox lucius* | | | | | 1 | | 2 | | | | 3 |
| Pumpkinseed | *Lepomis gibbosus* | 27 | 36 | 49 | 12 | 24 | 78 | 13 | 37 | 50 | 29 | 355 |
| Rockbass | *Ambloplites rupestris* | 1 | 1 | | | 1 | 4 | 4 | 3 | 1 | | 15 |
| Round goby | *Neogobius melanostomus* | | | | | | 1 | 1 | | 1 | | 3 |
| Rudd | *Scardinius erythrophthalmus* | 79 | 6 | 5 | | 18 | 1 | | | | 23 | 132 |
| Shorthead redhorse | *Moxostoma macrolepidotum* | 2 | | | | | | | | | 1 | 3 |
| Smallmouth bass | *Micropterus dolomieu* | | | | 1 | 1 | | | | | 1 | 3 |
| Tesselated darter | *Etheostoma olmstedi* | | | | | | | | 1 | | | 1 |
| Tiger muskellenge | *Esox lucius x Esox masquinongy* | | | 1 | | | | 1 | | | | 2 |
| Walleye | *Sander vitreus* | | | | | | | 1 | | | | 1 |
| White perch | *Morone americana* | 21 | 4 | 16 | 18 | 4 | 15 | 60 | 3 | 32 | 17 | 190 |
| White sucker | *Catostomus commersoni* | 3 | 4 | | 2 | 6 | 6 | 41 | 12 | | 2 | 76 |
| Yellow bullhead | *Ameiurus natalis* | | | | | 1 | 3 | 3 | 1 | | | 8 |
| Yellow perch | *Perca flavescens* | | 2 | 10 | 1 | 10 | 13 | 7 | 17 | 10 | 42 | 112 |
| | **Total Fish Captured** | 1685 | 528 | 286 | 1366 | 398 | 625 | 329 | 256 | 427 | 395 | 6295 |
| | **Species Richness** | **21** | **19** | **17** | **18** | **20** | **21** | **26** | **18** | **19** | **17** | **36** |

**Table 11**
**2011 Gill Net Sampling Locations in Onondaga Lake**

| Location Name | Sampling Date | Set Time | End Time | Water Depth (m) Shallow | Water Depth (m) Deep | Number Times Sampled |
|---|---|---|---|---|---|---|
| Harbor Brook (OL-STA-70124) | 7/19/2011 | 11:05:00 AM | 12:05:00 PM | 3.7 | 3.4 | 4 |
| | 8/23/2011 | 12:00:00 PM | 1:10:00 AM | 5.94 | 6.89 | |
| | 10/12/2011 | 8:55:00 PM | 9:55:00 PM | 6.7 | 7.16 | |
| | 10/12/2011 | 10:25:00 PM | 11:25:00 PM | 7.22 | 7.16 | |
| Route 690 Point (OL-STA-20158) | 5/24/2011 | 3:05:00 AM | 4:25:00 AM | 3.66 | 8.41 | 6 |
| | 6/21/2011 | 10:45:00 PM | 12:02:00 AM | 3.6 | 7.16 | |
| | 7/19/2011 | 10:05:00 AM | 11:15:00 AM | 2.6 | 6.6 | |
| | 8/24/2011 | 11:00:00 PM | 12:00:00 AM | 2.34 | 7.49 | |
| | 9/13/2011 | 8:20:00 PM | 9:30:00 PM | 4.08 | 7.65 | |
| | 10/12/2011 | 7:00:00 PM | 8:06:00 PM | 3.38 | 8.14 | |
| Causeway (OL-STA-20158) | 5/31/2011 | 8:45:00 PM | 9:45:00 PM | 3.66 | 8.2 | 6 |
| | 6/27/2011 | 8:50:00 PM | 9:50:00 PM | 2.71 | 6.4 | |
| | 7/19/2011 | 12:00:00 PM | 1:00:00 AM | 3.3 | 6.9 | |
| | 8/23/2011 | 11:00:00 PM | 12:00:00 PM | 3.2 | 7.86 | |
| | 9/13/2011 | 9:50:00 PM | 10:50:00 PM | 4.63 | 8.93 | |
| | 10/12/2011 | 9:20:00 PM | 10:20:00 PM | 4.24 | 8.14 | |
| Wastebeds 1-8 (OL-STA-30093) | 5/24/2011 | 2:40:00 AM | 3:40:00 AM | 3.11 | 8.11 | 6 |
| | 6/21/2011 | 10:13:00 PM | 11:13:00 PM | 3.99 | 8.2 | |
| | 7/19/2011 | 8:45:00 AM | 9:45:00 AM | 1.6 | 7.6 | |
| | 8/23/2011 | 10:41:00 PM | 11:41:00 PM | 4.14 | 7.99 | |
| | 9/13/2011 | 8:00:00 PM | 9:00:00 PM | 4.54 | 8.38 | |
| | 10/13/2011 | 10:00:00 PM | 11:00:00 PM | 3.63 | 8.26 | |
| Ninemile (OL-STA-40212) | 6/21/2011 | 9:15:00 PM | 10:20:00 PM | 3.47 | 8.72 | 5 |
| | 7/18/2011 | 10:18:00 AM | 11:22:00 AM | 4 | 8.7 | |
| | 8/24/2011 | 10:20:00 PM | 11:20:00 PM | 4.97 | 8.9 | |
| | 9/12/2011 | 7:30:00 PM | 8:30:00 PM | 3.32 | 8.78 | |
| | 10/13/2011 | 6:58:00 PM | 8:20:00 PM | 3.99 | 8.99 | |
| Permanent Habitat Module (OL-STA-50057) | 6/20/2011 | 9:15:00 PM | 10:40:00 PM | 2.93 | 8.87 | 5 |
| | 7/18/2011 | 9:18:00 AM | 10:24:00 AM | 2.5 | 8.4 | |
| | 8/24/2011 | 8:45:00 PM | 9:45:00 PM | 2.07 | 8.9 | |
| | 9/12/2011 | 9:00:00 PM | 10:05:00 PM | 3.23 | 8.9 | |
| | 10/13/2011 | 9:18:00 PM | 10:19:00 PM | 3.54 | 9.02 | |
| Outlet (OL-STA-50057) | 6/20/2011 | 8:45:00 PM | 9:45:00 PM | 2.04 | 6.95 | 5 |
| | 7/18/2011 | 8:47:00 AM | 9:45:00 AM | 3.6 | 7.1 | |
| | 8/24/2011 | 8:25:00 PM | 9:25:00 PM | 2.68 | 6.4 | |
| | 9/12/2011 | 9:33:00 PM | 10:35:00 PM | 2.47 | 6.74 | |
| | 10/13/2011 | 8:15:00 PM | 9:20:00 PM | 3.63 | 6.68 | |
| Hiawatha (OL-STA-50057) | 6/20/2011 | 10:35:00 PM | 11:45:00 PM | 2.44 | 6.13 | 6 |
| | 6/28/2011 | 8:15:00 PM | 9:15:00 PM | 2.13 | 6.13 | |
| | 7/18/2011 | 11:03:00 AM | 12:03:00 PM | 2.6 | 6.2 | |
| | 8/24/2011 | 9:15:00 PM | 10:30:00 PM | 3.29 | 10.49 | |
| | 9/12/2011 | 7:50:00 PM | 9:10:00 PM | 3.66 | 5.24 | |
| | 10/13/2011 | 6:40:00 PM | 7:38:00 PM | 3.87 | 5.33 | |
| Marina (OL-STA-50058) | 5/24/2011 | 4:20:00 AM | 5:30:00 AM | 3.81 | 5.67 | 6 |
| | 6/21/2011 | 8:45:00 PM | 9:45:00 PM | 3.66 | 8.84 | |
| | 7/18/2011 | 11:50:00 AM | 12:35:00 PM | 3.7 | 9.6 | |
| | 8/23/2011 | 8:55:00 PM | 10:10:00 PM | 4.54 | 11.63 | |
| | 9/12/2011 | 10:15:00 PM | 11:16:00 PM | 3.23 | 11.06 | |
| | 10/12/2011 | 6:40:00 PM | 7:40:00 PM | 4.45 | 8.47 | |
| Iron Bridge (OL-STA-50059) | 5/31/2011 | 8:20:00 PM | 9:20:00 PM | 3.38 | 10.55 | 6 |
| | 6/27/2011 | 8:15:00 PM | 8:55:00 PM | 2.53 | 8.9 | |
| | 7/19/2011 | 9:20:00 AM | 10:20:00 AM | 2.6 | 8.8 | |
| | 8/23/2011 | 9:20:00 AM | 10:45:00 AM | 4.57 | 10.36 | |
| | 9/13/2011 | 9:20:00 PM | 10:20:00 PM | 4.3 | 9.69 | |
| | 10/12/2011 | 8:05:00 PM | 9:05:00 PM | 3.69 | 10.27 | |
| | | | | Total Number of Gill Net sets | | 55 |

**Table 12**

**Summary of Nubmer of Individuals Per Species Captured in Gill Nets May-October 2011**

| | | Station Description (Station Identifer: OL-STA) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | **Harbor Brook (70124)** | **Causeway (20158)** | **Route 690 Point (20158)** | **Wastebeds 1-8 (30093)** | **Ninemile (40212)** | **Permanent Habitat Module (50057)** | **Outlet (50057)** | **Hiawatha Point (50057)** | **Marina (50058)** | **Iron Bridge (50059)** | **Total Fish Captured** |
| Brown trout | *Salmo trutta* | | | 1 | 5 | 2 | 1 | | | | | **9** |
| Channel catfish | *Ictalurus punctatus* | 4 | 9 | 12 | 4 | 16 | 1 | 13 | 9 | 8 | 12 | **88** |
| Common carp | *Cyprinus carpio* | 5 | 9 | 13 | 8 | 7 | 2 | 6 | 7 | 7 | 3 | **67** |
| Freshwater drum | *Aplodinotus grunniens* | 2 | 36 | 13 | 6 | 3 | 2 | 7 | 3 | 1 | 6 | **79** |
| Gizzard shad | *Dorosoma cepedianum* | 4 | 10 | 16 | 13 | 20 | | 13 | 12 | 8 | 9 | **105** |
| Lake sturgeon | *Acipenser fulvescens* | | | | 1 | | 1 | | | | | **2** |
| Longnose gar | *Lepisosteus osseus* | | | | | | | 1 | | | | **1** |
| Northern pike | *Esox lucius* | | 2 | 1 | 1 | | | | | 1 | | **5** |
| Quillback | *Carpiodes cyprinus* | | | | | 1 | | | | | | **1** |
| Shorthead redhorse | *Moxostoma macrolepidotum* | | 2 | 2 | 5 | 1 | | 4 | 2 | 2 | 3 | **21** |
| Silver redhorse sucker | *Moxostoma anisurum* | | | | | | | 1 | | | | **1** |
| Smallmouth bass | *Micropterus dolomieu* | | 2 | 2 | | | | | 2 | | 5 | **11** |
| Walleye | *Sander vitreus* | | 56 | 24 | 14 | 14 | 11 | 34 | 34 | 12 | 15 | **214** |
| White perch | *Morone americana* | | | | | 1 | | | | | | **1** |
| White sucker | *Catostomus commersoni* | | 8 | | 1 | 3 | 3 | 1 | | 2 | 3 | **21** |
| | **Total Fish Captured** | 15 | 134 | 84 | 58 | 68 | 21 | 80 | 69 | 41 | 56 | **626** |
| | **Species Richness** | 4 | 9 | 9 | 10 | 10 | 7 | 9 | 7 | 8 | 8 | **15** |

**Table 13**
**Lake Sturgeon Catch and Tag Information - 2011**

| Site Name | Sampling Date | Coordinates | Total Length (mm) | Weight (kg) | Carlin Tag | Pit Tag | Notes |
|---|---|---|---|---|---|---|---|
| Permanent Habitat Module | 5/11/2011 | 398818 N 4773657 W | 1480 | | 10 | | Captured in regular net and stressed |
| Lake Outlet | 6/1/2011 | 430651 N 761425 W | 1400 | 19.25 | 11 | 20555326 | |
| Lake Outlet | 6/1/2011 | 430651 N 761425 W | 1310 | 22.45 | 12 | 20472600 | |
| Lake Outlet | 6/1/2011 | 430651 N 761425 W | 1005 | 8.5 | 13 | 20559667 | |
| Causeway | 6/29/2011 | 402655 N 4769197 W | 1470 | 21.9 | 14 | 20435350 | Captured #14 in three gill net sets on 6/29/2011 |
| Lake Outlet | 6/29/2011 | 430651 N 761425 W | 1450 | 21.2 | 15 | 20481711 | |
| Wastebeds 1-8 | 6/29/2011 | 430521 N 761320 W | 1190 | 20.9 | 16 | 20480422 | |
| Causeway | 6/30/2011 | 402655 N 4769197 W | NA | NA | 17 | | Captured in regular net, fish stressed, tagged and released. No length data recorded. |
| Hiawatha Pt. | 8/26/2011 | 430310 N 761259 W | NA | NA | 16 | 20480422 | **Recapture** |
| Hiawatha Pt. | 8/26/2011 | 430310 N 761259 W | 975 | 9.05 | 18 | 20477894 | |
| Wastebeds | 8/29/2011 | 430521 N 761320 W | 1150 | 20.08 | | 5587A13 | Recapture (outside tag) |
| Iron Bridge | 8/29/2011 | 430524 N 761139 W | 1380 | 21.97 | 19 | 20431126 | |
| Marina | 10/24/2011 | 430515 N 761232 W | 1320 | | 20 | | |
| Hiawatha Pt. | 10/25/2011 | 430310 N 761259 W | | | 12 | 20472600 | **Recapture** |

**Table 14**

**Summary of Number of Individuals per Species Captured by Seining - August 2011**

| Common Name | Scientific Name | Metro (70124) | Rte 690 (20158) | Wastebeds 1-8 (30093) | Ninemile (40212) | Permanent Habitat Module (50057) | Maple Bay (50057) | Willow Bay (50057) | Marina (50058) | Iron Bridge (50059) | Total Fish Captured |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Banded killifish | *Fundulus diaphanus* | 61 | 104 | 237 | 185 | 30 | 156 | 111 | 15 | 173 | **1072** |
| Bluegill | *Lepomis macrochirus* | 2 | 3 | | 5 | 26 | 1 | 6 | | 5 | **48** |
| Bluntnose minnow | *Pimephales notatus* | 1 | | | | | 2 | | | | **3** |
| Brook silverside | *Labidesthes sicculus* | | | 1 | | 1 | | | | | **2** |
| Brown bullhead | *Ameiurus nebulosus* | | 4 | | 10 | | | | 2 | | **16** |
| Common carp | *Cyprinus carpio* | 1 | | | | 9 | 6 | | 1 | 2 | **19** |
| Golden shiner | *Notemigonus crysoleucas* | 11 | 1 | | | | 2 | 1 | | | **15** |
| Green sunfish | *Lepomis cyanellus* | | | | | | 1 | | | | **1** |
| Lepomis YOY | *Lepomis spp.* | 1 | | | | | 1 | | | 2 | **4** |
| Largemouth bass | *Micropterus salmoides* | 63 | 332 | | 101 | 46 | 206 | 68 | 62 | 125 | **1003** |
| Log perch | *Percina caprodes* | 6 | | 9 | | 2 | 1 | | | | **18** |
| Northern pike | *Esox lucius* | | | | | 1 | | 1 | | | **2** |
| Pumpkinseed | *Lepomis gibbosus* | 10 | 16 | | 15 | 8 | 3 | 1 | | 10 | **63** |
| Rock bass | *Ambloplites rupestris* | 1 | 1 | | 7 | 5 | 1 | | | | **15** |
| Round goby | *Neogobius melanostomus* | | | | 1 | 6 | 13 | | | | **20** |
| Smallmouth bass | *Micropterus dolomieu* | 1 | 1 | 2 | | | | | | 1 | **5** |
| Tadpole madtom | *Noturus gyrinus* | | | | 1 | | | | | | **1** |
| Tessellated darter | *Etheostoma olmstedi* | 4 | 5 | 4 | 5 | 6 | 51 | 6 | 10 | 19 | **110** |
| White sucker | *Catostomus commersoni* | | 1 | | | | | | | | **1** |
| Yellow perch | *Perca flavescens* | 4 | 22 | | 9 | 3 | 13 | 10 | | 51 | **112** |
| | **Total Fish Captured** | **166** | **490** | **253** | **339** | **143** | **457** | **204** | **90** | **388** | **2530** |
| | **Species Richness** | **13** | **11** | **5** | **10** | **12** | **14** | **8** | **5** | **9** | **19** |

Table 15
Fish Tag Information For Sonic Telemetry 2010 and 2011

| Tag Date | Fish ID | Species | Total Length (mm) | Capture Location | Dead or Alive (date) |
|---|---|---|---|---|---|
| **2010** | | | | | |
| 5/24/2010 | 62 | walleye | 580 | Hiawatha | Dead (2010) |
| 5/24/2010 | 63 | walleye | 465 | Wastebeds 1-8 | Alive |
| 5/24/2010 | 64 | walleye | 527 | Hiawatha | Alive |
| 5/25/2010 | 65 | walleye | 501 | Iron Bridge | Dead (2011) |
| 5/24/2010 | 66 | walleye | 546 | Wastebeds 1-8 | Alive |
| 5/25/2010 | 68 | walleye | 507 | PHM | Alive |
| 5/25/2010 | 69 | walleye | 644 | Iron Bridge | Alive |
| 5/24/2010 | 70 | walleye | 534 | Wastebeds 1-8 | Alive |
| 5/25/2010 | 71 | walleye | 622 | Marina | Alive |
| 5/25/2010 | 77 | walleye | 523 | PHM | Dead (2010) |
| 5/24/2010 | 78 | walleye | 540 | Hiawatha | Alive |
| 5/25/2010 | 79 | walleye | 573 | Marina | Dead (2010) |
| 5/25/2010 | 81 | walleye | 556 | Iron Bridge | Alive |
| 7/19/2010 | 105 | walleye | 548 | Marina | Dead (2010) |
| 7/19/2010 | 97 | walleye | 520 | Marina | Dead (2010) |
| 7/19/2010 | 103 | walleye | 579 | Wastebeds 1-8 | Alive |
| 10/14/2010 | 119 | walleye | 510 | Nine Mile | Alive |
| 10/14/2010 | 132 | smallmouth bass | 442 | Outlet | Alive |
| 10/14/2010 | 143 | smallmouth bass | 489 | Outlet | Alive |
| **2011** | | | | | |
| 5/11/2011 | 131 | walleye | 515 | Wastebeds 1-8 | Alive |
| 5/11/2011 | 123 | walleye | 509 | Wastebeds 1-8 | Alive |
| 5/11/2011 | 142 | walleye | 548 | Wastebeds 1-8 | Alive |
| 5/11/2011 | 126 | walleye | 552 | Wastebeds 1-8 | Alive |
| 5/11/2011 | 124 | walleye | 525 | Wastebeds 1-8 | Alive |
| 5/11/2011 | 125 | walleye | 575 | Wastebeds 1-8 | Alive |
| 5/12/2011 | 115 | walleye | 531 | Wastebeds 1-8 | Alive |
| 5/12/2011 | 102 | walleye | 703 | Wastebeds 1-8 | Alive |
| 5/12/2011 | 129 | walleye | 516 | Wastebeds 1-8 | Alive |
| 5/12/2011 | 114 | walleye | 528 | Wastebeds 1-8 | Alive |
| 5/12/2011 | 111 | walleye | 522 | PHM | Alive |
| 5/12/2011 | 112 | walleye | 534 | PHM | Alive |
| 5/12/2011 | 109 | walleye | 556 | PHM | Alive |
| 6/27/2011 | 133 | smallmouth bass | 432 | Parsons | Alive |
| 6/27/2011 | 134 | smallmouth bass | 446 | Parsons | Dead (2011) |
| 6/27/2011 | 127 | smallmouth bass | 480 | Parsons | Alive |
| 6/27/2011 | 139 | smallmouth bass | 461 | Parsons | Alive |
| 6/27/2011 | 135 | smallmouth bass | 381 | Parsons | Alive |

PHM = Permanent Habitat Module

**Table 16**
**Tag Detections and Location During 8-hr Sonic Telemetry Surveys May-October 2011**

| | Fish ID and Species | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | 63 W | 65 W | 66 W | 68 W | 70 W | 71 W | 78 W | 81 W | 102 W | 109 W | 111 W | 112 W | 114 W | 115 W | 119 W | 124 W | 125 W | 126 W | 127 S | 129 W | 131 W | 133 S | 134 S | 135 S | 139 S | 142 W | 143 S | **Total Detections** |
| 5/13/2011 | 5 | 5 | | | 8 | | | | | 5 | | | | | | | 8 | | | 8 | 5 | | | | | | | **7** |
| 5/27/2011 | | 5 | | 8 | 5 | | | | 5 | 5 | 5 | 8 | | 8 | | 6 | 4 | | | | | | | | | 4 | | **11** |
| 6/17/2011 | 8 | | 5 | | | 8 | 8 | 8 | 8 | 8 | | 5 | 8 | 8 | | 3 | 8 | 8 | | 5 | 5 | | | | | 8 | 8 | **17** |
| 6/27/2011 | 8 | 3 | 8 | | 8 | 6 | | 5 | 8 | 5 | 8 | 5 | 8 | 8 | | 8 | 8 | 8 | | 8 | 3 | | | | | 8 | | **18** |
| 7/8/2011 | 8 | 3 | 8 | 8 | 8 | 8 | | 8 | | | 5 | 8 | 8 | 8 | 5 | | 8 | 8 | | 8 | | 1 | | 2 | | 5 | | **18** |
| 7/20/2011 | 8 | 8 | 8 | 8 | 8 | 6 | | 8 | | | 8 | | 3 | 8 | 8 | 5 | 8 | 8 | 8 | | | 7 | 8 | 1 | 6 | | 8 | **20** |
| 8/5/2011 | 8 | | 8 | 8 | 8 | | 8 | | 8 | | | | 8 | | 8 | | 4 | 8 | | 8 | 8 | 8 | 5 | 8 | 8 | 8 | 8 | **18** |
| 8/20/2011 | 8 | | 8 | 5 | 8 | | | 8 | 8 | 5 | 5 | 8 | 8 | | 8 | | 5 | 8 | | 8 | | 1 | 8 | 8 | 8 | | 8 | **19** |
| 9/14/2011 | | | 8 | | | 6 | | 5 | 8 | 8 | | | | 8 | 8 | | | 8 | | 8 | | 4 | | 6 | 8 | | | **12** |
| 9/26/2011 | 8 | | 8 | 8 | 8 | 8 | | 8 | 8 | | 8 | 8 | | 8 | 8 | | 8 | 8 | | 8 | 8 | 8 | | 1 | 8 | | | **18** |
| 10/6/2011 | | | 8 | | 8 | 8 | | | | 8 | | 8 | | | | | 8 | | | 8 | | 8 | 8 | 8 | 8 | | 5 | **11** |
| 10/17/2011 | | | 8 | | 8 | 8 | | | | 5 | 8 | | 8 | 8 | 8 | 8 | 8 | | 8 | 8 | | 8 | | | | | | **13** |
| **Total number of times located** | **8** | **5** | **10** | **6** | **10** | **8** | **2** | **7** | **7** | **8** | **7** | **6** | **7** | **8** | **7** | **5** | **11** | **8** | **2** | **10** | **5** | **8** | **4** | **7** | **6** | **5** | **5** | **182** |

Number = SMU where fish found
W = Walleye; S = Smallmouth bass
blanks indicate fish not detected during survey

**Table 17**
**Temperature and Depth of Water Where Fish Were Located During 24-Hour Sonic Telemetry Tracking**

| | Walleye | | | | | | Smallmouth Bass | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Mean temperature (°C) | Minimum temperature (°C) | Maximum temperature (°C) | Mean water depth of fish (m) | Minimum water depth of fish (m) | Maximum water depth of fish (m) | Mean temperature (°C) | Minimum temperature (°C) | Maximum temperature (°C) | Mean water depth of fish (m) | Minimum water depth of fish (m) | Maximum water depth of fish (m) |
| 5/20/2011 | 15.1 | 14.5 | 16.5 | 9.1 | 7.0 | 18.3 | NA | | | | | |
| 6/6/2011 | 18.2 | 16.0 | 22.0 | 6.4 | 3.5 | 16.8 | NA | | | | | |
| 6/20/2011 | 21.8 | 19.5 | 23.0 | 12.3 | 3.5 | 18.0 | NA | | | | | |
| 7/11/2011 | 24.3 | 23.5 | 25.0 | 5.5 | 4.7 | 10.7 | 24.9 | 24.0 | 26.5 | 4.0 | 1.3 | 8.1 |
| 7/25/2011 | 25.6 | 25.0 | 28.0 | 8.1 | 26.7 | 8.1 | 26.4 | 26.0 | 27.5 | NA | | |
| 8/8/2011 | 22.6 | 20.0 | 24.5 | 7.6 | 8.9 | 17.3 | 23.7 | 23.5 | 24.5 | 5.9 | 2.0 | 16.9 |
| 8/28/2011 | 23.1 | 22.0 | 24.5 | 10.0 | 8.9 | 16.2 | NA | | | | | |
| 9/21/2011 | 17.4 | 16.0 | 18.0 | 8.2 | 2.6 | 18.9 | NA | | | | | |
| 10/10/2011 | 14.9 | 14.0 | 16.0 | 12.3 | 28.1 | 17.3 | 18.0 | 16.5 | 19.5 | 5.6 | 2.0 | 11.2 |
| 10/24/2011 | 11.8 | 11.5 | 12.5 | 11.8 | 27.3 | 17.9 | NA | | | | | |

Notes:
1. Water depths indicate the depth of water and not the depth of fish
2. Walleye and smallmouth bass that were tagged were tracked for 12 to 24 hours numerous times during 2011 (Figures 12a through 12i; 13a and 13b).
NA = none located

**Table 18**
**Number of Passive Receiver Detections Within The Onondaga Lake Outlet**

| | Fish ID (See Table 15) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | 63 W | 65 W | 66 W | 68 W | 78 W | 81 W | 111 W | 112 W | 114 W | 115 W | 119 W | 124 W | 125 W | 126 W | 131 W | 142 W | 143 S | Total |
| 6/7/2011 | | | | | 2 | | | | | | | | | | | | | 2 |
| 6/8/2011 | | | | | 6 | | 4 | | | | | | | | | | | 10 |
| 6/9/2011 | | | | | 1 | | | | | | | | | | | 1 | | 2 |
| 6/10/2011 | | | | | 5 | | | | | | | | | | | | | 5 |
| 6/11/2011 | | | | 11 | | | 2 | | | | | | | | | | | 13 |
| 6/12/2011 | | | 12 | | 6 | | | | | | | | | | | | | 18 |
| 6/13/2011 | | | | | 5 | | 7 | | | | | | | | | | | 12 |
| 6/14/2011 | | | | | 7 | | 12 | | | | | | | | | | | 19 |
| 6/15/2011 | | | | 14 | 15 | | | | | | | | | | | | 4 | 33 |
| 6/16/2011 | | | | | 8 | | | | | | | | | | | | | 8 |
| 6/17/2011 | | | | | | | | | | | | | | | | | | 1 |
| 6/19/2011 | | | | | 12 | | | | | | | | | | | | | 12 |
| 6/21/2011 | 10 | | | | | | | | | | | | | | | | | 10 |
| 6/23/2011 | | | | | | | | | | | | | | | | | 82 | 82 |
| 6/24/2011 | | | | 6 | | | | | | | | | | | | | 10 | 16 |
| 6/25/2011 | | | | 18 | 2 | | | | | | | | | | | | | 20 |
| 6/27/2011 | | | | 5 | | | | | | | | | | | | | | 5 |
| 6/28/2011 | | | | | 3 | | | | | | 1 | | | | | | 42 | 46 |
| 6/30/2011 | | | | | | | | | | | | | | | | | | 1 |
| 7/3/2011 | | | | | | | | | | | | | | | | | 118 | 118 |
| 7/5/2011 | | | | | | | | | | | | | | | 4 | | | 4 |
| 7/7/2011 | | | | | | | | | | | | | | | 2 | | | 2 |
| 7/9/2011 | | | | | | | 1 | | | | | | | | 1 | | 163 | 165 |
| 7/12/2011 | | | | | | | | | | | | | | | | | 11 | 11 |
| 7/20/2011 | | | | | | | | | | | | | | | 3 | | | 3 |
| 7/21/2011 | | | | | | | | | | | | 2 | | | | | | 2 |
| 7/22/2011 | | | | | | | | | | | | 4 | | | | | | 4 |
| 7/23/2011 | | | | | | | | | | | | | | | 2 | | | 3 |
| 7/26/2011 | | | | 4 | 6 | | | | | | | 3 | | | | | | 14 |
| 7/29/2011 | | | | | | | | | | | | | | | 21 | | | 21 |
| 7/30/2011 | | | | | | | | | | | | | | | | | 84 | 84 |
| 7/31/2011 | | | | | | | | | | | | | | | 1 | | | 1 |
| 8/1/2011 | | | | | | | | | | | | | | | 2 | | | 2 |
| 8/10/2011 | | | | | | | | | | | | | | | | | 123 | 123 |
| 8/11/2011 | | | | | 4 | | | | | | | | | | | | 222 | 226 |
| 8/12/2011 | | | | | | | | | | | | | | | | | 48 | 48 |
| 8/14/2011 | | 1 | | | | | | | | | | | | | | 5 | | 6 |
| 8/16/2011 | | | | | | | | | | | | | | | 5 | | 29 | 34 |
| 8/18/2011 | | | | | | | | | | | | | | | | | 17 | 17 |
| 8/19/2011 | | | | | | | | | | | | | | | | | 80 | 80 |
| 8/21/2011 | | | | | | | | | | | | | | | | | 28 | 28 |
| 8/22/2011 | | | | | | | | | | | | | | | | | 17 | 17 |
| 8/24/2011 | | | | | | | | 2 | | | | | 1 | 4 | | | | 7 |
| 8/25/2011 | | | | | | | | | 20 | | | | | | | | | 20 |
| 8/26/2011 | | | | | | | | | 10 | | | | | 7 | | | | 17 |
| 8/27/2011 | | | | | | | | 4 | | | | | | | | | 80 | 84 |
| 8/28/2011 | | | | | | | | | | | | | | | | | 19 | 19 |
| 8/29/2011 | | | | | | | 4 | | | | | | | | | | 2 | 6 |
| 8/30/2011 | | | | | | | | | | | | | | | | | 1 | 1 |
| 8/31/2011 | | | | | | | | | 25 | | | | | | | | | 25 |
| 9/1/2011 | | | | | | | | | 21 | | | | | | | | 4 | 25 |
| 9/2/2011 | | | | | | | | | 17 | | | | | | | | 2 | 19 |
| 9/3/2011 | | | | 45 | | | | | 12 | | | | | | | | 147 | 204 |
| 9/4/2011 | | | | | | | | | | | | | | | | | 87 | 87 |
| 9/5/2011 | | | | | | | | | | | | | | | | | 6 | 6 |
| 9/7/2011 | | | | | | | | 4 | | | | | | | | | 3 | 7 |
| 9/8/2011 | 14 | | | | | | 1 | | 3 | | | | | 3 | | | | 21 |
| 9/9/2011 | 8 | | | | | | | | | | | | | | | | 75 | 83 |
| 9/10/2011 | 8 | | | | | | | | | | | | | | | | 1 | 9 |
| 9/12/2011 | | | | | | | | | | | 11 | | | 2 | | | 5 | 18 |
| 9/13/2011 | | | | | | | | | | | | | | | | | 3 | 4 |
| 9/14/2011 | | | | | | | | | | | | | | | | | 3 | 3 |
| 9/15/2011 | | | | | | | | | 14 | | | | | | | | 6 | 20 |
| 9/16/2011 | | | | | | | | | 4 | | | | | | | | 2 | 6 |

**Table 18**
**Number of Passive Receiver Detections Within The Onondaga Lake Outlet**

| | Fish ID (See Table 15) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **63 W** | **65 W** | **66 W** | **68 W** | **78 W** | **81 W** | **111 W** | **112 W** | **114 W** | **115 W** | **119 W** | **124 W** | **125 W** | **126 W** | **131 W** | **142 W** | **143 S** | **Total** |
| 9/17/2011 | | | | | | | | | | 6 | | | | | | | | 6 |
| 9/18/2011 | | | | | | | | | | | 14 | | | | | | | 14 |
| 9/19/2011 | | | | | | | | | 29 | | | | | | | | | 29 |
| 9/20/2011 | | | | | | | | | 7 | 13 | | | | 4 | | | 156 | 180 |
| 9/21/2011 | | | | | | | | | 10 | 11 | | | | | 52 | | 24 | 97 |
| 9/22/2011 | | | | | | | | | | | | | | | 31 | | | 31 |
| 9/23/2011 | | | | | | | | | | | 19 | | | | | | | 19 |
| 9/24/2011 | | | | | | 9 | | | | | | | | | 4 | | | 13 |
| 9/25/2011 | | | | | | | | | 61 | | 9 | | | | | | 3 | 73 |
| 9/26/2011 | | | | | | | | | 15 | | 14 | | | | | | | 29 |
| 9/27/2011 | | | | | | | | | 3 | | | | | | | | 3 | 6 |
| 9/28/2011 | 5 | | | | | | | | 5 | | | | | | | | 2 | 12 |
| 9/29/2011 | 4 | | | | | | | | | | | | | | | | 4 | 8 |
| 9/30/2011 | | | | | | | | | 5 | | | | | | | | | 5 |
| 10/1/2011 | 4 | | | | | | | | 5 | | | | | | | | 2 | 11 |
| 10/2/2011 | | | | | | | | | 4 | | | | | | | | | 4 |
| 10/3/2011 | | | | | | | | | 1 | | | | | | | | | 1 |
| 10/4/2011 | 2 | | | | | | | | 3 | 1 | | | | | | | | 6 |
| 10/5/2011 | | | | | | | | | | | | | | | | | 8 | 8 |
| 10/6/2011 | | | | | | | | | 1 | | | | | | | | | 1 |
| **Number of detections** | **55** | **1** | **12** | **103** | **82** | **9** | **31** | **10** | **275** | **31** | **68** | **9** | **1** | **20** | **128** | **6** | **1726** | **2567** |

W = Walleye; S = Smallmouth bass

**Table 19**
**Number of Passive Receiver Detections Within Onondaga Creek (at Inner Harbor)**

| | Fish ID and Species (See Table 15) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | 66 W | 97 W | 2 W | 114 W | 115 W | 129 W | 131 W | Total |
| 7/8/2011 | 23 | | | | | | | 23 |
| 7/11/2011 | | | | | | | 22 | 23 |
| 7/22/2011 | | | | | 109 | | | 109 |
| 7/23/2011 | | | | 1 | 327 | | | 328 |
| 7/24/2011 | | | | | 55 | | | 55 |
| 7/25/2011 | | | | | 195 | | | 195 |
| 7/26/2011 | | | | | 399 | | | 399 |
| 7/27/2011 | | | | | 327 | | | 327 |
| 7/28/2011 | | | | 1 | 445 | | | 446 |
| 7/29/2011 | | | | | 15 | | | 15 |
| 7/30/2011 | | | | | 268 | | | 268 |
| 7/31/2011 | | | | | 100 | | | 100 |
| 8/2/2011 | | | | | 112 | | | 112 |
| 8/3/2011 | | | | | 324 | | | 324 |
| 8/4/2011 | | | | | 455 | | | 456 |
| 8/5/2011 | | | | | 316 | | | 316 |
| 8/6/2011 | | | | 1 | 174 | | 35 | 212 |
| 8/7/2011 | | | | | 401 | | 17 | 418 |
| 8/8/2011 | | | | | 66 | | | 66 |
| 8/9/2011 | | | | | 163 | | | 163 |
| 8/10/2011 | | | | | 152 | | | 152 |
| 8/11/2011 | | | | 1 | 257 | | | 258 |
| 8/12/2011 | | | | 1 | 307 | | | 308 |
| 8/13/2011 | | | | | | | 15 | 15 |
| 8/14/2011 | | 1 | | | 1 | 134 | | 137 |
| 8/15/2011 | | | | | 79 | | | 79 |
| 8/16/2011 | | | | | 302 | | | 302 |
| 8/17/2011 | | | | 1 | 361 | | | 362 |
| 8/18/2011 | | | | | 21 | | | 21 |
| 8/19/2011 | | | | | 197 | | | 197 |
| 8/20/2011 | | | | | 137 | | | 137 |
| 8/21/2011 | | | | | 322 | | | 322 |
| 8/22/2011 | | | | | 423 | | | 423 |
| 8/23/2011 | | | | | 65 | | | 65 |
| 8/24/2011 | | | | | 348 | | | 348 |
| 8/25/2011 | | | | | 334 | | | 334 |
| 8/26/2011 | | | | | 335 | | | 335 |
| 8/27/2011 | | | | | 209 | | | 209 |
| 8/28/2011 | | | | | 36 | | | 36 |
| 8/30/2011 | | | | | 14 | | | 14 |
| 8/31/2011 | | | | 1 | 226 | | | 227 |
| 9/1/2011 | | | | | 107 | | 1 | 108 |
| 9/2/2011 | | | | | 78 | | | 78 |
| 9/3/2011 | | | | | 52 | | | 52 |
| 9/4/2011 | | | | | 125 | | | 125 |
| 9/5/2011 | | | | | | | 24 | 25 |
| 9/6/2011 | | | | | 271 | | | 271 |
| 9/7/2011 | | | | | 21 | | | 21 |
| 9/10/2011 | | | | | 4 | | | 4 |
| 10/1/2011 | | | 4 | | | | | 4 |
| 10/4/2011 | | | 76 | | | | | 76 |
| 10/5/2011 | | | 236 | | | | | 236 |
| 10/6/2011 | | | 206 | | | | | 206 |
| **Number of Detections** | **23** | **1** | **522** | **7** | **9035** | **134** | **114** | **9836** |

W= Walleye

# TABLE 20

## 2011 BOOK 3 TRIBUTARY SAMPLING
## TOTAL MERCURY AND METHYLMERCURY SURFACE WATER CONCENTRATIONS

| Tributary | Location ID | Number of Analyses | Unfiltered Total Mercury Concentration Range Detected (ng/L) | Unfiltered Methylmercury Concentration Range Detected (ng/L) | Highest During Storm Event ? (Yes [Y] or No [N]) |
|---|---|---|---|---|---|
| Onondaga Creek | ONCK-Spencer | 25 | 0.6 to 42 | 0.03 to 0.45 | Y |
| Ninemile Creek | NMCK-Amboy | 25 | 0.7 to 29 | 0.05 to 0.45 | Y |
| Ninemile Creek | NMCK-Rte48 | 38 | 0.3 to 79 | 0.03 to 0.54 | Y |

Notes:
1. ND - Non-detect.
2. Numbers of analyses includes field duplicates.
3. ng/L - nanogram per liter.
4. Typical reporting limit for total mercury non-detects was 0.15 to 0.5 ng/L and a typical reporting limit for methylmercury non-detects was 0.02 ng/L.

**TABLE 21**
**2011 BOOK 3 TRIBUTARY SAMPLING**
**DISSOLVED MERCURY SURFACE WATER CONCENTRATIONS**

| Tributary | Location ID | 2011 Sample Date | Dissolved (Filtered) Mercury, ng/L (average of field duplicates) *where applicable* | Data Qualifier |
|---|---|---|---|---|
| Onondaga Creek | ONCK-Spencer | June 29 | 0.47 | *J* |
| Onondaga Creek | ONCK-Spencer | July 12 | 0.42 | *J* |
| Onondaga Creek | ONCK-Spencer | September 7 | 0.64 | *J* |
| Onondaga Creek | ONCK-Spencer | September 20 | 0.17 | *J* |
| Ninemile Creek | NMCK-Amboy | June 29 | 0.47 | *J* |
| Ninemile Creek | NMCK-Amboy | July 12 | 0.36 | *J* |
| Ninemile Creek | NMCK-Amboy | August 9 | 0.39 | *J* |
| Ninemile Creek | NMCK-Amboy | September 7 | 0.71* | *J* |
| Ninemile Creek | NMCK-Amboy | September 20 | 0.27 | *J* |
| Ninemile Creek | NMCK-Rte48 | June 29 | 0.24 | *J* |
| Ninemile Creek | NMCK-Rte48 | July 12 | 0.55 | *J* |
| Ninemile Creek | NMCK-Rte48 | September 7 | 1.1* | *J* |
| Ninemile Creek | NMCK-Rte48 | September 20 | 0.17 | *J* |

ng/L - nanogram per liter - 1 nanogram = 0.000001 milligram

* Measured concentration that exceeds the NYSDEC water quality standard of 0.7 ng/L established to protect human health based on fish consumption.

J - estimated value