

*Mary*

Wolf River/Shawano Lake  
Sediment and Fish Mercury  
Contamination Study

Wolf River Basin  
Integrated Ecosystem  
Management (IEM) Project

DRAFT

Submitted by  
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Wisconsin Department of Natural Resources  
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## **INTRODUCTION**

Mercury is a naturally occurring metallic element in our environment. It is found in very low levels in air, water, rocks, soil, and plant matter. However, humans have added mercury to our air, water, and land. Major emissions of mercury are due to combustion of fuels and incineration of municipal and medical wastes. Waste disposal of the countless devices and substances containing mercury often route to the environment through landfills, incinerators, and wastewater treatment plants. Atmospheric mercury mixes with rain and snow and falls into lakes and waterways. When mercury is deposited in lakes or waterways, bacteria living in or near sediment convert it to methylmercury. Methylmercury contaminates the food chain and builds up in tissue of fish. Exposure to mercury is known to cause damage to the brain, kidneys, and developing fetuses, depending upon exposure time, chemical form, and dosage. Mercury can be taken into the body via inhalation, ingestion, or through the skin.

The objectives of the Wolf River/Shawano Lake sediment and fish contamination study were to:

- ◆ Determine mercury levels in the sediment,
- ◆ Determine mercury levels in several different fish species that people eat,
- ◆ Update the current fish consumption advisory, if needed, and
- ◆ Develop a partnership with the Menominee Indian Tribe.

This report describes the mercury study, discusses results, and makes conclusions and recommendations for further studies.

## **STUDY AREA**

The Wolf River originates as the outlet of Pine Lake in Forest County, travels through Oneida, Langlade, Menominee, Shawano, Waupaca, Outagamie, and Winnebago Counties where it eventually discharges to Lake Poygan. Shawano Lake is a 6063-acre lake that discharges to the Wolf River via a 3-mile long outlet channel in the City of Shawano. There are two dams on this system. The Balsam Row dam is located in Shawano County about 1.5 miles downstream of the Shawano/Menominee County line. Shawano dam is located just downstream of the Shawano Lake Outlet channel in the City of Shawano.

Map will go here.....

Figure 1. Site location map of the Wolf River and Shawano Lake.

## METHODS

Elevated levels of mercury in sediment and fish tissue samples collected in the Wolf River, Shawano Lake, and Shawano Lake Outlet Channel prompted additional sampling in 1998.

Sediment samples were collected in August and September 1998. The Department of Natural Resources Field Procedures protocols (DNR, 1995) were used in all aspects of the field sampling. Sediment samples were collected using a petite ponar grab sampler while wading in the river or from the side of the boat. See figures 2 and 3 below. Samples were placed in one-gallon size zip-lock plastic bags for mercury analysis. Subsamples were placed in quart size zip-lock bags for particle size and total volatile solids analysis. See figure 4. Samples were labeled and cooled on ice. Sediment assessment location and sample information data sheets were filled out for each sample.



Figure 2. Dennis Weisensel placing sediment sample in a bowl as Doug Cox holds.

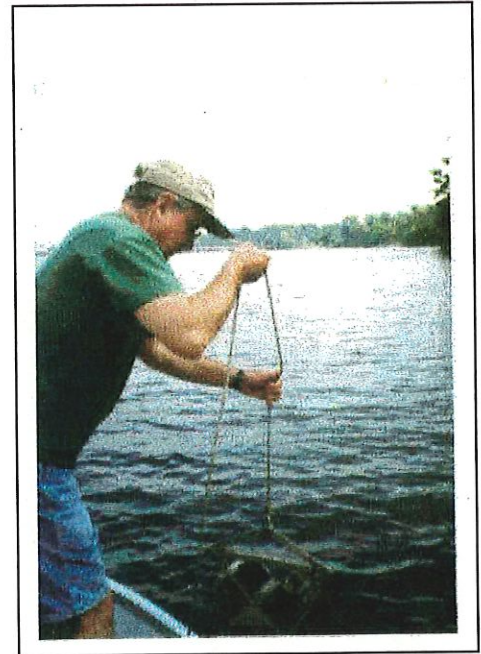


Figure 3. Dennis Weisensel lowering petite ponar sediment grab sampler from boat side.

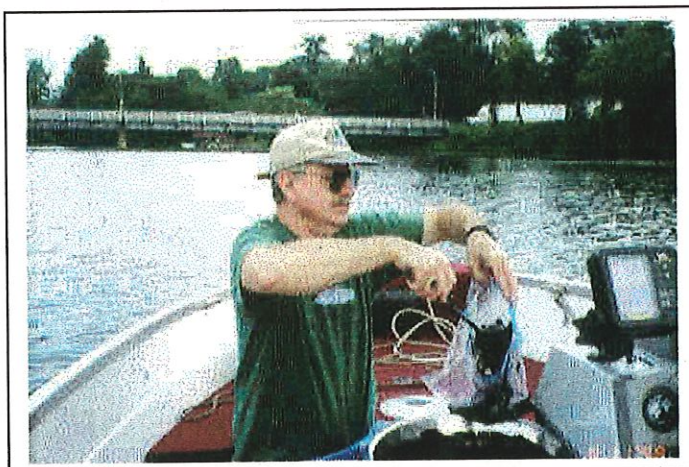


Figure 4. Dennis Weisensel placing sediment sample in zip-lock bags.

Game fish species were collected for fillet tissue mercury analysis in July, September, and October 1998. Fish samples were collected by electroshocking both during the day and in the evening. See figures 5 and 6. Fish were collected in size ranges which are representative of the angler's creel. One to four fish in each of the different size categories were targeted. Fish were wrapped in aluminum foil, labeled, and frozen. See figure 7. All samples were analyzed at the State Laboratory of Hygiene.



Figure 5. Ross Langhurst and Jim Amrhein netting fish while shocking on the Wolf River



Figure 6. Jeremy Pyatskowitz nets a fish.



Figure 7. Fish are wrapped in aluminum foil, frozen, and sent to the State Lab of Hygiene for analysis.

Sediment and fish samples within the Menominee Indian Reservation boundaries were jointly collected with tribal representatives and the Department of Natural Resources. Douglas Cox assisted in the identification of appropriate monitoring locations and collection of five sediment samples. Jeremy Pyatskowitz assisted with the fish collection.

## RESULTS AND DISCUSSION

### *Sediment results*

A total of 17 samples were collected in 1998 to compliment the already existing 22 samples that had been collected between 1984 and 1996. Table 1 summarizes sample locations and results for all sediment samples analyzed for mercury in the Wolf River, Shawano Lake, and Shawano Lake Outlet channel between 1984 and 1998.

Sediment mercury levels  $>0.1$  mg/kg have the potential to bioaccumulate in fish and other aquatic life. Therefore, levels  $>0.1$  mg/kg are considered elevated.

Six out of seven samples collected between 1985 and 1986 from the Outlet channel had elevated mercury levels. The one sample collected in the Outlet channel in 1998 again detected elevated levels (0.55 mg/kg).

The only other sample from 1998 with somewhat elevated mercury levels (0.11 mg/kg) was in the Wolf Pond just upstream of Shawano dam. The 1995 sample had also found elevated levels in the Wolf Pond upstream of Shawano dam and in the Wolf River below Shawano dam.

All the sediment samples collected to date in Langlade (three samples) and Menominee (six samples) Counties have had low mercury levels.

Mercury seems to have accumulated in the Shawano Lake Outlet channel and in the Wolf Pond above Shawano dam. The source and cause of mercury accumulation at these locations is unknown at this time.

### *Fish results*

A total of 105 fish samples were collected in 1998 to compliment the already existing 136 samples that had been collected between 1977 and 1995 from the Wolf River and Shawano Lake. Table 2 summarizes sample locations and results for all fish tissue samples analyzed for mercury from in the Wolf River and Shawano Lake.

1998 sample results found elevated concentrations of mercury ( $>0.5$  ppm) for smallmouth bass and walleye above the Shawano dam and for walleye both below Shawano dam and in Shawano Lake. One golden redhorse, one northern redhorse, and three northern pike were over 0.5 ppm above the Balsam Row dam.

Based on the elevated mercury concentrations in the northern pike in the Balsam Row Impoundment of the Wolf River, the 1999 fish consumption advisory was updated. From the Balsam Row Impoundment upstream to Keshena, northern pike up to the 18 inch category was added to group 1 and northern pike in the 18-22 and 22-26 inch categories were added to group 2 for meal advice (Wis. Division of Health and WDNR, 1999).

*Group 1 meal advice says, "Pregnant women should eat no more than one meal a month of Group 1 fish. Everyone else may eat unlimited amounts of Group 1 fish. Fillets average 0.5 ppm mercury or less".*

*Group 2 meal advice says, "Pregnant or breastfeeding women, women who plan to have children, and children under 15 should not eat Group 2 fish. Everyone else should eat no more than 26 meals of Group 2 fish a year. Eat no more than 13 of these in any one month. Space the remaining 13 meals over the rest of the year at rate of one or two meals a month. Fillets average 0.5 to 0.75 ppm mercury".*

Because there is not enough data available for redhorse, they were not included in the update at this time. A fish consumption advisory previously exists for walleye up to 26 inches both in the Wolf River below Shawano dam and in Shawano Lake.

Including northern pike within the Menominee Indian Reservation in the 1999 Wisconsin fish consumption advisory was done against the Menominee Indian Tribes wishes.

I can find only little correlation between sediment and fish tissue mercury levels. The sediment sample collected in the Balsam Row Impoundment had a relatively low mercury level (0.088 mg/kg), but yet the northern pike and redhorse have levels of concern. Recent Shawano Lake data continues to support the fish consumption advisory for walleye, but yet no sample to date has shown sediment contamination. The exception is both elevated fish and sediment mercury levels both above and below Shawano dam.

## **CONCLUSIONS AND RECOMMENDATIONS**

Mercury levels in the sediment and fish tissue in the Wolf River and Shawano Lake are generally pretty low; However, levels in some fish species are high enough to be of a concern and warrant a fish consumption advisory to protect human health. Further monitoring may help determine if there are locations where mercury is concentrated in the sediment or if the source of the mercury to the fish is from low concentrations throughout the entire system. Additional fish tissue samples will further define if and where fish consumption advisories are warranted.

## **ACKNOWLEDGEMENTS**

*delete* I would like to express my appreciation and acknowledge the assistance I received on this project from the ~~X~~ Douglas Cox and Jeremy Pyatskowitz of the Menominee Indian Nation, Dennis Weisensel, Jim Amrhein, Linda Talbot, Ross Langhurst, Dean Schoenike, Jessica Buelow, and Dan Helf of the Department of Natural Resources. Thank you.

## REFERENCES

Wisconsin Department of Natural Resources. Draft 1995. Guidance for Sediment Assessment in the State of Wisconsin.

Wisconsin Department of Natural Resources. 1999. Fish and Sediment Contaminant Database.

Wisconsin Department of Natural Resources. 1995. Field Procedures Manual. Version IV, Intranet Edition.

Wisconsin Division of Health and WDNR. 1998 and 1999. Important Health Information for People Eating Fish from Wisconsin Waters.

Table 1

**Sediment Sample Results**Sediment data available for the Wolf River,  
Shawano Lake, and Shawano Lake Outlet Channel

Date	County	Location	Site	Storet Number	Mercury (mg/kg)
1984	Langlade	Wolf River	at Langlade		0.06
Jul-85	Shawano	Shawano Lake	45' from mouth of Pickerel Creek		<0.2
Jul-85	Shawano	Shawano Lake	east of the SE point		<0.2
Jul-85	Shawano	Shawano Lake	deepest area of lake		<0.2
Jul-85	Shawano	Shawano Lake	140 meters NE of the island visible from the public park and beach along the NW shore		<0.2
Jul-85	Shawano	Outlet Channel	east of Hwy 47 bridge		1.8
Jul-85	Shawano	Wolf River	between HWY 29 bridge and the Outlet		<0.2
Jul-86	Shawano	Outlet Channel	200 yds above R.R. bridge		0.4
Jul-86	Shawano	Outlet Channel	50 ft. below R.R. Bridge		0.5
Jul-86	Shawano	Outlet Channel	between R.R. bridge and HWY 47		0.6
Jul-86	Shawano	Outlet Channel	Public dock mouth of storm sewer		0.2
Jul-86	Shawano	Outlet Channel	30 ft above Hwy 47 bridge (same site as 1985 sample=1.8 mg/kg)		<0.1
Jul-86	Shawano	Outlet Channel	between Hwy 47 & outlet mouth		0.2
Jul-86	Shawano	Wolf River	300 yds. above R.R. bridge		<0.1
Jul-86	Shawano	Wolf River	1.5 miles above R.R. bridge		<0.1
Oct-95	Shawano	Wolf River	Downstream of Hwy 29 bridge - 400 yds above dam	593122	0.12
Oct-95	Shawano	Wolf River	Hwy 22 - papermill WWTP discharge	593123	0.82
Oct-95	Waupaca	Wolf River	0.5 miles downstream of Riverside Park in New London	693137	0.024
Oct-95	Waupaca	Wolf River	1 mile downstream of Riverside Park in New London	693138	0.042
1995	Langlade	Wolf River	at Langlade	4075050	0.1



Table 1 continued

Date	County	Location	Site	Storet Number	Mercury (mg/kg)
1996	Menominee	Wolf River	at Keshena	4077100	0.08
1996	Langlade	Wolf River	at Langlade	4075050	0.09
✓ Aug-98	Shawano	Wolf River	Balsam row impoundment 500 ft upstram of dam mid-river	593144	0.088
✓ Aug-98	Shawano	Wolf River Pond	Upstream Shawano Lake dam	593140	0.11
✓ Aug-98	Shawano	Wolf River	Downstream CTH A bridge about 150 ft.	593143	0.061
✓ Aug-98	Shawano	Wolf River Pond	Above R.R bridge about 1000 ft, off west shore	593142	0.073
✓ Aug-98	Shawano	Wolf River Pond	about 300 ft below Old STH 29 bridge, off E. shore	593141	0.075
✓ Aug-98	Shawano	Shawano Lake Outlet	100 ft above STH 47 bridge on N. side of channel	593139	0.55
✓ Aug-98	Shawano	Wolf River	150 ft upstream of CTH CCC bridge on west side	593138	0.077
✓ Aug-98	Shawano	Wolf River	downstream of STH 156 bridge	593137	<0.007
✓ Aug-98	Shawano	Wolf River	about 100 ft. above STH 22 bridge	593123	<0.007
✓ Aug-98	Outagamie	Wolf River	about 0.5 mi. downstream CTH F	453268	0.039
✓ Aug-98	Outagamie	Wolf River	about 500 ft. above STH 54	453267	0.029
✓ Sep-98	Menoninee	Wolf River	0.5 mi. below Keshena, off extension of Pine Rd development	403105	0.041
✓ Sep-98	Menoninee	Wolf River	below Keshena, downstream of STH 47 bridge & WWTP discharge	403104	<0.007
✓ Sep-98	Menoninee	West Branch Wolf River	downstream of CTH M and Neopit	403103	0.052
✓ Sep-98	Menoninee	West Branch Wolf River	above confluence of Wolf R. about 1000 ft, below Wayka Falls	403102	<0.007
✓ Sep-98	Menoninee	Wolf River	about 300 yds below CTH M, off W. shore	403101	0.01
✓ Aug-98	Shawano	Shawano Lake	east central part of lake	593145	0.049

*for more  
reference (old) 10/28 or so stopped*

Table 2.

FISH / SEDIMENT CONTAMINANTS SYSTEM JOB ID: 271 10:21 Friday, February 19, 1999  
 FISH RESULTS BY SITE NAME - COLUMN STYLE  
 MERCURY IN FISH FROM THE WOLF RIVER

----- SITE=WOLF RIVER ABOVE HIGHWAY 52 LOCATION CODE=345013 COUNTY=LANGLADE -----

FIELD NUMBER	T/R/S	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	MERCURY
8301	33 13E 17	09/09/1983	SMALLMOUTH BASS	WHOLE FISH	4	7.9	0.11	0.11 - UG/G

----- SITE=WOLF RIVER BELOW SHAWANO DAM LOCATION CODE=595002 COUNTY=SHAWANO -----

FIELD NUMBER	T/R/S	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	MERCURY
7701	26 16E 06	05/24/1977	NORTHERN REDHORSE	WHOLE FISH	5	17.8		0.17 - UG/G
7702	26 16E 06	05/24/1977	WALLEYE	WHOLE FISH	4	16.4		0.27 - UG/G
7703	26 16E 06	05/24/1977	NORTHERN PIKE	WHOLE FISH	1	15.5		0.09 - UG/G
8501	26 16E 06	10/21/1985	WALLEYE	SKIN ON FILLET	1	15.7	0.50	0.22 - UG/G
8502	26 16E 06	10/21/1985	WALLEYE	SKIN ON FILLET	1	15.8	0.51	0.33 - UG/G
8503	26 16E 06	10/21/1985	WALLEYE	SKIN ON FILLET	1	16.2	0.68	0.4 - UG/G
8504	26 16E 06	10/21/1985	WALLEYE	SKIN ON FILLET	1	17.0	0.81	0.5 - UG/G
8505	26 16E 06	10/21/1985	CARP	WHOLE FISH	3	20.8	2.25	< 0.03 - UG/G
8506	26 16E 06	10/21/1985	WALLEYE	WHOLE FISH	3	18.3	0.98	< 0.38 - UG/G
8601	26 16E 06	10/27/1986	WALLEYE	SKIN ON FILLET	1	17.5	0.72	0.55 - UG/G
8602	26 16E 06	10/27/1986	WALLEYE	SKIN ON FILLET	1	19.0	0.94	0.7 - UG/G
8603	26 16E 06	10/27/1986	WALLEYE	SKIN ON FILLET	1	19.5	1.30	0.75 - UG/G
8604	26 16E 06	10/27/1986	WALLEYE	SKIN ON FILLET	1	20.0	1.10	0.46 - UG/G
8901	26 16E 06	06/20/1989	WALLEYE	SKIN ON FILLET	1	15.2	0.48	0.05 - UG/G
8902	26 16E 06	06/20/1989	WALLEYE	SKIN ON FILLET	1	15.8	0.56	0.04 - UG/G
8903	26 16E 06	06/20/1989	WALLEYE	SKIN ON FILLET	1	18.0	0.76	0.53 - UG/G
8904	26 16E 06	06/20/1989	WALLEYE	SKIN ON FILLET	1	20.5	1.29	0.23 - UG/G
8905	26 16E 06	06/20/1989	WALLEYE	SKIN ON FILLET	1	20.7	1.51	0.47 - UG/G

----- SITE=WOLF RIVER COUNTY HIGHWAY T LOCATION CODE=345011 COUNTY=LANGLADE -----

FIELD NUMBER	T/R/S	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	MERCURY
8301	33 12E 06	09/11/1983	SMALLMOUTH BASS	WHOLE FISH	1	15.0	0.50	0.26 - UG/G
8302	33 12E 06	09/11/1983	NORTHERN HOG SUCKER	WHOLE FISH	1	13.7	0.50	0.08 - UG/G
8401	33 12E 06	08/28/1984	NORTHERN REDHORSE	WHOLE FISH	3	17.3	0.83	0.63 - UG/G
8402	33 12E 06	08/28/1984	NORTHERN PIKE	WHOLE FISH	3	21.4	1.00	0.35 - UG/G
8403	33 12E 06	08/28/1984	NORTHERN PIKE	WHOLE FISH	3	18.2	0.37	0.22 - UG/G
8404	33 12E 06	08/28/1984	NORTHERN REDHORSE	SKIN ON FILLET	3	16.4	0.73	0.55 - UG/G
8601	33 12E 06	08/05/1986	NORTHERN REDHORSE	SKIN ON FILLET	1	13.7	0.40	0.15 - UG/G
8602	33 12E 06	08/05/1986	NORTHERN REDHORSE	SKIN ON FILLET	1	14.2	0.40	0.18 - UG/G
8603	33 12E 06	08/05/1986	NORTHERN REDHORSE	SKIN ON FILLET	1	15.1	0.57	0.26 - UG/G
8604	33 12E 06	08/05/1986	LARGEMOUTH BASS	SKIN ON FILLET	1	11.7	0.40	0.41 - UG/G
8605	33 12E 06	08/05/1986	LARGEMOUTH BASS	SKIN ON FILLET	1	13.1	0.57	0.32 - UG/G
8606	33 12E 06	08/05/1986	SMALLMOUTH BASS	SKIN ON FILLET	1	11.7	0.34	0.33 - UG/G
9101	33 12E 06	07/11/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	11.3	0.34	0.38 - UG/G
9102	33 12E 06	07/11/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	13.1	0.56	0.32 - UG/G
9103	33 12E 06	07/11/1991	WHITE SUCKER	SKIN ON FILLET	2	14.6	0.56	0.31 - UG/G

----- SITE=WOLF RIVER COUNTY HIGHWAY 1 LOCATION CODE=345011 COUNTY=LANGLADE -----  
 (continued)

FIELD NUMBER	T/R/S	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	MERCURY
9104	33 12E 06	07/11/1991	WHITE STOCKER	SKIN ON FILLET	2	15.8	0.65	0.39 - UG/G
9105	33 12E 06	07/11/1991	WHITE STOCKER	SKIN ON FILLET	1	16.2	0.68	- UG/G
9106	33 12E 06	07/11/1991	NORTHERN REDHORSE	SKIN ON FILLET	2	12.5	0.73	0.22 - UG/G
9107	33 12E 06	07/11/1991	NORTHERN REDHORSE	SKIN ON FILLET	1	16.7	0.73	0.36 - UG/G
9108	33 12E 06	07/11/1991	NORTHERN REDHORSE	SKIN ON FILLET	1	17.9	0.83	0.22 - UG/G
9109	33 12E 06	07/11/1991	NORTHERN REDHORSE	SKIN ON FILLET	1	19.2	1.03	0.39 - UG/G

----- SITE=WOLF RIVER FREMONT LOCATION CODE=695005 COUNTY=WAUPACA -----

FIELD NUMBER	T/R/S	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	MERCURY
9101	21 13E 36	08/19/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	11.3	0.34	0.19 - UG/G
9102	21 13E 36	08/19/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	12.1	0.34	0.27 - UG/G
9103	21 13E 36	08/19/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	12.3	0.45	0.75 - UG/G
9104	21 13E 36	08/19/1991	WALLEYE	SKIN ON FILLET	1	14.9	0.45	0.19 - UG/G
9105	21 13E 36	08/19/1991	WALLEYE	SKIN ON FILLET	1	16.4	0.57	0.23 - UG/G
9106	21 13E 36	08/19/1991	WALLEYE	SKIN ON FILLET	1	17.9	0.80	0.11 - UG/G
9107	21 13E 36	08/19/1991	NORTHERN PIKE	SKIN ON FILLET	1	15.4	0.34	0.16 - UG/G
9108	21 13E 36	08/19/1991	NORTHERN PIKE	SKIN ON FILLET	1	16.2	0.45	0.18 - UG/G
9109	21 13E 36	08/19/1991	NORTHERN PIKE	SKIN ON FILLET	1	19.3	0.68	0.21 - UG/G
9110	21 13E 36	08/19/1991	NORTHERN PIKE	SKIN ON FILLET	1	21.8	1.02	0.16 - UG/G
9111	21 13E 36	08/19/1991	NORTHERN PIKE	SKIN ON FILLET	1	22.2	1.02	0.24 - UG/G
9112	21 13E 36	08/19/1991	NORTHERN PIKE	SKIN ON FILLET	1	22.5	1.02	0.26 - UG/G
9502	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	14.1	0.47	0.19 - UG/G
9503	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	15.3	0.63	0.12 - UG/G
9504	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	15.7	0.66	0.4 - UG/G
9505	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	16.0	0.62	0.18 - UG/G
9506	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	16.0	0.66	0.13 - UG/G
9507	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	18.5	0.91	0.097 - UG/G
9508	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	19.1	1.11	0.48 - UG/G
9509	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	21.2	1.46	0.83 - UG/G
9510	21 13E 36	09/19/1995	WALLEYE	SKIN ON FILLET	1	23.0	1.94	0.69 - UG/G
9511	21 13E 36	09/19/1995	SMALLMOUTH BASS	SKIN ON FILLET	1	10.2	0.26	0.1 - UG/G
9512	21 13E 36	09/19/1995	SMALLMOUTH BASS	SKIN ON FILLET	1	13.1	0.59	0.37 - UG/G
9513	21 13E 36	09/19/1995	SMALLMOUTH BASS	SKIN ON FILLET	1	14.2	0.73	0.39 - UG/G
9514	21 13E 36	09/19/1995	SMALLMOUTH BASS	SKIN ON FILLET	1	14.5	0.80	0.53 - UG/G
9515	21 13E 36	09/19/1995	SMALLMOUTH BASS	SKIN ON FILLET	1	15.8	0.92	0.53 - UG/G
9516	21 13E 36	09/19/1995	NORTHERN PIKE	SKIN ON FILLET	1	15.8	0.91	0.45 - UG/G
9517	21 13E 36	09/19/1995	NORTHERN PIKE	SKIN ON FILLET	1	19.2	0.67	0.12 - UG/G
9518	21 13E 36	09/19/1995	NORTHERN PIKE	SKIN ON FILLET	1	19.3	0.68	0.24 - UG/G

FISH / SEDIMENT CONTAMINANTS SYSTEM JOB ID: 271  
 FISH RESULTS BY SITE NAME - COLUMN STYLE  
 MERCURY IN FISH FROM THE WOLF RIVER

10:21 Friday, February 19, 1999 5539R105

----- SITE=WOLF RIVER LAKE POYGAN LOCATION CODE=715010 COUNTY=WINNEBAGO -----

FIELD NUMBER	T/R/S	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	MERCURY
9504	20 14E 26	09/21/1995	WALLEYE	SKIN ON FILLET	1	19.2	1.07	0.086 - UG/G
9505	20 14E 26	09/21/1995	WALLEYE	SKIN ON FILLET	1	22.5	1.85	0.24 - UG/G
9506	20 14E 26	09/21/1995	WALLEYE	SKIN ON FILLET	1	19.3	1.30	0.13 - UG/G

----- SITE=WOLF RIVER NEW LONDON LOCATION CODE=695003 COUNTY=WAUPACA -----

FIELD NUMBER	T/R/S	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	MERCURY
7701	22 15E 18	11/08/1977	NORTHERN PIKE	WHOLE FISH	2	16.5		0.36 - UG/G
7702	22 15E 18	11/08/1977	NORTHERN REDHORSE	WHOLE FISH	4	16.3		0.72 - UG/G
7703	22 15E 18	11/08/1977	CARP	WHOLE FISH	4	24.8		0.19 - UG/G
7801	22 15E 18	09/05/1978	WALLEYE	WHOLE FISH	2	14.2		0.13 - UG/G
7802	22 15E 18	09/05/1978	NORTHERN PIKE	WHOLE FISH	1	19.5		0.21 - UG/G
7803	22 15E 18	09/05/1978	NORTHERN REDHORSE	WHOLE FISH	4	13.2		0.06 - UG/G
7804	22 15E 18	09/05/1978	CARP	WHOLE FISH	2	23.0		0.03 - UG/G
7901	22 15E 18	08/21/1979	NORTHERN PIKE	WHOLE FISH	2	23.1	1.15	0.46 - UG/G
7902	22 15E 18	08/21/1979	NORTHERN REDHORSE	WHOLE FISH	5	14.6	0.70	0.19 - UG/G
7903	22 15E 18	08/21/1979	CARP	WHOLE FISH	5	21.3	2.04	0.12 - UG/G
8001	22 15E 18	09/03/1980	WALLEYE	WHOLE FISH	3	17.4	0.80	0.53 - UG/G
8002	22 15E 18	09/03/1980	NORTHERN REDHORSE	WHOLE FISH	5	17.4	0.90	0.18 - UG/G
8003	22 15E 18	09/03/1980	CARP	WHOLE FISH	5	22.3	2.10	0.17 - UG/G
8101	22 15E 18	08/18/1981	CARP	WHOLE FISH	5	23.0	2.80	0.18 - UG/G
8102	22 15E 18	08/18/1981	NORTHERN REDHORSE	WHOLE FISH	5	13.3	0.50	0.13 - UG/G
8103	22 15E 18	08/18/1981	WALLEYE	WHOLE FISH	4	15.7	0.60	0.31 - UG/G
8201	22 15E 18	09/15/1982	WALLEYE	WHOLE FISH	2	15.2	0.50	0.37 - UG/G
8202	22 15E 18	09/15/1982	WHITE SOCKER	WHOLE FISH	5	13.2	0.40	0.11 - UG/G
8203	22 15E 18	09/15/1982	NORTHERN REDHORSE	WHOLE FISH	5	14.2	0.50	0.09 - UG/G
8801	22 15E 18	09/14/1988	WALLEYE	SKIN ON FILLET	1	14.0	0.36	0.24 - UG/G
8802	22 15E 18	09/14/1988	WALLEYE	SKIN ON FILLET	1	15.2	0.54	0.51 - UG/G
8803	22 15E 18	09/14/1988	WALLEYE	SKIN ON FILLET	1	21.2	1.43	0.56 - UG/G
8901	22 15E 18	05/25/1989	WALLEYE	SKIN ON FILLET	1	15.5	0.56	0.03 - UG/G
8902	22 15E 18	05/25/1989	WALLEYE	SKIN ON FILLET	1	16.2	0.63	0.04 - UG/G
9101	22 15E 18	07/26/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	11.5	0.34	0.27 - UG/G
9102	22 15E 18	07/26/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	12.8	0.57	0.31 - UG/G
9103	22 15E 18	07/26/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	13.0	0.45	0.25 - UG/G
9104	22 15E 18	07/26/1991	SMALLMOUTH BASS	SKIN ON FILLET	1	13.5	0.68	0.35 - UG/G
9105	22 15E 18	07/26/1991	WALLEYE	SKIN ON FILLET	1	17.8	0.95	0.41 - UG/G
9106	22 15E 18	07/26/1991	WALLEYE	SKIN ON FILLET	1	18.0	0.80	0.37 - UG/G
9107	22 15E 18	07/26/1991	WALLEYE	SKIN ON FILLET	1	18.8	0.95	0.42 - UG/G
9108	22 15E 18	07/26/1991	WALLEYE	SKIN ON FILLET	1	20.0	1.45	0.6 - UG/G
9109	22 15E 18	07/26/1991	NORTHERN PIKE	SKIN ON FILLET	1	15.2	0.34	0.35 - UG/G
9110	22 15E 18	07/26/1991	NORTHERN PIKE	SKIN ON FILLET	1	16.1	0.45	0.25 - UG/G
9111	22 15E 18	07/26/1991	NORTHERN PIKE	SKIN ON FILLET	1	20.1	0.68	0.3 - UG/G
9112	22 15E 18	07/26/1991	NORTHERN PIKE	SKIN ON FILLET	1	23.2	1.36	0.33 - UG/G
9113	22 15E 18	07/26/1991	NORTHERN PIKE	SKIN ON FILLET	1	28.6	2.39	0.36 - UG/G

FISH / SEDIMENT CONTAMINANTS SYSTEM JOB ID: 270  
 FISH RESULTS BY SITE NAME - COLUMN STYLE  
 MERCURY IN FISH FROM SHAWANO LAKE

10:13 Friday, February 19, 1999

----- SITE=SHAWANO LAKE LOCATION CODE=595001 COUNTY=SHAWANO -----

FIELD NUMBER	T/R/S	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	MERCURY
8401	27 16E 22	01/01/1984	BROWN BULLHEAD	SKIN OFF FILLET	3	12.50	0.60	0.27 - UG/G
8402	27 16E 22	01/01/1984	WALLEYE	SKIN ON FILLET	3	22.00	1.80	0.8 - UG/G
8403	27 16E 22	01/01/1984	CARP	WHOLE FISH	3	26.00	4.40	0.19 - UG/G
8501	27 16E 22	06/11/1985	BLACK CRAPPIE	SKIN ON FILLET	1	8.70	0.15	0.09 - UG/G
8502	27 16E 22	06/11/1985	BLACK CRAPPIE	SKIN ON FILLET	1	9.20	0.20	0.08 - UG/G
8503	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	19.20	0.80	0.43 - UG/G
8504	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	19.30	1.00	0.29 - UG/G
8505	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	20.20	1.10	0.39 - UG/G
8506	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	16.70	0.60	0.3 - UG/G
8507	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	16.80	0.65	0.53 - UG/G
8508	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	17.10	0.60	0.3 - UG/G
8509	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	17.70	0.75	0.39 - UG/G
850A	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	18.20	0.70	0.32 - UG/G
850B	27 16E 22	06/11/1985	WALLEYE	SKIN ON FILLET	1	17.50	0.30	0.16 - UG/G
850C	27 16E 22	06/11/1985	NORTHERN PIKE	SKIN ON FILLET	1	16.60	0.30	0.25 - UG/G
850D	27 16E 22	06/11/1985	NORTHERN PIKE	SKIN ON FILLET	1	17.50	0.30	0.25 - UG/G
8601	27 16E 22	04/11/1986	WALLEYE	SKIN ON FILLET	1	19.80	0.55	0.17 - UG/G
8602	27 16E 22	04/11/1986	WALLEYE	SKIN ON FILLET	1	22.24	2.33	0.4 - UG/G
8603	27 16E 22	04/11/1986	WALLEYE	SKIN ON FILLET	1	22.36	2.07	0.43 - UG/G
8604	27 16E 22	04/11/1986	WALLEYE	SKIN ON FILLET	1	22.44	2.10	0.45 - UG/G
8605	27 16E 22	04/11/1986	NORTHERN PIKE	SKIN ON FILLET	1	24.41	1.45	0.23 - UG/G
8606	27 16E 22	04/11/1986	NORTHERN PIKE	SKIN ON FILLET	1	26.18	1.68	0.42 - UG/G
8801	27 16E 22	05/18/1988	WALLEYE	SKIN ON FILLET	1	32.48	3.75	0.36 - UG/G
8802	27 16E 22	05/18/1988	WALLEYE	SKIN ON FILLET	1	16.90	0.73	0.28 - UG/G
8803	27 16E 22	05/18/1988	WALLEYE	SKIN ON FILLET	1	17.60	0.80	0.48 - UG/G
8804	27 16E 22	05/18/1988	WALLEYE	SKIN ON FILLET	1	18.30	0.92	0.28 - UG/G
8805	27 16E 22	05/18/1988	WALLEYE	SKIN ON FILLET	1	21.10	1.34	0.52 - UG/G
8805	27 16E 22	05/18/1988	WALLEYE	SKIN ON FILLET	1	21.20	1.31	0.66 - UG/G

FISH / SEDIMENT CONTAMINANTS SYSTEM  
 VERIFIED / UNVERIFIED SAMPLE RESULTS REPORT - COLUMN STYLE  
 CONTAMINANTS IN FISH - WOLF RIVER IEM PROJECT

16:27 Monday, January 4, 1999 SS39FR16

COUNTY-Shawano SITE-SHAWANO LAKE LOCATION CODE=595001

FIELD NUMBER	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	VERIFIED	MERCURY	FAT	PCB
9809	09/30/1998	BLACK BULLHEAD	SKIN OFF FILLET	1	11.1	0.34	NO	0.044		
9810	09/30/1998	BLACK BULLHEAD	SKIN OFF FILLET	1	11.8	0.34	NO	0.06		
9811	09/30/1998	BLACK BULLHEAD	SKIN OFF FILLET	1	12.1	0.34	NO	0.18		
9801	09/30/1998	BLACK CRAPPIE	SKIN ON FILLET	1	8.6	0.15	NO	0.041		
9802	09/30/1998	BLACK CRAPPIE	SKIN ON FILLET	1	9.2	0.16	NO	0.097		
9803	09/30/1998	BLACK CRAPPIE	SKIN ON FILLET	1	9.6	0.22	NO	0.11		
9804	09/30/1998	BLACK CRAPPIE	SKIN ON FILLET	1	9.8	0.21	NO	0.084		
9805	09/30/1998	BLUEGILL	SKIN ON FILLET	1	7.3	0.12	NO	0.075		
9807	09/30/1998	BLUEGILL	SKIN ON FILLET	1	7.4	0.12	NO	0.053		
9808	09/30/1998	BLUEGILL	SKIN ON FILLET	1	8.1	0.17	NO	0.13		
9812	09/30/1998	BLUEGILL	SKIN ON FILLET	1	8.2	0.19	NO	0.072		
9813	09/30/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	14.0	0.67	NO	0.19		
9814	09/30/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	14.1	0.69	NO	0.19		
9815	09/30/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	14.4	0.69	NO	0.17		
9816	09/30/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	15.1	0.86	NO	0.2		
9823	09/30/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	16.8	1.16	NO	0.4		
9824	09/30/1998	NORTHERN PIKE	SKIN ON FILLET	1	17.6	0.42	NO	0.22		
9825	09/30/1998	NORTHERN PIKE	SKIN ON FILLET	1	17.8	0.47	NO	0.068		
9826	09/30/1998	NORTHERN PIKE	SKIN ON FILLET	1	17.9	0.35	NO	0.46		
9828	09/30/1998	NORTHERN PIKE	SKIN ON FILLET	1	18.6	0.45	NO	0.42		
9829	09/30/1998	NORTHERN PIKE	SKIN ON FILLET	1	21.2	0.61	NO	0.25		
9830	10/01/1998	NORTHERN PIKE	SKIN ON FILLET	1	21.2	0.59	NO	0.35		
9831	09/30/1998	NORTHERN PIKE	SKIN ON FILLET	1	22.8	0.90	NO	0.26		
9832	09/30/1998	NORTHERN PIKE	SKIN ON FILLET	1	24.7	1.28	NO	0.34		
9818	09/30/1998	WALLEYE	SKIN ON FILLET	1	16.1	0.57	NO	0.4		
9819	09/30/1998	WALLEYE	SKIN ON FILLET	1	16.8	0.66	NO	0.25		
9820	09/30/1998	WALLEYE	SKIN ON FILLET	1	17.8	0.71	NO	0.27		
9827	09/30/1998	WALLEYE	SKIN ON FILLET	1	18.0	0.72	NO	0.5		
9821	09/30/1998	WALLEYE	SKIN ON FILLET	1	18.9	0.87	NO	0.52		
9822	09/30/1998	WALLEYE	SKIN ON FILLET	1	19.1	0.81	NO	0.55		
9817	10/01/1998	WHITE SUCKER	SKIN ON FILLET	1	20.8	1.17	NO	0.5		
					19.3	1.41	NO	0.053		

FISH / SEDIMENT CONTAMINANTS SYSTEM  
 VERIFIED / UNVERIFIED SAMPLE RESULTS REPORT - COLUMN STYLE  
 MERCURY DATA FOR FISH COLLECTED FROM THE WOLF RIVER

COUNTY-Shawano SITE-WOLF RIVER ABOVE SHAWANO DAM LOCATION CODE=595004

FIELD NUMBER	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	VERIFIED	MERCURY
9806	07/22/1998	BLACK CRAPPIE	SKIN ON FILLET	1	9.3	0.19	NO	0.11
9807	07/22/1998	BLACK CRAPPIE	SKIN ON FILLET	1	9.4	0.22	NO	0.094
9808	07/22/1998	BLACK CRAPPIE	SKIN ON FILLET	1	10.0	0.27	NO	0.22
9802	07/22/1998	BLUESGILL	SKIN ON FILLET	1	6.4	0.10	NO	0.075
9803	07/23/1998	BLUESGILL	SKIN ON FILLET	1	6.5	0.11	NO	0.072
9804	07/23/1998	BLUESGILL	SKIN ON FILLET	1	6.8	0.13	NO	0.21
9805	07/23/1998	BLUESGILL	SKIN ON FILLET	1	7.1	0.15	NO	0.069
9819	07/22/1998	GOLDEN REDHORSE	SKIN ON FILLET	1	17.9	0.75	NO	0.19
9820	07/22/1998	GOLDEN REDHORSE	SKIN ON FILLET	1	19.8	1.22	NO	0.26
9821	07/22/1998	GOLDEN REDHORSE	SKIN ON FILLET	1	20.1	1.31	NO	0.25
9812	07/23/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	14.4	0.76	NO	0.44
9813	07/23/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	14.4	0.90	NO	0.42
9814	07/22/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	15.9	0.96	NO	0.23
9815	07/22/1998	LARGEMOUTH BASS	SKIN ON FILLET	1	16.7	1.25	NO	0.44
9822	07/23/1998	NORTHERN PIKE	SKIN ON FILLET	1	17.0	0.41	NO	0.32
9823	07/23/1998	NORTHERN PIKE	SKIN ON FILLET	1	17.1	0.43	NO	0.35
9824	07/23/1998	NORTHERN PIKE	SKIN ON FILLET	1	19.1	0.57	NO	0.24
9825	07/23/1998	NORTHERN PIKE	SKIN ON FILLET	1	23.0	1.06	NO	0.28
9826	07/22/1998	NORTHERN PIKE	SKIN ON FILLET	1	25.5	2.00	NO	0.24
9801	07/23/1998	PUMPKINSEED	SKIN ON FILLET	1	8.2	0.25	NO	0.28
9809	07/22/1998	SMALLMOUTH BASS	SKIN ON FILLET	1	13.9	0.68	NO	0.38
9810	07/22/1998	SMALLMOUTH BASS	SKIN ON FILLET	1	14.2	0.82	NO	0.26
9811	07/22/1998	SMALLMOUTH BASS	SKIN ON FILLET	1	17.0	1.25	NO	0.6
9827	07/22/1998	WALLEYE	SKIN ON FILLET	1	21.5	1.76	NO	1.2
9816	07/22/1998	WHITE SUCKER	SKIN ON FILLET	1	15.4	0.52	NO	0.11
9817	07/22/1998	WHITE SUCKER	SKIN ON FILLET	1	17.0	0.77	NO	0.2
9818	07/23/1998	WHITE SUCKER	SKIN ON FILLET	1	21.0	1.67	NO	0.33

COUNTY-Shawano SITE-WOLF RIVER BELOW SHAWANO DAM LOCATION CODE=595002

FIELD NUMBER	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	VERIFIED	MERCURY
9802	07/16/1998	BLACK CRAPPIE	SKIN ON FILLET	1	8.2	0.15	NO	0.15
9803	07/17/1998	BLACK CRAPPIE	SKIN ON FILLET	1	8.2	0.14	NO	0.11
9804	07/16/1998	BLACK CRAPPIE	SKIN ON FILLET	1	8.7	0.17	NO	0.16
9805	07/17/1998	BLACK CRAPPIE	SKIN ON FILLET	1	9.2	0.19	NO	0.12
9806	07/17/1998	BLUESGILL	SKIN ON FILLET	1	5.4	0.06	NO	0.11
9807	07/17/1998	BLUESGILL	SKIN ON FILLET	1	5.7	0.07	NO	0.15
9808	07/17/1998	BLUESGILL	SKIN ON FILLET	1	6.6	0.10	NO	0.13
9819	07/16/1998	CHANNEL CATFISH	SKIN OFF FILLET	1	16.1	0.55	NO	0.19
9820	07/16/1998	CHANNEL CATFISH	SKIN OFF FILLET	1	17.7	0.76	NO	0.19
9821	07/16/1998	CHANNEL CATFISH	SKIN OFF FILLET	1	20.1	1.20	NO	0.27
9822	07/16/1998	CHANNEL CATFISH	SKIN OFF FILLET	1	20.2	1.30	NO	0.21
9823	07/16/1998	CHANNEL CATFISH	SKIN OFF FILLET	1	20.5	1.29	NO	0.15
9801	07/16/1998	ROCK BASS	SKIN ON FILLET	1	7.3	0.14	NO	0.17
9824	07/16/1998	SILVER REDHORSE	SKIN ON FILLET	1	18.9	1.22	NO	0.37

FISH / SEDIMENT CONTAMINANTS SYSTEM  
 VERIFIED / UNVERIFIED SAMPLE RESULTS REPORT - COLUMN STYLE  
 MERCURY DATA FOR FISH COLLECTED FROM THE WOLF RIVER

14:35 Monday, January 25, 1999  
 S539FR16

COUNTY-Shawano SITE-WOLF RIVER BELOW SHAWANO DAM LOCATION CODE=595002  
 (continued)

FIELD NUMBER	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	VERIFIED	MERCURY
9825	07/16/1998	SILVER REDHORSE	SKIN ON FILLET	1	20.6	1.81	NO	0.28
9826	07/16/1998	SILVER REDHORSE	SKIN ON FILLET	1	21.7	2.06	NO	0.35
9811	07/16/1998	SMALLMOUTH BASS	SKIN ON FILLET	1	14.1	0.36	NO	0.37
9812	07/16/1998	SMALLMOUTH BASS	SKIN ON FILLET	1	14.2	0.64	NO	0.33
9813	07/16/1998	WALLEYE	SKIN ON FILLET	1	12.8	0.24	NO	0.07
9814	07/17/1998	WALLEYE	SKIN ON FILLET	1	15.1	0.51	NO	0.28
9815	07/16/1998	WALLEYE	SKIN ON FILLET	1	15.6	0.46	NO	0.17
9816	07/16/1998	WALLEYE	SKIN ON FILLET	1	17.4	0.79	NO	0.49
9817	07/16/1998	WALLEYE	SKIN ON FILLET	1	17.8	0.77	NO	0.19
9818	07/16/1998	WALLEYE	SKIN ON FILLET	1	20.0	0.98	NO	0.54
9809	07/17/1998	YELLOW PERCH	SKIN ON FILLET	1	8.5	0.12	NO	0.12
9810	07/17/1998	YELLOW PERCH	SKIN ON FILLET	1	8.5	0.14	NO	0.096

WISCONSIN DEPARTMENT OF NATURAL RESOURCES  
 FISH / SEDIMENT CONTAMINANTS SYSTEM  
 VERIFIED / UNVERIFIED SAMPLE RESULTS REPORT - COLUMN STYLE  
 MERCURY DATA FOR FISH COLLECTED FROM THE WOLF RIVER  
 14:35 Monday, January 25, 1999  
 1

COUNTY-Menominee SITE-WOLF RIVER BALSAM ROW IMPOUNDMENT LOCATION CODE=405002

FIELD NUMBER	COLLECTION DATE	SAMPLE TYPE	SAMPLE FORM	NUMBER OF FISH	AVERAGE LENGTH (IN.)	AVERAGE WEIGHT (KG.)	VERIFIED	MERCURY
9801	10/13/1998	BLACK BULLHEAD	SKIN OFF FILLET	1	11.2	0.37	NO	0.15
9802	10/13/1998	BLACK BULLHEAD	SKIN OFF FILLET	1	11.7	0.36	NO	0.12
9803	10/13/1998	BLACK CRAPPIE	SKIN ON FILLET	1	11.1	0.38	NO	0.099
9804	10/13/1998	BLACK CRAPPIE	SKIN ON FILLET	1	11.2	0.39	NO	0.12
9805	10/13/1998	BLACK CRAPPIE	SKIN ON FILLET	1	11.7	0.45	NO	0.15
9807	07/20/1998	GOLDEN REDHORSE	SKIN ON FILLET	1	18.6	1.03	NO	0.62
9808	07/20/1998	GOLDEN REDHORSE	SKIN ON FILLET	1	23.9	2.46	NO	0.3
9813	10/13/1998	NORTHERN PIKE	SKIN ON FILLET	1	15.0	0.32	NO	0.23
9814	10/13/1998	NORTHERN PIKE	SKIN ON FILLET	1	16.4	0.37	NO	0.5
9815	07/20/1998	NORTHERN PIKE	SKIN ON FILLET	1	16.6	0.43	NO	0.2
9816	07/20/1998	NORTHERN PIKE	SKIN ON FILLET	1	18.8	0.54	NO	0.29
9817	07/20/1998	NORTHERN PIKE	SKIN ON FILLET	1	19.8	0.65	NO	0.42
9818	07/20/1998	NORTHERN PIKE	SKIN ON FILLET	1	19.9	0.78	NO	0.9
9819	07/20/1998	NORTHERN PIKE	SKIN ON FILLET	1	22.2	0.90	NO	0.57
9820	07/20/1998	NORTHERN PIKE	SKIN ON FILLET	1	22.4	1.00	NO	0.76
9806	07/20/1998	NORTHERN REDHORSE	SKIN ON FILLET	1	19.9	1.12	NO	0.53
9811	10/13/1998	SMALLMOUTH BASS	SKIN ON FILLET	1	14.2	0.70	NO	0.16
9812	07/20/1998	SMALLMOUTH BASS	SKIN ON FILLET	1	14.4	0.82	NO	0.37
9809	07/20/1998	WHITE SOCKER	SKIN ON FILLET	1	18.0	1.01	NO	0.4
9810	07/20/1998	WHITE SOCKER	SKIN ON FILLET	1	20.0	1.29	NO	0.42