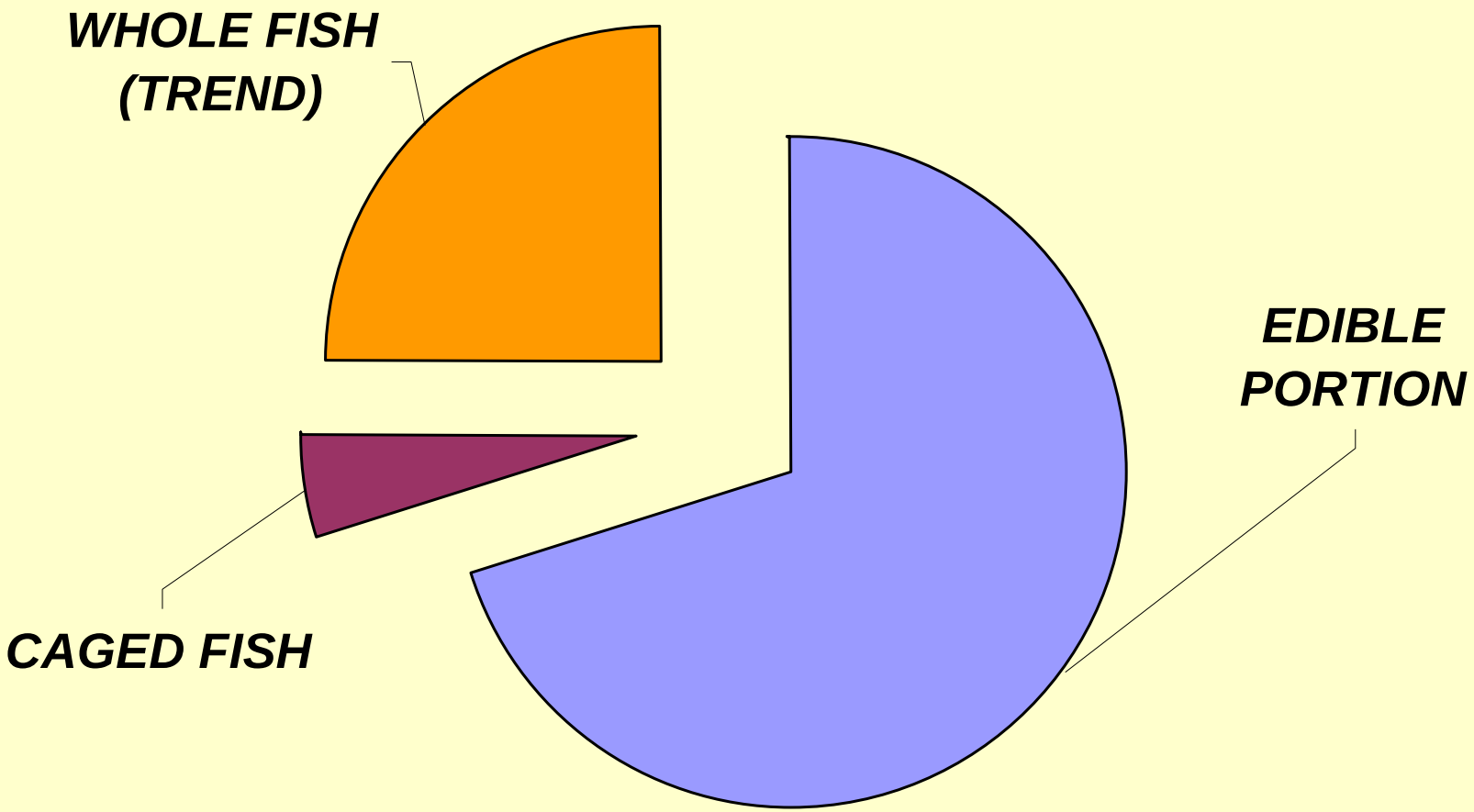
Michigan's Fish Contaminant Monitoring Program

Michigan DNRE

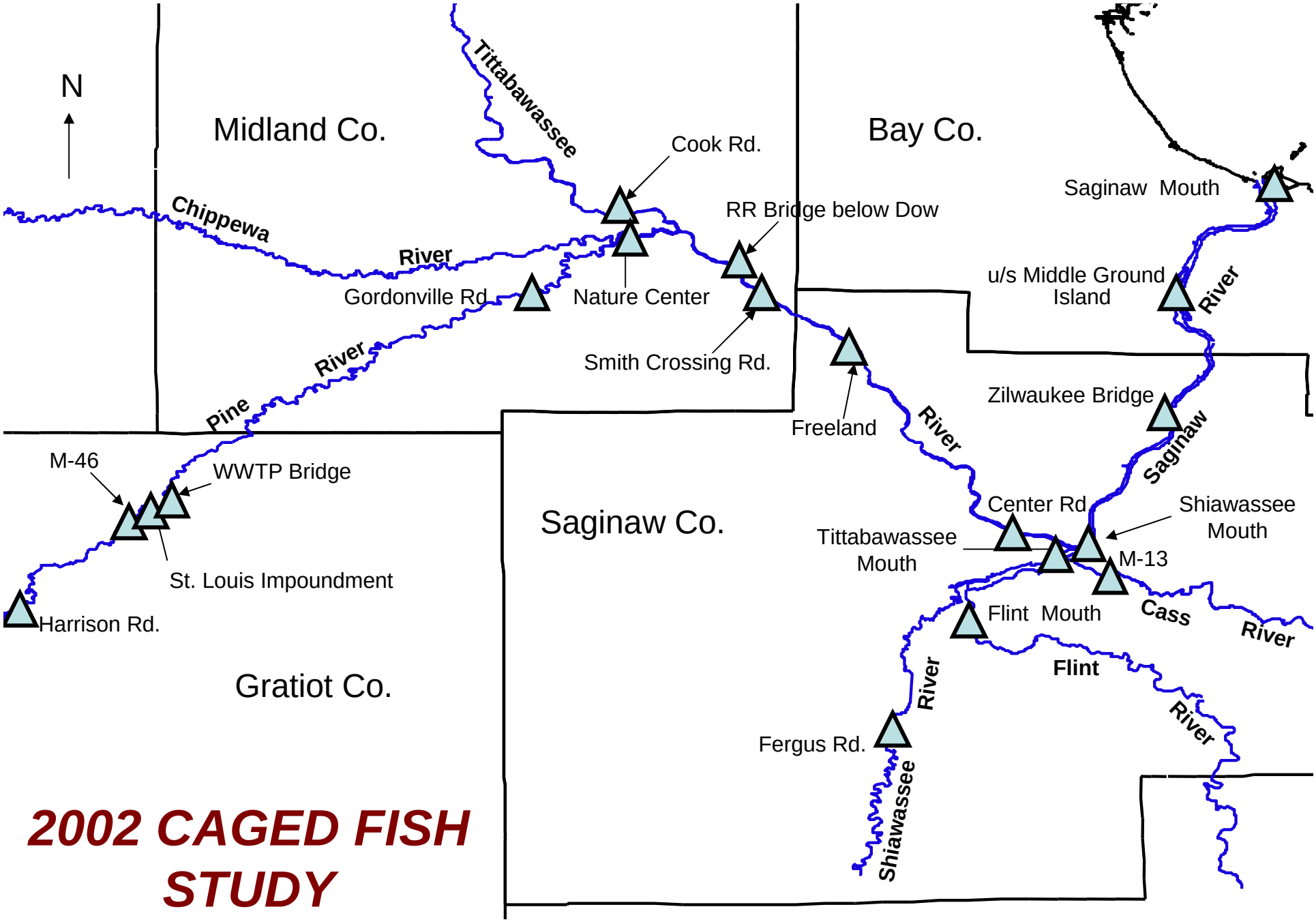
Fish Contaminant Monitoring Program Goals

- Evaluate the need for sport fish consumption advisories and commercial fishing regulations.
- Identify spatial and temporal trends in water quality.
- Evaluate whether existing programs are effectively eliminating or reducing chemical contamination.

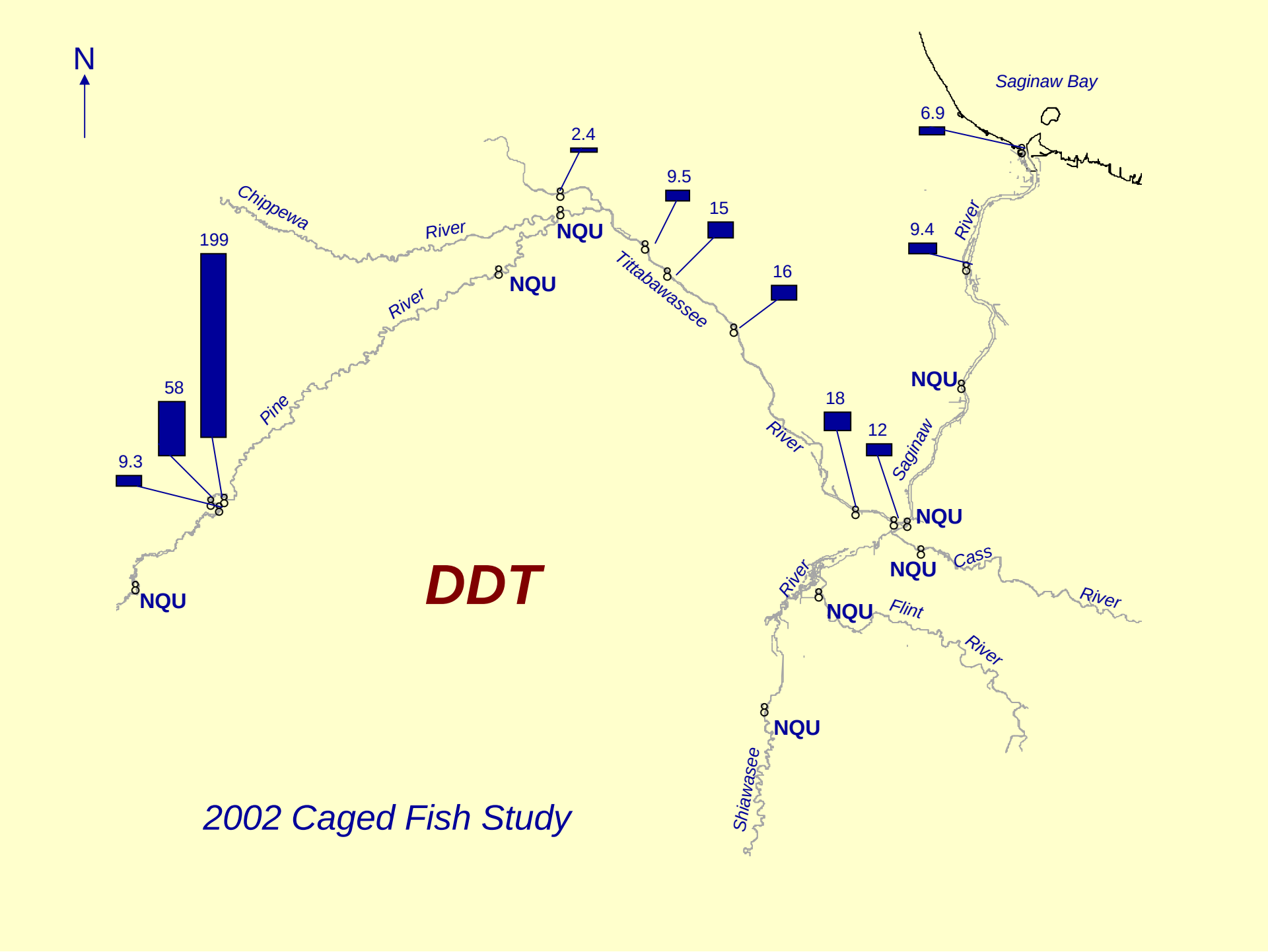
Michigan's Fish Contaminant Monitoring Elements

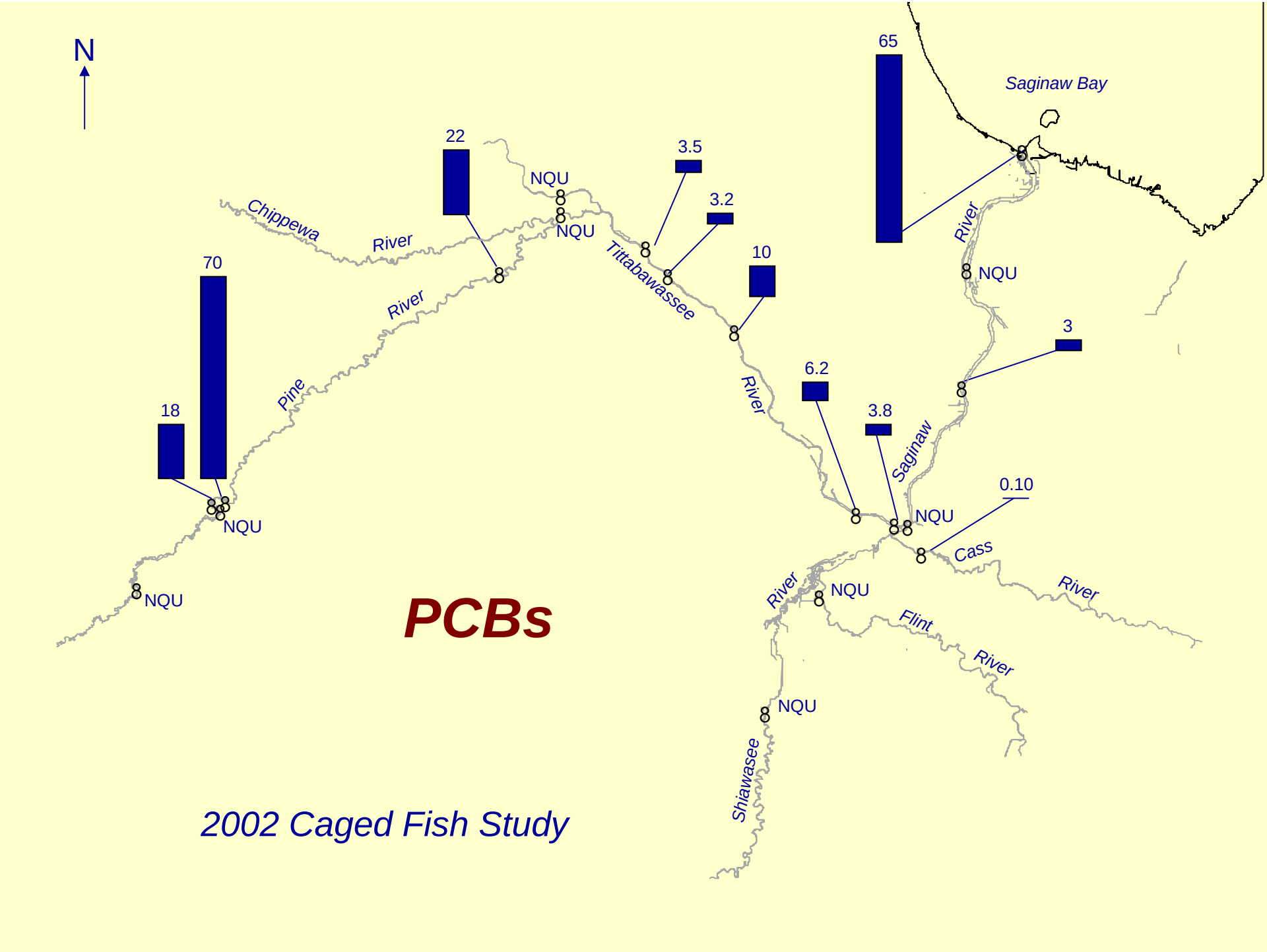


CAGED FISH MONITORING

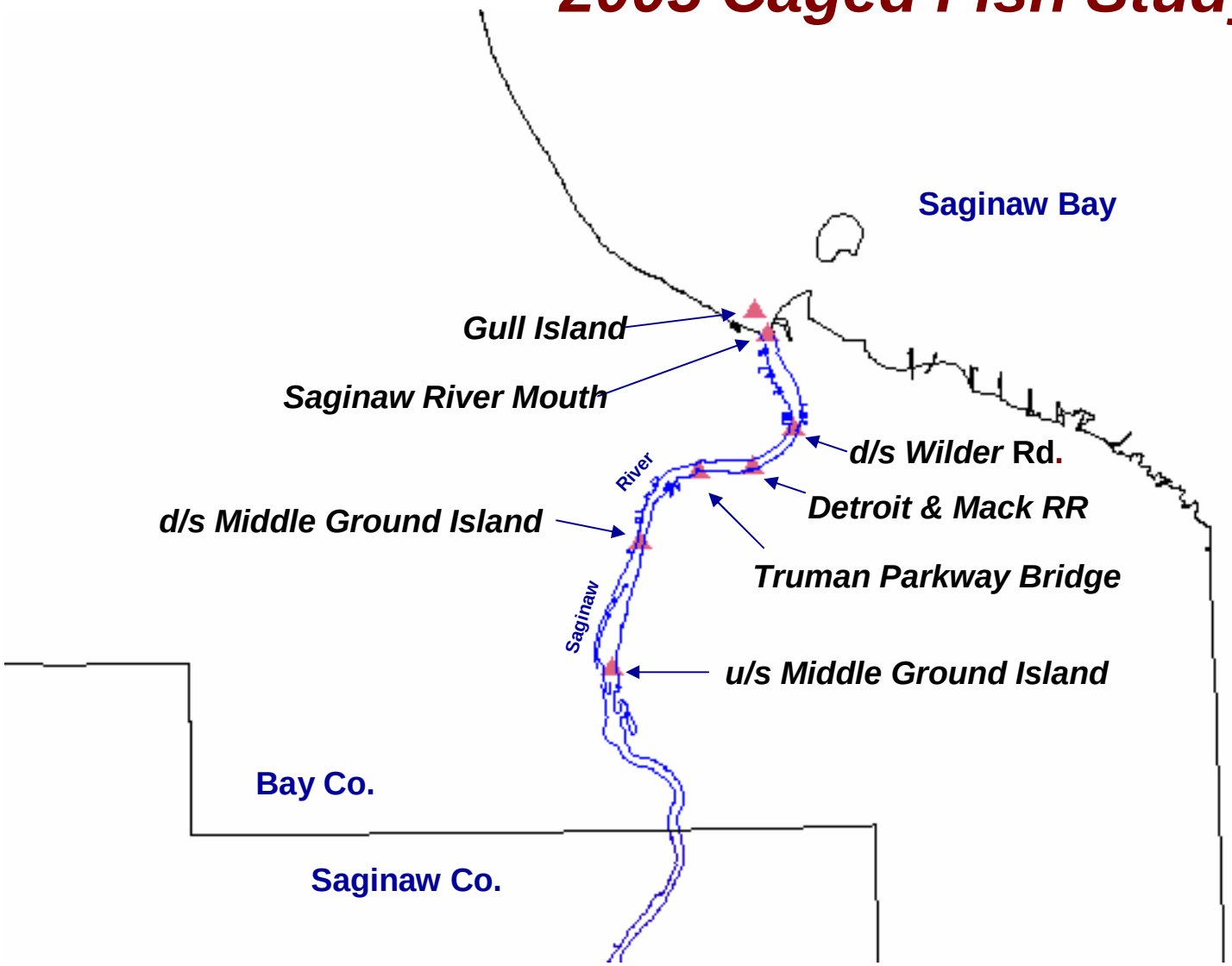


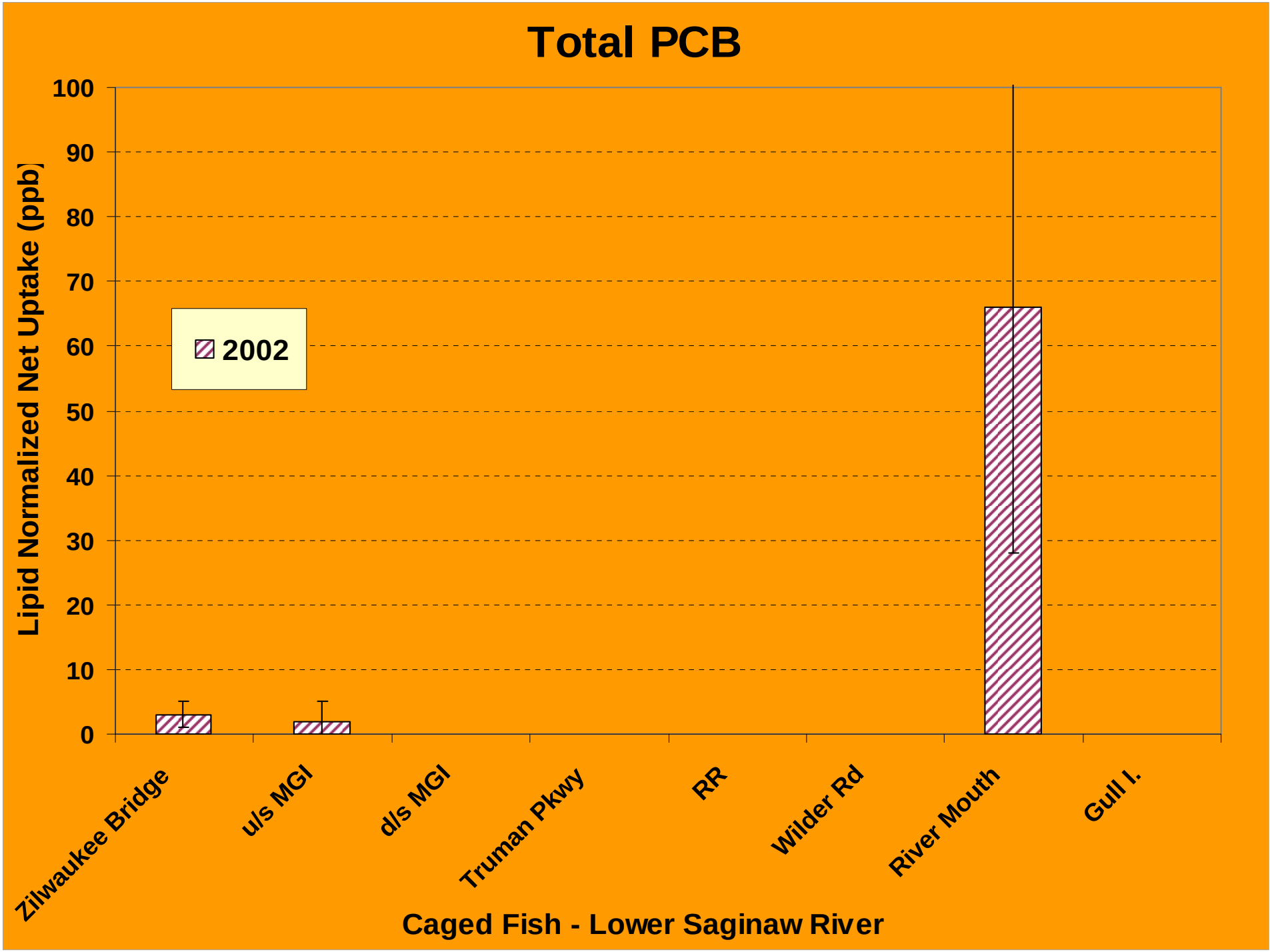
2002 CAGED FISH STUDY

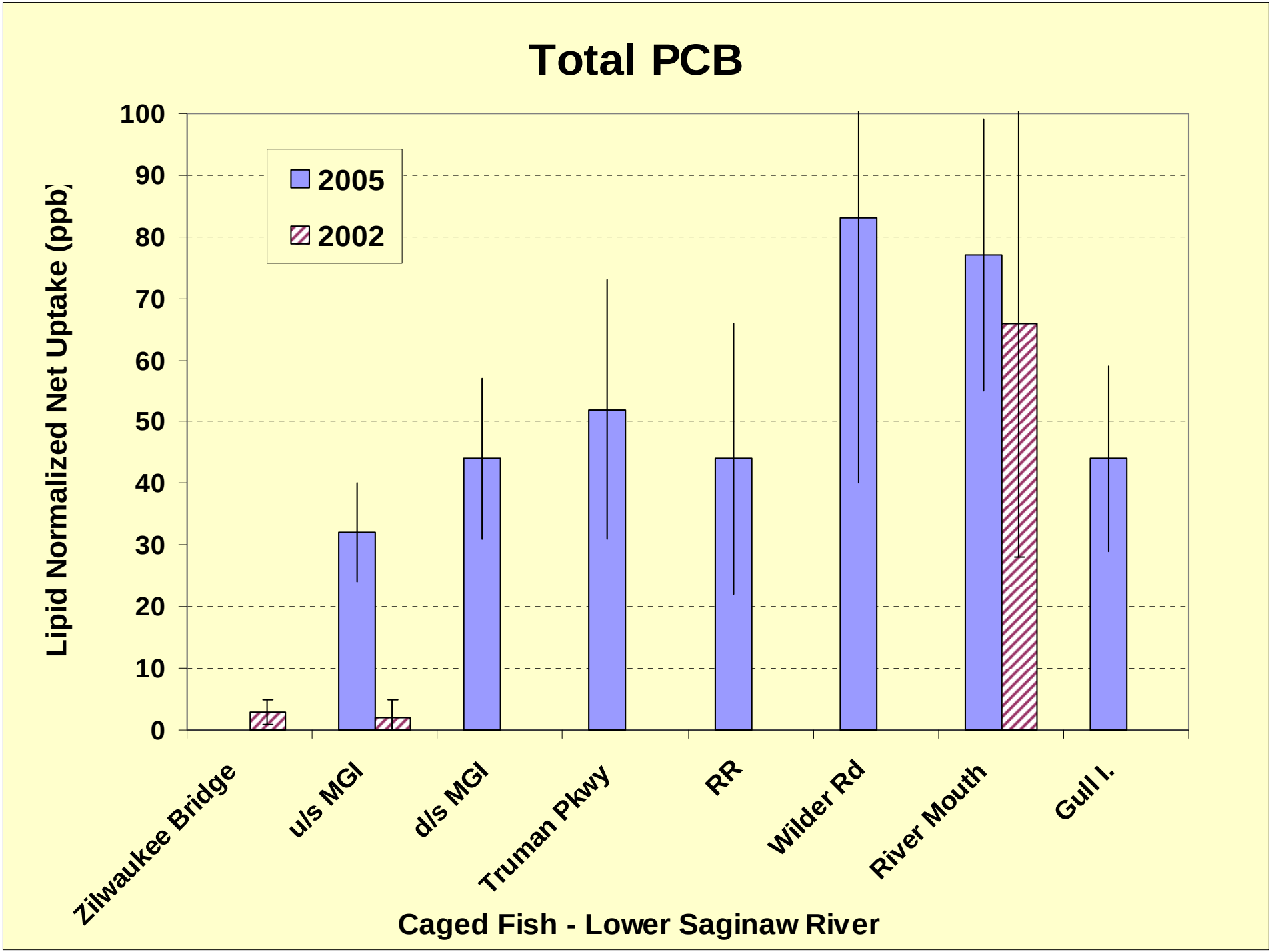

N
Saginaw Bay
6.9
2.4
9.5
15
16
9.4
199
58
9.3
18
12
NQU
Chippewa
River
Pine
Tittabawassee
Saginaw
Cass
Flint
Shiawasee
DDT
2002 Caged Fish Study

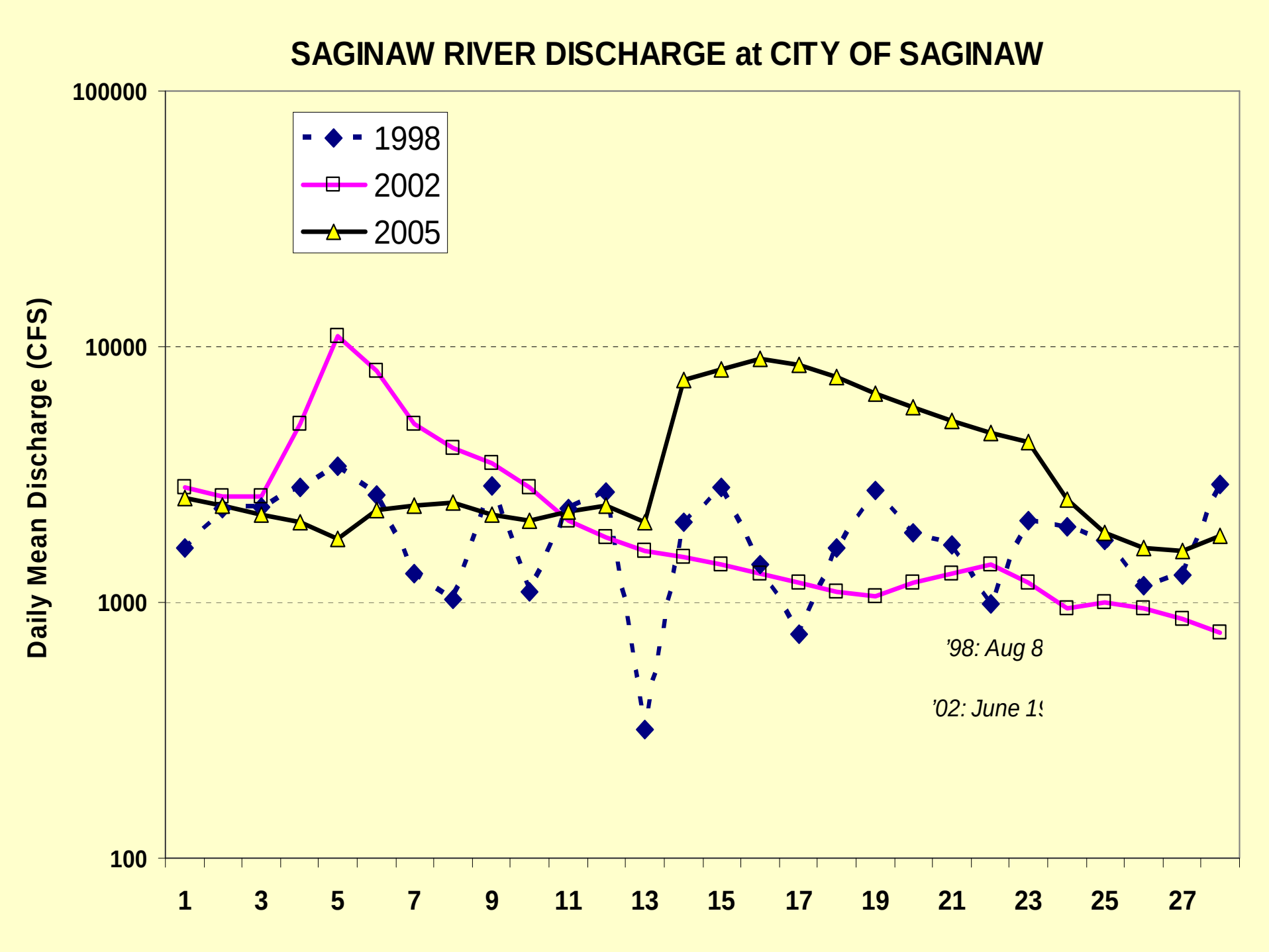

N
PCBs
2002 Caged Fish Study
Saginaw Bay
Chippewa River
Pine River
Tittabawassee River
Saginaw River
Cass River
Flint River
Shiawasee River
65
22
3.5
3.2
10
70
18
6.2
3.8
3
0.10
NQU

2005 Caged Fish Study

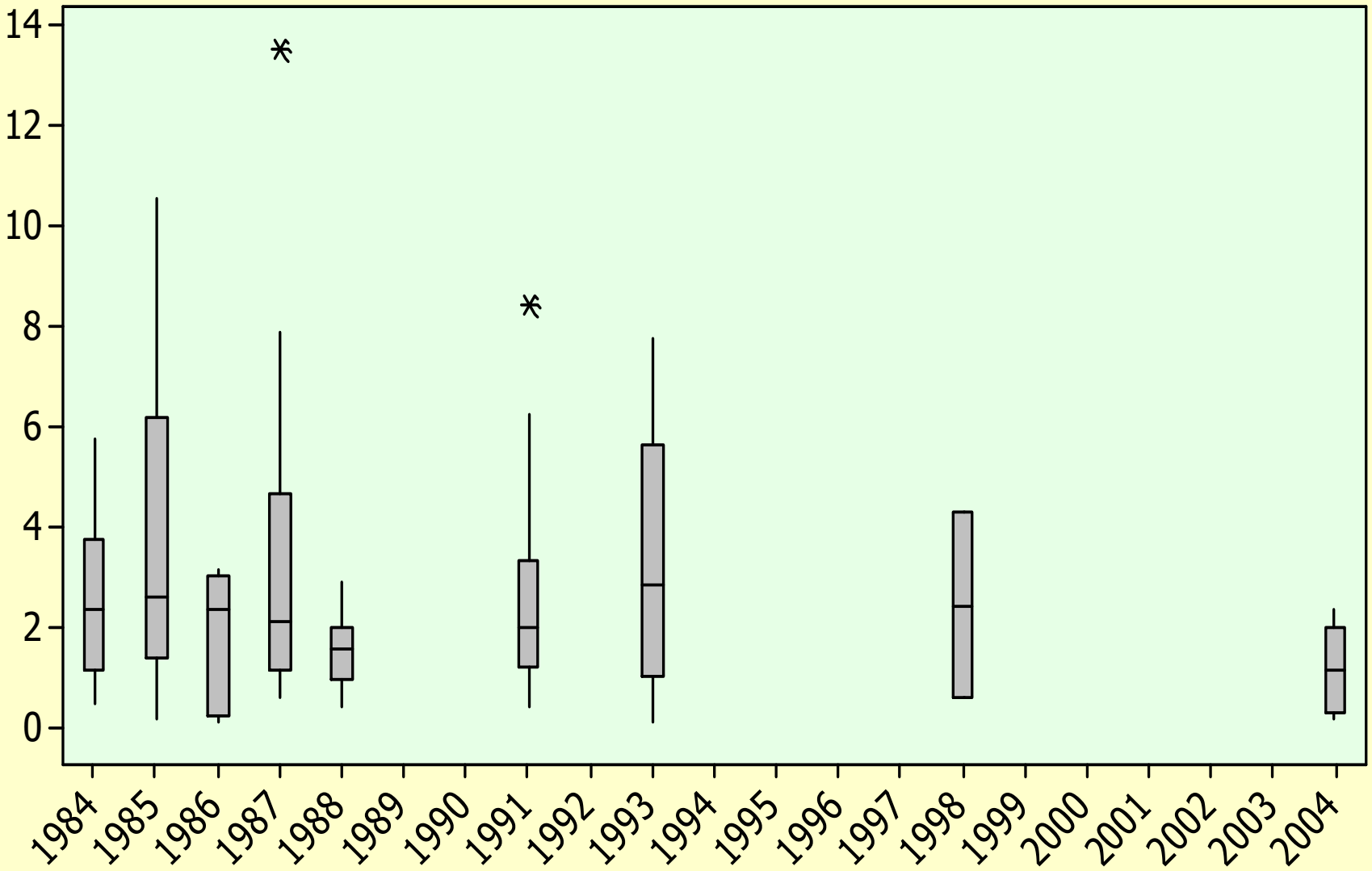


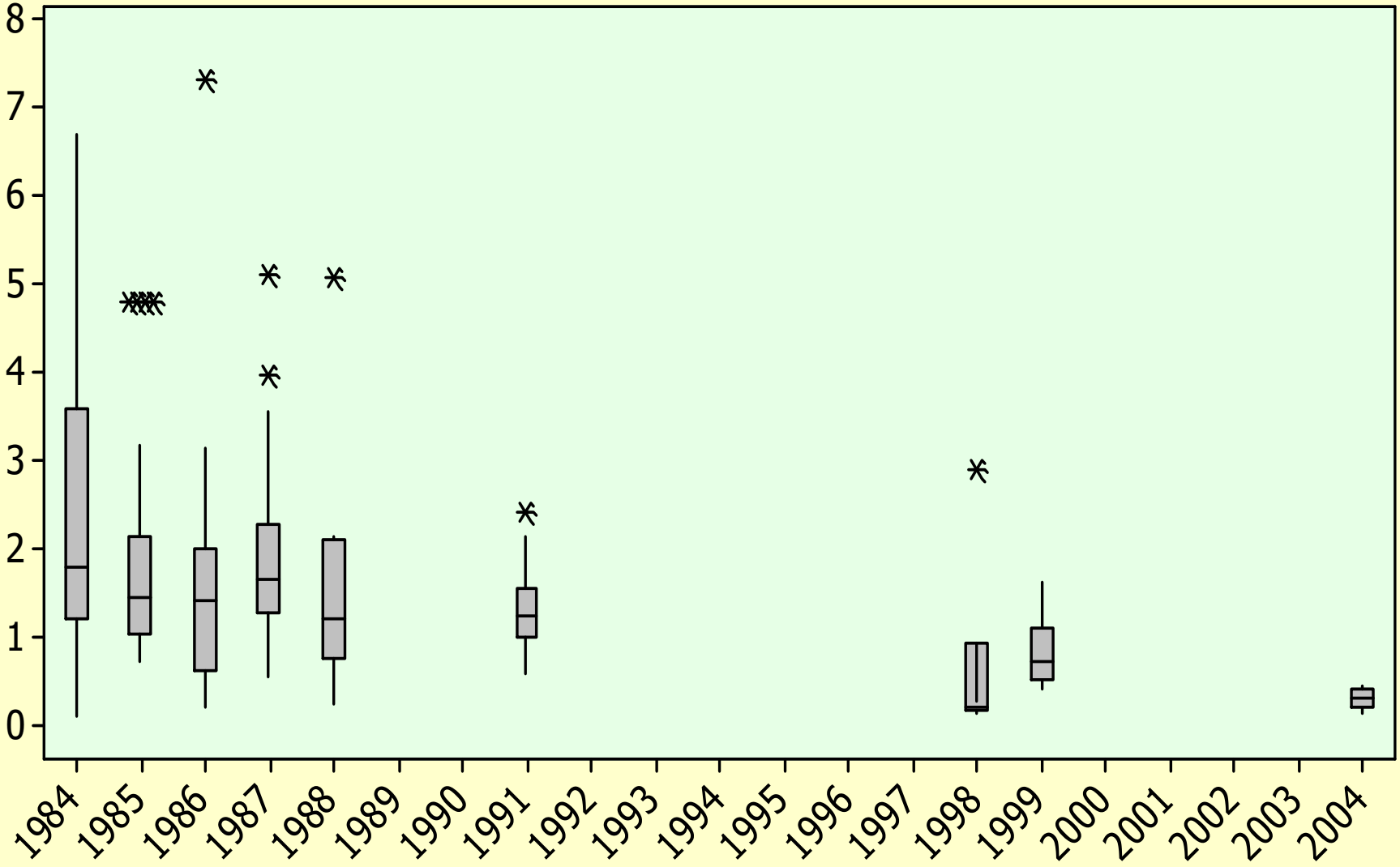

Total PCB
Lipid Normalized Net Uptake (ppb)
100
90
80
70
60
50
40
30
20
10
0
2002
Zilwaukee Bridge
u/s MGI
d/s MGI
Truman Pkwy
RR
Wilder Rd
River Mouth
Gull I.
Caged Fish - Lower Saginaw River

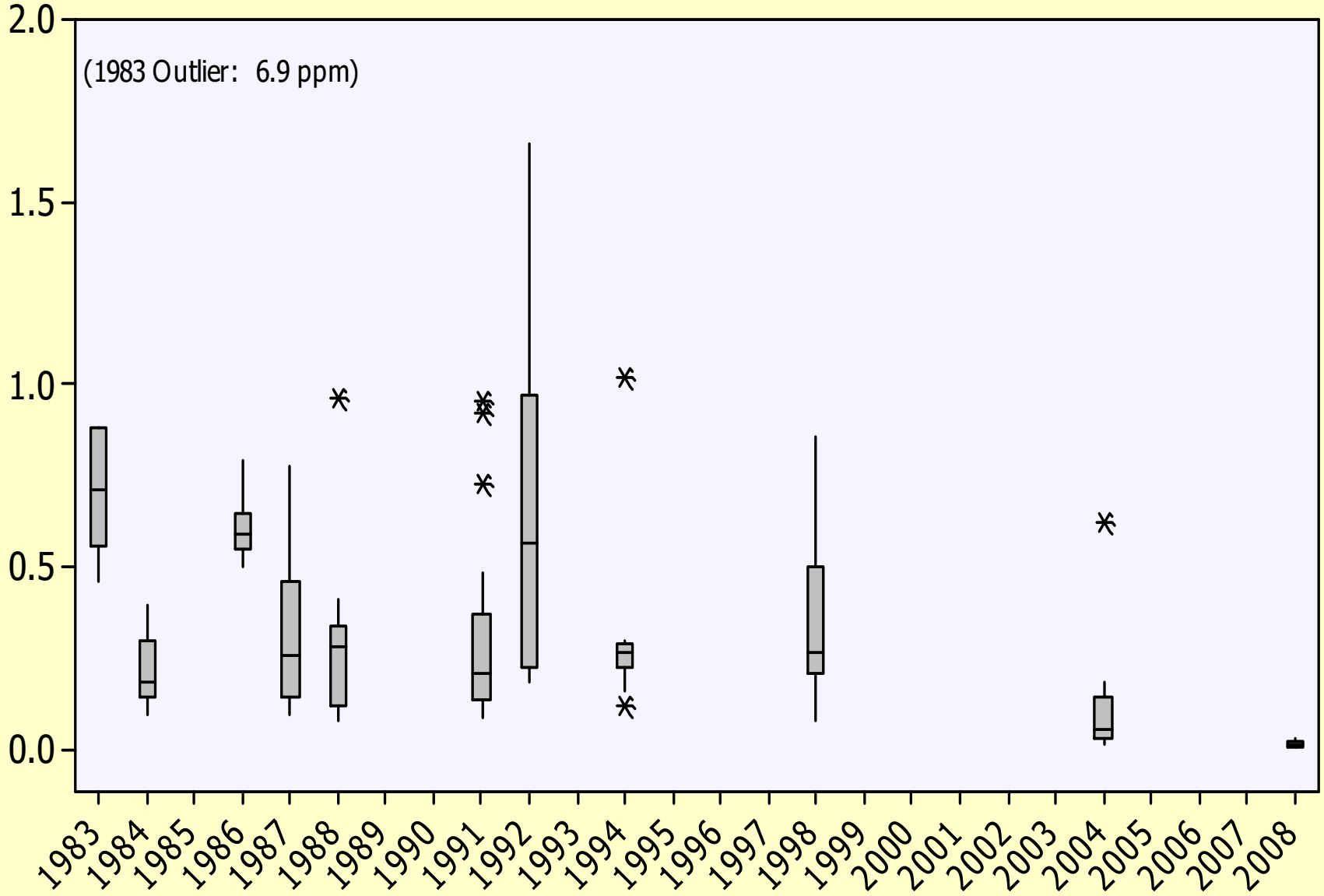

Total PCB
Lipid Normalized Net Uptake (ppb)
100
90
80
70
60
50
40
30
20
10
0
2005
2002
Zilwaukee Bridge
u/s MGI
d/s MGI
Truman Pkwy
RR
Wilder Rd
River Mouth
Gull I.
Caged Fish - Lower Saginaw River

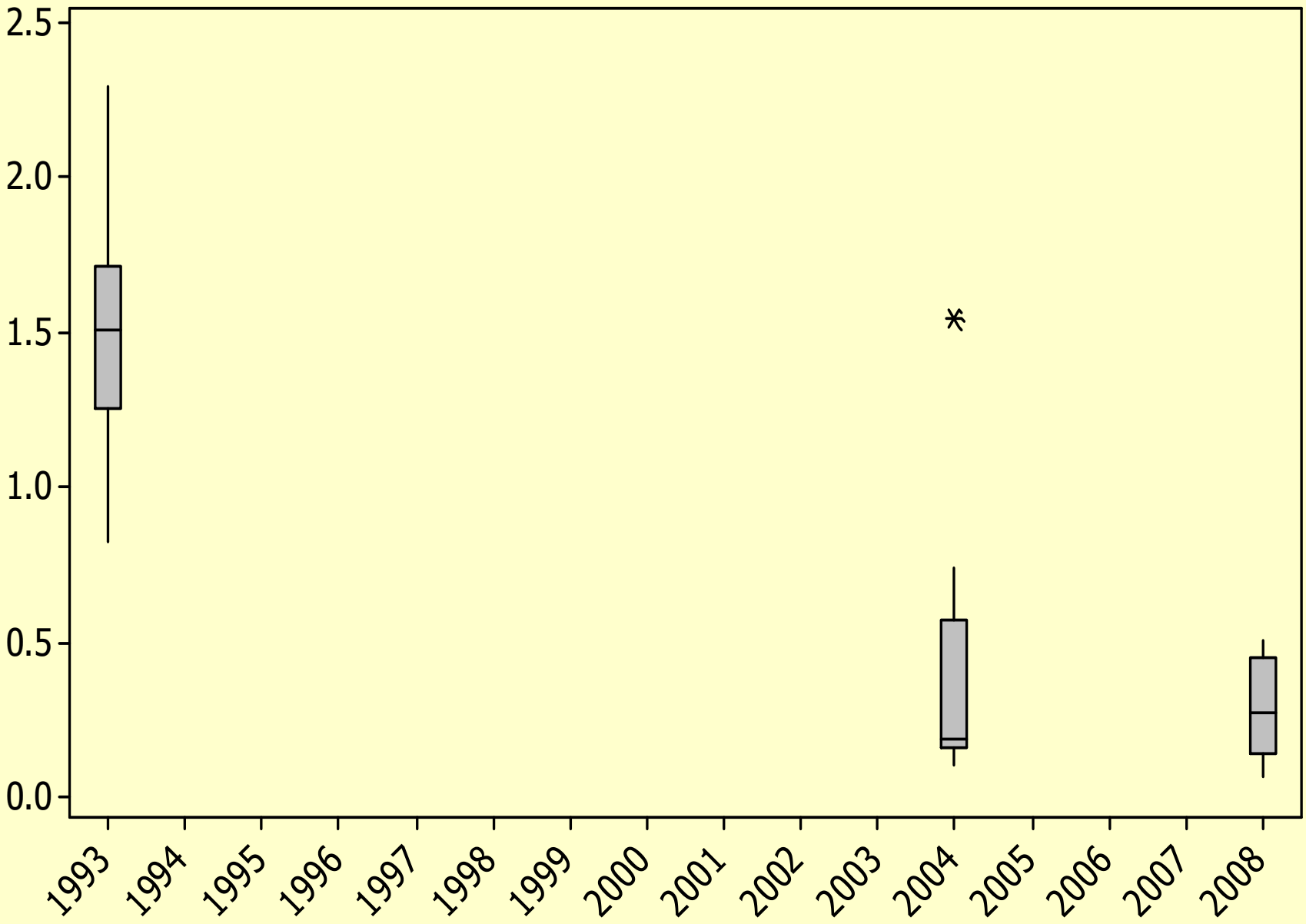

SAGINAW RIVER DISCHARGE at CITY OF SAGINAW
Daily Mean Discharge (CFS)
100000
10000
1000
100
1998
2002
2005
'98: Aug 8
'02: June 1
1
3
5
7
9
11
13
15
17
19
21
23
25
27

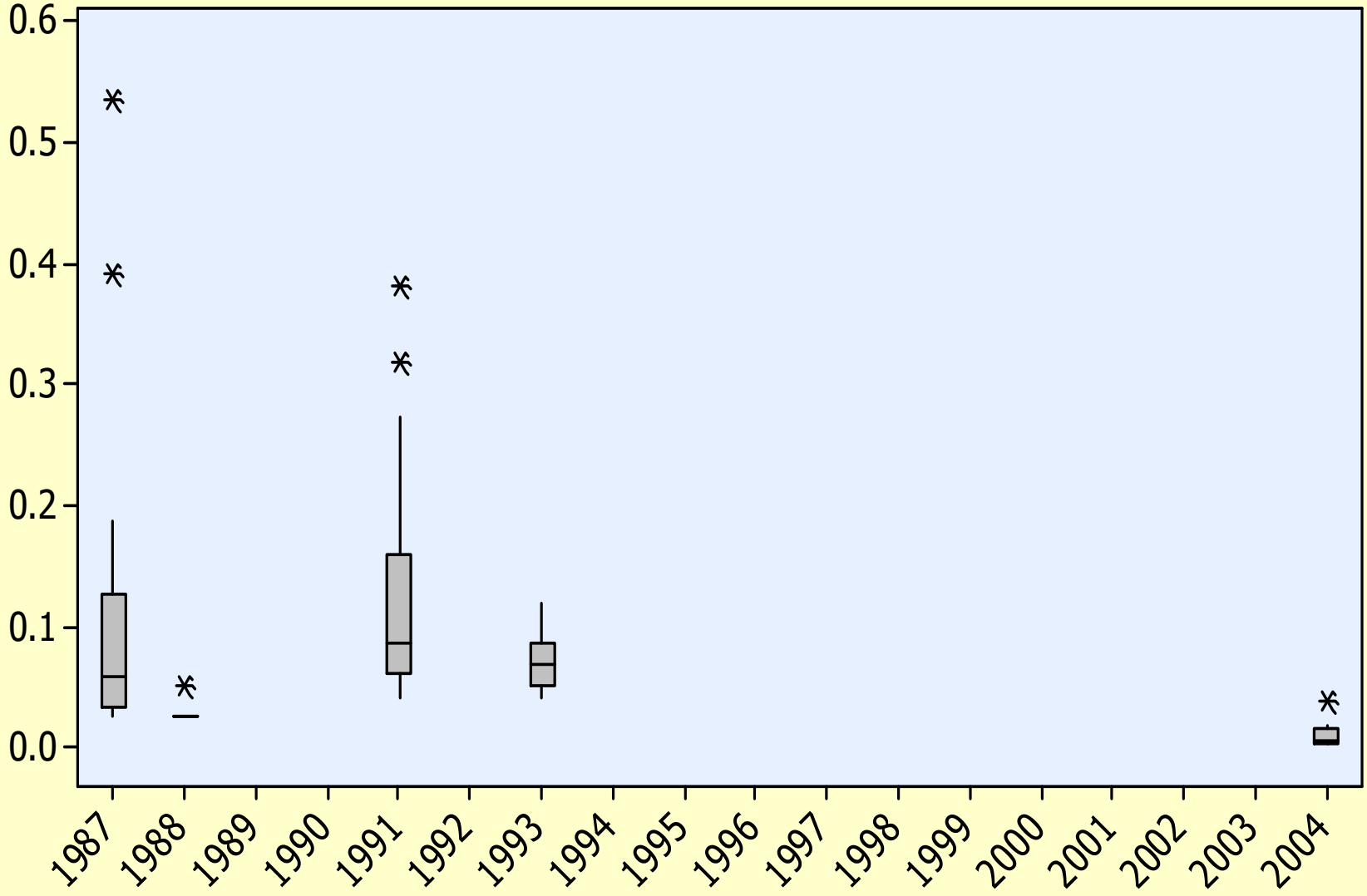
Edible Portion Monitoring


14
12
10
8
6
4
2
0
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004


8
7
6
5
4
3
2
1
0
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004


(1983 Outlier: 6.9 ppm)
2.0
1.5
1.0
0.5
0.0
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008


2.5
2.0
1.5
1.0
0.5
0.0
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008


0.6
0.5
0.4
0.3
0.2
0.1
0.0
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004

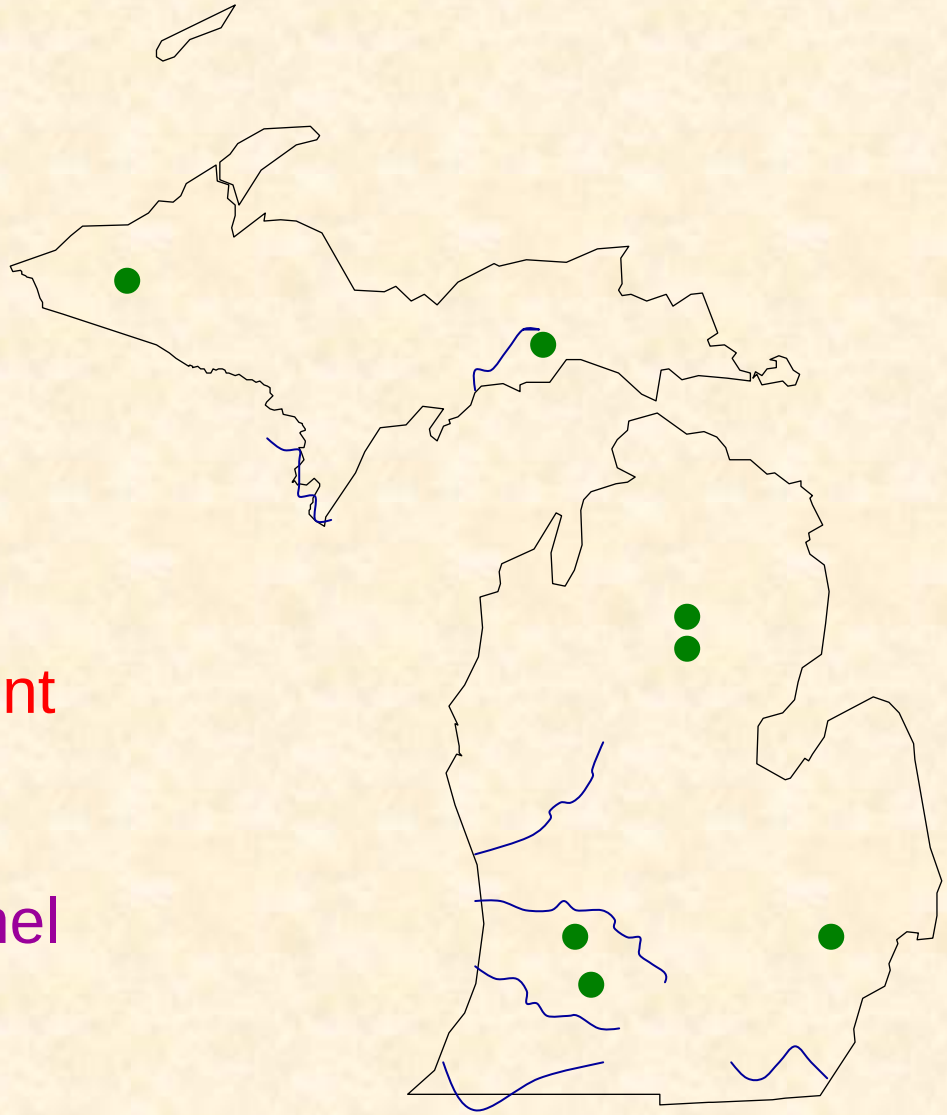
Whole Fish Trend Monitoring

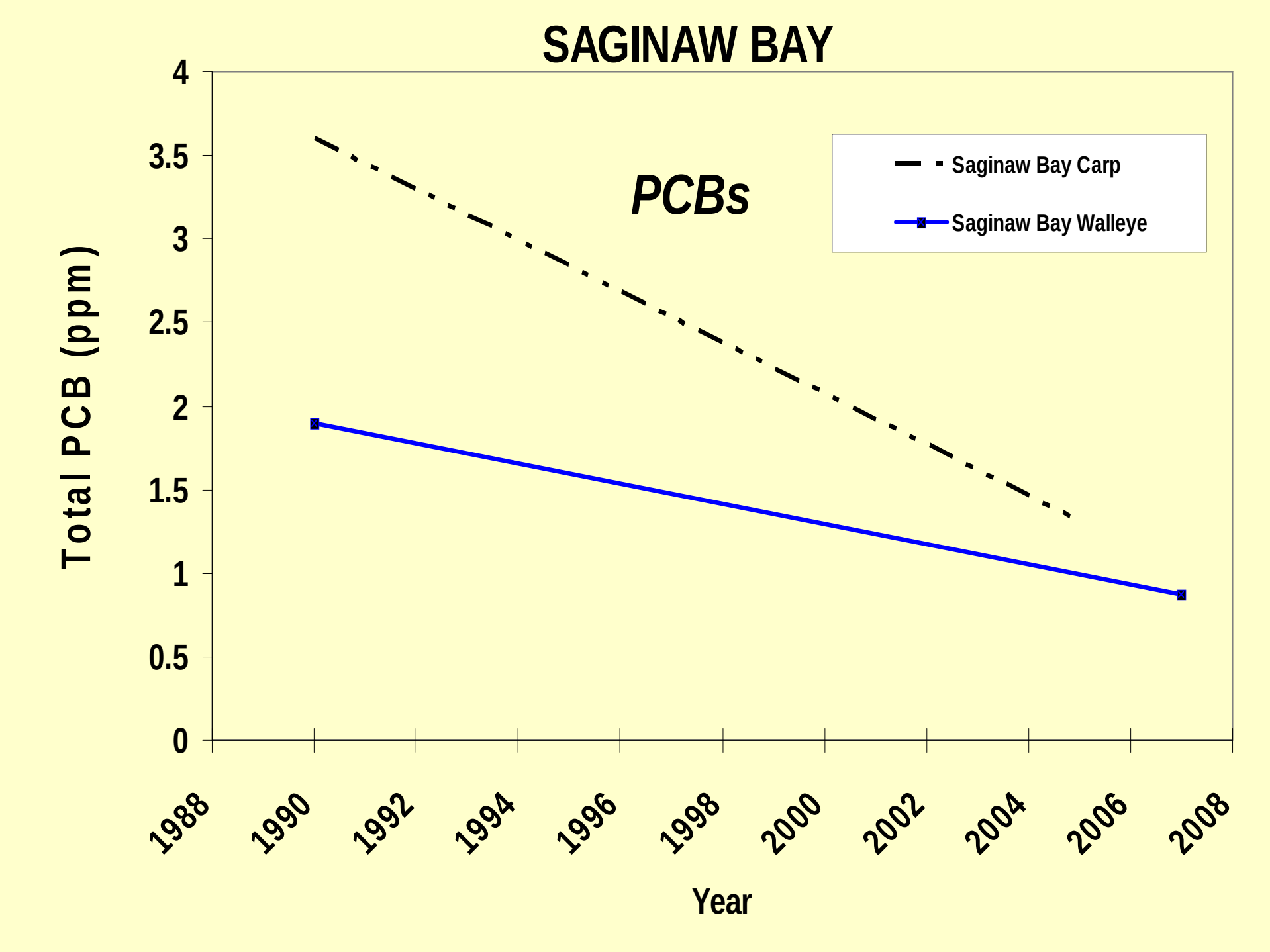
22 Fixed Stations

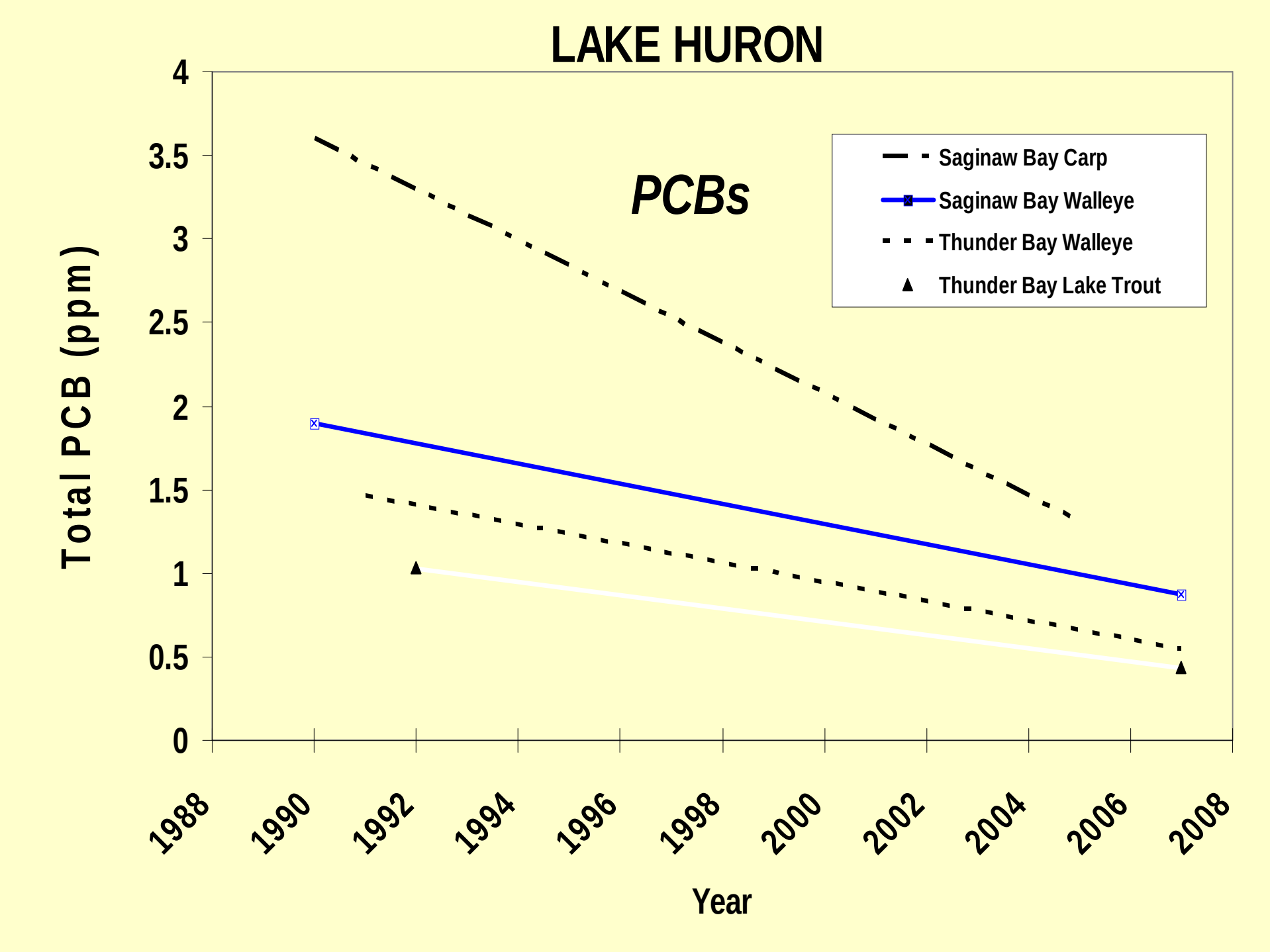
- 7 inland lake

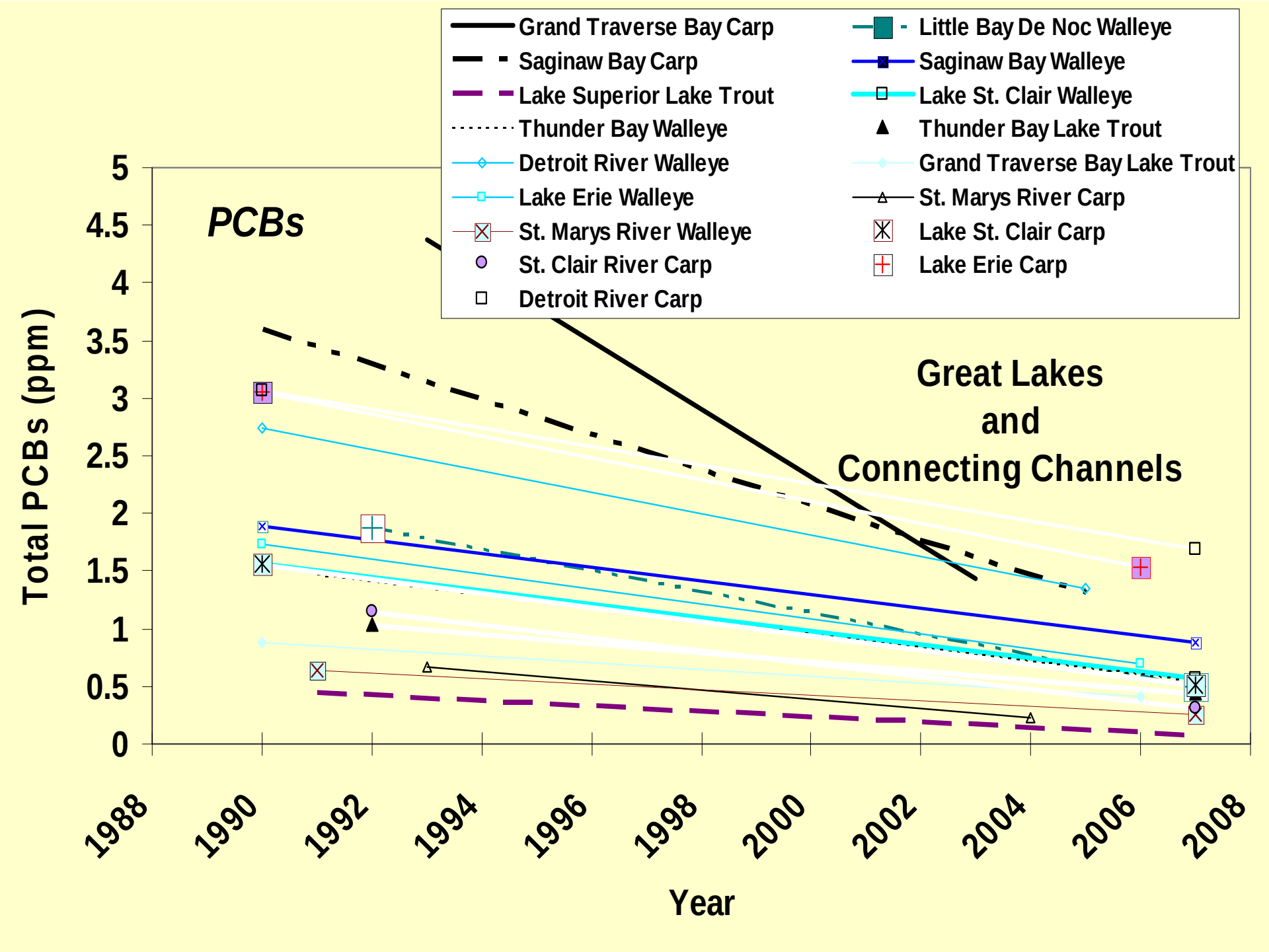
5 river impoundment

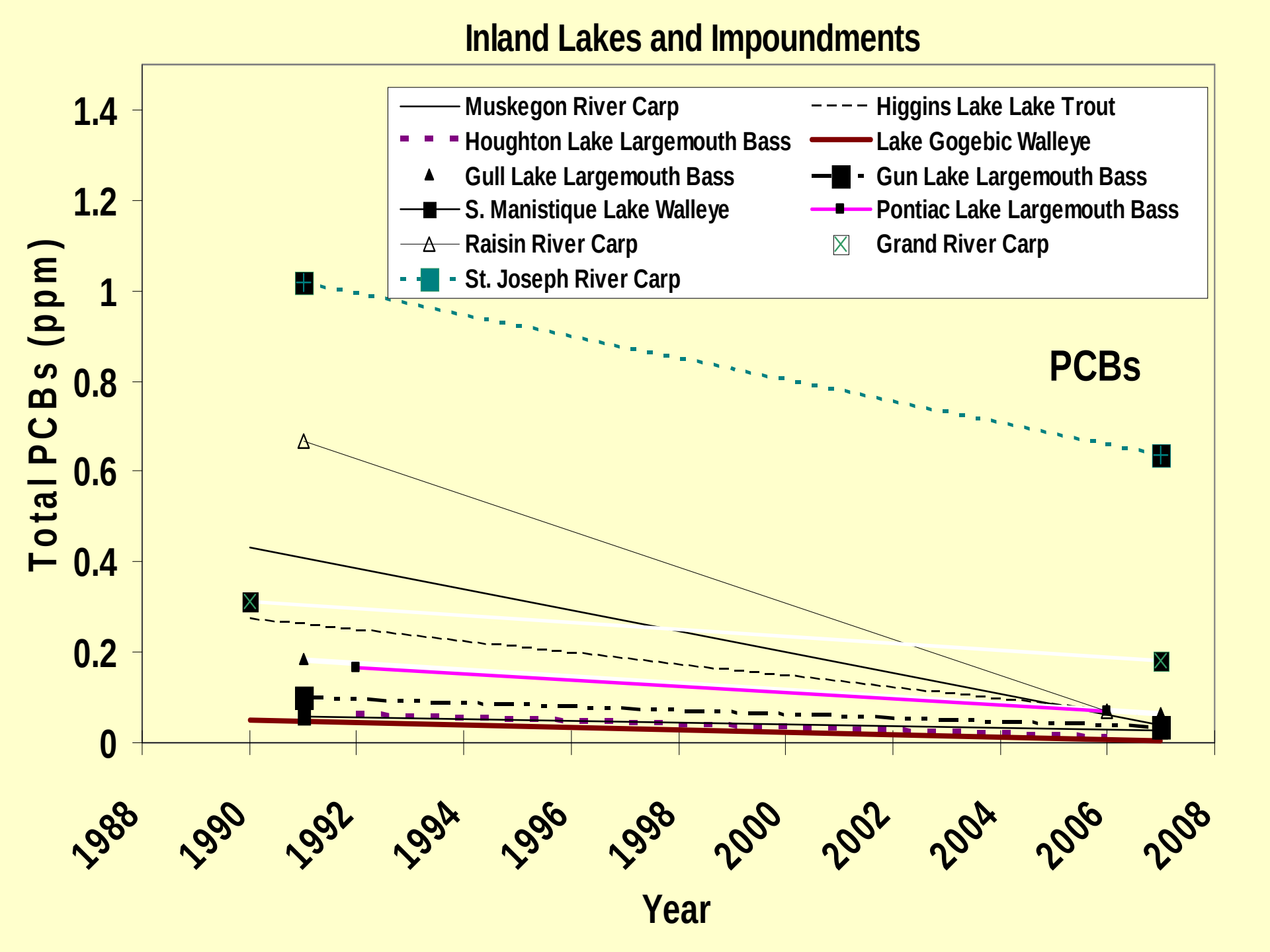
10 Great Lake or Connecting Channel

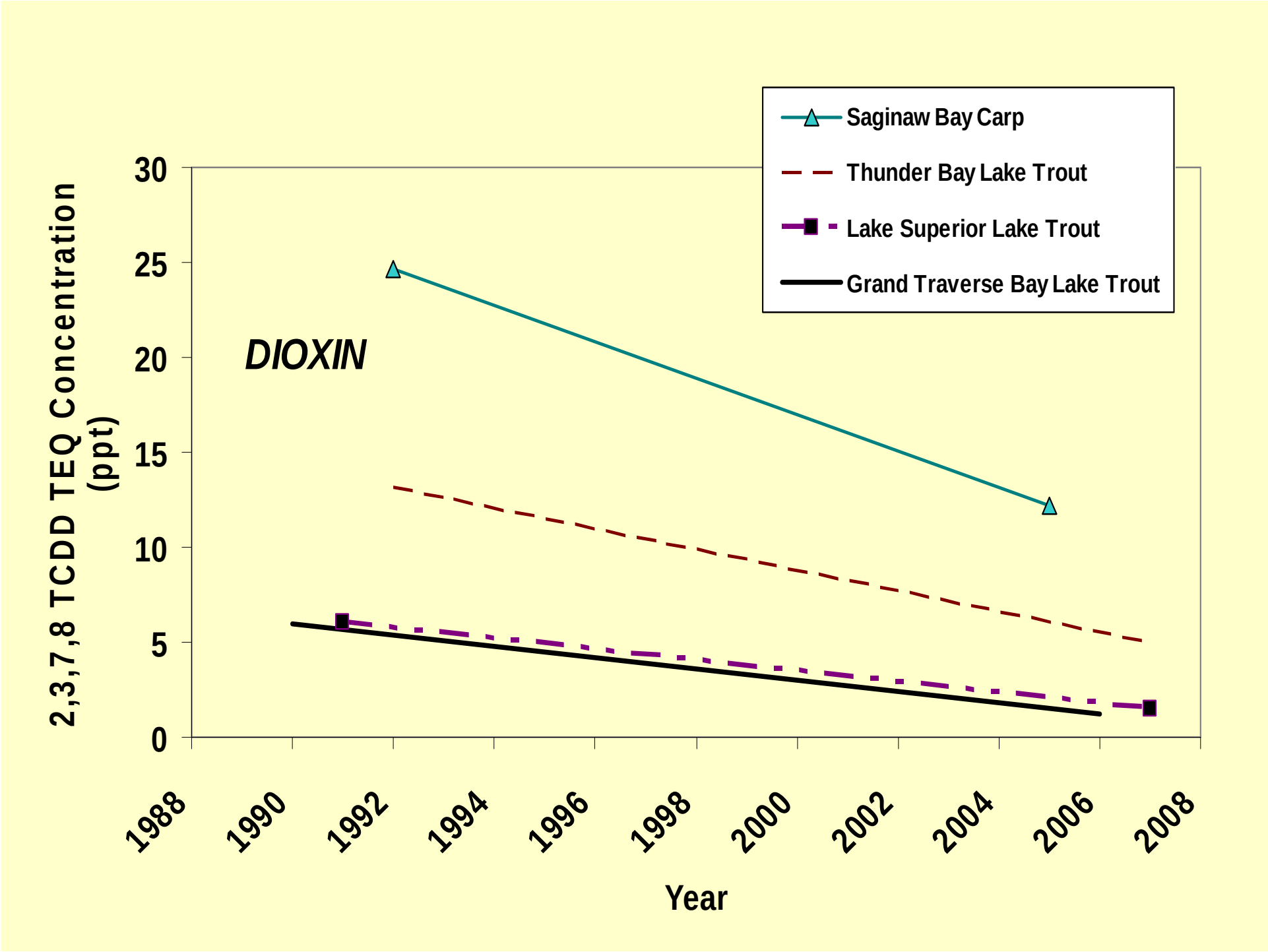


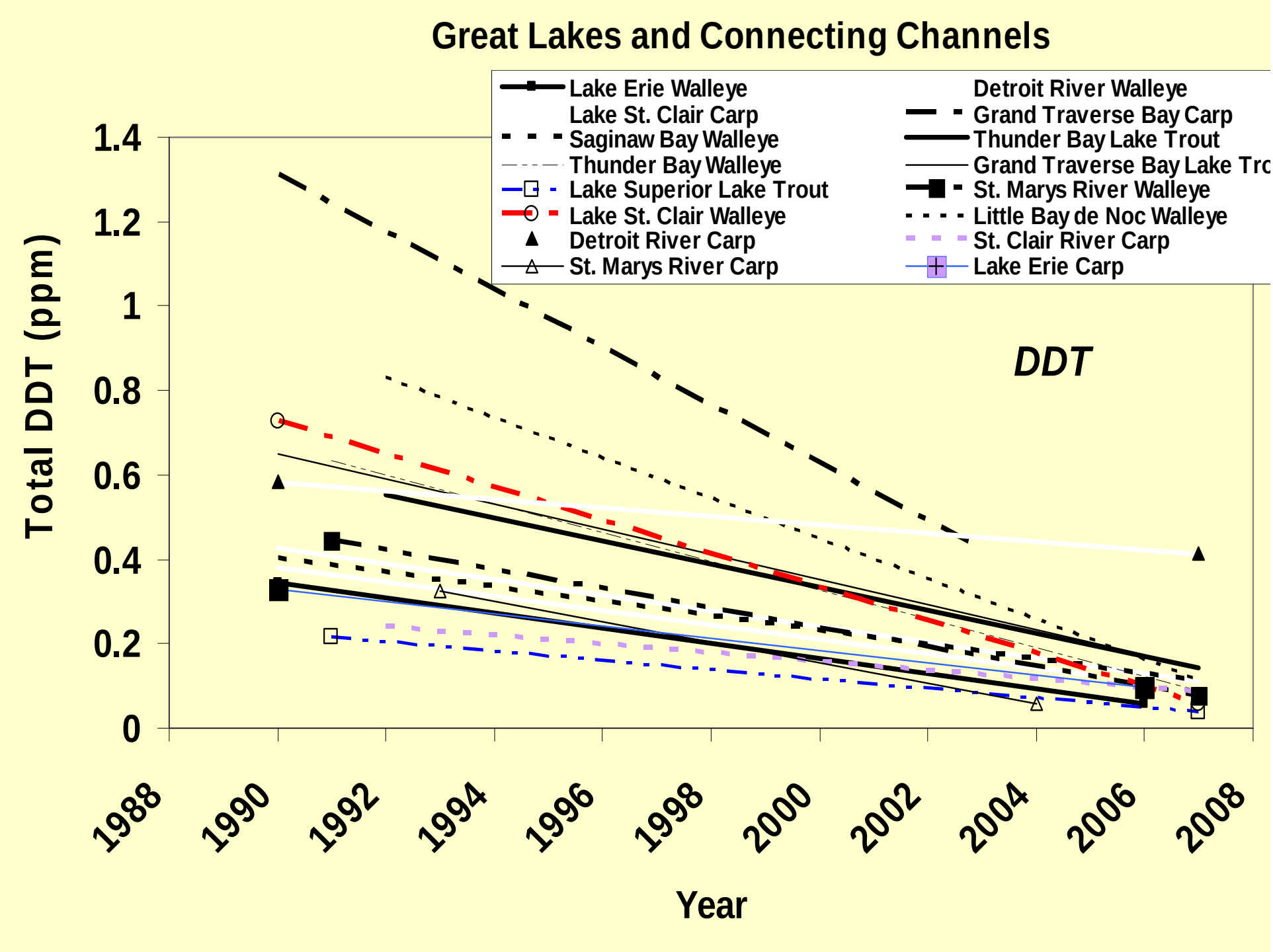

SAGINAW BAY
PCBs
Saginaw Bay Carp
Saginaw Bay Walleye
Total PCB (ppm)
4
3.5
3
2.5
2
1.5
1
0.5
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year

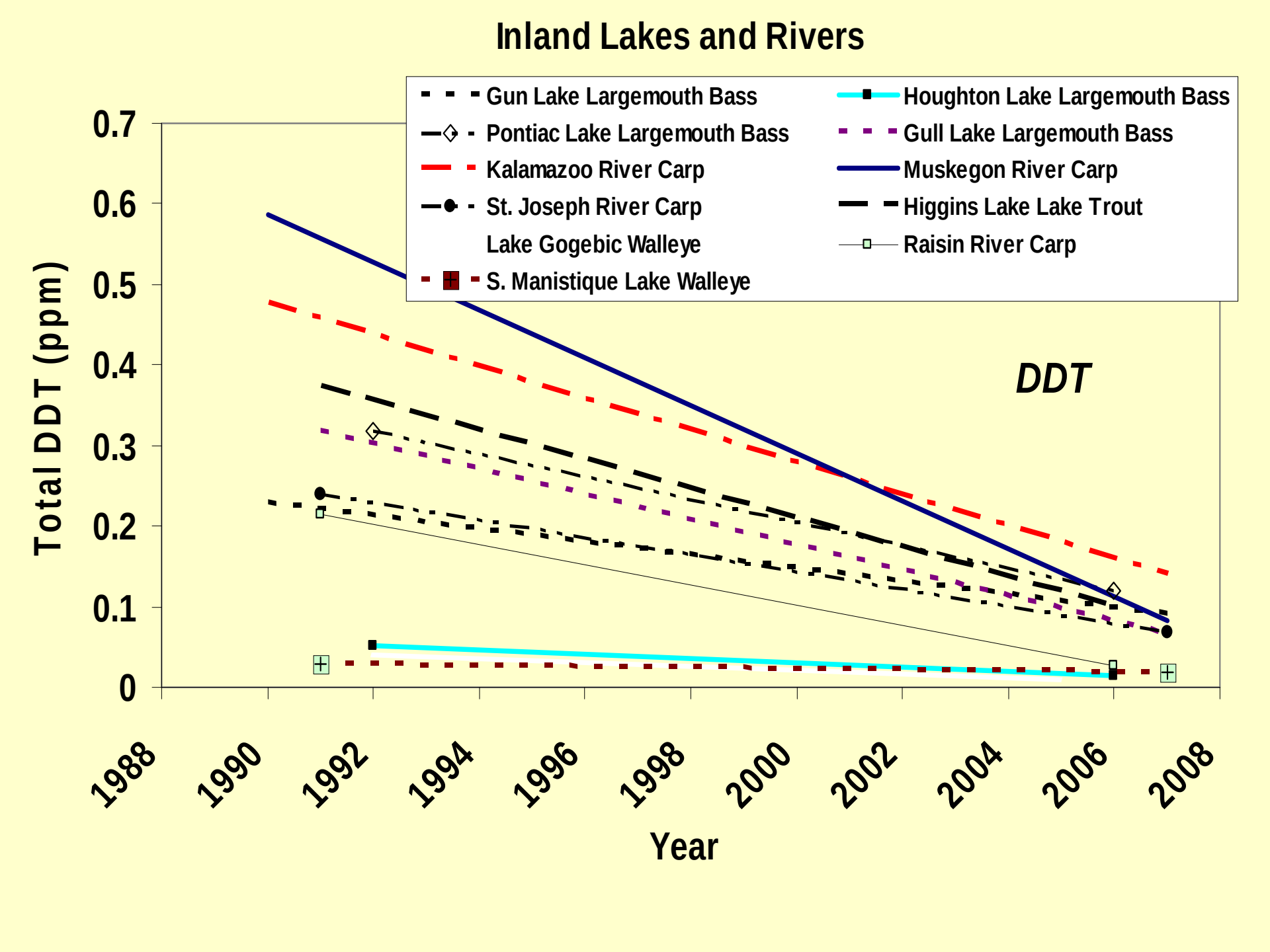

LAKE HURON
PCBs
Saginaw Bay Carp
Saginaw Bay Walleye
Thunder Bay Walleye
Thunder Bay Lake Trout
Total PCB (ppm)
4
3.5
3
2.5
2
1.5
1
0.5
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year

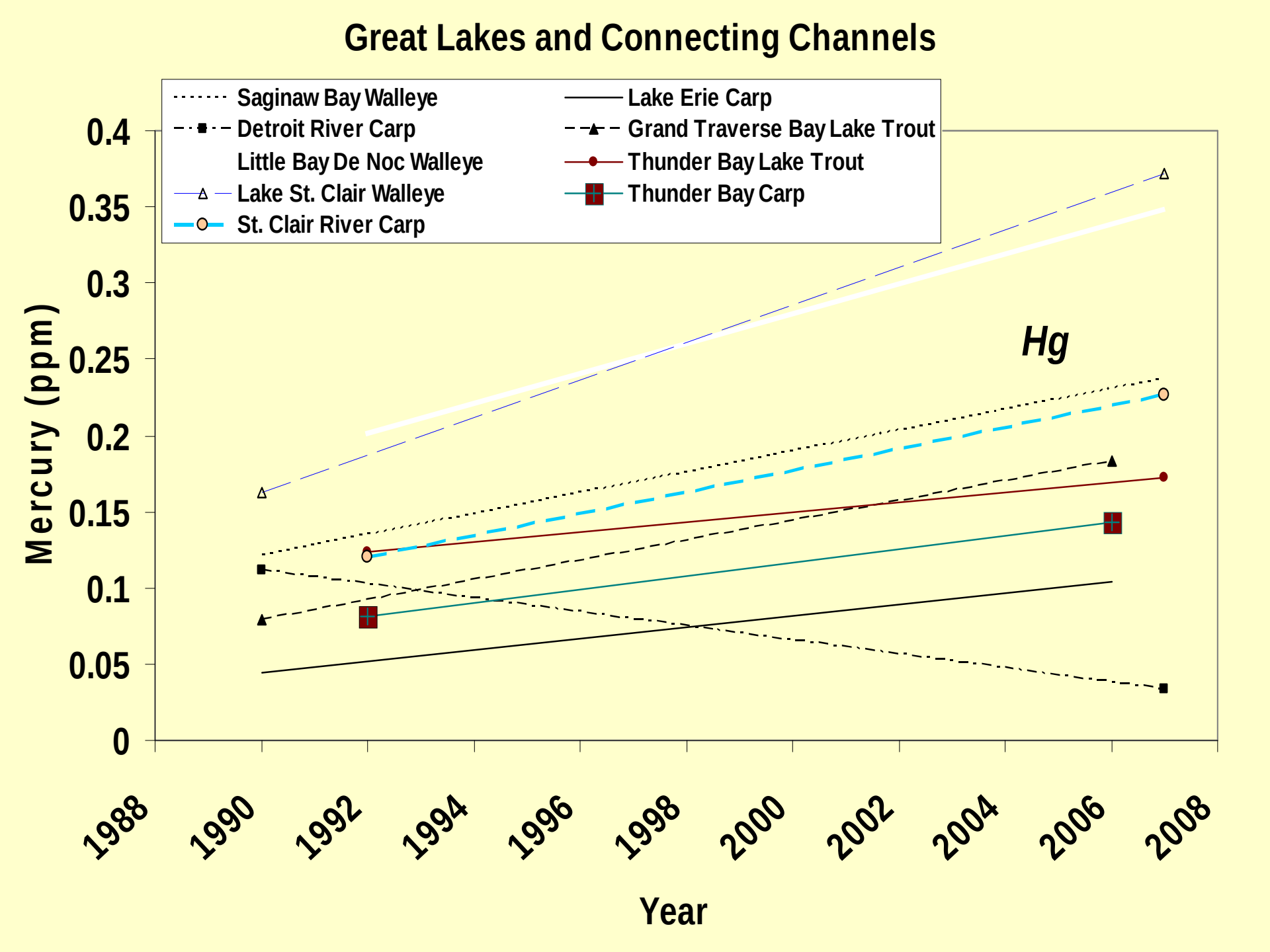

PCBs
Great Lakes
and
Connecting Channels
Grand Traverse Bay Carp
Saginaw Bay Carp
Lake Superior Lake Trout
Thunder Bay Walleye
Detroit River Walleye
Lake Erie Walleye
St. Marys River Walleye
St. Clair River Carp
Detroit River Carp
Little Bay De Noc Walleye
Saginaw Bay Walleye
Lake St. Clair Walleye
Thunder Bay Lake Trout
Grand Traverse Bay Lake Trout
St. Marys River Carp
Lake St. Clair Carp
Lake Erie Carp
Total PCBs (ppm)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year

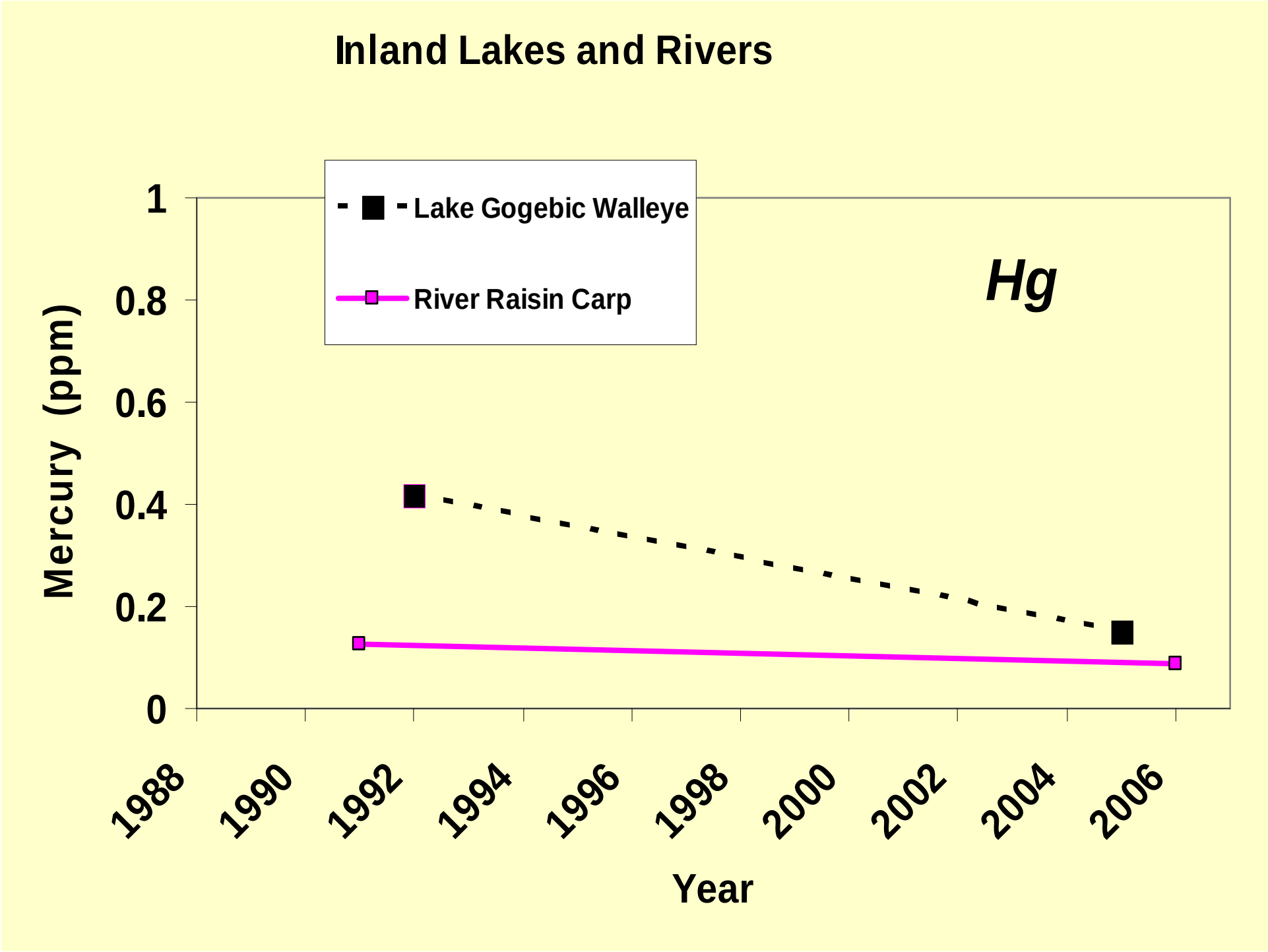

Inland Lakes and Impoundments
Muskegon River Carp
Higgins Lake Lake Trout
Houghton Lake Largemouth Bass
Lake Gogebic Walleye
Gull Lake Largemouth Bass
Gun Lake Largemouth Bass
S. Manistique Lake Walleye
Pontiac Lake Largemouth Bass
Raisin River Carp
Grand River Carp
St. Joseph River Carp
PCBs
Total PCBs (ppm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year


Saginaw Bay Carp
Thunder Bay Lake Trout
Lake Superior Lake Trout
Grand Traverse Bay Lake Trout
DIOXIN
2,3,7,8 TCDD TEQ Concentration (ppt)
30
25
20
15
10
5
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year


Great Lakes and Connecting Channels
Lake Erie Walleye
Lake St. Clair Carp
Saginaw Bay Walleye
Thunder Bay Walleye
Lake Superior Lake Trout
Lake St. Clair Walleye
Detroit River Carp
St. Marys River Carp
Detroit River Walleye
Grand Traverse Bay Carp
Thunder Bay Lake Trout
Grand Traverse Bay Lake Tro
St. Marys River Walleye
Little Bay de Noc Walleye
St. Clair River Carp
Lake Erie Carp
DDT
Total DDT (ppm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year


Inland Lakes and Rivers
Gun Lake Largemouth Bass
Pontiac Lake Largemouth Bass
Kalamazoo River Carp
St. Joseph River Carp
Lake Gogebic Walleye
S. Manistique Lake Walleye
Houghton Lake Largemouth Bass
Gull Lake Largemouth Bass
Muskegon River Carp
Higgins Lake Lake Trout
Raisin River Carp
DDT
Total DDT (ppm)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year


Great Lakes and Connecting Channels
Saginaw Bay Walleye
Detroit River Carp
Little Bay De Noc Walleye
Lake St. Clair Walleye
St. Clair River Carp
Lake Erie Carp
Grand Traverse Bay Lake Trout
Thunder Bay Lake Trout
Thunder Bay Carp
Hg
Mercury (ppm)
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year


Inland Lakes and Rivers
Lake Gogebic Walleye
River Raisin Carp
Hg
Mercury (ppm)
1
0.8
0.6
0.4
0.2
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year