Figure 3-1
Total Suspended Solids Concentration [TSS],
Upper Hudson River Water Column Transects
Figure 3-2
Particulate Organic Carbon [POC],
Upper Hudson River Water Column Transects

Note: POC concentration calculated from weight loss on ignition data.

Source: TAMS/Gradient Database
Figure 3-3
Two-Phase Partition Coefficients to Particulate Matter ($K_{P,a}$) for Water-Column Transects

Notes:
- No temperature correction.
- Plot includes congeners having at least three samples quantitated for both dissolved and particulate phases.
- For some congeners with skewed sample distributions the median may be below the confidence interval on the mean.

Source: TAMS/Gradient Database
Figure 3-4
Two-Phase Partition Coefficients to Particulate Organic Carbon ($K_{POC,a}$) for Water-Column Transects

Legend:
- Uncorrected median value
| 95% confidence interval on mean

Notes:
- No temperature correction.
- Plot includes congeners having at least three samples quantitated for both dissolved and particulate phases.

Source: TAMS/Gradient Database
Figure 3-5
Observed vs Theoretical Partitioning to Particulate Organic Carbon for PCB Congeners in the Freshwater Hudson

Note: Theoretical values from Mackay et al. (1992).
Figure 3-6
$K_{POC,a}$ Estimates vs. Water Temperature for BZ#52,
Hudson River Water-Column Transect Samples

Source: TAMS/Gradient Database
Figure 3-7
Variation in log $K_{P,a}$ by Transect for BZ#44

Note: Estimates without temperature correction.

Source: TAMS/Gradient Database
Figure 3-8
Variation in log $K_{POC,a}$ by Transect for BZ#44

Note: Estimates without temperature correction.

Source: TAMS/Gradient Database
Figure 3-9
Variation in log $K_{P,a}$ by River Mile for BZ#44

Note: Estimates without temperature correction.
Figure 3-10
Variation in log $K_{POC,a}$ by River Mile for BZ#44

Legend:
Transect Event
- 1
- 2
- 3
- 4
- 5
- 6

Note: Estimates without temperature correction.

Source: TAMS/Gradient Database
Figure 3-11
Temperature Correction Slope Estimates for PCB Capillary Column Peaks

Source: Warren et al. (1987)
Figure 3-12
Equilibration $K_{p,a}$ Estimates for PCB Partitioning in Hudson River Transect Samples

Source: TAMS/Gradient Database
Figure 3-13
K_{P,a} Estimates for Hudson River Transect 1

Note: Estimates without temperature correction.
Figure 3-14
K_p,a Estimates for Hudson River Transect 4

Note: Estimates without temperature correction.

Source: TAMS/Gradient Database
Figure 3-15
$K_{P,a}$ Estimates for Hudson River Transect 6

Note: Estimates without temperature correction.

Source: TAMS/Gradient Database
Figure 3-16
Percent Deviations in $\log K_{\text{POC,ad}}$ Estimates for PCB Congeners by River Mile

Legend:
- Mono-Trichlorinated Congeners
- Tetra-Octachlorinated Congeners

Source: TAMS/Gradient Database
Figure 3-17
Prediction of Particulate-Phase PCB Congener Concentration Using $K_{P,a}$ with Temperature Correction

A. Arithmetic Scale

B. Logarithmic Scale

Source: TAMS/Gradient Database
Figure 3-18
Prediction of Particulate-Phase PCB Congener Concentration Using $K_{POC,a}$ with Temperature Correction

A. Arithmetic Scale

B. Logarithmic Scale

Source: TAMS/Gradient Database
Figure 3-19
Median Values of $\log K_{\text{POC,a}}$ Corrected to 20 °C
Figure 3-20
PCB Congener $K_{POC,\alpha}$ Estimates for Hudson River Flow-Averaged vs. Transect Samples

Source: TAMS/Gradient Database
Figure 3-21
Relationship of Dissolved and Particulate Organic Carbon Concentrations in Upper Hudson River Transect Samples

Note: [POC] calculated from weight-loss-on-ignition data.

Source: TAMS/Gradient Database
Figure 3-22
Estimated Average Percent Distribution of PCB Congeners among Dissolved, POC, and DOC Phases in Upper Hudson River Water-Column Transect Data

Note: Percentages calculated at mean concentrations observed in Upper Hudson River of DOC = 4.79 mg/L and POC = 1.40 mg/L.

Source: TAMS/Gradient Database
Figure 3-23
Comparison of USGS Measured Flows at Fort Edward, Stillwater and Waterford for Water Year 1992

Flow Reported by the USGS for October 1, 1991 through March 31, 1992

Flow Reported by the USGS for April 1, 1992 through September 30, 1992

Legend:
- Ft. Edward
- Stillwater
- Waterford

Date of Measurement (Water Year 1992)
Notes:

a. For Stillwater Flow ≤ 4,000 cfs:
   97.5% Quantile = 12.2%
   2.5% Quantile = -18.5%

b. For 4,000 cfs < Stillwater Flow ≤ 6,000 cfs:
   97.5% Quantile = 13.5%
   2.5% Quantile = -10.8%

c. For Stillwater Flow > 6,000 cfs:
   97.5% Quantile = 11.2%
   2.5% Quantile = -8.5%

Source: NYS Thruway Authority, Office of Canals (1994)
Figure 3-25
Comparison of Flows Predicted by Stillwater Low Flow Models (Fort Edward Flow ≤ 8,000 cfs)

Source: TAMS/Gradient Database
Figure 3-26
Comparison of Flows Predicted by Stillwater
High-Flow (Fort Edward Flow > 8,000 cfs) Models
Figure 3-27
Comparison of Flows Predicted by Stillwater
Low-Flow (Fort Edward Flow ≤ 8,000 cfs) and
Stillwater High-Flow (Fort Edward Flow > 8,000 cfs) Models

Source: TAMS/Gradient Database
Figure 3-28
Comparison of Flows Predicted by Waterford
Low-Flow (Fort Edward Flow ≤ 8,000 cfs) Models

Source: TAMS/Gradient Database

TAMS/Gradient
Figure 3-29
Comparison of Flows Predicted by Waterford High-Flow (Fort Edward Flow > 8,000 cfs) Models

Source: TAMS/Gradient Database
Figure 3-30
Comparison of Flows Predicted by Waterford
Low-Flow (Fort Edward Flow • 8,000 cfs) Models and Waterford
High-Flow (Fort Edward Flow > 8,000 cfs) Models

Source: TAMS/Gradient Database
Figure 3-31
Homologue Distribution of the GE Hudson Falls Facility Source as Characterized by the Transect 1 Remnant Deposit Area (RM 195.8) Sample

Source: TAMS/Gradient Database
Figure 3-32
Suspended-Matter Loading in the Upper Hudson River - Transect 1 Low-Flow Conditions

Legend:
- Total Measured Main-Stem Hudson River Suspended-Matter Load
- Batten Kill Contribution
- Fish Creek Contribution
- Hoosic River Contribution
- Mohawk River Contribution

Source: TAMS/Gradient Database, USGS (1993a, 1993b), and NYS Thruway Authority, Office of Canals (1994a, 1993)

Note:
a) Tributary river mile designations correspond to point of confluence with the Hudson River.
b) Fish Creek suspended matter load is estimated using the suspended solids value for the Batten Kill and a flow estimate based on drainage basin area.
Figure 3-33
Suspended-Matter Loading in the Upper Hudson River
Transect 3 - Transition between Low-Flow and High-Flow Conditions

Legend:
- Total Measured Main-Stem Hudson River Suspended Matter Load
- Batten Kill Contribution
- Fish Creek Contribution
- Hoosic River Contribution

Note:
- a) Tributary river mile designations correspond to point of confluence with the Hudson River.
- b) Fish Creek suspended matter load is estimated using the suspended solids value for the Batten Kill and a flow estimate based on drainage basin area.
- c) Scour Event due to onset of spring flood event in lower part of the Upper River.

Source: TAMS/Gradient Database, USGS (1993a, 1993b), and NYS Thruway Authority, Office of Canals (1994a, 1993)
Figure 3-34
Suspended-Matter Loading in the Upper Hudson River - Transect 4 High-Flow Conditions

Legend:
- Total Measured Main-Stem Hudson River Suspended Matter Load
- Batten Kill Contribution
- Fish Creek Contribution
- Hoosic River Contribution
- Mohawk River Contribution

Note:
a) Tributary river mile designations correspond to point of confluence with the Hudson River.
b) Fish Creek suspended matter load is estimated using the suspended solids value for the Batten Kill and a flow estimate based on drainage basin area.
c) Sample is believed to over-represent dilution by the Moses Kill due to proximity of sampling location to Moses Kill confluence.
d) Sample is believed to over-represent upstream Main-Stem Hudson River loading due to incomplete mixing of the Mohawk River.
Figure 3-35
Suspended-Matter Loading in the Upper Hudson River - Transect 6 Low-Flow Conditions

Legend:
- Total Measured Main-Stem Hudson River Suspended-Matter Load
- Batten Kill Contribution $^a$
- Estimated Fish Creek Contribution $^{a,b}$
- Hoosic River Contribution $^a$
- Mohawk River Contribution $^a$

Source: TAMS/Gradient Database, USGS (1993a, 1993b), and NYS Thruway Authority, Office of Canals (1994a, 1993)

Note:
- $^a$ Tributary river mile designations correspond to point of confluence with the Hudson River.
- $^{a,b}$ Fish Creek suspended matter load is estimated using the suspended solids value for the Batten Kill and a flow estimate based on drainage basin area.
Note:
The level of dechlorination shown in the sediment distribution patterns increases from graph A through F.

Source: TAMS/Gradient Database

Figure 3-36
Sediment Homologue Distributions in the Thompson Island Pool
Figure 3-37
Estimated Porewater Homologue Distributions in Sediments from the Thompson Island Pool

Note:

1. Mass fractions are calculated using the homologue distributions shown in Figure 3-36 and the two phase water column partition coefficients developed in Section 3.1.
2. For congeners without partition coefficients, the median value of the homologue group was used. For Nona and Deca congeners, the median Octa value was used.

Source: TAMS/Gradient Database
Fenimore Bridge
River Mile = 197.6
Total Load = 0.47 mg/s
Flow = 170 m$^3$/s

Rogers Island
River Mile = 194.6
Total Load = 12 mg/s
Flow = 170 m$^3$/s

Thompson Island Dam
River Mile = 188.5
Total Load = 9.3 mg/s
Flow = 170 m$^3$/s

Batten Kill
River Mile = 182.1
Total Load = 0.09 mg/s
Flow = 30 m$^3$/s

Schuylerville
River Mile = 181.3
Total Load = 9.2 mg/s
Flow = 210 m$^3$/s

Hoosic River
River Mile = 167.5
Total Load = 0.11 mg/s
Flow = 62 m$^3$/s

Waterford
River Mile = 156.5
Total Load = 11 mg/s
Flow = 350 m$^3$/s

Mohawk River
River Mile = 156.2
Total Load = 0.09 mg/s
Flow = 80 m$^3$/s

Green Island Bridge
River Mile = 151.7
Total Load = 8.6 mg/s
Flow = 370 m$^3$/s


Notes:
1. Suspended-phase PCB concentration in ng/L calculated as function of dry weight concentration (ug/kg) and total suspended solids concentration (mg/L).
2. The homologue pattern measured for this station was unlike any seen in other Phase 2 samples and is considered suspect.
3. Tributary river mile designations correspond to point of confluence with the Hudson River.
Figure 3-39
Typical Homologue Distributions of the Batten Kill and Hoosic River PCB Water-Column Loads

Source: TAMS/Gradient Database

TAMS/Gradient
### Whole-Water PCBs

- **Fenimore Bridge**
  - River Mile = 197.6
  - Total Load = 0.16 mg/s
  - Flow = 94 m³/s

- **Rogers Island**
  - River Mile = 194.6
  - Total Load = 2.4 mg/s
  - Flow = 94 m³/s

- **Thompson Island Dam**
  - River Mile = 188.5
  - Total Load = 12 mg/s
  - Flow = 98 m³/s

- **Batten Kill**
  - River Mile = 182.5
  - Total Load = 0.08 mg/s
  - Flow = 38 m³/s

- **Schuylerville**
  - River Mile = 181.3
  - Total Load = 11 mg/s
  - Flow = 140 m³/s

- **Stillwater**
  - River Mile = 168.3
  - Total Load = 20 mg/s
  - Flow = 400 m³/s

- **Hoosic River**
  - River Mile = 167.5
  - Total Load = 0.15 mg/s
  - Flow = 12 m³/s

- **Waterford**
  - River Mile = 156.5
  - Total Load = 200 mg/s
  - Flow = 1300 m³/s

### Dissolved-Phase PCBs

- **Fenimore Bridge**
  - $C_{\text{Dissolved}} = 0.42$ ng/L

- **Rogers Island**
  - $C_{\text{Dissolved}} = 16$ ng/L

- **Thompson Island Dam**
  - $C_{\text{Dissolved}} = 98$ ng/L

- **Batten Kill**
  - $C_{\text{Dissolved}} = 0.51$ ng/L

- **Schuylerville**
  - $C_{\text{Dissolved}} = 63$ ng/L

- **Stillwater**
  - $C_{\text{Dissolved}} = 33$ ng/L

- **Hoosic River**
  - $C_{\text{Dissolved}} = 4.8$ ng/L

- **Waterford**
  - $C_{\text{Dissolved}} = 15$ ng/L

### Suspended-Phase PCBs

- **Fenimore Bridge**
  - $C_{\text{Suspended}} = 1.3$ ng/L

- **Rogers Island**
  - $C_{\text{Suspended}} = 9.7$ ng/L

- **Thompson Island Dam**
  - $C_{\text{Suspended}} = 28$ ng/L

- **Batten Kill**
  - $C_{\text{Suspended}} = 1.5$ ng/L

- **Schuylerville**
  - $C_{\text{Suspended}} = 13$ ng/L

- **Stillwater**
  - $C_{\text{Suspended}} = 14$ ng/L

- **Hoosic River**
  - $C_{\text{Suspended}} = 7.8$ ng/L

- **Waterford**
  - $C_{\text{Suspended}} = 150$ ng/L

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TAMS/Cadmus/Gradient

Notes:

a. Suspended-phase PCB concentration in ng/L calculated as function of dry weight concentration (ug/kg) and total suspended solids concentration (mg/L).
b. Tributary river mile designations correspond to point of confluence with the Hudson River.
c. Scour event due to onset of spring flood in lower part of the Upper River.
d. Vertical scale expanded to show full scour event loading.

**Figure 3-40**

Upper River Water-Column Instantaneous PCB Loading for Transect 3  
Transition from Low-Flow to High-Flow Conditions
Figure 3-41
Homologue Distributions of Surficial Sediments (0 to 2 cm) in the Batten Kill and the Hoosic River

Source: TAMS/Gradient Database
Figure 3-42

Sediment Homologue Distributions in the Upper River Reaches below the Thompson Island Dam
Fenimore Bridge
River Mile = 197.6
Total Load = 0.68 mg/s
Flow = 580 m³/s

Rogers Island
River Mile = 194.6
Total Load = 210 mg/s
Flow = 580 m³/s

Thompson Island Dam
River Mile = 188.5
Total Load = 120 mg/s
Flow = 600 m³/s

Batten Kill
River Mile = 182.1
Total Load = 0.77 mg/s
Flow = 75 m³/s

Schuylerville
River Mile = 181.3
Total Load = 210 mg/s
Flow = 690 m³/s

Stillwater
River Mile = 168.3
Total Load = 180 mg/s
Flow = 690 m³/s

Hoosic River
River Mile = 167.5
Total Load = 0.80 mg/s
Flow = 180 m³/s

Waterford
River Mile = 155.5
Total Load = 210 mg/s
Flow = 900 m³/s

Mohawk River
River Mile = 156.2
Total Load = 41 mg/s
Flow = 1000 m³/s

Green Island Bridge
River Mile = 151.7
Total Load = 380 mg/s
Flow = 1900 m³/s


Notes:
1. Suspended-phase PCB concentration in ng/L calculated as function of dry weight concentration (μg/kg) and total suspended solids concentration (mg/L).
2. Sample is believed to over-represent dilution by Moses Kill due to proximity of sampling location to Moses Kill confluence.
3. Tributary river mile designations correspond to point of confluence with the Hudson River.
4. Sample is believed to over-represent upstream load contribution due to incomplete mixing of the Mohawk River.

**Figure 3-43**
Upper River Water-Column Instantaneous PCB Loading for Transect 4 High-Flow Conditions
Figure 3-44
Upper River Water-Column PCB Loading for Flow-Averaged Event 1 High-Flow Conditions

Notes:

a. Flow-Averaged Event 1 samples were collected during the period of April 23 to May 8, 1993.
b. Samples collected at Waterford are not represented here due to local canal construction which is believed to have influenced the samples.


For the diagram:

**Fennimore Bridge**
River Mile = 197.6
Total Load = 1.4 mg
Flow = 530 m³/s

**Rogers Island**
River Mile = 194.6
Total Load = 83 mg
Flow = 530 m³/s

**Thompson Island**
River Mile = 188.5
Total Load = 68 mg
Flow = 560 m³/s

C₁₀ = 2.6 ng/L
C₁₅ = 160 ng/L
C₂₀ = 120 ng/L
**Fennimore Bridge**

River Mile = 197.6  
Total Load = 0.03 mg/s  
Flow = 96 m$^3$/s

**Rogers Island**

River Mile = 194.6  
Total Load = 4.7 mg/s  
Flow = 96 m$^3$/s

**Thompson Island Dam**

River Mile = 188.5  
Total Load = 17 mg/s  
Flow = 100 m$^3$/s

**Waterford**

River Mile = 156.5  
Total Load = 16 mg/s  
Flow = 160 m$^3$/s

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**Figure 3-45**

Upper River Water-Column PCB Loading for Flow-Averaged Event 2 Low-Flow Conditions
Fennimore Bridge
River Mile = 197.6
Total Load = 0.05 mg/s
Flow = 85 m³/s

Rogers Island
River Mile = 194.6
Total Load = 15 mg/s
Flow = 85 m³/s

Thompson Island Dam
River Mile = 188.5
Total Load = 17 mg/s
Flow = 89 m³/s

Waterford
River Mile = 156.5
Total Load = 17 mg/s
Flow = 188 m³/s

Note: Flow-Averaged 3 samples were collected during the period of June 6 to June 19, 1993.

Figure 3-46
Upper River Water-Column PCB Loading for Flow-Averaged Event 3 Low-Flow Conditions
Figure 3-47
Upper River Water-Column Instantaneous PCB Loading for Transect 6 Low-Flow Conditions
**Fennimore Bridge**
River Mile = 197.6  
Total Load = 0.27 mg/s  
Flow = 71 m³/s

**Rogers Island**
River Mile = 194.6  
Total Load = 2.5 mg/s  
Flow = 71 m³/s

**Thompson Island Dam**
River Mile = 188.5  
Total Load = 10 mg/s  
Flow = 75 m³/s

**Waterford**
River Mile = 156.5  
Total Load = 12 mg/s  
Flow = 171 m³/s

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**Figure 3-48**
Upper River Water-Column PCB Loading for Flow-Averaged 5 Low-Flow Conditions

Note: Flow-Averaged 5 samples were collected during the period of August 2 to August 17, 1993.

Fennimore Bridge
River Mile = 197.6
Total Load = 0.02 mg/s
Flow = 71 m$^3$/s

Rogers Island
River Mile = 194.6
Total Load = 2.0 mg/s
Flow = 71 m$^3$/s

Thompson Island Dam
River Mile = 188.5
Total Load = 7.3 mg/s
Flow = 75 m$^3$/s

Waterford
River Mile = 156.5
Total Load = 10 mg/s
Flow = 201 m$^3$/s

Note: Flow-Averaged 6 water column samples were collected during the period of September 9 to September 23, 1993.
The Coincidence of the $^{137}$Cs and $^{60}$Co Maxima at River Mile 43.2 (Core 6)

Source: TAMS/Gradient Database
Figure 3-51

$^{137}$Cs Concentrations in High Resolution Sediment Core 11 and Core 19

Note:
Error bars represent two standard deviations of counting uncertainty. The radionuclide is considered to be present when this uncertainty does not contain zero.

Source: TAMS/Gradient Database
**Comparison of $^{137}$Cs Profiles between a Phase 2 High-Resolution Sediment Core and a Historical Core at River Mile 188.5**

Source: TAMS/Gradient Database

Notes:

a. Error bars represent two standard deviations of counting uncertainty. The radionuclide is considered to be present when this uncertainty does not contain zero.

b. The historical core was not analyzed for $^7$Be; its core top is assumed to represent the 1984 period of collection.
Figure 3-53
Upper River High-Resolution Sediment Cores Depth vs. $^{137}$Cs Concentration and PCB Concentration

Source: TAMS/Gradient Database

Legend:
- $^{137}$Cs
- PCBs

Note:
a. Scales of horizontal axes differ
Figure 3-54

Lower River High-Resolution Sediment Cores Depth vs. $^{137}$Cs Concentration and PCB Concentration

Source: TAMS/Gradient Database
Tributaries and Background High Resolution Sediment Cores

Depth vs. $^{137}$Cs Concentration and PCB Concentration

Source: TAMS/Gradient Database
Comparison of Thompson Island Pool Surficial Sediment with Thompson Island Dam Suspended Matter

Comparison of Stillwater Pool Surficial Sediment with Stillwater Suspended Matter

Comparison of Albany Turning Basin Surficial Sediment with Green Island Bridge Suspended Matter

Comparison of Kingston Surficial Sediment with Highland Suspended Matter

Legend:
- Core 21 (RM 177.8)
- Suspended Matter (RM 146.7)

Legend:
- Core 23 (RM 189.2)
- Suspended Matter (RM 146.7)

Legend:
- Core 23 (RM 189.2)
- Suspended Matter (RM 146.7)

Legend:
- Core 21 (RM 177.8)
- Suspended Matter (RM 146.7)

Legend:
- Core 21 (RM 177.8)
- Suspended Matter (RM 146.7)

Legend:
- Core 23 (RM 189.2)
- Suspended Matter (RM 146.7)
Figure 3-57
Comparison of the Thompson Island Pool Surficial Sediment Congener Distribution with the Thompson Island Dam Suspended-Matter Congener Distributions associated with Low-Flow Winter and Summer Conditions

Source: TAMS/Gradient Database
Figure 3-58

Comparison of the Albany Turning Basin Surficial Sediment Congener Distribution with the Green Island Bridge Suspended-Matter Congener Distributions associated with Low-Flow Winter and Summer Conditions.
Figure 3-59
Total PCBs in Sediment vs. Approximate Year of Deposition at River Mile 188.5
Near the Thompson Island Dam: High Resolution Sediment Core 19

Note:
a. Measurement uncertainty is estimated to be 0.75 * Sample Thickness/Sedimentation Rate.

Source: TAMS/Gradient Database

Legend:
- Core 19
  - Measurement uncertainty
Figure 3-60

Total PCB Content in Sediment Deposited Between 1991 and 1992 vs. River Mile

Legend:
- Total PCBs
- Background & Tributary Contributions
- Duplicate Measurements

Note: a. Duplicate pairs exist at River Miles 177.8 and 43.2. The solid symbol represents the mean of the duplicate pair.

Source: TAMS/Gradient Database
Figure 3-61  
Total PCBs in Post-1975 Sediment vs. 
Approximate Year of Deposition in the Hudson River

Notes:

a. Measurement uncertainty is not shown in order to improve visual clarity of the data.
b. Dashed line represents a weighted running average of the data and is included for visual reference.
c. For all diagrams, measurement uncertainty is estimated to be ±0.75 x sample thickness/sedimentation rate.

Source: TAMS/Gradient Database
Figure 3-62

Total PCB Content in Sediment vs River Mile

Legend:
- Total PCBs
- Background & Tributary Contributions
- Duplicate Measurements

Note:
- Vertical axis range increases in successive diagrams as age of sediment represented increases.
- Duplicate pairs exist on all graphs at River Miles 177.8 and 43.2. The solid symbol represents the mean of the duplicate pair.

Source: TAMS/Gradient Database
Figure 3-63

137Cs Levels in Surface Sediments in the Hudson River Based on High-Resolution Sediment Coring Results

Notes:

a. Measurement uncertainty represents ± two standard deviations (±2σ)

Source: TAMS/Gradient Database

Legend:
- Main Stem Hudson
- Tributaries
- Measurement uncertainty ±2σ

Mean [137Cs] level between RM 177.8 and -1.9.

2σ uncertainty about mean
Legend:
- Measured
- Background & Tributary Contributions
- Duplicate Measurements

Note:
- Vertical axis range increases in successive diagrams as age of sediment represented increases.
- Duplicate pairs exist on all graphs at River Miles 177.8 and 43.2. The solid symbol represents the mean of the duplicate pair.

Source: TAMS/Gradient Database

Figure 3-64
Total PCBs/\(^{137}\)Cs Content in Sediment vs River Mile
Figure 3-65

Time Interval Comparison for Total PCBs/\(^{137}\)Cs Ratios: 1975 through 1992

Legend:
- 1975 - 1981
- 1982 - 1986
- 1987 - 1990
- 1991 - 1992

RM 188.5, Thompson Island Dam, Core 19

Source: TAMS/Gradient Database
**Figure 3-66**

**Comparison of Measured and Calculated Total PCBs/\(^{137}\)Cs Ratios for Sediment Deposited between 1991 and 1992**

Legend:
- **Measured**
- **Duplicate Measurements**
- **Calculated - Based on Thompson Island Dam Measurement**
- **Calculated - Based on Stillwater Measurement**
- **Background & Tributary Contributions**

Note:
- Duplicate pairs exist at River Miles 177.8 and 43.2. The solid symbol represents the mean of the duplicate pair.

Source: TAMS/Gradient Database
Figure 3-67

Comparison of Measured and Calculated Total PCBs/$^{137}$Cs Ratios for Sediment Deposited between 1982 and 1986
Figure 3-68

Total PCBs/137Cs Ratios in Dated Sediment vs River Mile: A Comparison of Calculated and Measured Results

Source: TAMS/Gradient Database

Note:
1. Vertical axis range increases in successive diagrams as age of sediment represented increases.
2. Error bars represent ±25% uncertainty in the measured value.
3. Duplicate pairs exist on all graphs at River Miles 177.8 and 43.2. The solid symbol represents the mean of the duplicate pair.
Figure 3-69
Comparison of the Duplicate Core Results on a Congener Basis
for RM 177.8 near Stillwater for 1991 to 1992

Source: TAMS/Gradient Database

Legend:
- Core 21 1991-1992
- Core 22 1991-1992
A Comparison between the Post-1990 Sediment PCB Congener Pattern for Core 21 at River Mile 177.4 near Stillwater and Three Aroclor Mixtures

Source: TAMS/Gradient Database

Legend:
- Core 21 - 1991 to 1992
- Aroclor 1242
- Aroclor 1254
- Aroclor 1260

Note: This plot has a separate vertical axis scale for Aroclor 1260 congener concentrations due to composition.
Figure 3-71
Normalized PCB Congener Concentrations in Stillwater 1991 to 1992
Sediments and Rogers Island Suspended Matter vs. Aroclors 1254 and 1260

Source: TAMS/Gradient Database
Figure 3-72
Comparison of PCB Congener Patterns: Suspended Matter from River Mile 194.6 at Rogers Island for Transect 4, April 12 to 14, 1993 and a Mixture of 94% Aroclor 1242 + 5% Aroclor 1254 + 1% Aroclor 1260
Figure 3.73
A Comparison between the 1991 to 1992 PCB Congener Pattern at River Mile 177.8 near Stillwater with the Period 1975 to 1990
Figure 3-74
A Comparison of the PCB Congener Pattern Chronology between River Mile 143.5 near Albany and River Mile 177.8 near Stillwater for 1975 to 1992
Figure 3-75
A Comparison of the Combined Thompson Island Dam PCB Load Congener Pattern
Recorded at Stillwater with Downstream Congener Patterns
in Sediments Dated Post-1990

Source: TAMS/Gradient Database
Figure 3-76
A Comparison of the Combined Thompson Island Dam PCB Load Congener Pattern Recorded at Stillwater with Downstream Congener Patterns in Sediments Dated 1987 to 1990

Source: TAMS/Gradient Database
Figure 3-77
A Comparison of the Combined Thompson Island Dam PCB Load Congener Pattern
Recorded at Stillwater with Downstream Congener Patterns
in Sediments Dated 1982 to 1986
Figure 3-78
A Comparison of the Combined Thompson Island Dam PCB Load Congener Pattern
Recorded at Stillwater with Downstream Congener Patterns
in Sediments Dated 1975 to 1981

Source: TAMS/Gradient Database
Comparison of PCB Congener Patterns: RM 143.5 near Albany and Mohawk River Sediments for 1991 to 1992 Deposition

Legend:
- RM 143.5
- Mohawk River

Comparison of PCB Congener Patterns: RM 143.5 near Albany and a Calculated Mixture for 1991 to 1992 Deposition

Legend:
- RM 143.5
- 77% RM 177.8 + 1% Mohawk River + 3% A1260 + 19% A1016
- RM 177.8

Comparison of PCB Congener Patterns: RM 143.5 near Albany and a Calculated Mixture for 1982 to 1986 Deposition

Legend:
- RM 143.5
- 85% RM 177.8 + 19% A1260
- RM 177.8

Note:
a. The vertical scale range is increased to accommodate the peak for BZ#110.
Comparison of PCB Congener Patterns: RM -1.9 in Upper New York Bay and the RM 177.8 Stillwater Core for 1991 to 1992 Deposition

Comparison of PCB Congener Patterns: RM -1.9 and a Mixture of 44% RM 177.8 and 56% Newtown Creek for 1991 to 1992 Deposition

Comparison of PCB Congener Patterns: RM -1.9 in Upper New York Bay and the RM 177.8 Stillwater Core for 1991 to 1992 Deposition

Note:
1. The vertical scale range is increased to accommodate the peak for BZ#110.
Figure 3-81
Monthly PCB Load, River Mile 194.6 at Rogers Island
And River Mile 188.5 at Thompson Island Pool
Averaging Estimate on GE Data

Source: TAMS/Gradient Database
Figure 3-82
Total PCB Concentrations at River Mile 194.6
GE Data, with Moving Average
Figure 3-83
Load across the Thompson Island Pool
Total PCBs, GE Data
Figure 3-84
Load across the Thompson Island Pool
Mono-Chlorinated PCB Homologues, GE Data
Figure 3-85
Load across the Thompson Island Pool
Di-Chlorinated PCB Homologues, GE Data
Figure 3-86
Load across the Thompson Island Pool
Tri-Chlorinated PCB Homologues, GE Data
Figure 3-87
Load across the Thompson Island Pool
Tetra-Chlorinated PCB Homologues, GE Data

Source: TAMS/Gradient Database

TAMS/ Gradient
Figure 3-88

Average Daily PCB Homologue Load at Rogers Island (river Mile 194.6) and Thompson Island Dam (River Mile 188.5)

April 1991 through February 1996, Averaging Estimate on GE Data
Figure 3-89
Gain across the Thompson Island Pool
Total PCBs, GE Data
Figure 3-90
Gain across the Thompson Island Pool
Mono-Chlorinated PCBs, GE Data

Source: TAMS/Gradient Database
Figure 3-91
Gain across the Thompson Island Pool
Di-Chlorinated PCB Homologues, GE Data
Figure 3-92
Gain across the Thompson Island Pool
Tri-Chlorinated PCB Homologues, GE Data

Source: TAMS/Gradient Database
TAMS/ Gradient
Figure 3-93
Gain across the Thompson Island Pool
Tetra-Chlorinated PCB Homologues, GE Data

Source: TAMS/Gradient Database
Figure 3-94
PCB Homologue Composition Change across the Thompson Island Pool
April 1991 through February 1995, GE Data

Source: TAMS/Gradient Database
Source: TAMS/Gradient Database

Figure 3-95
Summer PCB Homologue Concentrations
June through August 1991, GE Data
Figure 3-96
Summer PCB Homologue Concentrations
June through August 1992, GE Data

Source: TAMS/Gradient Database
Figure 3-97
Summer PCB Homologue Concentrations
June through August 1993, GE Data
Figure 3-98
Summer PCB Homologue Concentrations
June through August 1994, GE Data

Source: TAMS/Gradient Database
Figure 3-99
Summer PCB Homologue Concentrations
June through August 1995, GE Data
Figure 3-100
Total PCB Load from USGS Data:
Ratio Estimator

Source: TAMS/Gradient Database
Figure 3-101
Total PCB Load from USGS Data:
Averaging Estimator

Source: TAMS/Gradient Database
Figure 3-102
Water-Column PCB Homologue Composition at River Mile 194.6 at Rogers Island

Notes:
a. Loading for Transect 3 converted to monthly basis.
b. Represents whole-water analysis.

Source: TAMS/Gradient Database
Transect 3\textsuperscript{a}: March 26 - 31, 1993
26 kg/month

Transect 6\textsuperscript{a}: August 19 - September 1, 1993
15 kg/month

Note:
\textsuperscript{a} Loading for transects converted to monthly basis.

Source: TAMS/Gradient Database

Figure 3-103
Water-Column PCB Homologue Composition of the Net Thompson Island Pool Load
Legends:
- PCB Loading Originating Above Bakers Falls
- Incremental PCB Loading between Bakers Falls and Rogers Island
- Incremental PCB Loading from Thompson Island Pool
- Incremental PCB Loading between Thompson Island Dam and Waterford

Notes:
- a. The large PCB loading below the Thompson Island Pool is the result of scour of the Hudson River sediments caused by onset of the spring flood event in the Hoosic River.
- b. The PCB loading across the Thompson Island Pool is estimated as the difference between the PCB loadings at Schuylerville and Rogers Island since the Thompson Island Dam sample is considered to over-represent dilution by the Moses Kill.
- c. The 7% decrease in PCB load between Thompson Island Dam and Waterford is within measurement uncertainty and is not represented here.

Source: TAMS/Gradient Database

Figure 3-104
Comparison of 1993 Upper Hudson River PCB Loadings at Waterford based on Phase 2 Data
Comparison of Transect Results, Flow-Averaged Event Results, and Monthly Mean Based on GE Data

Notes:

a. PCB Loading for transects and flow-averaged events is converted to a monthly basis.

b. The PCB loading across the Thompson Island Pool is estimated as the difference between the PCB loading at Schuylerville and Rogers Island since the Thompson Island Dam sample is considered to over-represent dilution by the Moses Kill.

c. Sampling event exhibits a net decrease in PCB load between Rogers Island and Thompson Island Dam which is not represented here.
Mean PCB Loadings at the Thompson Island Dam

Figure 3-106

Note
a. Data for November 1995 through February 1996 are not represented here due to two anomalously high background load measurements which were not observed consistently at downstream locations.

Source: TAMS/Gradient Database
Figure 3-107
Water Column Total PCB Concentrations at the Thompson Island Dam:
June 1993 to May 1996 - GE Data
Figure 3-108
PCB Homologue Composition of the Net Thompson Island Pool Load, GE Data

Note:
- Mass transport is based on instantaneous flow values reported by GE.

Source: TAMS/Gradient Database

May 1996
52 kg/month (1.7 kg/day)

June 1991
11 kg/month (0.37 kg/day)

June 1993
36 kg/month (1.2 kg/day)

August 1993
26 kg/month (0.87 kg/day)

June 1994
34 kg/month (1.1 kg/day)

June 1995
22 kg/month (0.73 kg/day)
Figure 3-109
Total PCB Load at Rogers Island and the Thompson Island Dam - May 27
1996, GE Data

Transect 3 - March 26 to 31, 1993

Transect 4 - April 12 to 14, 1993

Transect 6 - August 19 Through September 1, 1993

Note:

a. The vertical scale for each plot is adjusted to accommodate the range of loads.

b. Mohawk River dissolved and suspended matter PCB concentrations for 3/30/93 were used here to provide a lower bound estimate on the Hoosic River load.

Source: TAMS/Gradient Database

Figure 3-110
PCB Load vs. River Mile for Three Phase 2 Water-Column Transects

TAMS/ Gradient
Transect 1 - January 1993
0.98 kg/day

Transect 3 - March 1993
21 kg/day

Transect 4 - April 1993
22 kg/day

Transect 6 - August 1993
0.76 kg/day

Legend:
- PCB Loading Originating above Bakers Falls
- Incremental PCB Loading between Bakers Falls & Waterford
- PCB Loading from the Batten Kill
- PCB Loading from the Hoosic River
- PCB Loading from the Mohawk River

Source: TAMS/Gradient Database

Figure 3-111
PCB Loadings to the Hudson River at River Mile 153.9
near Albany based on the Water-Column Transect Sampling
Figure 3-112

Fractional PCB Loads at Albany for 1991 to 1992
Based on Dated High-Resolution Sediment Core Results
Notes:
a. Exponential decline in Upper Hudson load = 0.2765/year
b. Exponential decline in downstream loads = 0.057/year
c. 1 lb/day = 0.454 kg/day


Figure 3-113
Model-Projected PCB Loadings to Lower Hudson River and Harbor for 1993
Notes:
  a. Loadings are for 1993 only and should not be used to directly estimate conditions for other time periods (see text for discussion)
  b. 1 lb/day = 0.454 kg/day

Source: TAMS/Gradient Database and various others discussed in text at Sections 2.3 and 3.5

**Figure 3-114**
**Estimated PCB Loadings to Lower Hudson and Harbor for 1993**