CHAPTER I

SECTION 3 FIGURES
Fort Edward Flow versus Date

Lock 1 Flow versus Date

Fort Edward and Lock 1 Daily Average Flows in 2009

Figure I-3-1a

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
However, closure of the East Rogers Island channel raised velocities in the West Rogers Island channel (WRI) to the equivalent of a 8,600 cfs flow, higher on average than any year on record.

2009 was the third wettest year on record, equivalent to a one-in-eleven year event.

Note: Typical flows through the east and west channels of Rogers Island occur roughly in the proportion of 1/3 to 2/3, based on USGS and other studies. Thus closure of the east channel will raise flow in the west channel by about 50 percent less the 200 cfs permitted to flow through the rock dike to maintain dissolved oxygen levels in the east channel.
Near-field Dredge Monitoring Operations Overview

Figure I-3-2

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010

Source: Anchor QEA.
Phase 1 Data Compilation. Hudson River PCBs Site. November 2009. Figure 2.2-2.
Figure I-3-3a

Average Total Suspended Solids Concentration and Two Standard Errors at Near-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Average Total Suspended Solids Concentration and Two Standard Errors at Near-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Average Total Suspended Solids Concentration and Two Standard Errors at Near-field Stations

Rogers Island: West Channel Operation #1

Rogers Island: West Channel Operation #2

Rogers Island: West Channel Operation #3

Figure I-3-3c

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Average Total Suspended Solids Concentration and Two Standard Errors at Near-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Figure I-3-4a
Time Series of Far-field Total PCB Concentrations During Phase 1 Dredging
EPA Phase 1 Evaluation Report - Hudson River PCBs Site

a. Bakers Falls Manual Station

b. Rogers Island Manual Station
c. Thompson Island Automated Station

- TI** (Mod. Green Bay Method)
- TI* (USEPA Method 508)
- TI** (MGM Dup.)
- 7-day flow weighted average

Resuspension Standard: 500 ng/L
Control Level: 350 ng/L

d. Lock 5 Automated Station

- Lock 5 Daily Concentration
- 7-day flow weighted average

Resuspension Standard: 500 ng/L
Control Level: 350 ng/L
Time Series of Far-field Total PCB Concentrations During Phase 1 Dredging
EPA Phase 1 Evaluation Report - Hudson River PCBs Site

Figure I-3-4c
March 2010
Time Series of Far-field Total PCB Concentrations During Phase 1 Dredging

EPA Phase I Evaluation Report - Hudson River PCBs Site

Figure I-3-4d
March 2010
Figure I-3-4e

Time Series of Far-field Total PCB Concentrations During Phase 1 Dredging
EPA Phase 1 Evaluation Report - Hudson River PCBs Site
March 2010
a. Bakers Falls Manual Station

b. Rogers Island Manual Station

Time Series of Far-field Tri+PCB Concentrations During Phase 1 Dredging
EPA Phase 1 Evaluation Report -Hudson River PCBs Site

Figure I-3-5a
March 2010
c. Thompson Island Dam Automated Station

Time Series of Far-field Tri+PCB Concentrations During Phase 1 Dredging
EPA Phase 1 Evaluation Report - Hudson River PCBs Site

Figure I-3-5b
March 2010
Time Series of Far-field Tri+PCB Concentrations During Phase 1 Dredging
EPA Phase I Evaluation Report - Hudson River PCBs Site

Figure I-3-5c

March 2010
Time Series of Far-field Tri+PCB Concentrations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

Figure I-3-5d

March 2010
i. Poughkeepsie Manual Station

Figure I-3-5e: Time Series of Far-field Tri+PCB Concentrations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
a. Bakers Falls Manual Station

b. Rogers Island Manual Station

Time Series of Far-field TSS Concentrations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site
c. Thompson Island Dam AutomatedStation

d. Lock 5 AutomatedStation

Time Series of Far-field TSS Concentrations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

Figure I-3-6b

March 2010
e. Stillwater Manual Station

f. Waterford Automated Station

Time Series of Far-field TSS Concentrations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
g. Mohawk River Manual Station

h. Albany Manual Station

Time Series of Far-field TSS Concentrations During Phase 1
Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
i. Poughkeepsie Manual Station

Time Series of Far-field TSS Concentrations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

Figure I-3-6e

March 2010
a. Bakers Falls Manual Station

b. Rogers Island Manual Station

Time Series of Far-field POC Concentrations During Phase 1 Dredging
EPA Phase 1 Evaluation Report - Hudson River PCBs Site

Figure I-3-7a
March 2010
c. Thompson Island Dam Automated Station

![Graph showing time series of POC concentrations for Thompson Island Dam Automated Station during Phase 1 Dredging.](image)

POC (mg/L)

Date (Year 2009)


d. Lock 5 Automated Station

![Graph showing time series of POC concentrations for Lock 5 Automated Station during Phase 1 Dredging.](image)

POC (mg/L)

Date (Year 2009)

e. Stillwater Manual Station

f. Waterford Automated Station

Time Series of Far-field POC Concentrations During Phase 1 Dredging
EPA Phase I Evaluation Report - Hudson River PCBs Site

Figure I-3-7c
March 2010
i. Poughkeepsie Manual Station

Time Series of Far-field POC Concentrations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Figure I-3-8a

Time Series of Far-field DOC Concentrations During Phase 1 Dredging
EPA Phase 1 Evaluation Report - Hudson River PCBs Site
March 2010
Figure I-3-8b

Time Series of Far-field DOC Concentrations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
e. Stillwater Manual Station

![Graph showing DOC concentrations for Stillwater Manual Station from May 1 to December 11, 2009.](image)

f. Waterford Automated Station

![Graph showing DOC concentrations for Waterford Automated Station from May 1 to December 11, 2009.](image)
Figure I-3-8e
Time Series of Far-field DOC Concentrations During Phase 1 Dredging
EPA Phase 1 Evaluation Report - Hudson River PCBs Site
March 2010
Debris Items Removed During Dredging Operations

Source: Anchor QEA and ARCADIS. Draft Phase I Evaluation Report. Hudson River PCBs Site. January 2010. Figure 5.2-1.
Total PCB Concentration at Thompson Island Station vs. Boat Distance Traveled on Sundays with No Dredging Activities

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Observed and Modeled Values for Water Column PCB Concentrations at Far-field Station in Thompson Island Pool

Figure I-3-12

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Comparison of Near-field and Far-field Total PCB to Tri+PCB Ratio

Figure I-3-13

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Figure I-3-14a

Relationship Between Daily Far-field TPCB to Tri+PCB Ratio and River Flows

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Figure I-3-14b

Relation Between Daily Far-field TPCB to Tri+PCB Ratio and River Flows

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Waterford Station

Figure I-3-14c Relationship Between Daily Far-field TPCB to Tri+PCB Ratio and River Flows

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Data from July 5 to October 27, 2009

Data from July 30 to August 8, 2009

Data from October 8 to 21, 2009

Homologue Load at Far-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Data from July 5 to October 27, 2009

Data from July 30 to August 8, 2009

Data from October 8 to 21, 2009

Homologue Mass Lost at Far-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Data from July 5 to October 27, 2009

Data from July 30 to August 8, 2009

Data from October 8 to 21, 2009

Homologue Fraction Loss at Far-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

Figure I-3-15c

March 2010
Homologue Fraction Transport at Far-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Figure I-3-15e

Total/Tri+ PCB Ratio and Total PCB Load at Schuylerville and Lock 5 for July 5 through October 27, 2009

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Time Series of 7-day Average TPCB Loads at Far-field Stations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Figure I-3-16b

Time Series of 7-day Average Tri+ PCB Loads at Far-field Stations During Phase 1 Dredging

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Cumulative Net TPCB Loads due to Remedial Activities during Phase 1

- Thompson Island: Total 437 kg
- Lock 5: Total 269 kg
- Waterford: Total 151 kg

1% Mass Removed (200 kg)
117 kg Annual Load Limit
Cumulative Net Tri+PCB Loads due to Remedial Activities during Phase 1

1% Mass Removed (55 kg)

39 kg Annual Load Limit
Estimated Mass of PCB Dredged

Thompson Island

Lock 5

Waterford

PCB Mass Dredged and PCB Mass Lost to Water Column at Far-field Stations during Phase 1

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
PCB Export Rate in Water Column in the Far-field during Phase 1 - Weekly Basis

Sample Starting Date (Year 2009)

- Thompson Island
- Lock 5
- Waterford
- 1% target

Fraction Lost to Water Column

March 2010

Figure I-3-18b

EPA Phase 1 Evaluation Report - Hudson River PCBs Site
Figure I-3-19a
Total PCB Concentration for the Lower Hudson River Baseline (2008) vs Phase 1 (2009)
Tri+ PCB Water Column Concentration at Poughkeepsie GE BMP and 2009 Phase 1 Data

Date Sampled


Tri+PCB Concentration (ng/L)

0 10 20 30 40 50 60

2004 2005 2006 2007 2008 2009

Figure I-3-19b

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Tri+ PCB Water Column Concentration at Albany GE BMP and 2009 Phase 1 Data

Figure I-3-19c

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Total PCB Concentration for the Lower Hudson River Baseline (2008) vs Phase 1 (2009)

Figure I-3-19d

EPA Phase 1 Evaluation Report - Hudson River PCBs Site
March 2010
Comparison of Baseline and Post-Dredging Total PCB Water Column Concentration at Far-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

Figure I-3-20a

March 2010
Comparison of Baseline and Post-Dredging Total PCB Water Column Concentration at Far-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Comparison of Baseline and Post-Dredging Total PCB Water Column Concentration at Far-field Stations

EPA Phase 1 Evaluation Report - Hudson River PCBs Site

March 2010
Notes:
1) Beale's ratio estimator was used to calculate the measured annual load.
2) 2005 to 2008 annual loads were calculated using Baseline Monitoring Program samples obtained by GE at Waterford.
Model Forecast

Measured:

- 2002-2005 SSAP Data (0 - 5 cm)
- 1991 GE Composite (0 - 5 cm)
- 1998 GE Composite (0 - 2 cm)

Note:
Model forecast is for 0-4cm of sediment.
Error bars represent 2 standard errors on the mean.

Actual mean surface concentration in 2002 to 2005 is equivalent to the 1991 concentrations, significantly greater than the 1998 concentrations and 3 times greater than the model forecast.