

Remedial Programs at the GE Hudson Falls and GE Fort Edward Plant Sites

**Presented to USEPA Community Advisory Group
March 25, 2004**

**Division of Environmental Remediation
New York State
Department of Environmental Conservation**

An aerial photograph showing a wide river valley. The river is dark and flows from the top center towards the bottom. The surrounding land is a patchwork of brown, tan, and green, indicating a mix of forest, fields, and some urban development. Two red arrows point to specific locations: one at the top center where the river narrows, and another further down the river on the right bank. Two yellow labels with black borders are positioned near these arrows.

GE Hudson Falls Plant Site

GE Fort Edward Plant Site

Site Location – GE Fort Edward

- Town of Fort Edward, Washington County
- Located along Park Avenue, between Broadway and Lower Allen Street
- County office complex to the north
- Rail line adjacent to the site to the west
- Hudson River approximately 800 feet west of the main manufacturing area

An aerial photograph showing a river on the left and an industrial facility on the right. A red arrow points from the '004 Outfall Area' label to the river. Another red arrow points from the 'GE Fort Edward Plant Site' label to a specific building within the industrial complex.

004 Outfall Area

GE Fort Edward Plant Site

Site Background

- Prior to 1947: Site used by GE for production of electric motors
- 1947 – 1977: GE capacitor production using PCB as dielectric fluid
- 1977 to present: GE capacitor production using substitute dielectric fluids TCB, DEHP, PXE

Operable Units

GE Fort Edward Plant Site

- Operable Unit 1 – ongoing groundwater recovery and treatment program to mitigate overburden contaminant plume south of site
- Operable Unit 2 – ongoing groundwater recovery and treatment program on-site; soils removal and off-site disposal in 1990

Operable Units

GE Fort Edward Plant Site

- Operable Unit 3 – additional groundwater and PCB oil management in main manufacturing area
- Operable Unit 4 - area of contaminated soils and sediment adjacent to the former 004 outfall on the eastern shore of the Hudson River

Operable Units

GE Fort Edward Plant Site

- ROD issued in January 2000 for Operable Units 3 and 4
- GE elected to implement the Operable Unit 3 remedy, and to not implement the Operable Unit 4 remedy

Results of Remedial Investigations – OU 4

- Extent of PCB contamination defined in riverbank soils

Interim Remedial Measures

- Relocation of 004 outfall point to Hudson River
- Removal of former 004 outfall pipe and associated contaminated soils

Operable Unit 3 Remedy

- Building 40 (Foil Mill) groundwater and oil collection system
- Conversion of former sewer to groundwater collection system
- Installation and operation of additional “transition zone” recovery wells
- Installation and operation of horizontal well PCB oil collection system in south parking lot

Operable Unit 4 Remedy

- Removal and offsite disposal of PCB contaminated riverbank soils
- Estimated 16,000 tons of material to be removed

Location of
former outfall pipe

Inner containment bladder

Diversion (outer) bladder

24 5:48 PM

Debris pile location

24 5:48 PM

Project logistics area

Remnant Site 3

Remnant Site 2

19 12:05 PM

Diversion bladder installation



19 4:14 PM

River stage during low flow

Oil sorbent boom

15 11:28 AM





Outer diversion

Debris pile

Inner containment

25 8:03 AM



Access road

17 8:29AM





6 2:37 PM

Stockpile awaiting offloading

Decon pad

27 6:54PM





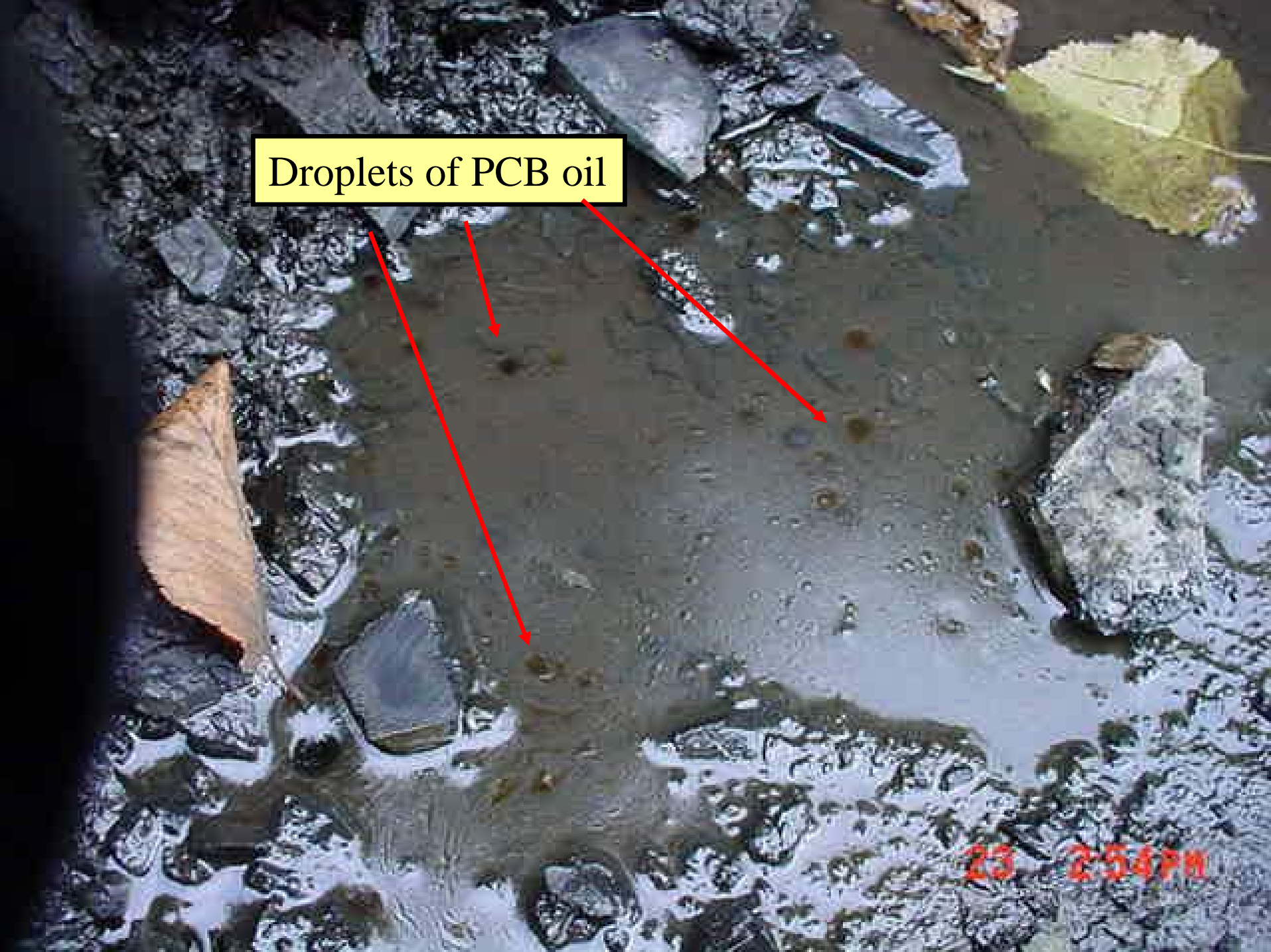
18 8:34AM



27 5:44 PM

Droplets of PCB oil

23 2:54PM





18 8:43AM





18 10:00 AM

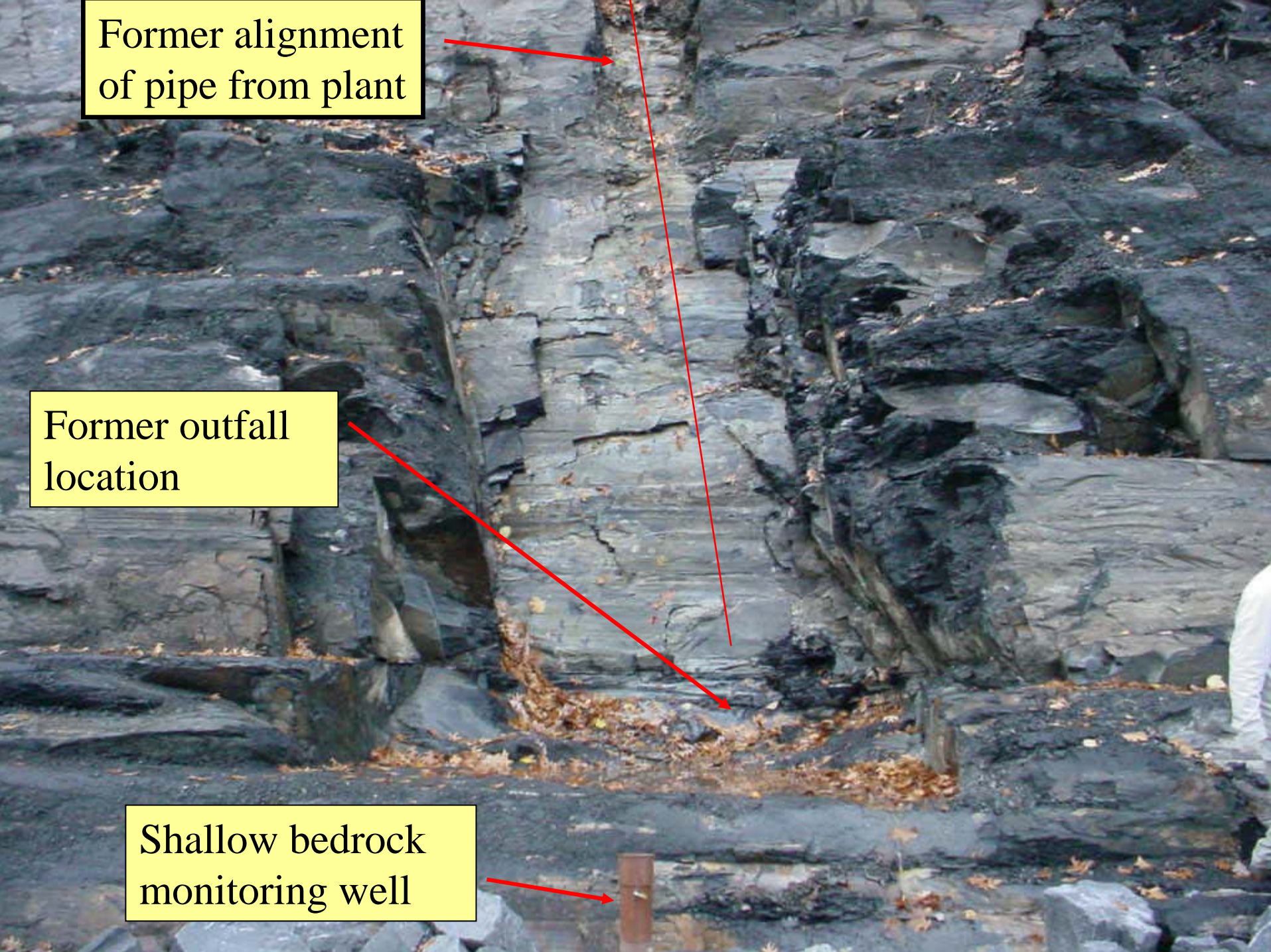
Former outfall structure



Former alignment
of pipe from plant

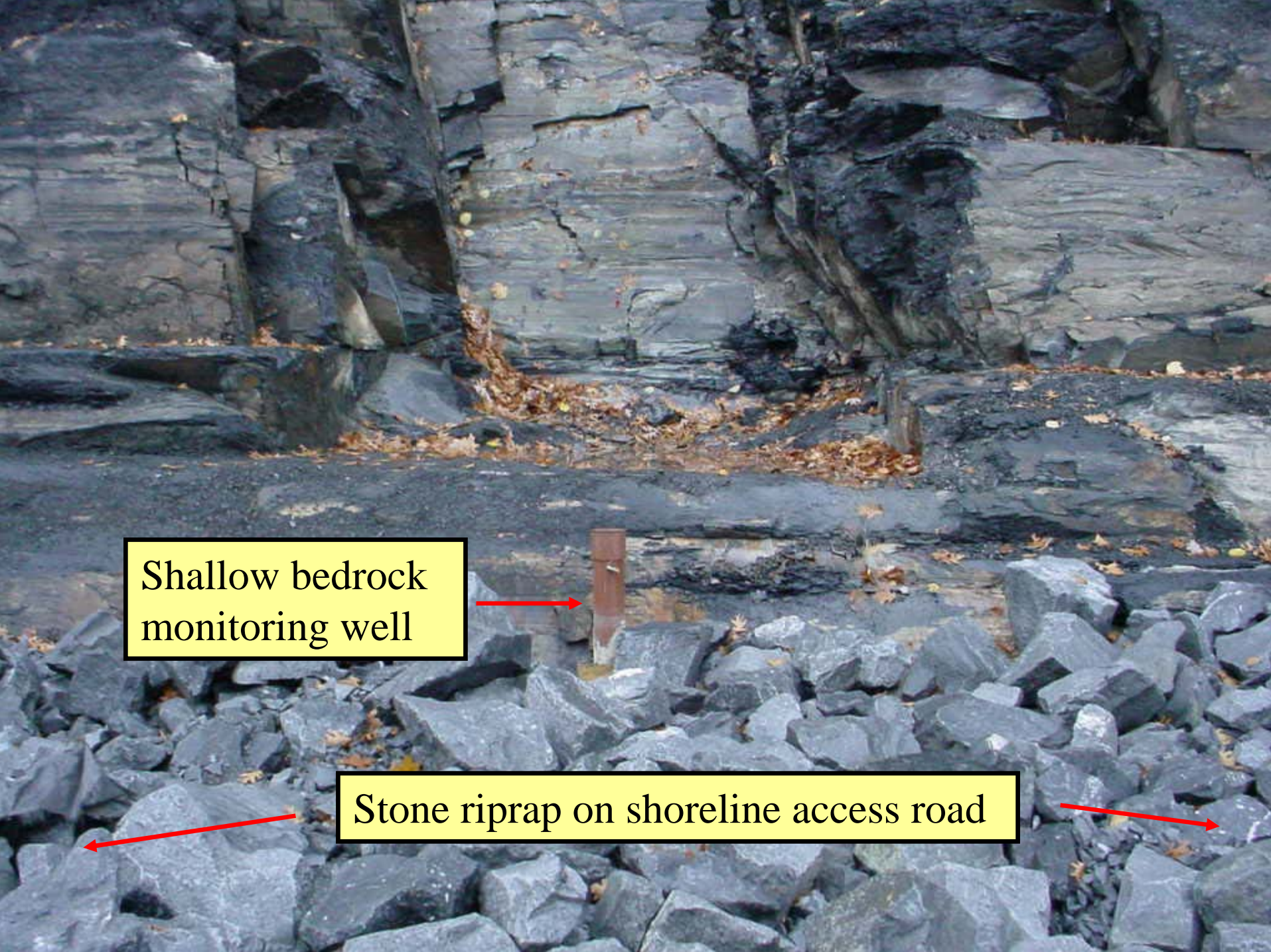
Former outfall
location

Shallow bedrock
monitoring well



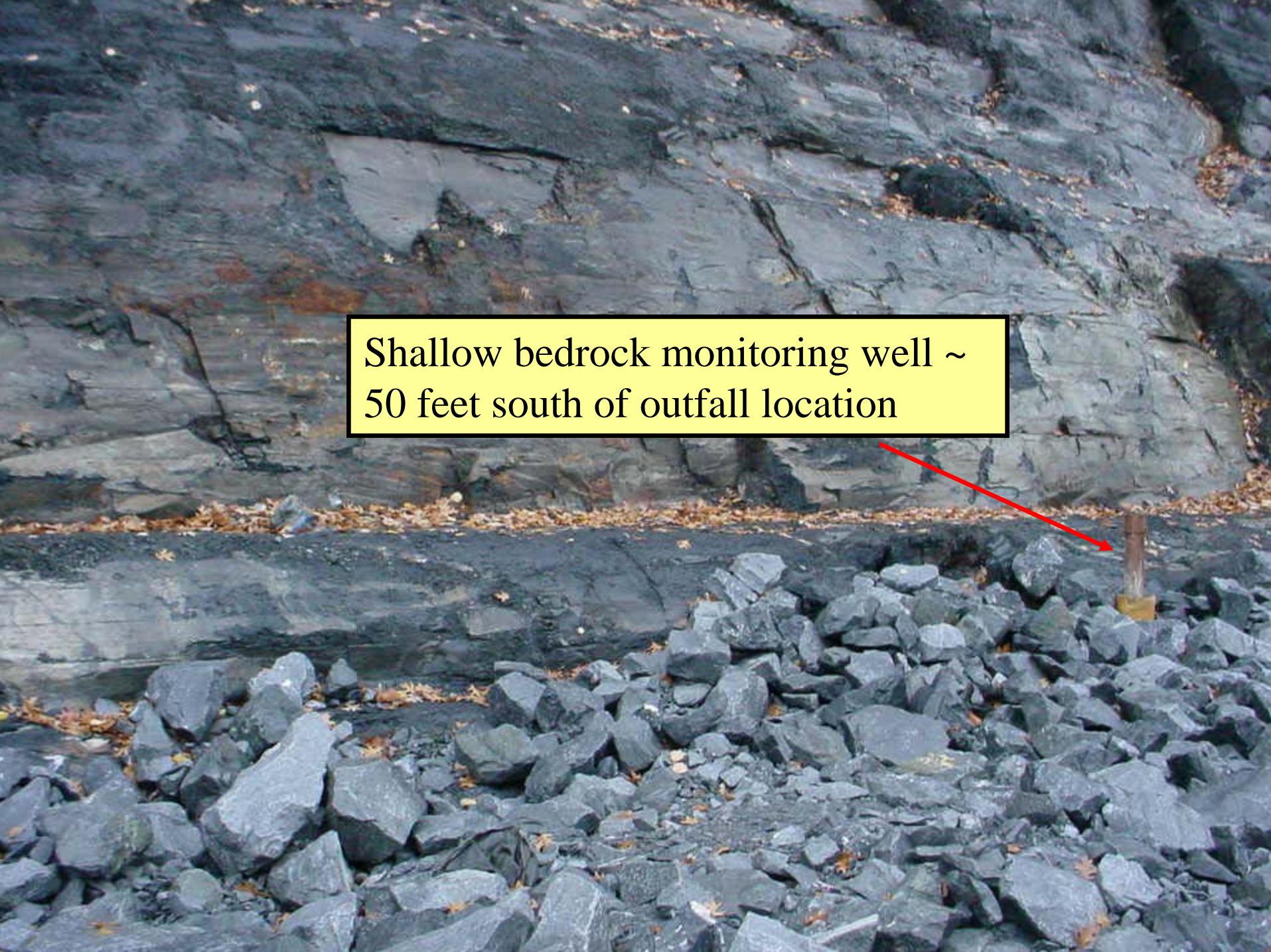
Oil release from bedrock at former outfall location



A photograph showing a shoreline access road. In the foreground, there is a large area of grey stone riprap. A brown metal monitoring well is visible in the middle ground, partially obscured by the riprap. The background shows a steep, layered rock face. Two red arrows point from text labels to the well and the riprap.

Shallow bedrock
monitoring well

Stone riprap on shoreline access road

The image shows a dark, layered rock face. A yellow rectangular box with a black border is positioned in the center-left, containing the text "Shallow bedrock monitoring well ~ 50 feet south of outfall location". A red arrow originates from the right side of this box and points towards a small, vertical wooden post or marker that is partially buried in a pile of dark, angular rocks in the foreground. The rocks are scattered across the bottom half of the image, and some dry, brown leaves are visible on the rock surface.

Shallow bedrock monitoring well ~
50 feet south of outfall location

Additional shallow bedrock
monitoring wells south of former
004 outfall location



Schedule for Implementation

Operable Unit 4:

- Riverbank soils removal nearly completed
- 23,000 tons removed; estimated 3,000 tons of soil remaining to be removed from beneath stockpile area
- Completion of soil removal Summer 2004

Outstanding Issues to Address

- During implementation of Operable Unit 4 remedy, PCB oil contamination in underlying bedrock discovered
- Extent of PCB oil in bedrock in this area is not yet defined
- Difficult to predict schedule at this time for remediation of this material

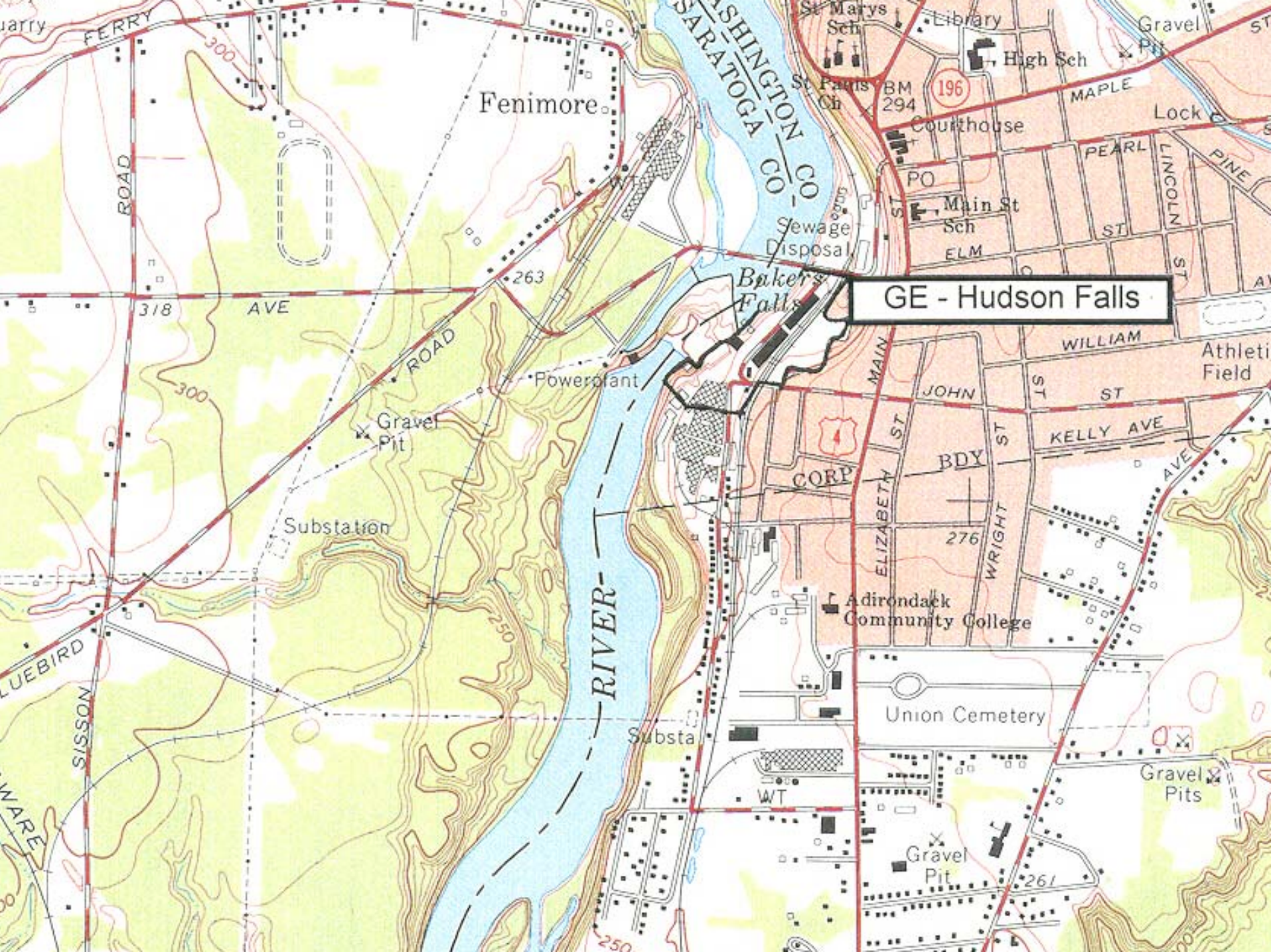
Remedial Program

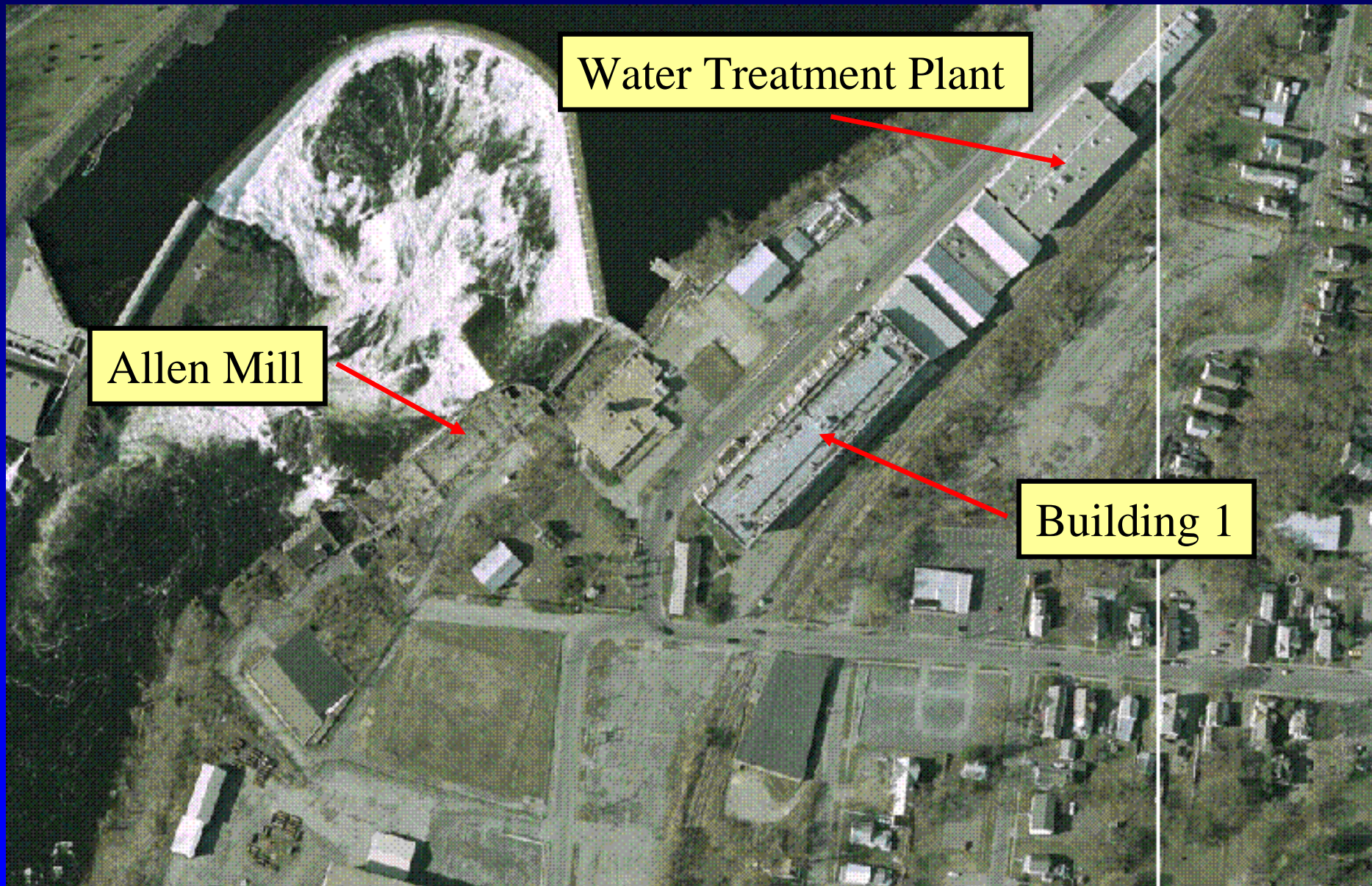
GE Hudson Falls Plant Site

- Record of Decision (ROD) issued March 16, 2004
- ROD identifies selected remedies for overburden soils, and overburden/bedrock groundwater

Site Location – GE Hudson Falls

- Village of Hudson Falls, Town of Kingsbury, Washington County
- Located along Sumpter Street, between John Street and Bridge Street, west of Derby Street and Mosher Hill Road
- Bakers Falls on the Hudson River is to the west
- Rail line cuts across the site from south to north





Water Treatment Plant

Allen Mill

Building 1

Water Treatment Plant



Fenimore Bridge

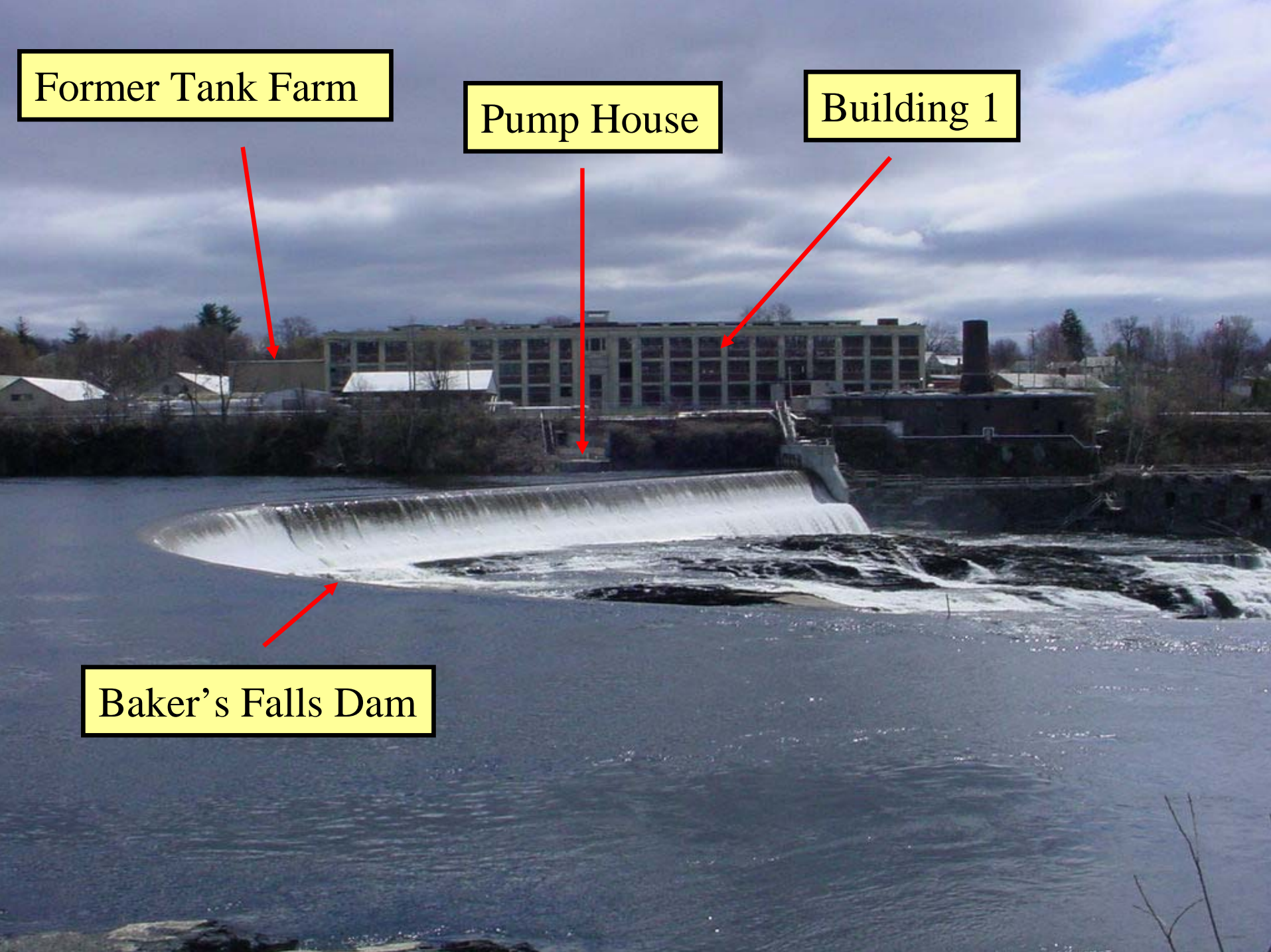


Former Tank Farm

Pump House

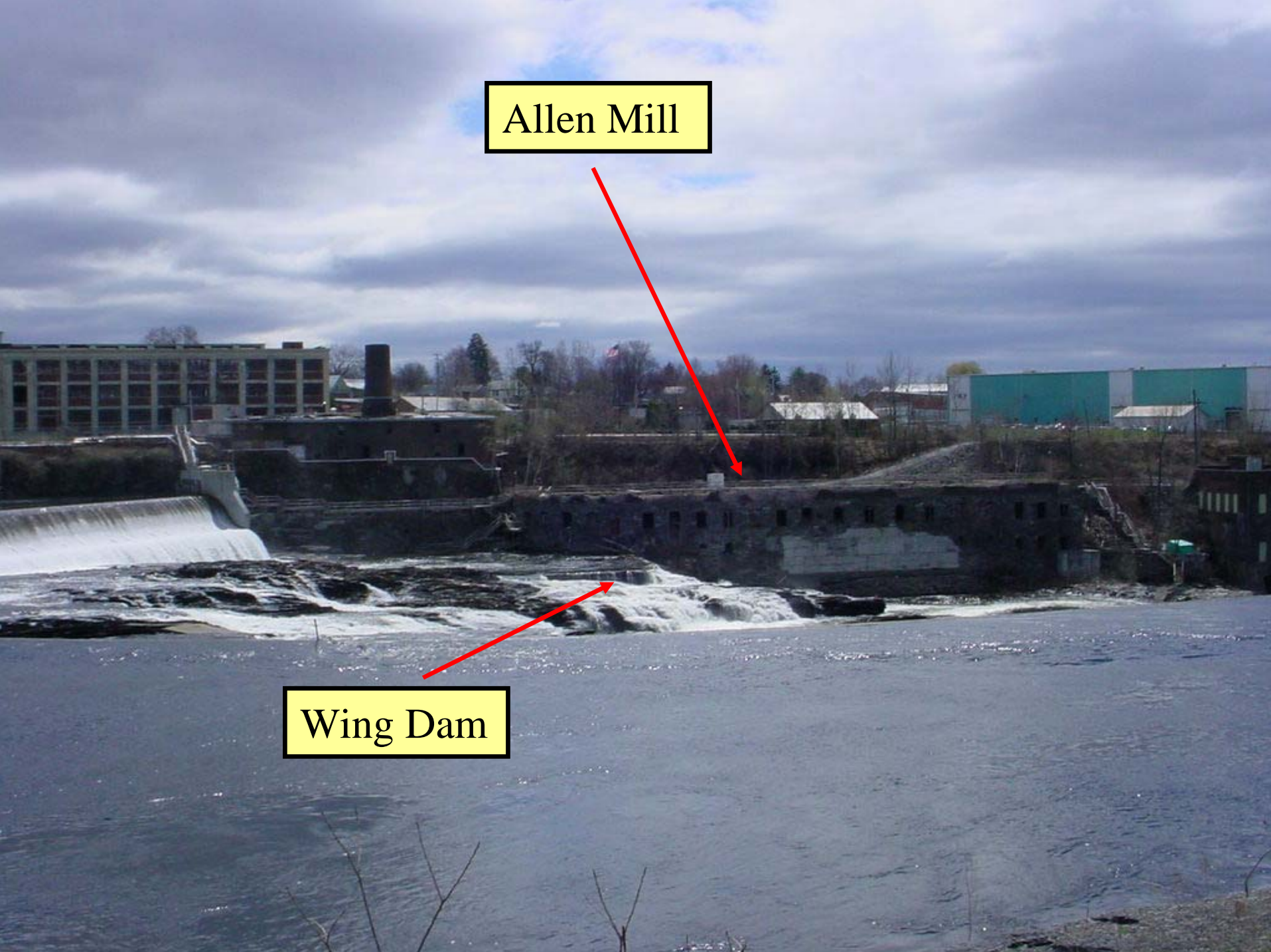
Building 1

Baker's Falls Dam



Allen Mill

Wing Dam



Water Treatment Plant



Rear of Building 1



Refined Products Storage Area



Rear of Tank Farm

Refined Products Storage Area

Railroad Offload Area

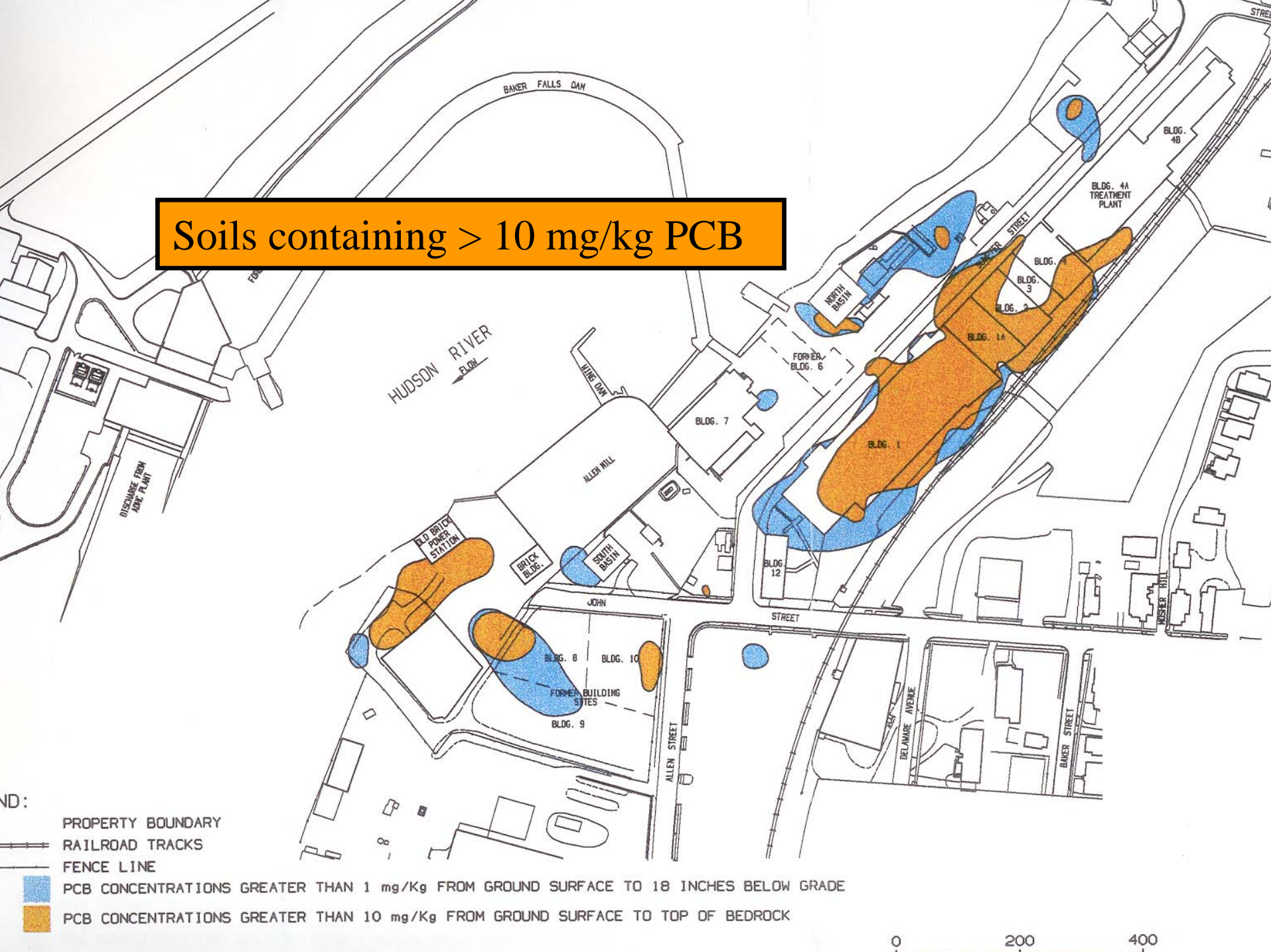
Site Background

- Prior to 1952: Site used for paper industry
- 1952-1977: GE capacitor production using PCB as dielectric fluid
- 1977-1995: GE capacitor production using substitute dielectric fluids TCB, DEHP, PXE
- 1995-present: Plant operations ceased; remedial activities only

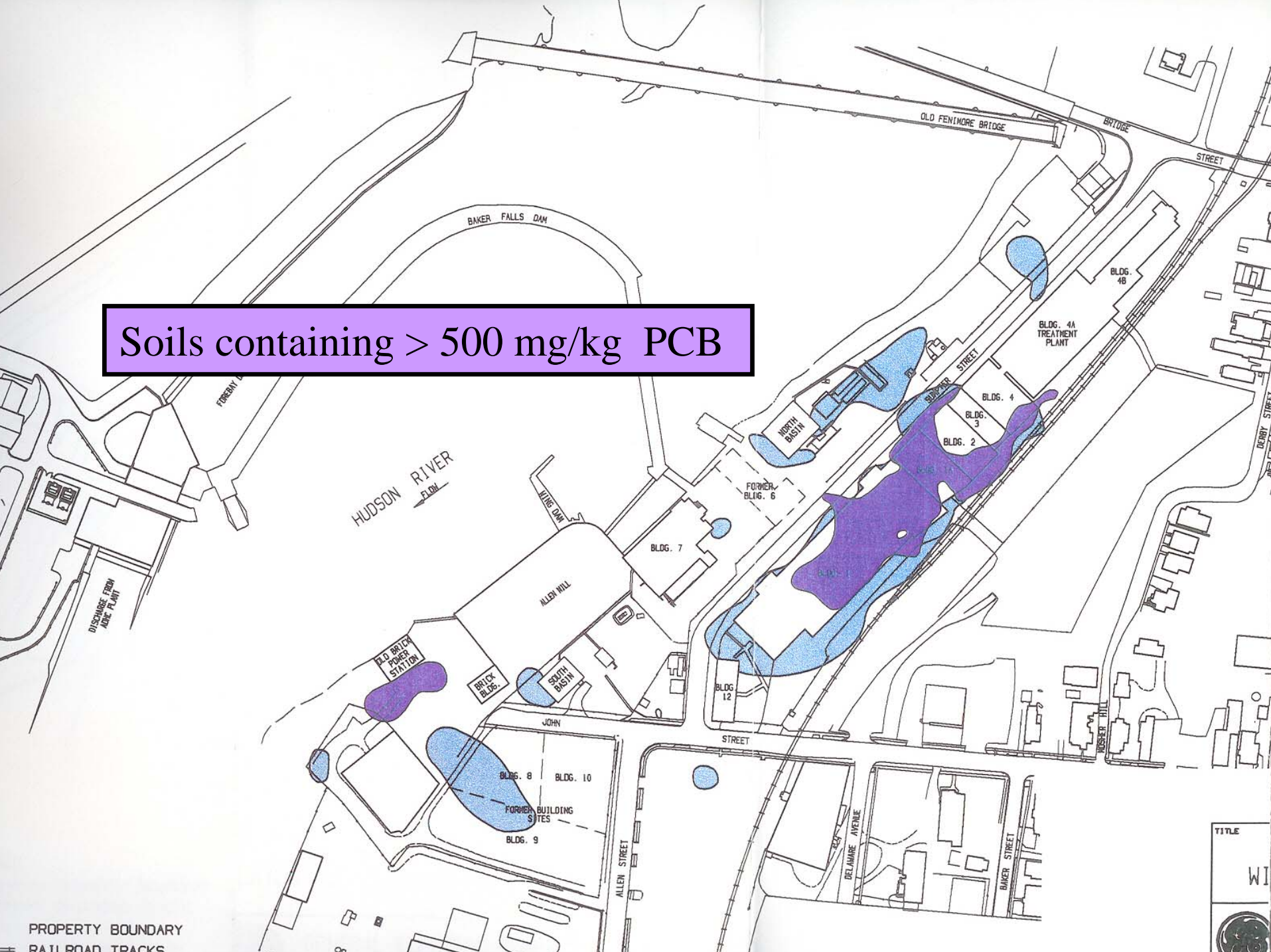
Results of the Remedial Investigation

- Extent of sediment and soil contamination defined
- Extent of overburden and bedrock groundwater contamination defined
- Nature of contamination defined
- Pathways of contamination migration defined

Soils containing > 10 mg/kg PCB



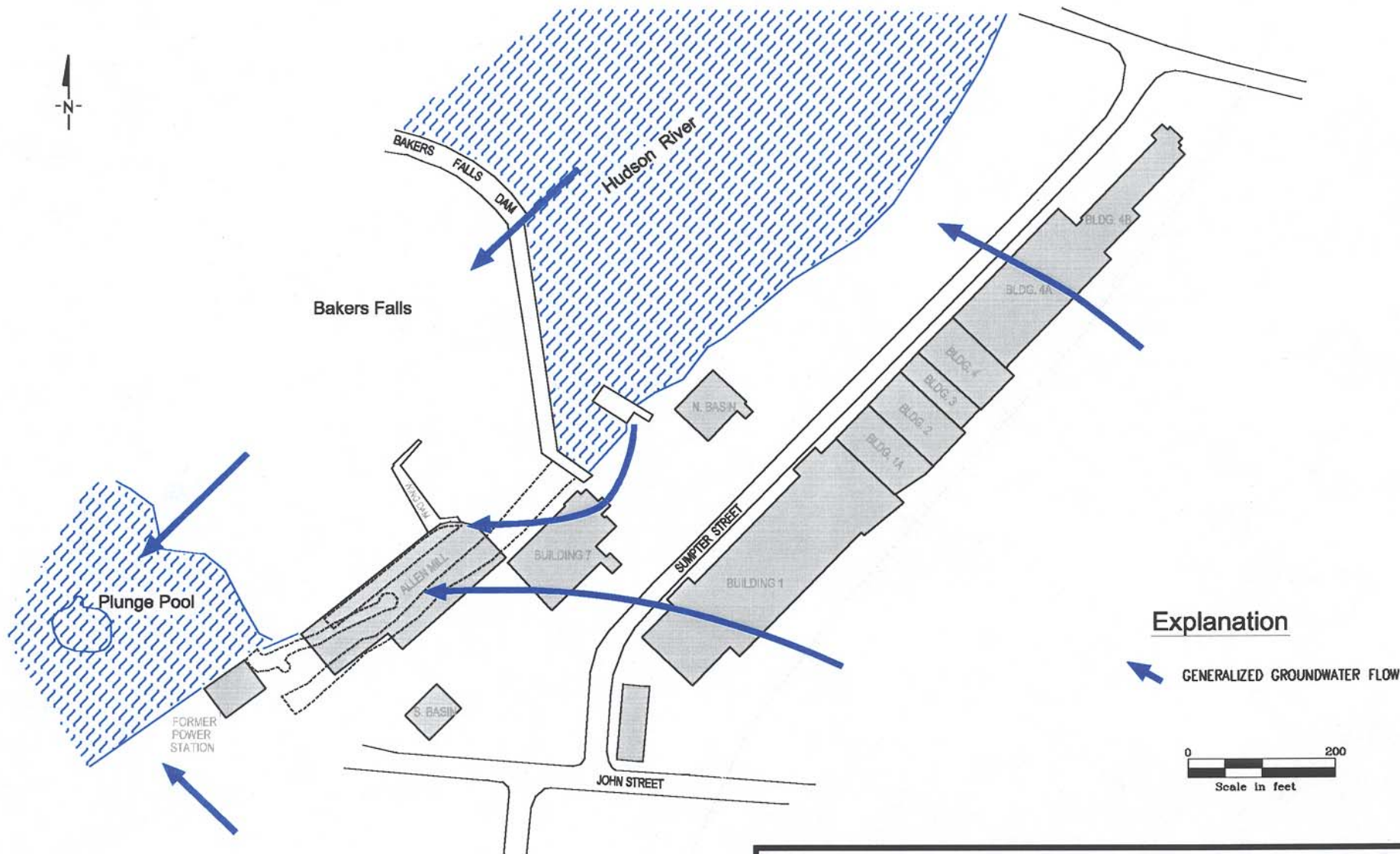
Soils containing > 500 mg/kg PCB



PROPERTY BOUNDARY
RAILROAD TRACKS

TITLE

WI



Explanation

← GENERALIZED GROUNDWATER FLOW

0 200
Scale in feet

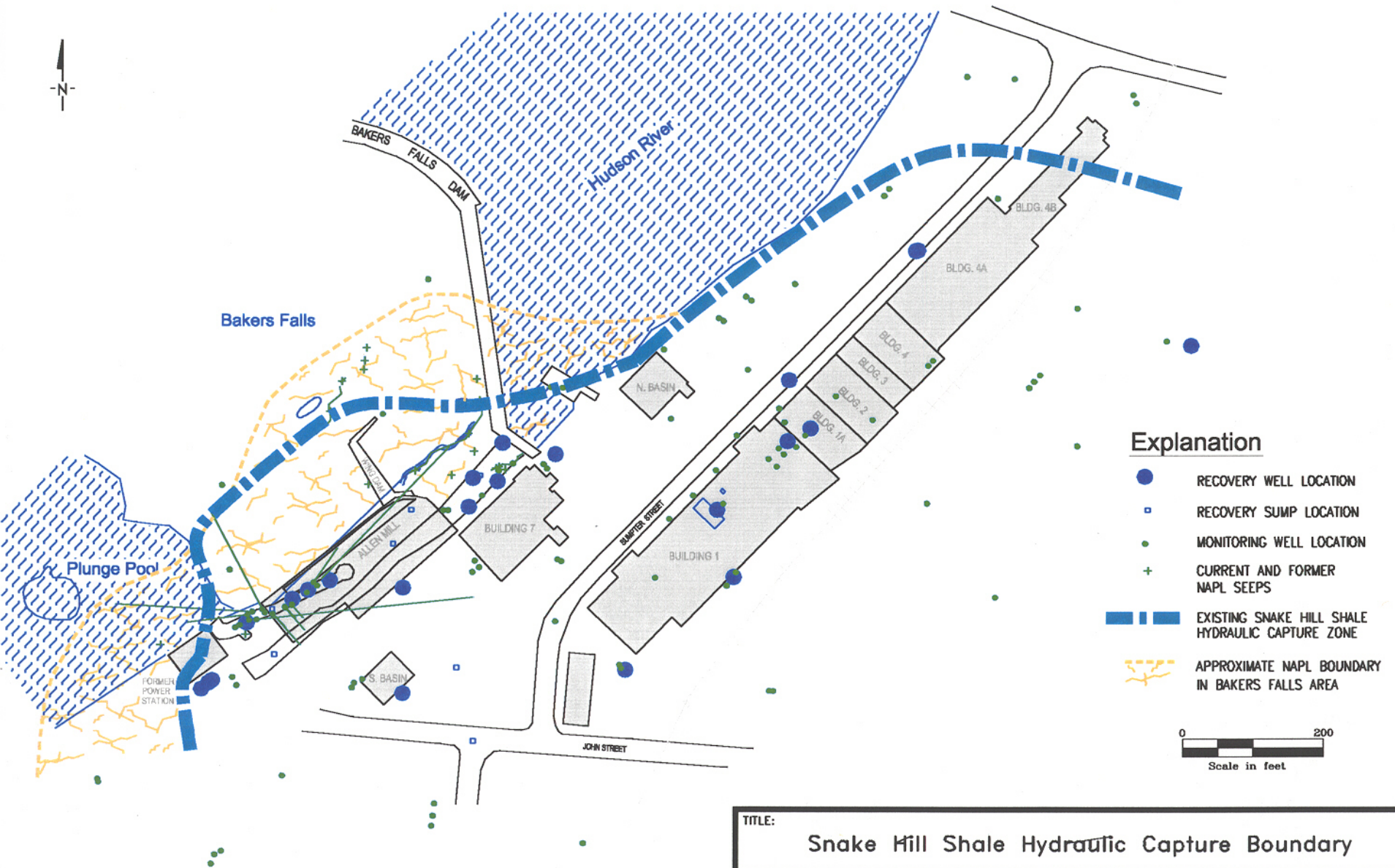
TITLE: Pre-Remediation Groundwater Flow Conditions
in the Snake Hill Shale

LOCATION: GE Hudson Falls



CHECKED	AEB
DRAFTED	RMK
FILE	fs-Pre-Remd.dwg
DATE	3/2/01

FIGURE
2-7



TITLE:

Snake Hill Shale Hydraulic Capture Boundary

LOCATION:

GE Hudson Falls

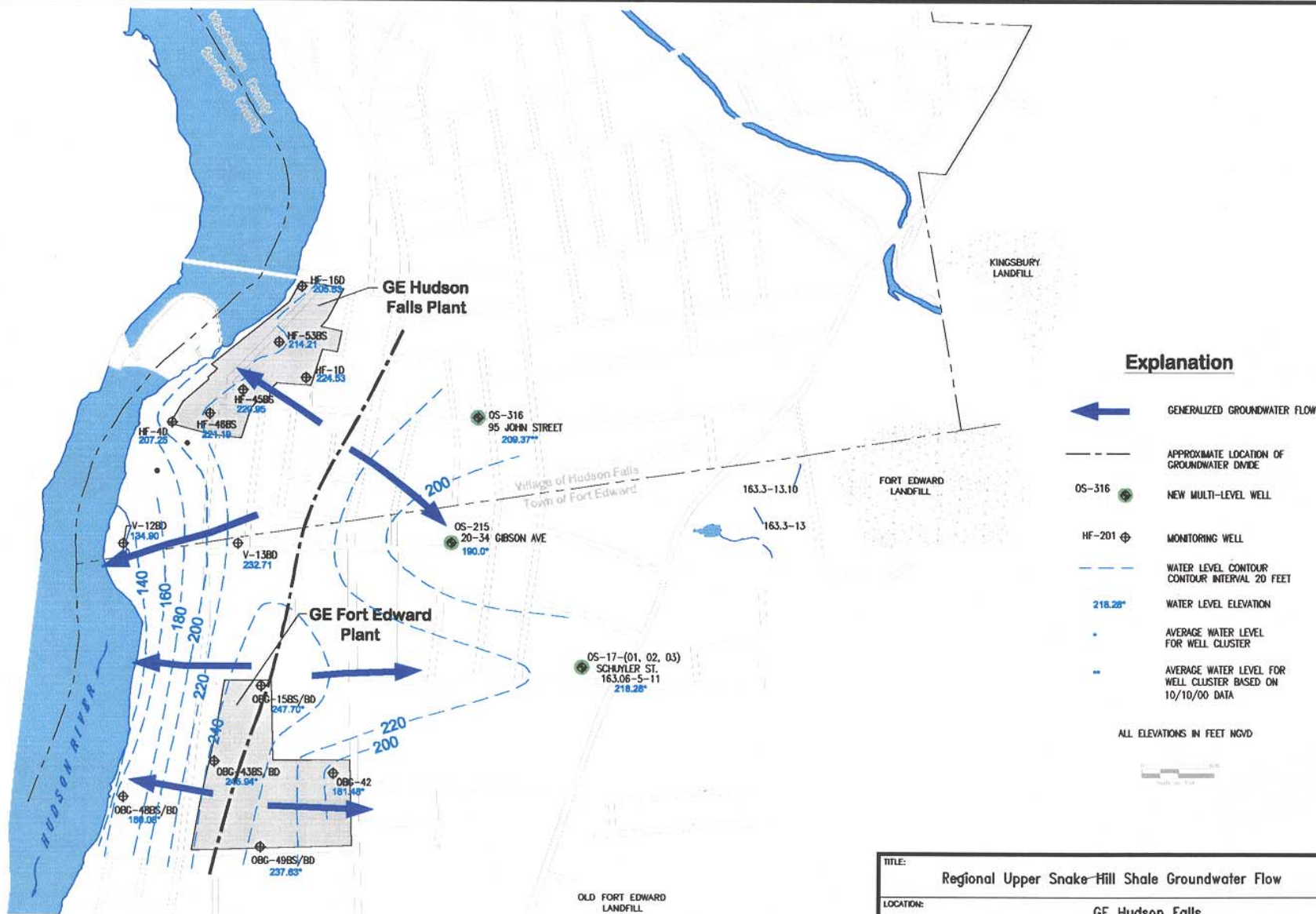


GeoTrans, Inc.
A TETRA TECH COMPANY

CHECKED	AEB
DRAFTED	RMK
FILE	RI-Capt-Brd.dwg
DATE	3/2/01

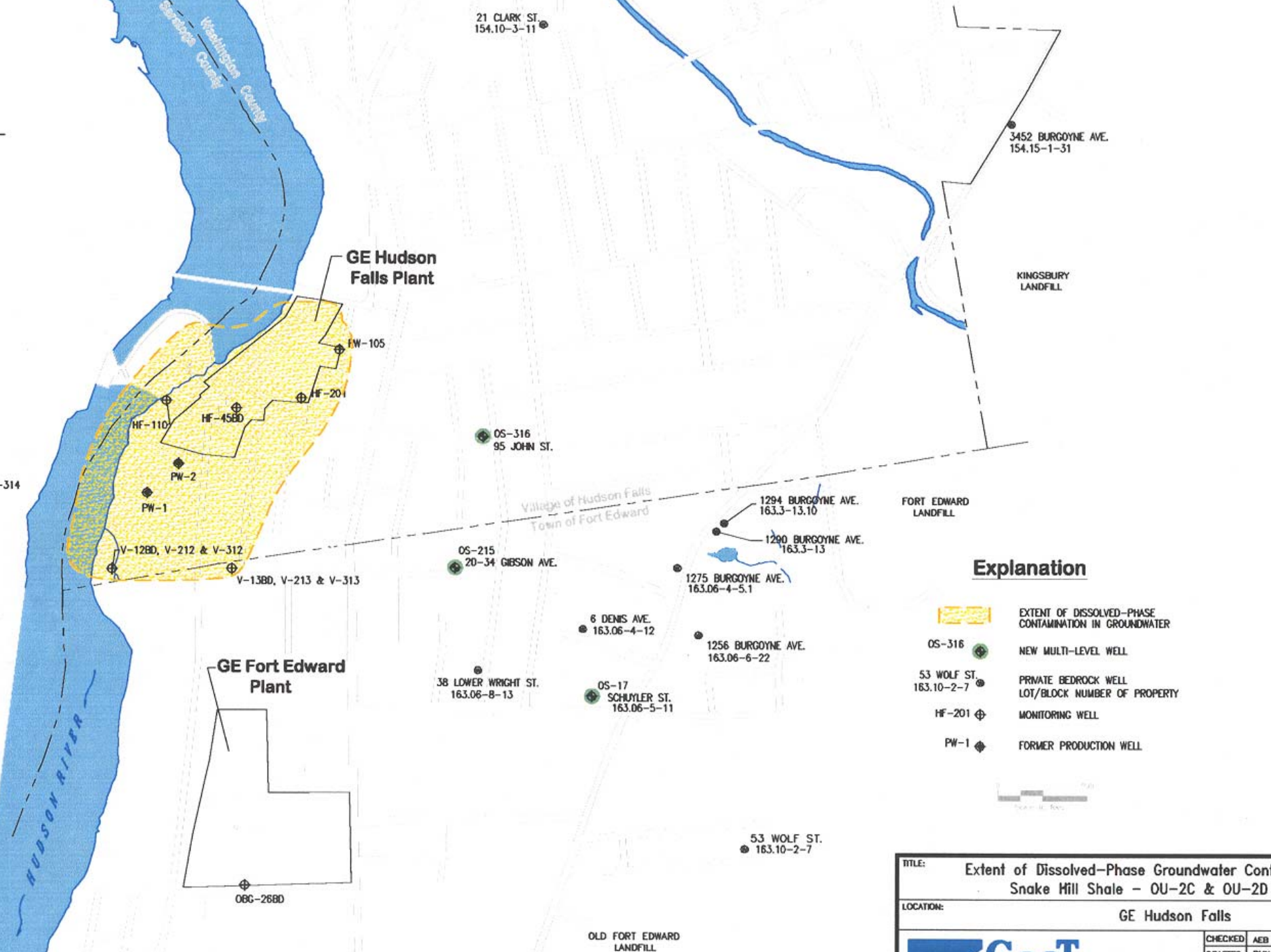
FIGURE:

2-8



TITLE:		Regional Upper Snake-Hill Shale Groundwater Flow	
LOCATION:		GE Hudson Falls	
CHECKED:		AEB	FIGURE:
DRAFTED:		RMK	2-9
FILE:		h2-REG-HL.dwg	
DATE:		3/2/01	





TITLE:	Extent of Dissolved-Phase Groundwater Contamination in the Snake Hill Shale - OU-2C & OU-2D	
LOCATION:	GE Hudson Falls	
CHECKED:	AEB	2/2/00

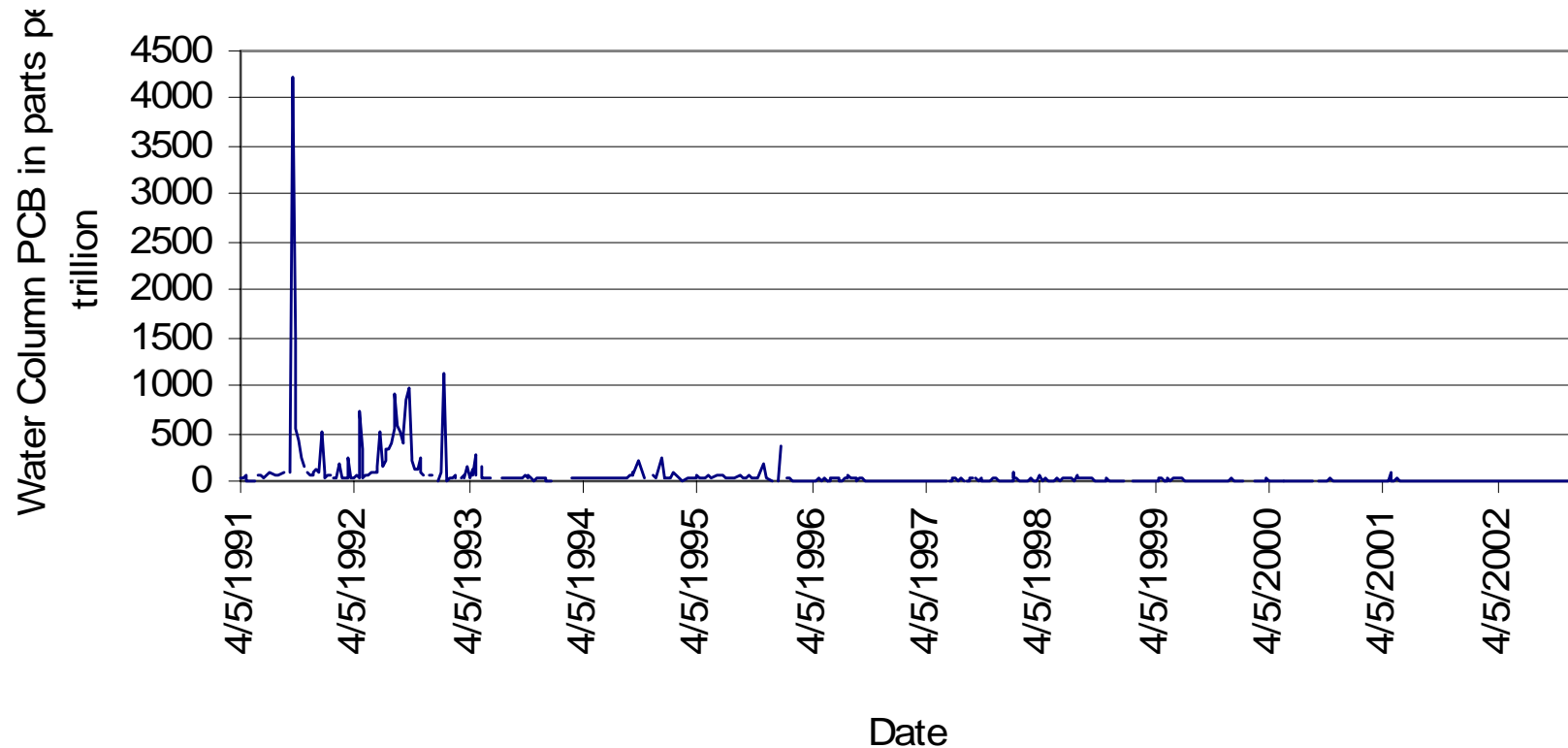
Interim Remedial Measures (IRMs)

- Sediment removal from the eastern raceway, lower raceway, tailrace tunnel, pump house area
- Seepage collection in the Allen Mill raceways, tailrace tunnel, and on Baker's Falls
- Installation and operation of a overburden and bedrock groundwater and PCB oil recovery system
- Construction of a new state-of-the-art wastewater treatment system to manage all waters generated at the site
- Removal of large volume of PCB oil and sludge from beneath Building 1

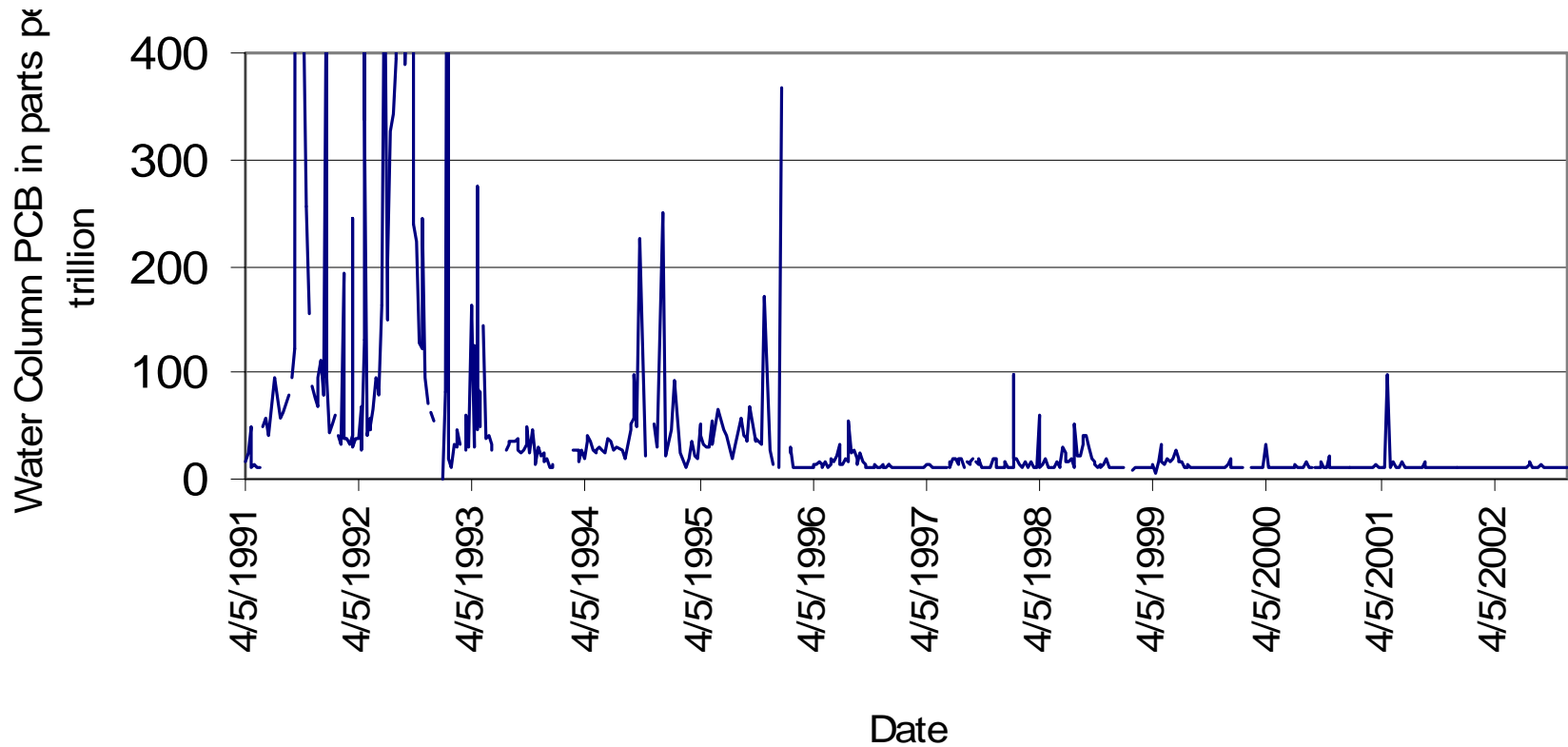
Result of IRM Implementation

- Removal of an estimated 135 tons of PCB
- Significant reduction in PCB concentrations in Hudson River directly attributable to the site

Water Column PCB at Roger's Island since 1991 (GE Data)



Water Column PCB at Roger's Island since 1991 (GE Data)



Soil Remedy: Treatment/Disposal

- Building decommissioning and demolition
- Soil treatment and/or disposal, with cleanup level determined to be protective of groundwater
- Treatment technologies to be selected in design
- Monitoring program
- Institutional controls

Groundwater Remedy: Enhance Existing Remedial System with Tunnel and Drain System

- Install and operate a tunnel and drain system along the western boundary of the site to supplement the existing system
- Expand the existing wastewater treatment plant from 125 to 250 gallons per minute
- Monitoring program and institutional controls

Preliminary Tunnel Layout

Schedule for Implementation

GE Hudson Falls

- Soils remedy – estimated duration of two years for design and construction activities; may be an additional year for design studies
- Groundwater / PCB oil remedy – estimated duration of two years for design and construction activities

Document Repositories

- Location of Documents for the GE Hudson Falls and Fort Edward Plant Sites:

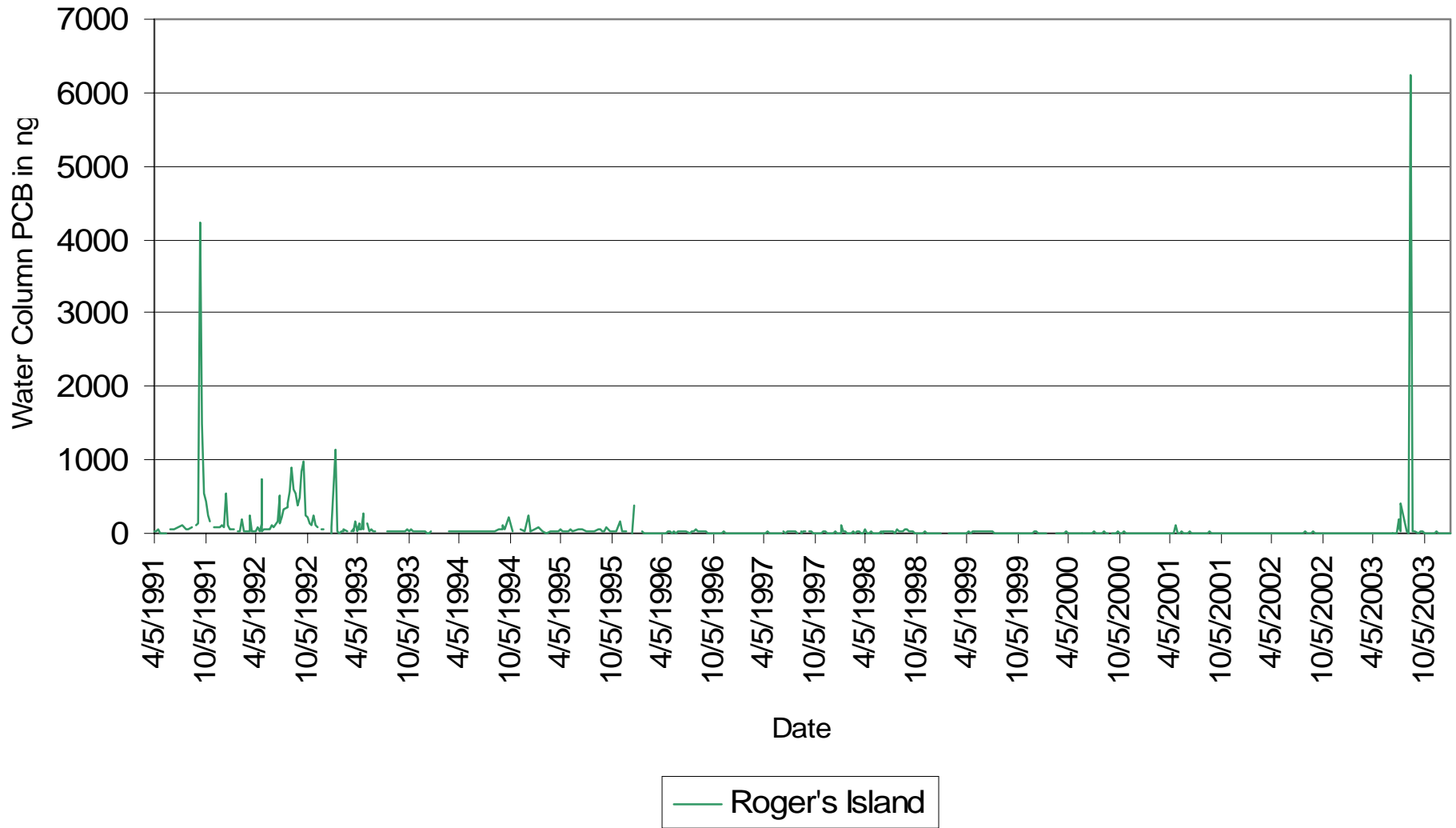
NYSDEC Central Office
625 Broadway, 11th Floor
Albany, NY 12233-7010

Washington County Clerk's Office
383 Upper Broadway
Fort Edward, NY

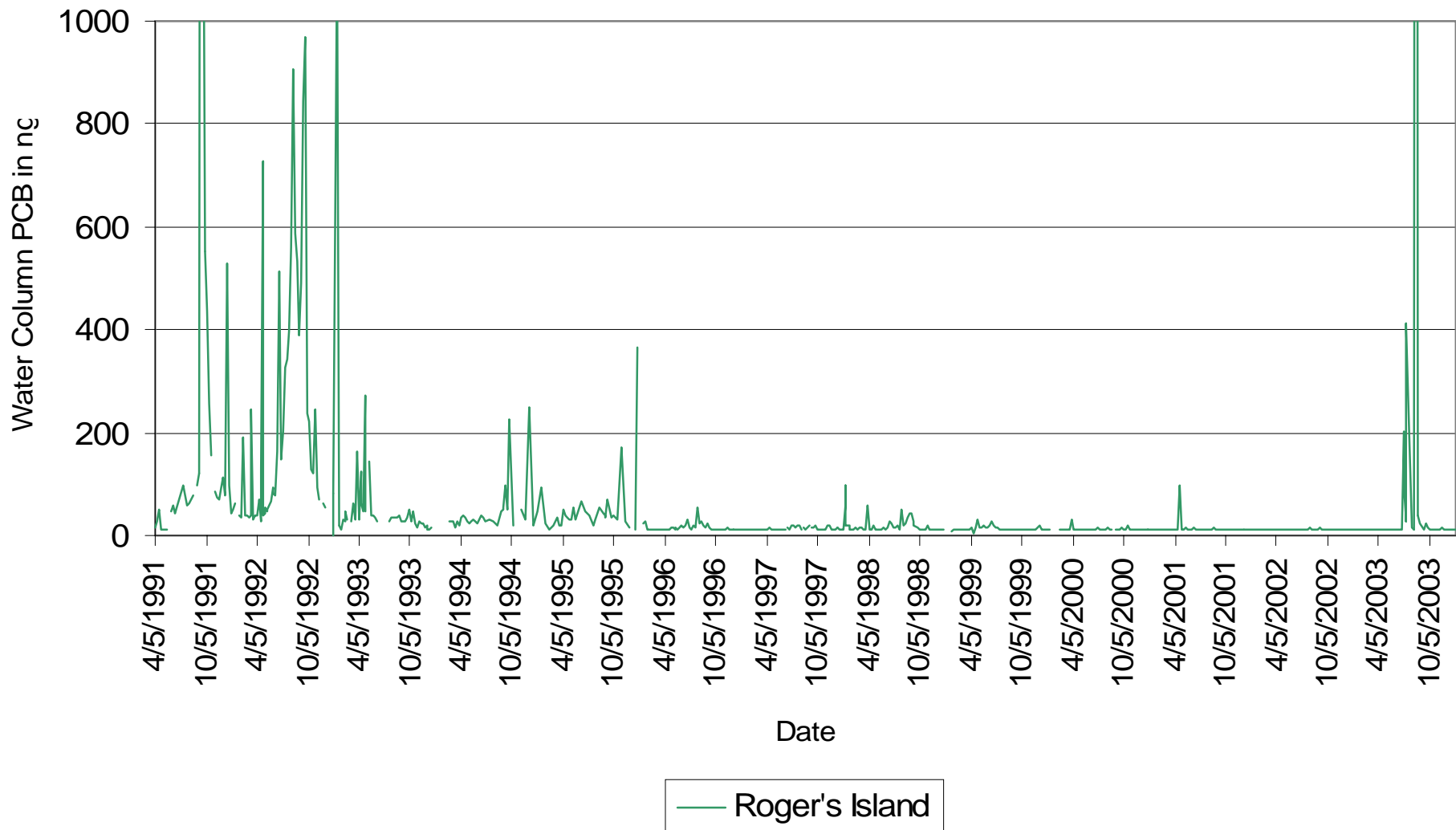
Adriance Public Library
93 Market Street
Poughkeepsie, NY

NYSDEC Region 5 Office
Hudson Street
Warrensburg, NY

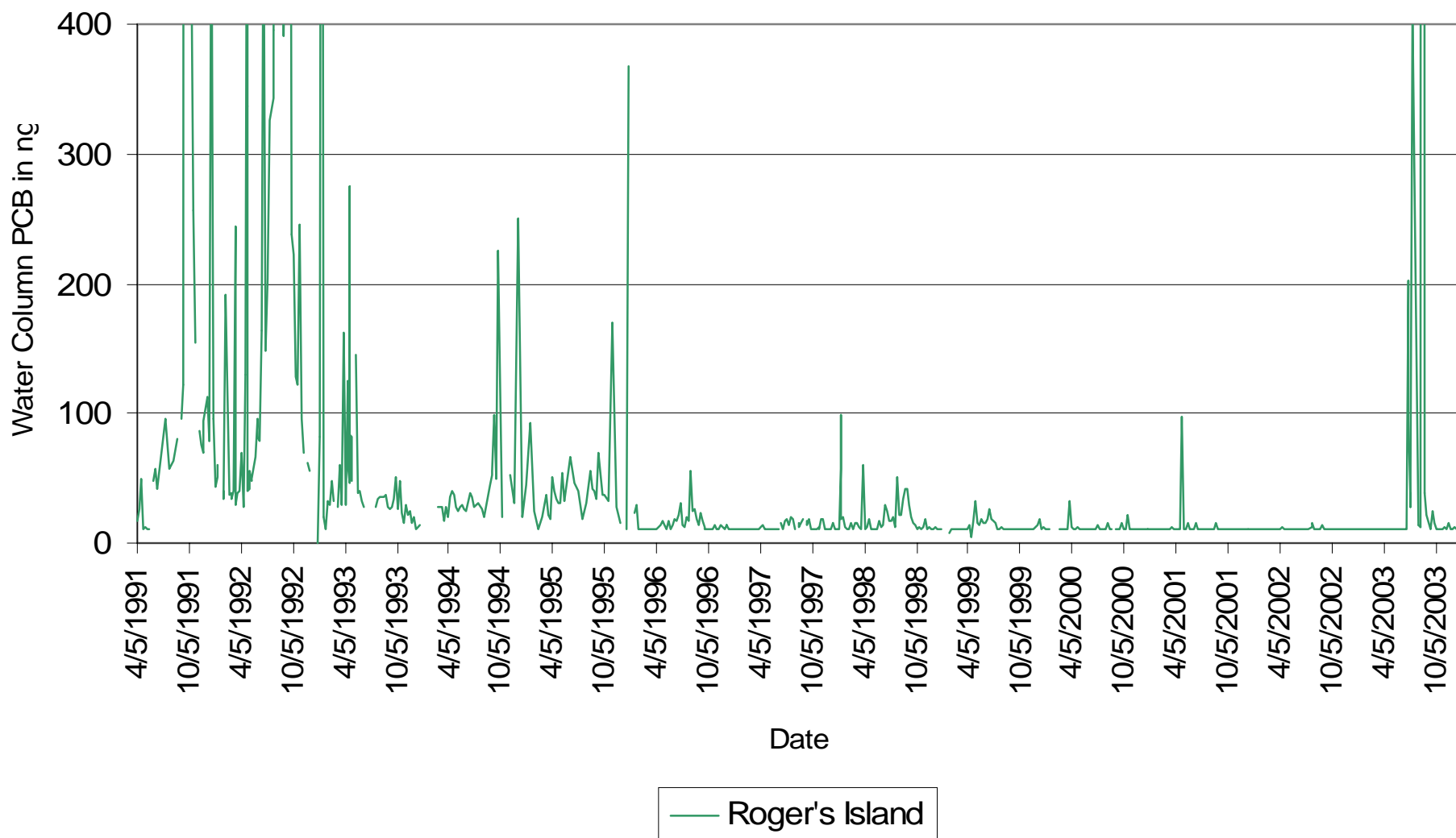
GE PCRDMP Data



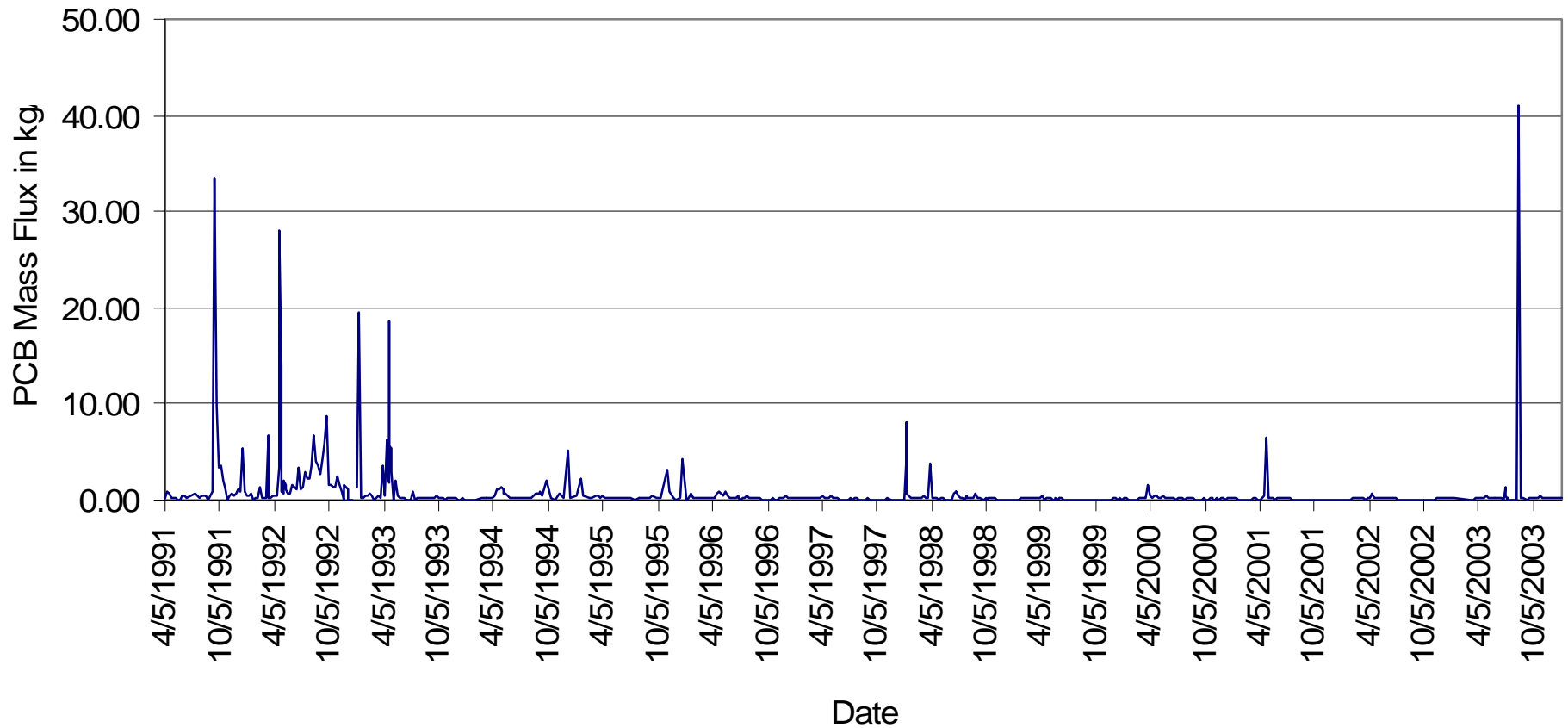
GE PCRDMP Data



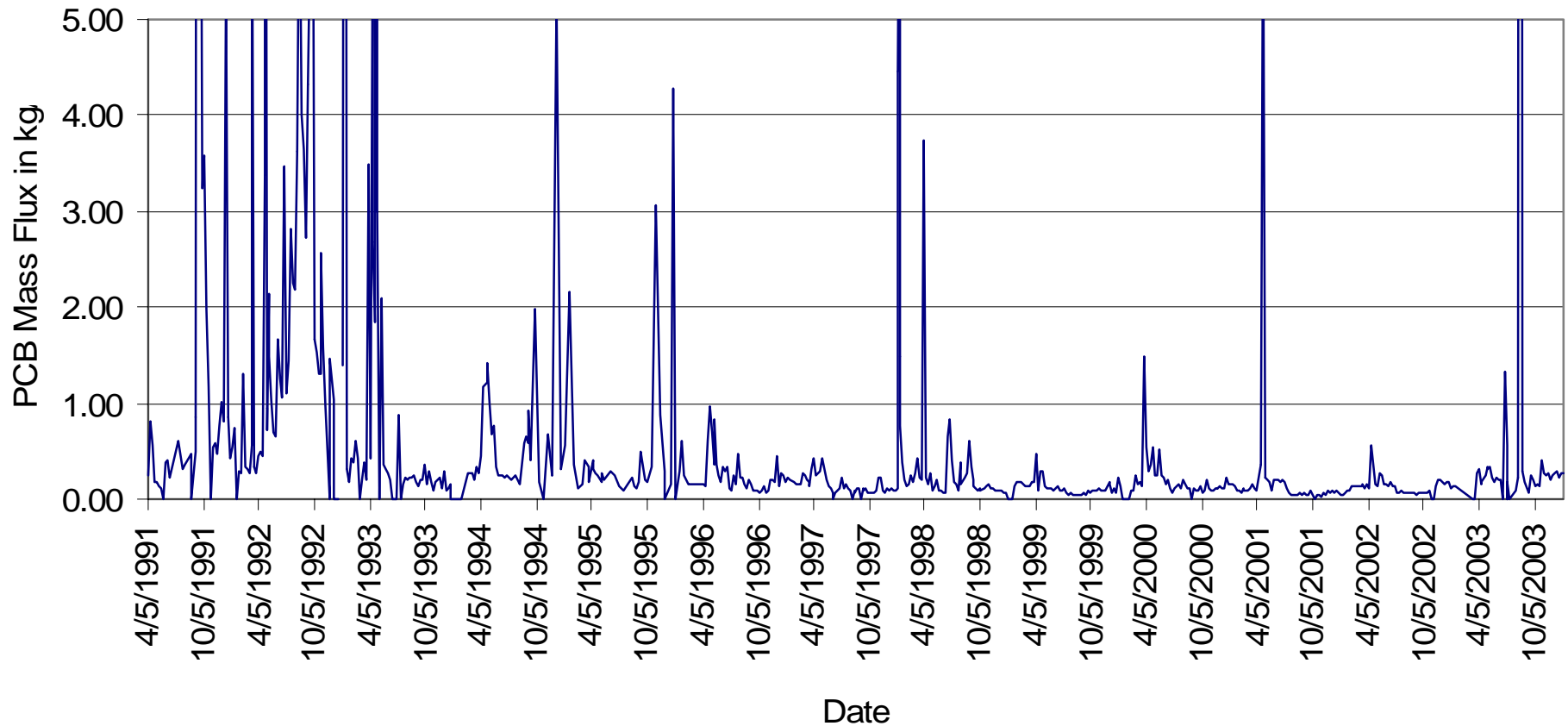
GE PCRDMP Data



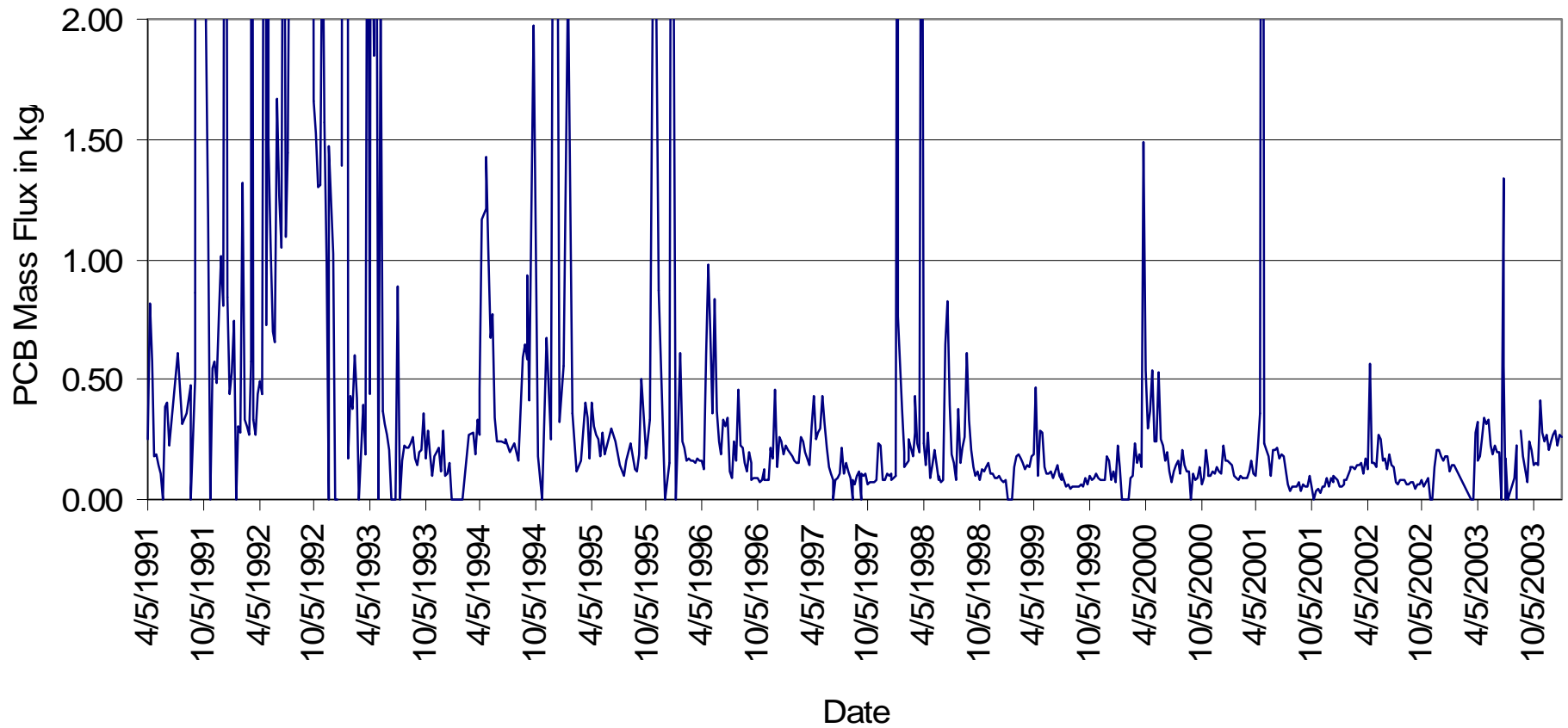
Hudson River PCB mass flux in kilograms per day at Roger's Island



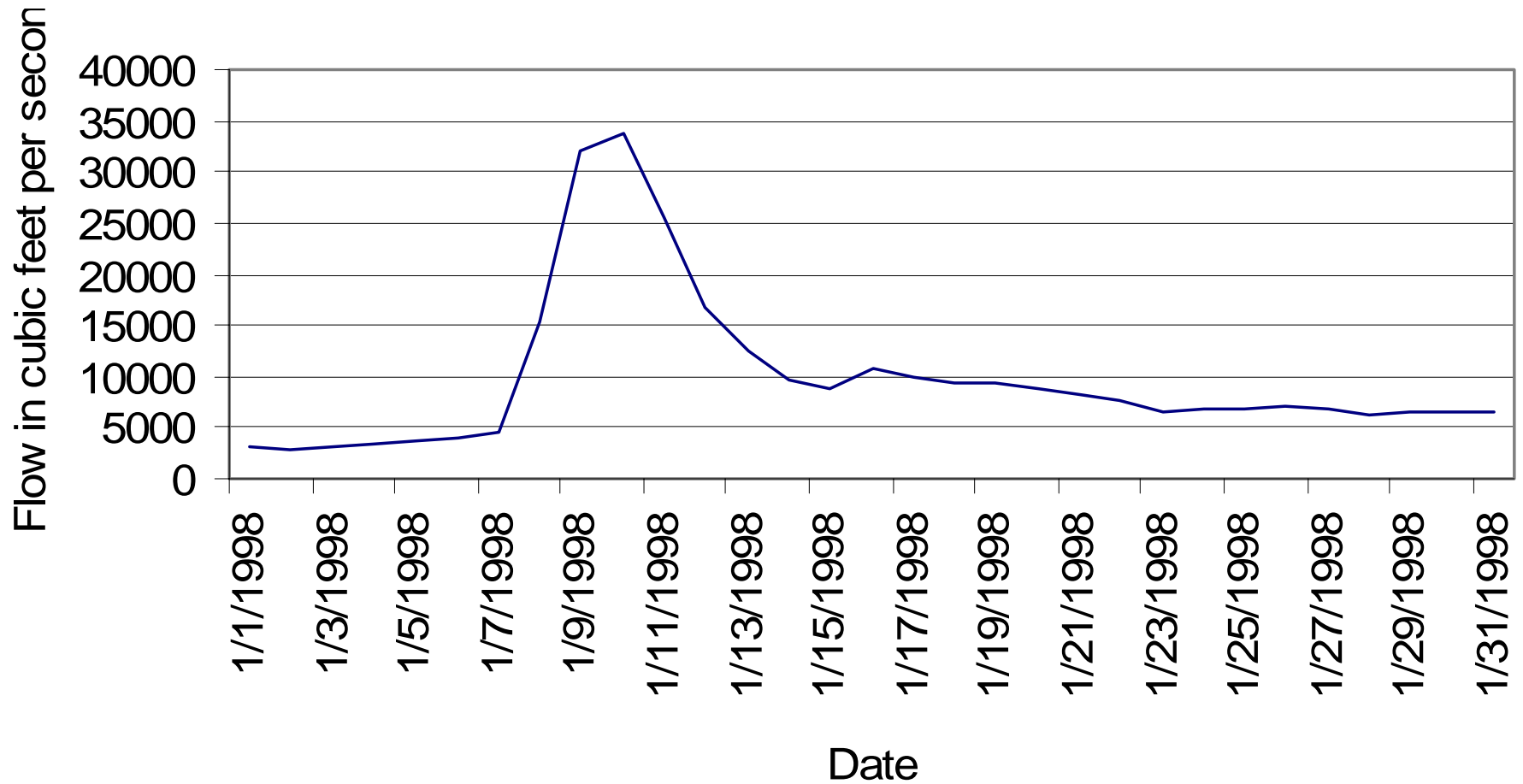
Hudson River PCB mass flux in kilograms per day at Roger's Island



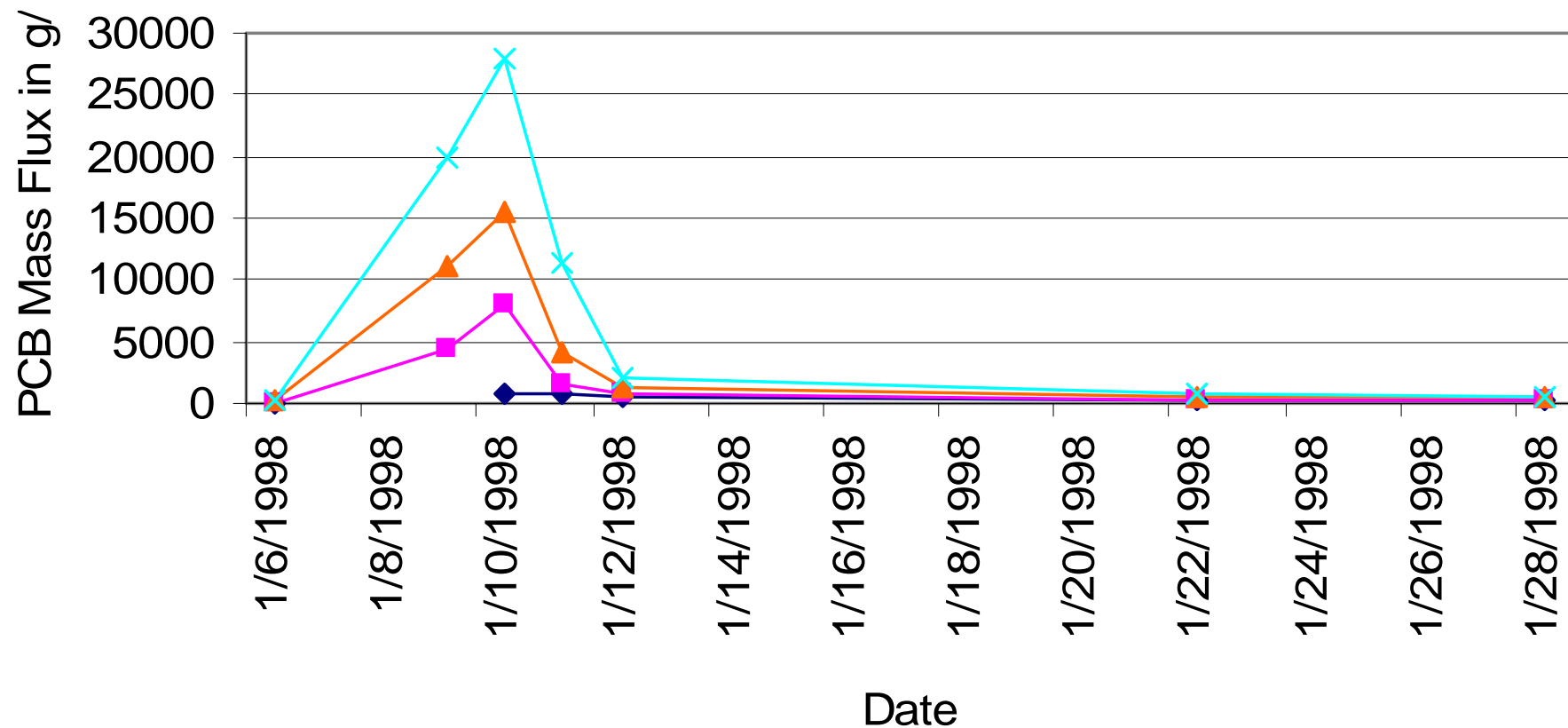
Hudson River PCB mass flux in kilograms per day at Roger's Island



Hudson River Daily Average Flow at Fort Edward, January 1998 (USGS)



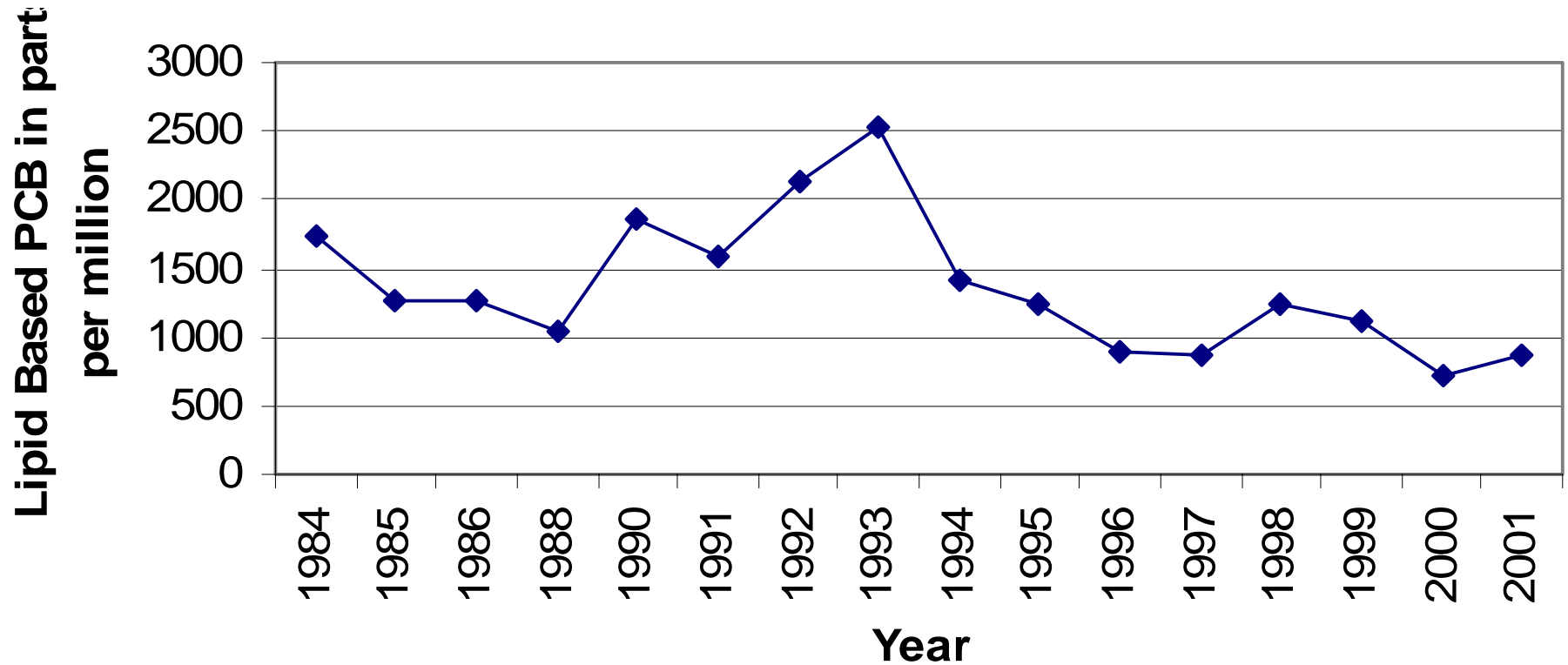
PCB Mass Flux in the Upper Hudson River, January 1998



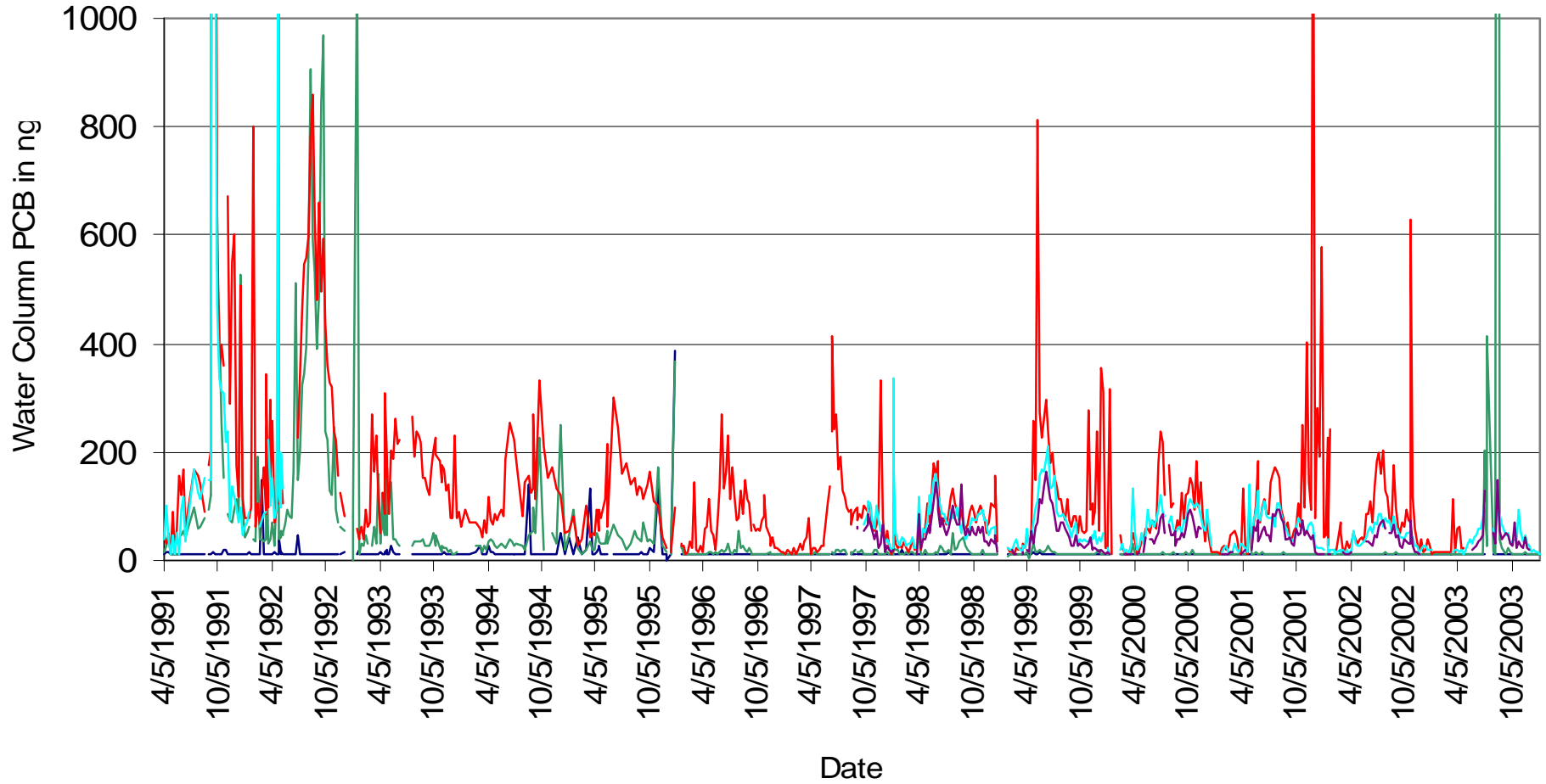
Legend:

- Fenimore Bridge
- Fort Edward
- Thompson Island Dam
- Schuylerville

Mean Lipid Based PCB in Largemouth Bass at Griffin Island

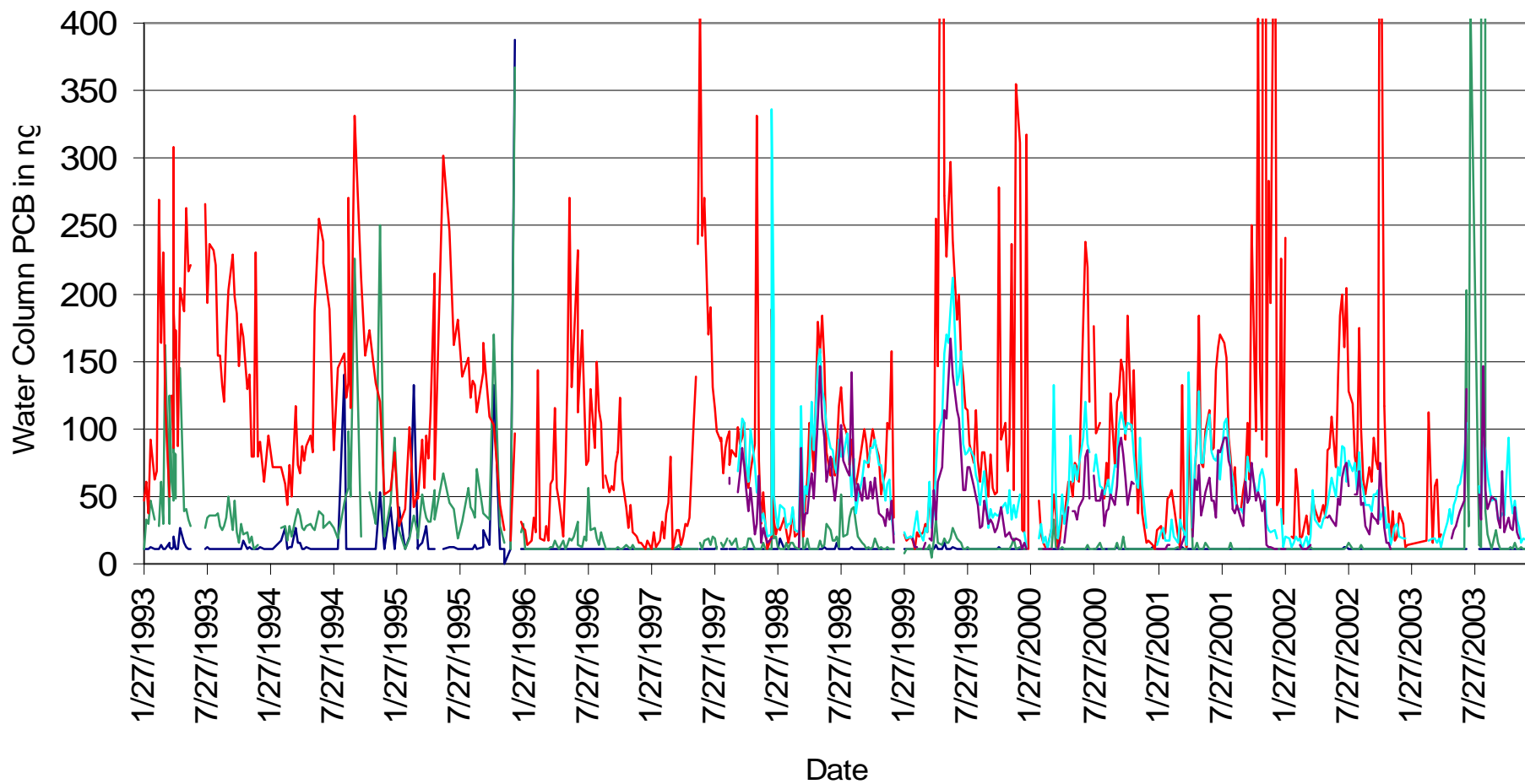


GE PCRDMP Data



Fenimore Bridge Roger's Island Thompson Island Dam Schuylerville TID-PRW2

GE PCRDMP Data



— Fenimore Bridge — Roger's Island — Thompson Island Dam — Schuylerville — TID-PRW2