Hudson River
PCBs SUPERFUND SITE

Dredging Project Update

Fall 2009
River HUDSON
United States Environmental Protection Agency

Upper Hudson River

WASHINGTON
WARREN

Glens Falls
Fort Edward

Hudson Falls

Northumberland Dam
Thompson Is. Dam
Fort Miller Dam

SARATOGA

Hadley Glens Falls

Schuylerville

Stillwater

Mechanicville

Green Island
Cohoes
Troy

RENSSLEAER

Federal Dam

Hoosic River

Section 1
Section 2
Section 3

Bakers Falls

0

5 mi

10 k

Northumberland Dam
Project Phases

- Dredging along 40 miles of river
  - Phase 1:
    - 1st year dredging (May - November) 2009
    - Test equipment/processing facility at peak performance
  - Test of EPA’s performance standards
  - Review of Phase 1:
    - Independent peer review panel
    - Receive public comments
    - EPA decision on changes to project
  - Phase 2:
    - Remaining dredging
Phase 1 and 2 Dredge Area Delineation

• Based on more than 50,000 sediment samples (since 2002) sampling data allowed EPA and GE to:
  – determine the distribution of PCBs in the sediment
  – refine estimates of the amount and location of PCBs in the sediment
  – establish river sediment characteristics (e.g., silt, sand, gravel)

• 400 acres to be dredged during Phase 2 (490 acres total)

• Overall typical depth 3 ft (some areas extend to 5 ft or more)
Phase 1 Dredging

- May-November 2009; operate 24/6
- 245,000 cubic yards from 90 acres in Thompson Island Pool
- Need 6 months to complete
- Up to 12 mechanical clamshell dredges working at same time
- 27 Hopper Barges
- 21 Tugs
- Constant monitoring to measure performance
- Backfill after dredging
- Habitat replacement
Phase 1 Certification Units

• 18 Units in Phase 1
• Average 5 Acres
• Process
  – Inventory Dredging
  – Hydrographic Survey
  – PCB testing
  – Residual Dredging
  – Backfill or Cap
Map 1
Map 5
Map 13
Engineering Performance Standards

- Resuspension, residuals and productivity standards are included in the basis of design
- Design analysis includes the assessment of the ability to achieve the standards
- Achievement of the performance standards will be tested in Phase 1
Quality of Life Standards

- Noise
- Light
- Odor
- Navigation
- Air
Dewatering Facility Operations
Dredging Project Update

• Unloading at processing facility
Water Treatment Plant

- Handles process water and water from the stormwater basins
- 25,500-square-foot building; 40-feet high
- 2 million-gallon-a-day capacity

Dewatering Plant

United States Environmental Protection Agency
Water Supply Issues

- Waterford and Halfmoon use the river for drinking water. New water line from Troy built by EPA for alternate supply.

- Village of Stillwater have well field next to river. GAC treatment built and operated by EPA for Village.
Dredging Project Update

• Tree trimming
Dredging Project Update

• Debris removal
River Dredging
Update on Phase 1 (cont)

• Continuing River Operations Activities:
  – Certification unit review/approval
  – Backfilling/capping

• Backfilling to continue through fall season
Water Monitoring

- One standard level exceedance in August
- Dredging halted, contingency monitoring began
- Dredging resumed once monitoring results over two consecutive days were below standard level
- One standard level exceedance in September (not a confirmed exceedance)
PCB Concentrations: Far-Field Stations

The concentration of the duplicate sample collected on 5/20/09 at 6:00 in Waterford was 1.76 ppt. The concentration of the sample initially analyzed was 316.471 ppt and is considered anomalous.

Note: When both the Modified Green Bay Method and the USEPA Method 508 were used, the Green Bay Method will be reflected in the TI graph. Note: On 8/9/09, multiple samples were analyzed at Thompson Island and Lock 5. The trendline runs through the average of these samples collected.
PCB Concentration: Thompson Island

![Graph of PCB Concentration over time]

![Graph of Daily Flow Rate over time]
Dredged Volume By CU

On a CU basis, volumes have increase ~20% and 300%. Biggest increases in area around Rogers Island (close proximity to old dam)
Productivity

- Approximately 278,000 cubic yards dredged as of October 17, 2009.
Load (lbs) to October 18

Figure B-1a. Cumulative Net Total PCB Load due to Remedial Activities From Inception of Dredging (May 16, 2009) to October 18, 2009

- Thompson Island: 777 lbs
- Lock 5: 440 lbs
- Waterford: 236 lbs

257 lb Annual Load Limit

Figure B-2a. Cumulative Net Tri+ PCB Load due to Remedial Activities From Inception of Dredging (May 16, 2009) to October 18, 2009

- Thompson Island: 159 lbs
- Lock 5: 86 lbs Annual Load Limit
- Waterford: 84 lbs

EPA
United States Environmental Protection Agency
Performance Standard Monitoring

Air:

• Approx 2,000 (24hr) samples collected since start of dredging
  – 65 samples exceeded the standards along dredging corridor
  – 11 samples exceeded the standards at the dewatering facility
  – Approximately 4% of all samples exceeded the standards
Productivity

• Approximately 224,500 cubic yards dredged as of September 23, 2009.
Volumes To Date

CU 9 - CU 13 planned = ~116,000 cy

44% shortfall due to CU 9-16 Volumes
Archeological Investigation

- Archeological work is underway at the site of historic Fort Edward.
- Archeologists have
  - completed underwater studies
  - removed the upper soil layers (recent material) to expose older strata dating from the time of the occupation of the Fort.
River Hudson United States Environmental Protection Agency
Observations from the First Phase of Dredging

- River flows have varied significantly from typical conditions.
- Started in the worst case conditions
- Debris removal and prop wash are significant resuspension contributors.
- Lumber operation debris became a significant issue.
- Environmental bucket observations
EPA’s Monitoring Data Website

www.hudsondredgingdata.com
Questions
Questions for CEUs
Question # 1

What are the Engineering Performance Standards?
Engineering Performance Standards

- Resuspension, residuals and productivity standards are included in the basis of design.
- Design analysis includes the assessment of the ability to achieve the standards.
- Achievement of the performance standards will be tested in Phase 1.
Question #2

What are the Quality of Life Standards for?
Quality of Life Standards

- Noise
- Light
- Odor
- Navigation
- Air
Question #3

• Why was mechanical dredging chosen over hydraulic dredging?
Mechanical Dredging

- Distance to pump material is 40 miles.
- Large amount of debris to be removed.
- Cobbles and boulders can clog transfer lines and must be removed mechanically anyway.
Question #4

Why are there 2 phases to the project?
Project Phases

- Dredging along 40 miles of river
  
  ➢ > Phase 1:
  ➢ 1st year dredging (May - November) 2009
  ➢ Test equipment/processing facility at peak performance
  ➢ Test of EPA’s performance standards

  ➢ Review of Phase 1:
    — Independent peer review panel
    --- Receive public comments
    — EPA decision on changes to project

  ➢ > Phase 2:
    — Remaining dredging
Question # 5
What are the lessons learned so far in the project?
Observations from the First Phase of Dredging

• River flows have varied significantly from typical conditions.
• Started in the worst case conditions
• Debris removal and prop wash are significant resuspension contributors.
• Lumber operation debris became a significant issue.
• Environmental bucket observations