Hudson River PCBs Site
EPA’s Phase 1 Evaluation

Discussion of Productivity Standard Application
February 18, 2010
Phase 1 Productivity Standard & Volume Achieved

Phase 1 Standard: 200,000 CY Minimum Vol.  
265,000 CY Target Vol.

Volume Dredged: 273,600 CY (EPA Est.)  
282,900 (GE Est.)

Target Maximum Monthly Production: 89,000 CY
Actual Maximum Monthly Production: ~78,000 CY
<table>
<thead>
<tr>
<th>Year</th>
<th>Required Volume</th>
<th>Target Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 through 4</td>
<td>475,300 CY/Year</td>
<td>528,100 CY/Year</td>
</tr>
<tr>
<td>5</td>
<td>475,300 CY</td>
<td>264,100 CY</td>
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</tbody>
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Avg. Daily Rate** 3378 CY 3745 CY

Avg. Monthly Rate*** 86,420 CY 96,020 CY

* Based on 2,650,000 CY total volume for Phases 1 and 2
** Based on 6-day week (141 actual days dredging)
*** Based on 5.5 month dredging season (May 1 – Oct. 15)
Dredging Equipment

Mechanical Dredges:

- 5 with 5-CY Bucket on Cat 385 Excavators
- 1 with 2-CY Bucket on Cat 345 Excavator
- 6 with 1-CY Bucket on Cat 320 Excavators
Dredging Equipment

**Scows:**
- 18 Large Hopper Scows (~195’ X 35’ X 12’)
- 7 Mini-Hopper Scows (~26’ X 18.5’ X 2’)
- 1 Supermini-Hopper Scow (~52’ X 18.5’ X 2’)

**Tugs:**
- 13 @ 600 hp
- 4 @ 400 hp
- 3 Carpenter Barges
Loading a Mini-Scow
Major Factors Affecting Productivity During Phase 1

- Scow Unavailability Due to Scow Unloading Capacity at Dewatering Site
- Presence of Slab Wood Debris in Sediment
- Limited Capacity of Mini-Scows
- Underestimated DoC
- Fine Grading to Meet Cut Line Tolerances
Scow Unloading
Scow Unloading Capacity

• Unloader Operated 7 Days/Week
• Max. Volume Unloaded: 17,921 CY/Week
• Avg. Volume Required for Phase 2: 22,000 CY/Week
• Max. Volume Required for Phase 2: ~25,000 CY/Week
Lost Dredging Time

- Lost Dredging Hours:
  - Storms/Fog: 382 (2%) hours
  - Resuspension: 1,022 (6%) hours
  - High Flow: 1,090 (6%) hours
  - No Scow: 4,753 (26%) hours

- Total Available Hours: 18,125
- Total Used: 10,878 (60%)
- Total Lost: 7,247 (40%)
Average Dredge Production Rates

Volume Dredged (GE Est.):
282,900 CY
Overall Production Rate:
26 CY/hour
Effect of Inadequate Unloading Capacity

- Target Production Rate:  89,000 CY/month
- Actual Max. Production:  78,000 CY/month
- Time Lost Awaiting Empty Scows:  1400 hours (same period)
- Production Lost Awaiting Empty Scows:  
  
  \[1400 \text{ hours} \times 26 \text{ CY/hour} = 36,400 \text{ CY}\]

- \[78,000 \text{ CY} + 36,400 \text{ CY} = 114,400 \text{ CY}\]
Slab Wood Debris in Sediment
Debris in Sediment
Impacts of Underestimated DoC and Fine Grading

Underestimated DoC:
• Additional Dredge Passes
• Time Lost in Mapping, Sampling, And Designing New Cut Lines
• CUs Open Longer

Fine Grading:
• Reduced Production Rate

(Both factors increased resuspension losses)
Generalizable Aspects of CU-1

- Multiple dredging passes due to underestimated DoC
- Productivity dropped off at the end of many weeks due to scow unavailability (unloading)
- Fine grading reduced productivity
- More passes meant multiple CU reviews (mapping, sampling, etc.)
- Improvement in productivity experienced with access dredging
CU-1 Daily Dredged Volume (CY)

- **Dredging Pass 1** “Inventory”
- **Dredging Pass 2** “Residuals”
- **Dredging Pass 3** “Inventory”
- **Dredging Pass 4** High Production
- **Dredging Pass 5** High Production

**Access dredging**
Phase 2 Productivity
Standard Can be Met by:

• Addressing uncertainty in DoC to minimize passes
• Improving scow unloading capacity
• Minimizing fine grading
• Conducting access dredging where needed