Discussion of Lower Passaic Cleanup Alternatives

Presentation to the Passaic River Community Advisory Group
December 6, 2012
Presentation Elements

• Overview of Sustainable Remedy
• Discussion of Region 2’s FFS assumptions
• Description of targeted remediation and watershed improvement projects
• Why use the targeted approach?
• Conclusions
Goals for the River

• Improve the quality of the River as quickly as possible
• Use techniques that have the best chance for success and have been proven effective.
• Minimize impacts and provide value to neighboring communities
A Sustainable Remedy

• Needs to address the entire 17-mile ecosystem

• Consists of:
  – Targeted remediation of highest surface sediment contamination followed by review of actual, measured results
  – Projects such as wetlands restoration, storm water reduction initiatives and efforts to improve access and usability
Current Region 2 FFS

• Two alternatives under consideration:
  – Deep Dredge – remove all sediments from RM 0-8
  – Dredge and Cap – remove surface sediments and install cap in RM 0-8

• Region 2 assumes this can be completed in 6-11 years

• Does not address RM 9-17
Assumptions Made in the Region 2 FFS

• Dredging can be accomplished much faster than experience suggests
• Sediments can be removed from a section of River with virtually no recontamination from adjoining areas up and downstream
• Natural recovery rates observed in recent years will not continue
Sustainable Remedy Based on “Adaptive Management”

Design  Implement  Monitor  Evaluate
RM 10.9 Data Clearly Illustrates Ability to Reduce Potential Risk with Targeted Removal

- 2,3,7,8 TCDD Removal Area is well defined by 1000 ppt contour:
  - In fine sediment near shore in central to upriver portion of inside river bend
  - Rapid decline of concentrations outside of silt deposit
- Deeper sediment is stable as documented by radiodating
- TCDD co-located with other COCs (especially those with the highest concentrations such as PCBs and mercury)
- Targeted remediation of high concentration area provides significant overall risk reduction
Developing Target Areas: Example at RM 7-7.8
Proposed Targeted Areas

• Elevated TCDD and other COCs are generally co-located
• As per Adaptive Management, ongoing delineation and monitoring will be used to refine areas
• Will reduce surface concentrations of TCDDs by 80% and bring PCBs to background levels
Unprecedented Dredging Rates

- Dredging projects in less urbanized river systems have rarely achieved assumed rates:
  - Hudson: 363,000 cy in 2011 and about 650,000 cy in 2012
  - Fox River: about 500,000 cy/yr
  - The removal rate for the Tierra Phase 1 project equates to about 120,000 cy/yr
- Engineers estimate FFS to take 17 to 28 years to complete under optimal conditions
Comparison with FFS % Reduction vs. Time

Dredging is Sloppy Work
- Up to 6% of sediment dredged is lost to the river
- The more sediment dredged, the more that will be lost
- Targeted areas can be controlled better so less sediment is lost

More Likely Dredging Rates
- FFS Dredge
- FFS Deep Dredge
- Targeted Remedy
- FFS Dredge and Cap
Comparison with FFS % Reduction vs. Time

Effect of loss of sediment during dredging

Targeted Remedy Will lose less sediment

FFS Dredge and Cap

FFS Deep Dredge Will lose the most sediment

Year on the River
Comparison with FFS % Reduction vs. Time

Effect of background on results of dredging

- FFS Dredge and Cap
  - The cap will be recontaminated

- FFS Deep Dredge
  - Channels will be filled with background sediment

Targeted Remedy
- Will be less affected because it works with the river

Year on the River

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

0 5 10 15 20 25 30 35 40 45 50

Percent Remaining

Percent TCCD Remaining
Recontamination of Caps

- Contamination Remains Upstream and Downstream of the Remediated Area for Region 2’s Alternatives

[Bar chart showing average surface sediment 2,3,7,8-TCDD (ppt) for Today and Post-Remediation with RM 8-12 and RM 0-8 categories, with a note that as predicted by EPA]
What Happens After Region 2’s FFS Dredging?

- 40% reduction in contaminant concentration in 12 years (3% per year)
- Same reduction rate seen in fish tissue
Nothing Has Changed

- Bathymetry shows the river is working the same way
- Recovery will continue
- With the high concentration area removed the rate of recovery may increase
Comparison with FFS % Reduction vs. Time

After Source Removal
• Recovery continues at 3%
Comparison with FFS % Reduction vs. Time

Natural Recovery May Increase

After Source Removal
- If the recovery rate increases to 5% per year all results are equal
Comparison with FFS % Reduction vs. Time

The Difference
- Quicker risk reduction will result in a better river
Information to measure success and support future decision-making

• Post-remedy monitoring to measure effectiveness
  – Fish tissue
  – Ecology
  – Bathymetry

• Need to demonstrate success to EPA and stakeholders
Monitoring data will let us answer these important questions

- Have levels in fish tissue declined?
- Have the caps remained intact?
- Is remaining river sediment stable?
- Is ecology improving?

Unless the answers are “YES”, more work will need to be done
Out-of-River Component

- Focuses on RM 0-17
- Addresses ongoing contamination and “urban river” water quality issues
- Includes projects, such as wetlands restoration, steps to reduce urban runoff, new parks, and improved access points with input from River communities
Conclusions – Sustainable Remedy

• Consistent with EPA Guidance
• Considers all available data
• Achieves significant risk reduction faster
  – Removes high concentration areas
  – Minimizes re-suspension of COCs
• Significantly reduces duration/disturbance of River
• Enhances the natural recovery rates of the River
• Uses measured data to evaluate performance
• Reduces ongoing contamination through out-of-river projects
Questions?