2,3,7,8- TCDD Patterns in Lower Passaic River Sediments

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Organized Patterns in Sediments are the Norm

- Reflect input locations and erosion/deposition processes
- Often used to craft remedial strategies
  - e.g., Hudson River, Fox River
Hudson River Dredge Areas

River Section 1
Area Remediated (Acres) = 306
Volume Sediments Removed (CY) = 940,300

River Section 2
Area Remediated (Acres) = 83
Volume Sediments Removed (CY) = 344,100

River Section 3
Area Remediated (Acres) = 98
Volume Sediments Removed (CY) = 511,100
Fox River Dredge Areas

• OUs 2 to 5 Remedial Action Areas
TCDD Concentration Patterns

- TCDD concentration patterns in the Passaic reflect
  - Upstream tidal transport to the limit of salinity intrusion
  - Depositional history
  - Transitions between shoal and channel
  - Recent erosion/deposition patterns
Salinity Intrusion Occurs as Far Upstream as River Mile 14

![Graph showing salinity intrusion percentages upstream of River Mile 14]
2,3,7,8-TCDD Surface Sediment Concentrations Low Upstream of RM 14

Reflects source located within the salt wedge and upstream transport to the limit of salinity intrusion
2,3,7,8-TCDD Concentrations Relate to Bathymetry Changes

*Only includes locations that experienced net deposition since 1949.
Local Patterns Exist in Surface Sediment Concentrations

- Along-river correlation within deposits
- Cross-river gradients reflecting geomorphology
Variogram Shows Strong Along-River Concentration Correlation on the Scale of 100 ft
Surface 2,3,7,8-TCDD Changes Relate to Recent Erosion/Deposition

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Higher 2,3,7,8- TCDD Concentrations in Discrete Pockets
Conclusions

- Areas of high and low sediment contamination are identifiable and related to
  - Extent of upstream transport
  - Long-term deposition patterns
  - Geomorphology
  - Recent erosion/deposition

- Concentrations are higher at locations that
  - Accumulated sediment since 1949
  - Sediments deposited in the 1960s are within the top 6 inches today

- Concentrations are declining at locations that are still depositional
Questions/ Discussion