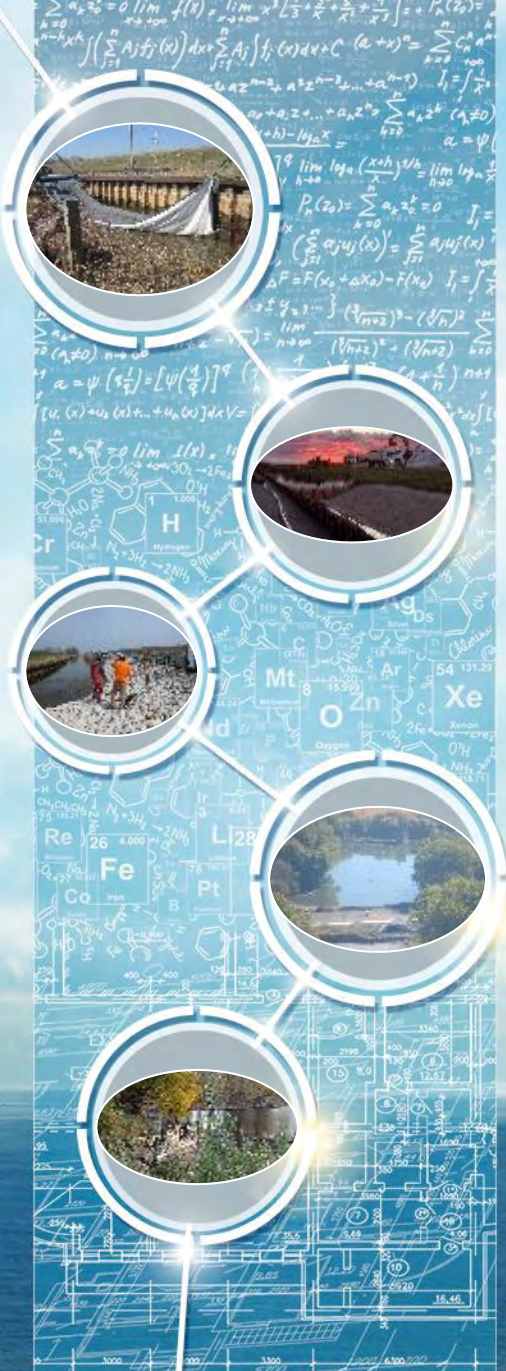




Dredging Over a Reactive Cap – Two Case Studies

April 13, 2016



Two projects to remove cap contamination

- Engineered caps installed over impacted sediments
 - OMC site in Waukegan, IL
 - Grand Calumet River, NW IN
- Sites impacted with PCBS and PAHs
- Both caps re-contaminated from above
 - OMC by PCB source outside of cap area
 - HSD from CSO
- Goal: remove contamination from surface of cap while minimizing loss of cap material

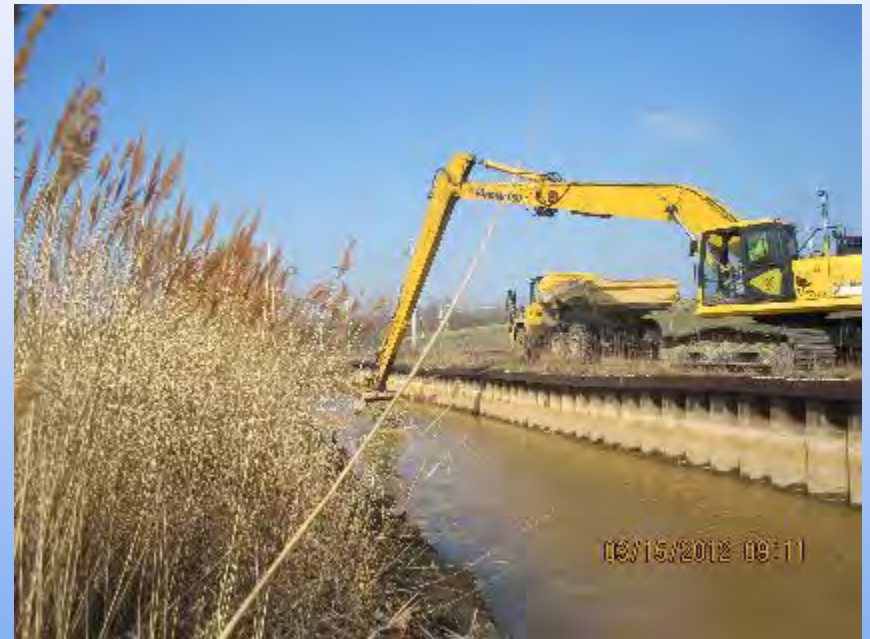




North Ditch Prior to Cap Placement



RCM Placement and Armor Stone



Diver-Assisted Dredging



Diver Decon and Dewatering



Amended Concrete Cap

- RAO of 1 PPM not met in 5 100-ft sections
- Concrete placed over cap in sections
- Concrete also served as better resistance to storm water flow into channel



Diver-assisted Dredging Summary

- 350 tons of sediment removed
- Total cost ~\$500,000
- Repaired RCM and supplemented with concrete encapsulation/armoring
- April – June 2016

Bank Source Control



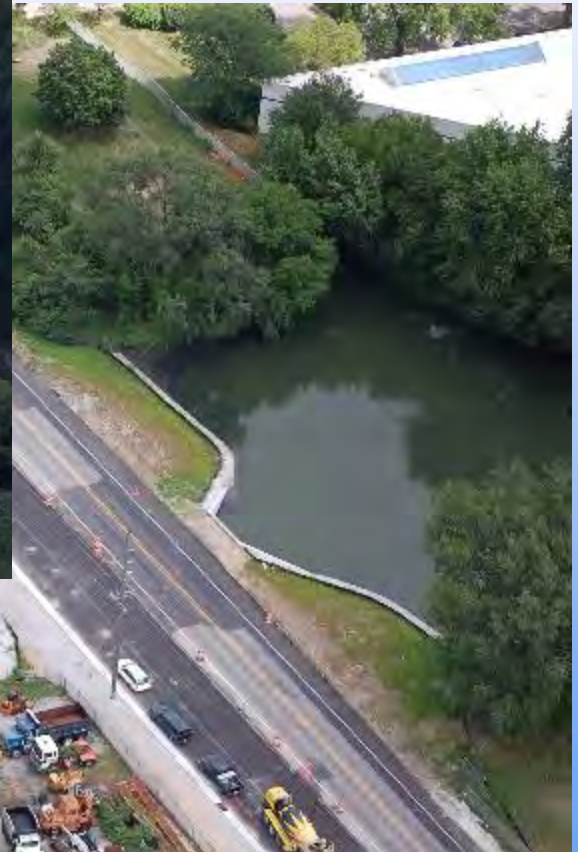
Bank Source Control



Bank Source Control



Hammond CSO Reach 2 GCR



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Timeline

- Cap placed Jan - April 2012
- CSO abandoned Fall 2014
- Cap sampled Nov 2014
- 3-12 inches material on top of engineered cap
- Thicker closer to CSO





Concerns

- Removing/Thinning Cap
- Cost
- Discharge Location
- HSD Acceptance
 - Flow rate
 - Solids content
 - Phosphorous

Fall 2016



Discharge back into HSD System





HSD CSO Dredging Summary

- ~ 800 CY of sediment removed
- Total cost ~\$100,000
- 1-3 inches soft sediment remaining
- Cap thickness 16.5-23 inches

Questions?



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