

FALL 2025 SEDIMENT MANAGEMENT WORKING GROUP MEETING

Applied Research and Field Demonstration: Testing of Contaminated Sediment Beneficial Use at Kingman Lake, Washington, DC

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Collaborators:

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Dev Murali, District of Columbia Department of Energy and Environment (DOEE)

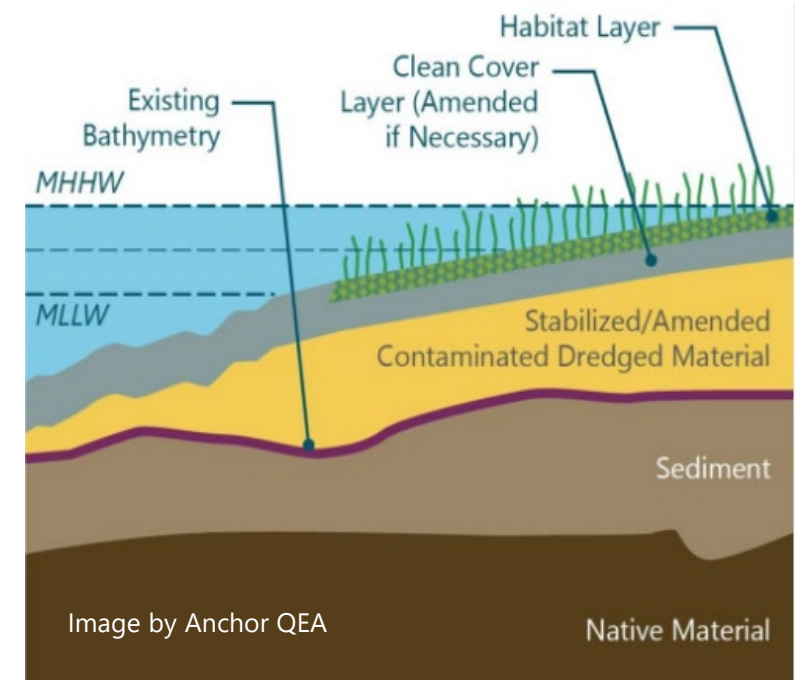


TECHNICAL OBJECTIVE

Investigate field technology deployment to evaluate how lower- to-mid-tier contaminated sediments can be beneficially used

Approach

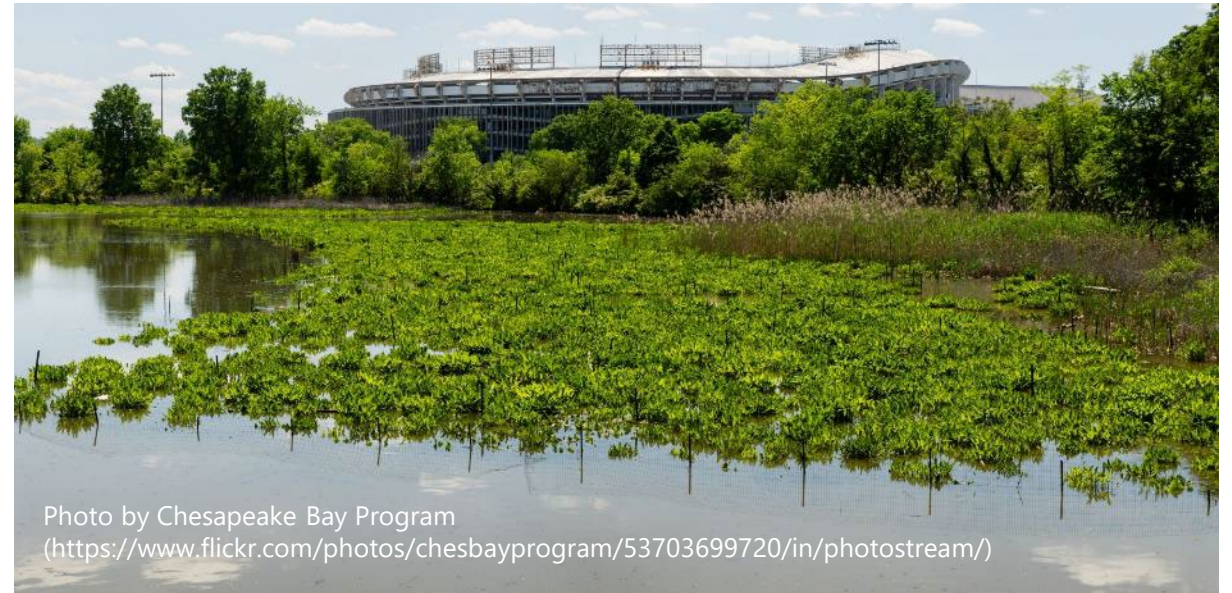
- Use amendments to physically stabilize contaminated sediments ex situ
- Use layers of clean sediment to provide further chemical isolation and promote habitat establishment
- Deploy field technology concepts at legacy contaminated sediment site (pending agency and stakeholder approval)



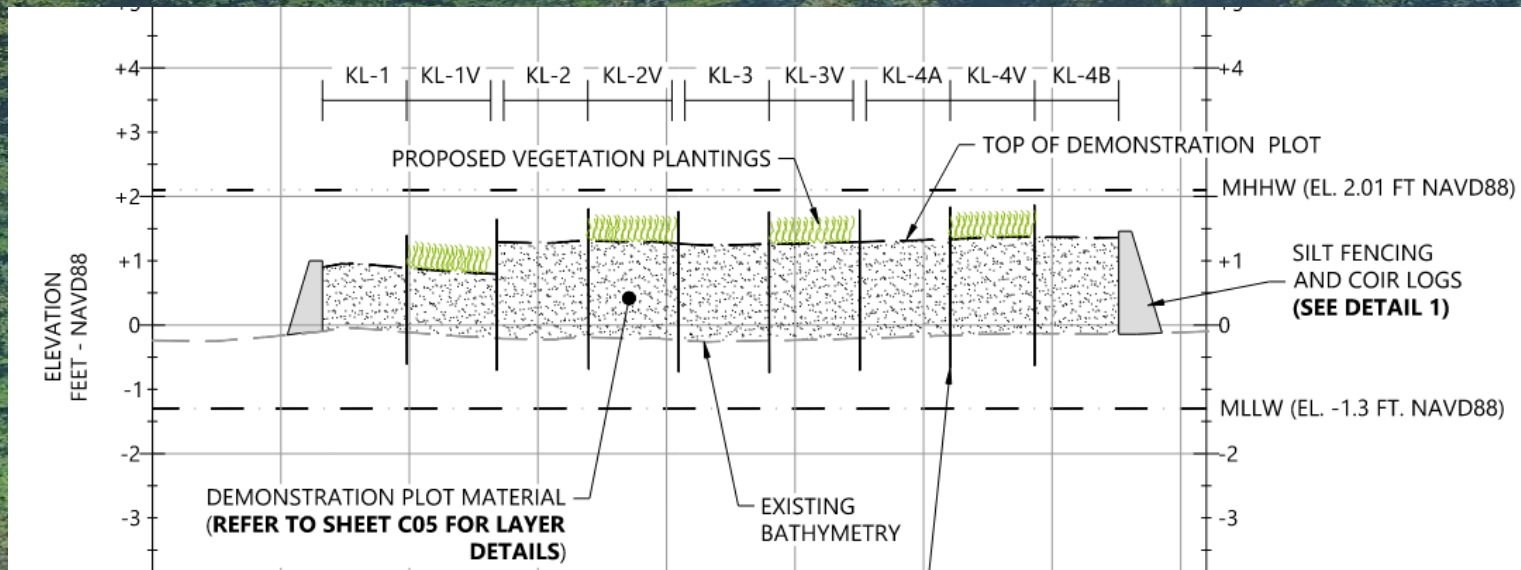
TECHNICAL OBJECTIVE

Applications

- Build scientific database and proof of concept for full-scale BU application of contaminated sediment
- Identify best practices and standard operating procedures for wider applications
- Develop regulatory acceptance and permitting guidance
- Publish papers and conduct knowledge-sharing workshops

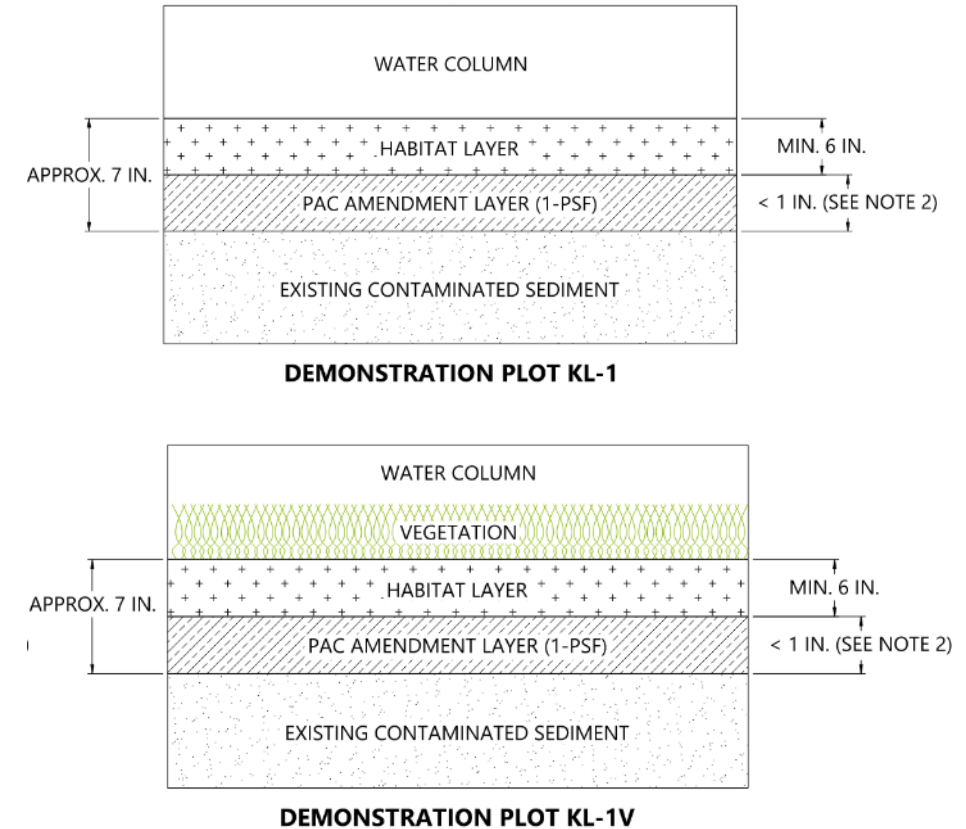


BU Test Plots



BU CONCEPTS

- 10 demonstration plots
- 4-meter by 4-meter square
- Contaminated dredged material stabilized with Portland cement for structural strength
- Variations in activated carbon treatment layers
- Habitat layer on top
- Plots are paired with or without planted vegetation
- 1 plot will receive PAC amendment directly on top of existing contaminated sediment



Note: Variations in layer thickness and arrangement (as well as amendment type and dose) will be constructed to determine which are the most effective configurations for contaminant reduction (via post-deployment monitoring)

Pilot Study Details

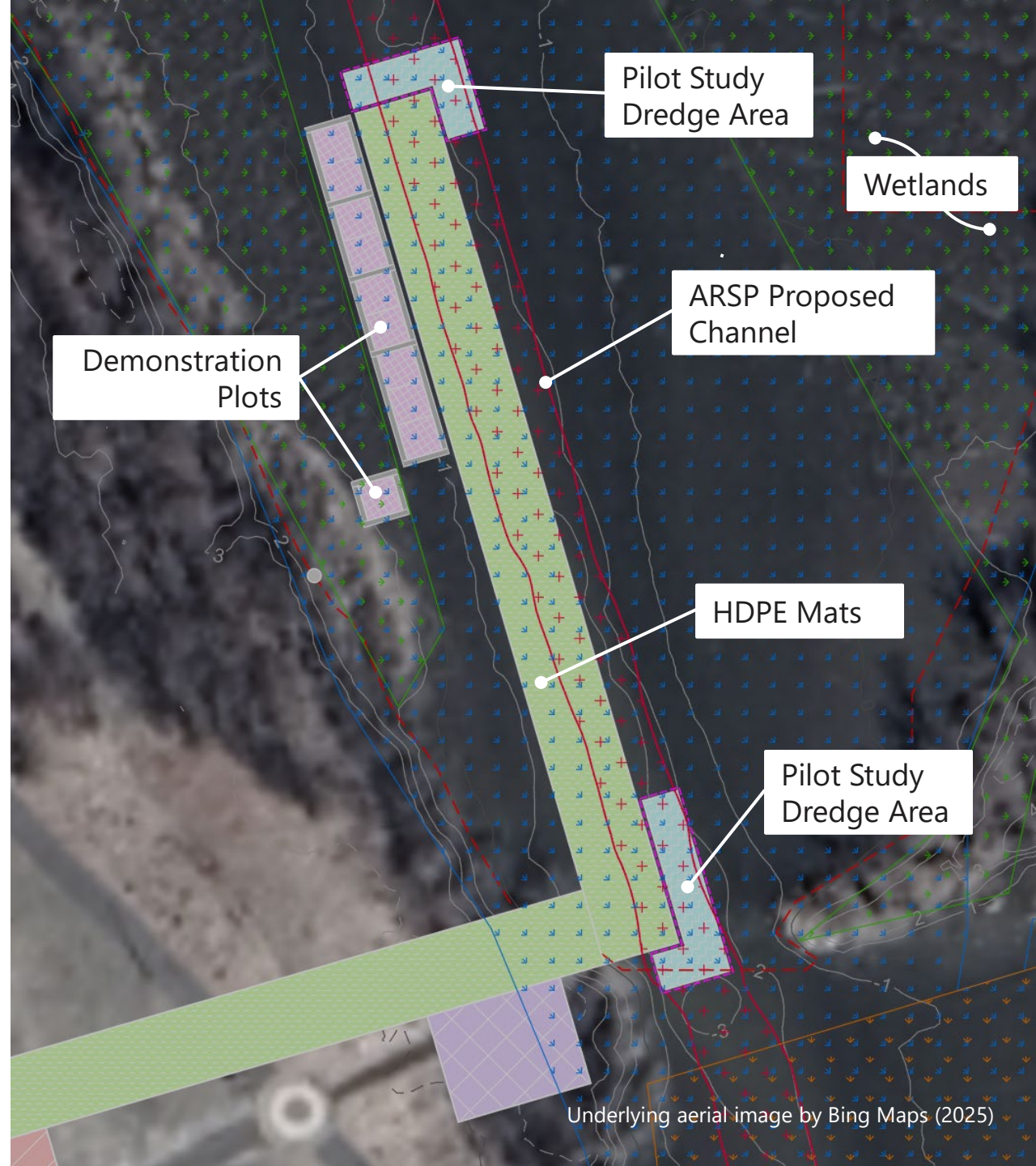
A wide-angle photograph of a water body, likely a pond or lake, under a clear blue sky. The water is dark blue and covered with numerous lily pads. In the background, there is a dense line of green trees and a wooden bridge. Several vertical white poles are planted in the water, spaced out across the scene, indicating a field study or experiment. The overall scene is bright and clear.

KINGMAN LAKE, ANACOSTIA RIVER, WASHINGTON, DC



PILOT STUDY DETAILS

- Target dredging low- to mid-tier contaminated sediment
- Dredge primarily within the limits of the proposed ARSP canoe channel
- 9 of 10 demonstration plots outside limits of existing DOEE-defined wetlands
- 1 demonstration plot design consistent with ARSP design



BASELINE AND LONG-TERM MONITORING

- Baseline monitoring by UMBC and Anchor QEA in 2024
- Long-term monitoring: 1- and 3-years post-deployment
 - Sediment porewater
 - Bulk sediment
 - Surface water
 - Benthic community survey
 - Bioaccumulation testing
 - Vegetation tissue testing and survey
- Sediment traps will also be installed on each demonstration plot to measure sediment deposition



PROJECT STATUS AND SCHEDULE

- Finalize and submit 100% design (Fall 2025)
- Develop and submit permit applications (Fall 2025)
- Contractor procurement (Winter 2025)
- Receipt of permits (Summer 2026)
- Field deployment (estimated 3- to 4-week duration: Summer 2026)
- Long-term monitoring: (Summers of 2027 and 2029)



Challenges & Lessons Learned

PROJECT CHALLENGES

- Pilot Study proposal was based on deployment to two different sites (New York City and Washington, DC) in varying regulatory jurisdictions
- Conceptual designs were developed prior to final site approval (including deployment and staging areas)
- Site selection challenges (deployment sites and staging areas)
- Agency and stakeholder coordination challenges
- Length of process

PROJECT CHALLENGES

- Proposal to ERDC was based on a recommended site in Newtown Creek
 - Proposal cost estimate (and funding) was based on site-specific conceptual design
- Multiple alternate sites were evaluated for cost-effectiveness
 - Evaluated a reduced scope study (i.e., shovel-scale or lab-scale)



PROJECT CHALLENGES

- Kingman Lake Pilot Study requires an upland staging and laydown area and access to the lake
- Use of adjacent upland (i.e., riparian area and RFK Stadium vacant lots) has not been approved by NPS or DC Mayor's office



LESSONS LEARNED

Prior to Proposing

- Coordinate with regulatory agencies and stakeholders to select and approve a Pilot Study site
- Estimate site-specific project deployment costs and include a conservative contingency
- Identify potential roadblocks and determine alternate sites, methods, and/or means to implement Pilot Study

During Design

- Solicit stakeholder input during conceptual design to avoid revision
- Establish consistent and frequent communication with agencies and stakeholders
- Include prospective contractor in design development

PPP: 5 BASIC RULES FOR PPP PROJECTS

- 1** Ideal for sites where a pilot test can help fill in data gaps or technical uncertainties
- 2** Requires buy-in from all parties
- 3** Should help innovate on technology or application
- 4** Ideally, executable within a year, and monitored for 2 to 3 years to gather reliable data on performance
- 5** Must be cost-effective

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