Field Demonstration of Active Caps: Innovative Capping and In-Situ Treatment Technologies

Hazardous Substance Research Center/South & Southwest
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Project Status Report for the period 8/1/02-10/31/02 to:

Government of the District of Columbia, Department of Health, Environmental Health Administration, 51 N Street NE, Suite 6039, Wash., DC 20002

Introduction: The Hazardous Substance Research Center/South and Southwest (HSRC), Louisiana State University, is conducting comparative validation of innovative "active capping" technologies. The goal of the cap is to ensure contaminants migrating through the cap are sorbed, chemically bound, or degraded and not released into the overlying water. The project seeks to provide site-specific preliminary design information on the application of innovative technologies to the Anacostia River where historically industrial, municipal, and military activities have resulted in potentially high hazardous levels of polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), metals, and other contaminants. The project will also demonstrate, on a field scale, the ability to design and construct caps that will provide treatment of sediment contaminants while simultaneously providing containment. Two sites in the Anacostia River have been tentatively selected for the field demonstration. The following sections provide information on the status of current activities within the project from August 1 through October 31, 2002. Future status reports will be for bimonthly periods.

Communication: Descriptive and status reports have been given at AWTA meetings during this reporting period. Communication on project activity has been maintained with DC Government personnel during and through these meetings. An additional briefing on the site characterization plan was presented to DC DOH on October 8, 2002. This interaction has benefited the project and is slated to continue. Through the AWTA meetings, additional data have been obtained from earlier work to assist with the site characterization work of this project.

Status of Contracting/Subs: Institutions and companies involved in this demonstration project are listed below along with their respective roles. One subcontract is for the prime field contractor while the remainder are for work to evaluate and demonstrate applicability of specific capping technologies to Anacostia River sediment. These treatability studies provide the information necessary to select or exclude these technologies from the demonstration. Contract completion during this reporting period was critical in order to ensure that all funds on-hand were obligated prior to September 30, 2002. All funds on hand have been obligated and contractual work for this phase is complete and fully executed. Horne and all subcontractors and projects are preparing or revising HSRC reviewed drafts of their Quality Assurance Project Plans (QAPPs) at this time.

Horne Engineering – Prime Contractor – Horne is responsible for subcontracting and providing expertise in the site characterization work, design and placement of the caps and analysis of the placement and effectiveness of the technology.

Hart-Crowser, Inc. – Subcontractor for services and support in connection with cap design, evaluation and testing using Biomin EC-100, a natural organic sorbent which encourages sorption-related retardation.

Hull and Associates – Technology uses commercially available Aquablok for control of seepage in the cap. (One subcontact to Hull and one to Aquablok)

Carnegie Mellon University and Rice University- Zero-valent iron is being tested (this technology has been demonstrated in groundwater remediation) to encourage dechlorination and metal reduction.

University of New Hampshire – This treatability test uses a phosphate mineral (Apatite) to encourage sorption and reaction of metals.

Status of Chemical Sampling/Analyses: Samples were collected from two locations on the Anacostia River on April 19, 2002 in order to initiate treatability testing of the above technologies. Four 55-gallon drums of sediment were collected and chain-of-custody provided to DC DOH as required. LSU and UNH each received 2 drums of sediment. Samples from sediment at LSU were sent for both physical and chemical analysis. Chemical analyses (volatiles, semi-volatiles, PCB's (partial and full suites), metals and Hg) have been received *are attached*.(pdf file)

Status of Site Characterization Plan: The next critical step, while laboratory testing of the candidate technologies is underway is to establish the site characterization plan (SCP) for locations 1 (Old CSO, West of Navy Yard) and 2 (MGP East of Navy Yard near Corps of Engineers dock. Detailed location data (GPS) was provided earlier to DC DOH with along with photos of the sampling and contaminant concentration information from the April 19 activity. The site characterization plan draft by Horne Engineering and LSU has been sent out for comment to selected AWTA members. Based upon comments received, the plan was modified and updated. The revised draft plan was presented to DC DOH on October 8, 2002. Comments were incorporated into a final plan that was submitted for approval on October 14, 2002 to DC DOH and selected members of AWTA. The final revised plan calls for a round of geophysical testing to be initiated in early November 2002 to aid selection of final sampling locations for physical sampling. Physical sampling is envisioned during mid-November to mid-December 2002, subject to receipt of appropriate approvals.

Planned activity for Remainder of 2002: As noted above, the balance of 2002 will involve completing the SCP and initiating the work. Rapid turnaround of additional drafts and comments will be necessary during this period to ensure timely completion. During the 4th quarter, the project will also report on preliminary conclusions on

laboratory treatability studies at the HSRC review meeting November 6-8, 2002, allowing us to begin preliminary field construction design. HSRC/S&SW will also be coordinating with cooperating sources of support and developing the plan to participate in the EPA SITE program (independent 3rd party technology evaluation). A draft of the Pre-Quality Assurance Project Plan Agreement (PQA) has been assembled and is being revised for submission to EPA SITE after additional review by Horne and subcontractors.

Planned activity for 2003 to completion: Activity to the completion of the project from the second quarter of 2003 is listed below:

- Second Quarter 2003
  - Final field construction design
  - Field construction
  - Evaluation of placement effectiveness
- Third Quarter 2003
  - Initiate cap effectiveness evaluation
  - Prepare report on cap placement effectiveness
- Third Quarter 2005
  - Prepare report on cap technology effectiveness
  - Project completion