

Pre-design Investigations for NAPL Control Cap for Intertidal Sediments at the Wyckoff/Eagle Harbor Superfund Site

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Background/Objectives. On May 23, 2018, the U.S. Environmental Protection Agency (EPA) issued an amended Record of Decision (ROD) to implement additional cleanup actions at the Wyckoff/Eagle Harbor Superfund Site intertidal beach areas at Bainbridge Island, Kitsap County, Washington. This decision amends the 1994 ROD to include dredging and capping contaminated beach sediments, improving the access road, and replacing the aging perimeter steel sheet pile wall.

The selected remedy for the intertidal beaches adjacent to the former creosote wood-treating facility includes the following activities:

- Dredging approximately 6,600 cubic yards of contaminated sediment from select areas
- Backfilling dredged areas with a multilayer cap, including placing reactive materials (such as oleophilic clay or other reagents) at the base of the cap to retard upward nonaqueous phase liquid (NAPL) seepage, then restoring dredged areas to grade with clean, imported materials
- Monitoring to confirm dredged and backfilled areas remain clean
- Monitoring outside active cleanup areas to confirm natural recovery effectiveness
- Implementing institutional controls to prohibit marine construction activities that could disturb the capped areas of the beach.

Approach/Activities. Construction in the intertidal areas is challenged by the tidal exchange where up to 300 feet of beach can be exposed at low tide and inundated at high tides. The movement of water during tidal exchange creates hydraulic gradients capable of moving NAPL. In addition, the tidal exchange introduces oxygenated surface water into the sediment that can promote natural attenuation of the contaminants.

The predesign investigations includes the following:

- A TarGOST® investigation and disturbed sediment elutriate tests
- A hydraulic study to measure: 1) vertical hydraulic gradients, 2) depth of the aerobic/anaerobic and freshwater/saltwater interface, and 3) the absence/presence of microorganisms capable of degrading NAPL constituents.
- A media evaluation test to estimate NAPL loading rate in the seep area and evaluate three different types of media for the reactive barrier component of the cap. The media include: 1) an oleophilic biobarrier (OBB), 2) an oleophilic clay mat, and 3) a granular oleophilic clay mixture.
- Test pit excavations to evaluate sidewall and bottom stability and water infiltration/exfiltration rates, and to obtain material to measure sediment dewatering rates and the degree of dewatering that can be achieved through gravity and air drying methods in the upland.

Results/Lessons Learned. This presentation will give a summary of the pre-design field investigations performed in Summer 2018. The work is being scheduled for the spring tides in July and August 2018 when negative tides are predicted. There are only a few hours each day

where the some of the work will be performed before tidal inundation requiring close coordination in scheduling activities.