

Combining Remedies for Contaminated Sediment at Southeast Loch, Pearl Harbor, Hawaii

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Background/Objectives. Sediment contamination has been identified in six areas or decision units (DUs) at the Pearl Harbor Sediment site. The majority of the contamination is primarily located within the Southeast Loch portion of the harbor. The feasibility study (FS) developed and evaluated a total of 13 potential alternatives for Southeast Loch. Seven of the 13 alternatives were retained in the FS for detailed and comparative analysis based on the preliminary screening for effectiveness, implementability and cost. The FS identified a preferred remedy for Southeast Loch that included a combination of focused dredging, enhanced natural recovery (ENR), monitored natural recovery (MNR), and activated carbon (AC) amendment. Key features identified in the Southeast Loch DU are: chemicals of concern (COCs) that include polychlorinated biphenyls (PCBs) and metals (including mercury); high maximum COC concentrations (> 10x site-specific preliminary remediation goals); relatively deep contamination (> 8 feet), deep water (30–60 feet), co-location with a large maintenance dredging area, and potential for recontamination from maintenance dredging, stormwater runoff, and erosion of contaminated sediments from steep slopes under piers. The objective of combining multiple technologies into a remedial alternative is to incorporate ongoing natural recovery processes along with active remediation to develop a remedy that is green, resilient, and sustainable, while still maintaining acceptable risk protectiveness.

Approach/Activities. Remedial alternatives (i.e., dredging, capping, ENR, MNR, and AC) comprised of multiple technologies were developed, and designed to work as an integrated remedy to achieve the remedial goals within reasonable timeframes by assigning specific and appropriate technologies to the DUs based on the level of sediment contamination. With these multi-component remedial alternatives, there is no single component of the alternatives that is considered the “primary” approach. Each individual element of the multi-component remedial alternative is equally important and necessary to achieve the remedial goals.

Results/Lessons Learned. The selected remedial alternative for Southeast Loch at the Pearl Harbor Sediment site combines active remedial technology (focused dredging) with natural-recovery based remedies (ENR, MNR, and in situ treatment with AC amendment). The combined multi-technology alternative achieves a similar level of protectiveness by achieving remediation goals in 20 years at a significantly lower cost than comprehensive dredging, and is well received by regulatory agencies (Environmental Protection Agency and State of Hawaii Department of Health).