Comment to the Hudson River Phase 1 Peer Review Panel on Evaluating Backfill as a Contributor to Exceedance of the Resuspension Standard

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The Department of the Interior (DOI) provides technical support to USEPA on the remedy for the Hudson River PCBs Site through the US Fish and Wildlife Service and the National Park Service. Also, the DOI is one of a group of Natural Resource Trustees (Trustees) that are conducting a Natural Resource Damage Assessment on the Hudson River.

In moving forward with Phase 1 of the remedial action for the Hudson River PCBs Site, USEPA has been able to accomplish the critical first step toward completing the overall remedial action for the site. The Trustees believe that the overall benefit associated with the removal of an estimated twenty tons of PCB from the river during 2009 greatly outweighs the short-term impacts associated with the work. The Trustees recognize that Phase 1 was conceived of as an opportunity to perform a significant portion of the dredging work under closely monitored conditions so as to allow a thorough analysis of the first year's outcome and guide the remainder of the cleanup using improvements and changes to project design that can achieve more benefit for the Hudson River, improve project quality, and better meet the human health and environmental risk reduction objectives in the Record of Decision.

The Trustees have identified issues that arose during the Phase 1 work which likely contributed to the elevated PCB concentrations measured in surface water samples collected at the far field monitoring stations and to the exceedances of the Resuspension Standard. Specifically, the Phase 1 design, as implemented, has left the river bottom in an unstable condition and contributed to exceedances of the resuspension standard. This is primarily due to:

1. a design that left behind steep, unstable underwater slopes between the dredged and undredged areas that have slumped and serve as a source of erodable fine materials and associated PCBs, and
2. inadequate amount and placement of backfill that significantly reduced the amount of habitat reconstruction envisioned –habitat that would serve to stabilize the river and further sequester capped PCBs. We ask that the panel consider how these may be corrected so as to reduce exceedances of the resuspension standard.

On our first point, the Phase 1 design, as implemented, has left the river bottom in an unstable condition and likely contributed to exceedances of the resuspension standard. During backfill operations, Type 1 backfill was found to be unstable on slopes at the design slope of 3 horizontal to 1 vertical. It was necessary to substitute Type 2 backfill in these areas, potentially limiting the habitat quality in these areas. In light of the failure of Type 1 backfill on 3:1 slopes and the advantages of Type 1 backfill over Type 2 backfill as substrate better suited for establishing plant and animal habitat, the Trustees view the 3:1 slopes as having an unstable angle of repose that is too steep. Side slopes at a 6:1 to as gentle as a 10:1 slope may be necessary to minimize slumping and erosion.

These steep underwater slopes between the dredged areas and the undredged areas are easily moved by flowing waters and serve as a source of erodable fine materials and associated PCBs. These eroding slopes are a likely source of some of the resuspended PCBs that contribute to water column concentrations monitored as part of the Resuspension Standard. The Trustees ask the panel to evaluate the integrity of the side slopes of dredged areas to determine whether a new, more stable design is needed. Is such a design change necessary to reduce these sites as a source of PCBs monitored by the resuspension standard?

On our second point regarding amount and placement of backfill, Project design required that a foot of backfill be placed over all areas dredged to remove PCBs and, as agreed to by GE and EPA, a supplemental amount equal to 15 percent of the total project volume of this one foot of material would be available as additional backfill for placement across areas of river bottom chosen by EPA to help reconstruct river bathymetry and habitats. During Phase 1, the majority of the 15 percent backfill volume was used in the nine CUs that were dredged in 2009, leaving an inadequate amount for use in the remainder of the project. In other words, sites in the river bottom that were dredged to greater depths generally required amounts of backfill greater than was anticipated. The Trustees would like to hear the panel's view on the adequacy of backfill for purposes of stabilizing the river should Phase 2 proceed with the original volume of backfill in the Project design given that greater volumes of sediments may be excavated. Will backfill volume of 15 percent provided for in the design have only limited stabilizing effect in dredged areas and increase the potential for mobilization and resuspension of nearby contaminated sediments?

Also, the Trustees are interested in the panel's recommendations after considering the adequacy of 15 percent backfill for reconstruction of the three habitat types: unconsolidated bottom (UCB), submerged aquatic vegetation (SAV) and riverine fringing wetland (RFW). Once these habitats are successfully re-established, they will promote sediment stability and reduce mobilization and resuspension of adjacent contaminated sediments. We ask the panel to keep in mind the amounts and types of backfill that are needed to return nearshore areas to their original bathymetry so that wetland plants that have strict water depth requirements are able to grow, survive and help to stabilize nearshore areas and provide protective sequestration of PCBs areas that must be capped. Similarly, will adequate backfill be available to re-establish areas of submerged aquatic vegetation as planned in the Phase 1 and Phase 2 design?