



Hudson River

PCBs SUPERFUND SITE

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Engineering Performance Standards General Overview

Winter 2011 Update

Highlights

This fact sheet describes the objectives and intended use of engineering performance standards for the Hudson River PCBs Superfund site. These standards were released to the public for review and comment, and were evaluated by an independent panel of scientists and with input from a broad range of stakeholders. Additional information can be found in individual fact sheets and in more detailed documents on dredging-related resuspension, dredging residuals, and dredging productivity.

Background

In February 2002, EPA issued a Record of Decision (ROD) for the Hudson River PCBs Superfund site that calls for targeted environmental dredging of approximately 2.65 million cubic yards of PCB-contaminated sediment from a 40-mile section of the Upper Hudson River.

The Hudson River cleanup will achieve five objectives:

- Reduce cancer risks and non-cancer health hazards to people who eat fish from the Hudson River by reducing the concentration of PCBs in fish,
- Lower the risks to fish and wildlife by reducing the concentration of PCBs in fish,
- Diminish PCB levels in sediments in order to reduce PCB concentrations in river water that are above water quality standards,
- Reduce the quantity (mass) of PCBs in sediments that may be consumed by fish and wildlife, and
- Minimize the long-term movement of PCBs down river.

Dredging will occur in two phases:

- **Phase 1** dredging took place from May to November 2009 along a six-mile stretch of the Upper Hudson River near Fort Edward, NY. Phase 1 dredging was conducted at a reduced scale with extensive monitoring to ensure that it was done safely.
- **Phase 2** dredging began in June 2011 and is being conducted at full production to remove the remainder of the contaminated river sediments targeted for dredging.



What are Engineering Performance Standards?

Engineering performance standards are technical requirements to help ensure that the cleanup meets the objectives for protecting people's health and the environment set forth in the ROD and does not cause adverse health or environmental impacts. They have been developed to make sure the dredging is done safely and stays on schedule. The ROD required the development of the following engineering performance standards:

- Dredging-related resuspension (transport of PCBs down river);
- Dredging residuals (PCBs left behind); and
- Dredging productivity (complete the project efficiently)

Dredging-related Resuspension

The resuspension standard and action levels are used to control PCB concentrations in the river downstream of the dredging to protect public water intakes and to minimize the impact of dredging-related releases on the recovery of the Hudson River ecosystem. A water quality-monitoring program is in place to show that the objectives of the resuspension standard have been met during dredging. Sampling results are used to determine whether additional measures are needed to ensure protection of public health and the environment. If necessary, these measures could include expanding the monitoring program, implementing operational or engineering improvements to reduce resuspension levels or temporarily slowing or stopping the dredging.

For the dredging project, the resuspension standard is the control level of 500 parts per trillion (ppt) Total PCBs, the EPA drinking water standard under the Safe Drinking Water Act. Prior to Phase 1 dredging, EPA used extensive modeling, environmental dredging case study data, and federal and state water quality standards to develop a series of tiered action levels for the standard. Computer models were used to simulate PCB concentrations in water, sediment and fish tissue that could result from dredging resuspension. The modeling efforts examined the impact of allowing dredging operations to proceed at various action levels specified in the resuspension standard. The conclusion was that operating at low resuspension rates resulted in negligible impacts on PCB levels in fish tissue. Higher resuspension rates could



increase fish tissue concentrations during dredging, but these were not found to be significant after dredging was completed.

If there is a single exceedance of the Resuspension Standard at one of the monitoring stations located downstream of dredging operations, EPA may require GE to conduct evaluations of the dredge operations and/or implement best management practices. If the 500 ppt Total PCBs standard is exceeded for five days out of any seven-day period or there is a confirmed exceedance at Waterford, EPA may require GE to slow down or shut down dredging operations upstream. If a slowdown or shutdown is required, normal operations will typically resume when the concentration at the applicable monitoring station is below 500 ppt Total PCBs for two consecutive days.

Dredging Residuals

The residuals standard is designed to detect and manage small amounts of contaminated sediments that may remain on the river bottom after dredging. These "residuals" may consist of contaminated sediments that were disturbed but escaped capture by the dredge, resuspended sediments that were redeposited or that settled, and/or contaminated sediments remaining below the dredging cut lines because they were not detected by the sediment sampling program.

The residuals standard first requires post-dredging sampling and analysis to detect and characterize PCB concentrations in the residual sediments. The level of PCBs in the sediment samples is then evaluated against a level of approximately 1 part per

million (ppm)- the sediment cleanup objective for the project - and a series of statistical action levels. If the sampling results do not meet the action levels, the appropriate management approach to the residual sediments, such as capping or dredging, will be selected to achieve the cleanup goals while maintaining dredging productivity.

Dredging Productivity

The productivity standard is designed to keep the dredging work on track to meet the goal of completing the project on schedule. The productivity standard defines the total project sediment volumes to be dredged each dredging season, based on the current estimate of cubic yards of sediment to be removed. Maintaining an appropriate dredging production rate will help to clean up the river within a reasonable time frame.

How were the standards developed?

The engineering performance standards were developed to provide public accountability and assurances that the dredging will be protective of people's health and the environment. These



standards will be used to measure the progress of the dredging and its effect on the river system.

They will ensure that:

- Action levels established in the resuspension standard protect people's health and the river ecosystem and maintain the total amount of PCBs in the river during dredging operations,
- PCB amounts and concentrations allowed by the resuspension standard are set at levels that do not cause additional serious long-term impacts on PCB levels in fish in the river,
- Removal of PCB-contaminated sediments with an anticipated residual of approximately 1 ppm prior to backfilling is achievable on an area-wide average basis, and
- The cleanup can be accomplished within a reasonable timeframe without compromising the other engineering performance standards.

Visit, call, or write to the Hudson River Field Office at the address below or log on to www.epa.gov/udson.

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