

## **Main Points on the Resuspension Standard**

### **Question 1: Framework**

- < The general framework is logical and well-thought out, however, this standard may have too many levels. EPA should consider simplifying or reducing the number of action levels, primarily to reflect those necessary to evaluate compliance.
- < The panel recommends that the resuspension standard consider and address all relevant Water Quality Standards. This would include the assimilative capacity for PCBs in the Hudson River.
- < For the long-term protection of the river, the total export of PCB should not exceed 650 Kg of total PCBs over the life of project as the upper bound limit. This objective should be clearly identified in the framework as well as the means by which it will be achieved.

### **Question 2: Near-Field Analyses**

- < The panel supports the use of the near field analysis during Phase I with the goal of acquiring sufficient information to simplify and streamline objectives for Phase 2.
- < The panel recommends that during phase 1 tPCB data be collected in the near field. If data collected in Phase 1 demonstrates a relationship between turbidity, TSS, and tPCB, then the Phase 2 standard would be modified accordingly.
- < Some of the panel recommends adding BMP guidelines for controlling solids losses during remediation and including near field turbidity monitoring with an upstream comparison.
- < Some of the panel feel that unacceptable downstream turbidity levels should initiate a response other than monitoring, preferably an action by the remedial operation to address the high turbidity level.
- < In general, there was consensus that the models were well formulated and applied and made good use of existing data. Monitoring will help clarify future direction.

### **Question 3: Evaluation Level**

- < The panel is split on elimination of evaluation level but overall recommends consideration of blending levels in Phase 2.

### **Question 4: Resuspension Threshold**

- < In general, there is agreement on the reasonableness of the 500 ng/L standard.
- < The concern and control levels for total PCBs should be based as the lower 95% confidence interval estimated around the 500 ng/L standard.

## Question 5: Monitoring Program

- < The panel recommends a special study during phase 1 to assess non-target area impacts.
- < The panel recommends consideration be given to reducing the number of monitoring stations if not needed for compliance determinations. This would especially apply to the near field monitoring stations around each piece of equipment and the furthest downstream stations.
- < The panel recommends that data should be taken only to answer specific questions. The onus will be on the standard writer to make an explicit statement of what question is to be answered. This would include an analyses to include each location, data type, and frequency at each action level.
- < The panel recommends consideration be given to “homologue method.”
- < The panel recommends that a split phase special study for PCBs be conducted in the near-field and that split phase sampling be dropped from the far field.
- < EPA should use temporal composite whole water samples for PCB in the far field.
- < If the collected monitoring data in near field and far field are meeting or exceeding necessary levels for protection of human health and the environment, EPA may, at its discretion, reduce the level of monitoring in the program.
- < EPA should adopt a goal to develop and implement a potential Phase 2 monitoring program before the end of Phase 1.
- < The NYDEC needs to provide documentation regarding the 401 Water Quality Certification requirements and in particular they need to address DO, pH, and how they view non-target COCs (e.g., metals). The state also needs to address the PCB assimilation capacity issue. Once that is written, the standard need to consider associated impacts.
- < Cost-benefit and implementability analysis of the monitoring program needs to be documented.
- < There is a suggestion that a relationship between turbidity, suspended solids, and PCBs is not needed to control solids losses.

## Main Points on the Residuals Standard

**Charge Question 6: Framework.** *Please comment on whether this framework provides a reasonable approach for developing the Residuals Standard.*

1. The Peer-Review Panel is in general agreement that the framework is reasonable and based on sound scientific principles, as stated.
2. The goals of the Residuals Standard need to be articulated better. The standards focus solely on confirmation of removal of all PCBs with an anticipated post-dredging (pre-backfill) residual PCB concentrations of 1.0 mg/kg Tri+PCBs. The standard also appears to have an unstated goal that after backfill, an expected surface sediment concentration of #0.25 mg/kg (assuming 1-ft backfill) will be achieved. That level is necessary to support levels of risk reduction to human health and the environment that were used in the ROD, as predicted by the HUDTOX model.

The specific objectives of the standard need to be articulated better at the beginning of the performance standards, to include the following goals:

- < Inventory removal (standards for inventory removal are not included; rather, the standards assume inventory removal is achieved)
- < Post-dredging pre-backfill residual concentrations [tri+ PCBs] = 1 mg/kg
- < Post-backfill surface sediment target concentration based on risk reduction of 0.25 mg/kg.

The standards needs to address how these goals will be met; that is, how will the monitoring program be used to meet these goals.

3. The proposed framework can be used to meet the objectives (as the panel understands them) of the standard. However, the panel believes that the framework is complex and directly impacts the potential success of the productivity standard. As crafted, the standard requires dredging, followed by up to two additional dredge passes, followed by either a mandatory 1- ft. backfill or cap. The alternate framework described below may provide greater potential for success in the field. The cost of the potentially increased amount of dredging has be to balanced with the possible reduction in redredging and testing.

The alternative framework is as follows:

- < The design needs to specify the dredge prisms such that the inventory removes Tri+PCBs in excess of 1.0 mg/kg; bottom elevations should be based on the lower confidence of the mean of the 1.0 mg/kg Tri+PCB target concentration; re-stated, the dredge prisms should be designed with sufficient certainty that no more than 5% of the target areas would be expected to exceed the 1.0 mg/kg tri+ PCB goal.
- < Confirmation of inventory removal (e.g., bathymetry or similar measurements) should be incorporated into the standard.
- < No re-dredging would be required unless the target elevation is not achieved.

- < Once dredging is complete, and design elevations verified, the contractor will have two alternatives:
  - Backfill without further testing
  - Avoid backfilling by verifying that dredging achieved an average surface sediment concentration  $\leq 0.25$  mg/kg Tri+PCB; this will be done through confirmatory sampling similar to the sampling requirements stipulated in draft Performance Standard.
- < During Phase 1, pre-backfill and/or post-backfill investigative sampling may be required to validate this approach.

**Charge Question 7: Statistical Analyses.** *Please comment on whether the statistical analyses are technically adequate and properly documented.*

Within the context of the draft framework, the statistical analysis was technically adequate and properly documented.

**Charge Question 8: Post-Dredging Confirmatory Sampling Program.** *Please comment on the adequacy of these aspects of the Residuals Standard, in particular the concept of a 20-acre evaluation area for Phase 1.*

1. The 20-acre unit is intended to provide flexibility to the contractor to achieve the 1.0 mg/kg treatment goal. If the alternative framework is employed, the concept of the 20-acre unit may not be relevant. Otherwise, within the existing framework the 20-acre unit concept is reasonable. The concept should be re-evaluated for Phase 2 based on the final surface area concentrations measure during Phase 1.
2. Some Peer-Review Panel members felt the 40 samples per certification unit could be composited. Others felt that compositing should not be permitted during Phase I, but that it could be considered during Phase 2. If compositing is employed, the restrictions should be included in the sampling program:
  - < Composited samples should be analyzed in duplicate or triplicate
  - < Aliquots of each of the 40 samples should be saved for individual analyses, in the event that the sample does not meet the 1.0 mg/kg goal.

**Charge Question 9: Re-dredging and Engineering Contingencies.** *Please comment on the reasonableness of the Residuals Standard with respect to re-dredging and engineering contingencies.*

1. The document did not adequately discuss cap and backfill material placement and performance metrics.
2. The SPI requirement should be revisited or removed.
3. There is general consensus to limit the number of re-dredging attempts. Currently, the Residuals Standards requires no more than two re-dredging attempts. Under the alternative framework, re-dredging requirements will be based on achieving design elevations. However, if the alternative framework is not implemented, the existing framework should evaluate the efficacy of multiple dredging attempts during Phase 1. This evaluation should consider a) whether re-dredging results in lower surface sediment concentrations and achieves the surface sediment concentration goals, and b) whether re-dredging negatively impacts resuspension. If re-dredging negatively impacts resuspension, the impacts on

resuspension should be weighted against the potential benefits of re-dredging. The Phase 2 Residuals Standards should reflect the results of this evaluation in the interest of further reducing re-dredging requirements.

4. The Performance Standard needs to more clearly articulate where backfill is required. As the panel understands it, backfilling is required in all dredged areas except within the navigation channel, if specific habitat (deep water) is desired, or if a cap is deemed necessary.
5. The panel believes that the design criteria for sediment caps and backfill need to be better documented.

## Main Points on the Productivity Standard

**Charge Question 10: Framework.** Please comment on whether this framework provides a reasonable approach for developing the Productivity Standard.

- < The concept of cumulative volumes and monthly targets are considered to be a reasonable approach.
- < During Phase 1 volume is less important than the information gained, but we recommend that the target in Phase 1 be at least 150,000 cubic yards.
- < Consider establishing a lower target production volume for year 2 to take full utilization of the new data gathered during Phase 1.
- < Phase 1 dredge sites should be chosen carefully to provide specific data on dredge and disposal production under different conditions anticipated during Phase 2 dredging.

**Charge Question 11: Example Production Schedule.** Please comment on the Example Production Schedule, including the reasonableness of the underlying assumptions for equipment selection and efficacy, as well as the time necessary to deploy, use and move equipment.

The panel recommends that EPA should strengthen the documentation on the following underlying assumptions that need to go into the Example Production Schedule:

- < Present better documentation of the utilization of the equipment to explain the dredging rates, capping rates, sheet piling installation rates, and other required work items.
- < Present a complete description of the river transportation cycle, including barge capacity, locking time, interference from river traffic, and mooring facilities at transfer facility.
- < Present a complete description of the transfer facility, including the layout and the process.
- < Present a complete geotechnical description of material to be dredged, including soil borings, SPT blowcounts, water contents, grain size distribution, plasticity.
- < Complete a sensitivity analysis of redredging effort on overall schedule.
- < Present typical information on river velocities (feet per second) in addition to flow rates (cubic feet per second) by month and location.
- < Review the impact the quality of life for noise and lights and its effect on production rates. For example, a clamshell bucket offloading backfill or cap material from a deck scow could produce noise levels that exceed the quality of life noise standard.
- < Develop an operations plan that describes and shows the working relationships between the different equipment. Specifically, show relative equipment locations especially for the multiple dredging and backfilling events.
- < Describe the assumed impacts of the water quality certification on production rates.

< Conduct a critical path analysis.

**Charge Question 12: Action Levels.** Please comment on appropriateness of the action levels and the required actions, as well as the reasonableness of the monitoring and record keeping requirements.

For Phase 2, the actual target cumulative volume must be based on an orderly progression of the dredging from upstream to downstream. This may entail some intermediate years having cumulative volumes that reflect either significantly slower or significantly faster production for the year than the average. The actual cumulative volume should be confirmed in a complete dredging schedule that shows the entire quantity of remedial activities completed in accordance with the ROD.

Specific information that should be collected, in addition to that presented in the report, includes:

- < Number of hours of actual dredging time to determine and monitor efficiency and net and gross production rates.
- < Monitoring of offloading rates.
- < Monitoring of capping and backfilling production rates.
- < Monitoring of shoreline work.
- < Noting any other delays associated with river flow conditions, weather, traffic, quality of life standards, equipment problems, sampling work, or other activities. It is important to be able to see if there are trends with delays.

The US Army Corps of Engineers has a standard Dredge Daily Report that may be used as a guide.

## **Main Points on Issues Relevant to All Three Standards**

### **Charge Questions 13 and 14: Interactions Among the Standards and Plans for Refining the Standards**

- < The panel recommends there be a summary capturing interactions between standards.
- < There needs to be a balance between the standards and a decision process that allows the parties to achieve that balance.
- < Risk reduction at the end of the project is the goal of the balancing process.
- < Data gathering to refine all standards should be stressed in Phase 1 and an attempt should be made to revise the approach by the end of the first year.
- < The peer reviewers recommend that EPA develop a process to evaluate data as it is generated and modify the implementation process in Phase 1. The proposed Phase 1 peer reviewers should be involved during Phase 1.

### **Charge Question 15: Other Issues**

- < Cost-benefit and implementability analysis of the monitoring program needs to be documented.
- < Individual members recommended that design criteria be included for the final dredge surface such that sediment entrapment and recontamination is minimized.
- < Some members recommend performance criteria for recontamination that acknowledge that nontarget areas will equilibrate with areas of remediation.
- < Some members suggest that the actions as defined in Tables 1-1 and 1-2 (of the Resuspension Standard volume) should be more directly related to controlling resuspension.
- < The standards should include a discussion of how the analytical methods and data management are to be applied and communicated. Clear guidelines on data interpretation need to be developed.
- < A special study should be conducted during Phase 1 to assess the release of other contaminants (e.g., metals) during dredging.
- < Some panel members recommended that during Phase 1, these be considered goals or alternatively draft standards until reformulation for Phase 2.