UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

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DATE: MAY 17 2001

SUBJECT: Biological Technical Assistance Group Review
Hudson River PCBs

FROM: Mindy J. Pensak, Coordinator
Biological Technical Assistance Group (DESA-HWSB)

TO: Alison Hess, Remedial Project Manager
Special Projects Branch (ERRD-SPB)

Attached is a summary of the BTAG conference call held on March 21, 2001 to assist you in addressing the issues regarding backfill and especially sensitive or unique habitats that were raised by the National Remedy Review Board during its review for the Hudson River PCBs Reassessment. BTAG looks forward to continued involvement in this site.

If you have any questions, comments, or require further information, please contact Michael Clemetson at (732) 321-6712.

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Summary of BTAG Conference Call on National Remedy Review Board Habitat Recommendations - Hudson River PCBs Superfund Site

Date: Wednesday, March 21, 2001 (10 a.m. - 12 p.m.)

Participants:

Alison Hess, USEPA	Lisa Rosman, NOAA
Michael Clemetson, USEPA	Larry Gumaer, NYSDEC
Mindy Pensak, USEPA	Ron Sloan, NYSDEC
Mark Sprenger, USEPA	Chuck Meikel, USFWS
John Cantilli, USEPA	Helen Chernoff, TAMS

INTRODUCTION AND PURPOSE

In a December 5, 2000 memorandum, the National Remedy Review Board (NRRB) made recommendations regarding the Hudson River PCBs Reassessment, including two related to habitat considerations. Region 2 responded to all of the NRRB's recommendations in a January 18, 2001 memorandum. RPM Alison Hess requested this conference call to obtain input from the Biological Technical Assistance Group (BTAG) in implementing portions of the Region's responses to the two habitat-related NRRB recommendations (see underlined text, below). The two recommendations and responses are as follows:

1. NRRB Recommendation: The Board notes that the placement of one foot of clean backfill in dredged areas contributes approximately 10% to the cost of the preferred alternative. The Region should more clearly explain in site decision documents the need for the backfill (e.g., bank or riverbed stabilization, isolation of residual contamination, providing substrate for ecological recovery, etc.).

Region's Response: In the Proposed Plan, the Region explains that, for all active alternatives, the placement of the clean backfill in appropriate targeted areas (excluding the navigation channels) is designed to cover any contamination remaining following dredging to further reduce the bioavailability of PCBs in the surface sediment, to provide an appropriate substrate for biota, and to help stabilize bank areas and minimize hydraulic changes to the river.

During remedial design, the Region will assess the appropriateness of eliminating the placement of clean backfill in targeted areas. For example, nearshore fish habitat areas that have become silted-in over time may be better mitigated by not adding clean backfill and leaving a deeper water habitat. The identification of any additional areas where backfill could be eliminated will help to reduce the costs associated with obtaining and placing the backfill.

2. NRRB Recommendation: Currently, areas targeted for remediation are identified primarily based on engineering criteria. The Board notes that especially sensitive ecological habitats in

the Upper Hudson may be impacted by PCB contamination that have not yet been identified. The Board recommends that for the preferred alternative (i.e., REM 3/10/Select), the Region consider including among these engineering-based criteria, factors that could recognize especially sensitive or unique habitats. For example, in certain instances, such factors might suggest extending the scope of the action where it is practicable to do so to include otherwise excluded but especially important or productive habitat areas.

Region's Response: In the Proposed Plan, the Region notes that 39 areas in the Lower Hudson River have been identified as either significant coastal fish and wildlife habitats or containing important plant and animal communities. The Region will consult with appropriate federal and state agencies in determining whether any especially sensitive or unique habitats exist in the Upper Hudson River that warrant special consideration during remedial design.

SUMMARY OF DISCUSSION

Habitat-Related Issue #1: Appropriateness of Not Backfilling Certain Areas

In addition to providing substrate for habitat, the backfill would isolate residual PCBs, help stabilize bank areas after dredging, and minimize hydraulic changes to the river. Leaving large remediated areas uncovered that were proposed for covering by backfill may affect the modeled recovery times presented in the Feasibility Study (FS). As presented in the FS:

- Clean fill will not be placed in the navigation channel or in other areas where deeper water environment is preferred based on ecological considerations;
- In areas of the river between the 6-foot contour and the navigation channel, 6 inches of gravel will be placed over 6 inches of sand;
- Between the shoreline and the 6-foot contour, 12 inches of sand will be placed; and
- In shallow wetland areas, pre-removal water depths will be re-established using a combination of sand and fine sand blended with silty material.

With regard to the backfill issue, BTAG members offered the following observations:

1) Remediated areas, especially the nearshore areas, may have relatively high rates of natural deposition. The high rates of deposition suggest that natural processes will isolate these residual PCBs in a short time frame, so these areas may be appropriate to receive no backfill. Other areas with somewhat lower, but still high, rates of natural deposition may be appropriate to receive a reduced thickness of backfill.

2) Nearshore areas may benefit from being left deeper than they currently are if some of the material removed is the result of human activity, such as waste from historical lumbering activities or increased erosion due to human activity such as land development or clearing for agricultural use. For example, much of the material behind the Federal Dam at Troy may be

waste material. In some areas (e.g., residential docks or ramps), property owners may prefer to have water depths returned to pre-dredging conditions.

3) Areas are identified in the FS for remediation based on available data (i.e., 1977, 1987, 1992-1993). These areas may be refined based on additional data collection during remedial design, so the FS modeling results should not be regarded as absolute.

4) Under the preferred alternative, not all PCB-contaminated sediment in the 40 mile-long Upper Hudson would be remediated. Natural processes may redistribute some of the unremediated PCB-contaminated sediment to remediated areas, including areas that have been backfilled. Removing additional PCB-contaminated sediment would decrease the amount of PCBs available for redistribution.

5) Sources of backfill material may be available from sediment deposits behind hydroelectric dams on tributaries to the Hudson River (e.g., Batten Kill and Hoosic River). In addition to providing a nearby source of backfill, removal of sediments behind the hydro dams for use as backfill would have a secondary benefit of assisting with flood control on these tributaries.

6) The FS provided a simplified plan for different types of backfill, which is an appropriate level of detail for that document. During remedial design and construction, the sources and physical and chemical characteristics of the backfill (e.g., grain size, degree of homogeneity, organic content) would be identified and the most appropriate type and thickness for each area would be determined. The use of thinner layers of blended backfill may be a preferred option---for example, four inches of a blended mix of different backfill types may be more effective at isolating residual PCBs and provide a better habitat substrate than 12 inches of sand.

Recommended Approach to Identifying Remediated Areas To Receive No Backfill or a Reduced Thickness of Backfill

Remediated areas that would receive no backfill or a reduced thickness of backfill include locations where the river is narrow and the channel is constricted and areas that typically have high natural sedimentation rates. A strictly quantitative approach using pre-dredging sedimentation rates was discussed but rejected because sediment rates in a given location cannot be expected to remain the same, due to changes in river hydrodynamics resulting from both natural processes and from upstream remediation. Instead, BTAG recommended a more qualitative approach based on a combination of existing habitat maps, water level and other data, common sense, and field observations ("ground-truthing").

Current and historic water level data in the USGS database may provide information to help identify areas with high sedimentation rates (Gaging Stations http://wwwdnyalb.er.usgs.gov/rt-cgi/gen_tbl_pg?page=1 and US Geological Survey in New York State: http://ny.usgs.gov/). It was noted that reducing the amount of backfill placed in the river would be consistent with regulation of flow from Sacandanga Reservoir to reduce flooding, which is currently under consideration by New York State.

The common-sense approach could be as basic as "if it's mucky, it's highly depositional, so no backfill or a reduced thickness of backfill may be appropriate." Remediated areas behind certain islands (e.g., back-channel west of the southern end of Griffin Island), in front of dams (e.g., above Lock 3), or shallow areas choked with water chestnut may be appropriate to receive no backfill. Field observations by appropriate personnel familiar with the river should be used to help identify remediated areas to receive no backfill or a reduced thickness of backfill.

Evaluating Recovery of the River

During remedial design, criteria should be developed and pre-dredging conditions measured against which to evaluate the recovery of the river habitat after remediation. This could be done by documenting the physical location and biological condition at certain areas to be remediated using such tools as side-scan sonar and vegetative mapping.

Vegetation

During remedial action, invasive vegetation (e.g., water chestnut [*Trapa natans*]) that is removed should be replaced with appropriate native vegetation (e.g., wild celery [*Vallisneria americana*]). Water chestnut is found in quiescent areas. The vegetation mapping conducted by GE in the Thompson Island Pool showed no correlation between vegetation and sediment type, although it was not a detailed study.

Habitat-Related Issue #2: Especially Sensitive or Unique Habitats

In its response to the NRRB, Region 2 stated that it would consult with appropriate federal and state agencies in determining whether any especially sensitive or unique ecological habitats exist in the Upper Hudson River that warrant special consideration during remedial design. At this time, no especially sensitive or unique habitats have been identified in the Upper Hudson River by the New York State Department of State (NYSDOS). It was clarified that any areas identified as especially sensitive or unique ecological habitats would be evaluated with respect to PCB contamination level and considered for inclusion in the areas to be remediated under the selected remedy, which is assumed to be the preferred alternative, REM-3/10/Select.

In the Lower River, areas have been designated as significant habitats by the NYSDOS Coastal Management Program (CMP). The criteria used to identify especially sensitive or unique habitats in the entirely freshwater Upper Hudson will differ from those that were used to identify significant habitats in the Lower Hudson, which is comprised of freshwater and estuarine sections. However, some of the criteria developed by the CMP may be appropriate for the Upper Hudson. A listing of the criteria used in the NYSDOS CMP as well as the 1984 NYSDEC Technical Memorandum: Procedures Used to Identify, Evaluate and Recommend Areas For Designation As "Significant Coastal Fish and Wildlife Habitats," were distributed

prior to the conference call.

With regard to the "especially sensitive or unique ecological habitats," BTAG members offered the following observations:

1) The areas identified as especially sensitive or unique ecological habitats should be especially sensitive or unique within the context of the Hudson River system, not some larger context such as the Eastern Flyway.

2) Many areas could be considered "sensitive," including macrophyte beds, where wild waterfowl reproduce and feed, and fish forage, spawn, and find refuge.

3) Nearshore areas are important fish habitat.

4) Riffle areas are important spawning areas for fish. These areas will need to be identified individually.

Recommended Approach

The first cut of especially sensitive and unique areas can be done using mapping of the Hudson River, such as the New York GAP Program map, the federal National Wetland Inventory and NYSDEC wetlands mapping. Supplemental information on the GAP Program is presented below. Wetland areas in the Upper Hudson are identified in EPA's November 2000 Hudson River Revised Baseline Ecological Risk Assessment (see, Plate 1, sheets 1-4). Individuals with relevant expertise should be contacted for information, including Peter Nye regarding bald eagle habitat along the river. After potentially especially sensitive and unique areas have been identified on a base map, these areas should be "ground-truthed." Ron Sloan will be on the river this summer and offered his assistance; others expressed interest as well.

Chuck Merkel agreed to distribute a set of draft criteria for identification of especially sensitive or unique habitats in the Upper Hudson River.

SUPPLEMENTAL INFORMATION ON THE NY GAP PROJECT

Gap analysis is a scientific method for identifying the degree to which native animal species and natural communities are represented in our present-day mix of conservation lands. Species and communities not adequately represented in the existing network of conservation lands constitute conservation "gaps." The purpose of the Gap Analysis Program (GAP) is to provide broad geographic information on the status of ordinary species (those not threatened with extinction or naturally rare) and their habitats in order to provide land managers, planners, scientists, and policy makers with the information they need to make better-informed decisions.

To achieve this, GAP is the first state- and national-level effort to complete the following:

- Map existing natural vegetation to the level of dominant or co-dominant plant species;
- Map predicted distribution of native vertebrate species;
- Map public land ownership and private conservation lands;
- Show the current network of conservation lands;
- Compare distributions of any native vertebrate species, group of species, or vegetation communities of interest with the network of conservation lands; and
- Provide an objective basis of information for local, state, and national options in managing biological resources.

The Gap Analysis Program is sponsored and coordinated by the Biological Resources Division of the US Geological Survey. Mapping and analysis is conducted by GAP projects within each state. Because GAP provides a standardized method and format, the data can be edge-matched with adjacent states as the state projects are completed.

Vegetation is mapped from satellite imagery and other records using the National Vegetation Classification System (FGDC, 1997). Native animal species ranges are mapped by using museum and agency specimen collection records in conjunction with known general ranges and the animal's affiliation with the previously mapped vegetation types and other physical characteristics. These data are combined and displayed with a computerized geographic information system (GIS) at a cartographic scale of 1:100,000.

The NY-GAP project cooperates with the ongoing NY Amphibian and Reptile Atlas, sponsored by NYSDEC (http://www.dec.state.ny.us/website/dfwmr/wildlife/herp/index.html). They have incorporated information on current distributions of amphibians and reptiles from the herpetological atlas project through the 1998 field season. Association matrices, relating vertebrate species occurrences to each of the 45 land cover types they have identified have been completed. Predicted occurrences of terrestrial vertebrates were assessed for accuracy using known occurrences of species from recent museum data (mammals only), recent herpetological atlas field data, check-lists of birds from state parks, breeding bird occurrence data from the NY Breeding Bird Atlas, and check-lists of birds and other vertebrates from federal refuges. The NY-GAP Project also cooperates with NYSDEC and the Federation of New York State Bird Clubs to assure that new information collected as part of the NY Breeding Bird Atlas 2000 Project (began in January 2000 and continuing through 2004) can be fully incorporated into the NY-GAP database for future gap analysis applications.

The NY-GAP is also characterizing for aquatic habitat for the GAP program. Habitat has been characterized using the parameters stream size, habitat quality, water quality, gradient, and riparian forest cover. The first three parameters were combined to form a habitat characterization from which fish diversity was predicted. The latter three parameters were used for macroinvertebrate diversity predictions. The first round of habitat characterization involved static, manually intensive classifications from topographic and Mylar land use overlay maps. In an effort to deviate from such limiting classification, the NY Aquatic Gap Analysis group developed computerized macros to automate classification from digital elevation models, land use, road and railroad coverages. This provided equal or better accuracy, increased flexibility,

and enabled the group to calibrate the model using previously collected data. The calibrated habitat characterization incorporated five additional GIS layers (surficial geology, bedrock geology, depth to bedrock, point-source pollution, priority waters) and involved optimization using discriminant analysis procedures.

Field data were collected in the summer of 1998 on fish species diversity, macroinvertebrate family diversity, stream width and depth, substrate, general habitat assessment, water chemistry, and gradient at 39 sites. This information was used to test the five parameters in habitat characterization and overall diversity of fish and macroinvertebrates.

The final NY Gap Analysis Project Report has been submitted and was approved by USGS in early February 2001. Production of the final CDs for data distribution is in the hands of USGS/BRD. If they are able to produce the CDs within 6 to 8 weeks after the report was approved, CDs could be available in April or May. The CDs will be available for around $20 on a first-come, first-served basis, from the Co-op Unit, located at:

New York Cooperative Fish & Wildlife Research Unit
202 Fernow Hall
Cornell University
Ithaca, NY 14853-3001
Office: 607-255-2839, Fax: 607-255-1895
Ellen Harris (Administrative Assistant): ech7@cornell.edu

They also plan to announce the availability of the CDs on the NY Gap Analysis web site: http://www.dnr.cornell.edu/gap/gap.htm. The Co-op Unit web site address is: http://www.dnr.cornell.edu/f%26wres/nycf%26wru.htm.
The contact person for the Hudson River region is Paul Jensen (Phone: 607-255-6578; Fax: 607-255-1895; e-mail:pj29@cornell.edu) and the project head is Charles R. Smith, Ph.D. (Phone: 607-255-3219; Fax: 607-255-1895; e-mail:crs6@cornell.edu).

References

Federal Geographic Data Committee. 1997. Vegetation Classification Standard. FGTC-STD-005. http://www.fgdc.gov/standards/status/sub2_1.html.