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Superfund Update

HUDSON RIVER PCBs SUPERFUND SITE

New York



October 1992

HUDSON RIVER PCBs REASSESSMENT RI/FS - PHASE 2

This update describes the data collection and analyses that EPA is conducting or planning to conduct during Phase 2 of the Reassessment Remedial Investigation and Feasibility Study (Reassessment) for the Hudson River PCBs Superfund site. This is the second such update for the Reassessment.

In December 1989, EPA announced that it would reassess the interim no action decision that it had made in 1984 for the PCB-contaminated sediments in the Hudson River. During Phase 1, EPA compiled existing data relevant to PCB contamination in the Hudson River, analyzed that data, and produced an interim report which presented the findings of those analyses. The Phase 1 Report was released in August 1991. EPA determined during Phase 1 that additional data collection was necessary to fill certain data gaps. The Phase 2A Sampling Plan, which outlined several sampling activities that EPA wanted to start on an accelerated schedule, was issued in September 1991. EPA initiated Phase 2A sampling in December 1991, and parts of that data collection effort are expected to continue through Spring 1993.

Data for the Reassessment will also be collected in a Phase 2B sampling effort. EPA released a Review Copy of the Phase 2 Work Plan in June 1992 which described the sampling planned for both Phase 2A and 2B, as well as the data analyses to be conducted. Public comment was received on the Review Copy, and a Final Phase 2 Work Plan was issued in September 1992. Pages 2, 3 and 4 of this update summarize the activities planned for Phase 2. In addition, in July 1992, EPA released a Phase 1 Responsiveness Summary which addresses comments and questions regarding the Phase 1 Report.

The data collected as part of Phase 2 will supplement and update the existing data. All PCB analyses conducted during Phase 2 will be by a congener-specific method.

For purposes of the Reassessment, EPA has divided the Hudson River into four Study Areas (see figures on pages 2 and 3).

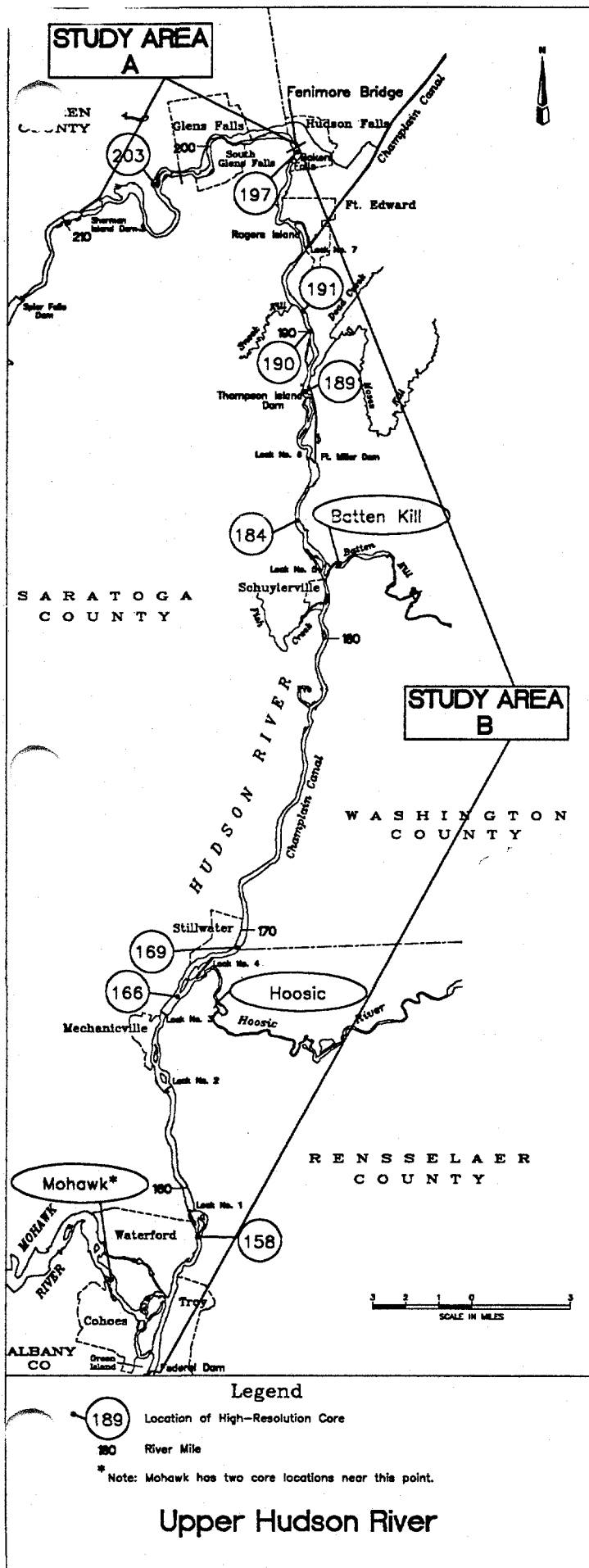
Study Area A - Above the Fenimore Bridge in Hudson Falls, NY (River Mile [RM] 197) to upstream of Glens Falls, NY (RM 209). This area provides baseline contaminant inputs to Study Area B.

Study Area B - From the Fenimore Bridge in Hudson Falls, NY to the Federal Dam in Troy, NY (RM 153). This is the area for which the Reassessment is evaluating potential remedial alternatives.

Study Area C - The northern, freshwater portion of the Lower (tidal) Hudson River, extending from the Federal Dam in Troy, NY to RM 55 (near Cornwall, NY) which is the average upstream limit of salt water. The Reassessment will investigate the relative importance of PCB loading from Study Area B to the overall PCB load in Study Area C.

Study Area D - The southern, salt water portion of the tidal Hudson River, from RM 55 to the Battery in New York City (RM 0). Investigations in this area will focus on the significance of current PCB releases from Study Area B to the total PCB burden in Study Area D.

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PHASE 2 - FURTHER CHARACTERIZATION AND ANALYSIS

The Final Phase 2 Work Plan explains the sampling and analyses that EPA plans to conduct during Phase 2. Several of these investigations, which were part of the Phase 2A Sampling Plan, have been completed. Efforts which are part of the Phase 2B Sampling Plan will be completed by early-Summer 1993.

GEOPHYSICAL INVESTIGATION - Study Area B. All field work for the Geophysical Investigation has been completed. In all of these investigations, sonar signals (at specific frequencies) were generated from equipment which was being pulled by a boat. Reflections of the signals were recorded by the equipment, and this information is being compiled into maps. These maps will show river depth, sediment form or structure, sediment texture, and the thickness of fine-grained sediments.

Depth Transponder (2A) - The depth transponder was used to determine the river depth (i.e., bathymetry).

Subbottom Profiler (2A) - This instrument is able to determine the thickness of fine-grained sediment deposits.

Side-Scan Sonar (2A) - The side-scan sonar is able to create a picture-like image of the river bottom. From this, the form or structure of the river bottom (i.e., sediment morphology) and the texture (e.g., sand, gravel, fine-grained, etc.) can be determined.

WATER-COLUMN SAMPLING - EPA will analyze water samples in several studies.

Transect Sampling (2A) - Study Areas A and B. A "parcel" of water will be sampled as it flows down the Hudson. Dye studies will be conducted to help identify a parcel. This study designates where the PCB load is entering the water and how this PCB load is transferred to the Lower Hudson. Several water samples will also be taken from Study Area C.

Equilibrium Study (2A) - Study Areas A and B. Data from water samples which are held for several days, are compared to water samples taken directly from the river. This study should determine the effective balance (equilibrium) between dissolved PCB congeners and PCBs that are associated with the suspended material.

Flow-Averaged Sampling (2B) - Study Areas A and B. A composite sample is obtained by taking samples every other day for a month. The volume of each day's sample is proportionate to that day's river flow. This analysis provides a relatively long-term average.

Historic Sample Analysis (2B) - Archived samples are available to be analyzed by new analytical techniques, which will provide the congener mixture that was historically carried by the river.

SEDIMENT SAMPLING - Several programs will be conducted which involve the analysis of sediment samples.

High-Resolution Coring (2A) - Study Areas A, B, C and D. Cores are taken from high deposition areas (1 to 2 cm/year) and are thinly sliced. These thin slices are analyzed for PCB congeners and the approximate date of deposition is determined by measuring the amount of certain radioactive materials that are present within the samples. These samples integrate information on the amount of PCB transported on suspended sediment in the water.

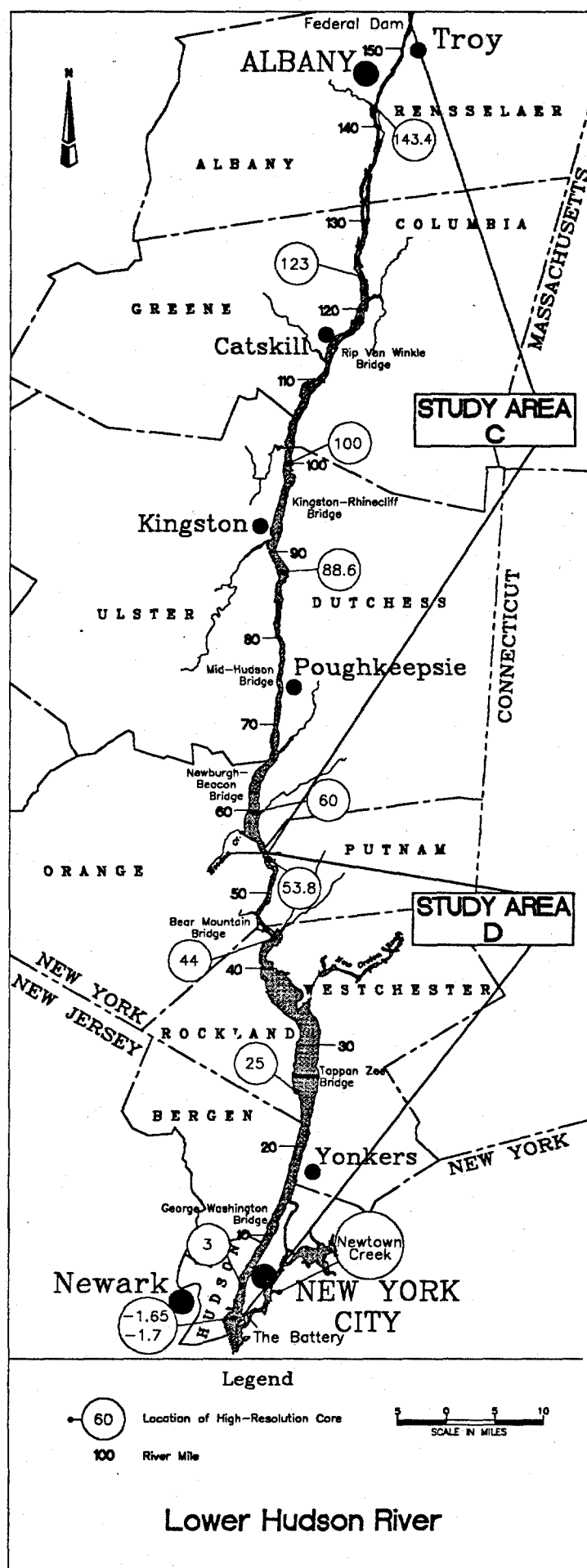
Confirmatory Sampling (2A) - Study Area B. This work has been completed. These samples are analyzed for particle size, to confirm the findings of the geophysical survey.

Low-Resolution Coring (2B) - Study Area B. This program will analyze sediment samples at a limited number of locations to augment and improve estimates of the distribution of PCB-contaminated sediments.

Historic Sample Analysis (2B) - Archived high-resolution core samples are available to analyze on a congener-specific basis. These results can be compared to new samples collected as a part of the Reassessment, and the rate of natural degradation can be estimated.

UPDATE OF DATABASE - All data collected as a part of Phase 2, as well as valid data from other sources, will be added to the database compiled during Phase 1.

CONTAMINANT FATE AND TRANSPORT ANALYSIS - In order to select an appropriate remedial alternative for the site, EPA will have to make a projection of future PCB concentrations in fish. Fish, which are at a high level of the food chain, are used in these analyses because PCBs become more concentrated at successive levels of the food chain. This phenomenon is known as bioaccumulation. It is also important to model



fish concentrations because the consumption of fish is the major exposure pathway for people, and because fish are valuable indicators of ecological health.

PCB Mass-Balance Analysis - Study Areas B and C. This analysis is a long-term analysis and prediction of PCB levels in water and sediment using a seasonal time scale and a reach-by-reach based spatial scale.

Biotic Effects/Bioaccumulation Analysis - Study Areas B and C. This analysis will predict the average concentration of PCBs in fish populations based on predicted concentrations in water and sediment.

Erodibility Analysis (2B) - Study Area B. The potential for scour during possible flood events, which could lead to the distribution of contaminated sediments, will be modelled during this analysis. In addition, if the grain size analysis conducted during the confirmatory sampling program (see above) shows that a large percentage of the sediments in the upper Hudson are cohesive, then several sediment samples may be taken for laboratory testing. The tests would provide values that could be input into the erodibility model for areas with those types of sediment.

BASELINE HUMAN HEALTH RISK ASSESSMENT - Study Area B and limited work in Area C. The Phase 1 Report for the Reassessment presented a preliminary baseline human health risk assessment. The Phase 2 Report will update the work conducted previously for new exposure and toxicity information.

Exposure Assessment - Data collected during Phase 2 and other data that has been entered into the database (e.g., NYSDEC fish-tissue data for 1990 and 1991) will be used to update the baseline risk assessment. In addition, statistical analyses, known as Monte Carlo analyses, will be used to estimate certain exposure parameters if there are sufficient data available to do so.

Toxicity Assessment - New information on carcinogenic and non-carcinogenic risks from PCBs has been under review by EPA on a national level. If new toxicity values are established, then the new values will be incorporated into the Reassessment.

BASELINE ECOLOGICAL RISK ASSESSMENT - Study Area B and selected locations in Study Areas C and D. The ecological risk assessment will describe the risk from PCB contamination in the river on the plants and animals that live in or

near the river.

Sediment Sampling (2B) - Surficial sediment samples will be taken at ecologically sensitive locations to determine potential exposures to organisms from those locations.

Benthic Invertebrate Study (2B) - (Study Area B only.) The current impacts of PCB-contaminated river sediments on the benthic invertebrate community (organisms that live in the sediments, such as worms and insect larvae) will be assessed.

Risk Characterization - In order to characterize the ecological risk, EPA will compare the PCB concentrations that selected species are exposed to with measured values for toxic endpoints (e.g., reproduction, growth, survival, etc.).

FEASIBILITY STUDY ANALYSES - Sediment volumes and areas of contamination will be defined and potential remedial technologies will be screened. The detailed evaluation of alternatives will be performed in Phase 3.

Sediment Volumes and Areas - Data collected during Phase 2, along with statistical analysis of previously collected data, will be used to determine which areas may need remediation, and the corresponding volume of sediments.

Technology and Process Option Screening - This will be a continuation of the evaluation started in Phase 1. Screening of technologies and processes will be based on several criteria, including; technical feasibility, effectiveness, implementability, and relative cost.

Sediment Disturbance Impact Assessment - The implementation of a remedial action could resuspend sediments or destroy habitat. An evaluation of the impacts of such disturbance will be started in Phase 2 and continued in Phase 3.

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**HUDSON RIVER PCBs REASSESSMENT
REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)**

INFORMATION REPOSITORY LOCATIONS

Public information regarding the Hudson River PCBs Superfund Site Reassessment RI/FS may be found at the following locations. Asterisks indicate locations where the Administrative Record File can be found.

Adriance Memorial Library*
93 Market Street
Poughkeepsie, NY 12601

Catskill Public Library
1 Franklin Street
Catskill, NY 12414

County Clerk's Office
Washington County Office Building
Upper Broadway
Fort Edward, NY 12828

Crandall Library*
City Park
Glens Falls, NY 12801

Croton Free Library
171 Cleveland Drive
Croton-on-Hudson, NY 10520

Fort Edward Town Clerk's Office
Fort Edward Town Hall
118 Broadway
Fort Edward, NY 12828

New York State Department of Environmental
Conservation (NYSDEC)
Region 3
21 South Putt Corners Road
New Paltz, NY 12561

NYSDEC
Region 4
2176 Guilderland Avenue
Schenectady, NY 12406

NYSDEC
Region 5
Route 86
Ray Brook, NY 12977

NYSDEC
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, NY 12233

NYSDEC
SUNY Campus
Building 40
Stony Brook, NY 11790

New York State Library
CEC Empire State Plaza
Albany, NY 12230

Saratoga Springs Public Library
320 Broadway
Saratoga Springs, NY 12866

Troy Public Library
100 Second Street
Troy, NY 12180

U.S. Environmental Protection Agency*
Superfund Records Center
26 Federal Plaza - 29th Floor
New York, NY 10278

White Plains Public Library
100 Martine Avenue
White Plains, NY 12601