Region III, Wheeling Field Office
303 Methodist Building, Wheeling, West Virginia 26003

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DATE: August 18, 1978

SUBJECT: "Hydrogeologic Evaluation of a Subsurface Oil Spill, Metals Bank of America, Inc., Disposal Site, Philadelphia, Pennsylvania" by Roy F. Weston, Inc.

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FROM: Benton M. Wilmoth, Geologist BW
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RECEIVED

AUG 25 1978

The report "Hydrogeologic evaluation of a subsurface oil spill, Metals Bank of America, Inc., disposal site, Philadelphia, Pennsylvania" by Roy F. Weston, Inc. for the U. S. Coast Guard, Gloucester City, New Jersey, was reviewed by the writer. As requested in our scope of proposed work for the salvage yard disposal site, the study has adequately described (1) the approximate volume, occurrence, and movement of oil and PCB, (2) the potential for PCB contamination of biota, and (3) the practical procedures for recovery, cleanup, and control of such contaminants both on the surface and in the subsurface.

The most important part of the remedial work, which will curtail oil-PCB discharge to the Delaware River, will be to physically remove and properly dispose of the liquid contaminants. Experience has shown that recovery can be accomplished by subsurface pumping of special recovery wells.

Consideration should be given to construction of large diameter recovery wells (36-48 inch) in order to accommodate certain new types of subsurface equipment that may be utilized.

Some of the latest types of subsurface oil-recovery equipment can eliminate almost entirely any contaminated ground water-oil emulsion. The treatment of such pumped contaminated ground water to remove oil and toxic PCB before discharge to natural drainage can be untenably expensive over a long period. Therefore, an oil-PCB recovery method that produces no contaminated emulsion should be evaluated for certain phases of the effort.

The most unexpected result of the field studies for the writer was the extremely low permeability of the saturated earth and artificial fill materials transmitting the shallow contaminated ground water and fluid oil-PCB.

At the calculated velocity and rate of movement, the present discharge of oil and PCB to the river will persist for several hundred years if not intercepted and removed.

Subsurface lateral movement of fluid oil-PCB in the zone of saturation was calculated in the study to be about 3.3 feet per year. The lateral distance from the leaking (?) underground storage tank to the tidal

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zone of oil-PCB discharge is about 60 feet. The time necessary for this subsurface lateral movement could therefore be estimated to be about 18 years.

If oil containing PCB was only stored in the tank during the period 1968 to 1972, then the time available for this lateral subsurface movement of 60 feet was only about 5 to 9 years. This tends to suggest a velocity of movement two or three times the calculated rate, which is of course possible, and presents no problem in the proposed work.

After the practical phases of subsurface pumping of oil-PCB have been completed, serious consideration should be given to the excavation and proper disposal of the most heavily contaminated earth and fill materials. In addition, some dredging of the tidal zone's most contaminated materials should be considered at an appropriate time.

The Consultant maintains that an adequate evaluation of the remedial work implemented will require an extensive long-term monitoring program. This will define the degree of treatment achieved, quantities of PCB and oil removed, and quantities of PCB and oil released to the environment. During this extensive period of work, how can regulatory agencies be assured that the property owner will not change the land-use pattern by industrial or other construction or from sale, transfer, or other enjoyment of ownership? Certain changes could interrupt or hamper remedial work and the related long-term environmental monitoring program.

An approximate time schedule will be needed for the entire remedial program at the disposal site including the proposed long-term monitoring work. Copies of periodic progress reports should be sent to the writer and to Mr. Bob Young, the Pennsylvania Department of Environmental Resources.

The calculated 21,000 gallons of oil containing PCB for the disposal site does not include the northeast area of subsurface oil indicated by test wells MB-B-1, B-10, B-11, B-15, and B-8. This northeast area of oil appears to be separated from the southern area of oil-PCB by a zone of little or no oil, although PCB contamination of ground water is indicated in test wells MB-B-9, B-10, B-12, and B-8.

The extent of subsurface oil and PCB contamination of ground water will eventually have to be defined on other adjacent properties that lie east, north, and west from the salvage yard. Any subsurface recovery work in the northeast part of the Metals Bank property would certainly be affected by oil-PCB at these immediately adjacent properties. The legal aspects of becoming involved with several additional property owners at this time should be evaluated before proceeding with subsurface testing in these neighboring areas.

cc: (see attached list)

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