RETURN TO 1998 ROD AR INDEX

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

REPLY TO
ATTENTION OF

March 30, 1990

Superfund Records Center
SITE: New Bedford
BREAK: 04.10
OTHER: 46227

SDMS DocID 46227

Operations Division
New Bedford Superfund

Ms. Mary Sanderson
EPA
Waste Management Division (HANCAN 2)
J.F. Kennedy Building
Boston, MA 02203-2211

Dear Ms. Sanderson:

The attached memorandum discusses target clean up levels for the New Bedford Harbor site. I have focused the document on the impacts to a dredging operation should a target clean up level of 1 ppm PCB be selected.

Please give me a call at 647-8273 if there are any questions.

Sincerely,

Mark J. Otis

c.c. Doug Allen

SUBJECT: TARGET CLEAN-UP LEVELS

PREPARED BY: Mark Otis
CENED-OD-S

This memorandum discusses the ability of a cutterhead dredge to remove PCB contaminated sediments from New Bedford Harbor in terms of target clean up levels of 10 ppm and 1 ppm.

Depth of Contamination

Extensive sediment sampling carried out in the upper estuary of New Bedford Harbor has shown that the majority of PCB contamination is confined to the top 24 inches of sediment. Only in isolated areas are PCB levels above 10 ppm at depths greater than 24 inches. The extent of contamination below this depth is shown on figure 1 which is a copy of figure 2-3 which appears in the draft Estuary and Lower Harbor/Bay Feasibility Study.

As shown on this figure, the majority of the upper estuary has PCB levels in the 0-10 ppm range in the 24-36 inch sediment horizon. The results of the Corps of Engineers 1985 sediment sampling effort are summarized on figure 2 and highlight this fact in more detail. A total of 21 samples from sediment horizons below the 24 inch depth were analyzed and only 6 samples had PCB levels greater than 1 ppm. Areas shaded red on figure 2 indicate grids where cores with PCB levels above 1 ppm were found. Areas colored yellow indicate grids where cores with values less than 1 ppm were found below the 24 inch depth.

The majority of sediment cores taken from the upper estuary were divided into 12 inch increments prior to analysis. For depths below 24 inches, the PCB values were generally derived from a sample representing the 24 - 36 inch sediment horizon. These values may not accurately reflect the PCB levels that would be found immediately below the 24 inch depth. Additional sampling may need to be performed to better define the lower limit of PCB contamination at the 1 ppm level.

Effectiveness of Dredging in Removing Contaminated Sediments

Three hydraulic pipeline dredges were evaluated during the pilot study and the cutterhead dredge has been recommended for future dredging work in New Bedford. This dredge was able to reduce PCB levels to the 10 ppm range in the pilot study test site by making two passes over the area which resulted in approximately a 1.1 foot layer of sediment being removed. For the dredge's first pass the dredgehead was positioned approximately two feet below the sediment/water interface and the dredge operated in what I will call the sediment removal mode. During the second pass the dredgehead is situated at the sediment/water interface and the dredge attempts to just skim the surface, removing very little additional material in what I will call the cleanup mode of operation. These dredgehead locations are shown on figure 3. This dredging method is recommended for the majority of the upper estuary and the lower harbor/bay to attain a target clean up level of 10 ppm. It should result in a 1-2 foot sediment layer being removed.

PCB levels remaining after dredging of the pilot study test area were determined by the following sampling procedure. The test area for the cutterhead dredge was approximately 90 feet by 60 feet. Sixteen sampling locations were located within this area and were randomly assigned a number from 1 to 4. These locations were then sampled (sample represented the top 3 inches of sediment) with the like numbered samples being composited. These 4 samples were then analyzed for PCBs. The levels ranged from 0.5 to 15.3 ppm and averaged 8.6 ppm.

Implications of a Target Clean Up Level of 1 ppm

It will be necessary to completely remove the the top 24-30 inches of sediment from the majority of the upper estuary and a greater depth in some isolated areas. The dredging procedure recommended to accomplish this would be to make three passes over the area. During the first two passes the dredge would operate in the sediment removal mode while attempting to remove a 1.5-2 foot layer of sediment. During the third pass the dredge would operate in the cleanup mode while attempting to just skim the surface. This would result in the removal of approximately a 3 foot lift of sediment. In areas where PCB levels currently are elevated below 24 inches, an additional pass of the dredge operating in the sediment removal mode would also be required.

In summary, reducing the clean up level to 1 ppm for PCBs would require one additional pass of the dredge over the entire upper estuary which would approximately double the amount of material removed with the resulting need for additional storage capacity in the disposal sites.

New Bedford Harbor

PCB Contamination in Upper Estuary Sediments (Below 24 inch depth)

Grid	PCB Level (ppm)	Depth Interval (inches)
E25	0.21	24-30
E27	1.10*	24-33
G17	577 *	24-38
G18	375 *	24-36
G20	0.29	24-36
H21	0.19	24-37
H25	0.16	24-33
H33	0.04	24-36
I9	0.10	22-29
I11	1.06*	24-36
I15	0.63	24-36
I19	0.01	24-37
I23	0.34	24-36
I28	0.02	24-38
J5	0.20	24-36
J7	92.3*	30-40
J8	1.22*	24-32
K5	0.05	24-33
L10	0.08	24-36
L29	0.06	24-36
M6	0.35	24-31

Refer to figure 2 for grid locations

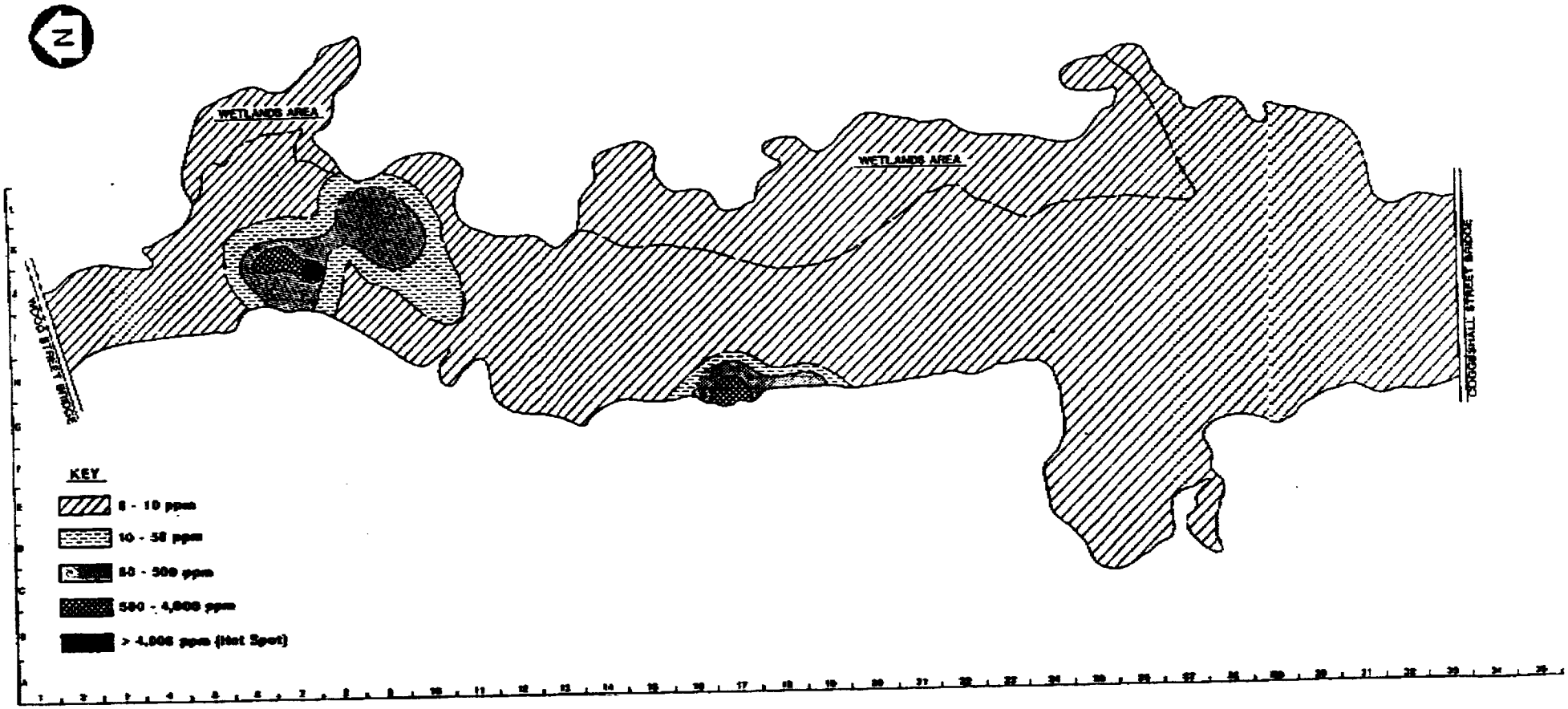

FIGURE 2-4
INTERPRETATION OF TOTAL PCB CONCENTRATIONS
DEPTH: 24 TO 36 INCHES
ESTUARY AND LOWER HARBOR AND BAY
FEASIBILITY STUDY
NEW BEDFORD HARBOR

0 400 800 1200 FEET

4919-25

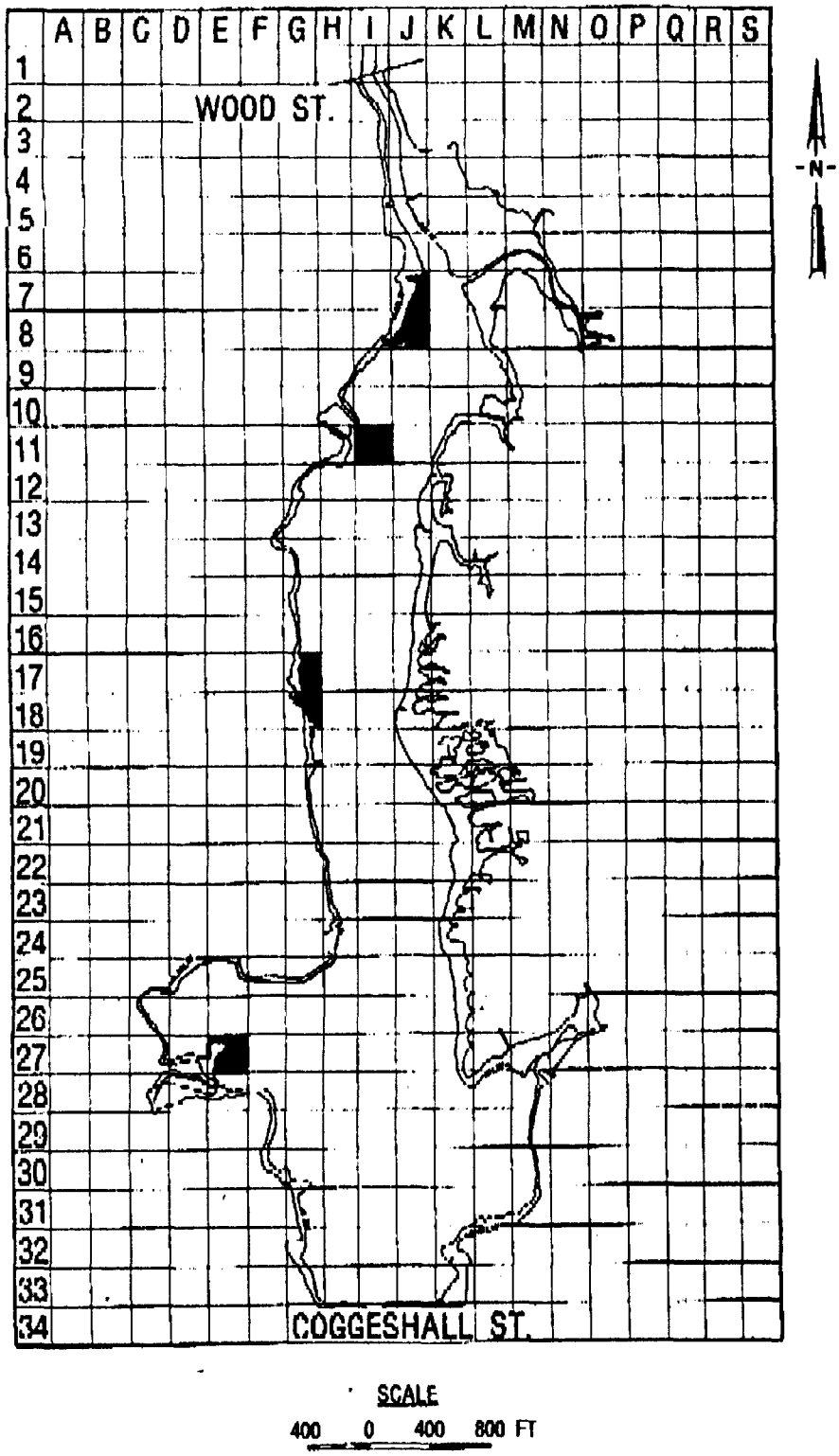

Figure B1. Upper Estuary grid system used in the EFS

NED FORM 223
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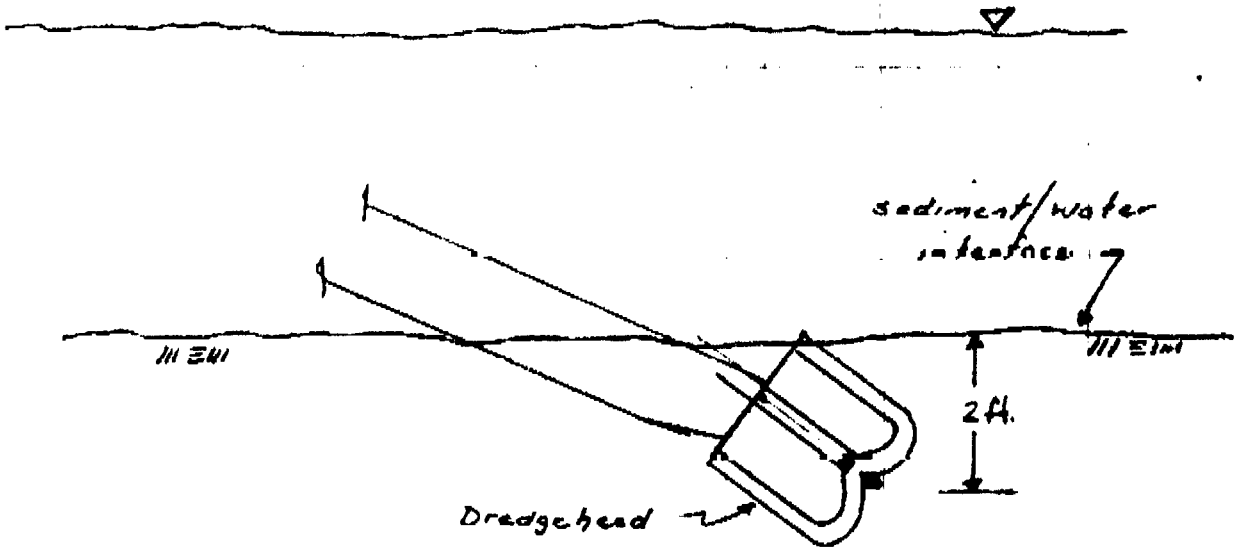
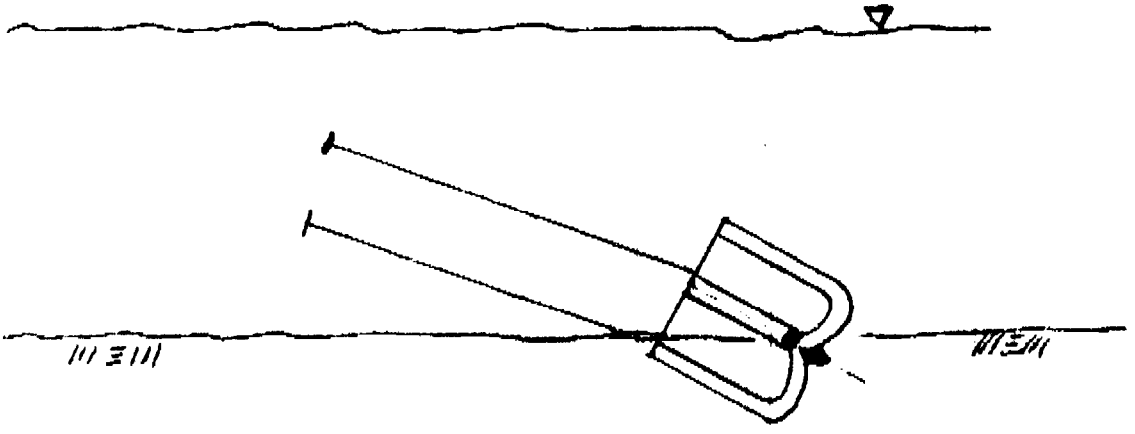
SUBJECT _____
COMPUTATION _____
COMPUTED BY _____ CHECKED BY _____ DATE _____



APPROXIMATE DREDGEHEAD LOCATION
SEDIMENT REMOVAL OPERATING MODE



APPROXIMATE DREDGEHEAD LOCATION
CLEANUP PASS OPERATING MODE

FIGURE 3