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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 7, 1984

JECT: Review of New Bedford Work Plan

FROM: Gerard Sotolongo, Project Officer

TO: Addresees

Enclosed are comments sent to me from NOAA concerning the New Bedford Harbor Model Work Plan. Finalization of the work plan will be coordinated through Joe Yeasted of NUS.

Joe Yeasted, NUS
Jerry Neff, Battelle
John St. John, HQI

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Center
Sandy Hook Laboratory
Highlands, New Jersey 07732

June 6, 1984 F/NEC4:RR

CONFIDENTIAL LEGAL DOCUMENT

TO: Gerry Sotolongo
New Bedford Project Officer, EPA

FROM: Robert N Reid
Robert Reid
NOAA, New Bedford Food Web Modelling Team

SUBJECT: Comments on New Bedford RI/FS Work Plan

I can only comment on the biological parts of the plan. I've discussed those parts with Peter Grose. I agree with his ideas that 1) if a single metal is to be modelled, cadmium should be substituted for copper, as Cd is more toxic to humans; and 2) with the lowering of the PCB action level, more samples should be taken outside the closed area [though to keep costs down, sampling within that area might be reduced].

My only other comment concerns the prey species used in the food web model. The model obviously cannot include all the species eaten by flounder and lobster. However, it may be valuable to do some gut content analyses to assure that the model's prey species are representative of the actual diets. For instance, flounder may eat only the smallest clams, mussels and crabs, and even these may be only a small proportion of the diet. If measured PCB concentrations in flounder and lobster are much different from those the model predicts, differences in diet would be one likely explanation.

cc:
George Kinter
Monique Trainor Rutledge
Peter Grose
Brian Eadie
Jerry Galt

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Oceanography and Marine Services
Ocean Assessments Division
Rockville, Maryland 20852

JUN 6 1984

Mr. Gerard Sotolongo
U.S. Environmental Protection Agency (WMD)
JFK Federal Building
Room 1903
Boston, Massachusetts 02203

Dear Gerry,

In general the Draft Work Plan for the New Bedford RI/FS modeling effort is well laid out and should accomplish the stated objectives. The Battelle and HydroQual authors should be complemented on their timely effort. After careful reading of this plan, I have two areas of concern for which I would like to suggest changes: (1) the choice of metal for analysis and modeling (Cd rather than Cu) and (2) the location of the biotic sampling (more or alternate stations outside area III).

1. Choice of Metals for analysis and modeling.

The Metcalf Eddy publication (and others) indicate that the following toxic metals are found in elevated concentrations in the New Bedford area: Cd, Pb, Hg, As, Cr, Cu, and Zn. Of these, the FDA has an action level of 1.0 PPM for Hg in edible seafood and is interested in setting Cd and As amounts but has not set action levels as of now. While there is hard evidence of the presence of these metals in the local sediments, there are few, if any, results of analyses of metal concentrations in the local biota available. Thus, the choice of which metal (or priority order) cannot be guided by observed biotic concentrations. It is known that Cd, Pb, and Hg are bioaccumulated and can have harmful effects on humans. From the human health point of view, it would seem that Cd, Pb, or Hg should be the choice for study rather than Cu, which primarily impacts primary productivity, lower trophic biota, and reproductive success of marine organisms, but is not a human health risk through seafood.

The appropriate way to select which metal(s) should be included in the studies is to base this decision on bioaccumulation analyses of the biota sampled in July as part of the proposed work plan. I suggest that this be the method used to select the metal(s) of concern. An appropriate screening schema can be set up to analyze the first biotic sampling for levels of all 8 metals. At worst, this would require analyses of 160 samples. Any metals which are not bioaccumulated significantly above normal levels can then be justifiably be dropped from consideration. The final choice could then be made from the remaining metals based on their observed concentrations in biota and impacts to the ecosystem and/or human health at these levels.

In the absence of such new analyses, I would recommend that Cd be selected, if only one metal is to be included based on potential human health factors through seafood consumption. If 3 metals are to be included, the priority list should be Cd and Cu with either Pb or Hg selected as the third.

Having Battelle be responsible for the analytical chemistry task would allow the added flexibility in the analysis schema needed to resolve the metals question and still allow timely reporting of results for use by the other work elements. Defering the choice of which metal to consider in the modeling so it could be based on observed bioaccumulation levels should not impact the modeling efforts since they should not be sensitive to a few weeks delay on the choice.

2. Biotic sampling program.

During the last week of May 1984, the FDA reduced the PCB action level in seafood from 5 PPM to 2 PPM effective at the end of this July. Historically, the fishery closure area at New Bedford was based on samples collected primarily within the final closure areas. The reduced action level for PCBs may require that the closure area be increased in size. Since the present biotic sampling schema is based on the existing closure areas, I am concerned that the area of interest may be too restricted. Clearly, there is a gradient of PCB levels into Buzzards Bay proper from the closure areas which is not well defined at present. By adding an additional sampling station location and adding a fifth biotic sampling area this gradient can be better defined. This will also allow the area of desired fishery restoration to be better delineated.

I would suggest that a new station (A) be located halfway between existing stations 18 and 22. This new station as well as existing stations 21 and 23 should be sampled for biota to represent a new area IV and biotic samples from stations 22 and 24 be used to define a new area V. If it is not possible to set up a new station, I would then recommend that biotic samples be acquired at stations 22 and 23 as alternates in the event that all the biotic samples are not acquired elsewhere. As a minimum, these alternate sites should be sampled for lobster and flounder; however, the full biota schedule of samples should be acquired if possible.

Sincerely,

Peter L. Grose, PhD

cc:
N/OMS34 - Jerry Galt
R/E/GL - Brian Eadie
NEC-4 - Robert Reid
N/ORM4 - George Kinter
Mr. Jerry Neff
Mr. Paul Boehm
Mr. John St. John

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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June 4, 1984

TO: Gerard Sotolongo
New Bedford Project Officer
EPA - Region 1

FROM: Brian J. Eadie
Head, Synthetic Organic and
Particle Dynamics Group

SUBJECT: Review of work plan for New Bedford Harbor

I have read the proposed New Bedford work plan. I am impressed by the thoroughness of the document and feel that the proposed work is well designed to address the major concerns of both EPA and NOAA.

The modeling approach is definitely state-of-the-art and is being performed by leaders in the field. This effort is one of the first and largest attempts to develop and test an integrated series of models incorporating hydrodynamics, contaminant transport, and food web transport; the lessons learned in this exercise will be useful far beyond the New Bedford case.

I have a few comments. First, I notice that Battelle is recommending extreme care be taken in the selection of the contractor for laboratory analysis. I concur. The cost of sample analysis is approximately 25% of the project cost, but the modeling will only be a paper exercise if the data collected are not of high quality.

Battelle has a need for measuring contaminants in two sample matrices (total suspended matter and pore water) with which we have had problems (in the measurement of PAH) in the past. In both cases I believe their sample size should be increased. For TSM they could continue pumping until they have saturated their dual filters and record the volume by installing a flow meter in the line. There are other possibilities, but more than 19 liters should be filtered for analysis. We have found for pore waters that our precision decreases by a factor of about 2 as our sample size decreases from 4-500 ml down to $\sim$ 100 ml. Presumably this is due to blanks and inhomogenities in the sample which are smoothed over in larger samples. The recommended sampling strategy would yield pore water samples with a maximum volume of about 100 ml; I recommend these be increased through the use of a box corer, grab samples, or multiple gravity cores.

It is also proposed to analyze the top 5 cm of cores from the area. Since the modeling efforts are being expanded to include the effects of bioturbation, I recommend that the sediment mixed depth (oxidized zone) be measured in each core, and that the material from this zone be worked up rather than arbitrary 5 cm section.

I believe that this is an excellent work plan and look forward to following its progress.

N/ORM4 - G. L. Kinter