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Mr. Chuck Fox, Assistant Administrator
Office of Water
U.S. Environmental Protection Agency
401 M Street SW (4101)
Washington, DC 20460

Dear ~~Mr. Fox~~ Chuck:

This letter conveys my comments on the Gulf of Mexico Hypoxia Assessment. These comments are based on: (1) the verbal presentations of reports 1-6 at the recent meeting in Memphis; (2) a careful review of reports 1, 2 and 5; and (3) extensive discussions with a variety of authorities on river dynamics, oceanography and coastal ecology, including some of the participants in the assessment.

I commend EPA and the members of the six technical study teams for having pulled together an enormous amount of information in a relatively short time and for attempting to characterize a very complex issue without collecting new data. Clearly the hypoxia issue is not settled; there are major unanswered questions that will require new data collection and analyses - and perhaps the help of additional scientists with relevant expertise.

I particularly commend Dr. Bill Mitsch and the other members of the solutions report (No. 5). I found this report to be philosophically and technically well grounded, conservative, balanced and innovative. This solution could theoretically be implemented in phases of increasing magnitude and cost, while tracking its effectiveness.

The concept of addressing the problem of hypoxia and distributing its solution throughout the entire river basin, including the lower delta, is ecologically appropriate, and it avoids placing the burden solely on agriculture in the Midwest. Including river diversions in the lower delta as part of the solution is consistent with Coast 2050, Louisiana's blueprint for reversing coastal land loss.

My sense of the state of current knowledge of Gulf hypoxia includes these points: (1) hypoxia is an interesting and important phenomenon that should be reversible; (2) the evidence for fisheries impacts from hypoxia are still inconclusive and uncertain, as is the degree to which the nektonic community may have adapted to eutrophication; and (3) reconnecting both branches of the nitrogen-rich lower river to the delta could very likely reduce hypoxia while restoring coastal wetlands.

The following are issues that seem to need additional work:

1. More quantitative information on the potential for using shallow coastal watersheds in Louisiana as nitrogen sinks, by the use of diversions and overbank flow (solution #4 in Report 5). Existing river diversion projects provide ideal ready-made sites for case studies of nitrogen uptake and denitrification, e.g., Caernarvon, Naomi and West Point a la Hache. According to Rabalais, et al., in Report 1, river water exiting the Atchafalaya Basin at Morgan City contains 31% less nitrate than river water in the lower Mississippi River at St. Francisville. After clearing the Atchafalaya Basin floodway this water passes through a shallow, turbulent estuary at the Atchafalaya delta *in which algal blooms have never been a problem* before it reaches the Gulf. (Potential contacts: Charlie Demas, USGS; Dr. Fred Bryan, USFWS; Dr. Michael Waldon, Virginia Polytechnic Institute; Mark Schexsnayder, Louisiana Dept. of Wildlife and Fisheries).

2. Investigation of short term, large scale river diversion strategies - controlled pulsed diversions - during exceptional high river stage years when nitrate loading is most serious. Such a strategy could allow 20% or more of total flow in the lower Mississippi to pass through coastal basins and be stripped of nitrate prior to entering the Gulf. It would also mimic the crevasses that occurred prior to the construction of levees by the Corps. In January, 1997, 225,000 cfs or 17% of the volume of the lower Mississippi River was released into Lake Pontchartrain through the Bonnet Carre floodway; by the time the water reached the Gulf nitrogen levels had fallen to background (Dr. John Day, personal communication).

3. More information on the role, timing and effectiveness of zooplankton in cropping and converting excess algal production to food for nekton (Potential contact: Dr. Mike Dagg, LUMCON).

4. Development of a model of fisheries dynamics in response to hypoxia in the Gulf (an open system) - as opposed to the Caddy model that is appropriate for more limited basins. (Potential contact: Dr. Chuck Wilson, LSU).

5. The application of available remote sensing imagery as a means of tracking patterns of turbidity and surface Chlorophyll as precursors to hypoxia in the Gulf, e.g., SeaWifs. (Potential contact: Dr. Nan Walker, Earth Scan Laboratory, LSU).

6. More detailed investigation into the importance and dynamics of suspended organic matter in Mississippi River water entering the Gulf.

7. Specific consideration of the potential effects of global climate change that could increase peak flood stages of the Mississippi River system (and change the agricultural climate

within the Mississippi River basin).

8. More detailed investigation into the rate and timing of land loss and presumably carbon release throughout the active delta, as correlated to onset of hypoxia (Potential contact: Dr. Denise Reed, UNO).

9. Development of a model of the potential trophic effects of the reduction of nitrogen loading in Gulf waters.

I would be happy to provide whatever additional information and support I can as the discussions of Gulf hypoxia and how to deal with it go forward (225-342-3968).

Sincerely,

Len Bahr
Executive assistant
Office of Coastal Activities