

**Lower Mississippi River  
Sub-basin Committee on Hypoxia  
c/o School of the Coast & Environment  
Louisiana State University  
Baton Rouge, La. 70803**

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November 1, 2007

Dr. Holly Stallworth  
Hypoxia Advisory Panel  
Science Advisory Board  
Environmental Protection Agency

Dear Dr. Stallworth,

I am submitting the following comments on the August 30, 2007 version of the Draft Report on Hypoxia in the Northern Gulf of Mexico on behalf of the Lower Mississippi River Sub-basin Committee on Hypoxia (LMRSBC). The LMRSBC is one of three Sub-basin Committees formed under the *Action Plan for Reducing, Controlling, and Mitigating Hypoxia in the Northern Gulf of Mexico* (2001), and includes the states of Arkansas, Louisiana, Mississippi, Missouri, and Tennessee (represented through their agencies serving on the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force), along with federal partner agencies and the non-profit Agriculture Coalition for the Environment.

There has been a significant overall improvement in the report's clarity since the May 2007 draft. For the general reading public, a more in-depth explanation of the recommended reduction goals for nitrogen and phosphorus would still be helpful in the text, even with the inclusion at the beginning of the report of definitions of scientific terms. The report constitutes a comprehensive look at the overall issue of nutrient loading and reduction potentials in the Mississippi River Basin. While the Lower Mississippi River and Sub-basin receive little attention in the latest draft, we continue to believe that there are significant opportunities for nutrient removal actions in the lower basin, and are planning our activities around those opportunities.

One topic that the August draft does highlight is the role of the Atchafalaya River and the changes in that river's hydrology over the 20<sup>th</sup> century. As the report notes on pages 24-25, the percentage of freshwater discharge to the Gulf delivered by the Atchafalaya River increased from about 25% to about 50% between 1920 and 1960, and practically all of this discharge of freshwater, nutrients, and sediments is delivered to the Louisiana-Texas continental shelf. The degree to which the Atchafalaya River can be managed to increase nutrient uptake is a key question, and several studies are underway in an attempt to provide answers. One study was highlighted at the Lower River Nutrient Symposium we held in New Orleans in 2006 (Nyman, et.al , [http://www.tetrattech-ffx.com/lower\\_miss/](http://www.tetrattech-ffx.com/lower_miss/).) An upcoming conference set for January 10, 2008 in Baton Rouge will focus on ecosystem functions of the Atchafalaya River from the Old River Control Structure to the Continental Shelf, and nutrient dynamics will be a key topic of discussion (see [www.crcl.org](http://www.crcl.org)). It is worth noting as well that the Water Resources Development Act (WRDA) which recently passed Congress contained funding for a feasibility study of a freshwater conveyance from the Atchafalaya to the western Terrebonne Parish

restoration.

Another topic that was highlighted in last year's Lower River Nutrient Symposium is the range of agricultural management practices specifically suited to that region – these included controlled agricultural drainage in open surface ditches, conservation tillage, nutrient and fertility management, and winter flooding of open fields. The report makes the important point that site specific and regional optimization of conservation practices and their appropriate targeting are needed, and that these include a broad range of alternative practices and management measures targeted to appropriate areas (p.217).

The report focuses on sub-surface drainage systems in the upper basin, which convey the largest amounts of nutrients, and cites the important work of the ADMS Task Force in showing that significant reductions can be made in those systems (page 155). There is also important research work being done with the open-ditch systems prevalent in the lower Mississippi Valley. A leader in research in this area is the USDA Agricultural Research Service Soil & Water Research Unit housed at Louisiana State University, which has the Cabin Teele Watershed in northeast Louisiana as its main research platform for development of best management practices involving open ditch drainage, including the incorporation of wetlands for increased nutrient uptake.

([http://www.ars.usda.gov/main/site\\_main.htm?modecode=64-13-20-00](http://www.ars.usda.gov/main/site_main.htm?modecode=64-13-20-00)).

The Lower Mississippi River region has also been a leader in wetlands restoration efforts through Farm Bill programs and associated private projects initiated by organizations like Ducks Unlimited. What is often overlooked is that these efforts also involve the formation of extensive partnerships between agencies, landowners, local governments, and other stakeholders, all of which provide an important foundation for future efforts. As shown by the chart on page 105, the LMR Basin has the greatest number of acres of wetlands created, restored, or enhanced under the Wetlands Reserve, Conservation Reserve, Conservation Reserve Enhancement, and Environmental Quality Incentive Programs for the years 2000-2006. The demand for additional enrollment in these programs remains high, but is being impacted in the short-term by the rapid expansion of acreage put into corn for ethanol production. The report notes that wetlands created, enhanced, and restored for N removal can also function for P removal, with important limits (page 162).

The report notes on page 105 that some questions remain about the capacity of coastal wetlands to function as nutrient sinks, and different studies have obtained a range of results in different locations. The WRDA bill referred to above also includes authorization for several freshwater diversions from the river south of New Orleans, and these should have an integral monitoring component to assess their effects. The LMRSBC is also working to identify sites upstream where the river could potentially be reconnected to the floodplain. While these will be fewer in number and smaller in scale than the planned coastal projects, they still represent important opportunities that should be explored.

Finally, the Lower River Sub-basin also includes the coastal area that supports the productive Gulf fishery, one of the last such systems that is still productive in the lower 48 states. The report makes the important point that there are indications that the Gulf is becoming more sensitive to hypoxia, with smaller inputs triggering a larger hypoxic response, and response times to reductions becoming longer (page 51). As the report notes, this reinforces the need for additional action. We have reiterated the point that such efforts have the entire Mississippi River Basin to work in, and our commitment to

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pursuing the opportunities in the lower river section of this globally important system.

Sincerely,

Doug Daigle  
Coordinator  
Lower Mississippi River  
Sub-basin Committee on Hypoxia

**Lower Mississippi River Sub-basin  
Committee on Hypoxia  
c/o Coastal Ecology Institute  
School of the Coast & Environment  
Louisiana State University  
Baton Rouge, La. 70803**

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June 27, 2007

Dr. Virginia Dale, Chair  
EPA Science Advisory Board  
Hypoxia Advisory Panel

Dear Dr. Dale,

I am submitting the following comments on the May 24, 2007 Draft Report of the EPA Hypoxia Advisory Panel on behalf of the Lower Mississippi River Sub-basin Committee on Hypoxia (LMRSBC). The LMRSBC was formed in 2003 under the *Action Plan for Reducing, Controlling, and Mitigating Hypoxia in the Northern Gulf of Mexico* (2001).

The LMRSBC includes the states of Arkansas, Louisiana, Mississippi, Missouri, and Tennessee, along with federal partner agencies (COE, EPA, USDA, USFWS, USGS) and the non-profit Agricultural Coalition for the Environment.

Our focus has been on identifying the opportunities for nutrient reduction and removal in the Lower Mississippi River (LMR) Sub-basin, and coordinating and supporting states, agencies, and private interests to act on those opportunities. We are currently completing a report on *Nutrient Reduction Strategies in the Lower Mississippi River Sub-basin* (called for in short-term action 6 in the *Action Plan*.) A copy of the draft LMR report is enclosed in the hope that it may provide some assistance to the Hypoxia Advisory Panel.

An initial impression on reading the draft HAP report is that limited attention is given to the Lower Mississippi River Sub-basin. We understand the report's focus on the sub-basins with the highest levels of nutrient loading (the Upper Mississippi and Ohio River). At the same time, there are significant nutrient sources and significant nutrient removal/uptake opportunities in the LMR, and addressing both is an integral part of the *Action Plan*, along with efforts undertaken in other sub-basins. If there is any further information on the LMR Alluvial Valley, Sub-basin, watersheds, etc. that the HAP can still include in the final report, that would help our efforts.

This leads to an additional point about the draft HAP report, which states that "the Panel recommends N reductions by at least 45%; [and] P reductions by at least 40%" (page 116 and elsewhere) without explaining precisely what these figures mean. The *Action Plan* stated that "The best current science indicates that sub-basin strategies, in the aggregate, should be aimed at achieving a 30% reduction (from the average discharge in the 1980-1996 time frame) in nitrogen discharges to the Gulf (on a 5-year running average) to be

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consistent with the Coastal Goal for reducing the areal extent of hypoxia in the Gulf”(p.21).

Despite the fact that the *Action Plan* stated that this figure (30%) referred to nitrogen discharges to the Gulf, it has been a continual source of misunderstanding and misrepresentation since the Plan was completed. Various parties have stated publicly that this figure (as well as higher numbers) represents the amount of reduction in fertilizer use or nitrogen loss that is or will be required of individual farmers, states, etc. Following the publication of the paper “Predicting the response of Gulf of Mexico hypoxia to variations in Mississippi River nitrogen load,” (Scavia, Rabalais, Turner, *Limnology and Oceanography*, May 2003, Vol.48, No.3) and several presentations at the symposium *Hypoxia in the Northern Gulf of Mexico: Assessing the State of the Science*, (April 2006), both of which suggested that nitrogen loading to the Gulf might need to be reduced by 45% (rather than 30%), that larger figure began to be applied to supposed required reductions for fertilizer use, nitrogen loss, etc. on farms, in states, etc. by the same parties.

Our understanding is that there have been no such numerical estimates (much less requirements) applied to particular states or individual farms in the basin, both because such estimates have not been made, and because reaching any targets for reducing nitrogen loading to the Gulf would be the cumulative result of actions taken in the entire Mississippi River Basin, in multiple sub-basins or watersheds, involving multiple sectors and sources, and utilizing a variety of available techniques in all of them.

While the HAP cannot prevent the spread of misinformation, you can clarify what the report states so that genuine misunderstandings are avoided. One suggestion would be to state something like the following:

“The Panel finds that increased reductions for major nutrients are needed to achieve a significant reversal of the trend of the spread of hypoxia in the northern Gulf of Mexico and the goals of the *Action Plan*. We recommend the following targets: reducing nitrogen loading to the Gulf of Mexico by at least 45%, and phosphorus loading to the Gulf of Mexico by at least 40%. These reductions can be achieved by a wide variety of actions undertaken across the entire Mississippi River Basin. Multiple strategies undertaken in concert with each other generally offer the best results for achieving significant reductions in nutrient loading to the Mississippi River and Gulf of Mexico.”

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We thank the Panel for the opportunity to offer comments, and commend your progress on completing this challenging report.

Sincerely,

Doug Daigle  
Coordinator

Cc:

Earl Smith, Arkansas Natural Resources Commission  
Ken Brazil, Arkansas Natural Resources Commission  
Dr. Len Bahr, Louisiana Governor's Office of Coastal Activities  
Dugan Sabins, Louisiana Department of Environmental Quality  
Richard Ingram, Mississippi Department of Environmental Quality  
Sarah Fast, Missouri Department of Natural Resources  
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Steve Ashby, ERDC, Corps of Engineers  
Phil Bass, EPA Gulf of Mexico Program  
Kenneth Teague, EPA Region 6  
Michael Sullivan, USDA Natural Resources Conservation Service  
Dr. Larry Beran, Agriculture Coalition for the Environment

