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November 9, 2007

Holly Stallworth, Ph.D.
U.S. Environmental Protection Agency
Science Advisory Board Staff Office (1400F)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Dr. Stallworth,

LimnoTech has reviewed portions of the Science Advisory Board (SAB) Hypoxia Panel Draft Advisory Report related to estimates of point source contributions to N and P fluxes into the Gulf of Mexico, and has concluded that these estimates may be in error. The error could be due to confusion between nutrient loads discharged within the Mississippi-Atchafalaya River Basin (MARB) and nutrient loads actually delivered to the Gulf of Mexico.

Page 201 of the 11/5/07 Working Draft states:

> Based on data from the recent MART (2006b) report, the SAB Panel has estimated that permitted point-source discharges represented approximately 22 and 34% of the average annual total N and total P flux to the Gulf, respectively, for the 2001 to 2005 water years.

Page 96 of the 11/5/07 Working Draft states:

> When the contributions from all point sources are compared to the average annual N and P fluxes for the period 2001 – 2005, these new estimates indicate that point sources contribute to the Gulf about 22% and 34% of the average annual N and P flux, respectively.

Focusing on total nitrogen (TN) as an example, page 96 also states that the Management Action Reassessment Team (MART) 2006 reassessment estimated "total nitrogen flux **to the MARB**" (emphasis added) at 233,000 metric tons/year for point sources, which was adjusted upward on a reasonable basis by the SAB to 267,000 metric tons/year. USGS (Aulenbach *et al.,* 2007) estimates that the average total nitrogen load delivered **to the Gulf of Mexico** for the period 2001-2005 is 1,254,528 metric tons/year.

Dividing the adjusted TN flux to the MARB from point sources (267,000 metric tons/year) by the average TN load delivered to the Gulf of Mexico (1,254,528 metric tons/year) gives an estimated point source contribution of 21.28%, which is “about 22%” as stated in the Draft Advisory Report.

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Goolsby provided a similar analysis using estimates of TN point source inputs to streams as 287,000 metric tons/year, and 1980-1996 average TN MARB discharge to the Gulf of Mexico as 1,567,900 metric tons/year. Page 103 in Goolsby *et al.* (1999) states:

> For the entire MARB, municipal and industrial point sources, at a maximum, could only account for about 18% of the mean annual total N yield of the basin (Figure 6.2A). This assumes no in-stream removal of the point-source N, which is unlikely since some of these discharges are to small streams. Expressed in terms of the average annual N flux, point sources could, at the most, comprise about 287,000 of the 1,567,900 metric tons of N discharged annually from the MARB to the Gulf.

However, Goolsby calculates separately using multiple regression analysis that municipal and industrial point sources account **for 11% of TN flux to the Gulf**, as described on pages 115-118 of Goolsby *et al.* (1999):

> Point sources are estimated to contribute about 11% of the total N, which is about half the maximum potential contribution from point sources shown in Figure 6.1A and discussed in section 6.1.

Consistent with these results by Goolsby *et al.* (1999), Richard Alexander of the USGS, in a presentation at the 15th Public Meeting of the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force on October 29, estimated the contributions of different sources to nutrients delivered to the Gulf of Mexico. Urban sources were estimated to make up about **7%-11% of the TN stream flux to the Gulf**, with a mean of around 9%.

We request that the estimates in the 2007 Draft Advisory Report for point source contributions be reviewed because they appear to be inconsistent with Goolsby's estimates for 1980-1996 and Alexander's most recent estimates. Specifically, we request that the Panel clarify whether the point source loads in the report are expressed in terms of loads discharged within the MARB or of loads actually delivered to the Gulf of Mexico.

Also, if these estimates are incorrectly stated and do need to be revised, there may need to be reconsideration of the action plan recommendations pertaining to point source N and P loads.

Respectfully submitted,

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References

Aulenbach, B.T., Buxton, H.T., Battaglin, W.A., and Coupe, R.H., 2007, Streamflow and nutrient fluxes of the Mississippi-Atchafalaya River Basin and subbasins for the period of record through 2005: U.S. Geological Survey Open-File Report 2007-1080, available online at: http://toxics.usgs.gov/pubs/of-2007-1080/index.html.

Goolsby, D.A., Battaglin, W.A., Lawrence, G.B., Artz, R.S., Aulenbach, B.T., Hooper, R.P., Keeney, D.R., and Stensland, G.S., 1999, Flux and sources of nutrients in the Mississippi–Atchafalaya river basin—Topic 3, Report for the integrated assessment of hypoxia in the Gulf of Mexico: National Oceanic and Atmospheric Administration Coastal Ocean Program Decision Analysis Series 17, 128 p.