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July 20, 2007

Dr. Holly Stallworth

Designated Federal Officer

U.S. EPA Science Advisory Board

Ariel Rios Building MC: 1400F

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Washington, DC 20460

Via Electronic Mail: stallworth.holly@epa.gov

Dear Dr. Stallworth:

The National Association of Clean Water Agencies (NACWA) appreciates the opportunity to comment on the U.S. Environmental Protection Agency's Science Advisory Board (SAB) Hypoxia Advisory Panel's report on the hypoxic zone in the Gulf of Mexico. NACWA represents the interests of nearly 300 public wastewater treatment agencies, many of which ultimately discharge into the Gulf or one of the many river systems that feed it.

NACWA has several concerns with the current draft of the Panel's report. The Panel obviously struggled with the same issues that have plagued similar, regional efforts to address nutrient levels – namely that nonpoint sources only participate in such efforts to the extent they choose to. Controls on point sources holding Clean Water Act permits will always seem to be the most “cost-effective” and most “certain” way to reduce nutrient levels. While the report accurately highlights some of the existing flaws in nonpoint source nutrient control efforts, it takes the same path of least resistance by “starting with” the point sources to maximize progress toward its 2015 goal. NACWA wrote to the SAB in June 2006 to highlight the need for real-world, wastewater treatment expertise on the Hypoxia Advisory Panel, but no such experts were added. NACWA believes that the conclusions reached in the draft of the report suffer from the lack of this critical perspective.

NACWA offers the following information for consideration by the Panel during its deliberations on the draft.

- The Panel's point source recommendations lack proper justification. The Panel recommends sweeping point source (PS) controls to nearly the limit of technology but fails to reasonably justify those recommendations relative to

the cost and benefit of other available options. The Panel's report contains only very limited information on the cost of possible point source controls. The only discussion of point source cost effectiveness is brief and anecdotal. Section 4.5.8 cites the application of biological nutrient removal and enhanced nutrient removal technologies in Tampa Bay, the Chesapeake Bay, and Long Island Sound, when it concludes that wastewater treatment plant upgrades have proven to "be as cost effective and more certain than estimated reductions from agricultural best management practices." The section goes on to point out that point sources may "offer some of the most certain short-term and cost-effective opportunities for substantial nutrient reductions."

Much more work is needed, however, in this area before arriving at such a conclusion. NACWA recommends that a process similar to that used for determining the nutrient allocations for the Chesapeake Bay be used in the report. In the case of the Bay, a series of management "tiers" were designed that spanned a wide variety of management actions for both PS and nonpoint sources (NPS). Those scenarios ranged from the most comprehensive (theoretical maximum) "Everything by Everybody Everywhere" (E3) to an acceptance of the status quo. Stakeholder experience from the Chesapeake Bay indicates that reductions in point source nutrient loads are not proportional to costs. A NACWA member on the Chesapeake Bay commissioned a report in 2003 to evaluate the costs for various nutrient removal technologies (Level 1 TN=8 mg/l, Level 2 TN=5 mg/l, and Level 3 TN=3 mg/l). The results indicated that removing the last 15% of nitrogen (by Level 3, limit of technology) would cost over five times more per pound than removing the first 62 percent (by Level 1, biological nutrient removal (BNR)). NACWA recommends that the question of cost-benefit be addressed explicitly in a detailed and comprehensive manner in the report.

- The Panel's point source recommendations are not equitable. The panel's recommendations do not serve to establish a reasonably fair or equitable division of burden between the regions of the Mississippi-Atchafalaya River Basin (MARB) – or between PS and NPS. There are many ways that equity can be established in a loading allocation. However, it is not equitable that point sources are being held to a disproportionate management burden relative to their contribution to the problem. It is also inequitable that those implementing the proposed controls would not enjoy the same level of benefits from addressing the hypoxia. It could be argued that those communities local to the Gulf that stand to benefit from the controls (by improved fishing, tourism, etc.) should pay more than those that do not. NACWA recommends that a set of principles be established to address the issue of equity. Once again, the Chesapeake Bay Program allocation process could be a model of how to address such issues.
- The Panel's assertion that point source controls are of "relatively low cost" was not substantiated. The report indicates (p. 198) that "[e]xperience in other regions has shown that these upgrades in secondary treatment can produce significant P and N reductions at relatively low cost." NACWA disagrees with this statement. A 2004 report of the Chesapeake Bay Commission recognizes that point source nutrient controls are effective but also "expensive". Figure 4 from the Bay Commission report shows that the dollar per pound costs for point source upgrades were approximately two to five times more expensive than other leading agriculture non-point source control measures such as nutrient management and conservation tillage. It is notable that the point source costs estimated in Figure 4 did not include costs for the most expensive point source projects. Costs for across-the-board limit of technology would widen these gaps even further.

NACWA believes that a major goal of any efforts to control the Gulf hypoxia issue should be to recommend those projects that result in the greatest reduction per dollar spent. Given the dominance of agriculture in the MARB (and lesser associated control costs), the Panel's report should place greater emphasis and priority on non-point source control efforts. The data cited from the Chesapeake Bay Commission are sufficient to demonstrate that the Panel's current limit of technology recommendation cannot be justified on a cost per pound basis.

- Section 4 begins with a discussion of the importance of adaptive management, using models and monitoring data to adapt tactics as efforts to control the problem proceed. NACWA has supported this concept in past efforts. However, the report fails to recognize the limitations of an adaptive approach – that mid-course corrections are often much more difficult, and even impossible, for point sources that must install treatment equipment or make other process changes in order to reduce nutrient discharges. In addition, most of the report's later recommendations regarding point sources simply ignore the concept of adaptive implementation for wastewater treatment plants and instead seek to achieve maximum reduction from all major plants at the outset. The report (p. 197) states that “[m]ost of the plants in the MARB have not upgraded to use either Biological Nutrient Removal (BNR) or Enhanced Nutrient Removal (ENR)...” Given this situation, NACWA believes that there is an excellent opportunity to consider a wider range of both point and non-point source alternatives in an adaptive management framework.
- In Section 4.2 the Panel admits that data is lacking on phosphorus, but that enough information currently exists to set a goal in an “adaptive management context beginning with the P [phosphorus] reductions that are already feasible given existing technologies.” The report then states that a “start should be to address point sources of P in the basin” and that a reduction of 21% in total P loads could be achieved by applying best available technology to all major discharges in the MARB. There is nothing adaptive about requiring near limit of technology controls for all major point sources.
- NACWA is uncertain as to how the loading estimates for phosphorus were calculated. Section 4.2 states that if all point source discharges were at 0.3 mg P/L, the reduction goal could be met. This implies that all dischargers were currently estimated to be at 0.9 mg P/L (67% required reduction in point source loads from 0.9 to 0.3 mg P/L to achieve 21% reduction in total P load). In *Appendix C: Calculation of Point Source Inputs of N and P*, however, the report states that plants with advanced treatment were estimated as discharging 2.02 mg P/L, while plants with only secondary treatment were estimated as discharging 4 mg P/L. Since both of these are much higher than 0.9 mg/L and the report states that wastewater treatment plants are the major component of the point source load, further explanation is needed. If the Appendix C estimates are accurate, the 67% point source reduction noted in Section 4.2 may be greatly understated, masking the degree of disparity between point source and nonpoint source expectations.
- The statement that point sources represent about 22% and 34% of the average annual MARB total nitrogen and total phosphorus loading should be critically examined. In contrast, the National Oceanic and Atmospheric Administration (NOAA) 1999 Report for the Integrated Assessment on Hypoxia in the Gulf of Mexico attributed only about 10% of the total MARB nutrient loading to point sources. The draft report concludes that a higher proportion of nutrients come from point sources, even though it shows the total point source nutrient loading to be lower than 1998 estimates, as shown below.

	1998 Assessment (based on 1996 data)	2005-2006 Assessment (based on 2004 data)
Est. Total N Load	321,000 metric tons/yr	267,000 metric tons/yr
Est. Total P Load	91,500 metric tons/yr	53,000 metric tons/yr

The draft report states that point source contributions were compared to average annual MARB nitrogen and phosphorus loadings for 2001 - 2005 to calculate the 22% and 34% point source contribution estimates. The effects of weather variations on these loading estimates should be evaluated. Much of the Midwest experienced a multi-year drought during this period. Nonpoint source nutrient discharges are greatest when rainfall runoff transports nutrients to streams and rivers. In contrast, point source nutrient discharges are relatively constant throughout the year. The proportion of nutrient loading attributable to point sources during a drought is likely not representative of the relative contribution during normal precipitation.

- The Panel's recommendation would effectively eliminate trading. Section 4.2 also states that "point sources would need to be capped...such that further increases in flow are accompanied by further reductions in discharge concentrations." However, the report fails to mention the implications of a technology based approach followed by such concentration caps for all major point sources. Requiring near limit of technology controls for all major point sources would likely eliminate future nutrient trading or other market-based approaches, something the report itself considers as an option for reducing nutrient levels in the Gulf. Why? Trading requires the generation of credits. Such credits are generated by those facilities that go beyond the requirements for their individual facilities. Those credits are traded on the market and sold to those that need them in order to attain compliance. In the case of limit of technology, a facility cannot go beyond its requirements because the technology to further reduce loads does not exist. This causes the pool of credits to zero out and eliminates trading as a viable option for point sources.
- The Panel's recommendations would stop or eliminate economic growth. As most wastewater treatment plant managers know, point source caps on phosphorus or nitrogen would effectively stop or severely limit the ability of a treatment plant that is already at the limit of technology to accommodate further growth. The ability to serve the future needs of the community represents a basic mission of wastewater treatment agencies.
- Section 4.4 contains an extensive discussion on what the Panel considers "cost effective approaches to implementation" of controls on nutrient discharges. Most of the specifics are focused on nonpoint source controls and the Panel makes it clear that current nonpoint source control programs are not as effective as they could be. NACWA agrees with much of what is laid out in this section regarding nonpoint sources, including that voluntary agreements without economic incentives are not likely to be

adequate to obtain the necessary load reductions and that additional accountability is necessary for existing subsidy programs to achieve the maximum environmental benefit.

- As outlined in the report, many uncertainties remain regarding the hypoxia issue and NACWA believes that greater assurance is needed that watershed-wide wastewater treatment plant upgrades will actually address the problem. The point source loading assessments are based primarily on estimated “typical pollutant concentration” because measured data are generally not available. NACWA believes this is a critical limitation. The report also highlights the “great uncertainty” regarding the spatial and temporal linkages between phytoplankton production and respiration and the hypoxia problem. NACWA agrees with the report that a better understanding of these patterns is needed.

Evidence exists that hypoxia is a complex natural process not entirely caused by human activities. A U.S. Geological Survey (USGS) study (<http://coastal.er.usgs.gov/gom/posters/hypoxia/index.html>) analyzed low-oxygen tolerant benthic organisms in Louisiana shelf sediment cores. The data indicate that low oxygen bottom water events have developed periodically on the Louisiana shelf for the last few centuries. The index of low-oxygen tolerant benthic organisms “suggests that low-oxygen conditions near the Mississippi Delta in the late 1500’s to early 1700’s were as severe as conditions associated with hypoxia events of the last 50 years.”

Again, NACWA appreciates the opportunity to comment on the draft report. Please contact me at 202/833-9106 or chornback@nacwa.org if you have any questions.

Sincerely,



Chris Hornback
Senior Director, Regulatory Affairs