KANSAS

Kathleen Sebelius, Governor
Roderick L. Bremby, Secretary

DEPARTMENT OF HEALTH
AND ENVIRONMENT

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Division of Environment

July 20, 2007

Dr. Holly Stallworth
US EPA Science Advisory Board (1400F)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: SAB Hypoxia Advisory Panel – Comments on Draft Advisory Report
Hypoxic Zone in the Gulf of Mexico

Dear Dr. Stallworth and Panel:

On behalf of the Kansas Department of Health and Environment (KDHE), comments are being provided on the Hypoxia Advisory Panel *Draft Advisory*. We applaud the efforts of the Gulf of Mexico Task Force and the Science Advisory Board (SAB) Panel for their focus on nutrient reduction in the Mississippi River Basin (MRB). The current draft report further refines the initial hypoxia work in the Gulf of Mexico, and validates the need to reduce nutrient transport from within the MRB to the Gulf. Nutrient reduction in the MRB should result in improved water quality inland, as well as the Gulf.

The *Draft Advisory* contains a wealth of information. However, KDHE is providing comments in only two areas, technology-based nutrient limits for point sources, and nutrient control via the total maximum daily load (TMDL) program. Our comments are included as an attachment.

Sincerely,

Michael B. Tate, PE, Chief
Technical Services Section

BUREAU OF WATER
CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 420, TOPEKA, KS 66612-1367
Voice 785-296-5504 Fax 785-296-0086

# Comments on Draft Advisory Report
# Hypoxic Zone in the Gulf of Mexico

Kansas Department of Health and Environment
July 20, 2007

## I. Technology-Based Point Source Limits

The document calls for limit of technology (LOT) wastewater treatment for municipal wastewater facilities designed to treat ≥ 1 million gallons per day (MGD) located in the Mississippi River Basin (MRB). The proposed limits of technology are 3.0 mg/L total nitrogen (TN) and 0.3 mg/L total phosphorus (TP). It is estimated that if those limits are met, nearly 50% of the Gulf TP reduction goal can be met, while around 25% of the Gulf TN reduction goal can be met. The Kansas Department of Health and Environment (KDHE) adopted a similar strategy in 2004 that was articulated in our *Surface Water Nutrient Reduction Plan* (KDHE, 2004). That plan called for technology-based biological nutrient removal (BNR) treatment at Kansas' 60 municipal treatment plants designed to treat ≥ 1 MGD. BNR treatment was defined as TN=8.0 mg/L and TP=1.5 mg/L. The Plan was built around the 30% reduction goals from the Hypoxia Task Force work in the 1990s. Very similar to the current document, the wastewater treatment plants reductions were predicted to lead to meeting 46% of the TP reduction goal, and 33% of the TN goal.

KDHE is still very much a proponent of technology-based limits for municipal wastewater treatment facilities. The concept has received overall support from the treatment industry in Kansas. The step to LOT for all wastewater treatment plants in the MRB is a large one, however. Several issues the Panel should consider prior to outright adoption of this recommendation include:

1. Additional cost analyses. On page 198, the following statement is made in relation to meeting LOT permit limits:

   *Experience in other regions, e.g., Tampa Bay, Chesapeake Bay, and Long Island Sound, has shown that these upgrades in secondary sewage treatment can produce significant P and N reductions at relatively low costs.*

   The three areas of the country referenced tend to be densely populated with relatively high median incomes. There is an economy of scale in wastewater treatment plant design and operation as acknowledged in a report on wastewater treatment funding produced by the Congressional Research Service (Copeland, 2005). The larger the facility, the lower the unit cost build and operate. Thus, the cost per connection for a 10 MGD facility (80,000 - 100,000 population) is typically less than for a 5 MGD facility (30,000 – 50,000 population).

   To lend perspective, Kansas and many other western states have low-populations and large land area. This leads to large numbers of relatively small wastewater treatment plants. Kansas currently has 66 municipal treatment facilities with a design discharge flow ≥ 0.5 MGD.

This flow volume accounts for approximately 87% of the domestic wastewater discharge for the state, or a population served of approximately 2.3 million. The US Census Bureau states the 2004 median household income for Kansas is $41,664 (US Census Bureau, 2007).

Contrast the Kansas data with the State of Maryland – a Chesapeake Bay state. The State of Maryland web site claims Maryland has 66 municipal facilities with a flow of $\geq$ 0.5 MGD accounting for 95% of that state's wastewater flow (Saffouri, 2005). This accounts for an approximate population served of 5.3 million. The US Census Bureau states the 2004 median household income for Maryland is $57,019 (US Census Bureau, 2007a). A summary of the data are provided in the following table.

| **Measure** | **Kansas** | **Maryland** |
|---|---|---|
| Number of Municipal WWTF >= 0.5 MGD | 66 | 66 |
| Population Served | 2,300,000 | 5,300,000 |
| Average Population Served per Facility | 34,848 | 80,303 |
| Estimated Households Served per Facility (assume 3.5 per household) | 9,957 | 22,944 |
| Median Household Income | $41,664 | $57,019 |

Clearly, Maryland benefits from an economy of scale with an average treatment facility size 2.3 times that of Kansas. Couple economy of scale with a 37% higher median household income to pay user fees, and the costs for equivalent treatment has a significantly greater impact on the individual user Kansas than the individual user in Maryland.

Further, Maryland has had programs in place to pay 50% of the costs for the 66 facilities greater than 0.5 MGD to upgrade to BNR, and 100% of the costs to upgrade to ENR – Maryland's equivalent to LOT. Thus, individual rate payers are largely spared the capital costs associated with nutrient removal via user fees. Without such a program, the impact on individual users would increase.

Long Island Sound was also used as an example of low cost nutrient removal. While not an outright payment for upgrade as in Maryland, the State of Connecticut provides grants, loans, and incentives for nitrogen reduction in Long Island Sound in excess of the Federal Clean Water State Revolving Fund. Again, however, the cost to the individual ratepayer is subsidized by funding other than user fees.

For states with smaller populations and less robust economies, development of grant programs through local tax dollars similar to Maryland and Connecticut are prohibitive. Thus, individual rate payers, with generally lower incomes are required to pick up the entire cost of mandatory updates. This often leads to a disproportionate share of household income funding utility costs. Unfortunately, this has lead to many cities seeking "earmarks" from Congress to meet demands, thus leading to a further "un-leveling" of the playing field for smaller communities.

Therefore, making a blanket statement that LOT treatment has "relatively low costs" can be unintentionally misleading when applied on a national scale. We request more in depth analysis of the true costs of existing LOT facilities on a cost per connection basis. National studies tending to rely on Chesapeake Bay and Long Island Sound data to estimate the costs of LOT may not be reflective of the overall economic impact on more rural states. The conclusion being drawn is that LOT is low cost; consequently all municipalities with a population greater than 8,000 – 10,000 population can afford it. As discussed above, many of the facilities included in the cost analyses have had user costs mitigated by various means; for instance, economy of scale, and grant funding. Thus, we would expect an analysis of true costs to address such things as economy of scale, sources of funding – including fees, grants, and loans, and the impact of user fees as a portion of median income, capital costs, and operational costs.

In terms of affordability, it should also be noted that EPA has identified wet weather issues – combined sewer overflows (CSOs), sanitary sewer overflows (SSOs), and stormwater runoff as a national program priority. Correction of wet weather issues are substantial economic burdens. In 2004, EPA estimated combined national needs for CSO and SSO correction alone at $138 billion (US Environmental Protection Agency, 2004). Much of the identified cost is associated with municipalities in the MRB. Therefore, the Panel should be aware there are substantial competing interests for utility infrastructure dollars which could largely delay implementation of nutrient removal depending on the priority assigned.

2. There was much discussion on modifying voluntary, incentive-based nonpoint source programs to achieve greater results per Federal dollar spent. We agree with the concept, and question why there is no mention of additional methods of funding point source upgrades. Low interest loans from the Clean Water State Revolving Fund (CWSRF) could be one mechanism. However, the CWSRF is woefully undercapitalized for such an endeavor. States have consistently identified the funding gap between the CWSRF and needed construction. Adding LOT as a requirement without additional sources of revenue will only widen the gap.

   We request the Panel include a recommendation that a portion of the cost to upgrade to LOT be funded with Federal grants or low interest loans above the levels currently appropriated by Congress.

3. By our reading, the recommendation for LOT is based on the current design wastewater treatment capacity in the MRB. There is little discussion as to how nutrient limits would be applied to new or expanding discharges. If the population increases, wastewater flow will generally increase. To maintain the mass load achieved through application of LOT on the existing inventory of wastewater treatment facilities, reductions in concentrations below LOT would be required for new or expanded discharges. If LOT truly represents the *limit* of technology, can further reductions in concentration be effectively attained?

   We request the Panel generally address the issue of new and expanding point source discharges and how permit limits would be established.

4. The report discusses various modeling activities in the MRB. Kansas has found the US Geological Survey (USGS) SPARROW modeling useful in targeting watersheds that have the greatest impact on the Gulf (USGS, 2003). Has any thought been given to targeting point source treatment based on modeling efforts such as the SPARROW model? Rather than applying LOT across the MRB, it would appear modeling could target LOT for areas having the greatest impact on the Gulf, while BNR or ENR could be applied in those watersheds that have very low coefficients of transport to the Gulf. For instance, the predicted nitrogen transport for MRB watersheds in Kansas ranges from less than 1% to 85%. It does not appear to be cost effective to require the same high level of treatment for facilities in basins with 1% transfer coefficients as is required for a facilities in basins with 85% transfer coefficients.

   We request some thought be given to targeting watersheds, and subsequently the point sources in those watersheds, for LOT, ENR, and BNR treatment requirements using transport models like SPARROW to predict individual watershed impacts on the Gulf.

## II. Total Maximum Daily Load (TMDL)

We are struck by the absence of any discussion on the use of the Total Maximum Daily Load (TMDL) program to address the Gulf Hypoxia. Based on our understanding, the northern Gulf is a Water of the United States. As such, it would appear §303 of the Clean Water Act could be applied to the Gulf.

Due to the MRB cross-cutting 25 States, EPA would need to take a leadership position in developing and implementing the TMDL. Much of the work to establish a TMDL is already completed:

- The pollutants causing water quality impairments have been identified.
- The levels of pollution reduction or pollutant loading needed to attain achievement of water quality standards have been identified.
- Corrective actions, including load allocations, to be implemented among point and nonpoint sources in the watershed affecting the water quality limited water body have been identified.
- The monitoring and evaluation strategies needed to assess the impact of corrective actions in achieving TMDLs and water quality standards have been identified.

Use of the TMDL program would place a greater emphasis on protection of the Gulf of Mexico by providing a regulatory framework for addressing hypoxia. The scope of the TMDL would be unprecedented. It would, however, ramp up the regulatory intensity that may be necessary to achieve the desired goals.

Again, use of a regional model such as SPARROW would allow EPA to target substantial TMDL efforts in areas contributing significant loads to the Gulf and exacerbating the hypoxia issue. Such a segregated strategy would allow the Federal government to stage funding over time and incrementally reduce loading to the Gulf. Concurrently, individual states could marshal resources toward priority TMDL areas within their borders. This true watershed-based approach would undoubtedly serve to heighten the profile of the Gulf hypoxia issue to a level of regional and national prominence necessary to influence change.

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