



Association of
Metropolitan
Sewerage Agencies

President
William L. Pugh
Public Works Director
City of Tacoma
Public Works Department
Tacoma, WA

April 12, 2001

Vice President
Gurnie C. Gunter
Director
Kansas City Water
Services Department
Kansas City, MO

Mr. Barry Burgan
U.S. Environmental Protection Agency
Ariel Rios (4504-F)
1200 Pennsylvania Ave, NW
Washington, DC 20460

Treasurer
Paul Pinault
Executive Director
Narragansett Bay Commission
Providence, RI

**RE: Draft National Coastal Condition Report, 66 Fed. Reg. 7760
(Jan. 25, 2001)**

Secretary
Thomas R. "Buddy" Morgan
General Manager
Water Works & Sanitary
Sewer Board
Montgomery, AL

Dear Mr. Burgan:

Executive Director
Ken Kirk

On behalf of Association of Metropolitan Sewerage Agencies (AMSA), I would like to thank you again for the opportunity to provide comments on the *Draft Clean Water Action Plan: National Coastal Condition Report (Draft Report)*. As you know, AMSA represents the interests of the nation's publicly-owned wastewater treatment works (POTWs) and has worked at the federal, state, and local level to preserve and protect our nation's water quality for over 30 years. Attached please find additional technical comments to supplement our comments of March 30, 2001.

Should you have any questions, please contact Christopher Hornback at AMSA at 202/833-9106.

Sincerely,

Norman LeBlanc
Chair, AMSA Water Quality Committee
Chief, Technical Services
Hampton Roads Sanitation District

Technical Comments on Clean Water Action Plan: Draft National Condition Report

The Association of Metropolitan Sewerage Agencies (AMSA) is pleased to provide the following technical comments concerning *Clean Water Action Plan: Draft National Condition Report EPA 620-R-00-004 (Draft Report)*. In our first letter, dated March 30, 2001, we raised the concern that the indicators used in the assessment lacked scientific merit and were inconsistent with state water quality standards. AMSA offers the following additional technical comments for the record to further demonstrate the nature of our concerns.

I. Dissolved oxygen (DO)

AMSA is concerned with how the *Draft Report* defines “poor” DO levels for coastal waters. According to the report, waters are considered “poor” for DO when 15 percent of coastal waters have concentrations of less than 2 ppm.¹ The report further elaborates that “*this value is widely accepted as representative of hypoxic condition, so this bench mark for poor condition is strongly supported by scientific evidence*”². The use of a 2 ppm indicator raises a number of concerns due to its inconsistency with existing water quality criteria.

First, it is unclear whether the 2 ppm DO indicator appropriately addresses organism exposure. EPA’s indicator does not appear to have adequately addressed the dynamics of DO exposure and population response, nor is it apparent that the indicator used accepted scientific practices. These shortcomings significantly compromise the reliability of the indicator and the corresponding conclusions. EPA has developed a population model that integrates duration, frequency and magnitude of DO exposure in predicting response from a population. The *Draft Report* does not specify whether the area-specific monitoring data took these exposure factors into account. For example, the *Draft Report* does not state whether data was averaged over time or whether a single observation was used to characterize conditions. If averaged, the time period for averaging was not presented. Even several days of exposure at 2 ppm does not result in impact on a population if higher DO concentrations are experienced prior to or following the 2 ppm exposure.

Second, AMSA questions the overall value of using the 2 ppm DO indicator as a measure of healthy coastal conditions on a more regional scale. In the Chesapeake Bay watershed, for instance, different levels of DO are required depending on the target habitat and species in need of protection. In spawning and nursery areas, it is widely acknowledged that DO levels need to be approximately 5 ppm on average. On the other hand, in deep channels approximately 1 ppm on average would be needed to protect benthic organisms. The Chesapeake Bay example highlights why the adoption of a 2 ppm indicator is of limited value. The 2 ppm level could be under protective or overly stringent depending on the part of the Bay in question. AMSA suggests that existing water quality standards are the only appropriate method to assess DO on a national scale.

¹ Draft Coastal Condition Report, Chapter 1, page 8.

² Draft Coastal Condition Report, Chapter 1, page 8.

II. *Water Clarity*

Water clarity is an important parameter that is often overlooked, though it has significant implications for many ecological processes. We support appropriate use of this parameter. AMSA believes the *Draft Report's* use of the water clarity indicator is problematic, however, because (a) the judgment values used do not appear to have a technical basis, and (b) the indicators were inconsistent with state water quality standards.

Lack of Technical Basis

Water clarity is defined in the *Draft Report* as “poor” if “less than 10% of the surface light reaches a depth of 1m”³. AMSA questions the use of this criteria and the level of beneficial uses it protects. During the development of the water clarity criteria for the Chesapeake Bay, there was considerable uncertainty regarding where to establish the restoration depths in a manner that corresponded to the submerged aquatic vegetation (SAV) light requirements. The attainment of these light requirements was heavily influenced by depth as well as light attenuation. In the final analysis, it was determined that the amount of light required by SAV in higher salinity waters (such as the Bay) is nearly twice that described by the *Draft Report*. Although SAV was mentioned in the water clarity indicators explanation, the Chesapeake Bay experience undermines the use of a single indicator nationwide.

Misleading Nature of Water Clarity Assessments

The *Draft Report* acknowledges that the ranking of estuarine conditions on the basis of water clarity can be misleading due to the difficulties associated with distinguishing between anthropogenic impacts and naturally-occurring conditions. The use of such a disclaimer highlights why water clarity cannot be reliably used as an indicator and, as such, should be removed from the report.

Few states, if any, have promulgated standards for water clarity. The development and adoption of related water quality standards even on a regional level, may take several years because of the numerous technical and policy related issues that must be resolved before such adoption will occur. AMSA contends that the use of water clarity as a means to rate the nation's waters at this time is premature and should be postponed until water quality standards are adopted.

III. *Eutrophic Condition*

The *Draft Report* indicates that data from NOAA's *National Estuarine Eutrophication Assessment* (Bricker et al., 1999) was used to assess the eutrophic condition of the nation's waters. A limited review of Bricker et al. (1999) and associated regional assessments reveals a number of key

³ Draft Coastal Condition Report, Chapter 1, page 7.

inconsistencies which undermine the value of this data. Some of the more noteworthy inconsistencies involved (a) ranking methods, (b) geographical scales of assessment / variability, and (c) redundancy with other coastal condition report indicators. In addition, AMSA cautions that the eutrophic analyses in the *Draft Report* appear to be inconsistent with ongoing standards development for nutrients.

Ranking Methods Were Biased Towards Problem Identification

Bricker et. al. (1999) developed measures to score specific estuarine areas on the basis of eutrophic levels. Using these measures, the *Draft Report* ranked national eutrophic conditions on a scale of “good” (less than 10% of the waters have symptoms indicating a high potential for eutrophication), “fair” (10% to 20% of the waters have symptoms indicating a high potential for eutrophication), and “poor” (more than 20% of the waters have symptoms indicating a high potential for eutrophication). AMSA has concerns with this ranking system, as it skews the evaluation towards a “poor” rating.

The *Draft Report* findings for the Pacific coast provides a good example of this concern. Bricker et. al. (1999) provided an analysis of the 39 individual estuaries in this area based on data for 27 of the estuaries. Their analysis showed that a total of 7, 11, and 9 estuaries exhibited high, moderate, and low levels of eutrophication, respectively. This translates into a finding that 21 out of the 27 (~75%) estuaries showed low to moderate levels of eutrophication. Nevertheless, the *Draft Report* rates this area as “poor” despite the NOAA finding that the majority of this area exhibited low or moderate nutrient effects. While AMSA agrees that there are significant issues associated with nutrient enrichment in many areas around the country, the majority of these issues are site-specific or regional, rather than national in scope.

Geographical Scales of Assessment

Bricker et. al. (1999) divided the east coast of the U.S. into three regions including the South Atlantic Region, Mid-Atlantic Region, and the North Atlantic Region. Although it can be effectively argued that these regional groupings are already too broad, the *Draft Report* further collapses these regions into two by lumping the Mid-Atlantic region and North Atlantic region into one management area called the “Northeast”. AMSA believes that this category is inappropriately large considering the major differences in water quality conditions between the New England area and the Mid-Atlantic owing to the degree of urbanization, climate, temperatures, type of shoreline substrate and many other factors. By collapsing this area into one region, the *Draft Report* findings become far too hypothetical.

By their very nature, large regional areas are inappropriate for ranking an indicator as site-specific and as regionally variable as eutrophic conditions. For example, Bricker et al. (1999) characterizes the Middle Atlantic as having 8, 5, and 7 estuaries with high, moderate, and low expressions of eutrophication, respectively. Examining one state's eutrophic conditions in more detail reveals the inaccuracies of such a broad analysis. In Virginia's three major tributaries, each river exhibited a distinct eutrophic expression. The James River was low, York River was high, and the Rappahannock River was moderate. Using the Chesapeake Bay region as an example, the *Draft Report's* use of the "Northeast" ranking tells the public very little about the Chesapeake Bay region. Eutrophic conditions are so widely variable that they defy making reasonable regional assessments at the gross scales attempted by the Agency. The Bricker et al. (1999) study exhibited this problem in the NOAA report's indexes of salinity levels at individual tributaries.

Redundancy with Other Indicators

AMSA observes that many of the indicators appear to overlap, leading to the potential for double or triple counting. Of the 7 indicators used in the *Draft Report*, 3 of the 7 (43%) were based on eutrophication-related variables. For example, eutrophic condition as defined by Bricker et al. (1999) is based on water clarity and DO among other things. To rank an area on the basis of eutrophic condition, along with and in addition to water clarity and DO resolution, results in the triple counting of the same impacts. AMSA questions why eutrophic conditions, DO, and water clarity are being used separately, when they are included as part of the eutrophic conditions? This is another example of how the *Draft Report* is heavily biased toward problem identification. AMSA recommends that EPA address the potential redundancy between these interrelated indices.

Disconnect Between the Eutrophication Indicator and Nutrient Criteria Program

A national effort is ongoing to develop nutrient criteria in various ecoregions around the country. At this stage in the development of ecoregion nutrient criteria, AMSA has a number of preliminary concerns with the methodology proposed in the draft guidance for Lakes / Reservoirs and Rivers / Streams guidance and the recently released ecoregion criteria for these matrices. We also note that a guidance document for estuaries and wetlands is pending. Given these substantial and ongoing national efforts, it seems premature to release a *Draft Report* that attempts to assess nutrient enrichment around the country prior to the development of regulatory standards. AMSA reiterates that national nutrient assessments should be based on State water quality standards as opposed to a more arbitrary benchmark as suggested by the *Draft Report*.

IV. *Sediment Contaminants*

AMSA has a number of concerns with the *Draft Report's* conclusions about sediment contamination based on the choice of indices.

- A. The document considers the Effects Range Medium (ERM) and the Effects Range Low (ERL) approach as experimental, yet it uses these benchmarks for drawing conclusive findings. The *Draft Report* does not accompany findings with qualification of the uncertainty of using an experimental indices. AMSA believes that ERMs/ERLs should not be used to draw conclusions on coastal conditions if they are merely “experimental”.
- B. The approach used in the document does not recognize or account for the magnitude of exceedance of an ERM or ERL and how this relates to condition. For example, the Agency grades a 10% exceedance of an ERM as an exceedance of that same ERM by 100%. This approach fails to appropriately characterize the quality of sediments.
- C. ERM/ERL benchmarks do not address bioavailability in grading sediment condition. Bioavailability has been extensively documented as an important factor in linking impact with sediments and the water column concentration.
- D. It is not clear why the equation assumes that one ERM exceedance is equivalent to 5 ERL exceedances.

A single ERM exceedance equates to an ecological impact 50% of the time, and zero impact 50% of the time. AMSA questions why the 95 percent probability level used to judge impacts in most environmental media is not used for ecological impact from sediment contamination. If the 95 percent level were employed, approximately four ERM exceedances would be necessary to make an impact determination. Furthermore, AMSA notes that even at the five ERL exceedance level, there is an unacceptably high false positive rate. For example, in O'Connor et al. (1998), (all NOAA and EPA authors), after studying a 1500+ sample data set generated by EPA and NOAA, this study found that only 40% of ERM exceedance actually correlated to amphipod toxicity. The study further concluded that ERM exceedance should only be used to trigger further study, not to make a definitive toxicity finding. When referring to ERMs, O'Connor et al. stated: “[ERMs] should never be taken, by themselves, to mean that sediment is exerting a toxic effect upon the environment or that there would be any benefit to decreasing its chemical content”. AMSA believes that these benchmarks should not be used to characterize the status of national waters.

In consideration of these issues, sediment contamination should not be employed as an indicator to rank coastal condition until and unless sediment standards are adopted.

V. *Benthic Condition*

The *Draft Report* depends heavily on the use of biocriteria that were not developed for the purpose of informing the public or Congress on benthic condition. The use of biocriteria as an indicator of the nation's coastal water quality conditions is inappropriate unless these measures are adopted as water quality standards.

VI. *Fish Tissue Contaminants*

The *Draft Report* used Food and Drug Administration (FDA) levels to assess fish tissue levels, rather than EPA-approved human health criteria. It is not clear why EPA did not use its own methodology to derive human health values considering that the *Draft Report* was completed after the fish tissue methodology was finalized. By reading the *Draft Report*, it is inferred that all contaminants tend to “remain in animal tissues” and may bioaccumulate. In fact, a very small percentage of the total number of chemicals released into the environment has been identified to bioaccumulate.

EPA states in its fish advisory guidance for the 303(d) and 305(b) reports that “FDA action levels are established to protect consumers of interstate shipped, commercially marketed fish and shellfish rather than fish and shellfish caught and consumed within the state. FDA action levels also include non-risk based factors (e.g., economic impacts) in their derivation, while water quality criteria must protect the designated use without regard to economic impacts.” FDA action levels are not calibrated towards the achievement of designated uses. The fish tissue indicator used in the report is not linked to designated uses, and is therefore an inappropriate benchmark to use for a national assessment.

Lastly, the *Draft Report* broadly refers to “international standards” as indicators, but there is no citation or further description provided to better describe these benchmarks. It is not possible to comment on them or their use if EPA does not provide enough information on their source.