March 4, 2004

Michael J. Hornbrook
Chief Operating Officer
Massachusetts Water Resources Authority
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

Re: MWRA
NPDES Permit No.MA0103284
Proposed Revisions to Ambient Monitoring Plan

Dear Mr. Hornbrook:

The United States Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MADEP) received the November 14, 2003 correspondence from you which requested revisions to the 1997 Effluent Outfall Ambient Monitoring Plan appended to MWRA's NPDES Permit (MA0103284) as Attachment N. Specifically, your correspondence requested that these revisions be made in accordance with Part I.7.c. of the Permit which provides:

> "By November 15 of each year, the permittee shall submit a list of any proposed modifications to the monitoring plan, including any interim modifications which have become effective pursuant to paragraph I.7.c.iii below, to EPA, MADEP, and the public (See: Part I.20.e. of this permit), and shall publish the list in the Environmental Monitor for the purpose of soliciting public comment. These modifications shall become effective upon approval by EPA and the MADEP."

EPA and MADEP would like to initially note that the Ambient Monitoring Plan was always viewed by our agencies as a "living document" that would continually be reviewed and improved or revised based on current scientific understanding and in response to the analysis and assessment of information derived from the monitoring. We are fortunate that we have nine years of baseline monitoring and over three years of additional monitoring data obtained once the new outfall became operational on September 6, 2000. We are also pleased that the MWRA undertook a rigorous, scientifically-based approach in evaluating proposed revisions to the monitoring plan. This is the first major revision of the plan since publication of the 1997

Ambient Monitoring Plan, and its incorporation into the MWRA NPDES Permit in 2000.

Public review

These revisions were proposed by MWRA, and evaluated by the OMSAP (Outfall Monitoring Science Advisory Panel, including the Public Interest Advisory Committee) in a series of three focused workshops from March to July 2003, with final discussion and approval by the OMSAP in October 2003. The proposed revisions were noticed in the November 26, 2003 Environmental Monitor for public comment. In preparing our response we considered input from the OMSAP, the public, and other state and federal agencies.

Proposed revisions

As described by the MWRA[1], this revision incorporates three kinds of changes to the monitoring plan: (1) changes recommended by the OMSAP and previously approved by EPA and MADEP after public comment in 2002; (2) changes recommended by the OMSAP in spring 2003 and approved on an interim basis by EPA and MADEP in July 2003; and (3) new changes as recommended by the OMSAP after discussion during the 2003 meetings and workshops. The differences between the 1997 Ambient Monitoring Plan and the draft Ambient Monitoring Plan Revision 1 are summarized below.

<u>Changes to monitoring activities approved by EPA and MADEP after public comment in 2002</u>

- Total coliform measurements from effluent monitoring, and urea measurements from water column monitoring have been dropped.

<u>Changes to monitoring activities approved on an interim basis by EPA and MADEP in 2003</u>

- The location of two stations for hard-bottom monitoring have been shifted, and the sampling schedule for comprehensive sediment contaminant monitoring has been reduced from annually to every third year, with two stations out of a total of 24 stations being sampled every year.

<u>New changes as recommended by OMSAP in 2003</u>

- The number of water column nearfield stations sampled has been reduced from 21 to 7 and the number of nearfield surveys carried out annually has been reduced from 17 to 12. OMSAP has recommended that MWRA examine the feasibility of continuous monitoring for biological parameters to compensate for the reduction in surveys.

- Beginning in 2004, the number of soft-bottom benthic community monitoring stations

[1] Letter from Michael J. Hornbrook, MWRA to MADEP and EPA, November 14, 2003

sampled annually has been reduced so that half the stations are sampled in alternate years. In addition, some measurements from the benthic nutrient flux special study have been dropped.

- The frequency of sampling winter flounder for tissue contaminants has been reduced from annually to once every three years (i.e. next sampling is in 2006), and one flounder sampling station (Broad Sound) for measuring tissue contaminants and observations of external lesions and internal histology has been dropped. The revised plan also includes a special study to monitor the blind side lesions first observed in the spring 2003 sample. This special study involves developing an interagency lesion identification protocol and will include stations in Broad Sound and elsewhere if recommended by an OMSAP focus group.

- The frequency of sampling lobster for tissue chemistry, animal size, mass, dry/lipid weight and external lesions (including deformities or diseases) has been reduced from annually to once every three years (i.e. next sampling is in 2006).

- The frequency of deploying the mussel bioaccumulation cages has been reduced from annually to once every three years (i.e. next sampling is in 2006).

In addition, the draft Ambient Monitoring Plan Revision 1 includes the following updates and clarifications[2]:

- Comprehensive updates, including, for example, a summary of monitoring results through 2002 for each monitoring area as they pertain to the original questions on which the plan is based.

- The relationship between requirements from the NPDES permit, the Contingency Plan, routine monitoring, and special studies is clarified in this revision.

- Completed studies (e.g. plume tracking) have been removed from the plan. The listing and description of other special studies has been updated.

- Data evaluation sections have been revised to give examples of analyses that will be used to answer monitoring questions, or information that would be useful in future refinement of the monitoring program.

EPA and MADEP Concerns

[2] Letter from Michael J. Hornbrook, MWRA to MADEP and EPA, November 14, 2003

EPA and MADEP are concerned with several aspects of the proposed monitoring plan related only to the new changes for 2004.

Regarding reductions in the water column nearfield monitoring program, we are confident that based on the MWRA analysis of the monitoring data collected to date, the proposed reductions will not harm our ability to understand the water column response to the effluent outfall in the nearfield region. We believe, however, that a reduction in the nearfield water column monitoring should be accompanied by a firm effort to establish a continuous monitoring measurement program. We look forward to hearing the results of the May 19, 2004 MWRA-sponsored meeting of outside experts entitled "Technical Monitoring Needs of the MWRA".

Regarding the winter flounder blind side lesions first observed by MWRA in spring 2003, we believe that it is not appropriate to drop the Broad Sound station since a high prevalence of lesions were observed in April 2003, and the relationship between the outfall effluent and the lesions has not been disproved. We are also concerned that no established protocol exists to describe these lesions and that MWRA did not report their observations to EPA, MADEP, and the public in a timely fashion - although the MWRA did confer with MA Division of Marine Fisheries and the National Marine Fisheries Service to evaluate the lesions. The special study of blind-side lesions ensures that this station is monitored and establishes a process to produce a consistent lesion identification protocol in time for the spring 2004 survey. MWRA has also agreed to more explicitly list the internal and external lesions and other deformities of winter flounder and lobsters in the revised Ambient Monitoring Plan.

Regarding the caged mussel bioaccumulation program, EPA and MADEP are concerned with the proposed reduction in frequency of this program, with the next sampling proposed for 2006. The results of this monitoring have yielded consistent exceedances of the Contingency Plan thresholds for PAHs (2001, 2002 and 2003) and chlordane (2001 and 2002). A triennial deployment of caged mussels reflects only 40 to 60 days of exposure over a three year period. To that end, we request that OMSAP's special focus group on mussel tissue contaminants reconvene to discuss the possibility of continuing the caged mussel bioaccumulation program on a more frequent basis.

In response to a public comment, we agree that it is worthwhile to maintain a listing of special studies that have been concluded.

EPA and MADEP Determinations

EPA and MADEP accept the monitoring changes approved in 2002 and the interim 2003 changes and approve of their incorporation to the draft Ambient Monitoring Plan Revision 1. EPA and MADEP also approve the new changes (as recommended by OMSAP and requested by MWRA) with the following modifications to the draft Ambient Monitoring Plan Revision 1:

Regarding the continuous measurement of biological parameters, replace the language in Section 3.3 on the current page 27 with the following paragraph:

Continuous measurement of biological parameters. As recommended by the OMSAP (October 21, 2003), MWRA plans to hold a workshop on May 19, 2004 to discuss the goals, issues, technologies, and costs of augmenting its ambient monitoring with continuous water quality monitoring and additional use of satellite data. Some suggested goals include detecting events that should be sampled, and providing coverage between scheduled surveys to compensate for fewer scheduled surveys.

Following the workshop, OMSAP may recommend further evaluation, or may recommend implementation of a specific technology (for example adding chlorophyll sensors to the existing Gulf of Maine Ocean Observing System or GoMOOS mooring off Cape Ann, or providing USGS mooring data in real-time). Some recommendations could be implemented later in 2004.

Regarding the fish and shellfish monitoring, insert in section 5-3:

Table 5-1 summarizes the chemical analyses performed for fish and shellfish. Figure 5-1 shows the sampling locations. Gross deformities, parasites, or visually apparent diseases are noted for both collected flounder and lobster. In addition, histological measurements are made in flounders (in particular, liver lesions).

Table 5-2 summarizes the internal and external lesions measured in flounder and lobster. (Additional table to be included.) If lesions or gross deformities are observed, samples will be archived for additional tissue contamination if deemed necessary.

Regarding the flounder blind side lesions, in section 5.3, replace language in section 5.3 on the current page 49 with the following language:

Special study of flounder blind side lesions

At its October 2003 meeting, OMSAP recommended that: 1) MWRA continue its special study investigating recent observations of an apparent increased prevalence of blind side flounder lesions in Boston Harbor and Massachusetts Bay, and 2) coordinate with other agencies. An important aspect of the study is developing, with fisheries agencies, a lesion identification protocol to ensure consistency. As part of this study in 2004:

- Additional sites will be sampled in Massachusetts Bay to better define the spatial extent and severity of the condition (if observed at the regular monitoring sites);
- The Broad Sound site dropped from routine flounder monitoring will be sampled for determination of both external lesions and liver histopathology;
- Liver and filet samples will be collected from Broad Sound, Nantasket Beach, Eastern Cape Cod Bay, Nantasket Beach, and the outfall site. Samples for contaminants will be archived, and an evaluation of the internal and external lesion data will be used to determine if contaminant analyses are warranted.

MWRA will submit a complete study design to OMSAP and regulators at least 30 days prior to the April 2004 flounder sampling. In addition, MWRA will submit the results of the monitoring for external lesions in the next quarterly monitoring report in accordance with Section I.7.c.iv of the permit.

Regarding the caged mussel bioaccumulation monitoring program, replace language in section 5.3 on the current page 49 with the following language:

Special studies to enhance mussel bioaccumulation monitoring

Since 1998, MWRA has deployed mussels at a reference station in Cape Cod Bay. In 2001-2003, MWRA deployed an extra set of mussels in the vicinity of the Boston "B"-buoy, ~1 km SE of the outfall. In 2002, MWRA carried out enhanced effluent contaminant monitoring during the mussel deployments, and analyzed mussels deployed along the outfall from both the 40 and 60-day retrievals to determine if an intervening treatment plant upset led to increased mussel bioaccumulation. The monitoring results demonstrated that the treatment plant upset did not lead to increased mussel bioaccumulation (Pala et al. 2003).

MWRA has requested regulators to reconvene the OMSAP focus group that evaluated the 2002 exceedances in light of the results of the 2003 mussel study. In 2003, PAH concentrations in outfall site mussels exceeded the Contingency Plan caution threshold (chlordane concentrations did not exceed thresholds in 2003) (MWRA, 2003d). The focus group will be asked to advise whether the monitoring results warrant a special study during summer 2004, in which mussels would be deployed at the outfall site, with post-deployment analyses for PAHs and chlordane. If recommended by that focus group, the special study will be carried out.

To provide additional clarification to the monitoring plan document, provide an Appendix A listing the completed special studies as follows:

- **Study of outfall dilution/plume tracking.** Results are evaluated in Hunt et al. (2002b, 2002c).
- **Study of potential short-term buildup of contaminants in nearfield sediments.** Results of this study, which supplemented the ongoing USGS/MWRA study of sediment and contaminant transport, are evaluated in Kropp et al. (2002) and Maciolek et al (2003).
- **Study of anthropogenic viruses at the outfall site.** A report evaluating the results of this special study should be completed by Summer 2004.

Reports can be downloaded at:
<http://www.mwra.state.ma.us/harbor/enquad/trlist.html>. To request reports by mail, call the MWRA Environmental Quality Department at (617) 788-4601.

We look forward to seeing a revised final Ambient Monitoring Plan addressing these concerns. If you have any questions or concerns about this response, please do not hesitate to contact Matthew Liebman, EPA, at (617) 918-1626 or Cathy Coniaris, MADEP, at (617) 348-4026.

Sincerely,

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Environmental Protection Agency

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