MASSACHUSETTS WATER RESOURCES AUTHORITY

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October 25, 2006

Mr. Glenn Haas, Director
Division of Watershed Management
Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Ms. Linda Murphy, Director
Office of Ecosystem Protection
U.S.E.P.A.
Water Technical Unit "SEW"
P.O. Box 8127
Boston, MA 02114

Re: Massachusetts Water Resources Authority, Permit Number MA0103284
Notification Pursuant to Part I.8. Contingency Plan: *Nearfield chlorophyll*

Dear Mr. Haas and Ms. Murphy:

One parameter that the Massachusetts Water Resources Authority ("MWRA") monitors in its outfall ambient monitoring program is levels of chlorophyll, a measure of the biomass of phytoplankton. Reporting on seasonal levels of chlorophyll in the outfall nearfield area is part of the Contingency Plan.[1] MWRA has received chlorophyll results from samples collected through August, 2006. The mean nearfield chlorophyll value for summer 2006 (May, June, July and August) is 97.11 mg/m^2, which exceeds the Caution Level threshold for summer chlorophyll of 93 mg/m^2, triggering a notification requirement under the Contingency Plan. This letter constitutes the notification. There are no indications of adverse impacts of this level of chlorophyll.

1 *Massachusetts Water Resources Authority Contingency Plan Revision 1*. 2001. Report ENQUAD ms-071. http://www.mwra.state.ma.us/harbor/enquad/trlist.html. The chlorophyll caution threshold is the 95th percentile of the baseline (pre-outfall) mean. Exceedance of this threshold is intended to trigger a closer look at the environmental data to determine if there may be adverse effects, and if the outfall discharge may be a cause.

Figure 1 shows the summer chlorophyll threshold data since 1992; summer chlorophyll levels in 2000 before the outfall went on-line were almost as high as in 2006.

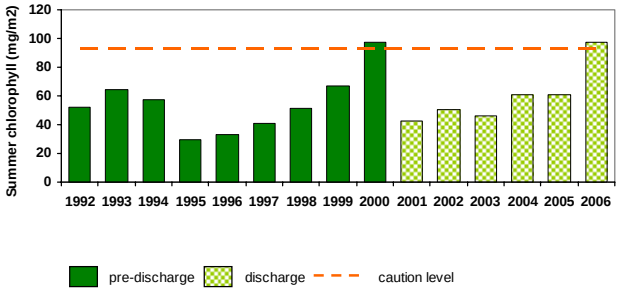

Figure 1 Summer nearfield chlorophyll levels 1992-2006

MWRA monitors water quality parameters, including chlorophyll, at seven stations in the outfall nearfield, at five depths at each station, four times during the summer. The nearfield average is computed as follows: (1) average the chlorophyll concentrations over depth; (2) convert to areal value; (3) average over nearfield stations. Table 1 shows average chlorophyll values for each 2006 summer survey in mg/m^2.

Table 1
Average nearfield chlorophyll by survey,
Summer 2006

Date	Average chlorophyll mg/m^2	SD
May 17	90	33
June 20	32	3
July 19	193	97
August 22	73	22

Figure 2 shows a view of the chlorophyll monitoring data, for each survey included in the threshold calculation. There was a peak in nearfield chlorophyll concentration in July 2006, maximum levels of chlorophyll were in the subsurface samples. Plankton samples showed that the phytoplankton community was dominated by one species, the chain-forming diatom *Dactyliosolen fragilissimus*, with cell counts ranging from 1.2 to 5.8 million cells/L. This species of phytoplankton is common in the North Atlantic, and is frequently seen in MWRA's monitoring samples, sometimes in numbers similar to those found this July. These diatoms are not considered harmful or nuisance algal species—rather they are a typical species forming the base of the oceanic food web. The environmental concern that is related to the amount of phytoplankton growth (and the reason for a chlorophyll threshold) is whether algae might become over-abundant and cause eutrophication and loss of oxygen in the water or sediment. Oxygen levels in the outfall nearfield bottom waters in summer (Figure 3) were normal.

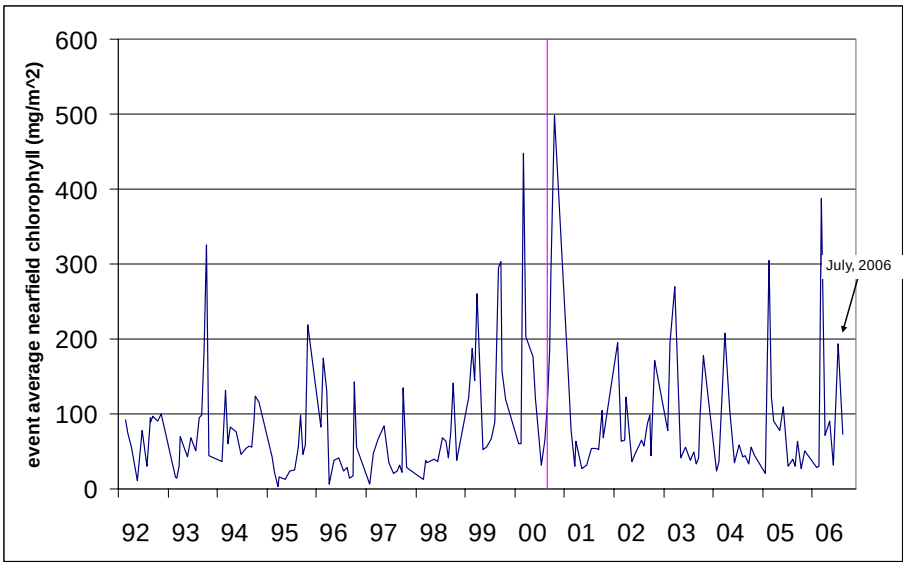

Figure 2 Chlorophyll values for each nearfield survey event since 1992 that is included in the threshold calculations.

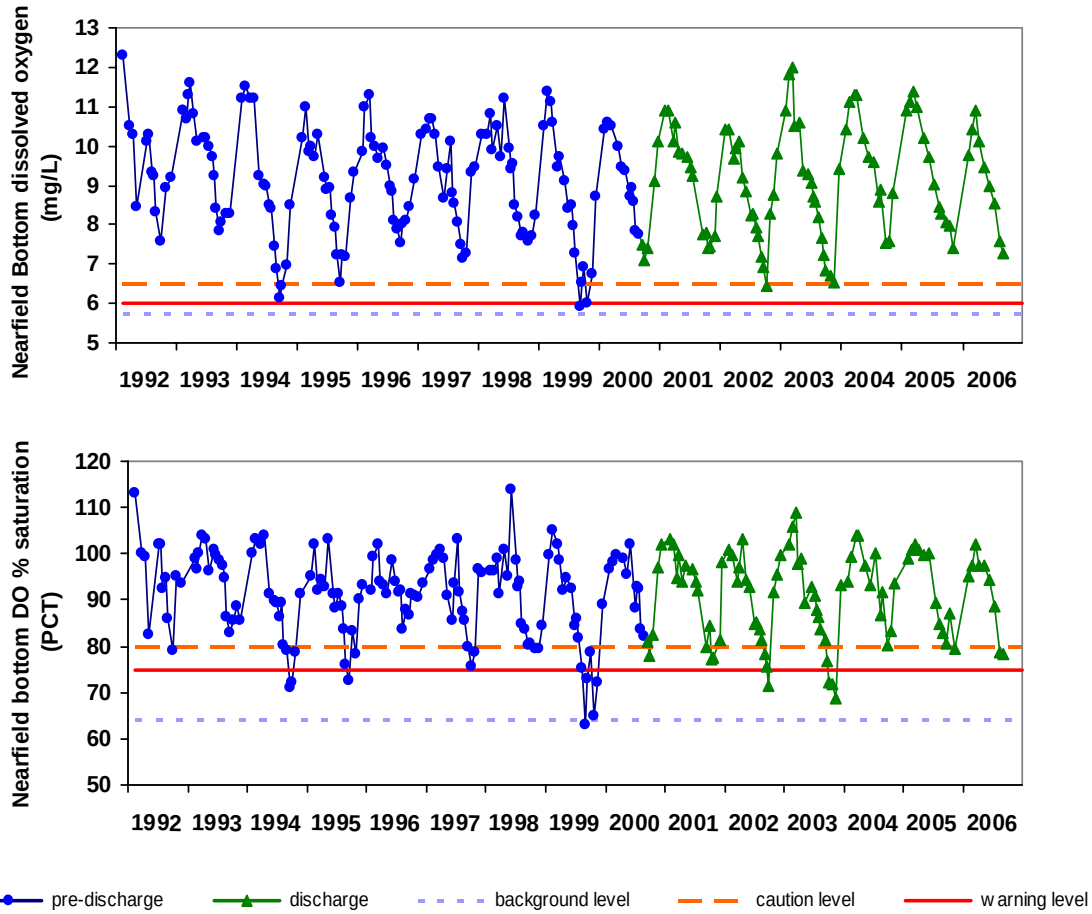

Figure 3. Bottom water dissolved oxygen concentration and percent saturation in the MWRA outfall nearfield through early September, 2006 were at normal levels.

Preliminary data from the August 2006 sediment survey, which uses a camera to visually measure images of sediment oxygenation, showed normal sediment oxygenation.

Other MWRA environmental monitoring data, including more complete physical oceanographic and nutrient data, subsequent chlorophyll, phytoplankton, bottom water dissolved oxygen measurements, rate of oxygen depletion, and sediment flux measurements, will become available in the near future. Analysis of this information together with data which may be available from other sources will help in understanding the potential cause(s) and effects, if any, of this summer bloom. MWRA will discuss this threshold exceedance at the next Outfall Monitoring Science Advisory Panel meeting.

Please let me know if any of MWRA's staff can give you additional assistance regarding this notification.

Sincerely,

Michael J. Hornbrook
Chief Operating Officer

Cc:

Environmental Protection Agency, Region I
Matthew Liebman
Todd Borci
Roger Janson

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Cathy Vakalopoulos

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