MASSACHUSETTS WATER RESOURCES AUTHORITY

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Frederick A. Laskey
Executive Director

October 28, 2005

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. Environmental Protection Agency
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: *Phaeocystis*

Dear Mr. Haas and Ms. Murphy:

One of the nuisance algae that the Massachusetts Water Resources Authority ("MWRA") monitors in its outfall ambient monitoring program is *Phaeocystis*. Reporting on seasonal abundances of *Phaeocystis* in the outfall nearfield area is part of the Contingency Plan.[1] MWRA has received *Phaeocystis* results from samples collected through June, 2005. One sample[2] collected in the nearfield on June 17, 2005 contained cells of *Phaeocystis,* apparently an isolated remnant of a relatively small *Phaeocystis* bloom that occurred this spring. This observation corresponds to a calculated abundance of *Phaeocystis* in that sample of 10,300 cells/L, giving a seasonal summer mean, which is calculated from average counts from May 1 to August 31, of at least 517 cells per liter, even if there are zero *Phaeocystis* in July and August samples. This is above the Caution Level threshold of 357 cells/L, which triggers a notification under the Contingency Plan. This letter constitutes the notification for the threshold exceedance.

Average 2005 *Phaeocystis* data collected from February through June are shown in the table below. (Note that the winter/spring data, from the actual bloom period, are well below the threshold.)

Contingency Plan threshold results for *Phaeocystis* for winter/spring and summer, 2005.

Parameter	Specific Parameter	Baseline	Caution Level Threshold	Warning Level Threshold	2005 Results
Phaeocystis pouchetii	Winter/spring	470,000 cells/L	2,020,000 cells/L	None	438,000 cells/L
	Summer	**79 cells/L**	**357 cells/L**		**≥ 517 cells/L* Caution Level Exceedance**

* Assumes *Phaeocystis* is absent from all samples collected in July and August, 2005. Preliminary data indicates no cells present in July. August samples are being processed.

1 *Massachusetts Water Resources Authority Contingency Plan Revision 1*. 2001. Report ENQUAD ms-071. http://www.mwra.state.ma.us/harbor/enquad/trlist.htm

[2] Station N18, depth= subsurface chlorophyll maximum; cells were in poor condition, *i.e.* not actively growing.

No adverse aesthetic or other impacts were observed from this year's spring *Phaeocystis* bloom, which was relatively small. Figure 1 shows that the temporal pattern of the bloom was typical, with the bloom first detected in mid-March, counts peaking in mid-April, and dropping to very low levels by mid-May. Figure 2 shows the winter-spring seasonal means, and Figure 3 shows the summer seasonal means, plotted against the corresponding thresholds. There does not appear to be any connection between the 2005 red tide event and this *Phaeocystis* exceedance. There is no obvious association with MWRA's outfall, as the bloom appeared to be region-wide. The highest count observed during the winter-spring *Phaeocystis* bloom was 4.1 million cells/liter at F22, a farfield station 20 km east of Marblehead.

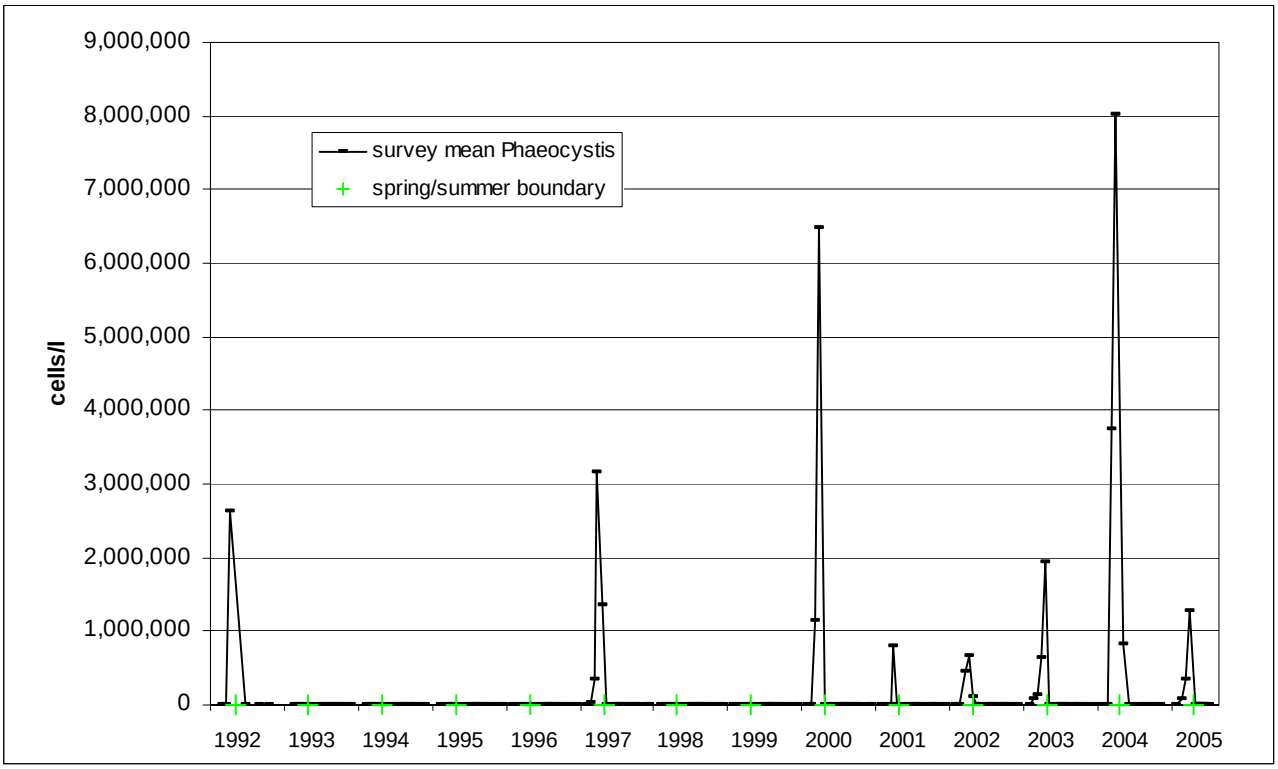

Figure 1. Annual patterns of nearfield mean *Phaeocystis* abundances, 1992-2005.

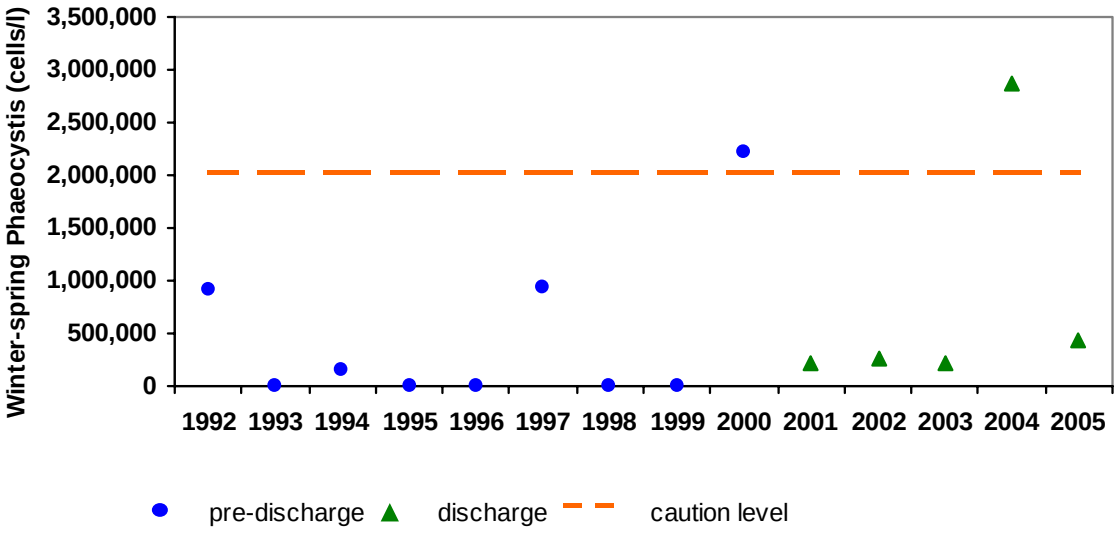

Figure 2. Winter-spring nearfield seasonal mean *Phaeocystis* counts 1992-2005.

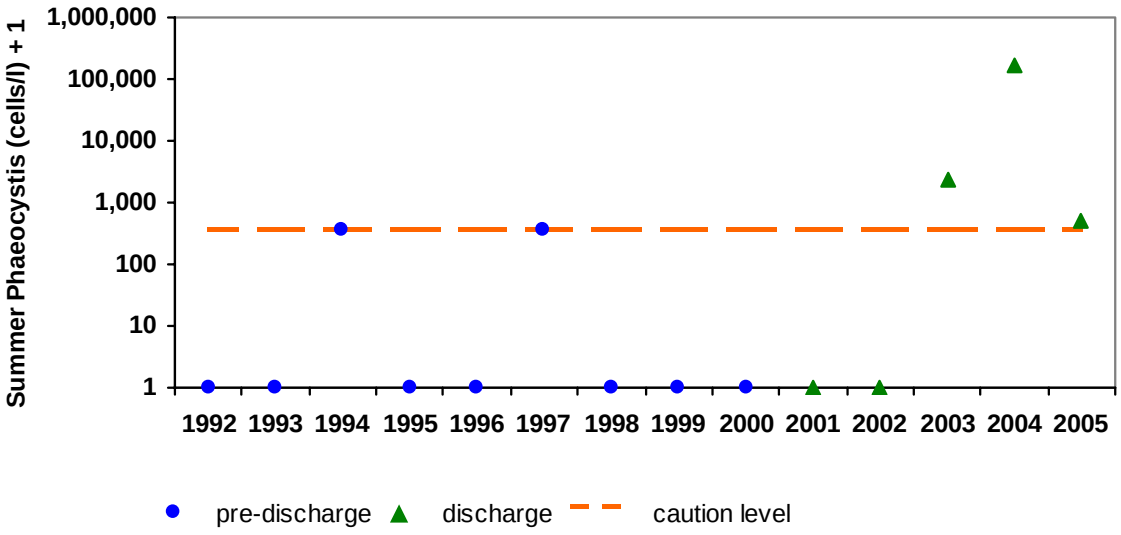

Figure 3. Summer nearfield seasonal mean *Phaeocystis* counts 1992-2005

As noted above, this threshold exceedance resulted from a single nearfield sample in which *Phaeocystis* cells was observed. *Phaeocystis* was not observed in any of 32 plankton samples collected at 16 other stations sampled during that survey, which ranged from Cape Ann to Cape Cod Bay to Boston Harbor. MWRA suggests that it is appropriate to review the summer *Phaeocystis* threshold, which is calculated as the 95th percentile of the baseline seasonal mean. This threshold is so low that it can be triggered by the observation of a single colony of *Phaeocystis* in one sample over the course of an entire season. This is not biologically meaningful, nor does it constitute a meaningful change from baseline observations.

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:

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Sanctuary
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