

May 21, 2008

Stephen Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency
Water Technical Unit "SEW"
P.O. BOX 8127
Boston, MA 02114

Glenn Haas, Acting Assistant Commissioner
Bureau of Resource Protection
Massachusetts Department of Environmental
Protection
One Winter Street, 2nd Floor
Boston, MA 02108

RE: Massachusetts Water Resources Authority
Permit Number MA 0103284
MWRA Contingency Plan Threshold Exceedance: Red Tide 2008

Dear Mr. Perkins and Mr. Haas:

In its outfall ambient monitoring program, MWRA monitors levels of the red-tide alga *Alexandrium*, the cause of paralytic shellfish poisoning ("PSP"). Reporting on per-sample abundances of *Alexandrium* in the outfall nearfield is part of the Contingency Plan.¹ The Contingency Plan also specifies that MWRA conduct additional targeted monitoring for *Alexandrium*. Based on observations of shellfish PSP toxicity and *Alexandrium* cell counts in the waters off the coast of Maine, New Hampshire and Massachusetts, MWRA initiates surveys for *Alexandrium*² in the outfall area if conditions are right for significant amounts of *Alexandrium* to enter Massachusetts Bay, and/or *Alexandrium* is detected at levels above the Contingency Plan threshold in the outfall nearfield.

In May 2008, northeasterly storms occurred simultaneously with a bloom of *Alexandrium* along the coast of Maine. In early May, PSP monitoring programs reported toxicity in shellfish from New Hampshire, and the Woods Hole Oceanographic Institution ("WHOI") reported significant levels of *Alexandrium* in Massachusetts Bay. Therefore, MWRA added testing for *Alexandrium* in surface water to its next survey, a sediment nutrient flux survey, which collected samples May 16. On May 19, MWRA was notified that results³ from that survey showed that the single sample abundance of *Alexandrium* in the outfall nearfield ranged from 775 to 1493 cells per liter. This level is higher than the Contingency Plan threshold of 100 cells/liter, and thus is a threshold exceedance requiring regulatory and public notification. This letter constitutes that notification.

¹ *Massachusetts Water Resources Authority Contingency Plan Revision 1*. 2001. Report 2001-ms-71, on the web at <http://www.mwra.state.ma.us/harbor/enquad/trlist.html>

² Libby S. 2006. Standing Survey Plan: Rapid Response *Alexandrium* Survey. Boston: Massachusetts Water Resources Authority. Report 2006-05. 19 p. on the web at <http://www.mwra.state.ma.us/harbor/enquad/trlist.html>

³ Analyses were carried out in the laboratories of the National Office for Marine Biotoxins and Harmful Algal Blooms at the Woods Hole Oceanographic Institution (WHOI).

MWRA staff monitor the progress of *Alexandrium* events in the Gulf of Maine by communicating with state shellfish regulatory personnel and academic researchers in Maine, New Hampshire and Massachusetts. *Alexandrium* events typically occur in the spring, initiating along the coast of Maine and advecting south to New Hampshire. Under some spring wind and current conditions, (especially northeast winds) cells abundant north of Cape Ann are swept into Massachusetts and Cape Cod Bays.

On March 7, 2008 WHOI informed the shellfish managers in the northeast that there was a high abundance of *Alexandrium* cysts in the sediments off the Maine coastline, and that therefore WHOI predicted a high likelihood of a major *Alexandrium* event in spring 2008.

Between April 28 and May 5, WHOI found 300-900 cells/liter of *Alexandrium* in a coastal plume offshore of Wells, Maine; however cell counts in Massachusetts and New Hampshire waters were still less than 100 cells per liter. By May 6 and 7, mussels from Isle of Shoals and Hampton Harbor contained toxic levels of PSP, and New Hampshire closed its coastal waters to shellfishing. In Massachusetts, low levels of toxin were observed in mussels collected at stations north of Cape Ann on Monday May 12, but mussels collected on May 14 were toxic at two stations, and the Massachusetts Division of Marine Fisheries (“DMF”) closed waters from Gloucester to the New Hampshire border to all shellfishing.

These shellfish monitoring results were consistent with computer model projections made by researchers at WHOI and North Carolina State University.

<http://omglnx3.meas.ncsu.edu/yli/08forecast/>

Northeasterly winds and rain occurred from May 9 through 14, creating conditions likely to carry *Alexandrium* cells into Massachusetts Bay, therefore MWRA added surface water sample collection for *Alexandrium* to its next field survey, a sediment nutrient flux survey which occurred May 16. Also on May 16, MWRA received data from WHOI that “live” field counts in Massachusetts and Cape Cod Bays (not from the outfall nearfield) showed 500-2,500 cells/liter *Alexandrium*.

On May 19, MWRA received results from the May 16 outfall nearfield samples. Water column counts of *Alexandrium* ranged from 775 to 1493 cells/liter at the three nearfield stations. At the Stellwagen site there were 488 cells/liter. MWRA is implementing its *Alexandrium* response monitoring plan in coordination with WHOI and DMF, and will keep the regulatory agencies informed of the results. To date, this red tide bloom has progressed in the pattern historically typical in the Gulf of Maine, beginning off the Maine coastline, advecting south during May, and entering Massachusetts Bay with northeasterly winds and currents. The bloom was not found in the outfall area before being found “upstream” in Maine and New Hampshire.

If you have questions or need additional information, please feel free to call me at (617) 788-4359.

Sincerely,

Michael J. Hornbrook
Chief Operating Officer

Cc:

Environmental Protection Agency, Region I

Matthew Liebman

Todd Borci

Roger Janson

National Marine Fisheries Service

Chris Mantzaris

David Dow

Stellwagen Bank National Marine Sanctuary

Craig MacDonald

US Food and Drug Administration

Martin Dowgert

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