



MASSACHUSETTS WATER RESOURCES AUTHORITY

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Frederick A. Laskey
Executive Director

May 21, 2009

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 2009

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.

On May 7, 2009, MWRA was notified that PSP toxicity in shellfish off the coast of New Hampshire was increasing and approaching closure levels—a finding that has in the past preceded the movement of *Alexandrium* into Massachusetts Bay. In addition, experimental computer modeling³ done by the Woods Hole Oceanographic Institution and North Carolina State University predicted the presence of *Alexandrium* in Massachusetts Bay (Figure 1). Therefore, MWRA included testing for *Alexandrium* at 5 nearfield stations (Figure 2) during its regular

¹ Massachusetts Water Resources Authority Contingency Plan Revision 1. 2001. Report ENQUAD 2001-ms-71. Retrieved from <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. Retrieved from <http://www.mwra.state.ma.us/harbor/enquad/trlist.html>

³ Ruoying He, Yizhen Li, Dennis McGillicuddy, Don Anderson, Bruce Keafer: Gulf of Maine *Alexandrium fundyense* Model Results – 2009. Retrieved from <http://omglnx3.meas.ncsu.edu/yli/09forecast/>

survey on May 12. On May 18, MWRA was notified that results⁴ from that survey showed that in one surface sample at station N18, the abundance of *Alexandrium* in the outfall nearfield was 150 cells/liter. The concentration of 150 cells/liter 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.

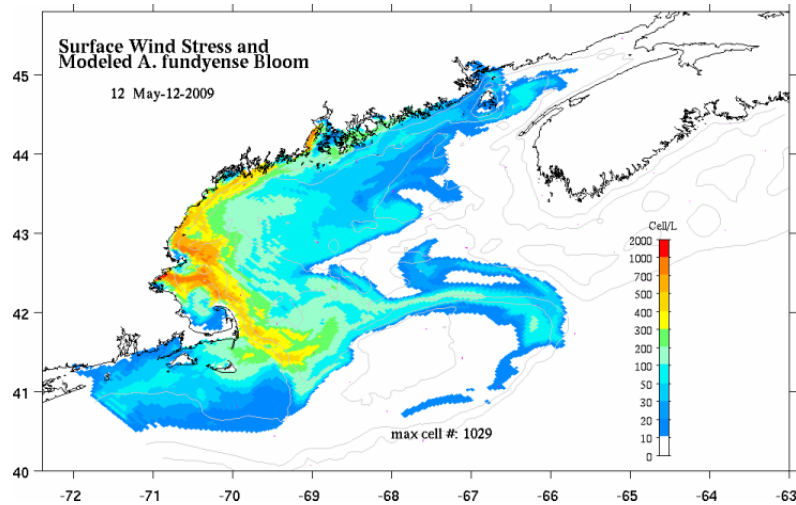


Figure 1 Results of experimental modeling for *Alexandrium* May 12, 2009.

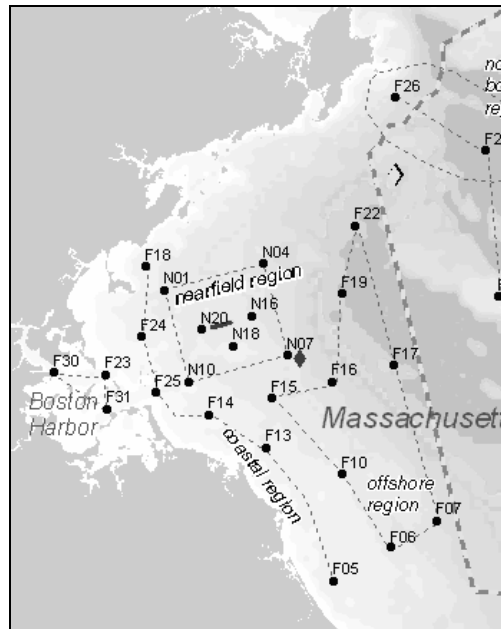


Figure 2 Map of some of MWRA's outfall monitoring stations, including stations N01, N04, N18, N07, and N10 which were sampled for *Alexandrium* on May 12, 2009. *Alexandrium* was detected at all stations sampled, the *Alexandrium* exceedance was at station N18.

⁴ 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).

As shown in Table 1, counts in the other 9 samples collected that day were lower than the threshold, and ranged from 6 to 62 cells/liter.

Table 1 Results of MWRA May 12, 2009 *Alexandrium* sampling

Sample Date Time	Station	Depth (m)	<i>A. fundyense</i> cells/liter
5/12/09 7:50	N10	10	6
5/12/09 7:51	N10	1	7
5/12/09 8:41	N01	12	10
5/12/09 8:42	N01	1	23
5/12/09 10:21	N07	13	39
5/12/09 10:22	N07	2	60
5/12/09 11:08	N04	13	62
5/12/09 11:09	N04	1	42
5/12/09 11:53	N18	12	32
5/12/09 11:55	N18	2	150

Alexandrium events typically occur in the spring, initiating along the coast of Maine and advecting south to New Hampshire. To date, the 2009 red tide bloom has progressed in the pattern typical in the Gulf of Maine: beginning off the Maine coastline and advecting south during May.

MWRA carried out an *Alexandrium* survey on May 20, 2009, and will report those data and data from future surveys when they become available. 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

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