

Contingency Plan Report Third Quarter 2006

Ambient Monitoring

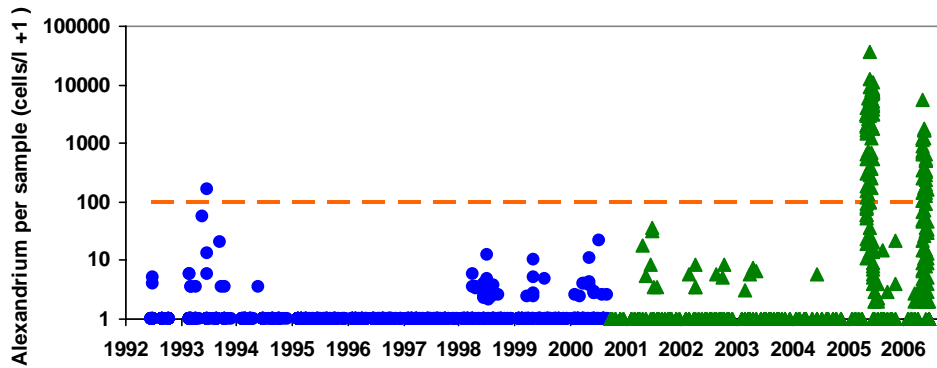
MWRA gathers data from the outfall location in Massachusetts Bay on various thresholds in its Deer Island outfall discharge permit. This report shows relevant ambient monitoring results that became available in the April-June 2006 time period. There was one exceedance of a Contingency Plan threshold, for the nuisance alga *Alexandrium*.

NUISANCE ALGAE – January-June 2006

ALEXANDRIUM

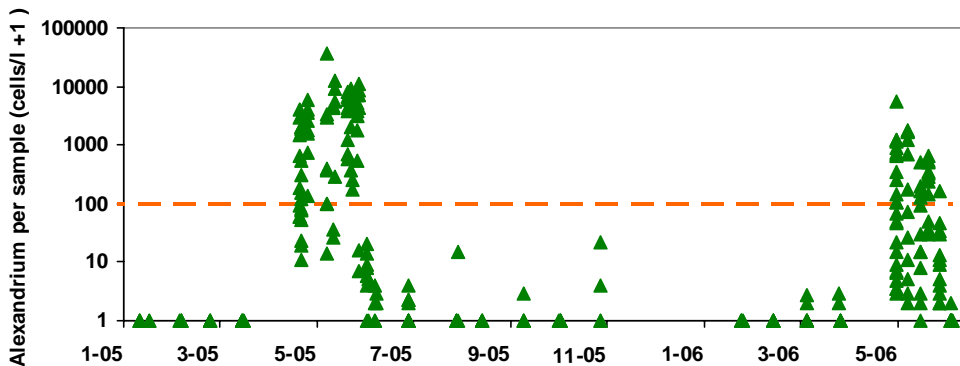
The nuisance algae *Alexandrium* (“red tide”) can cause paralytic shellfish poisoning (PSP) in Massachusetts Bay. MWRA measures *Alexandrium* abundance in its monitoring program, and also checks state fisheries agency observations of shellfish PSP toxicity to keep track of the course of Gulf of Maine *Alexandrium* blooms.

In May, 2006, extended northeasterly storms occurred simultaneously with a bloom of *Alexandrium* that occurs annually along the coast of Maine. Early data, using rapid molecular probe methodologies from a survey on May 17, showed that the single sample abundance of *Alexandrium* in the outfall nearfield exceeded the Caution Level threshold of 100 cells/L, triggering notification under the Contingency Plan. Therefore, MWRA implemented its rapid response *Alexandrium* monitoring plan which comprised four additional surveys in May and June plus specialized *Alexandrium* enumeration methods during two routine surveys. The bloom subsided in Massachusetts Bay by late June. The figure below includes nearfield data available through September 2006, including data from six routine surveys and four special surveys between January and June 2006. (Note logarithmic scale for graph.)



January-June <i>Alexandrium</i> per-sample abundance (cells/liter)	
Caution threshold	100
Winter-spring 2006	5667*

* maximum of samples collected between Jan. 1 and June 30, 2006



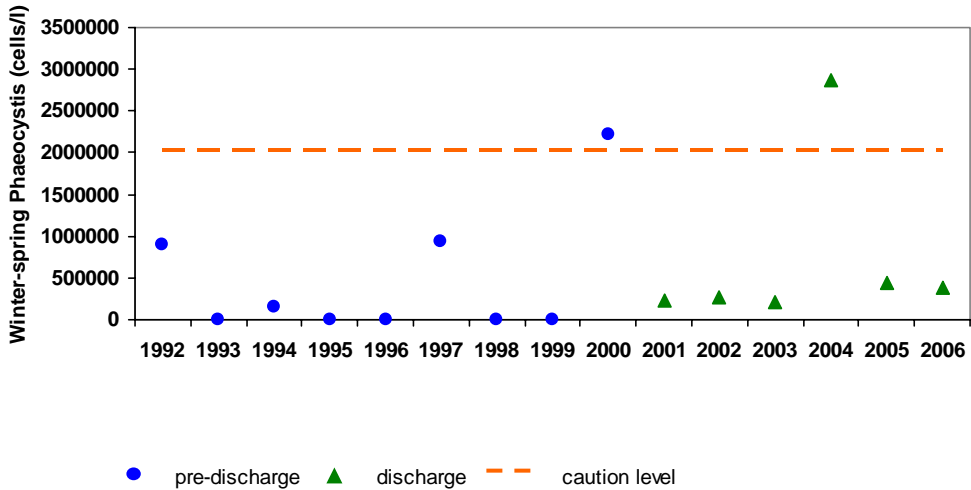
● pre-discharge ▲ discharge - - - caution level

PHAEOCYSTIS and PSEUDONITZSCHIA

Phaeocystis pouchetii was present only at abundances below the threshold, and *Pseudonitzschia* was not observed, in the nearfield in winter/spring 2006. In the figures below, we compare *Phaeocystis* and *Pseudonitzschia* data to the [nuisance algae thresholds](#) for winter/spring 2006 (January through April), which included four surveys.

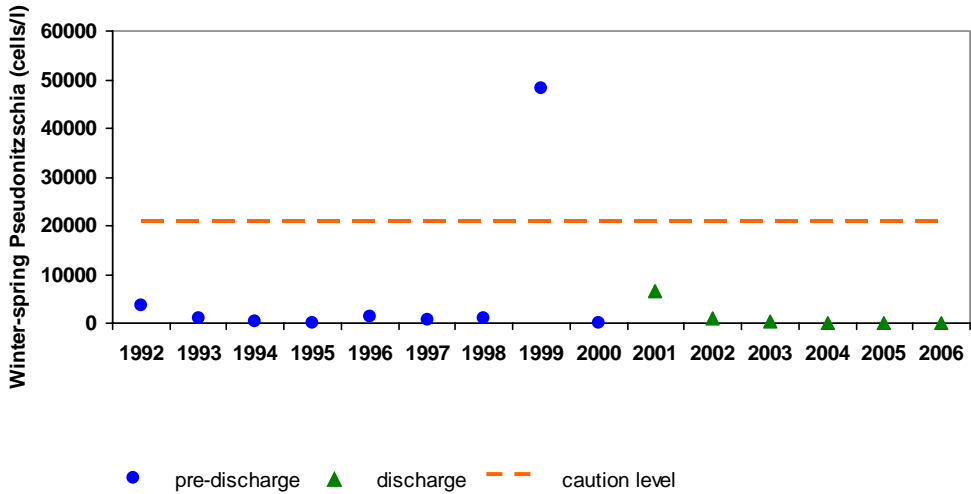
Because of the modest bloom of *Phaeocystis* in the spring, however, the very low summer threshold will be exceeded, as in other recent years.

PHAEOCYSTIS
Winter/spring



Winter/spring <i>Phaeocystis</i> mean abundance (cells/liter)	
Caution threshold	2,020,000
Winter/spring 2006	383,000

PSEUDONITZSCHIA
Winter/spring



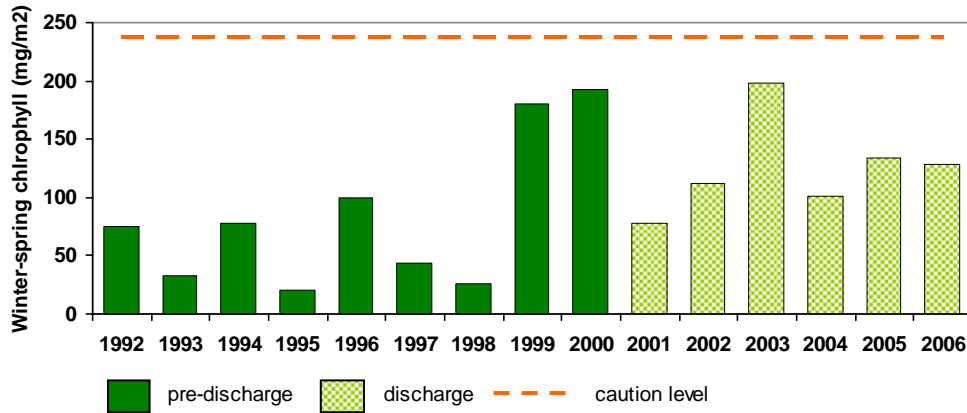
Winter/spring <i>Pseudonitzschia</i> mean abundance (cells/liter)	
Caution threshold	21,000
Winter/spring 2006	0

CHLOROPHYLL – January- April 2006

There were no [chlorophyll threshold](#) exceedances in this period. The nearfield mean area average chlorophyll in winter/spring 2006 was 129 mg/m², below the caution level threshold for winter/spring of 238 mg/m².

The figure compares chlorophyll data for winter/spring 2006 (January-April), which included four surveys, to the corresponding threshold. The graph includes data since the start of the monitoring program in 1992.

Winter/spring

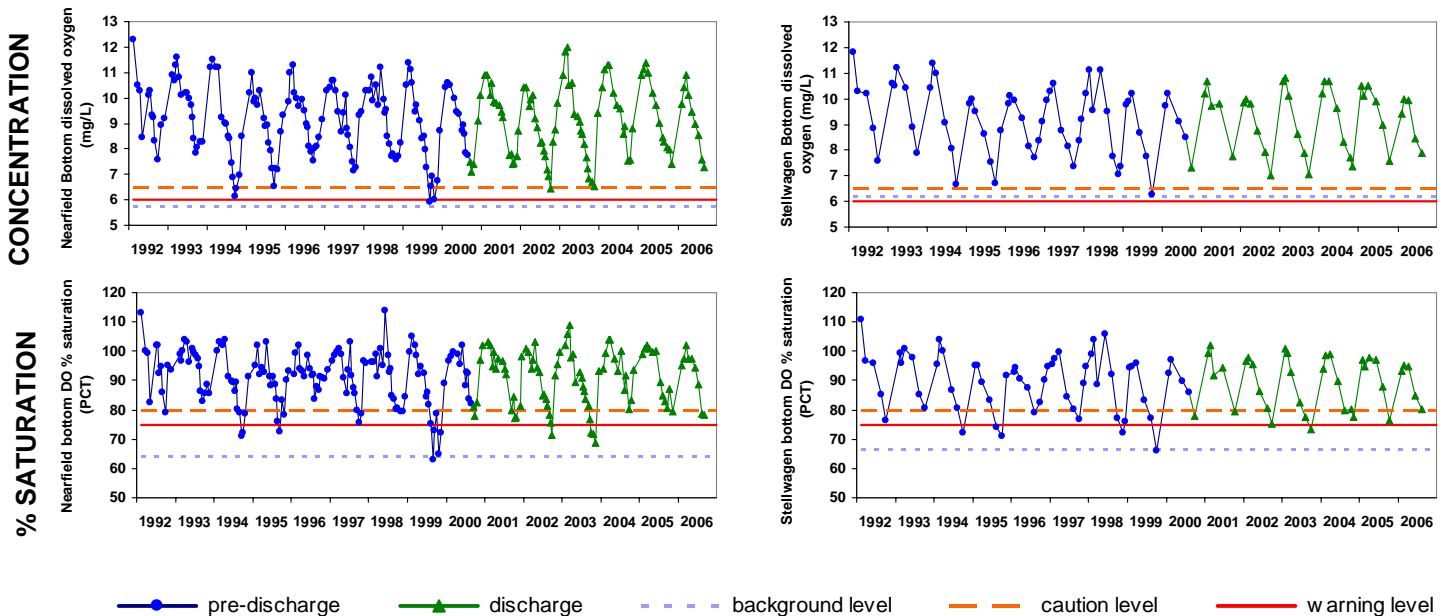


DISSOLVED OXYGEN – June-early September 2006

Measurements of dissolved oxygen (DO) concentration and percent saturation in summer 2006 did not fall below background levels and thus did not exceed thresholds.

NEARFIELD

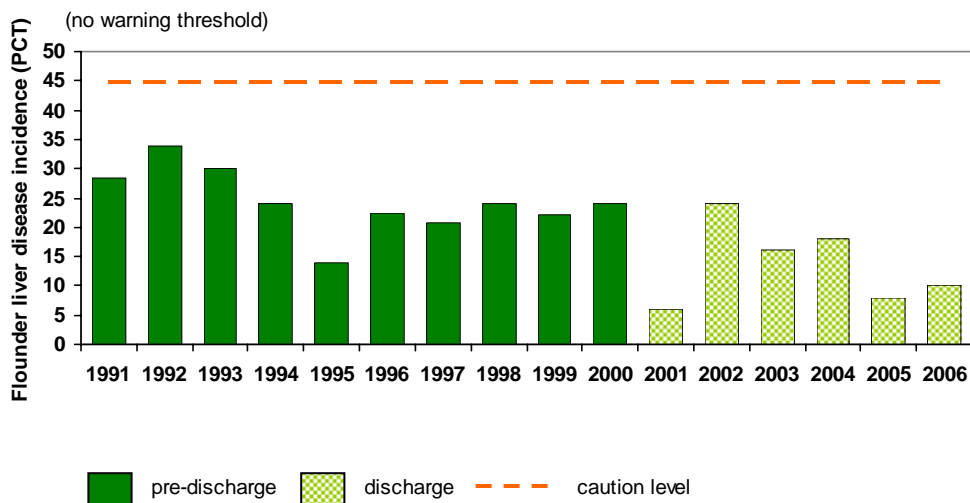
STELLWAGEN BASIN



The current reporting period for [dissolved oxygen thresholds](#) is June-early September 2006. During this period there were two nearfield surveys and two farfield surveys. Oxygen levels were similar to those seen in most baseline years. The graphs above include data since the start of the monitoring program in 1992, and reflect the natural fluctuation of DO and percent saturation, which is typically lowest in early autumn.

FLOUNDER LIVER DISEASE - 2006

The prevalence of liver disease at the outfall site in 2006 was lower than any of the baseline years and did not exceed the threshold. Flounder are sampled annually in April.



One measure of the effects of pollution is the incidence of disease in winter flounder. The flounder liver disease threshold value (dashed line) is based on data from Boston Harbor during the baseline monitoring period (1991-2000). In the harbor, flounder liver disease rates were historically quite high but dropped considerably during the late 1980s. Since Massachusetts Bay monitoring began, prevalence of an early-stage liver disease near the new outfall has been much lower than the threshold. If the prevalence of liver disease at the outfall site were to approach that seen in Boston Harbor in the 1990's, a caution level threshold would be exceeded.