

# Contingency Plan Report

## First and Second Quarters 2006

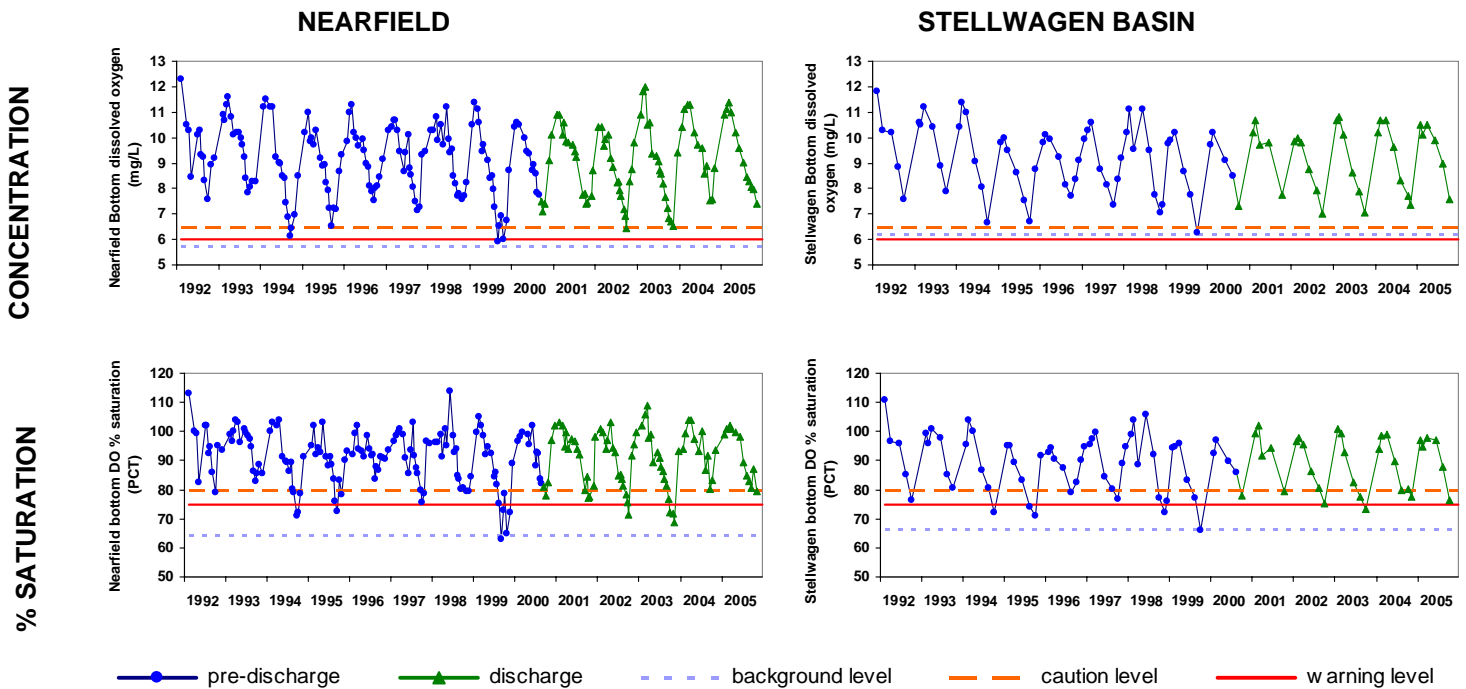
### Ambient Monitoring

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 January-June 2006 time period.

No final relevant ambient monitoring data became available in April-June 2005 thus this report has the same data as last quarter. There were no exceedances of Contingency Plan thresholds during the first quarter; preliminary field data from the second quarter showed one exceedance of a Contingency Plan threshold, for the nuisance alga *Alexandrium* (see <http://www.mwra.state.ma.us/harbor/pdf/20060517amx.pdf>). Processing of the *Alexandrium* data is not complete; they will be reported next quarter.

#### DISSOLVED OXYGEN – September-November 2005

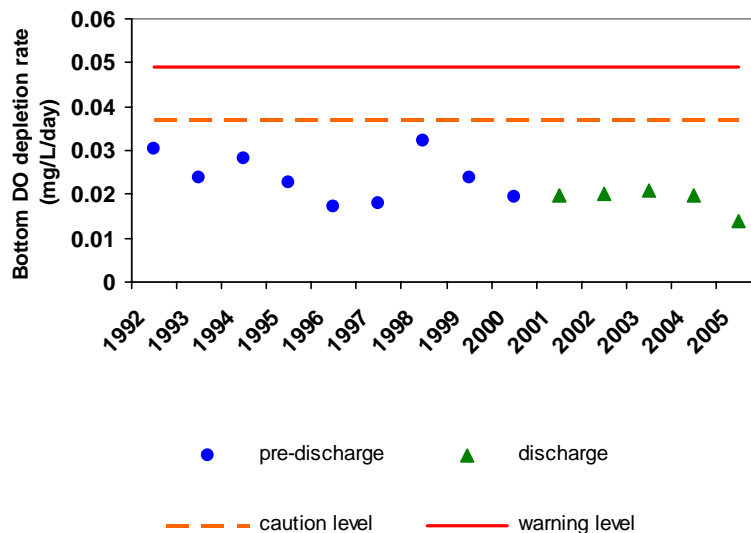
Measurements of dissolved oxygen (DO) concentration and percent saturation in autumn 2005 did not fall below background levels and thus did not exceed thresholds.



The current reporting period for [dissolved oxygen thresholds](#) is September-November 2005. During this period there were three nearfield surveys and one farfield survey. 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.

An additional threshold measure of dissolved oxygen is the rate at which oxygen is depleted during the stratified summer period. The DO depletion rate for the summer of 2005 was low, and did not exceed the threshold.

**DO Depletion Rate – summer 2005**



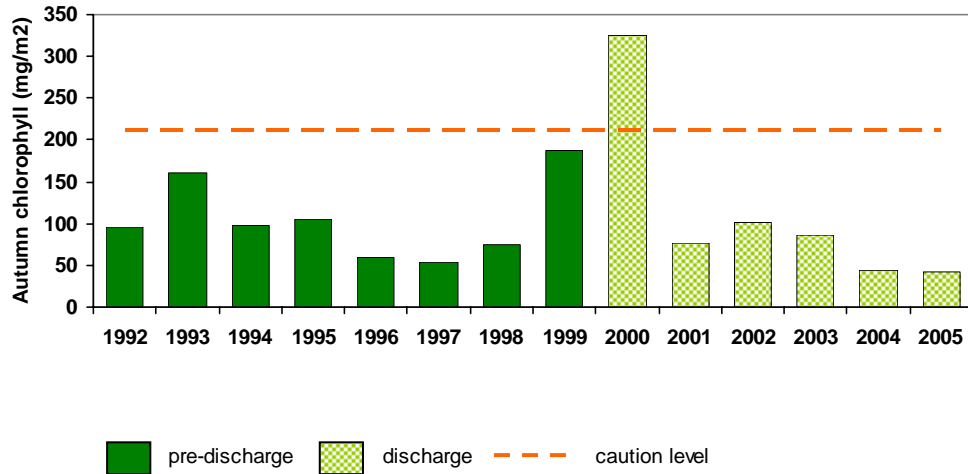
Even if dissolved oxygen concentrations remain healthy, an excessively rapid rate of decrease could signal a future problem. A low rate indicates DO dropped only slowly. The threshold for DO depletion rate is based on a change from the baseline; the caution threshold is a rate faster than 1.5 times the baseline mean rate, while the warning threshold is twice the baseline mean rate.

## CHLOROPHYLL – September-December 2005

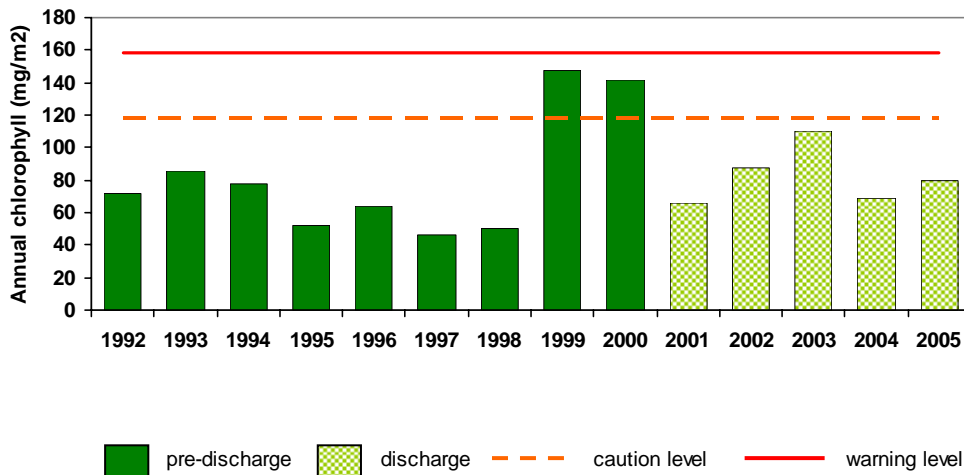
There were no [chlorophyll threshold](#) exceedances in this period. The nearfield mean areal average chlorophyll in autumn 2005 was 43 mg/m<sup>2</sup>, well below the caution level threshold for autumn of 212 mg/m<sup>2</sup>. The 2005 annual average was 79 mg/m<sup>2</sup>, well below the caution and warning thresholds for annual average chlorophyll of 118 and 158 mg/m<sup>2</sup>, respectively and similar to the baseline years 1992-93.

The figures compare chlorophyll data for autumn 2005 (September-November), which included four surveys, and data for all of 2005, to the corresponding thresholds. The graph includes data since the start of the monitoring program in 1992.

### AUTUMN



### ANNUAL



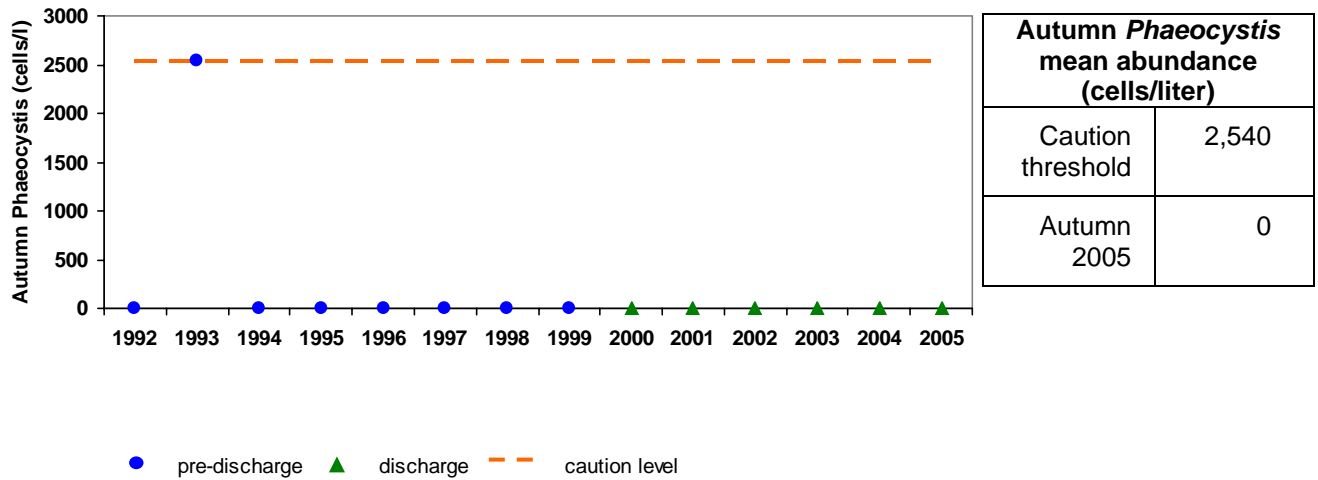
## NUISANCE ALGAE – Autumn 2005

In the figures below, we compare *Phaeocystis* and *Pseudonitzschia* data to the [nuisance algae thresholds](#) for autumn 2005 (September through November), which included four surveys. We also compare *Alexandrium* data to the threshold for each sample in September through November 2005. There were no nuisance algae threshold exceedances.

### PHAEOCYSTIS

*Phaeocystis* was not observed in the nearfield in autumn 2005.

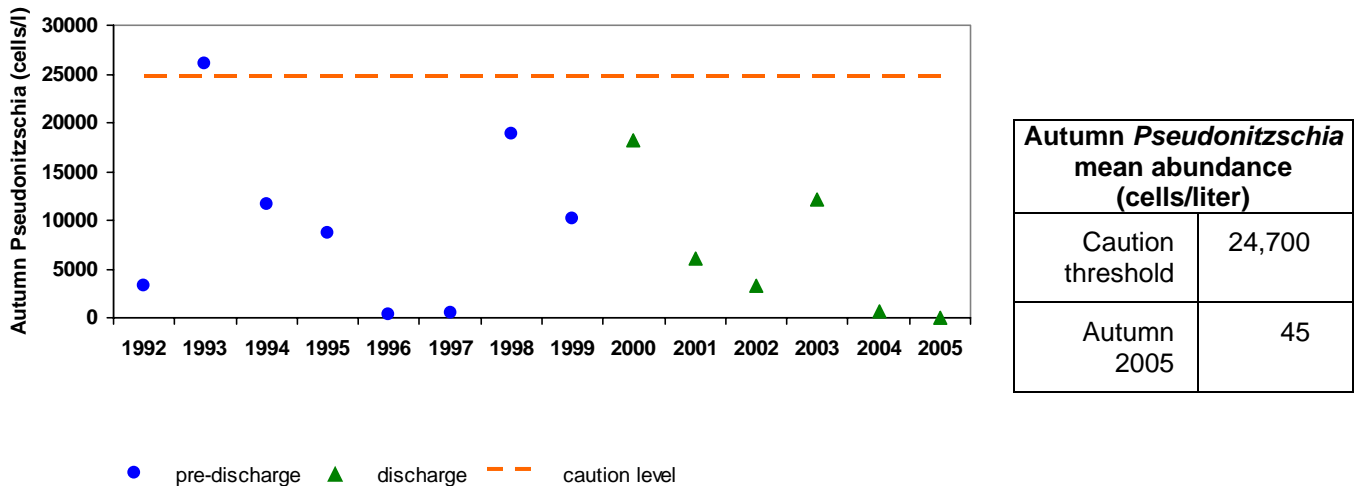
#### Autumn



### PSEUDONITZSCHIA

*Pseudonitzschia* was present only at very low abundances in the nearfield in autumn 2005, well below the threshold.

#### Autumn



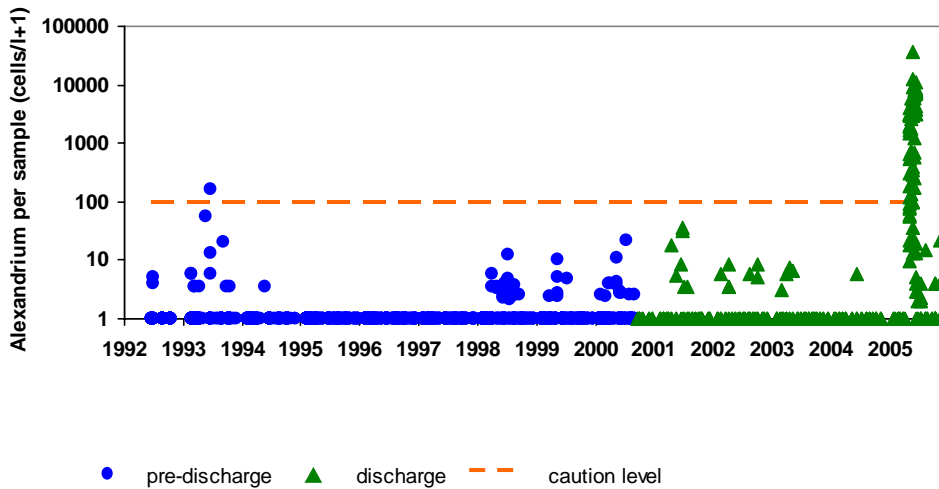
## ALEXANDRIUM

Data from the spring 2006 bloom of *Alexandrium* will be reported next quarter.

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.

During the months covered by this quarter's report, (September through November) *Alexandrium* cells (*Alexandrium fundyense*) were observed in some samples, but none exceeded the threshold value.

In late spring and early autumn 2005 there was an unusually robust *Alexandrium* bloom throughout the southern Gulf of Maine including Massachusetts Bay. The bloom subsided in Massachusetts Bay in early July. The figure below includes nearfield data from routine surveys through autumn 2005, plus seven special surveys between May and July 2005. The second figure shows the course of the 2005 bloom. (Note logarithmic scale for graphs.)



| Autumn <i>Alexandrium</i> per-sample abundance (cells/liter) |     |
|--|-----|
| Caution threshold  | 100 |
| Autumn 2005  | 20* |

\* maximum of all samples collected between September 1, 2005 and December 31, 2005

