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Contingency Plan Report
Third Quarter 2009

Ambient Monitoring

MWRA gathers data from the outfall location in Massachusetts Bay on various thresholds in its Deer Island outfall discharge permit. This contingency plan quarterly report shows relevant ambient monitoring results that became available in the July-September 2009 time period. There are updated data relevant to the exceedance of a Contingency Plan threshold, for the nuisance alga *Alexandrium*, for which partial results were reported last quarter.

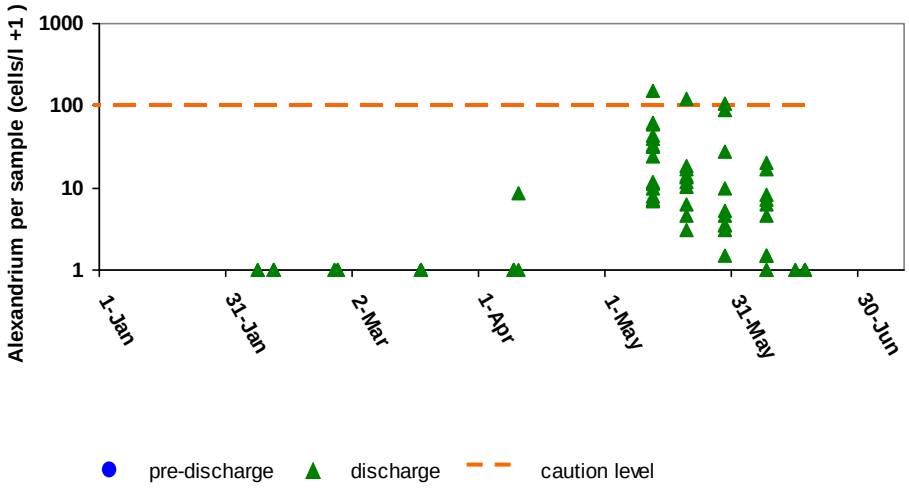
NUISANCE ALGAE – January-June 2009 - updated results for *Alexandrium*

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 2009 there was an *Alexandrium* bloom along the coast of Maine, New Hampshire, and Massachusetts. Early data, using rapid molecular DNA probe methodologies from a routine survey on May 12, 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 (see http://www.mwra.state.ma.us/harbor/pdf/20090518_amx.pdf). By June 2009, the bloom had subsided in Massachusetts Bay.

The figure below includes nearfield data available through September 2009, including data from routine surveys through June 2009, and from special rapid DNA probe samples taken from one of the routine surveys and from three special targeted surveys in May and June 2009. (Note logarithmic scale for graph.)

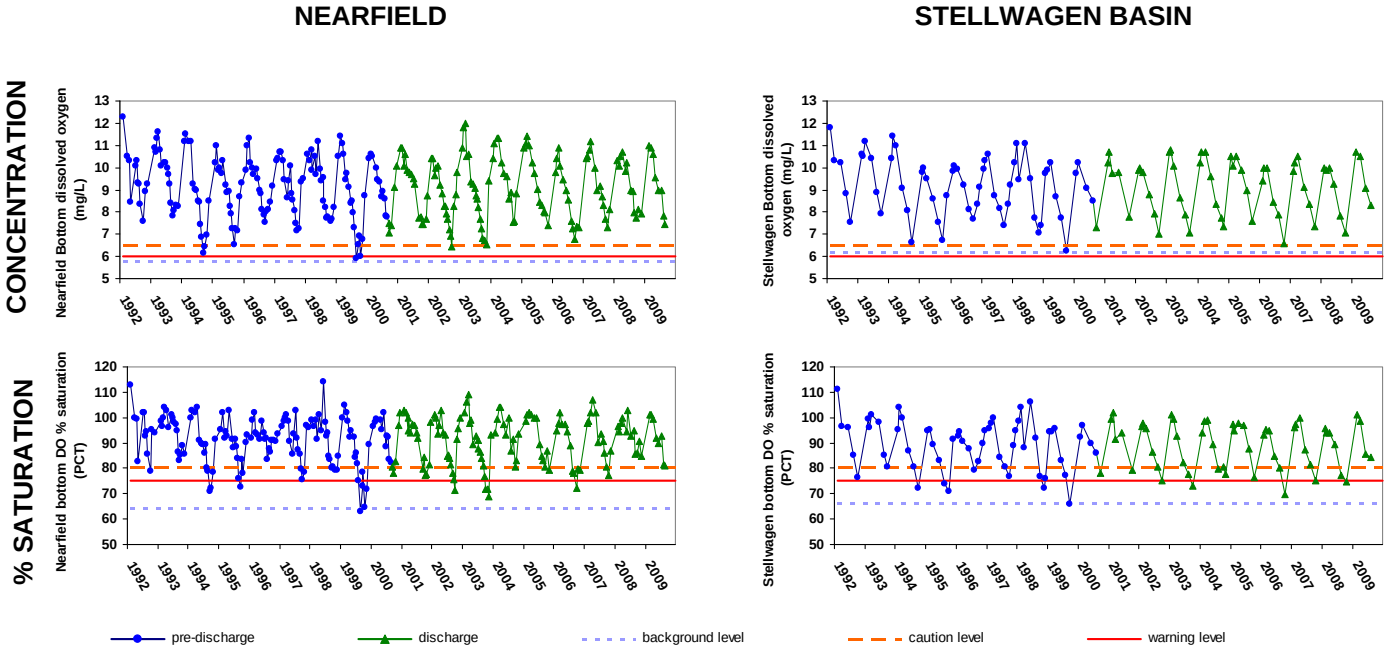


January-June results for *Alexandrium* per-sample abundance (cells/liter)	
Caution threshold	100
Winter-early summer 2009	150*

* maximum of DNA probe samples collected between January 1, 2009 and June 30, 2009

DISSOLVED OXYGEN – July- early September 2009

Measurements of dissolved oxygen (DO) concentration and percent saturation in July through early September 2009 did not fall below background levels and thus did not exceed thresholds.



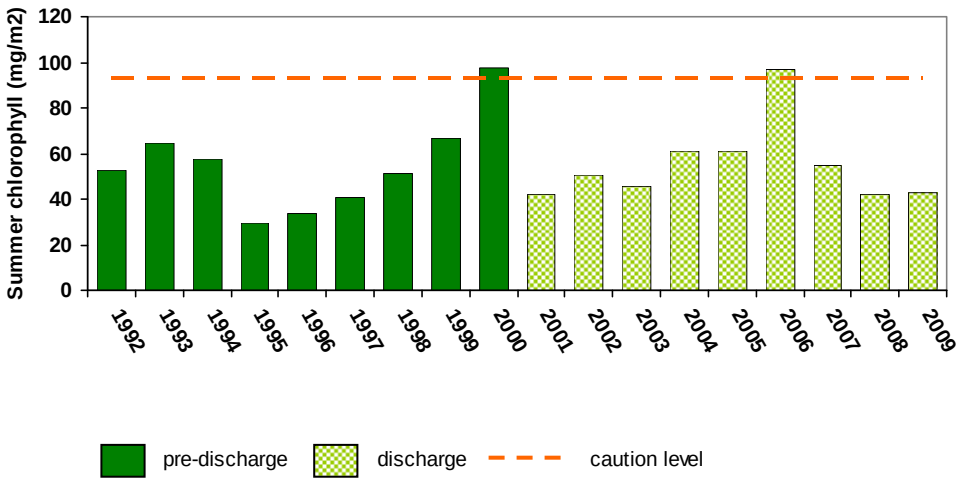
The current reporting period for dissolved oxygen thresholds is July-early September 2009. During this period there were four nearfield surveys and two farfield surveys. Oxygen levels were similar to those seen in most baseline years. The graphs above include data since the start of the monitoring program in 1992, and reflect the natural fluctuation of DO and percent saturation, which is typically lowest in early autumn.

CHLOROPHYLL – May-August 2009

There were no chlorophyll threshold exceedances in this period. The nearfield mean areal average chlorophyll in summer 2009 (May-August) was 43 mg/m^2, well below the caution level threshold for summer of 93 mg/m^2 and in the range typical of the pre-discharge period.

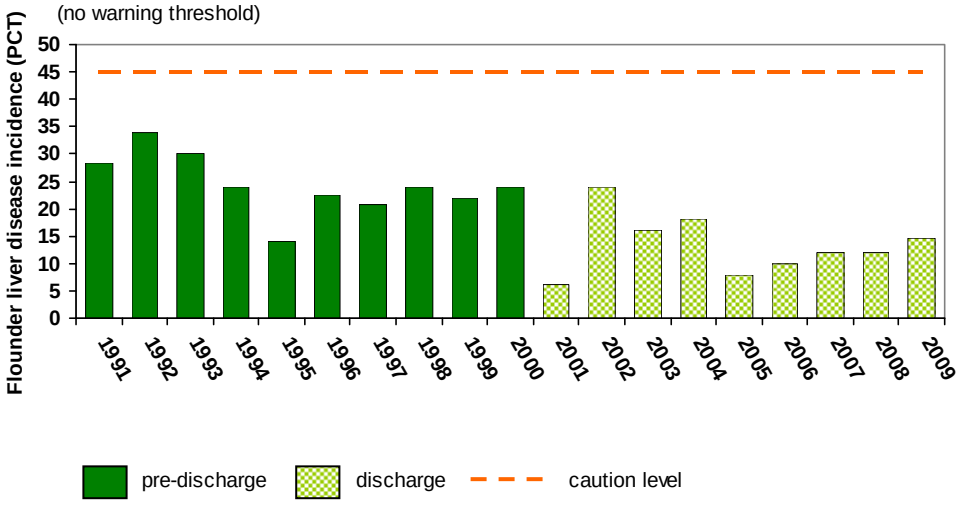
The figure compares chlorophyll data for summer 2009 (May-August), which included four surveys, to the corresponding threshold. The graph includes data since the start of the monitoring program in 1992.

Summer



FLOUNDER LIVER DISEASE - 2009

The prevalence of liver disease at the outfall site in 2009 was 15%, lower than all but one 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 prevalence of liver 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.