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Contingency Plan Report
First Quarter 2011

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-March 2011 time period. There were two contingency plan threshold exceedances for sediment biodiversity.

SEDIMENT BIODIVERSITY - 2010

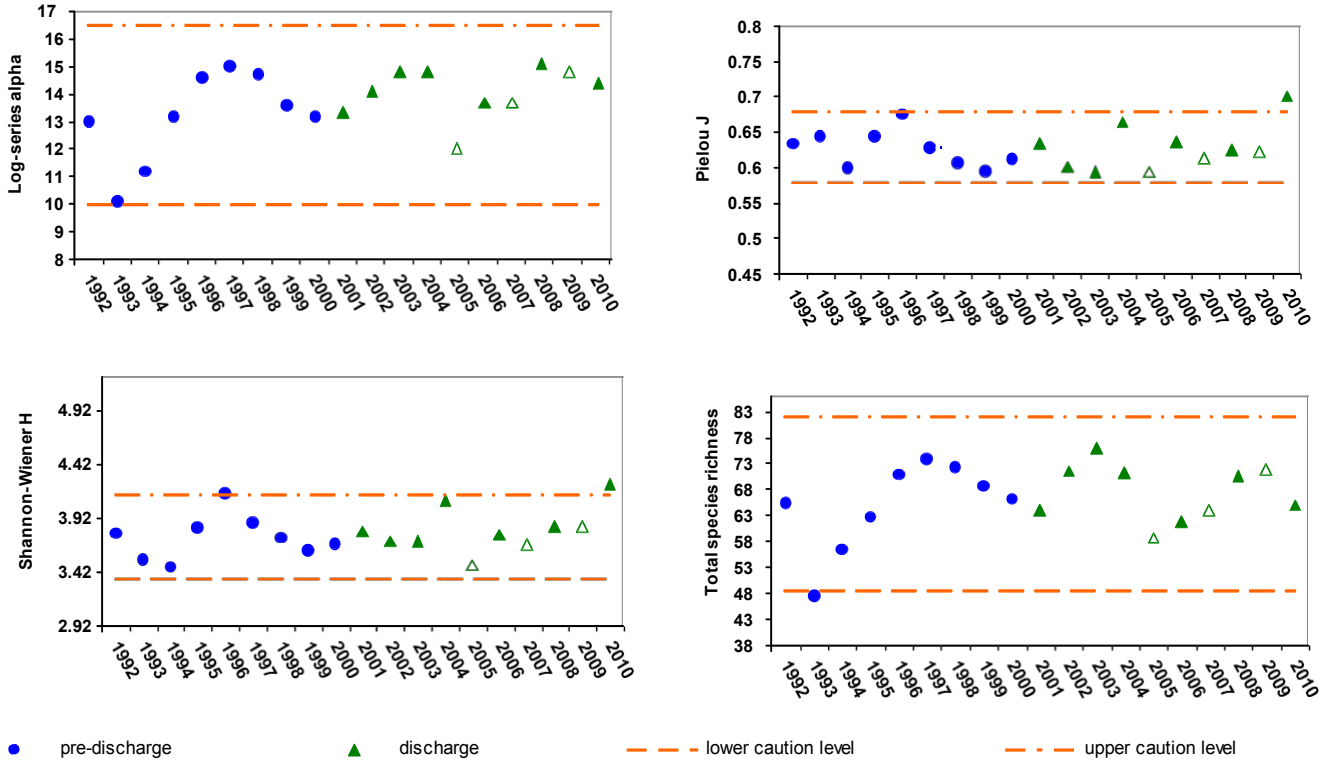
DIVERSITY

The annual survey of sediment-dwelling communities in 2010 showed that the benthic diversity exceeded benthic diversity thresholds.

Calculations of diversity in the bottom-dwelling community in the August 2010 monitoring data showed two values above an upper diversity threshold, triggering notification under the Contingency Plan (see http://www.mwra.state.ma.us/harbor/pdf/20110107amx_diversity.pdf.) MWRA samples the animals that live in the mud near the outfall every summer and measures the numbers and kinds of animals living there. These measurements are used in four indicators of biodiversity. In 2010, two of those four measures were slightly higher than the upper diversity threshold (there are upper and lower thresholds corresponding to the 97.5th percentile and 2.5th percentile of the baseline mean. That is, the community was more diverse than in baseline, before the outfall came on-line.

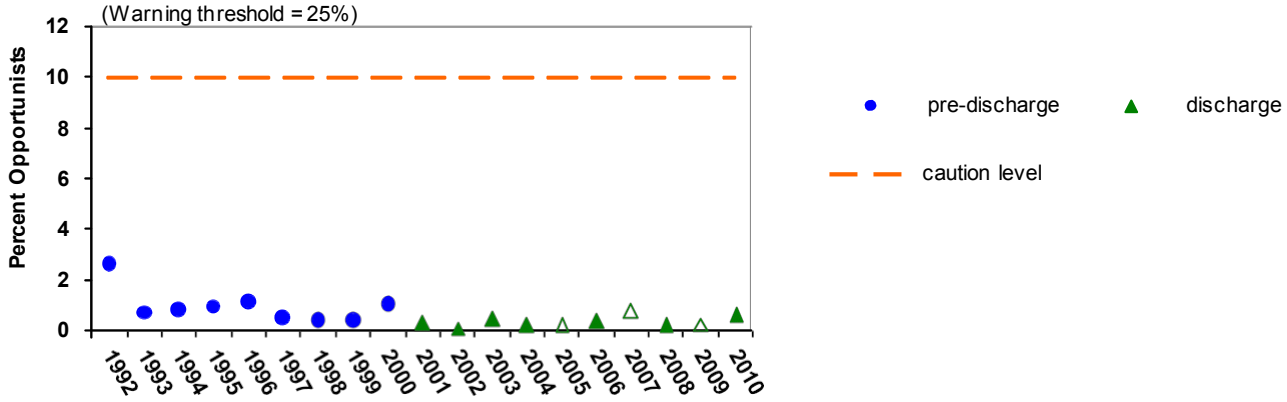
Other measures of the sediment animal community health including the other two diversity indices, sediment oxygenation, sediment quality, and the abundance of animals, showed no indication that excessive sediment enrichment was occurring, or that there has been a decline in sediment community health. The number of opportunistic animals remains extremely low. Therefore, all indications so far are that the increased diversity is a normal fluctuation of the sediment animal population.

For each diversity measure, the graphs show the annual average for sediment samples collected within seven kilometers of the outfall discharge since 1992. Data for 2005, 2007, and 2009 are shown in a different symbol because a different set of stations was sampled in those years.



OPPORTUNISTS

The annual sampling in 2010 showed that the numbers of opportunistic benthic organisms remain normal at the outfall site and did not exceed the caution threshold of 10% of the total population.



Data for 2005, 2007, and 2009 are shown in a different symbol because a different set of stations was sampled in those years.

NUISANCE ALGAE – AUTUMN 2010

In the figures below, we compare *Phaeocystis* and *Pseudonitzschia* data to the nuisance algae thresholds for autumn 2010 (September through December), which included three surveys[1]. We also compare *Alexandrium* data to the threshold for each sample in September through November 2010.

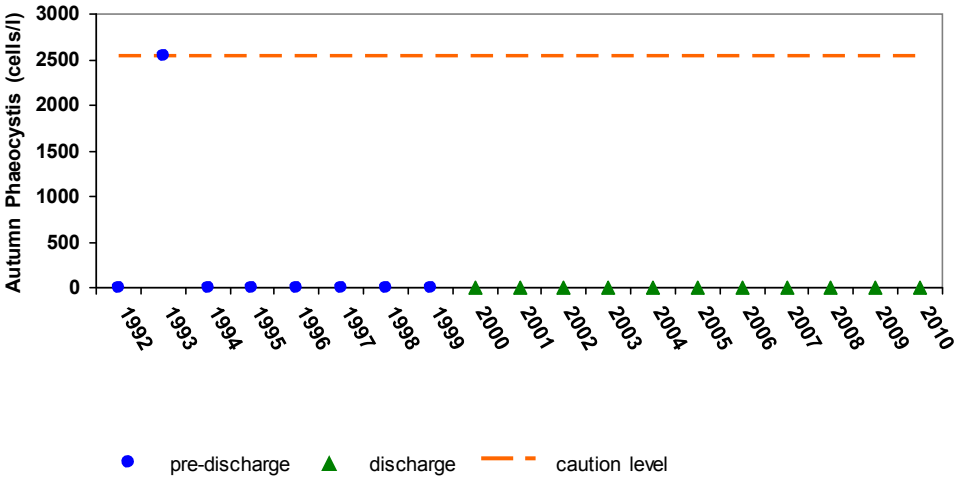
There were no threshold exceedances for *Phaeocystis*, *Pseudonitzschia*, or *Alexandrium.*

PHAEOCYSTIS and *PSEUDONITZSCHIA*

Phaeocystis pouchetii was not observed in the nearfield in autumn 2010. *Pseudonitzschia* was observed only at very low levels.

PHAEOCYSTIS

Phaeocystis was not observed in the nearfield in autumn 2010

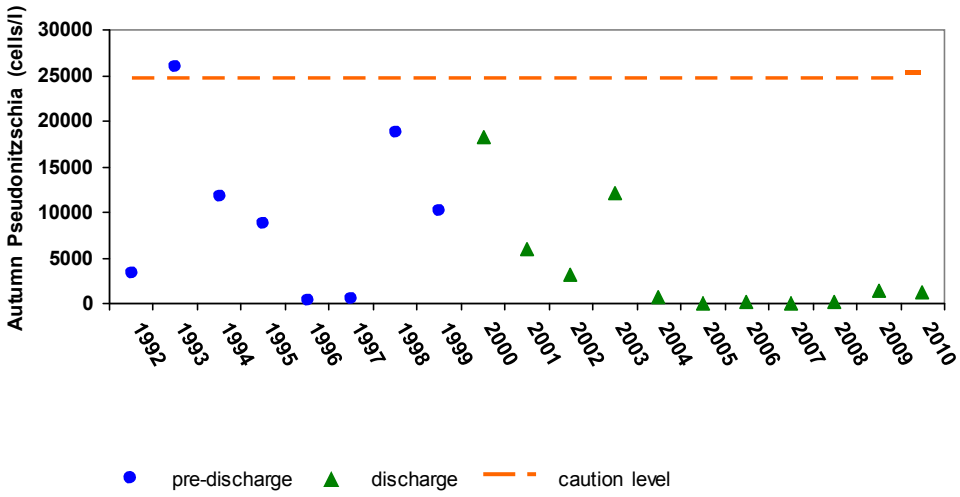


Autumn *Phaeocystis* mean abundance (cells/liter)	
Caution threshold	2,540
Autumn 2010	0

[1] Note that the survey that usually takes place in very early September, took place at the end of August this year and thus is included in the summer time period.

PSEUDONITZSCHIA

Pseudonitzschia was observed at very low levels in the nearfield in autumn 2010.



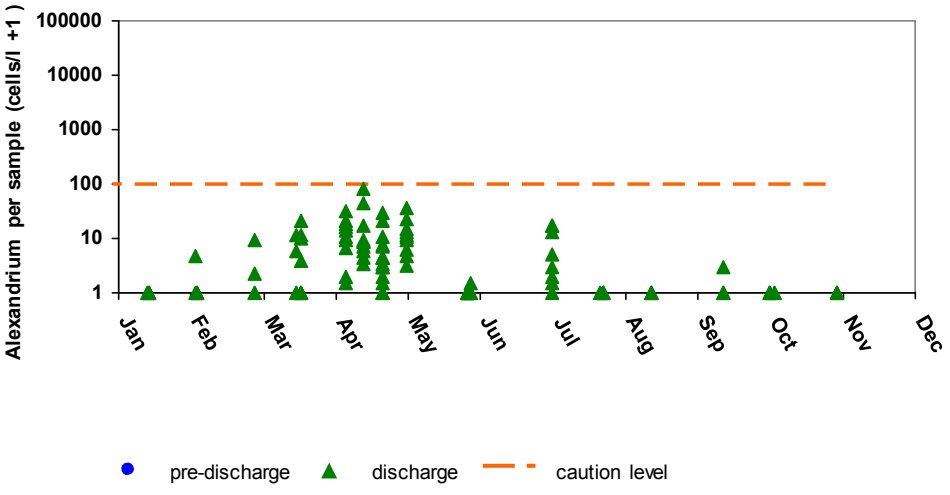
Autumn *Pseudonitzschia* mean abundance (cells/liter)	
Caution threshold	24,700
Autumn 2010	1,160

ALEXANDRIUM

Alexandrium was observed in one nearfield sample in autumn 2010, at low abundance well below the threshold.

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 2010 there was an *Alexandrium* bloom along the coast of Maine, New Hampshire, and Massachusetts. However, unlike many recent years, the single sample abundance of *Alexandrium* in the outfall nearfield did not exceed the Caution Level threshold of 100 cells/L. By early July 2010, the bloom had subsided in Massachusetts Bay. Rapid analysis results through July 2010 were reported in previous quarterly reports; this report includes additional results for late summer. The figure below includes results for each 2010 sample available through March 2011. (Note logarithmic scale for graph.)



Autumn *Alexandrium* per-sample abundance (cells/liter)	
Caution threshold	100
Autumn 2010	2*

* maximum of all samples collected between September 1, 2010 and December 31, 2010