

Contingency Plan Quarterly Report on Ambient Monitoring Results First Quarter 2019

MWRA gathers data near the outfall discharge location in Massachusetts Bay on various thresholds in the [Contingency Plan](#) required by its Deer Island Treatment Plant (DITP) NPDES discharge permit. This report shows ambient monitoring results for Contingency Plan thresholds that became available in January through March 2019. None of these new results exceed Contingency Plan thresholds. Included in this report are results for lobster and mussel tissue chemistry, and sediment biodiversity.

Previous Contingency Plan reports are available at:

<http://www.mwra.state.ma.us/harbor/html/archive.htm#cpq>.

FISH AND SHELLFISH TISSUE CHEMISTRY

Contaminants are measured in the edible tissue of three species of seafood: flounder, lobster, and mussels. The fish tissue contamination thresholds are designed to identify unexpected effects on marine life. For mercury and PCBs in flounder, lobster, and mussels, caution and warning thresholds are set at 50% and 80% of the FDA action limits. The threshold for lead in mussels is based on EPA risk assessment of lead in drinking water. Other fish/shellfish tissue contamination thresholds are based on change from baseline conditions at the outfall site.

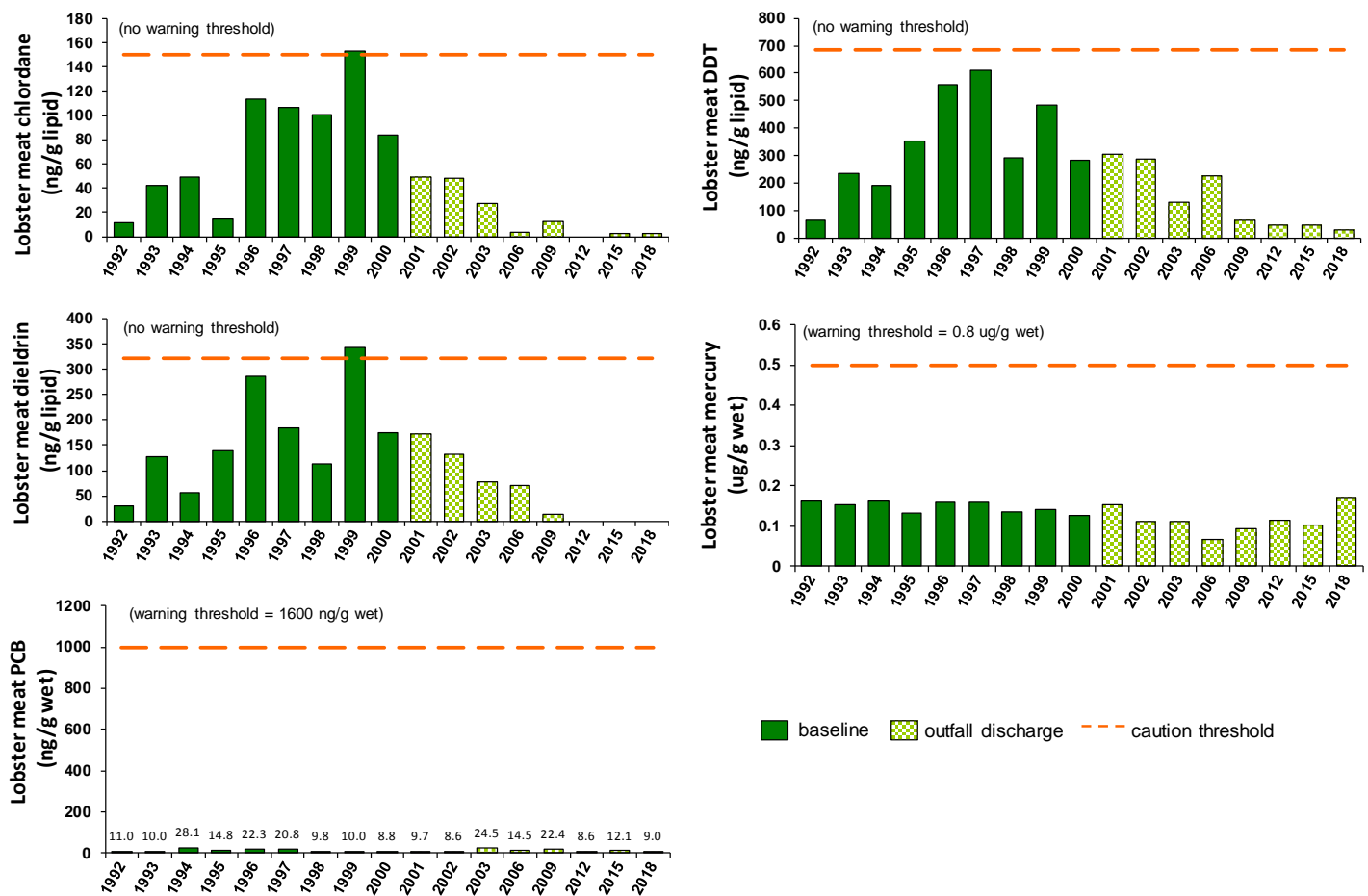
Data available this quarter include tissue contamination in lobster and mussels from the outfall site. Tissue chemistry results for flounder were reported last quarter.

Lobsters were collected from traps near the outfall site in mid-July. Mussels were retrieved in late August after a 62-day deployment in cage arrays at the outfall site.

There were no exceedances of lobster or mussel tissue contamination thresholds in 2018.

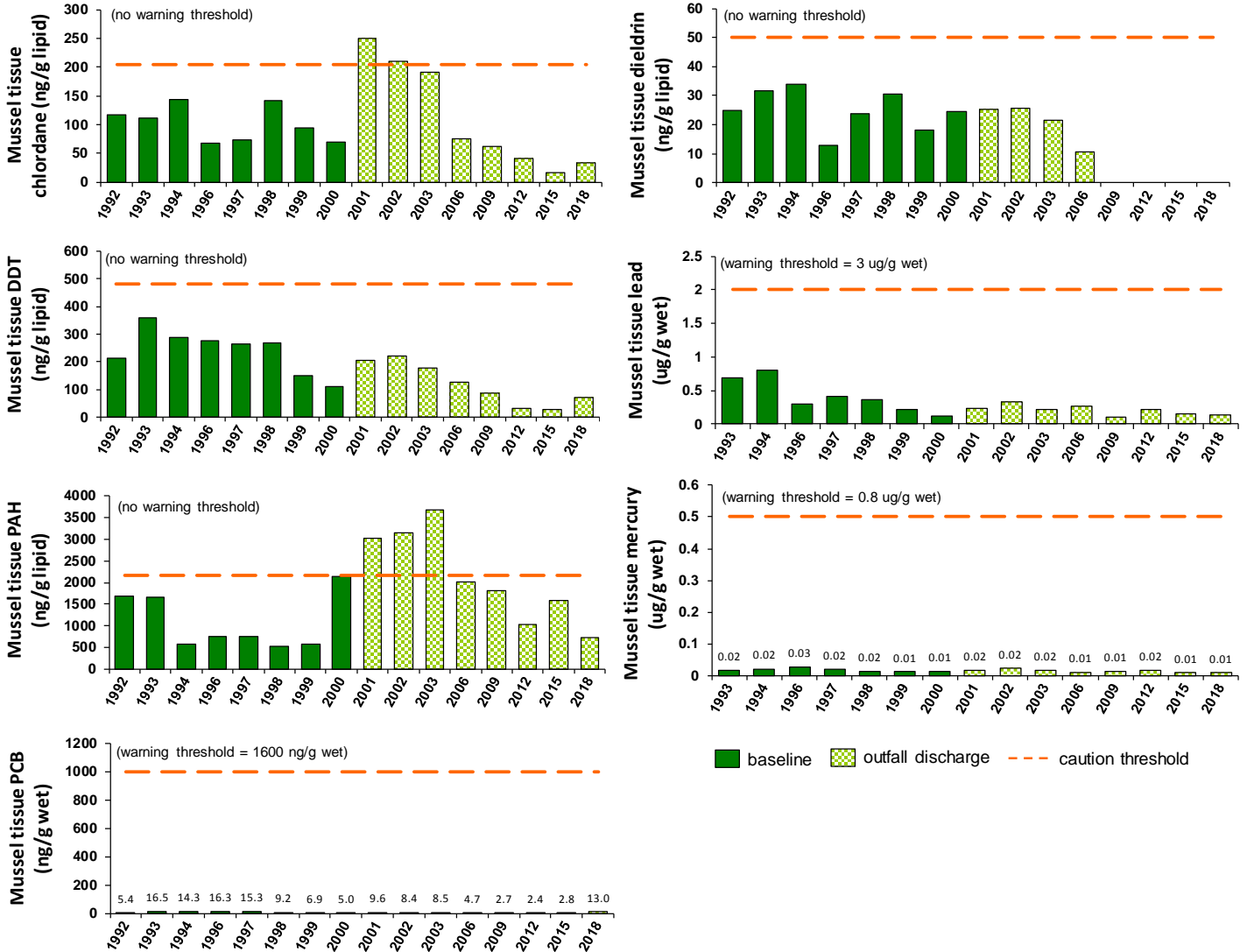
LOBSTER

Contaminant mean concentrations reported for 2018 are from three composites of lobster meat (seven lobsters for each composite). Lobster meat PCB contamination remained low and similar to other years. DDTs were lower in 2018 than measured in all previous years. Chlordane was lower than all years except for 2012 and 2015. Lobster meat mercury concentrations in 2018 were higher than in recent years, but still well below threshold levels and comparable to concentrations measured in 1992, 1994, and 2001. Mean concentrations of all other contaminants remain low and well below threshold levels. Dieldrin was not detected in lobster meat in 2018 as was the case for 2012 and 2015.



MUSSELS

Contaminant mean concentrations for mussels are reported from analysis of 8 composites of mussel soft tissue (25 mussels in each composite). In 2018, concentrations of all contaminants reported remain very low and well below threshold levels. Mussel mercury and lead concentrations remained low and similar to other years. Chlordane and DDT concentrations in 2018 were among the lowest measured. Dieldrin was not detected, as has been the case since 2009. Mussel PAHs were lower than all other discharge years.



SEDIMENT BIODIVERSITY

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 to calculate four indicators of biodiversity. In 2018, these indicate that, in vicinity of the outfall, the ability of the sediment and habitat to support diverse populations of infauna remains high and within the bounds of Contingency Plan thresholds. An additional indicator of habitat quality is the proportion of opportunistic animals, which predominate in degraded sediments. For 2018 this index remained low.

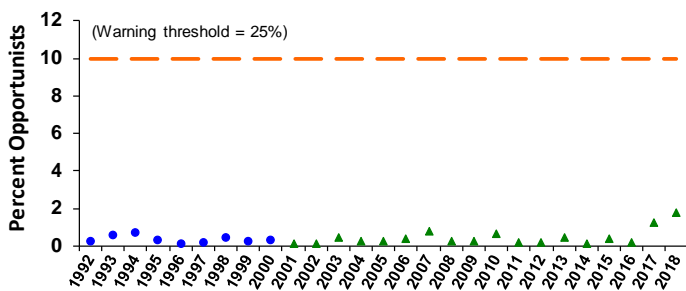
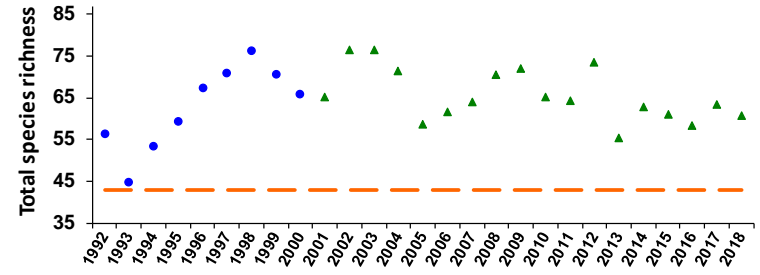
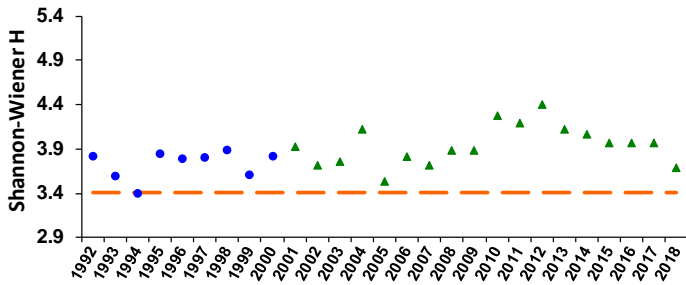
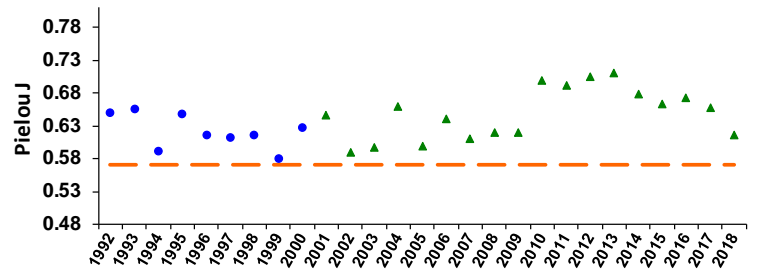
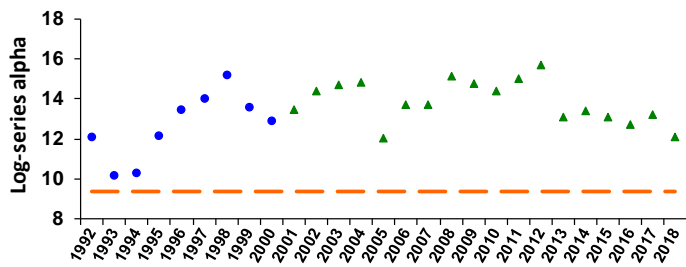
DIVERSITY

For each [diversity measure](#), the graphs show the annual average for sediment samples collected within seven kilometers of the outfall discharge since 1992. The results shown for 1992-2003 and 2011-2018 are from the current eleven monitoring stations (which are a subset of the stations sampled 1992-2003), reflecting the modified design that began in 2011. Data from 2004 through 2010 are the averages for the odd- or even-year stations sampled then, as not all of the 11 nearfield stations currently occupied were sampled in those years. This enables us to better compare the threshold results across years to values corresponding to the 2.5th percentile of the baseline mean.

The threshold levels varied slightly through the monitoring period because of the differing station sets. For simplicity, only the current thresholds are shown. In 2018, all diversity measures were well within the ranges observed during previous years.

OPPORTUNISTS

The annual sampling in 2018 showed that the proportion of [opportunistic benthic organisms](#) (1.8 %) is slightly higher than previous years at the outfall site. As last year, this small increase was due to the continued high abundance of one opportunistic worm in one of 11 samples (the spionid polychaete *Polydora cornuta*) was almost 8% of the total abundance at station FF12 in Broad Sound near Nahant) and does not indicate degraded conditions in the vicinity of the outfall. The average percent opportunists remained far below the caution threshold of 10% of the total population.



● baseline ▲ outfall discharge - - - caution threshold