

Effects of Downpour and Massive Sewage Overflows Captured by Continuous Monitor at Fort McHenry

On March 10th, 2011, the Baltimore City Department of Public Works reported six major sewage overflows (Figure 1) totaling nearly 4.7 million gallons. This total surpasses all the spills reported by Baltimore City over the previous two years combined (3.8 million gallons). The largest of the spills on March 10th occurred at 401 E. Eager Street and dumped over 4.4 millions gallons of untreated, diluted wastewater into the Jones Falls. Heavy rains which overwhelmed the sanitary lines were the most likely causes of these events. More than 2.6 inches of rain were reported at BWI Marshall Airport on March 10th, with some locations around Baltimore City receiving over 3 inches. Full details of these overflows can be found through the [Maryland Department of the Environment Reported Sewer Overflow Database](#) and the [Baltimore City Department of Public Works website](#).

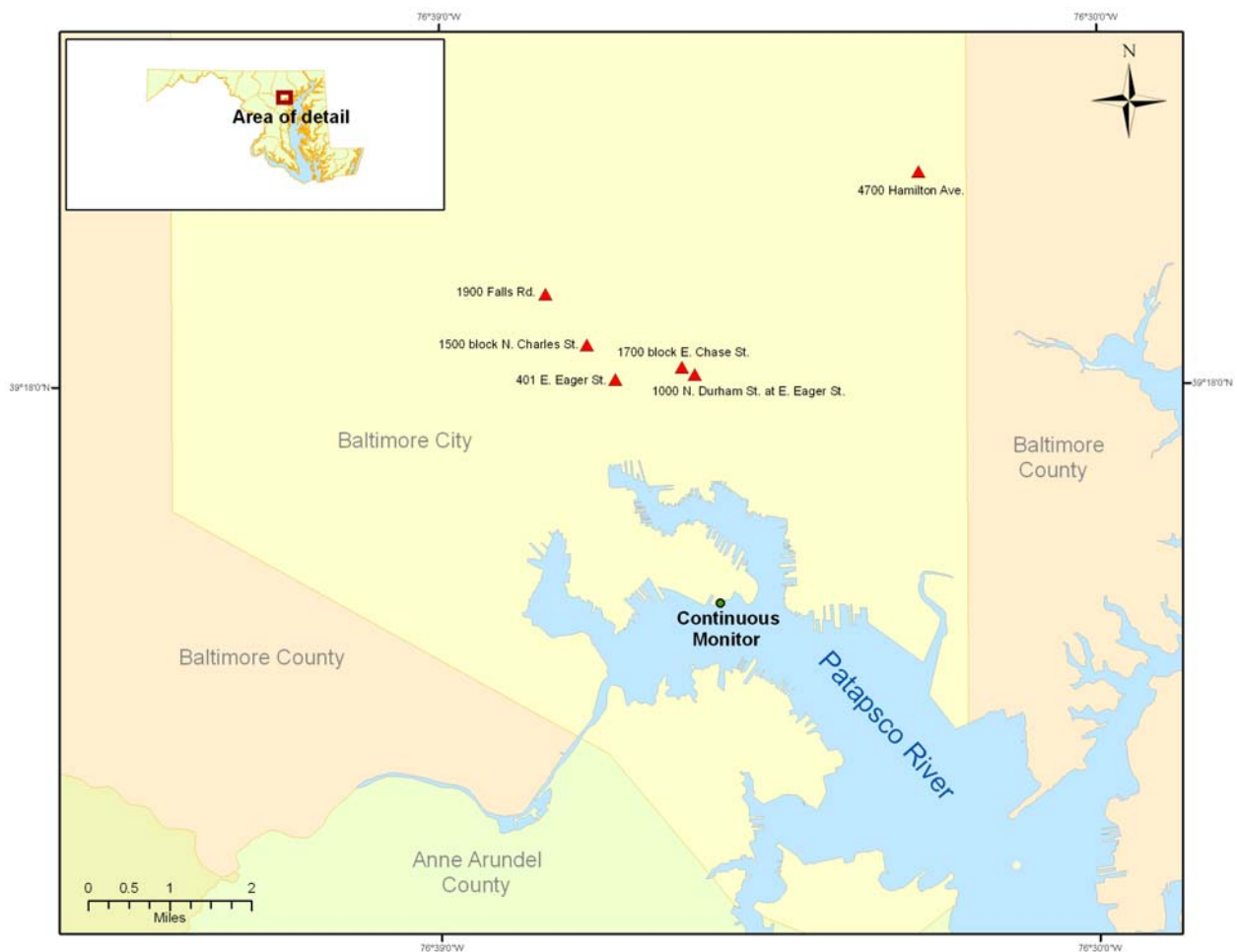


Figure 1. Map of the Patapsco River showing the location of the six reported sanitary sewer overflows on March 10th, and Maryland DNR's Continuous Monitor at Fort McHenry.

The Jones Falls empties into the Patapsco River near the Baltimore Inner Harbor. The river then flows past the communities of Curtis Bay, Dundalk, and Orchard Beach, before reaching the Chesapeake Bay at Fort Smallwood Park. For the twelfth consecutive year, Maryland DNR is maintaining a Continuous Monitoring site on the Patapsco River at Fort McHenry (Figure 1). The Continuous Monitoring Program consists of a series of sites throughout Maryland's tidal waters, which collect water quality readings every 15 minutes around the clock during the spring and summer. Data collected include water temperature, dissolved oxygen, salinity, turbidity (water clarity), and chlorophyll levels.

Observations from Fort McHenry show an influx of freshwater as salinity levels dropped from approximately 5 parts per thousand (ppt) to 1.8 ppt between March 10th and 11th (Figure 2a). Turbidity readings, which measure how cloudy or clear the water is, also spiked during this time (Figure 2b), indicating the influx of water brought high concentrations of particles and sediment that clouded the water.

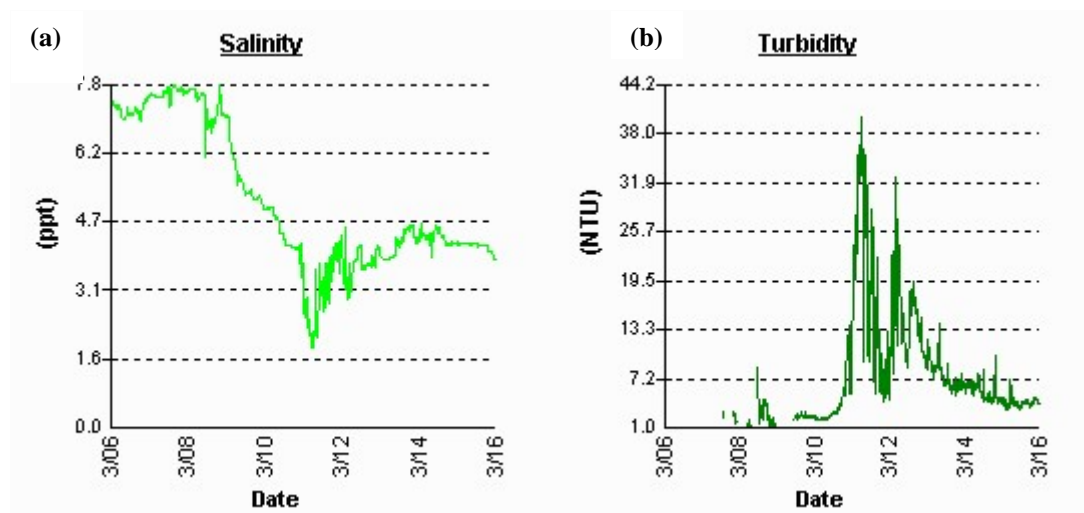


Figure 2. Salinity (a) and turbidity levels (b) recorded between March 6th and March 16th, 2011 at the Maryland DNR Continuous Monitoring site at Fort McHenry on the Patapsco River.

The graphs in Figure 2 indicate that the initial effects of the March 10th downpour and sanitary sewer spills into the Patapsco were short-lived. However, longer-term effects may not be readily apparent. Excessive nutrients, particularly nitrogen and phosphorus, flow into waterways with sewer overflows and have the potential to fuel algae blooms. These blooms can cloud the water for long periods of time and can depress the growth of underwater vegetation and decrease the health of fish by increasing stress levels and decreasing their ability to extract oxygen from the water. The death and decomposition of large algae blooms can also reduce oxygen levels in waterways to the point where fish and other aquatic animals cannot survive in affected areas. Thus, Maryland DNR will continue to actively monitor and report on the condition of the Patapsco River and the Chesapeake Bay. For the most recent Water Quality data for waterways throughout Maryland, please visit www.eyesonthebay.net.