Effects of Hurricane Sandy and Sanitary Sewer Overflow Captured by DNR Continuous Monitoring Stations in Mattawoman Creek

On October 29th and 30th, 2012, Hurricane Sandy impacted the mid-Atlantic region as almost 5-inches of rain fell in the Washington-Metropolitan area. Due to these heavy rains overwhelming sanitary lines, a sanitary sewer overflow occurred October 30th near the Mattawoman Wastewater Treatment Plant in LaPlata, MD (Figure 1). Approximately 100,000 gallons of untreated, diluted sewage spilled into Mattawoman Creek, a tributary of the Potomac River. Full details of this overflow can be found through the Maryland Department of the Environment Reported Sewer Overflow Database and the Charles County Government website.

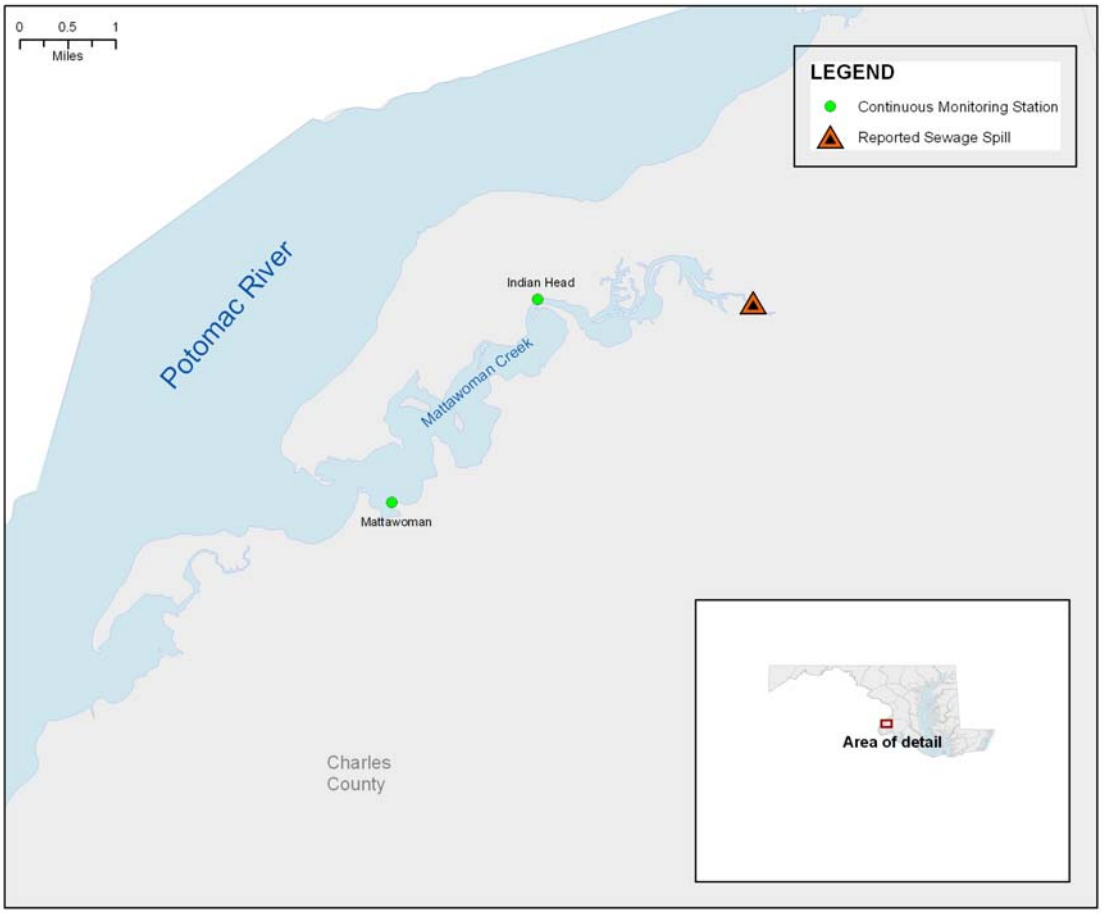

Figure 1. Map of Mattawoman Creek showing the location of the reported sanitary sewer overflow on October 30th, and Maryland DNR's Continuous Monitoring stations off of Mattingly Avenue Park (Indian Head) and off of Smallwood State Park (Mattawoman).

Since 2004, Maryland DNR has maintained a continuous monitoring station in Mattawoman Creek at Smallwood State Park (Figure 1). The Continuous Monitoring Program consists of a series of sites throughout Maryland's tidal waters that collect water quality readings every 15 minutes around the clock during the spring and summer, with a few sites deployed year-round. Data collected include water temperature, dissolved oxygen, salinity, turbidity (water clarity), and chlorophyll levels. Starting in 2009, DNR added a second Continuous Monitor in Mattawoman Creek at Mattingly Avenue Park (Figure 1).

Measurements collected at these two stations show that turbidity readings spiked to high levels during the hurricane and overflow (Figure 2). Turbidity, which is recorded in Nephelometric Turbidity Units (NTU), is a measure of the cloudiness or clarity of the water. High values indicate cloudy water while lower values indicate clearer water. Turbidity values over a threshold of 15 NTU are generally considered to be detrimental to bay grass growth and values at Smallwood State Park (Mattawoman) and Mattingly Avenue Park (Indian Head) spiked to over 400 NTU and 60 NTU, respectively. These measurements indicate that the influx of water associated with Hurricane Sandy and related sanitary sewer overflow carried high concentrations of particles and sediment that clouded the water.

Smallwood State Park (Mattawoman). **Mattingly Avenue Park (Indian Head).**

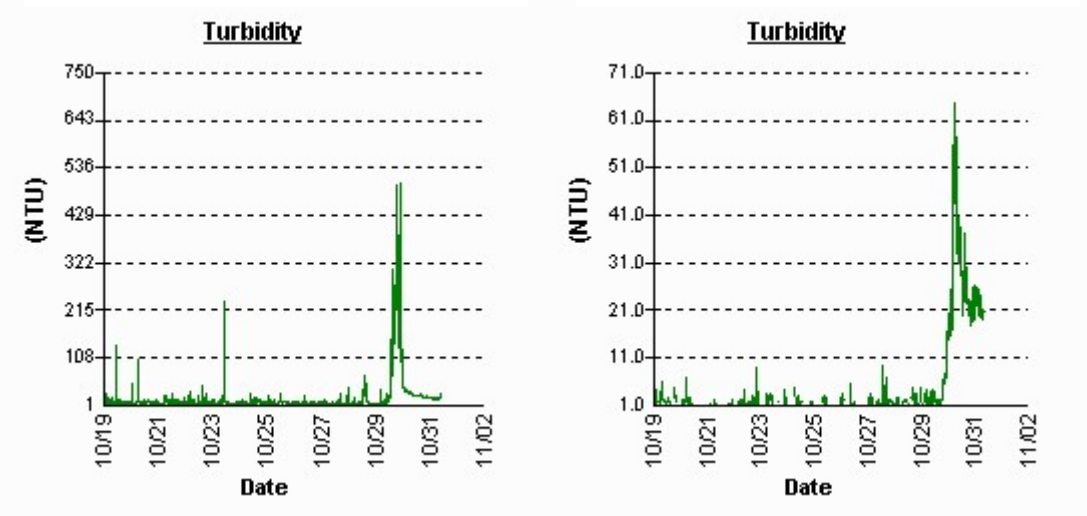

Figure 2. Turbidity levels recorded between October 19th and October 31st, 2012 at the Maryland DNR Continuous Monitoring stations in Mattawoman Creek.
Note: Both stations were removed for the winter season on October 31st.

The turbidity graphs in Figure 2 indicate that the initial effects of Hurricane Sandy and the associated sanitary sewer overflow into Mattawoman Creek were short-lived. However, longer-term effects may not be readily apparent. Excessive nutrients, particularly nitrogen and phosphorus, flow into waterways with storm runoff and sewer overflows and have the potential to fuel algal 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 algal blooms can also reduce oxygen levels in waterways to the point where fish and other aquatic animals cannot survive. Thus, starting again in spring 2013, Maryland DNR will continue to actively monitor and report on the condition of Mattawoman Creek and the Chesapeake Bay.

For the most recent Water Quality data for waterways throughout Maryland, please visit DNR's "Eyes on the Bay" website (www.eyesonthebay.net). You can also follow "Eyes on the Bay" on your mobile device (http://bit.ly/eotbmobile), Facebook, (Eyes on the Bay), and receive water quality alerts via Twitter (http://bit.ly/eotbalerts).