

Heavy Rain and Massive Sewage Overflows Impact Baltimore Region and the Patapsco River *(Updated September 2014)*

On August 12th, 2014, a major storm impacted the Baltimore-Metropolitan area as over 6-inches of rain fell at BWI Marshall Airport, with some areas in the region receiving up to 10-inches (Figure 1). Due to heavy rains overwhelming sanitary lines, three major sanitary sewer overflows (Figure 2) impacting the Patapsco River and associated tributaries were reported by the Baltimore City Department of Public Works on [August 15th](#). The largest of these spills occurred at the Patapsco Wastewater Treatment Plant in Fairfield and dumped approximately three million gallons of untreated, diluted wastewater into the Patapsco River. A second sewage overflow occurred less than a half mile away and spilled approximately 170,300 gallons into the river. The last of these spills occurred at 1901 Falls Road and discharged 23,050 gallons into the Jones Falls. On [August 22nd](#), the Department of Public Works reported that an additional nine million gallons of untreated, diluted sewage was spilled at three additional locations: Eager Street at Durham Street, the 1700 block of E. Chase Street, and the 2100 Block of Wicomico Street. Full details of these overflows can be found through the [Baltimore City Department of Public Works website](#).

Maryland: 8/13/2014 1-Day Observed Precipitation
Valid at 8/13/2014 1200 UTC- Created 8/15/14 23:32 UTC

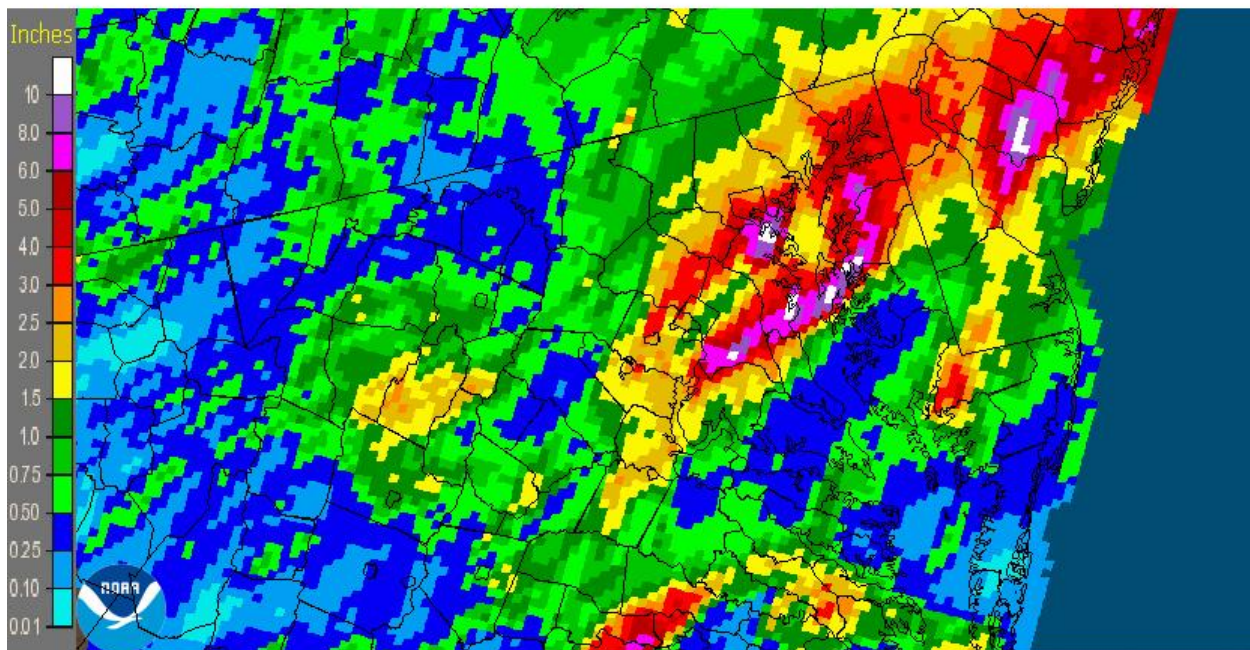


Figure 1. National Weather Service map of 1-day observed precipitation on August 12th in Maryland. (<http://water.weather.gov/precip/index.php>)



Figure 2. Map of the Patapsco River showing the location of six reported sanitary sewer overflows on August 12th, and Maryland DNR's Continuous Monitor at Masonville Cove.

For the sixth consecutive year, Maryland DNR is maintaining a Continuous Monitoring site on the Patapsco River at Masonville Cove in the Brooklyn/Curtis Bay area (Figure 2). 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 (a measure of water clarity), and chlorophyll levels.

Direct effects from two of the sanitary sewer overflows on August 12th that occurred at the Patapsco Wastewater Treatment Plant and a nearby pumping station are probably not evident in the Masonville water quality data because they occurred downstream of the cove. The Jones Falls, however, empties into the Patapsco River near the Baltimore Inner Harbor, upstream from Masonville Cove. Gwynns Falls, which was impacted by the spill on Wicomico Street, empties into the middle branch of the Patapsco, which is also upstream of the cove. The Patapsco River then flows past the communities of Curtis Bay, Dundalk, and Orchard Beach, before reaching the

Chesapeake Bay at Fort Smallwood Park. Therefore, discharge from the Jones Falls and Gwynns Falls spills, as well as storm runoff from the land, may have impacted Masonville Cove.

Data collected from Masonville Cove do show an influx of freshwater on the afternoon of August 12th as salinity levels dropped from almost 6.5 parts per thousand (ppt) to less than 0.5 ppt in twelve hours (Figure 3a). During this same time period, turbidity readings, which measure how cloudy or clear the water is, increased 50-fold (Figure 3b), and a Secchi disk reading taken by DNR field personnel on August 13th measured underwater visibility at less than 0.1m. These high turbidity levels and low Secchi reading indicate water discharged into the river brought high concentrations of particles and sediment that clouded the water.

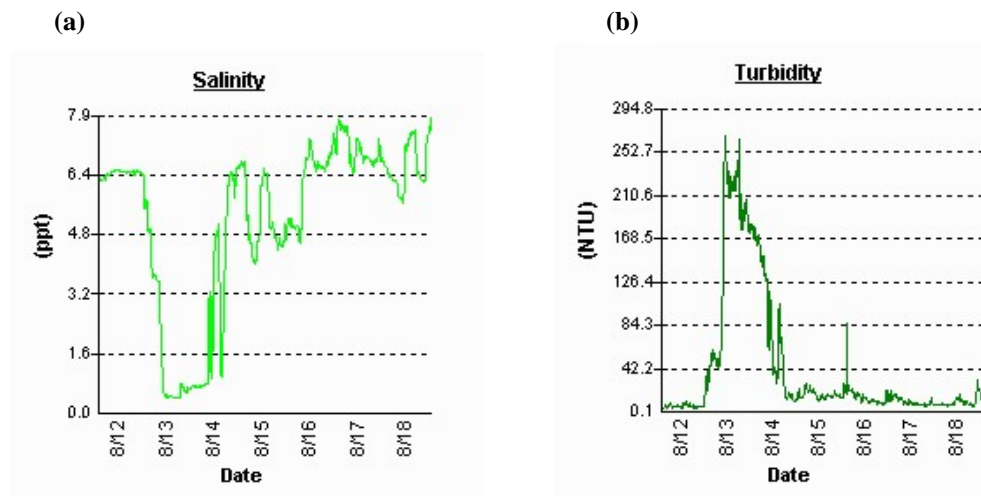


Figure 3. Salinity (a) and turbidity (b) levels recorded between August 12th and August 18th, 2014 at the Maryland DNR Continuous Monitoring site at Masonville Cove on the Patapsco River.

The salinity and turbidity graphs in Figure 3 indicate that the initial effects of the August 12th storm and sanitary sewer overflows 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 storm runoff and sewer overflows and have the potential to fuel algal blooms. Indeed, chlorophyll levels at Masonville Cove have increased and repeatedly spiked following the storm (Figure 4). Very large algal 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 in affected areas. Thus, Maryland DNR will continue to actively monitor and report on the condition of the Patapsco River and the Chesapeake Bay.

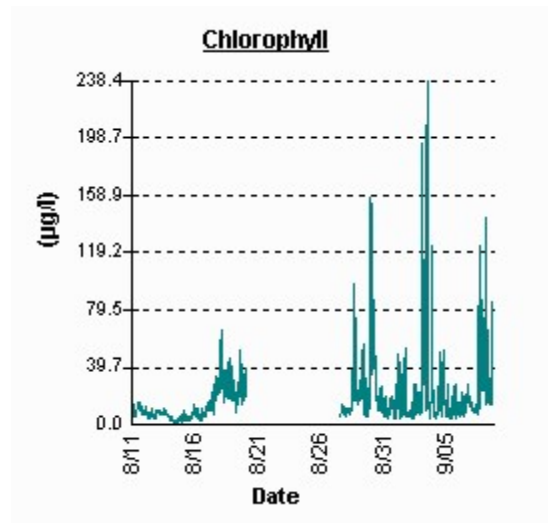


Figure 4. Chlorophyll levels recorded between August 12th and September 8th, 2014 at the Maryland DNR Continuous Monitoring site at Masonville Cove on the Patapsco River.

For the most recent Water Quality data for waterways throughout Maryland, please visit DNR’s [“Eyes on the Bay”](#) website. You can also follow “Eyes on the Bay” on your [mobile device](#), [Facebook](#), (Eyes on the Bay), and [Twitter](#).