

U.S. Geological Survey (USGS) Maryland-Delaware-District of Columbia Monthly Water Conditions Summary

July 2013 – Record high monthly mean streamflows in Queen Anne’s County, Maryland. More than 80 percent of groundwater levels and 100 percent of streamflow levels were normal or above normal in the Maryland-Delaware-District of Columbia region.

Why is it important for the USGS to collect and analyze water-resources data?

USGS water data are valuable to the public, researchers, water managers, planners, and agricultural users, especially during floods and droughts. These data can be used to assess how water resources respond to changes in climate. Scientists at the USGS have measured streamflow and groundwater levels in wells to assess water resources for over 125 years.

In addition to providing the most extensive set of historical streamflow and groundwater data available to the public, the USGS collects water data and quality-assures the data by employing standardized techniques across the country. The uniformity of the dataset allows for multi-state comparisons and other comparative statistical analyses that better inform policy makers of the possible water resources conditions they might encounter in the future.

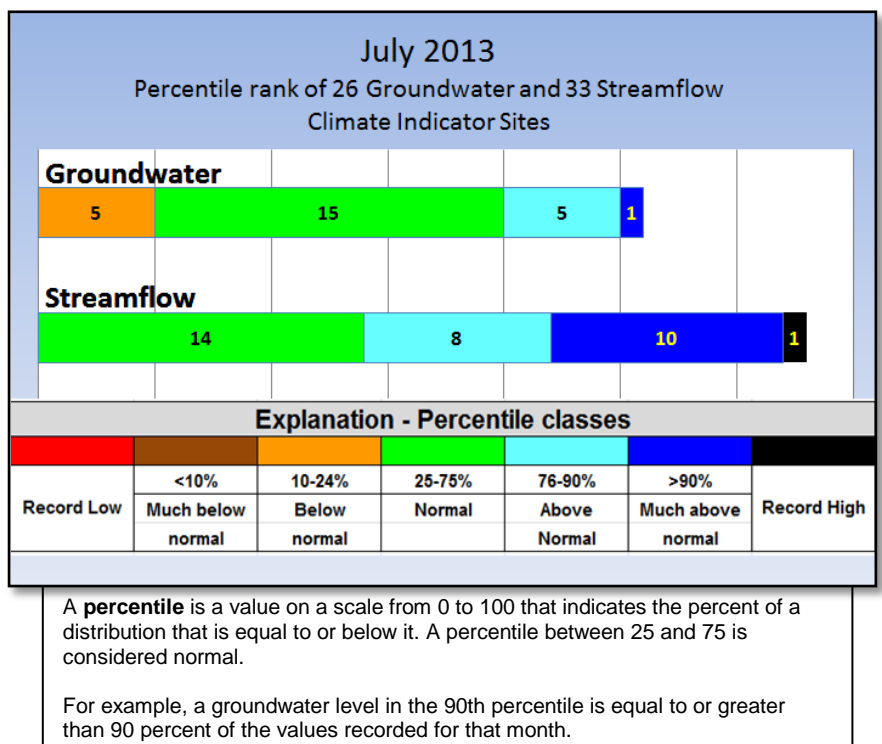
The sites used in this water summary were carefully selected to show the response of streamflow and groundwater levels to weather conditions. Ideally, these sites will show no effects from human influences. The streamflow and groundwater data are ranked in comparison to the historical record and summarized. Precipitation and reservoir data are also presented to give a more complete picture of the region’s water resources.

USGS July 2013 Water Conditions Summary

For the second consecutive month, rainfall at the weather station in Georgetown, Delaware was above the long-term average, causing nearby groundwater and streamflow levels to be high.

Sallie Harris Creek in Queen Anne’s County, Maryland set a record high July monthly mean streamflow and the groundwater level in the USGS Wicomico County, Maryland observation well remains high.

Over 80 percent of the monthly groundwater levels and 100 percent of the monthly mean streamflows at sites used to monitor the response of water resources to changes in climatic conditions in Maryland, Delaware, and the District of Columbia were in the normal to above normal range (above the 25th percentile).



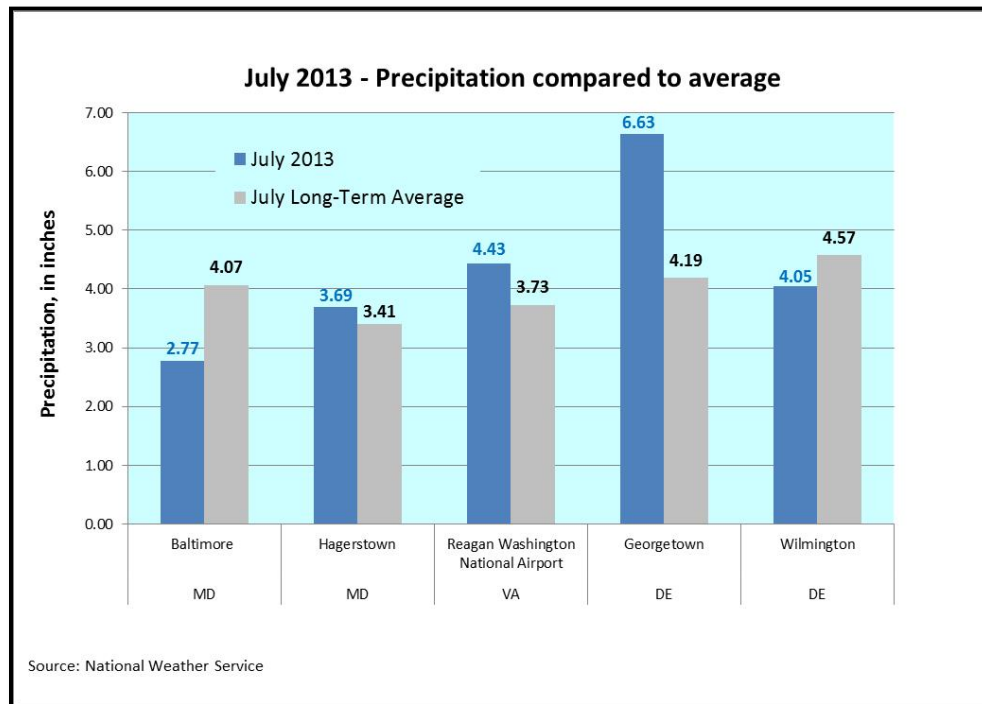
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July 2013 Precipitation and Weather

Rainfall in July ranged from below average in Baltimore, Maryland to much above average in Georgetown, Delaware. Rainfall at the remaining three National Weather Service (NWS) stations in Maryland, Delaware, and the District of Columbia was near the long-term average.

In Georgetown, Delaware, July rainfall was 6.63 inches, which is 2.44 inches above the July average. Rainfall was 7.63 inches above average at this site in June. On July 12, 3.41 inches of rain fell, which set a daily record high. The two months of high rainfall caused the streams and groundwater levels to be above normal.

July temperatures were 1.4 to 2.8 degrees Fahrenheit above the long-term average at all five weather stations, according to the NWS. The NWS normal (long-term average) period used for determining records is from 1981–2010.



Sources:

National Weather Service
MD and DC: <http://www.weather.gov/climate/index.php?wfo=lwx>
DE: <http://www.erh.noaa.gov/phi/>
Middle Atlantic River Forecast Center (MARFC): <http://www.weather.gov/marfc/Precipitation/Departures>

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Groundwater

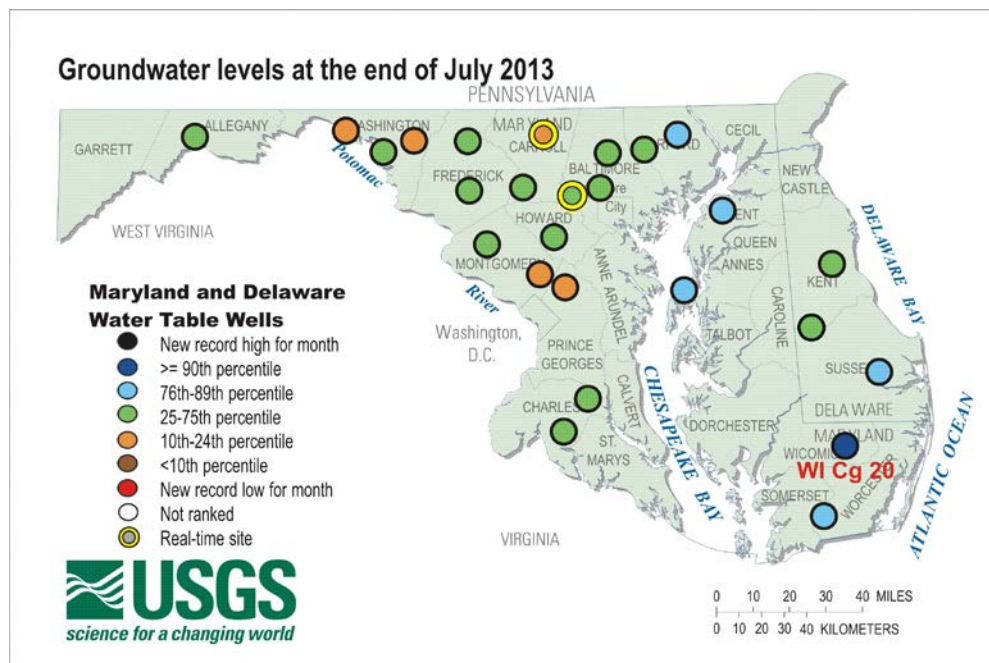
The USGS monitors groundwater levels in unconfined aquifers, providing observations that can be compared to both short-term and long-term changes in climatic conditions. Twenty-six groundwater wells were selected based on the following criteria:

- Located in an unconfined (water-table) aquifer;
- Open to a single, known hydrogeologic unit/aquifer;
- Groundwater hydrograph reflects changes in climatic conditions;
- No indicated nearby pumpage and likely to remain uninfluenced by pumpage, regulated streamflow, or changes related to human activities;
- Minimum period of record is 10 years of continuous/monthly records;
- Minimally affected by irrigation, canals, drains, pipelines, and other potential sources of artificial recharge;
- Well has casing – dug wells are not used;
- Water levels show no apparent hydrologic connection to nearby streams;
- Well has never gone dry; and
- Long-term accessibility likely.

July 2013 Groundwater Levels

July groundwater levels ranged from below normal at five wells in the Great Valley and Piedmont region to the 90th percentile on the lower Delmarva Peninsula. Although groundwater levels dropped in July after the high rainfall in June, the groundwater level in the USGS observation well in Wicomico County, Maryland was in the 90th percentile.

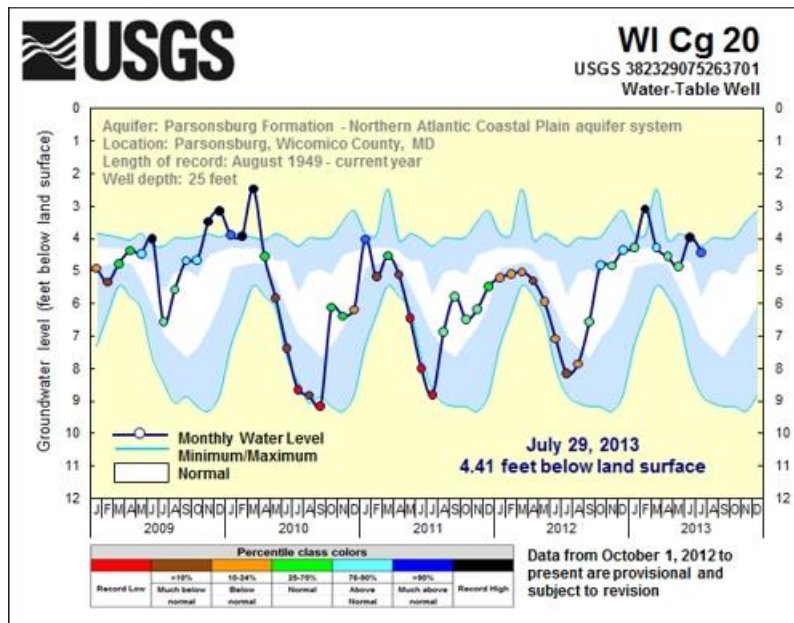
Groundwater levels were in the normal range in 15 of the 26 wells used to monitor climatic conditions in Maryland and Delaware. Normal is considered to be between the 25th and 75th percentiles.



To access the clickable groundwater map, go to:
http://md.water.usgs.gov/groundwater/web_wells/current/water_table/counties/index.html

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The groundwater level in observation well WI Cg 20 in Wicomico County, Maryland reflects a slight drop from a record high in June to the 90th percentile in July. Rainfall at the closest NWS weather station in Georgetown, Delaware was 6.63 inches in July and 12.24 inches in June, which caused groundwater levels to be high. Many of the record highs and lows at this well have been set during the last 5 years.



Five-year groundwater hydrographs can be viewed at:
http://md.water.usgs.gov/groundwater/web_wells/current/water_table/counties

These 5-year hydrographs show groundwater levels as a dark blue line, the minimum and maximum monthly values, and the normal range (between the 25th and 75th percentiles) as a white band based on the period of record. The maximum water level is at the top of the upper blue section and the minimum water level is at the bottom of the lower blue section in the graph.

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Streamflow

Streamflow data are used for many purposes. A few of the most obvious uses are to assess water supply and the risk of droughts and floods. Streamflow data are also used to calculate loads of chemical constituents and assess how biological communities are affected by hydrologic conditions. The USGS operates the most extensive network of streamflow gages in the region.

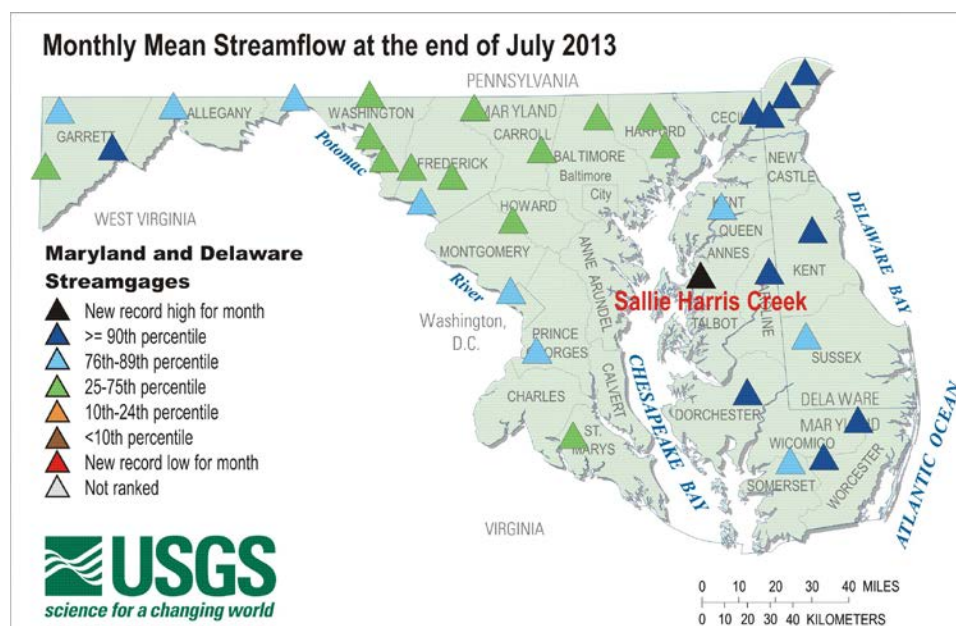
The streamflow locations chosen for the monthly water summary were selected based on the following criteria:

- Minimum period of record is 10 years of continuous data;
- Watershed areas greater than 5 square miles;
- Streamflow is not regulated, or has relatively natural flow;
- Streamflow data reflect climatic conditions; and
- The surrounding area and watershed are not urban.

July 2013 Streamflow

Monthly mean streamflow was at a record high July level at Sallie Harris Creek in Queen Anne's County, Maryland and in the 90th percentile at nine sites on the Delmarva Peninsula.

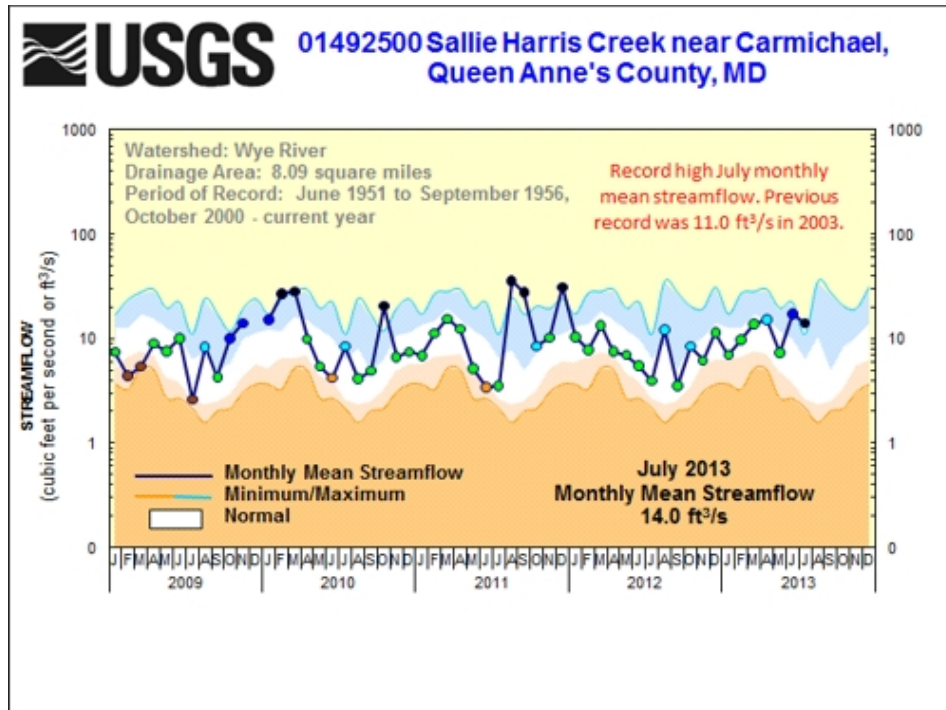
Streamflow at 13 of the 33 USGS streamgages used to monitor climatic response in Maryland, Delaware, and the District of Columbia was in the normal range. Normal is considered to be between the 25th and 75th percentiles. Streamflow at the remaining 20 streamgages was above normal and there were no below normal monthly mean streamflows in July. The high streamflow levels on the Delmarva Peninsula were from 12 inches of rain in June and another 6 inches in July. Normal monthly rainfall for July is 3-4 inches.



To access the clickable streamflow map, go to:
<http://md.water.usgs.gov/surfacewater/streamflow/>

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Monthly mean streamflow at Sallie Harris Creek in Queen Anne's County, Maryland was at a record July high, exceeding the previous record set in 2003 by 3 cubic feet per second (ft³/s). Prior to June, streamflow was at near normal levels during the previous nine months.

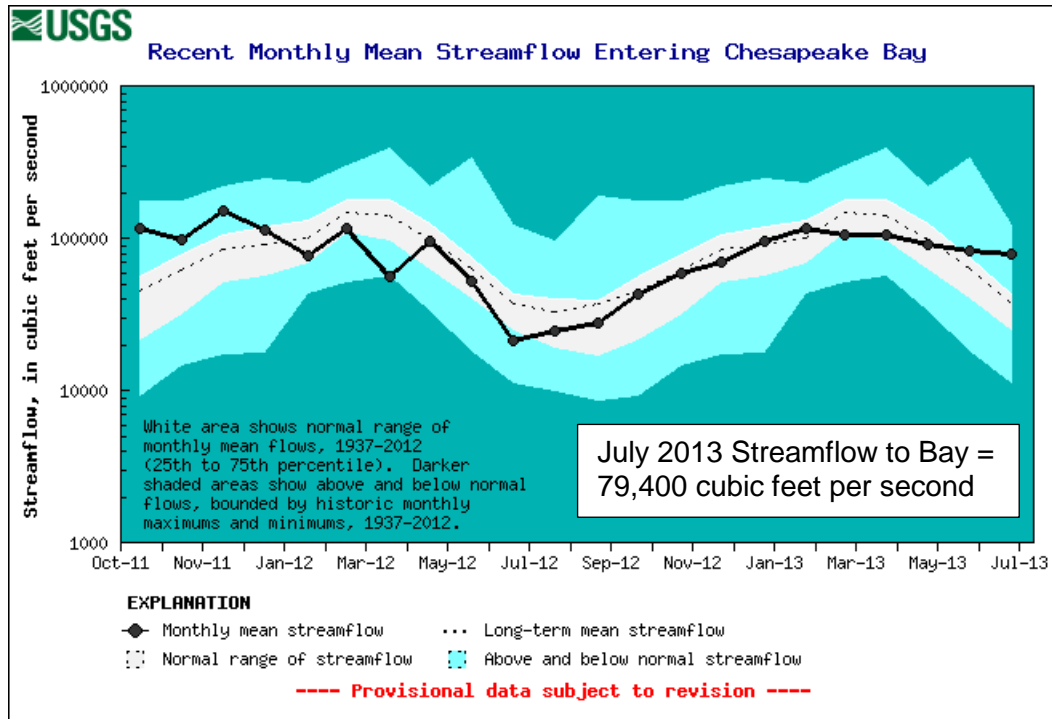


The dark line in the 5-year hydrograph represents the monthly mean streamflow for this period and the white band shows the normal range (25th to 75th percentile) based on the period of record. The maximum monthly mean streamflow is at the top of the blue shaded section, and the lowest monthly mean streamflow is at the top of the dark orange area.

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Estimated Streamflow to the Chesapeake Bay

The estimated monthly mean freshwater streamflow to Chesapeake Bay was above normal in July 2013, at 79,400 ft³/s (provisional and subject to revision). Average (mean) monthly streamflow for July is 37,700 ft³/s. The normal range for average (mean) monthly streamflow for July is between 24,800 ft³/s and 43,400 ft³/s, the 25th and 75th percentiles of all July values. These provisional statistics are based on a 76-year period of record.



Data and more information on the freshwater flow to the Bay can be found here:
<http://md.water.usgs.gov/waterdata/chesinflow/>

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Reservoir Levels

Reservoir storage at the end of July in the Baltimore reservoirs (Loch Raven, Liberty, and Prettyboy) was at 99 percent of available storage capacity, with a total of 75.08 billion gallons of water.

Total storage in the Triadelphia and Duckett Reservoirs, which serve parts of Howard, Montgomery, and Prince George’s Counties in suburban areas around the District of Columbia, dropped 4 percent since June to 95 percent of normal storage capacity, with 10.09 billion gallons of water in July.

July 2013	Percent available/ normal storage	Volume (billion gallons)	Source
Baltimore Reservoirs			Baltimore City – Environmental Services Division
Liberty	98	36.08	
Loch Raven	100	21.20	
Prettyboy	100	17.80	
Total	99	75.08	
Patuxent Reservoirs			Washington Suburban Sanitary Commission (WSSC)
Triadelphia	93	5.22	
Duckett	97	4.87	
Total	95	10.09	