

## July 2010 USGS Maryland-Delaware-District of Columbia Water Conditions Summary

Record low groundwater and streamflow levels were set in July in Wicomico and Worcester Counties in Maryland. The region has had 4 months with below normal precipitation. Other low water levels occurred in Carroll, Charles, and Frederick Counties, where water levels either set new record lows or were in the lowest percentile. The groundwater level in the well in Carroll County was the lowest July water level, which is the second consecutive month of record-setting low water levels.

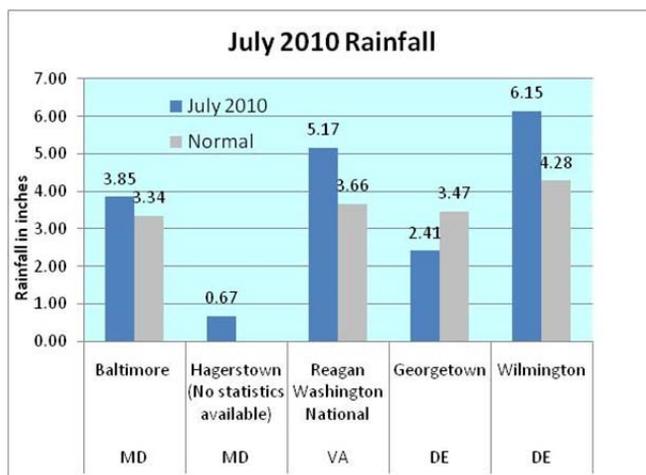
Despite the low water levels, other parts of the region showed normal water levels in more than half of the stations measured in July. Streamflow was normal in 59 percent, or 17 of the 29 streams used by the U.S. Geological Survey (USGS) to assess response to climatic conditions in Maryland, Delaware, and the District of Columbia in July. Groundwater levels were normal in 15 of the 25 wells.

### Precipitation

July rainfall ranged from 0.67 inches in Hagerstown, Maryland to 6.15 inches in Wilmington, Delaware. Most of the counties adjacent to the Chesapeake Bay had normal rainfall in July. Normal July rainfall is between 3 and 4 inches.

The Middle Atlantic River Forecast Center's 365-day departure from the average precipitation map showed that most of the region remained above normal, except western Maryland, which had below average precipitation for that period. The fractured rock region of western Maryland is not capable of storing the water through the dry periods. The reason for the above average 365-day precipitation is the abundant rain and record-setting snowfall during the previous fall and winter. The largest surplus is in Caroline County with 17.0 inches.

July 2010 was the second hottest on record in Baltimore. Many daily high temperature records were set in the region in July at the five National Weather Service stations in Maryland, Delaware, and at Ronald Reagan Washington National Airport in Virginia. The average monthly temperature is typically highest in July and the long-term average is 77.4 degrees Fahrenheit according to the National Weather Service. The average temperature in July 2010 was 81.5 degrees. There were 20 days with temperatures above 90 degrees Fahrenheit in Maryland (5 days above 100 degrees) and 15 days with temperatures above 90 degrees Fahrenheit in Delaware.



Sources: National Weather Service

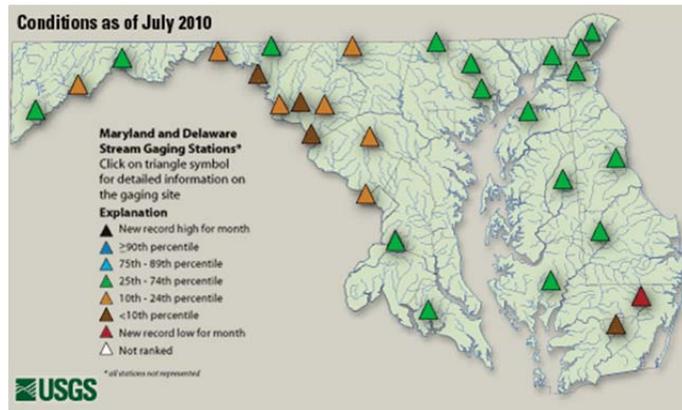
MD and DC: <http://www.weather.gov/climate/index.php?wfo=lwx>

DE: <http://www.erh.noaa.gov/phi/>

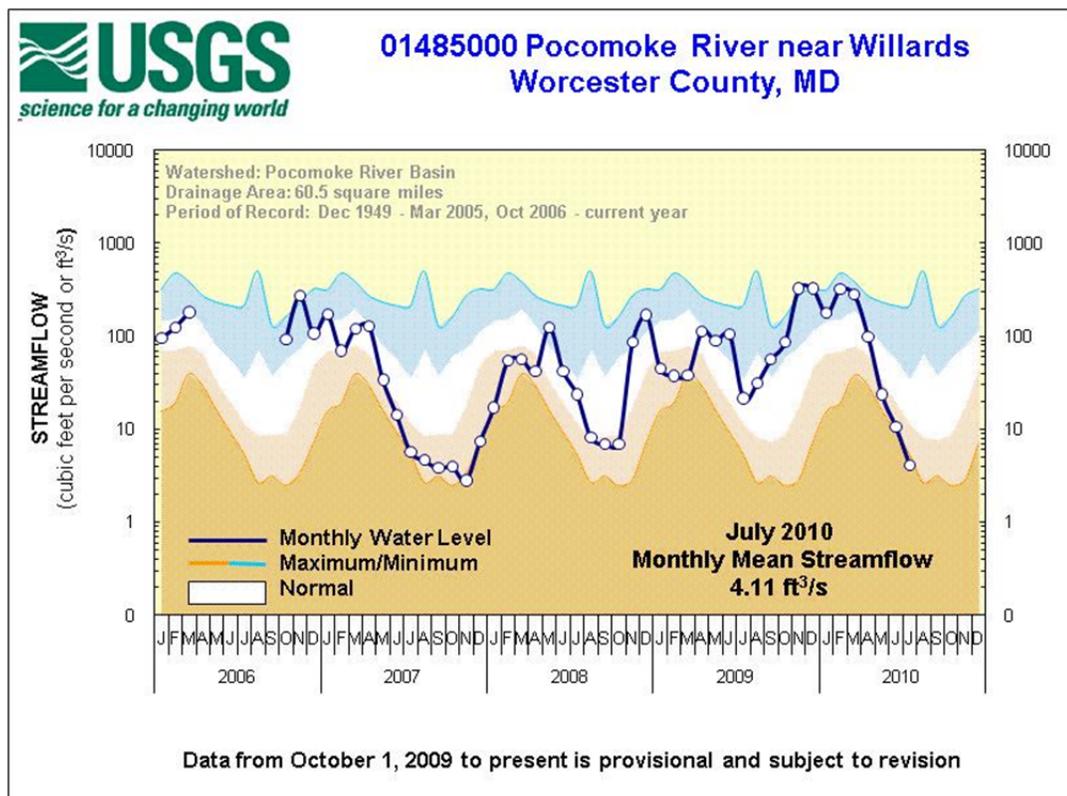
Middle Atlantic River Forecast Center (MARFC): <http://www.erh.noaa.gov/marfc/Maps/precip.html>

## Streamflow

Monthly mean streamflow was normal in 17 of the 29 USGS streamflow stations used to assess climatic conditions in Maryland, Delaware, and the District of Columbia. The lowest streamflows are clustered in the southern part of the Delmarva Peninsula and Carroll, Frederick, Montgomery, and Washington Counties stream-gaging stations.



The July monthly mean streamflow on the Pocomoke River was at its lowest level since record-keeping began in 1949. The streamflow dropped more quickly than the normal rate for the fourth consecutive month. Precipitation in this region has also been below normal for the past 4 months. The dark line in the 5-year hydrograph represents the current gaging monthly mean streamflow and the white band shows the normal range (25<sup>th</sup> to 74<sup>th</sup> percentile) based on the period of record (1949 to current year).



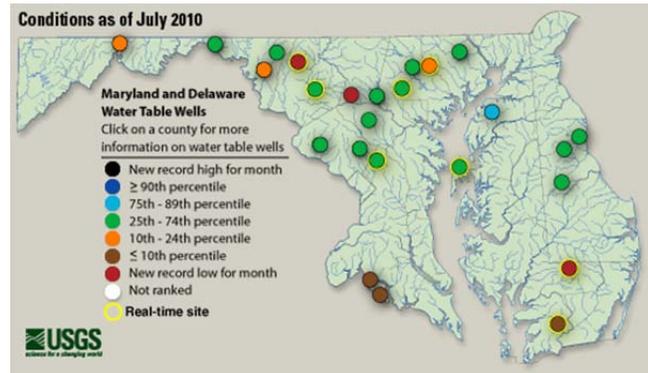
Five-year hydrographs can be viewed at: <http://md.water.usgs.gov/surfacewater/streamflow/>

## Groundwater

In July 2010, water levels in three water-table wells were at the lowest July levels on record. The wells are located in Carroll, Frederick, and Wicomico Counties. Groundwater levels were also below normal in another six wells, with near record lows in Charles and Somerset Counties.

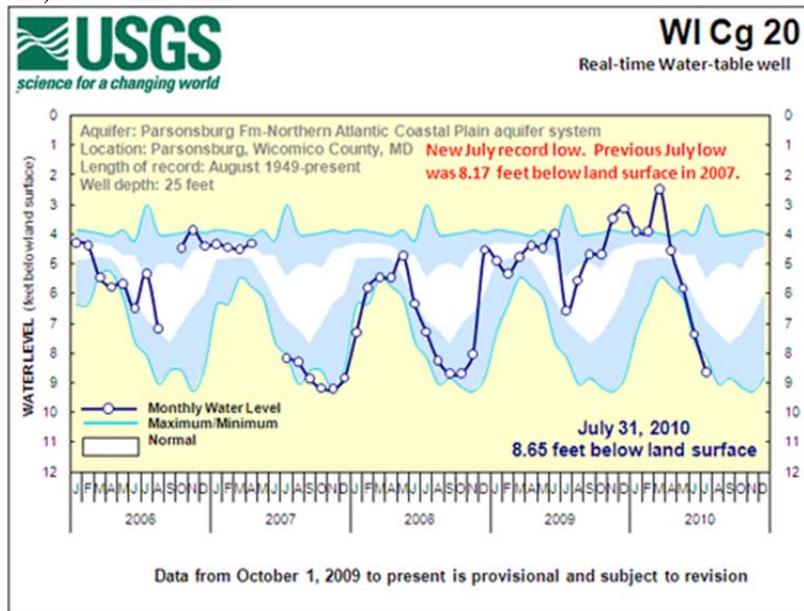
Groundwater levels were normal in July for 15 of the 25 wells used by the USGS to assess climatic conditions. These wells are primarily in central Maryland and Delaware.

The only well with an above normal water level in July was in Kent County, Maryland.



County	Well Name	Water level, in feet below land surface			
		July 2010	July long-term average	Previous record	Year of previous record
Carroll	CL Ec 75	4.82	4.15	4.78	2008
Frederick	FR Bd 96	35.64	28.59	35.07	2007
Wicomico	WI Cg 20	8.65	6.33	8.17	2007

The July groundwater level in well WI Cg 20 in Wicomico County, Maryland was the lowest July level on record (8.65 feet below land surface), beating the previous record of 8.17 feet below land surface set in 2007. This is the second consecutive month with a record low water level at this well. The 5-year hydrograph shows the water level as a dark line and the normal range (between the 25<sup>th</sup> and 74<sup>th</sup> percentiles) as a white band.



Five-year groundwater hydrographs can be viewed at:

[http://md.water.usgs.gov/groundwater/web\\_wells/current/water\\_table/counties](http://md.water.usgs.gov/groundwater/web_wells/current/water_table/counties)

## Reservoir Levels

Storage in the Baltimore reservoirs (Loch Raven, Liberty, and Prettyboy) dropped from 100 percent of available storage in May to 95 percent, with 71.88 billion gallons in available storage.

The Triadelphia and Duckett Reservoirs, which serve Montgomery and Prince George's Counties, were at 86 percent of normal storage, with 9.13 billion gallons at the end of July 2010.

July 2010	Percent available/ normal storage	Volume (billion gallons)	Source
<b>Baltimore Reservoirs</b>			<b>Baltimore City – Environmental Services Division</b>
Loch Raven	95%	20.18	
Liberty	93%	34.10	
Prettyboy	98%	17.60	
<b>Total</b>	<b>97%</b>	<b>71.88</b>	
<b>Patuxent Reservoirs</b>			<b>Washington Suburban Sanitary Commission (WSSC)</b>
Triadelphia	100%	5.00	
Duckett	94%	4.13	
<b>Total</b>	<b>97%</b>	<b>9.13</b>	