News Release

U.S. Department of the Interior
U.S. Geological Survey

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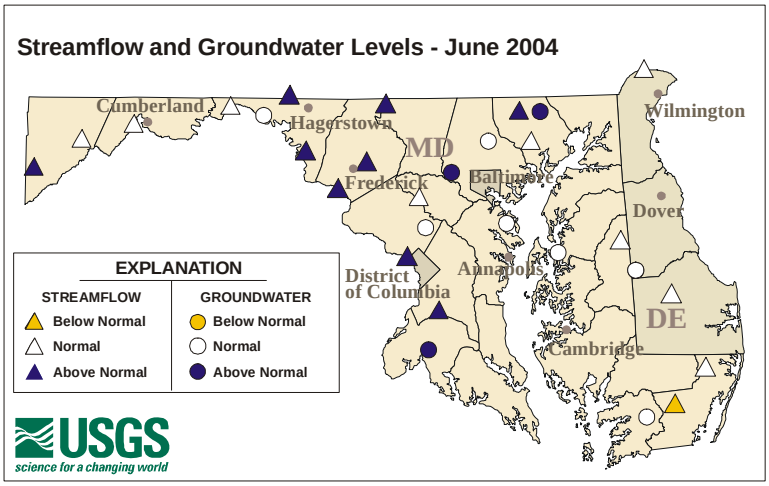
Water Levels Normal to Above Normal in June

Water levels in streams and wells continued their downward trend, which is common at this time of year as evapotranspiration (evaporation and water used by plants) rates increase. Streamflow and groundwater levels for most of Maryland and Delaware were normal to above normal, corresponding with above normal rainfall. In southern Maryland, however, rainfall and streamflow were below normal in June, according to hydrologists at the U.S. Geological Survey (USGS).

Status of Streams and Wells

The map to the right shows the location of the wells and streams used by the USGS to monitor water conditions in Maryland, Delaware, and the District of Columbia. Water levels in the Piedmont region were generally above normal, and were normal to below normal in southern Maryland and Delaware in June.



Precipitation

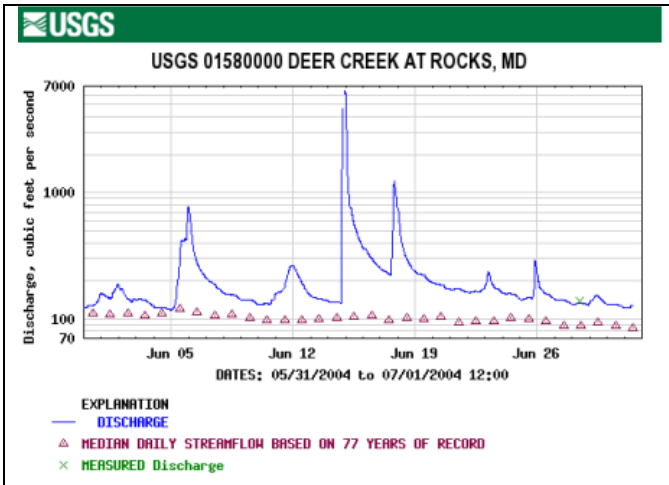
Rainfall in June was above normal according to preliminary rainfall data from the National Weather Service at Washington National Airport (4.60 inches, or 1.47 inches above normal) and at Baltimore-Washington International (BWI) Airport (4.17 inches, or 0.74 inches above normal). Rainfall in Delaware ranged from 3.39 inches above normal in Wilmington (6.98 total inches) to 1.77 inches below normal (1.55 inches total) in Georgetown. Water levels are influenced by local precipitation during the growing season.

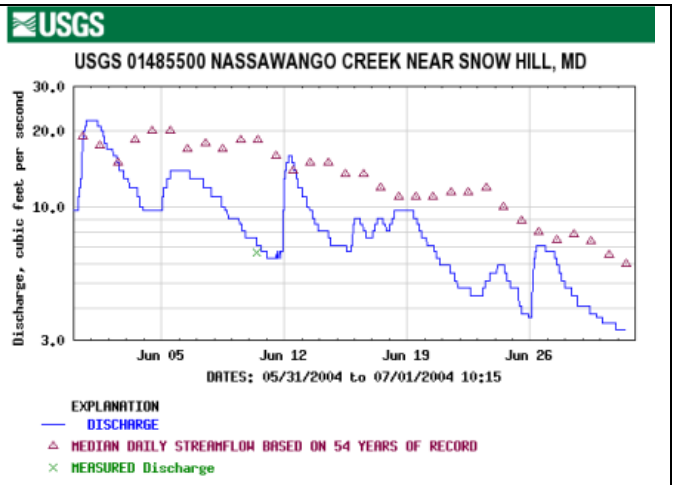
Chesapeake Bay

Monthly mean streamflow into the Chesapeake Bay during June averaged 42.2 bgd (billion gallons per day), which is 4 percent above normal. More information about USGS studies to help with the protection and restoration of the Chesapeake Bay and its watershed can be found at http://chesapeake.usgs.gov.

Streamflow

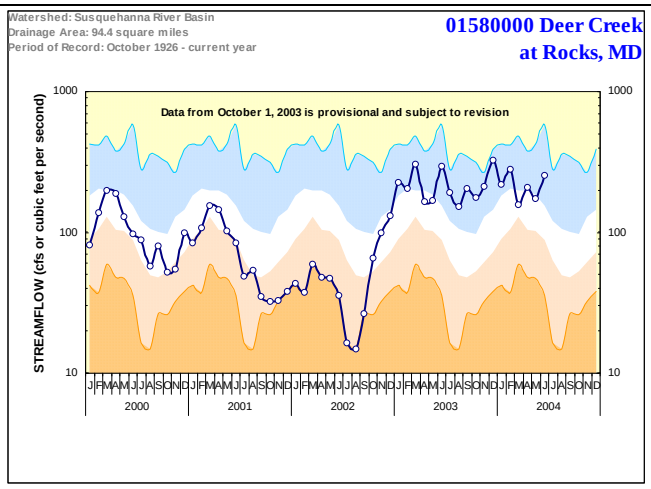
Streams in Maryland and Delaware ranged from below normal to above normal levels in June. Streams in the western Maryland and the central Maryland Piedmont region, such as Deer Creek in Harford County (see hydrographs below), were above normal, while Nassawango Creek in Worcester County in southern Maryland was below normal. Current and historical streamflow data can be monitored on the web at: http://waterdata.usgs.gov/. Five-year monthly streamflow hydrographs from the USGS stream-gaging network can be viewed on the USGS website at http:/md.water.usgs.gov/surfacewater/streamflow/.

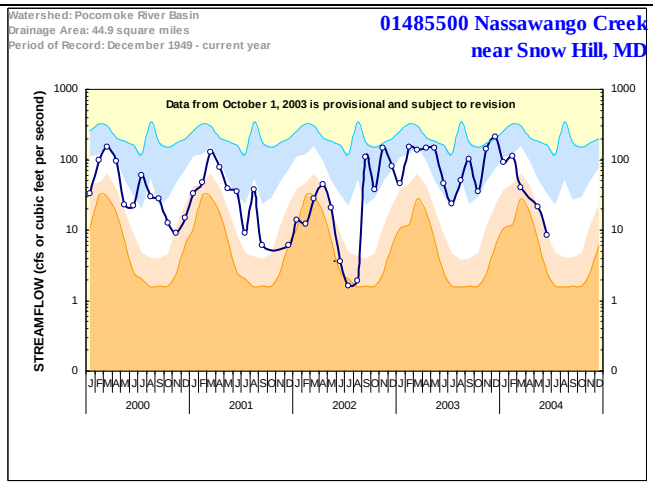




Real-Time Streamflow at Deer Creek and Nassawango Creek

The blue line in the graphs shows streamflow and the triangle represents normal streamflow for that day. Note that streamflow was above normal in June at Deer Creek and below normal at Nassawango Creek. Water data is available at: http://waterdata.usgs.gov/





Five-Year Hydrographs for Deer Creek and Nassawango Creek

Water levels in the tan region are below normal and water levels in the blue region are above normal. Normal is shown as a white band and represents the range from the 25th to the 75th percentile. Streamflow at Deer Creek has been flowing at normal to above normal levels since October 2002. Streamflow at Nassawango Creek was above normal in 2003, and has fallen to below normal since spring 2004. View 5-year streamflow hydrographs at: http:/md.water.usgs.gov/surfacewater/streamflow/.

Daily streamflow on the Potomac River near Washington, D.C. averaged 7.9 bgd in June, which is 32 percent above normal for the month of June. More information on the Potomac River is available at: http://md.water.usgs.gov/monthly/poto.html

Groundwater-Unconfined or Shallow Aquifers

Groundwater levels dropped in most of the wells used by the USGS to monitor unconfined or shallow aquifer response to climatic conditions in the bi-state region. Water levels were in the normal to above normal range during June. For 5-year hydrographs of groundwater levels for the climatic indicator wells, visit: http://md.water.usgs.gov/groundwater/.

Groundwater-Confined or Deep Aquifers

Although water is plentiful at the surface (streams, reservoirs, and shallow groundwater reserves are full), some of the water levels in the deep confined aquifers used for water supply by many people living in southern Maryland and the Delmarva Peninsula continue to decline. The decline is caused by pumping at greater rates than the rate at which deep groundwater is recharged, and because the confined aquifers are deep, water levels in confined aquifers take longer to respond to climatic conditions than water levels in shallow aquifers. Confined aquifer wells can be viewed at http://md.water.usgs.gov/groundwater. Real-time water-level data can be viewed at: http://waterdata.usgs.gov/md/nwis/gw

Reservoir Storage

Contents of the Baltimore reservoir system remained at 100 percent capacity in June. The Baltimore reservoirs (Loch Raven, Liberty, and Prettyboy) have been full since May 2003. Storage in the Triadelphia and Duckett Reservoirs on the Patuxent River, which serves Montgomery and Prince Georges Counties, has dropped to 96 percent of capacity.

Water Monitoring

The USGS has been collecting National streamflow data for 120 years, since 1884. Streamflow monitoring began in Maryland on the Potomac River at Point of Rocks, Maryland in 1895 and continues today. Streamflow and groundwater levels are used to assess the current water conditions and can be used to predict the potential for flooding and drought conditions. These USGS data have been provided to State and local water resource managers and are critical for making appropriate decisions on water regulation. For more information on streamflow and groundwater levels in Maryland, Delaware, and the District of Columbia, visit Water Watch at: http://md.water.usgs.gov/waterwatch/.

The real-time streamflow stations used in this analysis are operated in cooperation with the Maryland and Delaware Geological Surveys, the Maryland State Highway Administration, the U.S. Army Corps of Engineers, the Maryland Department of Natural Resources, the Maryland Department of the Environment, Baltimore County, Baltimore City, and other agencies. The long-term observation wells used in this analysis are operated in cooperation with the Maryland and Delaware Geological Surveys and the Interstate Commission on the Potomac River Basin. The real-time wells are operated in cooperation with the Maryland and Delaware Geological Surveys, the Interstate Commission on the Potomac River Basin, and Calvert County, Maryland. The USGS publishes data for 137 streamflow stations, 393 observation wells, and 4 springs across Delaware, Maryland, and the District of Columbia.

Recently Released USGS Report

The USGS Maryland, Delaware, and D.C. District publishes reports highlighting recent scientific work. Fact sheets and other publications are available online from the Publications section of the District homepage at: http://md.water.usgs.gov/publications/online.html.

MTBE in Surficial Aquifers

Methyl *tert*-butyl ether (MTBE) is a volatile organic compound (VOC) derived from natural gas that is added to gasoline either seasonally or year round in many parts of the United States to increase the octane level and to reduce carbon monoxide and ozone levels in the air caused by auto emissions. MTBE replaced lead as an octane enhancer in 1979.

Releases of MTBE to ground and surface water can occur through leaking underground storage tanks and pipelines, spills, emissions from marine engines into lakes and reservoirs, and to some extent, from air deposition. MTBE is on the U.S. Environmental Protection Agency's (USEPA) Drinking Water Priority List. USEPA's Office of Water has concluded that available data are not adequate to estimate potential health risks of MTBE at low exposure levels in drinking water, but that the data support the conclusion that MTBE is a potential human carcinogen at high doses (see http://www.epa.gov/mtbe/).

Two USGS reports concerning MTBE and groundwater were recently released:

1. Distribution of Methyl *Tert*-Butyl Ether (MTBE) and Selected Water-Quality Constituents in the Surficial Aquifer at the Dover National Test Site, Dover Air Force Base, Delaware, 2001: USGS Scientific Investigations Report 2004-5011, 13 p. The report is available online at: http://md.water.usgs.gov/publications/sir-2004-5011

2. Analytical Results from Ground-Water Sampling Using a Direct-Push Technique at the Dover National Test Site, Dover Air Force Base, Delaware, June-July 2001: USGS Open-File Report 03-380, 31 p. The report is available online at: http://md.water.usgs.gov/publications/ofr-03-380

At the Dover National Test Site at Dover Air Force Base, the highest concentrations of MTBE were detected in the surficial aquifer from 4.6 feet below mean sea level, to 6.4 feet above mean sea level. MTBE was also detected as deep as 9.5 feet below mean sea level. Increased methane concentrations and decreased dissolved oxygen concentrations that were found in association with the ground-water samples that contained MTBE are preliminary indicators that will assist in determining if natural attenuation (the process by which a compound is reduced in concentration over time by natural chemical, physical, and biological processes) of MTBE is occurring in the surficial aquifer.

Paper copies are available at the USGS office in Dover, Delaware (contact William Guertal at 302-734-2506 or wguertal@usgs.gov).

The USGS serves the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

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