

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

## February 2012

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

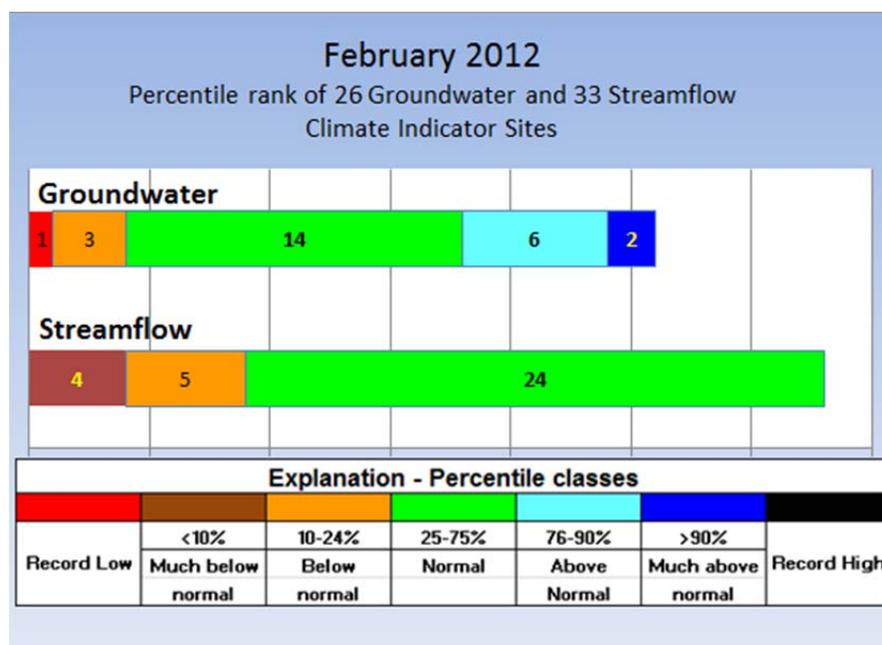
USGS water data is valuable to the public, researchers, water managers, planners, and agricultural users, especially during floods and droughts. These data can be used to assess how water resources respond to changes in climate. Scientists at the USGS have measured streamflow and groundwater levels in 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 resource 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 precipitation. 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 February 2012 Water Conditions Summary

Despite below normal rainfall and higher than average temperatures, more than 50 percent of the streams and wells used by the USGS to assess the response to climatic conditions in the Maryland, Delaware, and District of Columbia region had normal or above normal water levels in February. Twenty-four of the 33 streamgaging sites (73 percent) and 14 of the 26 wells (54 percent) were at normal levels. There were four streams with monthly mean streamflow in the lowest 10<sup>th</sup> percentile, and preliminary data for the observation well in Carroll County, Maryland show that the groundwater level was at a record low in February.



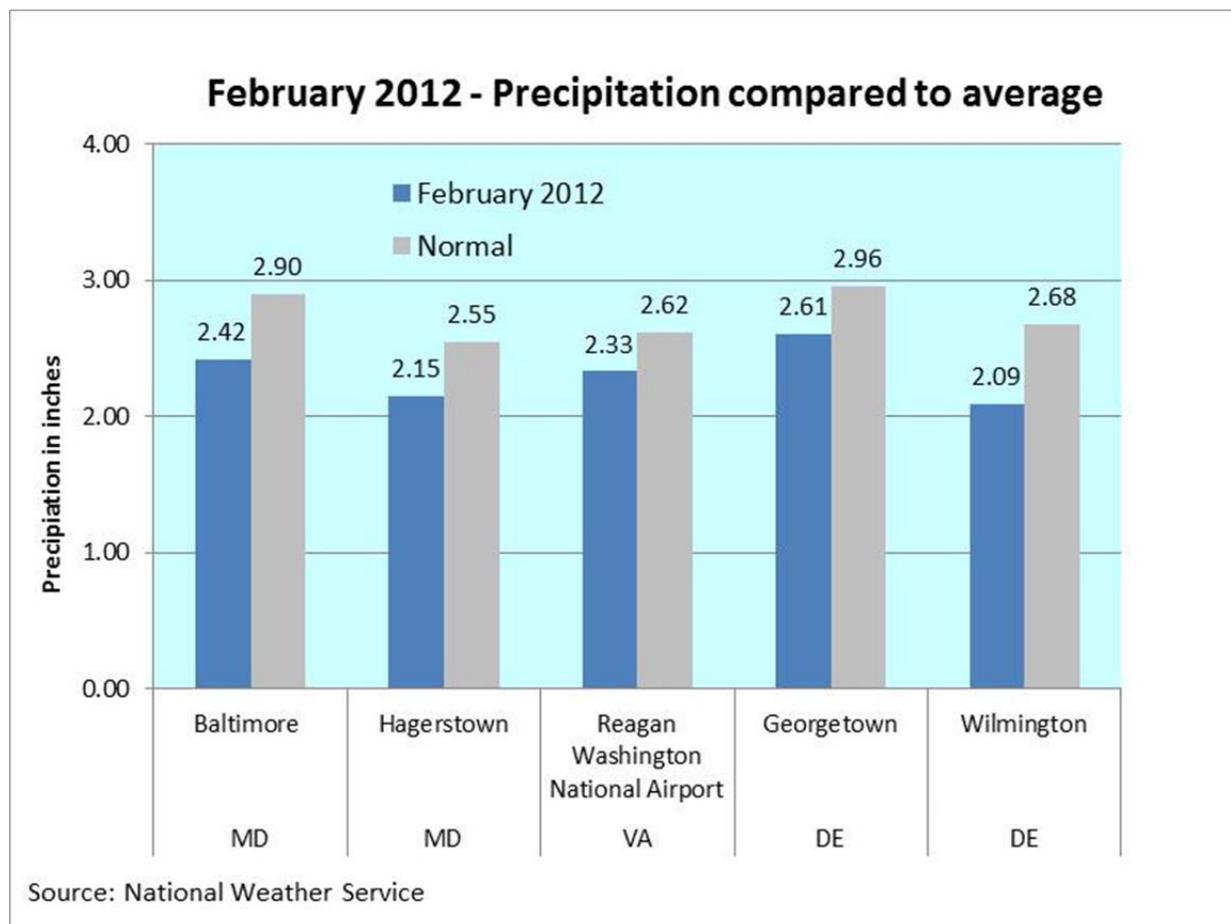
A **percentile** is a value on a scale from 0 to 100 that indicates the percent of a distribution that is equal to or below it. A percentile between 25 and 75 is considered normal.

For example, a groundwater level in the 90<sup>th</sup> percentile is equal to or greater than 90 percent of the values recorded for that month.

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## Precipitation

February 2012 rainfall was below average for the climate normal period\* at National Weather Service (NWS) stations in Baltimore and Hagerstown in Maryland, Wilmington, Delaware, and Ronald Reagan Washington National Airport in Virginia. Temperatures were more than 4 degrees Fahrenheit above the long-term average.



*\*Note from the National Weather Service: September 2011 was the first month to incorporate the new 1981--2010 climate normals that were calculated by the National Climatic Data Center. The new normals replaced the 1971--2000 normals.*

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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## Streamflow

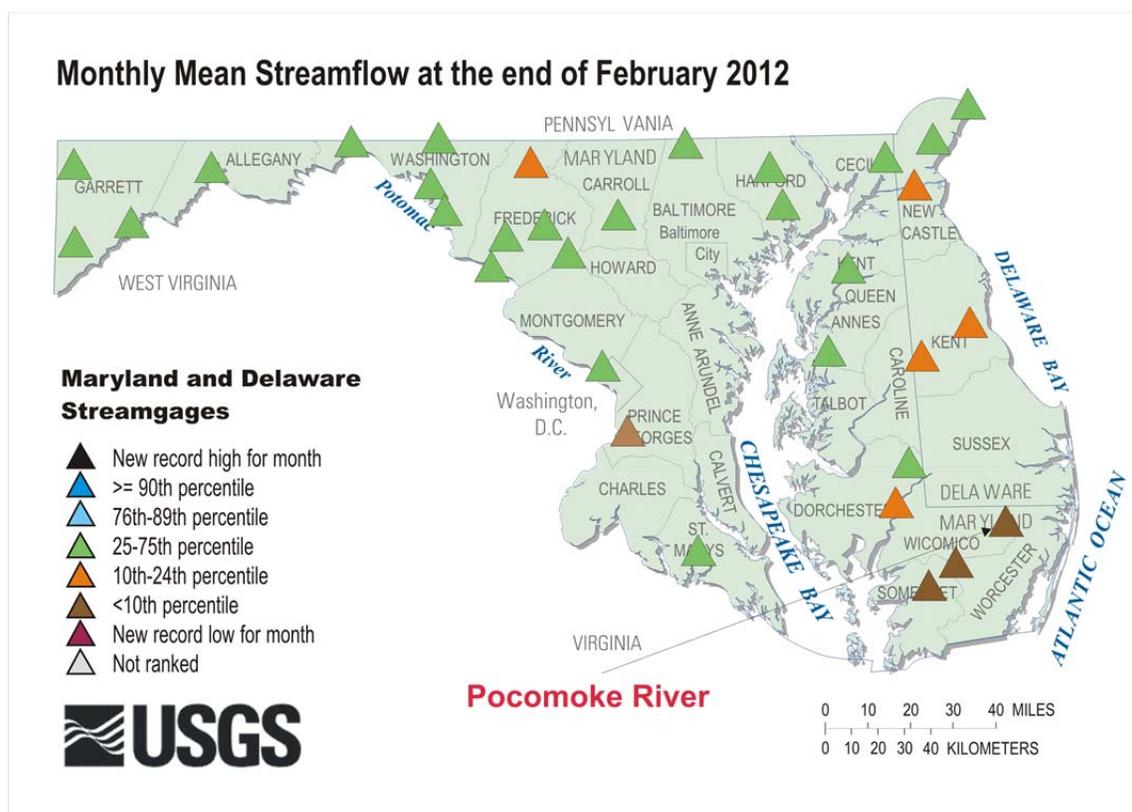
Streamflow data are used for many purposes. A few of the most obvious uses are to assess water supply and the risk of droughts and floods. Streamflow data are also used to calculate loads of chemical constituents and to assess how biological communities are affected by hydrologic conditions. The USGS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

## Streamflow for February 2012

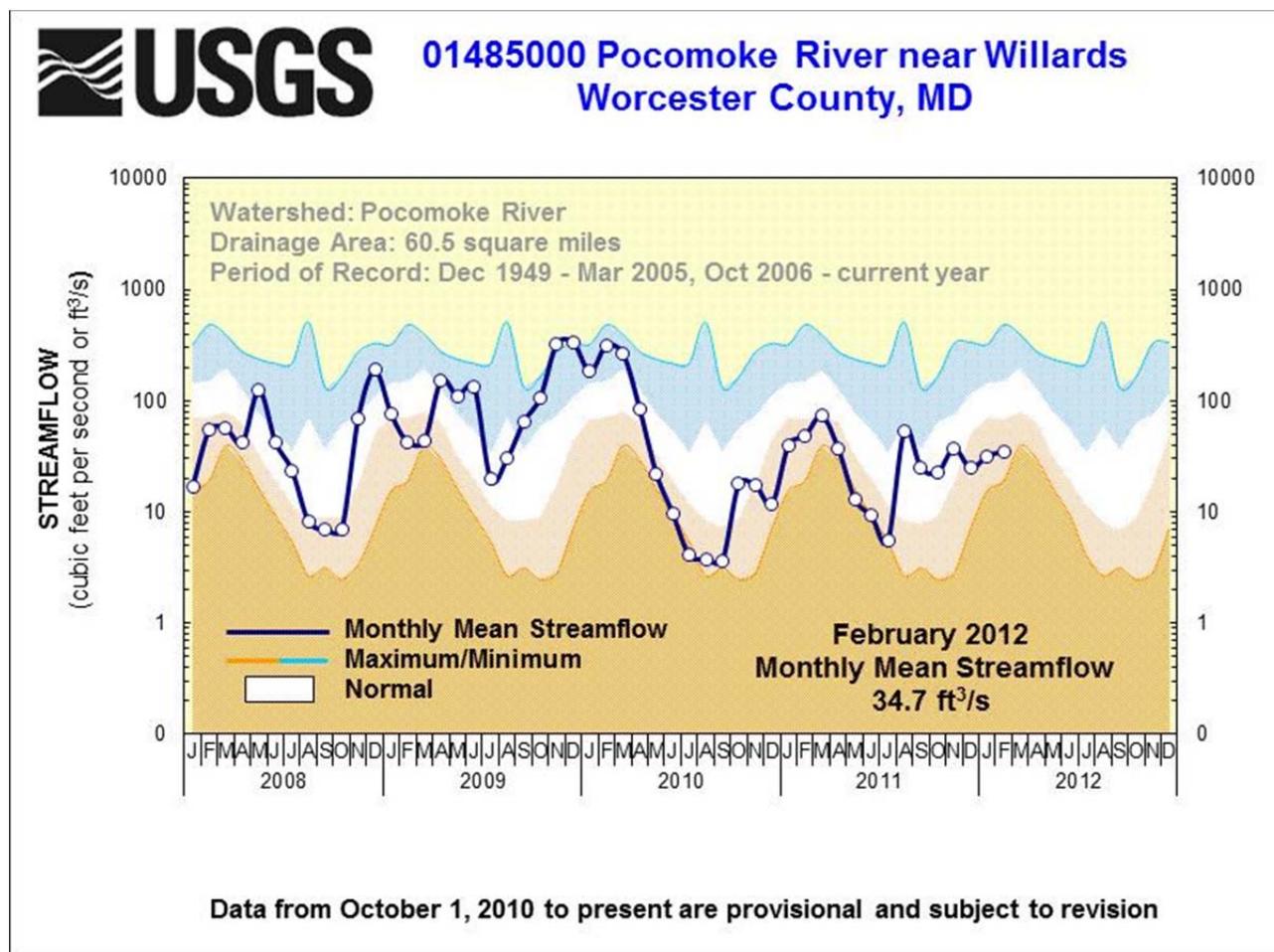
Monthly mean streamflow in February 2012 was normal at 24 of the 33 sites used to monitor climatic response in Maryland, Delaware, and the District of Columbia. The remaining nine sites had below normal monthly mean streamflows. Three of the four sites in the lowest 10<sup>th</sup> percentile were on the southern Delmarva Peninsula. These include Manokin Branch, Nassawango Creek, and the Pocomoke River. The fourth site in the lowest 10<sup>th</sup> percentile is Piscataway Creek in Prince George's County.



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

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

The February 2012 monthly mean streamflow at the Pocomoke River in Worcester County, Maryland on the southern Delmarva Peninsula was below normal at 34.7 ft<sup>3</sup>/s (cubic feet per second). Streamflow at this site had been low from April to July 2011, then rose significantly after rainfall from Hurricane Irene and Tropical Storm Lee, and returned to below normal levels in December 2011. Streamflow was still below normal in February 2012.



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

The dark line in the 5-year hydrograph represents the current monthly mean streamflow and the white band shows the normal range (25<sup>th</sup> to 75<sup>th</sup> 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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## Groundwater

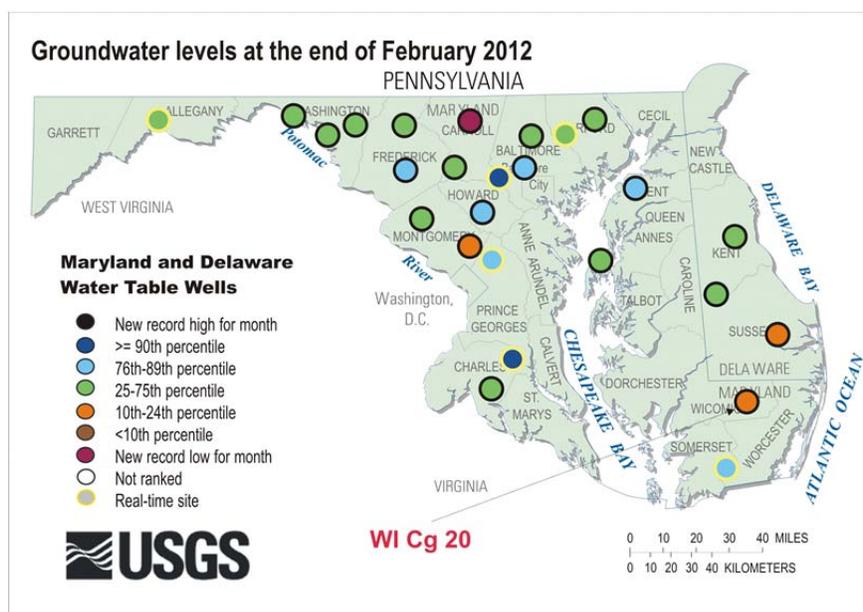
The USGS monitors groundwater levels in unconfined aquifers, providing observations that can be compared to both short-term and long-term changes in climatic conditions. Twenty-six groundwater wells were selected based on the following criteria:

- 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 not used;
- Water levels show no apparent hydrologic connection to nearby streams;
- Well has never gone dry; and
- Long-term accessibility likely.

## February 2012 Groundwater Levels

Groundwater levels across Maryland and Delaware ranged from above normal to below normal. Groundwater levels in February 2012 were normal at more than half, or 14 of the 26 wells, used by the USGS to assess climatic conditions in the region.

Groundwater levels were below normal in observation wells in Sussex County, Delaware, and in observation wells in Carroll, Montgomery, and Wicomico Counties in Maryland. The groundwater level in the Carroll County well was at a record low, although this low level does not seem consistent with the surrounding groundwater levels. Data are preliminary until reviewed.

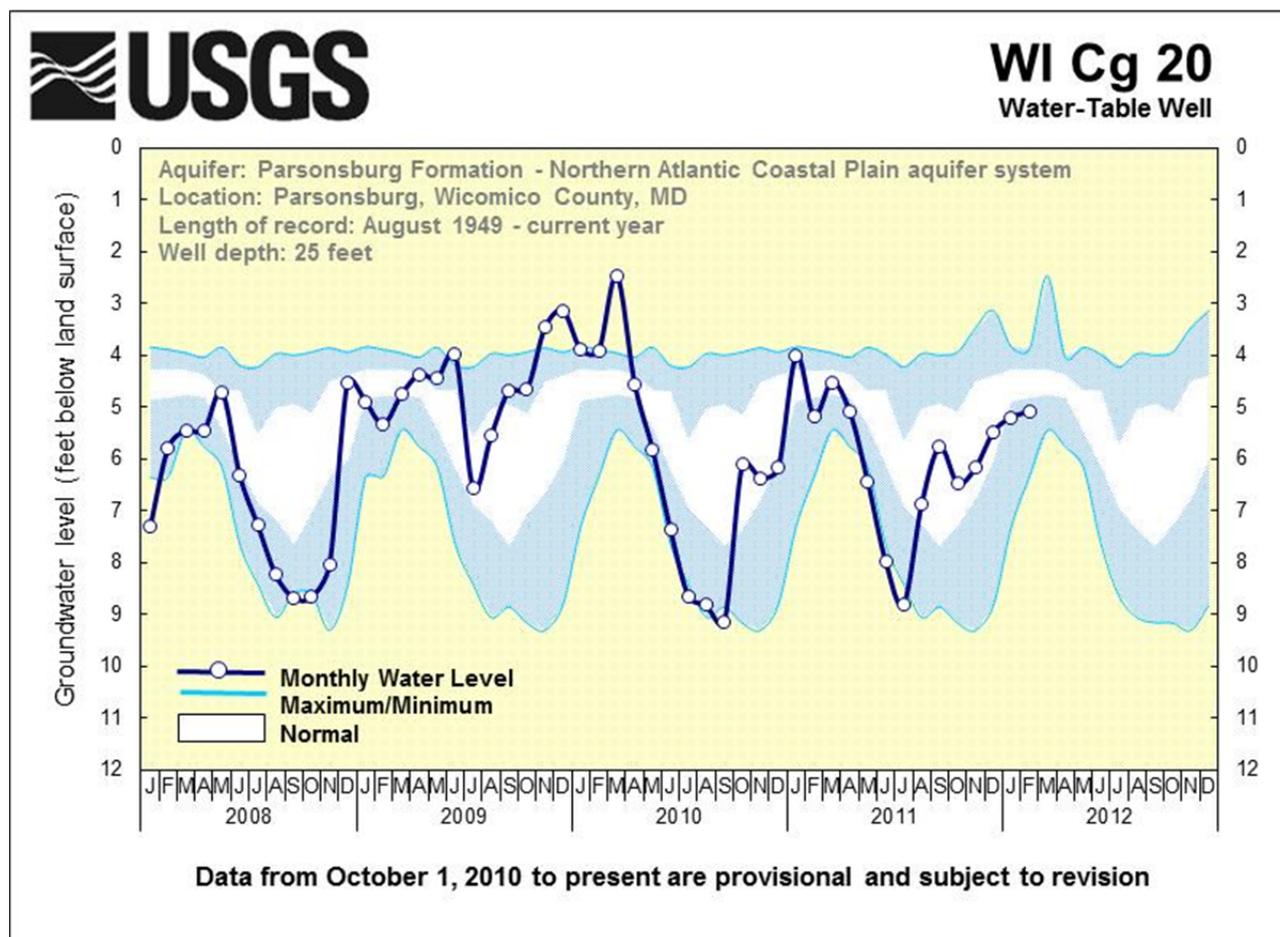


To access the clickable groundwater map, go to:

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

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

Groundwater levels in observation well WI Cg 20 in Wicomico County, Maryland were below normal for the last 2 months. Normal is considered between the 25<sup>th</sup> and 75<sup>th</sup> percentiles and is depicted by the white band in the graphic below. Groundwater levels had been at record lows last summer, but climbed after the hurricane and tropical storm in the fall. During February 2012, they were below normal again.



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)

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

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Monthly Water Conditions Summary**

**Reservoir Levels**

All regional reservoirs were full at the end of February 2012. Storage in the Baltimore reservoirs (Loch Raven, Liberty, and Prettyboy) remains at 100 percent of available storage capacity, or 75.77 billion gallons of water.

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, remains at 100 percent of normal storage capacity at the end of February 2012, with 10.76 billion gallons of water.

<b>February 2012</b>	<b>Percent available/ normal storage</b>	<b>Volume (billion gallons)</b>	<b>Source</b>
<b>Baltimore Reservoirs</b>			<b>Baltimore City – Environmental Services Division</b>
Liberty	100%	36.72	
Loch Raven	100%	21.20	
Prettyboy	100%	17.85	
<b>Total</b>	<b>100%</b>	<b>75.77</b>	
<b>Patuxent Reservoirs</b>			<b>Washington Suburban Sanitary Commission (WSSC)</b>
Triadelphia	100%	5.76	
Duckett	100%	5.00	
<b>Total</b>	<b>100%</b>	<b>10.76</b>	