News Release

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U.S. Geological Survey

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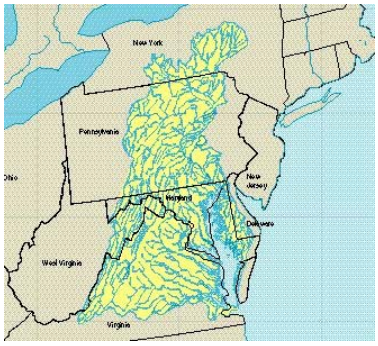
Cold, Dry January Leads to Drop in Water Levels

Streamflow and groundwater levels have dropped from their high levels and many water levels in many streams are now in the normal range across Maryland and Delaware, according to hydrologists at the U.S. Geological Survey (USGS). These declines have also reduced the flow into the Chesapeake Bay. Streamflow has decreased because of the lack of precipitation and the cold temperatures during January. Since the ground is frozen, the snow and water frozen in the ground holds water in storage that will be released when the temperatures are above freezing for an extended period.

Chesapeake Bay

Monthly mean streamflow into the Chesapeake Bay during January averaged 60.9 bgd (billion gallons per day), which is only 6 percent above average. Flow to the Bay has been above average since March 2003, with several months with near record-setting high levels. The abundant flow has contributed to higher amounts of nutrients and sediment entering the Bay.

The Chesapeake Bay watershed (right) covers more than 64,000 square miles in six states (New York, Pennsylvania, Maryland, Delaware, Virginia and West Virginia) and the District of Columbia. The USGS recently completed a multi-year study of the discharge, nitrogen transport, and age of ground water in streams of the Chesapeake Bay watershed. Results from the study indicate that groundwater supplies a significant amount (about half) of the water and nitrogen to streams in the watershed and is therefore an important pathway for nitrogen to reach Chesapeake Bay. The groundwater moves slowly to streams and has an average time in the ground of about 10 years. The relatively slow movement of groundwater will cause a "lag time" between implementation of management practices and improvement of water quality in the Chesapeake Bay.



Chesapeake Bay Watershed

The findings of the USGS Chesapeake Bay ground-water study have been summarized in a fact sheet "The Influence of Ground Water on Nitrogen Delivery to the Chesapeake Bay, Online Publication - FS-091-03" and a comprehensive technical report "Residence Times and Nitrate Transport in Ground Water Discharging to Streams in the Chesapeake Bay Watershed, Water-Resources Investigations Report 03-4035". 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.

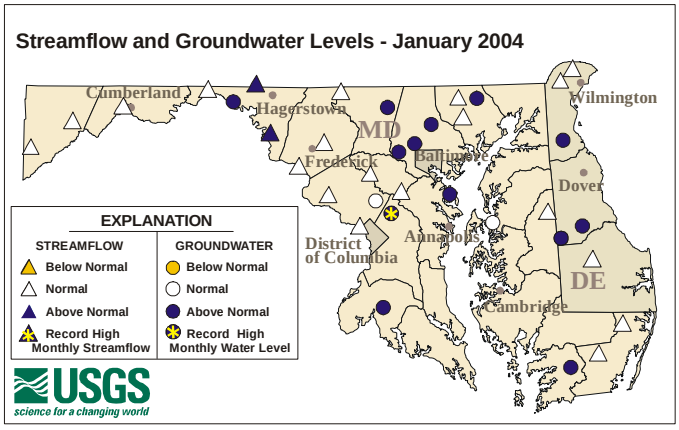
Precipitation

Snowfall in January resulted in only 1.26 inches of water in Baltimore, Maryland, which is 2.21 inches below normal, according to the National Weather Service. Temperatures were also 4.8 °F colder than normal, averaging 27.5°. Only seven days had temperatures above freezing. The cold temperatures cause water in the soil to freeze, and the water (as ice) is essentially held in storage until it melts and either recharges aquifers or contributes flow to streams.

Status of Streams and Wells for January 2004

The map to the right shows the wells and streams used by the USGS to monitor water conditions in Maryland, Delaware, and Washington, D.C. In January, all wells were at above normal levels (dark circles). A well in Prince Georges County, Maryland was at its highest January level in 40 years (represented by an asterisk).

Streamflow was at normal levels for most streams. Since the region recovered from the drought last winter, water levels in most of these streams and wells had frequently been at above normal levels.



For news release and images, go to http://md.water.usgs.gov/publications/press_release/current/

Streamflow

Streams across Maryland and Delaware were flowing at normal to above normal levels in January after several months of above normal flow. Streamflow data in January may have been affected by ice build-up at the gaging stations. 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/. Current and historical streamflow data can be monitored on the web at: http://waterdata.usgs.gov/.

Daily streamflow on the Potomac River near Washington, D.C. in January averaged 7.6 bgd, which is 16 percent below normal for January. More information on the Potomac River is available at: http://md.water.usgs.gov/monthly/poto.html

Groundwater-Unconfined or Shallow Aquifers

Groundwater levels in most of the wells used by the USGS to monitor unconfined or shallow aquifer response to climatic conditions in the bi-state region dropped during January. Although many water levels dropped in January, a well in Prince Georges County, Maryland, was at its highest January level in 40 years. This is the fifth consecutive month of record-setting high groundwater levels for Prince Georges County. For 5-year hydrographs of groundwater levels for the climatic indicator wells, visit: http://md.water.usgs.gov/groundwater/.

Water levels are expected to rise as groundwater resources are recharged through the winter and spring months when most plants are dormant and temperatures are lower. Generally, recharge is suspended when the ground freezes and resumes when the temperatures rise above freezing.

Groundwater-Confined or Deep Aquifers

Although water is plentiful at the surface (streams, reservoirs, and shallow groundwater reserves are full), some of the deep confined aquifers used for water supply by many people living in southern and eastern Maryland and Delaware continue to decline. The water levels continue to decline because they are being pumped at rates higher than deep groundwater is recharged and since the confined aquifers are deep, water levels in confined aquifers take longer to respond to climatic conditions than shallow aquifers. Confined aquifer wells are measured monthly and can be viewed at http://md.water.usgs.gov/groundwater.

Reservoir Storage

High groundwater levels and above normal streamflow and rainfall helped to keep reservoir storage levels in the Baltimore reservoir system at capacity in January. Storage in the Triadelphia and Duckett Reservoirs on the Patuxent River has decreased to 95 percent of capacity.

USGS 125th Year Anniversary: Successor to Lewis and Clark

The Lewis and Clark Expedition was the first of many Government surveys of natural resources in the American West. The U.S. Geological Survey was established on March 3, 1879 in response to a report from the National Academy of Sciences, which had been asked by the Congress in 1878 to provide a plan for surveying and mapping the Territories of the United States that would secure the best possible results at the least possible cost. The USGS continues to serve the Nation as an independent fact-finding agency that provides scientific understanding about natural-resource conditions, issues, and problems. Because of its origin in natural resource surveys and the similarity of the USGS mission to Thomas Jefferson's charge to Meriwether Lewis, the USGS can be seen as the organizational successor to Lewis and Clark. For more information, visit http://www.usgs.gov/features/lewisandclark.html.

Water Monitoring

The USGS has been collecting national streamflow data for 120 years, or since 1884. 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 Washington, D.C., 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 observation wells used in this analysis are operated in cooperation with the Maryland and Delaware Geological Surveys. 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 and 379 observation wells across Maryland and Delaware.

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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