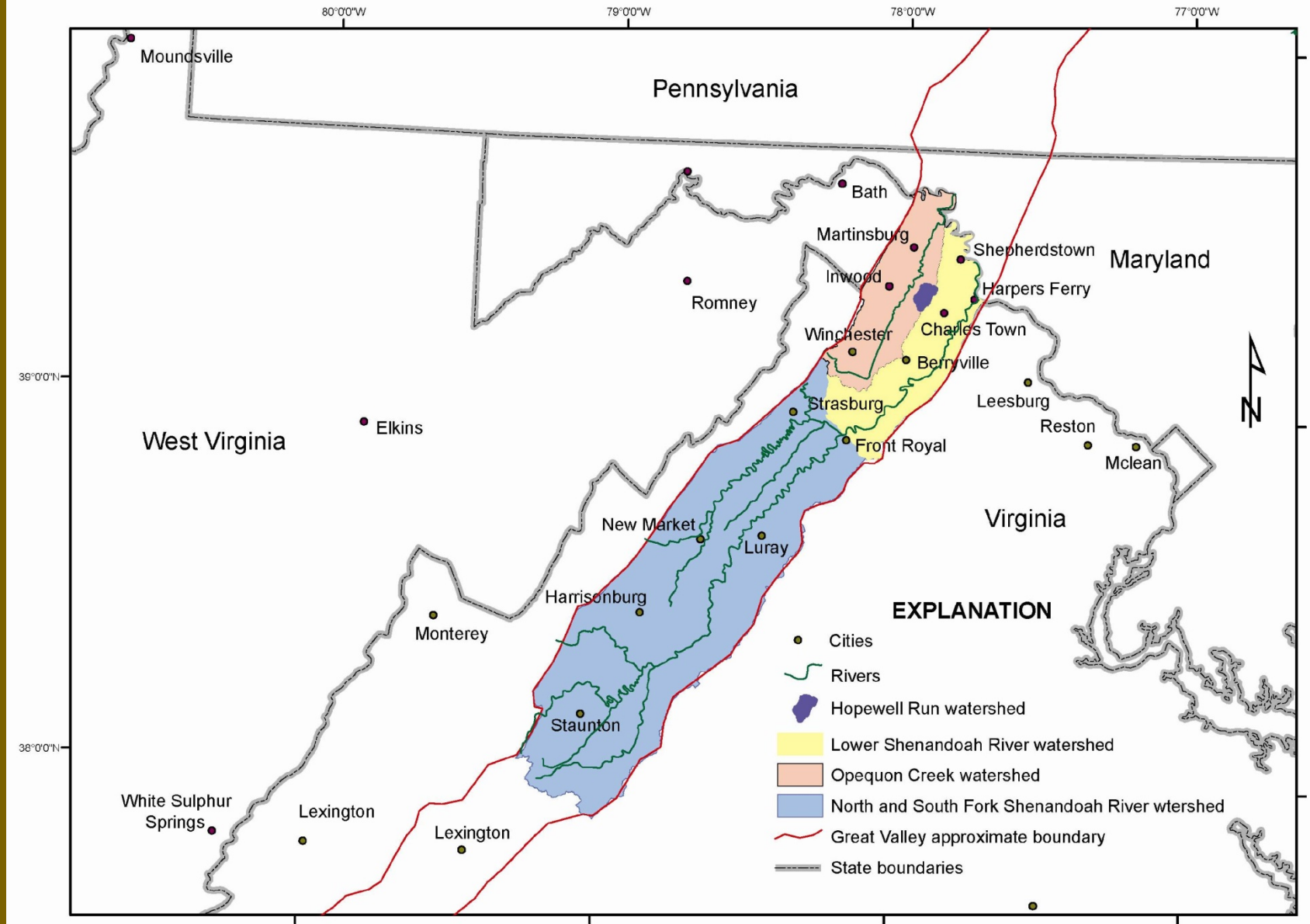
Opequon Creek Groundwater Flow Model



Map showing existing and proposed ground-water flow models developed for the Shenandoah Valley.

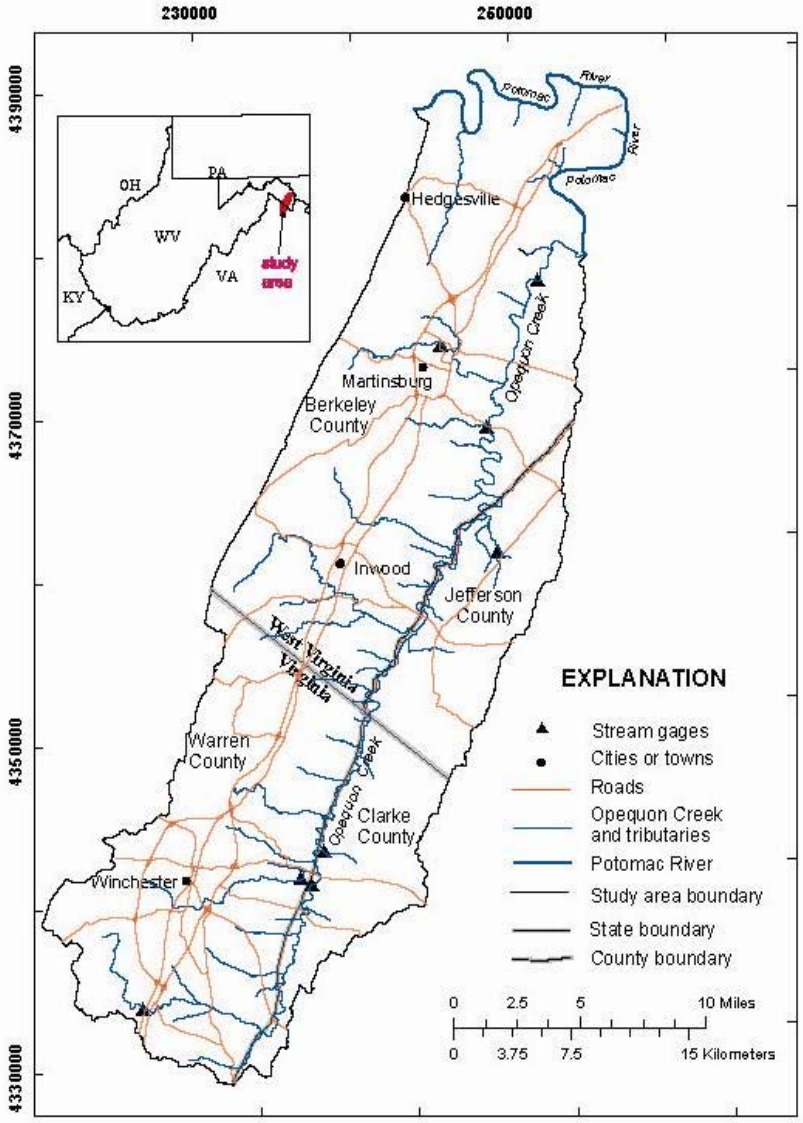


Figure 1. Map showing location of the Opequon Creek watershed, stream gages and the portions of the four counties in Virginia and West Virginia that comprise the study area.

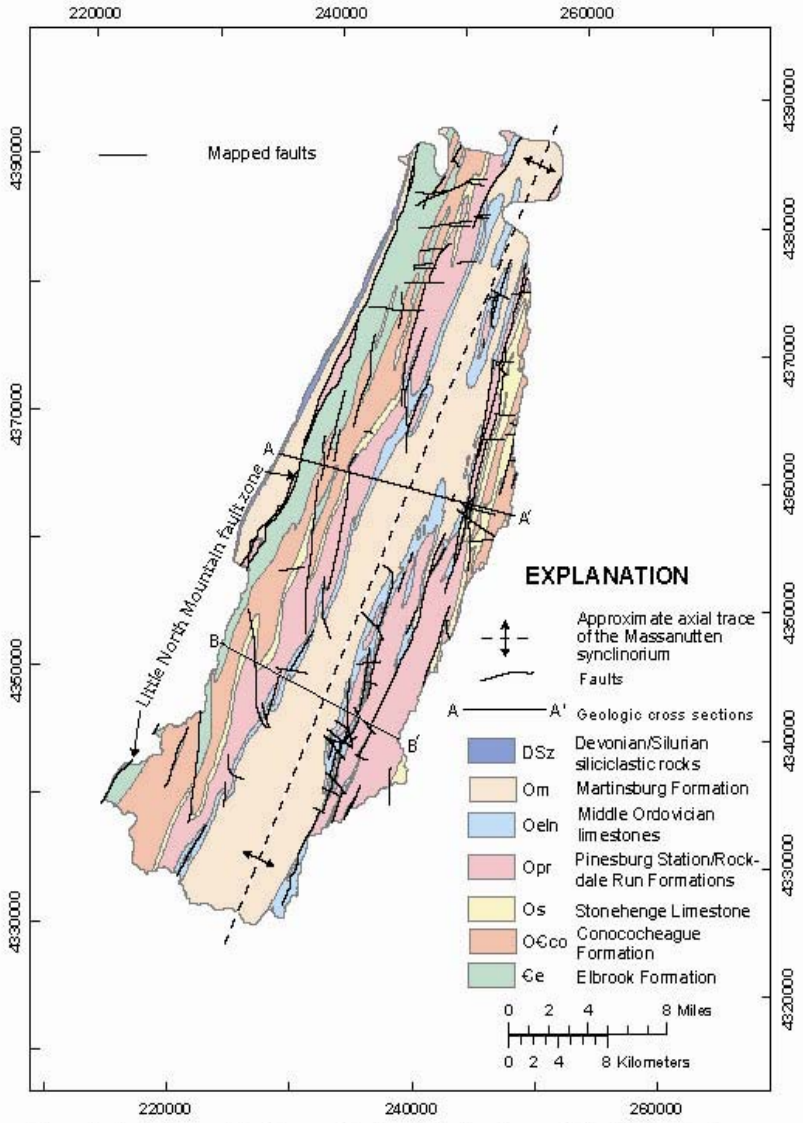


Figure 2. Geologic map of the Opequon Creek watershed and areas of direct drainage to the Potomac River, Virginia and West Virginia.

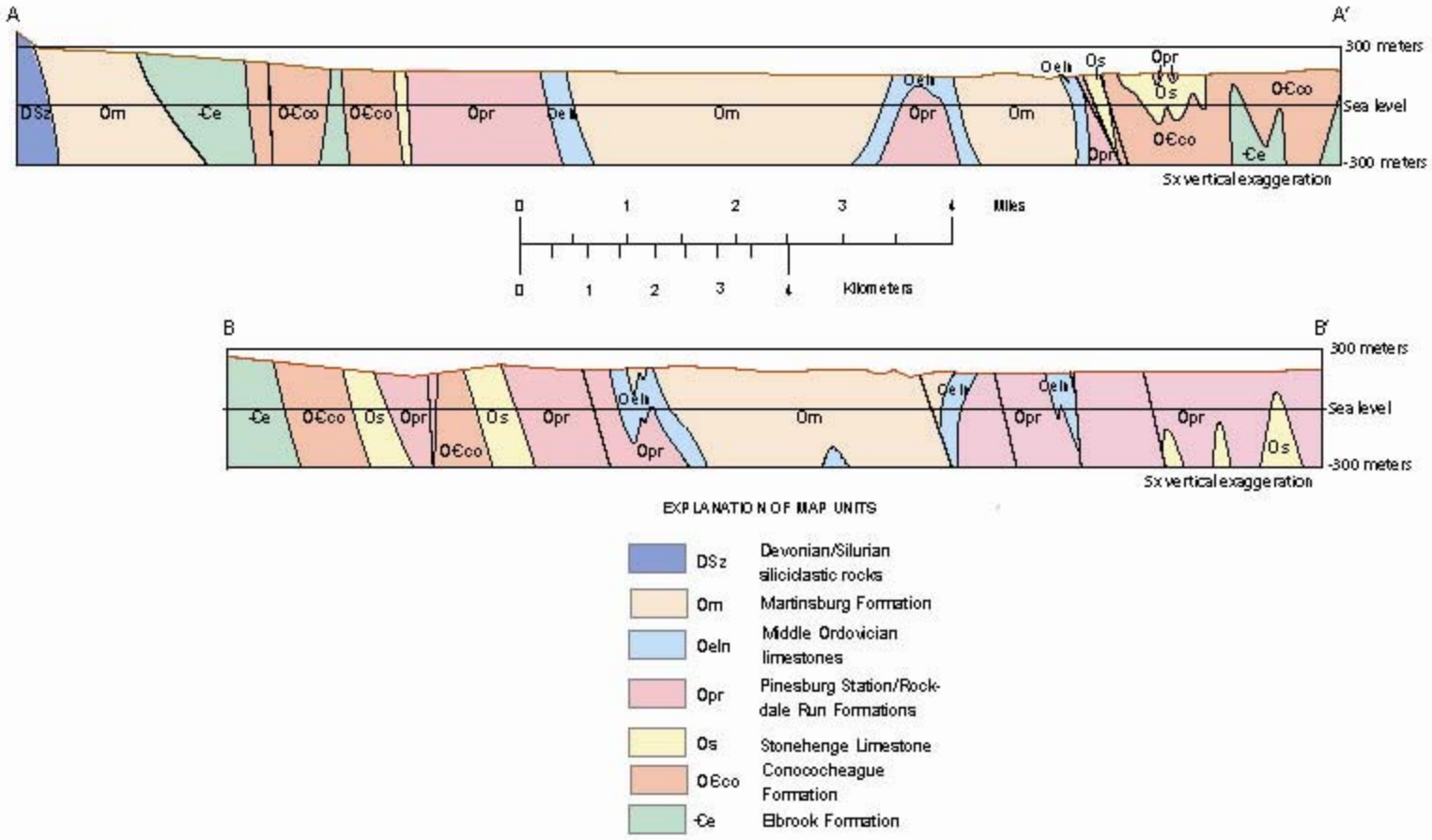


Figure 2C. Geologic cross sections for the Opequon Creek watershed, Virginia and West Virginia.

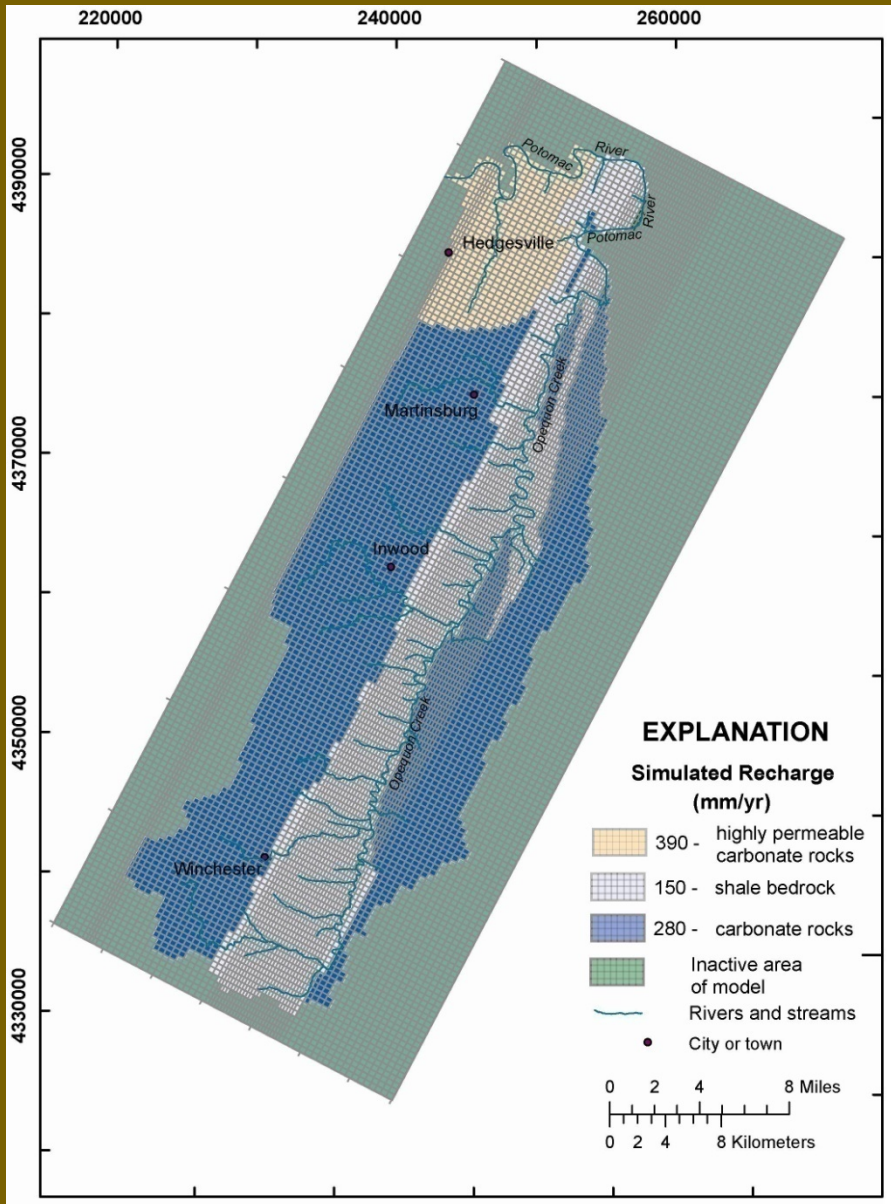


Figure 4. Simulated recharge applied to the ground-water flow model developed for the Opequon Creek Watershed area, Virginia and West Virginia

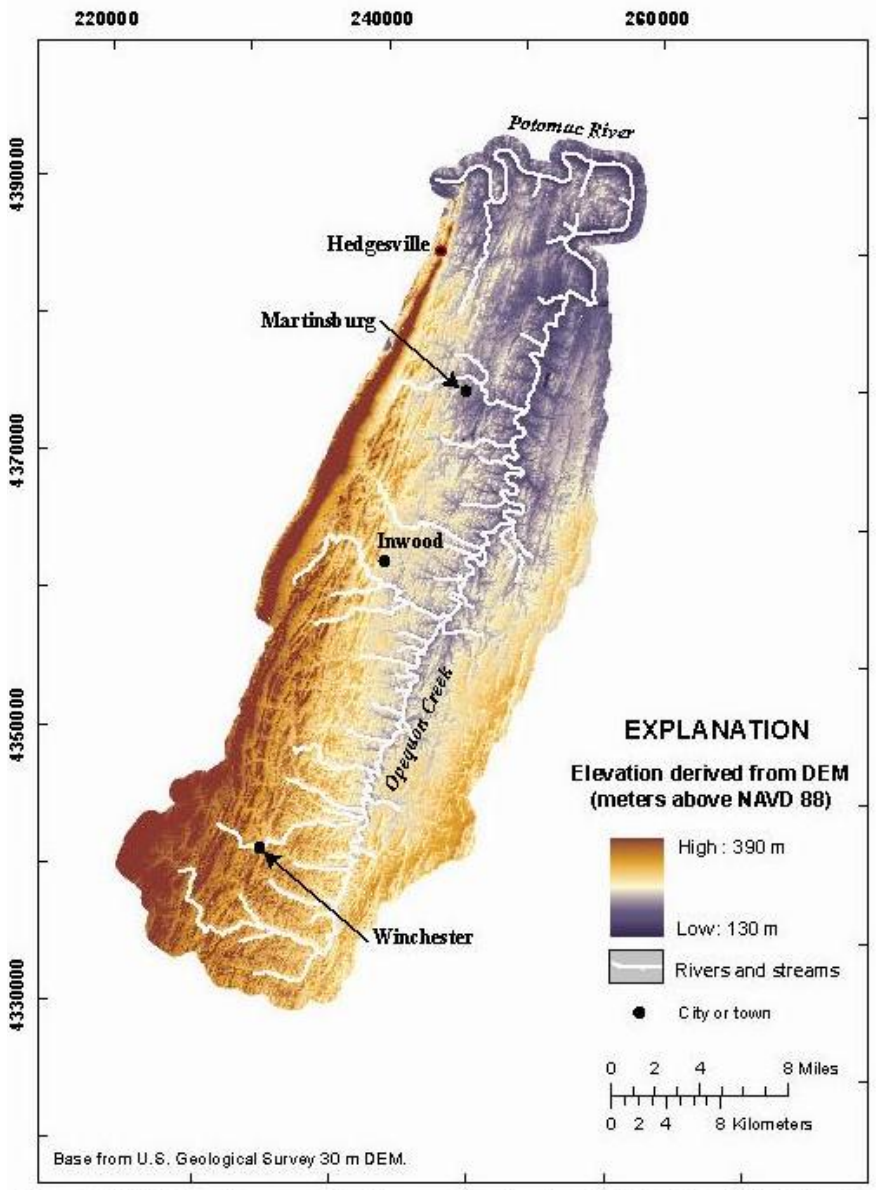


Figure 5. Digital elevation map of the Opequon Creek watershed, Virginia and West Virginia. [NAVD 88, National vertical datum of 1988; DEM, digital elevation model]

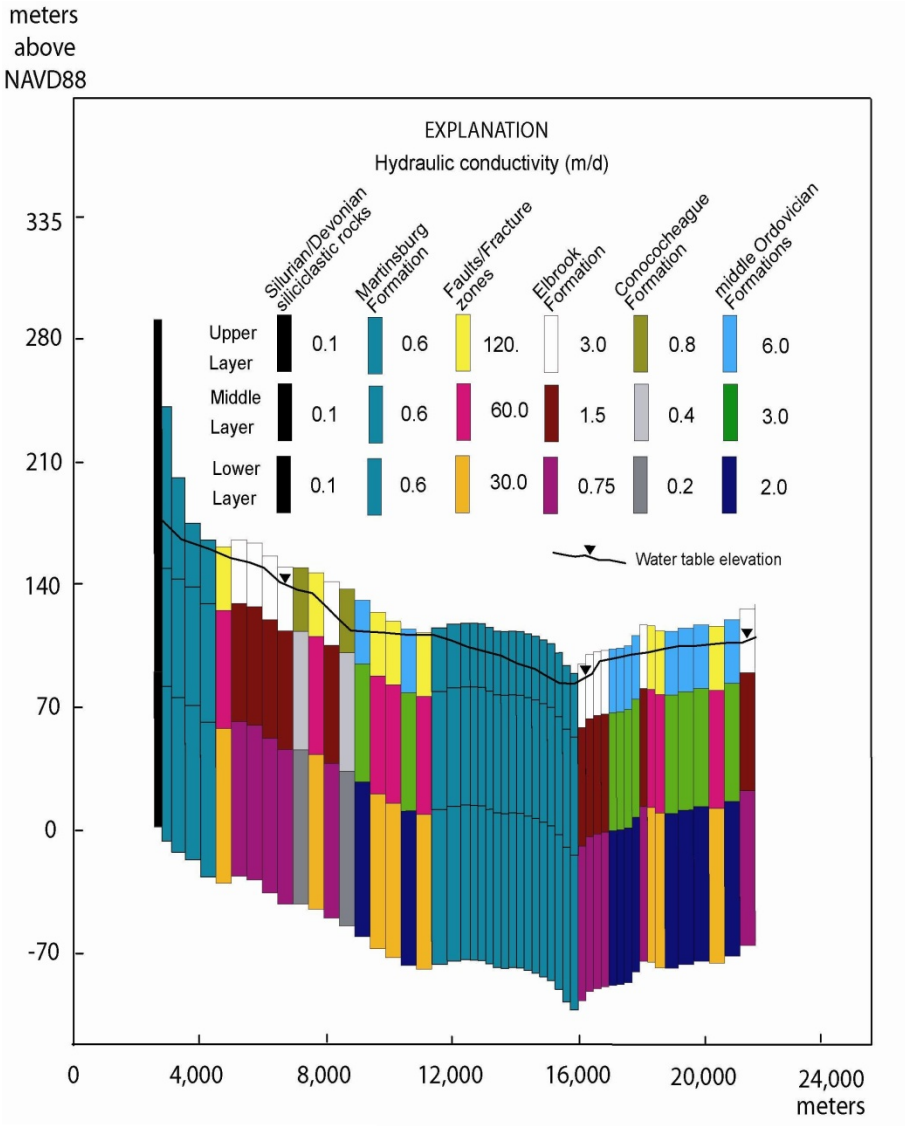
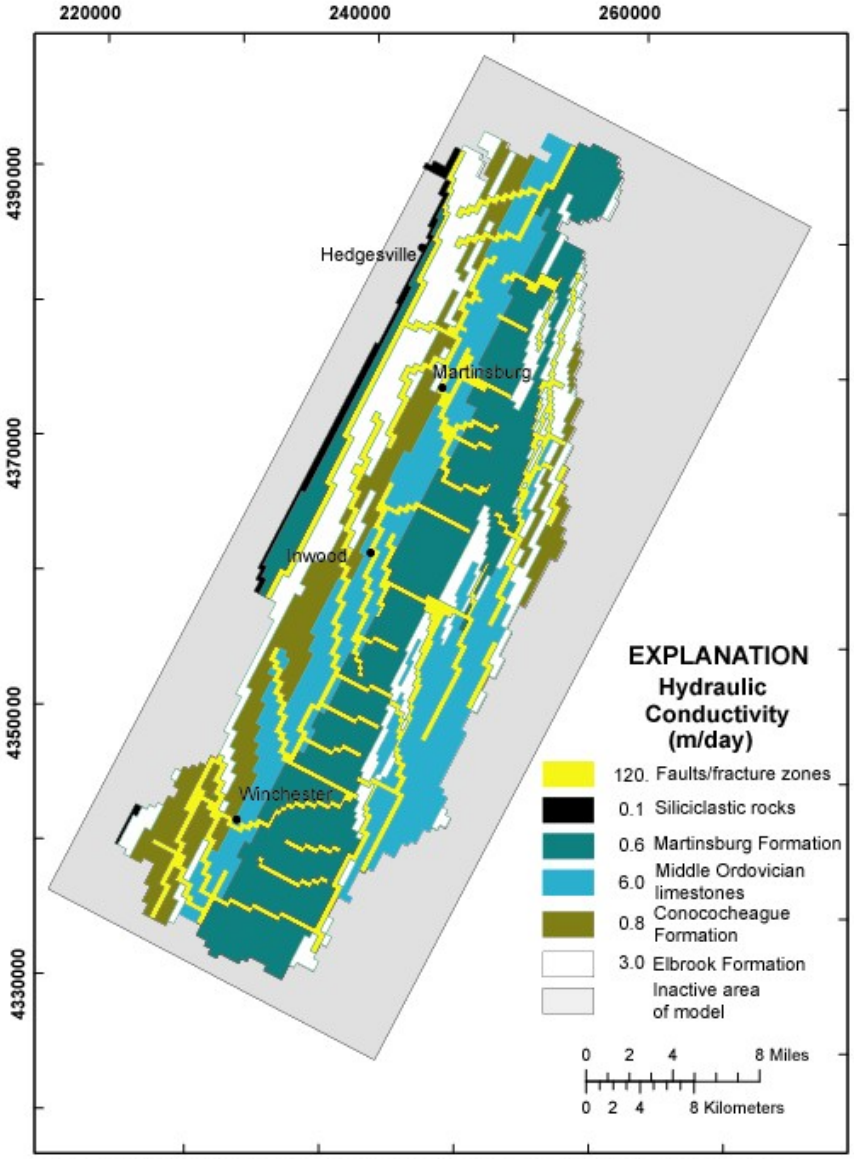


Figure 7. Cross section of the layer configuration, hydraulic conductivity, and water table elevation simulated in the ground-water flow model developed for the Opequon Creek Watershed area, Virgini and West Virginia.



Base from U.S. Geological Survey digital data, Universal Transvers Mercator Projection Zone 18, 1:24,000, 2008.

Figure 9. Hydraulic conductivities assigned to the upper layer of the ground-water flow model developed for the Opequon Creek Watershed area, Virginia and West Virginia.

USGS

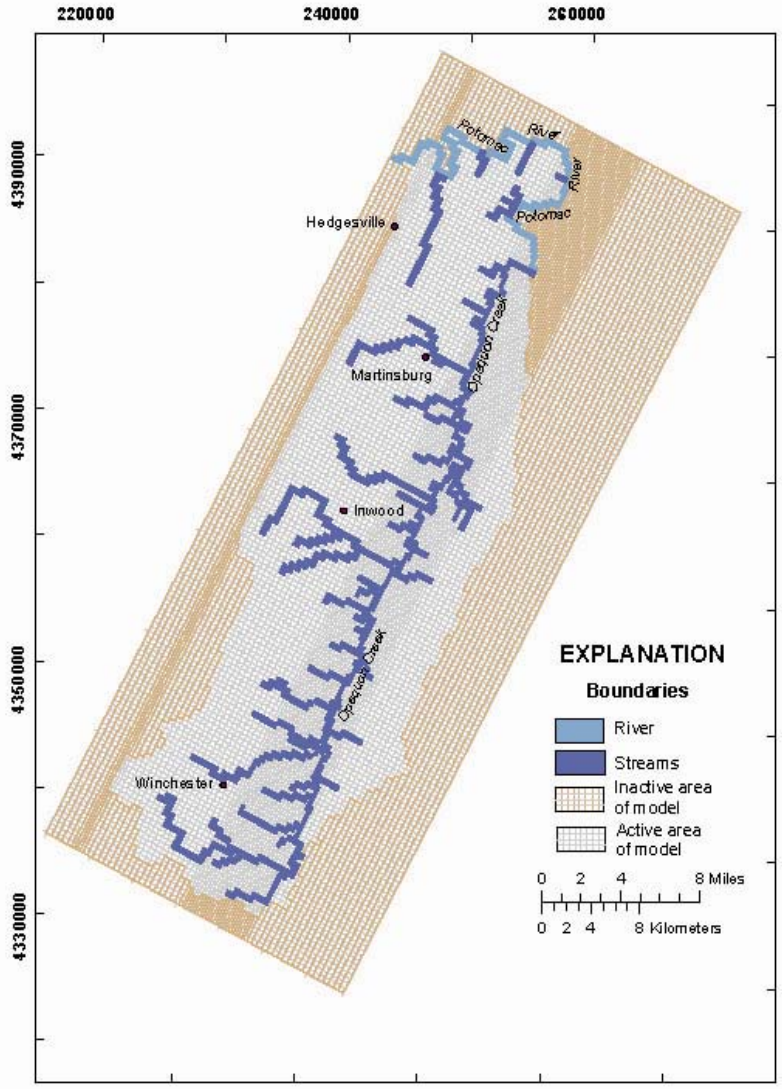


Figure 10. Map showing boundary conditions and the active and inactive model grid of the ground-water flow model developed for the Opequon Creek watershed, Virginia and West Virginia.

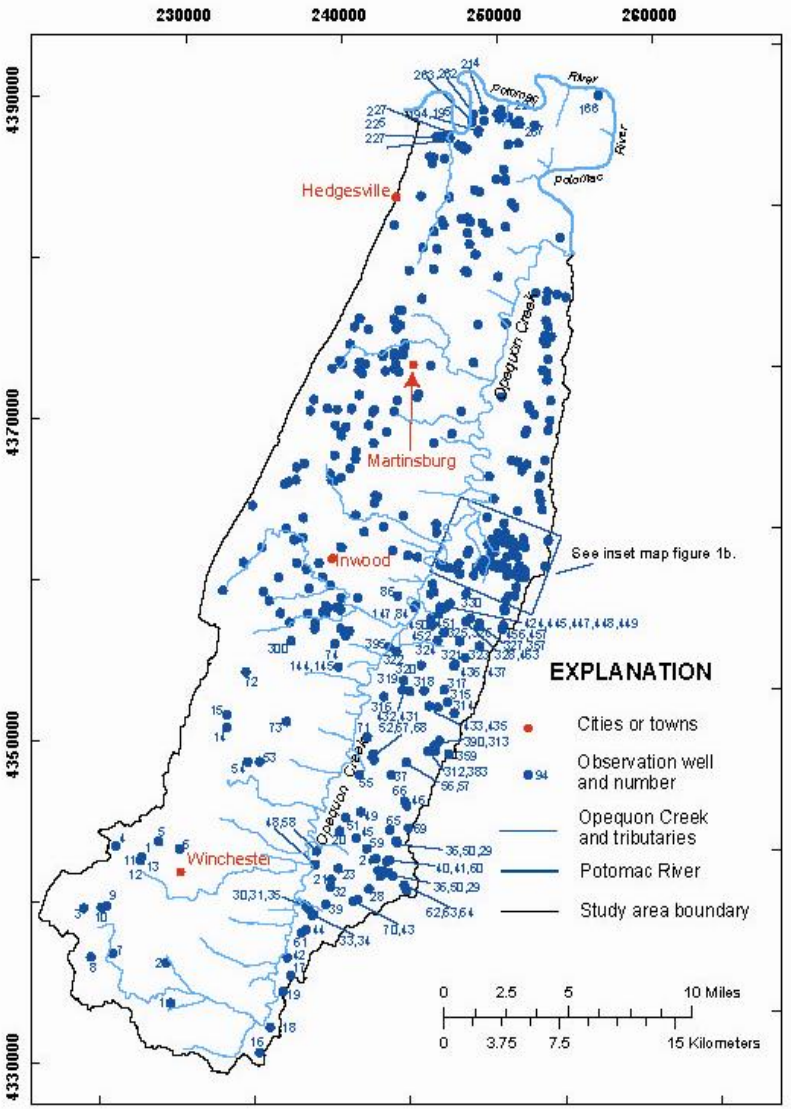


Figure 3. Map showing location of water-level observation wells used for development and calibration of the ground-wter flow model of the Opequon Creek watershed, Virginia and West Virginia.

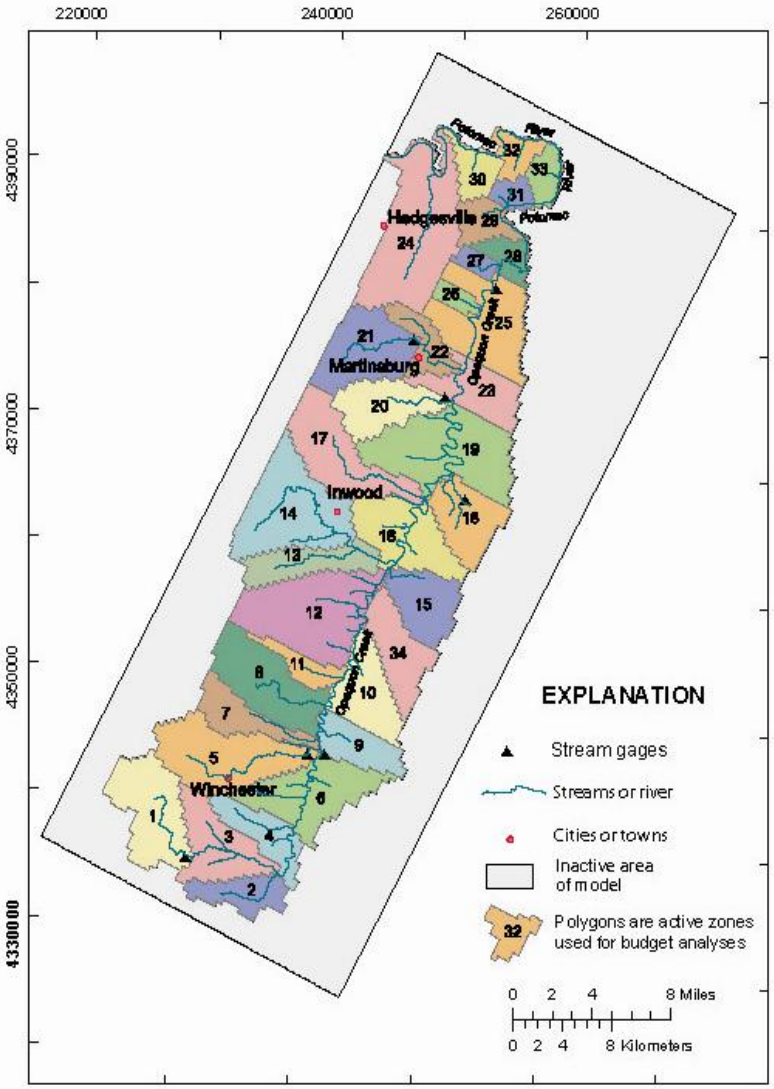


Figure 11. Map showing zones for which water budget analyses were conducted on sub-basins of the Opequon Creek watershed, Virginia and West Virginia.

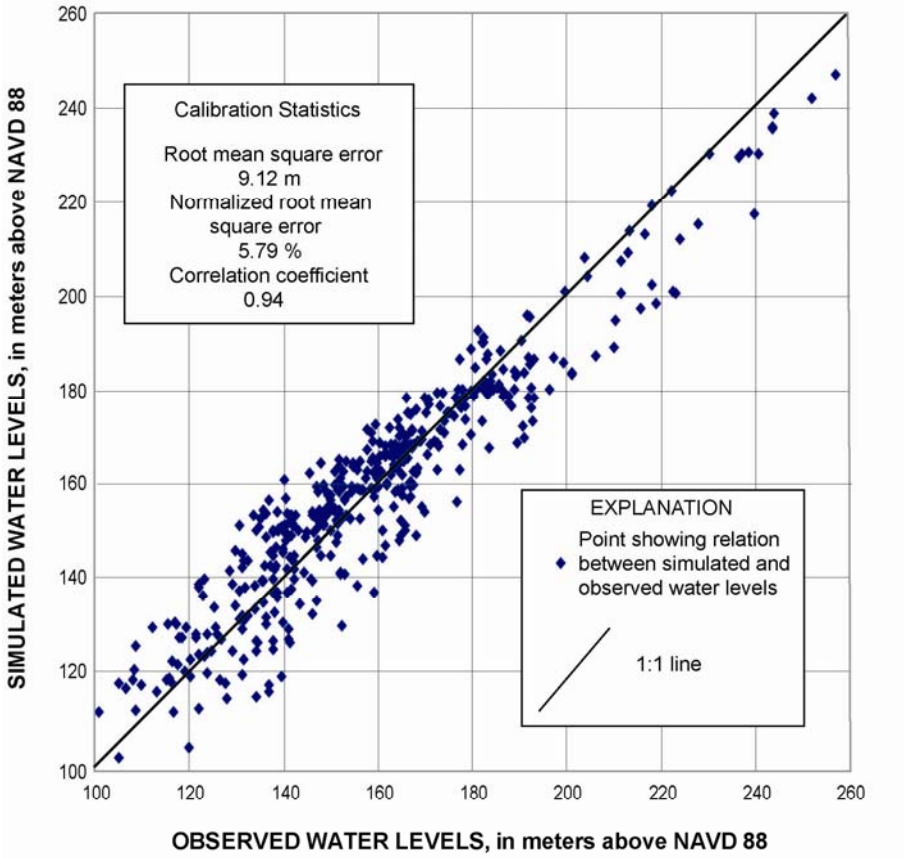


Figure 13. Relation between simulated and observed water levels in 470 observation wells iin the Opequon Creek Watershed area, Virginia and West Virginia.

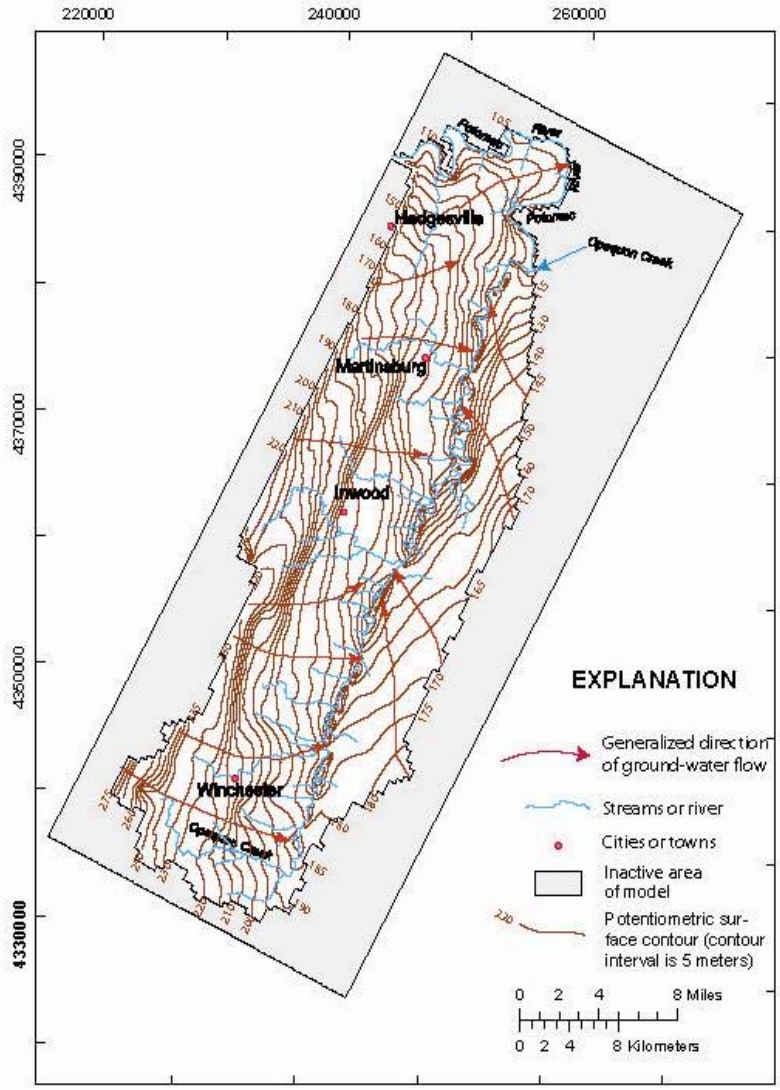


Figure 13. Map showing simulated potentiometric surface (water table) for average hydrologic conditions in the Opequon Creek watershed, Virginia and West Virginia.

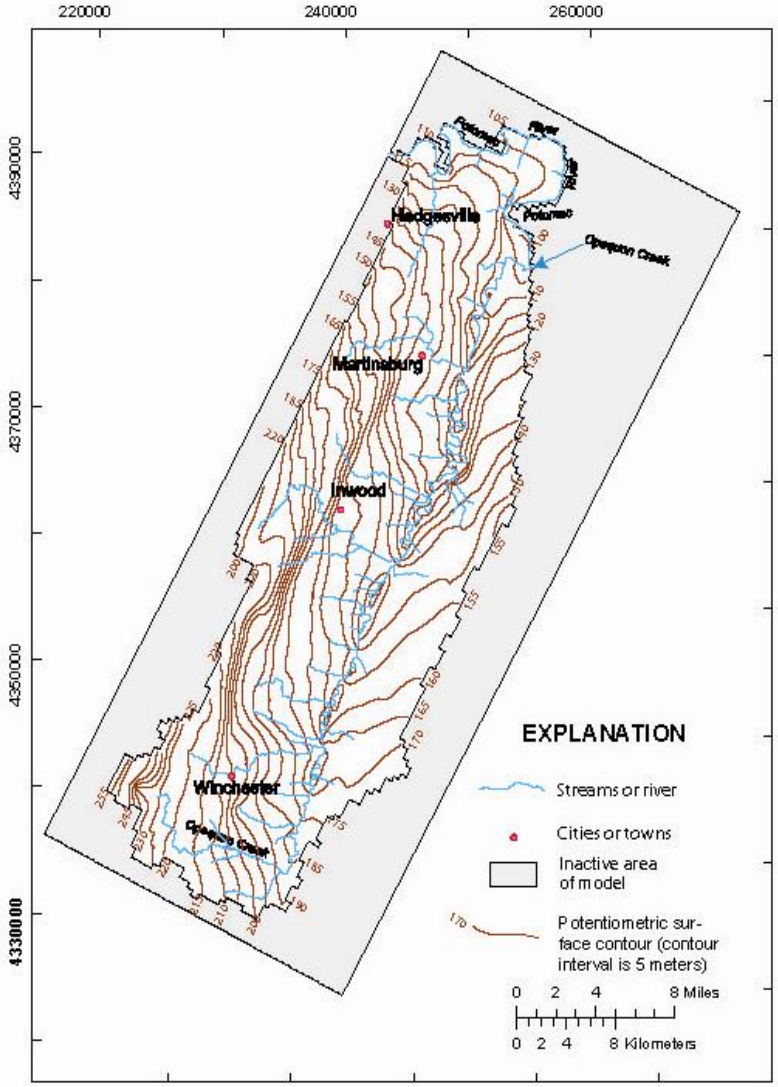


Figure 14. Map showing simulated potentiometric surface (water table) for a simulated drought in the Opequon Creek watershed, Virginia and West Virginia.

Hydrogeology and Ground-Water Flow in the Opequon Creek Watershed area, Virginia and West Virginia

By Mark D. Kozar and David J. Weary

http://pubs.usgs.gov/sir/2009/5153/

Base Streamflow
in
Jefferson County, West Virginia

Base Streamflow Survey Oct. 31 to Nov. 2, 2007

- **Flow conditions at 25th percentile (flow that would be equaled or exceeded 75 percent of the time).**
- **Measurements obtained:**
  - **Streamflow**
  - **Water temperature**
  - **Specific conductance**

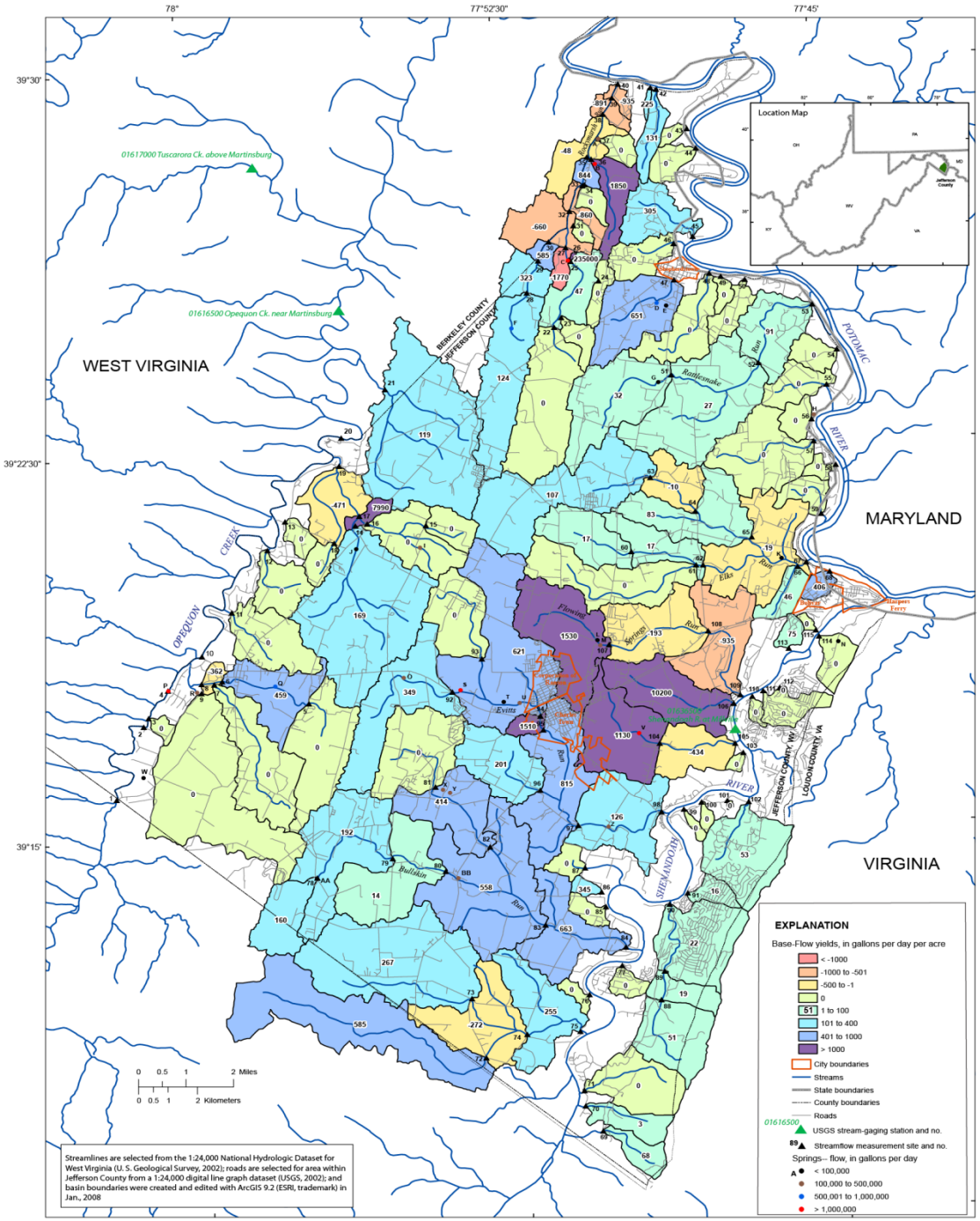


Figure 1. Map showing measurement sites, base-flow yields of watersheds, and spring flow in Jefferson County, West Virginia, fall 2007.

Results

- 115 stream sites and 28 springs were visited for measurement
- Some large springs in west are adjacent to watersheds with little or no base flow, indicating capture and transfer of groundwater
- Most watersheds adjacent to Potomac River had no base flow, indicating underflow to River
- South central watersheds had largest yields; several exceeded 400 gal/d/acre
- South east watersheds (Blue ridge) had smallest yields; all less than 100 gal/d/acre

Hydrogeologic Factors Affecting Base-Flow Yields in the Jefferson County Area, West Virginia, October–November 2007

By Ronald D. Evaldi, Katherine S. Paybins, and Mark D. Kozar

http://pubs.usgs.gov/sir/2009/5145/