

Forests, Water and People

Drinking water supply and forest lands in the District of Columbia

USDA Forest Service
Northeastern Area
State and Private Forestry



Project Description

In the Northeast and Midwest United States, forests are critically important to the supply of clean drinking water. Protecting and managing forests in source watersheds is an essential part of future strategies for providing clean safe drinking water that citizens can afford. The Forests, Water and People analysis identified private forests that are most important for drinking water supply and most in need of protection from development pressure. This fact sheet gives the results of the analysis for the District of Columbia. For more detailed description of methods, and results for the Northeast and Midwest United States, see the [full report](#).

The Process

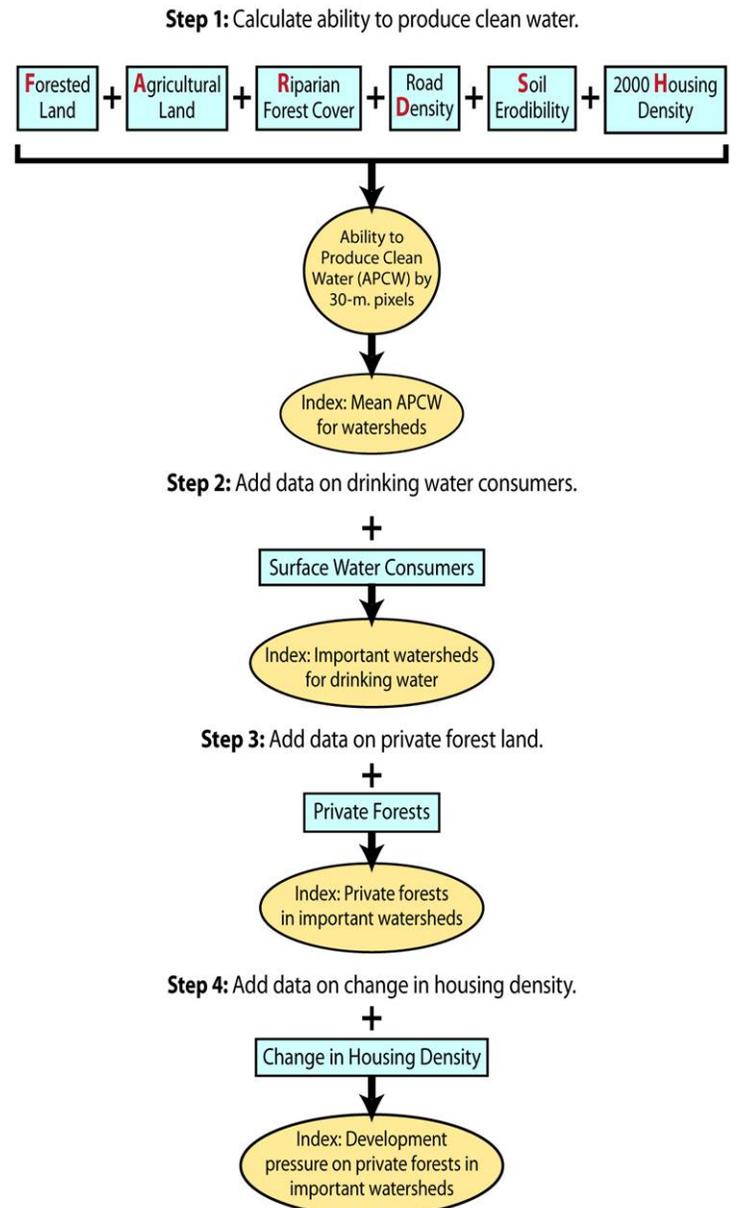
Through a 4 step GIS-based overlay analysis, four indices were developed for each watershed (see Figure 1).



Photo by Michael Land.

"Water, in all its uses and permutations, is by far the most valuable commodity that comes from the forest land that we manage, assist others to manage, and/or regulate."
Policy Statement, National Association of State Foresters

Figure 1. Nine layers of GIS data (boxes) were combined in stepwise fashion, to produce four indices (ovals) of watershed importance for drinking water supplies and the need for private forest management to protect those supplies.



District of Columbia Results

Highlights

- Although the District of Columbia is a densely populated area, its watersheds ranked above average in providing surface drinking water supply and having private forests on important watersheds, and among the highest among the Northeastern Area since its high-quality watersheds are under development pressure.
- Due to its small size and mixed land use, the District of Columbia did not rank as high in the ability to produce clean water, although the District of Columbia has more than 700,000 acres of forestland.
- The District of Columbia ranked above average in the ability of its watersheds to provide drinking water because more than 2 million surface water consumers depend on drinking water supplies. The Middle Potomac-Catocin watershed supplies drinking water to 1.9 million people.
- Due to the large percentage of private forest (88 percent), the District of Columbia's watersheds ranked above average in their importance for providing drinking water supply.
- Nearly 1/3 (31 percent) of private forestlands on high-quality watershed areas are subject to development pressure by 2030, which placed the District of Columbia's watersheds among the highest across the region.

Table 1. Watershed results for the District of Columbia

Watershed Name	Hydrologic Unit Code	Mean APCW for watersheds	Surface drinking water consumers	% private forest in watershed	% watershed with housing density increase	Index: Development pressure on private forests important for drinking water supply	
						Score (Step 4)	Rank (Step 4)
Middle Potomac-Catocin	02070008	5 of 10	1,880,230	38 %	36 %	31 of 40	50 of 540
Middle Potomac-Anacostia-Occoquan	02070010	5 of 10	434,952	41 %	20 %	30 of 40	61 of 540

Average or total value for all watersheds listed in Table 1

Mean APCW for watersheds:	5.0	of 10
Important watersheds for drinking water composite score:	14.5	of 20
Private forests in important watersheds composite score:	20.5	of 30
Development pressure on private forests in important watersheds composite score:	30.5	of 40
Forested Land (acres):	707,089.6	
Private Forest (acres):	622,742.8	
Private Forest Land under Development Pressure by 2030 (acres):	193,047.3	
(% private forest land):	31.0%	

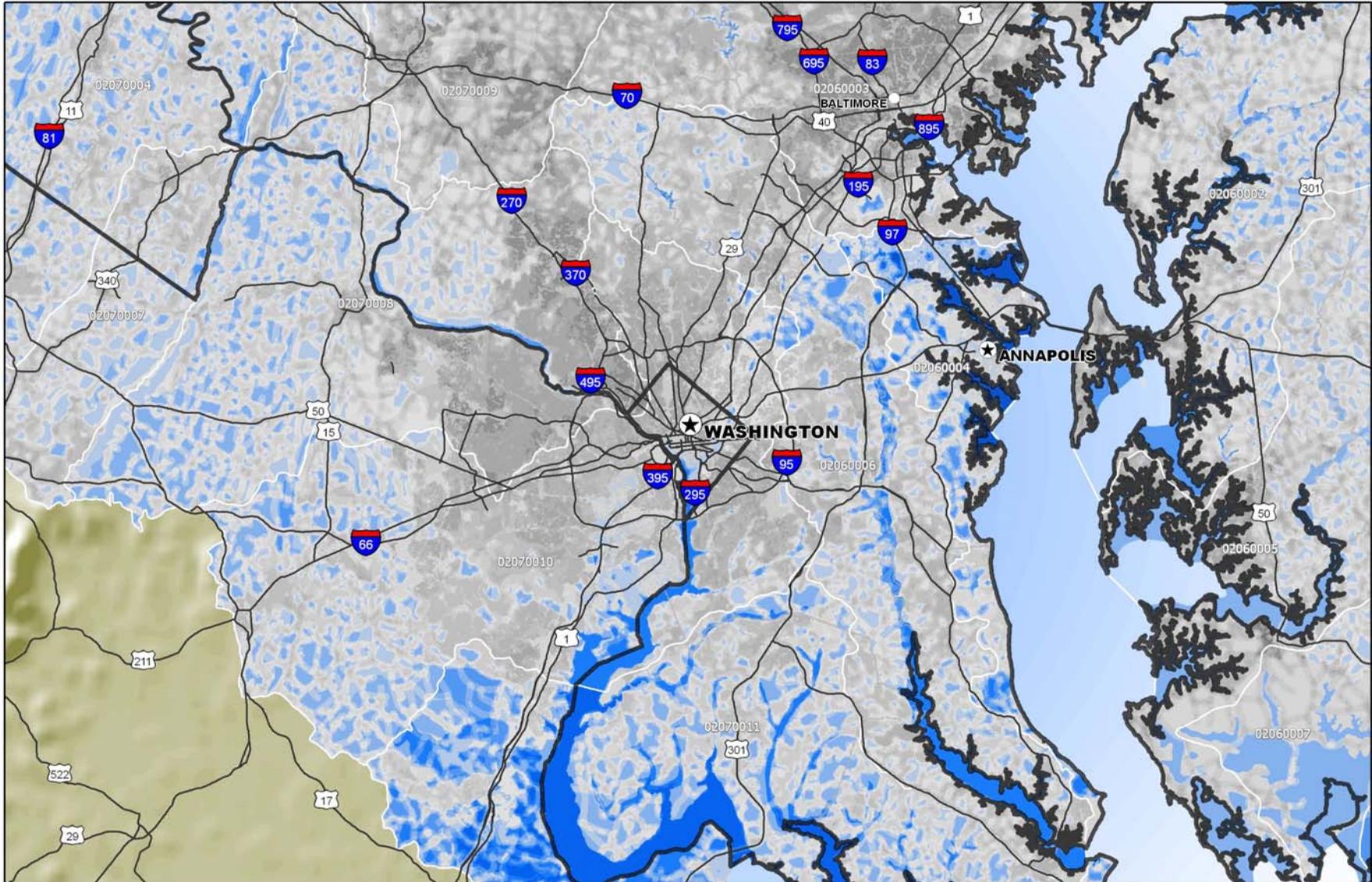
Note: If a watershed fell partially in the District of Columbia, the whole watershed was considered for this project. State results reflect the total acreage for all watersheds that impact that State (this may account for a higher acreage figure than if only lands within State boundaries were considered).

Maps

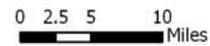
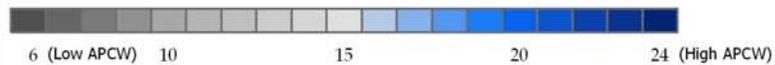
The following maps depict the results of each step in the Forests, Water and People analysis. Each watershed is labeled with the eight-digit HUC and the watershed composite score for the analysis step. (Note: the APCW, 30-m. pixel view does not have a watershed score)

All of the maps were produced by Rebecca Whitney Lilja, Office of Knowledge Management, Northeastern Area State and Private Forestry.

Step 1 - Ability to Produce Clean Water, 30m View - District of Columbia



STEP 1 COMPOSITE SCORE, 30m VIEW

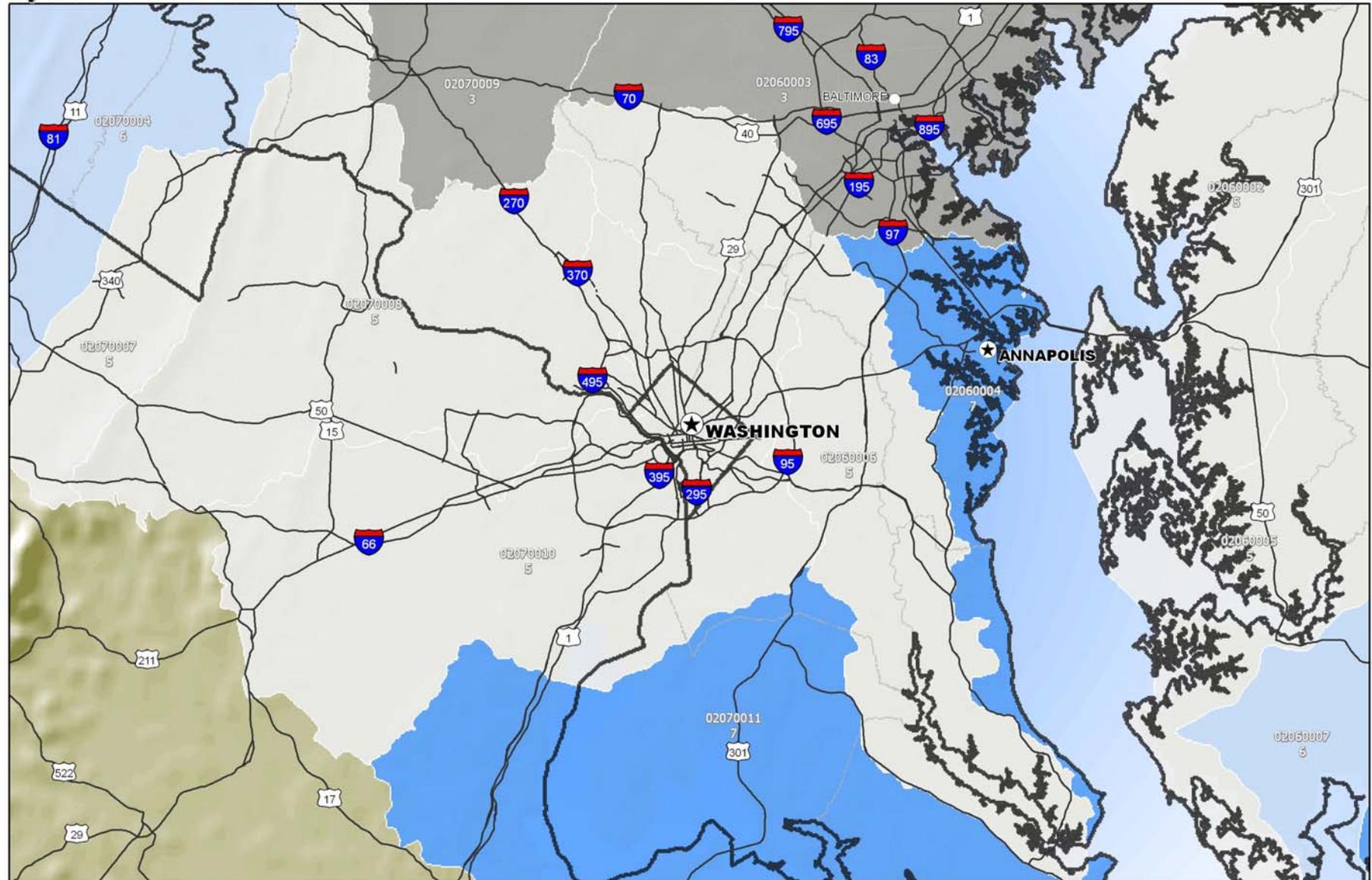


Projection: Albers

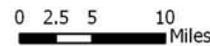
Watershed labels describe the 8-digit hydrologic unit code (HUC)

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Step 1 (Continued) - Mean Ability to Produce Clean Water by Watershed - District of Columbia



STEP 1 COMPOSITE SCORE

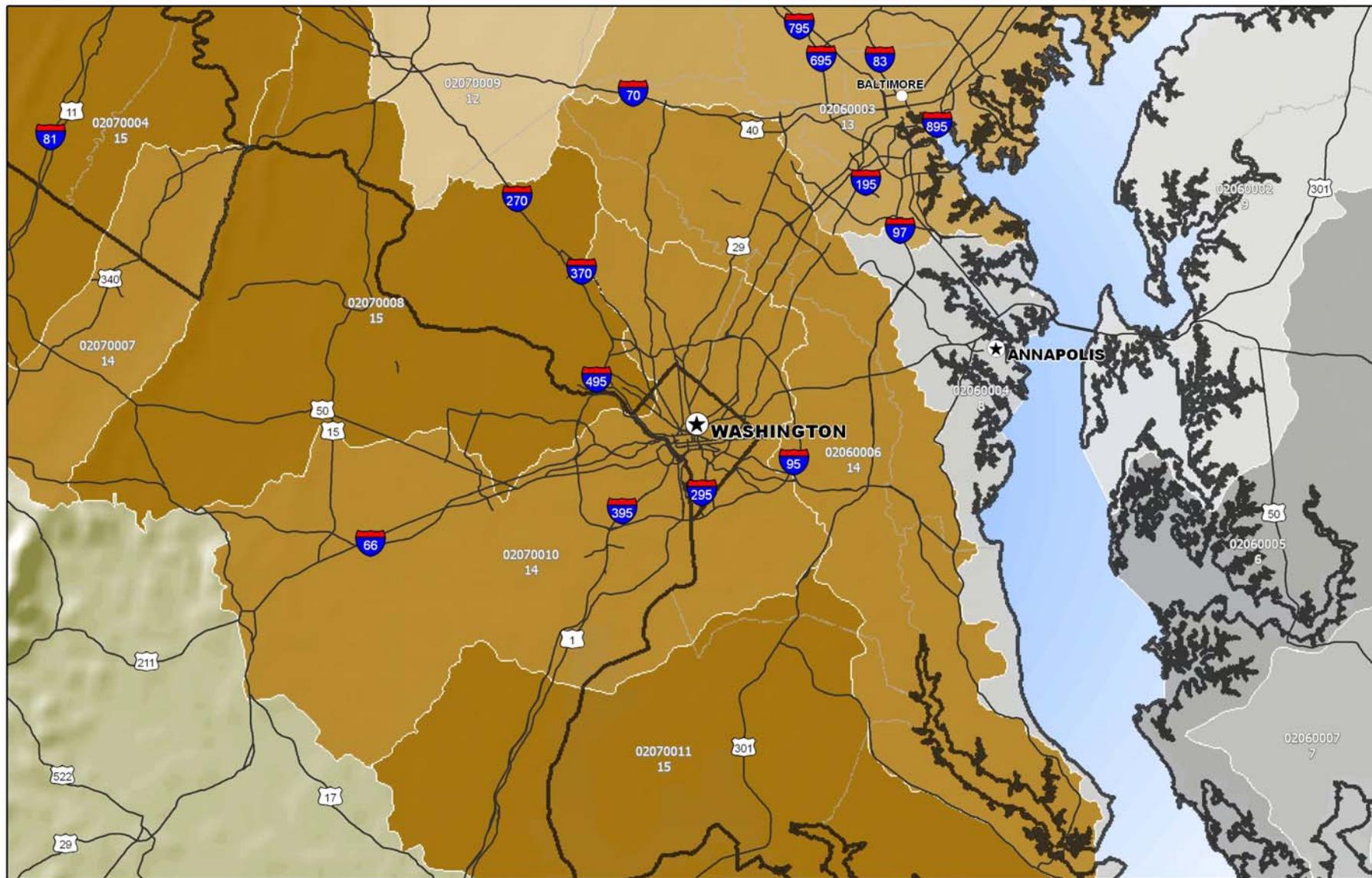


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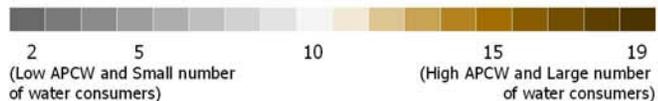
Watershed labels describe the 8-digit hydrologic unit code (HUC) and watershed composite score

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Step 2 - Importance of watersheds for drinking water supply - District of Columbia



STEP 2 COMPOSITE SCORE



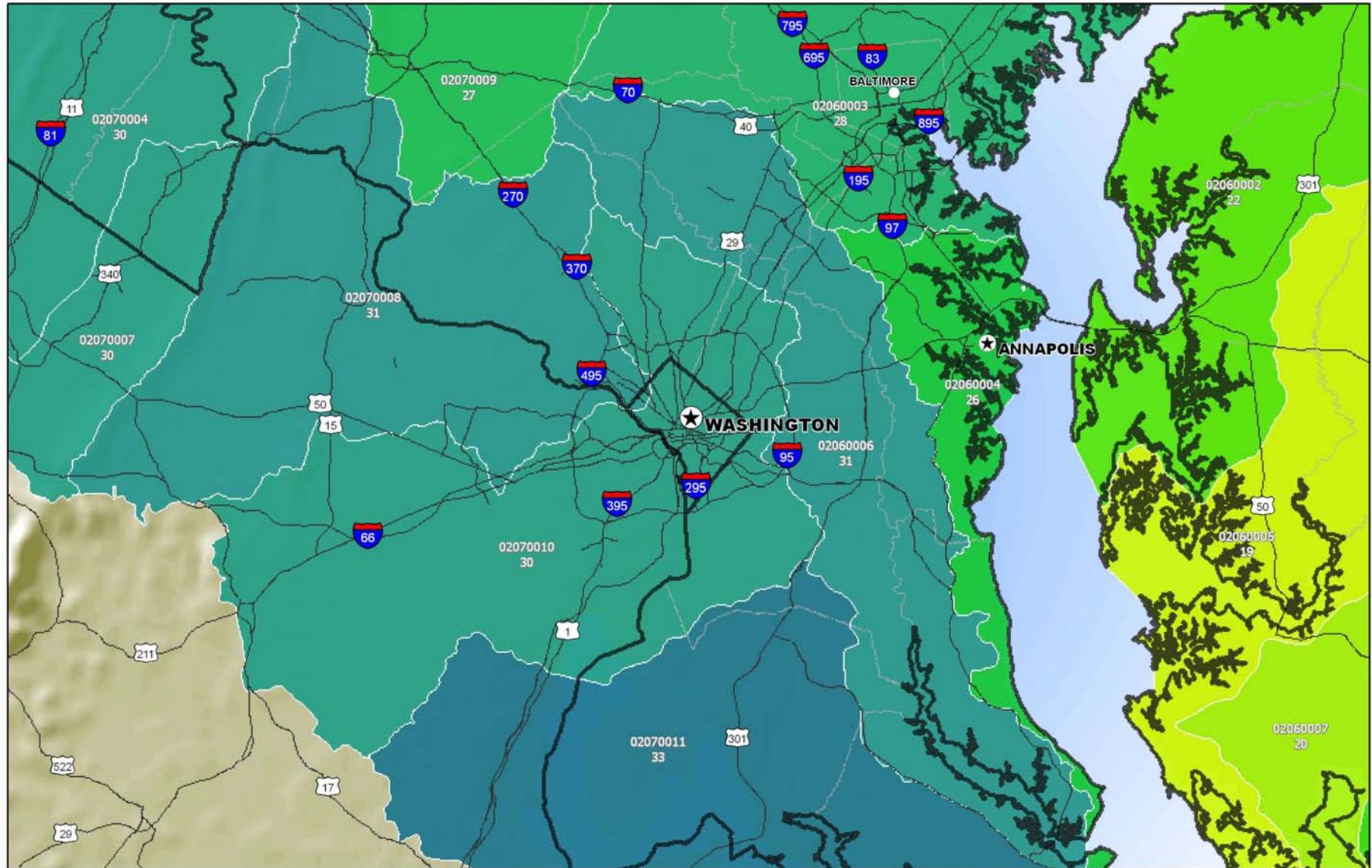
0 2.5 5 10 Miles

Projection: Albers

Watershed labels describe the 8-digit hydrologic unit code (HUC) and watershed composite score

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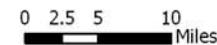
Step 4: Development pressure on private forests in drinking water supply watersheds - District of Columbia



STEP 4 COMPOSITE SCORE



Projection: Albers



Watershed labels describe the 8-digit hydrologic unit code (HUC) and watershed composite score

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References

Table 2. Datasets used in the Forests, Water and People Analysis

Attribute	Dataset	Source*
Forest land	1992 National Landcover Dataset	U.S. Geological Survey 1999
Agricultural land by watershed	1992 National Landcover Dataset	U.S. Geological Survey 1999
Riparian forest cover by watershed	1:100,000-scale National Hydrography Dataset, buffered to 30 meters	Hatfield 2005
Road density	2002 Bureau of Transportation Statistics (BTS) Roads	U.S. Department of Transportation 2002
Soil erodibility	STATSGO Soil Dataset, kffact	Miller and White 1998
Housing density by watershed	Housing density in 2000	Theobald 2004
Surface drinking water consumers per unit area	Public Drinking Water System (PWS) Consumers by eight-digit HUC; City Drinking water consumers for New York City, Philadelphia, St. Louis, St. Paul, and Washington DC	U.S. Environmental Protection Agency 2005
Private forest by watershed	Protected Areas Database, Version 4; Wisconsin Stewardship Data	Conservation Biology Institute 2006; U.S. Geological Survey, Upper Midwest Environmental Sciences Center 2005
Development pressure per unit area	Housing density in 2000 and 2030	Theobald 2004

*Note: See the [full report](#) for complete reference citations.

Watershed Resources

Northeastern Area Watershed— <http://www.na.fs.fed.us/watershed>

Forest-to-Faucet Partnership—<http://www.wetpartnership.org/index.html>

Trust for Public Land Source Water Stewardship Project—<http://www.tpl.org/>

Forests on the Edge—<http://www.fs.fed.us/openspace/fote/index.html>

American Water Works Association—Professional and Technical Resources—<http://www.awwa.org/Resources/index.cfm?&navItemNumber=1416>

Source Water Collaborative—<http://www.protectdrinkingwater.org/>

Environmental Protection Agency—Surf Your Watershed—<http://cfpub.epa.gov/surf/locate/index.cfm>

Environmental Protection Agency—Safe Drinking Water Information System—http://www.epa.gov/enviro/html/sdwis/sdwis_ov.html

This project was a collaborative effort between the Northeastern Area and Dr. Paul K. Barten, Associate Professor, University of Massachusetts-Amherst and Co-director of the Forest-to-Faucet Partnership.

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