



Caroline County and the Towns of Bowling Green and Port Royal

Water Source Overview

Major water sources include groundwater wells, the Rappahannock River, the Pamunkey River, and Lake Caroline.

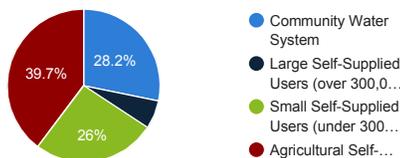
***Table 1:** Reported (2010) and projected (2040) water use by system type for Caroline County in MGD

Type	Reported Use 2010 MGD	Projected Use 2040 MGD
Community Water System	1.180	2.834
Large Self-Supplied Users (over 300,000 gal/month)	0.251	0.456
Small Self-Supplied Users (under 300,000 gal/month)	1.088	1.196
Agricultural Self-Supplied Users	1.660	2.236

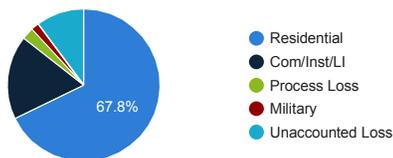
Water Use by System Type

Approximately 11,290 people use private groundwater wells for residential water supply. All tables and graphs represent reported water use including Sales to other localities, if applicable.

***Figure 1:** Percentage of reported water use by system type in 2010 (No use data shown on graph if less than .01 MGD: Refer to Table 1)



***Figure 2:** Disaggregated water use percentages for Community Water Systems in 2010 (No graph shown if no disaggregated use data reported)



***Table 2:** Reported (2010) and projected (2040) groundwater and surface water use for Caroline County in MGD

Reported 2010 Groundwater Use (MGD)	Reported 2010 Surface Water Use (MGD)	Projected 2040 Groundwater Use (MGD)	Projected 2040 Surface Water Use (MGD)
2.34	1.84	4.27	2.46

***Figure 3:** Caroline County highlighted in the Commonwealth of Virginia



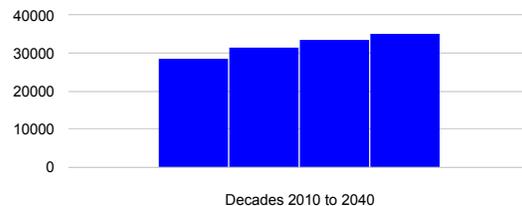
Projected Water Demand

Population and demand are projected to increase through the planning period. The County and Town of Bowling Green may experience a combined average daily deficit of 0.256 MGD by the year 2030. Alternative water supply sources listed in the plan include groundwater development, interconnection with other localities, and an intake on the Rappahannock River. For the Town of Port Royal, average annual demand can be met through the planning period; however, there are concerns over meeting peak demand as early as 2030. Peak demand is estimated at 0.049 MGD in 2030. Alternatives presented include improvements to existing wells, a cooperative agreement with Caroline County to increase the town's customer base, or taking over the operation of two small community water supplies outside of the town limits to increase their customer base.

***Table 3:** Caroline County population projections by decade from 2010 to 2040 (data gathered from VEC projections - 05/20/13)

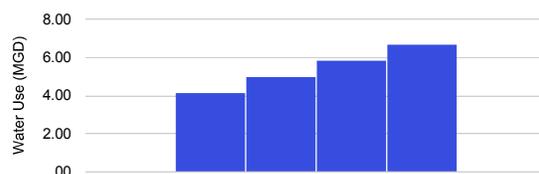
2010	2020	2030	2040	% Change (2010-2040)
28,545	31,400	33,447	35,259	25.0%

***Figure 4:** Caroline County population projections by decade for 2010, 2020, 2030 & 2040



***Table 4 & Figure 5:** Caroline County water demand trends by decade for 2010, 2020, 2030 & 2040 in MGD

Reported Use 2010 MGD	Projected Use 2020 MGD	Projected Use 2030 MGD	Projected Use 2040 MGD	Percent Change (2010-2040)
4.18	5.03	5.87	6.72	60.9%



Drought Management Practices

The Town of Bowling Green adopted an ordinance to enforce drought emergency measures. Caroline County adopted an ordinance to enforce emergency restrictions due to water shortage or other cause. The Town of Port Royal will adopt an emergency ordinance to enforce the Drought Response and Contingency Plan. [Caroline County and Town of Bowling Green Regional Water Supply Plan; Town of Port Royal Local Water Supply Plan]