

## **9.0 ALTERNATIVES ANALYSIS**

Generally, the existing sources of water are projected to meet future demands in Goochland County. Each is briefly discussed below.

### **9.1 Eastern Goochland**

As noted in the “Statement of Need” section of this report, the existing contract with Henrico County will provide adequate water to meet the projected needs of Eastern Goochland beyond 2060. In order for Henrico to meet future demands, the Cobbs Creek Reservoir is identified as the long-term water source for Henrico County, and as a result, the long-term solution for Eastern Goochland.

### **9.2 Courthouse Village and Correctional Center**

The James River Correctional Center Treatment Plant is adequate to meet the projected demands of the Department of Corrections needs as well as the Courthouse Village for the next 50 years.

### **9.3 Major Village Areas**

It is anticipated that the other major village areas, Oilville and Manakin, will continue to rely on self-supplied groundwater sources until residential, commercial or industrial development increases to a point where a community water system is needed. A community water system could be supplied by groundwater, or, water could be provided by the Eastern Goochland water system.

### **9.4 Rural Villages**

The rural villages: Hadensville, Sandy Hook, George’s Tavern/Fife and Crozier will continue to rely on groundwater for the foreseeable future. It is possible that community or non-community systems that rely on groundwater will develop in these villages.

### **9.5 Regional Solution**

The focus of the Alternatives Analysis for Goochland County is the planned Cobbs Creek Reservoir which is a regional project designed to meet the future water needs of Henrico, Cumberland, Powhatan and Goochland Counties.

The reservoir will be built, owned and operated by Henrico County. The 1,017 acre reservoir will be located in northwest Cumberland County. The raw water storage capacity is 14.8 billion gallons of water and the safe yield is estimated to be 47 million gallons per day which is projected to provide water to meet the regional needs through most, if not all, of the 50-year planning horizon.

Key project components include:

- ◆ James River withdrawal facilities
- ◆ A dam and reservoir
- ◆ Reservoir withdrawal facilities
- ◆ A transfer pipe between the river and the reservoir.

Water from the James River will be pumped to the reservoir when river flows are adequate. Controlled releases from the reservoir will be made to the James River during droughts and other periods when the James River flows are inadequate to support regional demands.

Henrico County's share of the capacity of the reservoir is 30 million gallons and Goochland County will continue to purchase water from Henrico County in accordance with the existing contract.

## **9.6 Reuse**

One way to extend the groundwater and surface water supply that will be needed to meet increasing demands for water is to use (or reuse) treated wastewater that has undergone a high level of treatment. Studies in other parts of the United States have shown that using reuse water can reduce the demand for potable water by 5 to 20 percent.

Virginia has adopted Water Reuse Regulations that allow for the potential application of reuse water for a variety of potable and non-potable uses. The following table provides a listing of the types of uses that are allowed in Virginia. As shown below, Level 1 requires a higher level of treatment due to the potential for human contact.

**Table 87: Water Reuse Opportunities in Virginia**

<b>Level 1 Treatment (Level 1 treatment requires secondary treatment with filtration and higher level of disinfection)</b>	<b>Level 2 Treatment (Level 2 treatment requires secondary treatment with standard disinfection)</b>
Residential Lawn Watering	Irrigation of food crops (commercially processed)
Toilet flushing (non-residential)	Irrigation of non-food crops
Fire Fighting and Fire Protection (non-residential)	Landscape impoundments
Commercial Car Wash	Construction (compaction, dust control, concrete)
Commercial Air Conditioning Systems	Livestock Watering
Irrigation of Certain Food Crops	Ship Ballast
Landscape Impoundments	Cooling Towers
Commercial Laundries	
Irrigation of Golf Courses, Recreation Fields	

Currently, there are limited opportunities for developing reuse projects in Goochland County due to the limited number of wastewater treatment facilities in the county. It is recommended that the county be aware of the reuse regulations and consider opportunities to take advantage of this method of reducing water demands when available.