

## **Chapter 4E**

# **PUBLIC FACILITIES PLAN- WATER AND SEWER**



## WATER AND SEWER FACILITIES

### Introduction

The latest approved version of the County Water and Sewer Master Plan is incorporated by reference into the Comprehensive Plan. It identifies short and long range improvements required to meet development guidelines as established by the Comprehensive Plan. As the County grows additional demand will be placed on water/sewer existing infrastructure and County water resources. It is an axiom of planning that development follows water and sewer lines, as well as roads. When these facilities are upgraded in response to growth pressures, their improvement can stimulate further development. That development will increase demands on schools, recreation programs, emergency services, and other services in a continuing cycle of growth, demand, service provision, and more growth. Ensuring that the provision of community facilities and public services is phased with demand is a major aim of any Comprehensive Planning process.

One of the most effective tools for directing the timing and location of growth is the establishment of a Primary Development Boundary to define the area within which public utilities will be provided. Utility services will not be provided by the County outside of the Primary Development Boundary, where development is discouraged. Per the Future Land Use Element of the Comprehensive Plan, areas located outside of the County Primary Development Boundary are overwhelmingly designated for rural residential and agriculture and forestal land uses. With lack of public water and sewer availability in these areas, water and sewer availability comes via private well and septic systems serving individual lots. Private utility services particularly for residential uses meant to serve collections of residences outside of the Primary Development Boundary are discouraged. The threat of systems failures (such as mass drainfields), insufficient funding, management, or maintenance poses risk for service supported residents reliant on such services and the County utilities department who may have few options but to take over management and maintenance functions in areas not intended for County utility service. By establishing a Primary Development Boundary, the County will encourage more efficient use of the land while preserving the rural character of those portions of the County outside the boundary. The Primary Development Boundary is depicted in the Primary Development Boundary Map, embedded within the Public Facilities Water and Sewer Facilities, and in the Future Land Use Map, located in Chapter 2. This boundary is not permanent and can be adjusted through the Comprehensive Plan amendment process when conditions warrant.

### Existing Water Service

The Spotsylvania County water system, serves more than 32,000 customers with drinking water in the County and provides bulk finished water to the City of Fredericksburg. The distribution system consists of multiple pressure zones that are supplied by seven storage tanks, two water treatment facilities and three reservoirs.



The Spotsylvania County water system consists of the following principal features:

#### Ni Reservoir

The Ni Reservoir, the raw water supply to the adjacent Ni Water Treatment Plant, was constructed in 1974 and the reservoir has a volume of 1.4 billion gallons with a surface area of approximately 420 acres.

#### Ni Water Treatment Plant

The Ni WTP was constructed in 1974 expanded to its current peak capacity of 6.0 mgd.

#### Motts Run Reservoir

The Motts Run Reservoir was built in 1969 and is owned by the City of Fredericksburg, but is jointly operated by the City of Fredericksburg and Spotsylvania County. The total reservoir volume, prior to modifications, is 1.3 billion gallons with a surface area of 160 acres.

#### Motts Run Water Treatment Plant and Intake on the Rappahannock River

The Motts Run WTP serves Spotsylvania County and the City of Fredericksburg. The Motts Run water treatment facility and Rappahannock River raw water pumping station were completed in the spring of 2000. The plant currently has a firm capacity of approximately 12.5 mgd and a limited summer peak capacity of 15 mgd. The plant is expandable to 24 mgd.

#### Hunting Run Side-Stream Storage Reservoir and Intake on the Rapidan River

The Hunting Run water supply dam and side-stream reservoir was completed in November of 2002. The reservoir volume is 209 billion gallons and the surface area is approximately 420 acres. Water is released into the Rapidan River to supplement the Rappahannock River during periods of low flow to allow continued river intake for the Motts Run WTP.

### **Existing Sewer Service**

Spotsylvania County sewerage system consists of the following principal features:

#### Massaponax Wastewater Treatment Plant

The Massaponax WWTP was constructed in 1975 and has been expanded to 9.4-mgd (million gallons per day) capacity. The plant is a state of the art biological nutrient removal facility. The wastewater treatment plant serves the Massaponax Creek drainage basin and includes the pump-over from the American Central sewage collection system and a small part of the upper Hazel Run drainage basin which is also pumped into the Massaponax Creek basin. Facilities are in place to enable sewage from the Deep Run drainage basin to be pumped to the Massaponax Creek drainage basin. Deep Run wastewater may also be treated at the FMC WWTP. Construction has been completed for the Courthouse Area Sewage Pumping Station that conveys sewage from the Courthouse Area to the Massaponax Creek interceptor.



#### FMC Wastewater Treatment Plant

The original FMC industrial WWTP began operation in 1967 and purchased by the County in 1980 and upgraded to 4-mgd capacity. Sewage from the City of Fredericksburg is treated at this plant.

#### Thornburg Wastewater Treatment Plant

The Thornburg WWTP was constructed in 1972 and has been expanded to a 345,000-gpd capacity.

#### Sewers and Interceptors

The sewer system is broken into collection sewers and four major interceptors. The interceptors are defined by the drainage basins that they serve: Massaponax Creek, Hazel Run, Deep Run, and Long Branch (which is a part of the Hazel Run drainage basin).

All Spotsylvania County sewers and interceptors have been mapped on the County GIS system.

### **GOALS, POLICIES, AND STRATEGIES**

**Goal:** Within the Primary Development Boundary, provide a sufficient supply of high quality drinking water and a distribution system to serve the domestic, recreational, industrial, commercial, and fire protection needs of the community at the most economical price possible.

**Policy:** Supplement the existing supply of potable water and fire flow for Spotsylvania County citizens.

#### Strategies

1. Utilize the Water and Sewer Master Plan to develop a comprehensive approach for the development of new and/or additional water sources.
2. Utilize the Water and Sewer Master Plan to develop a Capital Improvement Program so as to phase water supply and fire flow improvements for designated County growth areas in a timely and cost effective manner.
  - a. A project to construct a 1 MG elevated water storage tank and all attendant facilities and structures serving the tank including, but not limited to, utilities and roads, near Massaponax High School, and, if technically possible, to be located on Massaponax High School's property as that location is ideal to provide the best water service in the most cost efficient manner and will have the least impact on surrounding properties and/or environmental and/or historic resources of significance. This tank will provide additional storage volume to the County's distribution system, increase available fire flow rates to the Route 1 corridor and Thornburg areas, and help to support the anticipated water demand from future development in the Thornburg area. The tank may also allow for the colocation of telecommunications facilities to further support

Page 4



the communication and broadband needs of County citizens. Construction for this project is planned to start in calendar year 2022.

3. Continue to promote a Water Conservation Program throughout the County and protect the County's surface and groundwater supplies for the benefit of all.
4. Provide for a cost sharing program with developers to fund water improvements.

**Goal:** Provide for the adequacy of all new and existing sewage treatment that meets the needs of the community in an environmentally safe manner and only in targeted growth areas of the County.

**Policy:** Locate new or upgraded sewer facilities consistent with the Water and Sewer Master Plan to support orderly and efficient development.

#### Strategies

1. Update and utilize the Water and Sewer Master Plan to provide a phased, prioritized program for the extension of the County sewer system to identified development districts.
2. Utilize the Water and Sewer Master Plan to develop a Capital Improvement Program to phase sewer treatment improvements for designated County growth areas in a timely and cost effective manner.
3. Continue to provide for a cost sharing program with developers to fund sewer improvements.
4. Eliminate and consolidate individual pump stations through the provision of regional pump stations or gravity sewer extensions.

**Goal:** Support capacity and efficiency enhancements to continue to provide quality service within a growing community.

**Policy:** Invest infrastructure enhancements in areas intended for growth, and strategically locate new facilities to the betterment of operations and customer service.

#### Strategies

1. Focus infrastructure expansion and enhancements to the Primary Development Boundary.
2. Discourage and avoid potential cost, maintenance, and management risks associated with private utility systems intended to serve collections of residential users with mass drainfields, etc. located outside of the Primary Development Boundary.
3. Seek to co-locate the County Utilities and Public Works group to a recently acquired parcel located along Gordon Road (TM 21-A-84,) through construction of a modern new facility with adequate facilities to meet the needs to service a growing customer base.
  - a. Explore opportunities to co-locate additional public facilities onsite, including a potential park site on remaining acreage.

