Public Works

Overview

The City of Manassas Park has extensive and well-developed water distribution, sanitary sewer and stormwater management systems. The city also provides trash collection, recycling and street sweeping services to maintain a high quality of life for residents. These systems, together with utilities provided by other systems, are collectively discussed in this Comprehensive Plan as Public Works. Construction and maintenance of city transportation facilities and related services are covered in Chapter 12 of this Comprehensive Plan.

Background

Water system

High quality water for the City of Manassas Park is obtained from two sources, the City well system and the purchased capacity from neighboring jurisdictions.

Table 13.1 Existing Sources of Water and Capacities

Source	*Type*	*Potential Capacity (MGD)*	*Portion of Capacity Currently Used **	*Peak Demand** (MGD)*
Wells #4, #6 and #9	Owned	0.62	63%	0.5859
Previously Purchased Capacity from City of Manassas	Purchased 2001	1.00	75%	1.125
Purchase Currently Planned in 2007 CIP	Purchase	0.50	***	***
Purchase additional capacity	Purchase	0.50	***	***
Totals		**2.62**		

Source: Water Supply and Distribution System Optimization Study for Western Prince William County, Virginia, April 2003
*Average Daily demand
**Peak demand (i.e., Peak Day) = 1.5 times the Average Daily demand
***None until agreement(s) finalized

Table 13.2 Water Consumption Rates and Projections (MGD)

	2002	*2005*	*2010*	*2015*	*2020*	*2025*	*2050*
Average Daily Flow	1.18	1.37	1.41	1.41	1.41	1.41	1.41
Maximum Daily Flow	1.77	2.05	2.11	2.11	2.11	2.11	2.17

Source: Water Supply and Distribution System Optimization Study for Western Prince William County, Virginia, April 2003, Chapter 7, D,Table 7.1

The city well system provides customers, primarily in the area west of the intersection of Manassas Drive and Centreville Road (VA Route 28), with water. The city produces an average of 380,000 gallons per day from 3 existing wells with a total capacity of 620,000 gallons per day. The city also owns 6 other well sites that are currently inactive.

One million gallons per day of water is available to the city via an agreement with the City of Manassas for the area east of the intersection of Manassas Drive and Centreville Road (VA Route 28). Since the well system and the water obtained from outside sources are connected by the city's water distribution system, either source of water can service the entire City should the need arise.

The city must continue to ensure an adequate supply of water to the over 3,700 current customers within the city and customers in the neighboring Yorkshire area.

Based on future development or redevelopment and fire emergency needs throughout the City, agreements are currently under negotiation with neighboring jurisdictions to purchase an additional 1 million gallons per day capacity, as needed.

In addition, the city is participating in the construction of a 24-inch pipeline from Blooms Quarry Road south along Euclid Avenue. The line will provide the city with emergency fire protection on the east side of the city in addition to the Birmingham Green facility and Park Center. This line allows for the option of additional capacity and increased pressure to the Blooms Crossing development in the future.

Prince William County Service Authority (PWCSA) water is also available through the new Rugby Road vault and 12-inch pipeline on the west side of the city. The new vault and pipeline will be operation in February 2006. Although this water source is primarily to provide increased fire flow to help fight fires, it also provides the city with the option of retiring wells in the future. Options will be determined based on negotiations with PWCSA.

The city's average daily water use is currently about 1.18 million gallons per day (MGD). The city continues to monitor water usage in order to determine future needs requiring additional capacity. Table 13.2 provides the average water consumption rates and projections.

Water quality is continually monitored to ensure a safe water supply. Any variances from city,

state or federal standards are promptly addressed. An upgraded water testing protocol was implemented in 2003 to help ensure the accuracy of all tests.

The city water system includes 3 water storage tanks used to store water and to maintain water pressure throughout the city. In addition, the city has expanded its ability to maintain water service in the event of a water main break by providing a closed-loop distribution system. Table 13.3 gives information on city storage tank sizes and capacities. See Figure 13.2 - Water Line System, for a map of the city water line distribution system and water storage tank locations.

As the water storage tanks age, they need to be continually monitored for maintenance needs or replacement.

Table 13.3 Water Storage Tanks

Location	*Built (year)*	*Storage Capacity*
Blooms Quarry Lane	Pre-1975	925,000
Mathis Avenue	Pre-1975	250,000
Joshua Court	1990	1,000,000
Total		**2,175,000**

Source: Public Works Department

Currently there are no plans to add additional tanks to the system. Both water storage and water pressure needs can be provided by purchasing additional capacity from the neighboring jurisdictions of the City of Manassas and Prince William County.

An engineering study has proposed that Manassas Park, Manassas City and the Prince William County Service Authority consolidate their water systems in this area. The city recently signed an agreement with the Prince William County Service Authority and Birmingham Green to provide a portion of the proposed network in order to provide increased fire flow capacity for the adult care facility and the eastern side of the city.

Upon purchase of additional capacity, and minor improvements in the city's eastern portion, this consolidation would eliminate low water pressure in the eastern part of Manassas Park. The consolidation may eliminate the need to keep the Joshua Court water tank in service.

If that tank is no longer required, it could be sold and removed from the site. The alternative to consolidation would be to maintain the Joshua Court tank and to construct and operate a major booster pump station adjacent to the tank.

The city has undertaken a major program of improvements to the water system on the western side of Manassas Park. New transmission lines have been installed to improve water pressure and reliability. The installation of added hydrants will improve the city's fire suppression capabilities by reducing the distance between existing hydrants. The addition of new hydrants and replacement of existing valves will need to continue for several years.

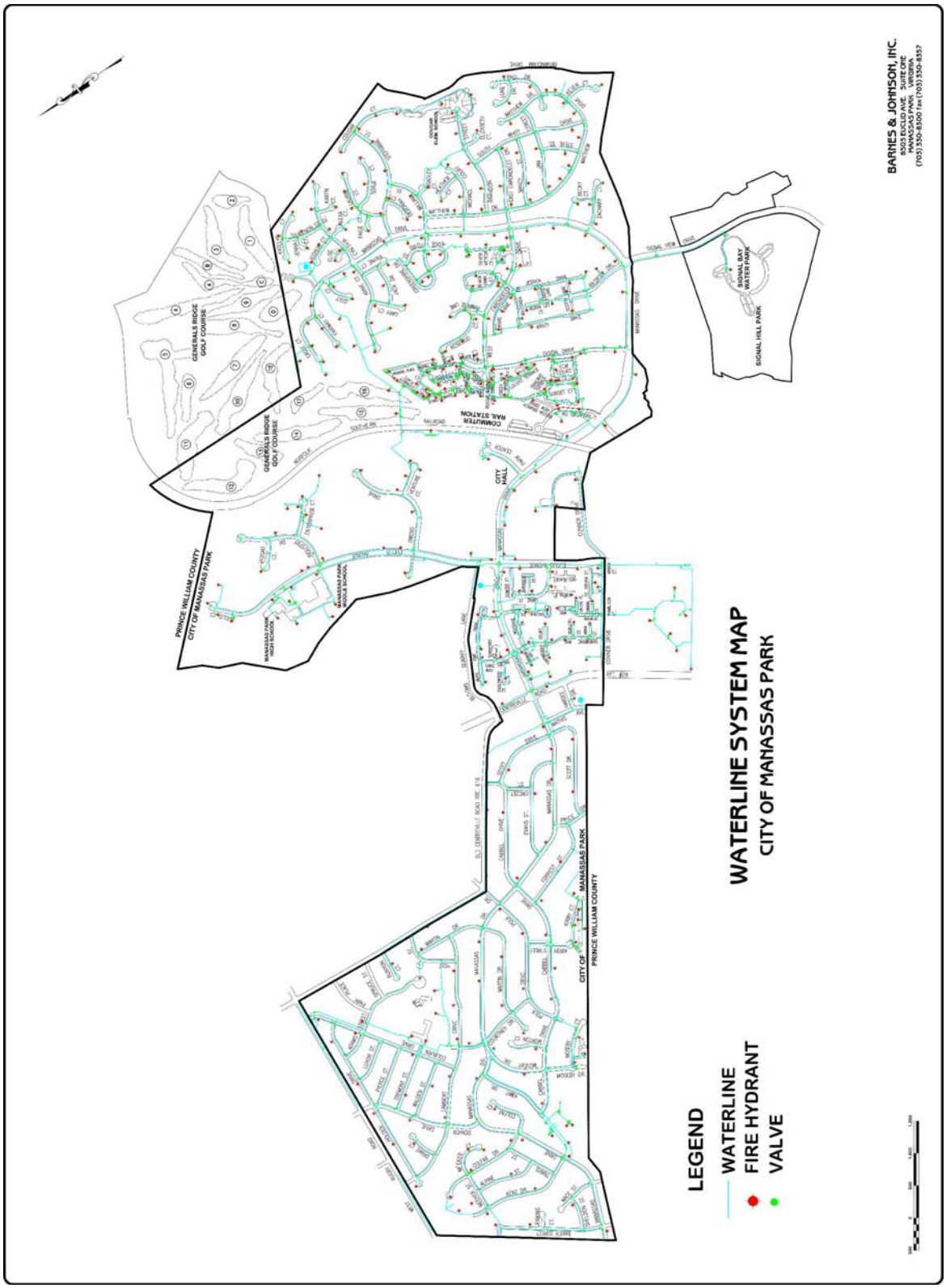

Figure 13.1 Waterline System Map

Sanitary Sewer System

The City of Manassas Park provides access to public sewage treatment facilities via its sanitary sewer mains and pumping stations that are connected the trunk lines and pumping stations of the Upper Occoquan Sewage Authority (UOSA) located a couple miles outside the city.

Initially, the city provided its own sewage treatment facility. In the 1970s, the State environmental agencies required Manassas Park, Manassas, and Prince William County to join Fairfax County in forming Upper Occoquan Sanitation Agency (UOSA). The city closed its treatment plant and, beginning in 1978 began relying on UOSA for its sewage treatment. UOSA now treats sewage from the city to such a high level that the end product is literally "drinkable". As with most communities, sewage treatment is a major expense for city customers.

Table 13.4 Sanitary Sewer Lines

Size	*Amount (LF)*
18 inch pipe	1,085
10 inch pipe	73,315
8 inch pipe	79,695
Total	**154,095**

Source: Department of Public Works

The city-maintained sanitary sewage system consists of pipes ranging in size from 8 to 18 inches in diameter and over 29 miles in length. Table 13.4 provides a breakdown of sizes of the city's sanitary sewer lines.

See Figure 13.3 – Sanitary Sewer System, for a map of the sanitary sewer system showing the locations and relative sizes of major sewer lines and sewage pumping stations.

The city's 3700 utility customers produce an average daily wastewater flow of about 1.1 MGD that is treated at the UOSA wastewater reclamation plant. In addition, inflow and infiltration (I&I) of storm water into the sanitary sewer system adds to the total flow that the city is billed for by UOSA while negatively impacting the operations at the UOSA plant. These peak flows can reach a monthly average of nearly 2.0 MGD during rainy periods.

The city's portion of the capacity at the UOSA plant is currently is 2.9137 million gallons with the recent completion of construction at UOSA. Manassas Park now has 5.3957% of the capacity of the expanded plant.

Leaks in the sanitary sewer pipelines and manholes cause inflow and infiltration (I&I) of storm water into the sanitary sewer system. This results in UOSA charging the city for water that does not need to be treated. To minimize the I&I, the city has an on-going maintenance program concentrating on upgrading the quality of existing sewer lines.
Rehabilitation includes relining sewer lines and manholes and reduces the likelihood of sewer line collapse.

Each year, approximately five percent of the existing sewer line is inspected with video cameras and rehabilitated. The planned expansion of this program, to include replacement and relining of existing sewer lines and manholes, will reduce the burden upon the UOSA treatment plant and reduce the billing. An engineering study has shown that the city's relining project will eliminate the need for additional UOSA capacity through buildout.

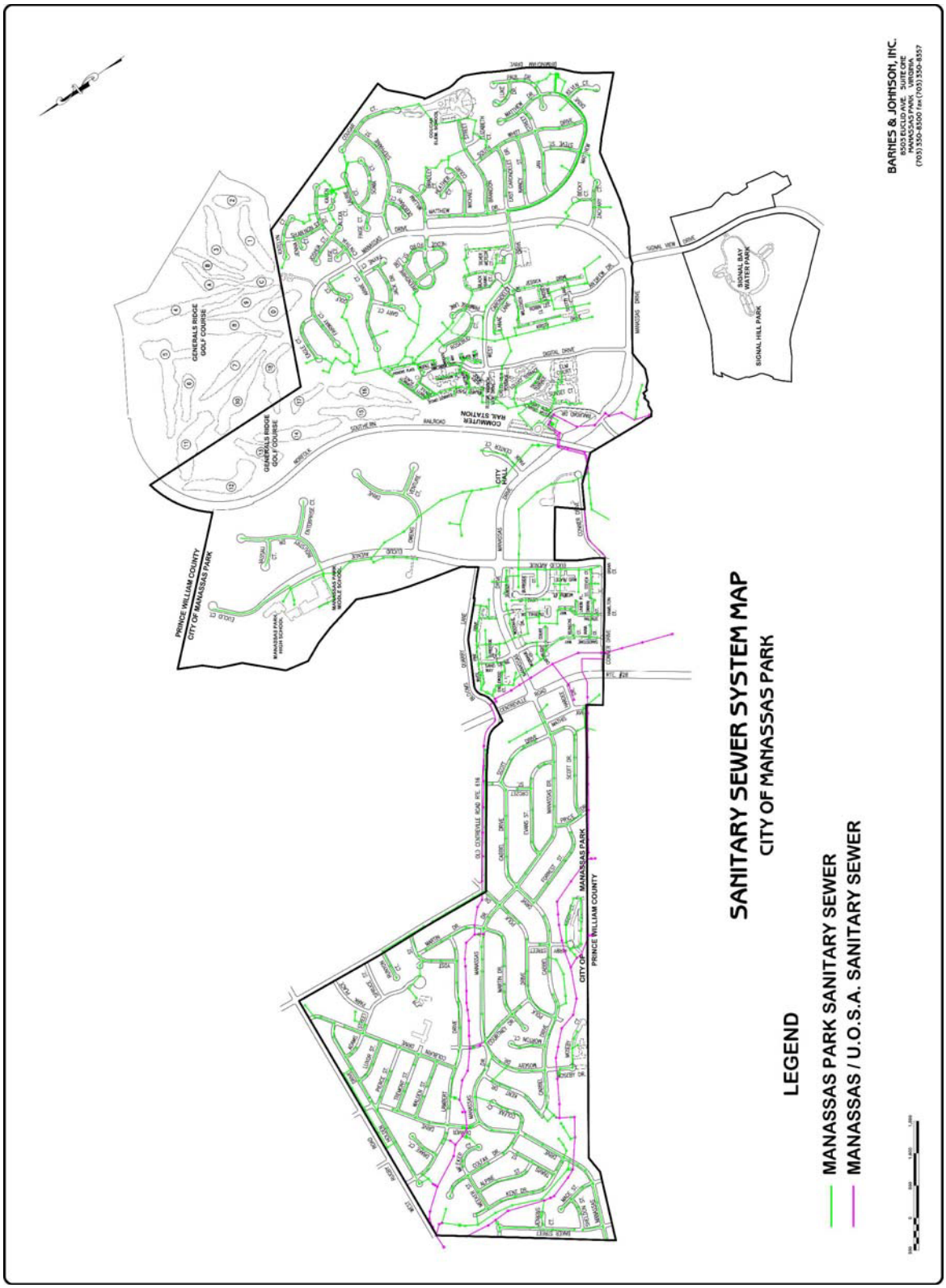

Figure 13.2 Sanitary Sewer System Map

Storm Sewer System

The city maintains an extensive storm sewer system and requires all development, redevelopment, or modification of parcels of land, follow all applicable guidelines to control the runoff of water and waste materials. Stormwater retention or detention ponds are required to minimize runoff from all sources of possible pollution. See Figure 13.5 – Storm Water Management/Best Management Practices Facilities, for a map showing the location of major stormwater detention or retention ponds.

Trash and Recycling Services

The city contracts for once-a-week (currently Wednesday) removal of residential solid wastes (trash) and recyclable materials. Recyclable materials include newspapers, aluminum, glass of all colors, plastics and tin. In addition, tree leaves, telephone books and Christmas trees are collected annually. City businesses and industries are responsible for their own trash removal and recycling services. The current low level of recycling in the city needs to be increased to the state-mandated level of 25%.

Miscellaneous City Services

The city provides a number of street sweeping, sewer flushing and other routine maintenance services. The street sweeping, for example, not only helps enhance the beauty of the city, but also helps the city meet state and federal (US Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES)) requirements regarding reducing pollution in the metropolitan Washington, DC area (see Figure 13.5).

Figure 13.3 Street Sweeper

The city has a reputation for providing excellent snow removal services. In addition to enhancing the safety of the traveling public, this city service significantly reduces the time lost by the city school system, businesses and residents. City and contractor employees and vehicles provide snow removal services for City streets and parking lots.

Miscellaneous City Facilities and Vehicles

The city maintains a number of buildings and garages for staff and vehicles in the Department of Public Works. It stores sand, salt and other abrasives for spreading on city streets when needed to provide safe travel by the motoring public.

The Department of Public Works maintains its fleet of vehicles as well as those used by other city Departments. Due to currently crowded and shared facilities, planning is currently underway to

provide refurbished and expanded facilities.

City vehicles maintained by the Department of Public Works include city-use automobiles and light duty trucks, street sweepers, dump trucks, construction equipment, maintenance equipment and police emergency vehicles. Special maintenance procedures and warranty services not provided by the Department of Public Works are handled by outside contractors, vehicle dealers or manufacturers.

A December 2003 "City of Manassas Park, Virginia, Report on Vehicle Maintenance Study" indicates a need to improve the Public Works yard and garage (see Figure 13.6); develop a vehicle/equipment replacement schedule; improve record keeping; develop a Fleet Business Plan; and follow other "Best Practices" for fleet programs. The "Study" strongly recommends training and certification to improve and update the skills of mechanics.

Costs relating to replacing Public Works vehicles should be spread over a number of years to reduce the need to make a large number of replacements in any one year and to ensure both new and backup equipment are available (see Table 13.5). Costs can also be spread over several years, particularly when the vehicle is purchased and not leased.

Figure 13.4 Public Works Garage

Access to Public Utilities that are Provided by Others

Electricity is supplied and distributed to the City of Manassas Park by the Northern Virginia Electric Cooperative (NOVEC).

Table 13.5 Public Works Vehicle Replacement Schedule

Vehicle Type	*Years as Primary Vehicle*	*Years as Backup Vehicle*
Street Sweeper	5 to 7	2 to 3
Pick Up	8 to 10	2 to 3
Dump Truck	6 to 9	1 to 3
Back Hoe	5 to 8	3 to 5
Flush Truck	5 to 7	1 to 3
Leaf Vacuum & Box	8 to 10	3 to 5
Roller Compactor	10 to 15	1 to 3
Skid Loader	5 to 8	3 to 5

Source: Department of Public Works

Washington Gas supplies and distributes natural gas to the area east of the intersection of Manassas Drive and the Norfolk-Southern railroad tracks. Columbia Gas supplies and distributes natural gas to the area west of the railroad tracks.

A number of telecommunications companies provide service to the city, including broadband communication connectivity via cable television and the telephone companies.

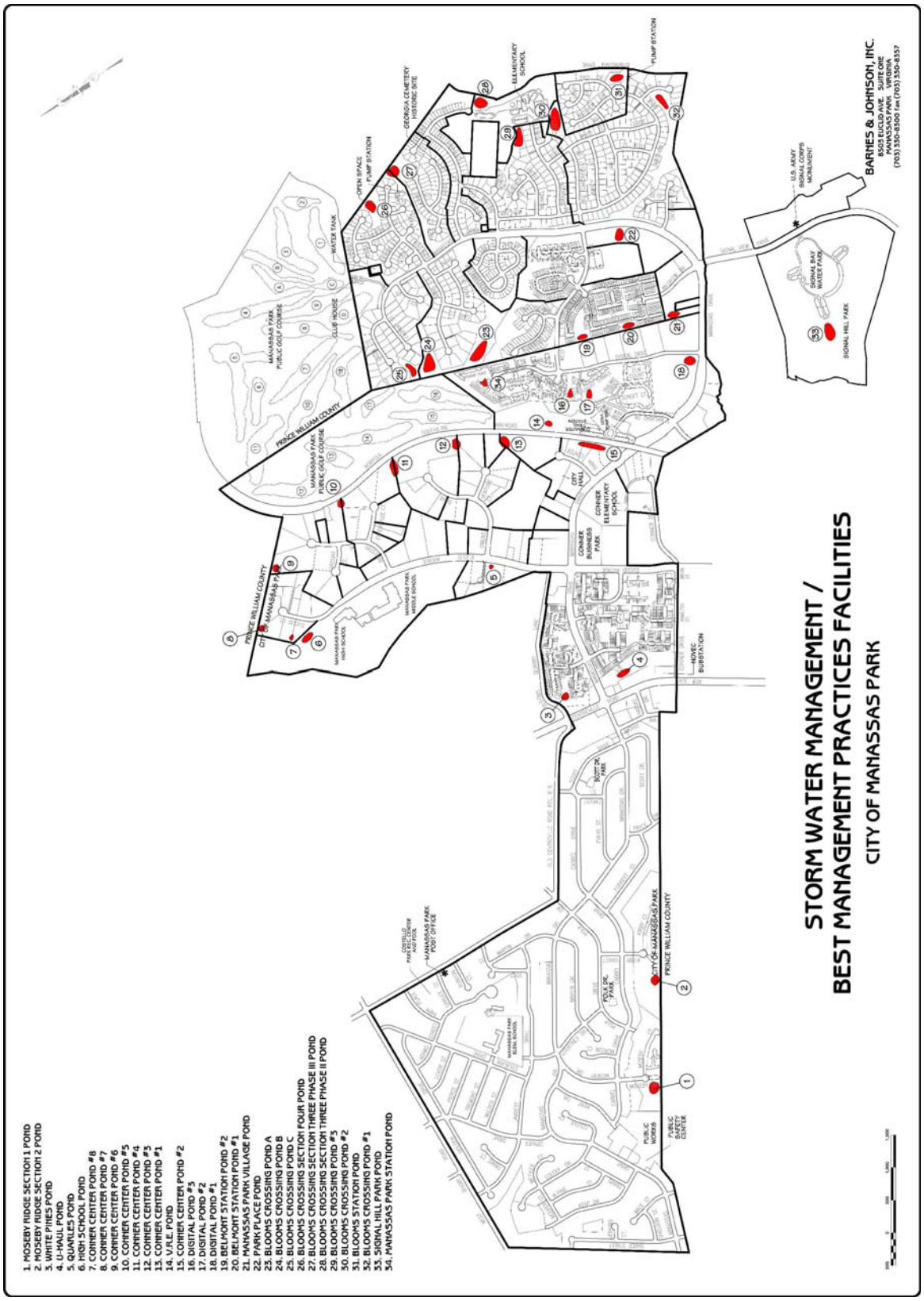

Figure 13.5 Storm Water Management Facilities

Underground Utilities

Underground utilities are encouraged whenever and wherever possible. Most electric and telecommunications cables are underground east of the intersection of Manassas Drive and the Norfolk-Southern railroad tracks.

As funds become available and as part of the development of Park Center, the city is planning on placing utilities along Manassas Drive underground from Euclid Avenue to the Norfolk-Southern railroad track crossing.

Staffing Levels

Currently, the Department of Public Works employs 5 Crewman and Crew Leaders and 7 seasonal workers who concentrate on transportation repairs and modifications. A total of 12 Crewman and Crew Leaders concentrate on other Public Works responsibilities, such as grounds and buildings, water, sewer, and utility maintenance. A Crewman III devotes over 75% of his/her time to street sweeping throughout the city during the months of March through November.

All available workers, including the Crew Superintendent, Crew Leaders, Crewmen II and III, Locators and Meter Readers are used to help clear streets of snow and ice as the need arises. A total of 2 Mechanics provide routine maintenance to City vehicles. Administrative personnel include 1 full time and 1 part time staff person.

Outside contractors perform other tasks as previously stated, solid waste management, recycling, and non-routine maintenance of Fire Department emergency vehicles.

Goals, Objectives & Action Strategies

Goal P1 The city will operate and maintain water, sewer and solid waste management systems that meet the current and future needs of the city as well as its obligations to the overall region. The city will encourage high quality access to public utilities provided by other systems.

Objective P1
Provide efficient and effective management of the water supply system and both sanitary and storm sewers to meet the current and future needs of the city's residents and businesses.

Action Strategy P1.1 Ensure that development and redevelopment within the city do not occur at a rate which exceeds the capabilities of the city's water and sewer systems to provide high quality service.

Action Strategy P1.2 Increase the use of technological innovations to operate, monitor and maintain the city's water and sewer utilities, such as upgrade water meters and monitoring systems.

Action Strategy P1.3 Design and implement stormwater management projects according to the requirements of the Manassas Park Public Facilities Manual, the Virginia Department of Environmental Quality and other relevant state and national standards.

Action Strategy P1.4 Continue to limit development and redevelopment in areas located in the 100-year flood plain.

Action Strategy P1.5 Update the Public Facilities Manual to reflect or exceed the latest standards set forth by state and federal regulatory agencies.

Action Strategy P1.6 Ensure developments or redevelopments follow or exceed the guidance provided in the Public Facilities Manual.

Objective P2
Provide economically and environmentally friendly systems of high quality drinking water to all residents and businesses in the city. Ensure an adequate water supply, transmission means, storage facilities, water pressure, and distribution system capable of serving all existing and proposed developments.

Action Strategy P2.1 Continue to upgrade and maintain the city's well system to maintain a high-quality source of water from city resources.

Action Strategy P2.2 Rehabilitate deteriorating water lines to provide safe, clean drinking water and adequate water for fire protection.

Action Strategy P2.3 Negotiate economically feasible expansions of capacity rights with Prince William County, Fairfax County and the City of Manassas in order to provide for the projected needs of the city.

Action Strategy P2.4 Weigh costs and benefits of continuing to maintain existing wells and storage tanks versus purchasing added capacity from neighboring jurisdictions.

Action Strategy P2.5 Identify ways to reduce water consumption by each household and business to conserve natural resources and minimize capacity needs.

Action Strategy P2.6 Protect the water quality of nearby rivers, streams and other bodies of water by providing efficient stormwater best management practices (BMPs) to control run-off.

Objective P3
Ensure adequate and cost effective water supplies and capacities to support planned growth and development.

Action Strategy P3.1 Maintain the 100 gallons per person per day guideline set forth in the Public Facilities Manual for provision of water with a peak factor of 1.5 times the estimated average day demand to determine maximum daily demand.

Action Strategy P3.2 Maintain the standards set in the Public Facilities Manual for fire protection flow pressure (See also Chapter 10, Public Safety).

Action Strategy P3.3 Test for groundwater contamination throughout the city on a regular basis, particularly near city well sites.

Action Strategy P3.4 Provide additional fire hydrants to provide a convenient water supply for fire protection.

Objective P4
Ensure adequate sewer capacities based on the planned new development and redevelopment.

Action Strategy P4.1 Encourage innovative demonstration projects for stormwater runoff control, e.g., composting.

Action Strategy P4.2 Change sewer plans based on planned development to supply adequate service.

Action Strategy P4.3 Ensure adequate sewage capacity allocations from the Upper Occoquan Sewage Authority to meet anticipated needs.

Action Strategy P4.4 Plan and design sewer facilities in accordance with the standards set forth in the Public Facilities Manual.

Action Strategy P4.5 Provide adequate stormwater control facilities throughout the city.

Action Strategy P4.6 Place stormwater drainage facilities using best management practices (BMPs) to minimize future problems for developed or redeveloped sites.

Action Strategy P4.7 Rehabilitate the sanitary sewer system to minimize infiltration and inflow (I&I) on a planned schedule, with 5% of the total system rehabilitated each year.

Objective P5
Provide adequate access to utilities provided by other systems, e.g., electricity, high-speed telecommunications, and natural gas.

Action Strategy P5.1 Provide adequate access to high-speed communication utilities in keeping with the regional emphasis on technology and investigate new technologies as they become available.

Action Strategy P5.2 Coordinate planning of utilities provided by others with the Future Land Use Plan and Map.

Action Strategy P5.3 Avoid interference caused by radio, television, and other telecommunications receivers.

Objective P6
Ensure that the Capital Improvements Program (CIP) and the operating budget provide sufficient funds to support the maintenance needs of city water, sewer and waste management services.

Action Strategy P6.1 Ensure proffers are used whereby developers and redevelopers contribute funds to support public facilities directly impacted by their development proposals.

Action Strategy P6.2 Ensure new developments and redevelopments in the city cover the costs associated with expanding capacity and other needs of the water and sewer systems.

Action Strategy P6.3 Analyze the costs of city water, sewer and waste managements systems to determine the benefits of contracting these functions to other organizations.

Action Strategy P6.4 Use the city's CIP to plan when, where, and how to develop and improve city water, sewer and waste management facilities and services.

Objective P7
Provide cost-effective trash collection services that take advantage of recycling opportunities and explore ways of reducing the quantity of trash.

Action Strategy P7.1 Continue providing a curbside collection program for recyclable materials and study ways to expand the program.

Action Strategy P7.2 Continue the existing program of providing cost effective curbside collection of leaves.

Action Strategy P7.3 Provide opportunities for dropping off recyclable materials in public areas, city facilities and at all city functions.

Action Strategy P7.4 Continue to encourage citizens and businesses to participate in all recycling and hazardous waste collection programs by instituting an effective outreach program.

Action Strategy P7.5 Increase the current low level of recycling in the city to the State-mandated level of 25% through outreach and incentives.

Action Strategy P7.6 Provide economical trash and recycled waste pickup for all city residents at least once time per week by closely monitoring, controlling and, if necessary, replacing the contractor providing such services.

Objective P8
Minimize the visual impact of utilities and related buildings on neighboring properties. This includes those owned and operated by both the city and by other systems.

Action Strategy P8.1 Provide for the screening and buffering of proposed utility structures.

Action Strategy P8.2 Minimize the visual impact of ground transformers and distribution boxes by careful positioning.

Action Strategy P8.3 Ensure future power and communication equipment areas buffer nearby residences from noise and other hazards.

Action Strategy P8.4 Place utility structures such as electrical transmission poles, telecommunication hubs and electrical substations in the same location to minimize the visual impact and the impact on adjacent properties.

Action Strategy P8.5 Minimize the visual impact of buildings, storage facilities and equipment on adjacent properties.

Action Strategy P8.6 Place utilities underground, preferably along existing or planned utility or road rights-of-way and on lot lines, to minimize their impact on neighboring properties.

Action Strategy P8.7 Place above-ground transmission lines along railroad rights-of-way to minimize impacts on neighboring properties.

Action Strategy P8.8 Use existing towers, water storage tanks, tall buildings and poles to support cellular antennae and utility lines to minimize the need for new towers and poles.

Action Strategy P8.9 Position water, sewerage, storm drainage, power and communication structures to minimize adverse visual impacts on nearby properties.

Action Strategy P8.10 Co-locate poles, towers and equipment buildings to minimize their impact on nearby properties in accordance with the policies found in the Public Facilities Manual.

Action Strategy P8.11 Mitigate the impact of utilities on the natural environment and avoid environmentally sensitive areas, e.g., wetlands, trees, streams, etc**.**

Action Strategy P8.12 Minimize the impact of sewer lines on the natural environment (e.g., stream valleys, wetlands, and wooded areas.

Action Strategy P8.13 Provide screening and buffering around water, sewer and other public works facilities to minimize their impact on nearby properties.

Action Strategy P8.14 Locate pumping stations in well-buffered, attractively designed structures to minimize their impact on neighboring properties.

Action Strategy P8.14 Develop telecommunications policies, procedures and implementation measures for the city.

Objective P9
Maintain Public Works equipment and building as well as city vehicles to enhance their operation and minimize repair costs.

Action Strategy P9.1 Maintain and upgrade street sweepers, water/sewer vacuum, flush truck, road graders, trucks, and the like, systematically to spread costs over a number of years and to minimize large expenditures from unexpected vehicle breakdown.

Action Strategy P9.2 Maintain a Public Works facility to accommodate and service city vehicles from the public safety fleets, departmental vehicles and city equipment as well as administrative functions.

Action Strategy P9.3 Improve the Public Works yard and garage; develop a vehicle/equipment replacement schedule; improve record keeping; develop a Fleet Business Plan; and follow other "Best Practices" for fleet programs as recommended by the December 2003 "City of Manassas Park, Virginia Report on Vehicle Maintenance Study".

Objective P10
Maintain a clean street system and provide for the prompt removal of snow, ice, and post-storm salt and sand.

Action Strategy P10.1 Develop an efficient snow-removal plan for all streets.

Action Strategy P10.2 Sweep all streets on a regular cycle, at least once per month from March through November.

Action Strategy P10.3 Develop tree maintenance guidelines for trees along city streets, water lines and sewers, setting forth clear lines of responsibilities for the city and adjacent property owners.