depending upon the transmission system's ability to handle sewerage flows. For existing and potential overflow basins these designations will be limited to the area above and tributary to the problem that causes the designation. References to the "Director" refer to the Director of the Montgomery County Department of Environmental Protection.

**Table 4-T5: WSSC Sewerage Basin Designations and Policies**

| Designation | Description | Policy |
|---|---|---|
| **Adequate Capacity Basin** | Part or all of any basin in which regular overflows and user backups have not been experienced and the observed or calculated peak sewage flow, allowing for an appropriate wet weather reserve, does not exceed the sewer operating capacity. | WSSC may permit additional sewer hookups and commitments subject to the availability of adequate treatment capacity. |
| **Potential Overflow Basin** | Part or all of any basin which has not experienced regular overflows or user backups, but for which the calculated or observed peak sewage flow, allowing for an appropriate wet weather reserve, exceeds the peak sewer operating capacity | WSSC, after consultation with the Director, should declare by resolution that it will **not** permit additional sewer hookups or commitments which would significantly increase the probability of sewer overflows or user backups until a facility plan is initiated or relief measures are under construction. The WSSC may continue to permit additional sewer hookups or commitments which would result in peak sewer operating capacity being exceeded if the calculated peak sewage flow will not result in an increased significant probability of overflows or user backups prior to completion of a relief project. The identical exemptions defined for immediate public health hazards, public service buildings, and individually-owned abutting lots in the policy for Existing Overflow Basins below also apply to this policy for Potential Overflow Basins. |
| **Existing Overflow Basin** | Part or all of any basin which is experiencing regular sewage overflows or user backups such that an immediate public health problem exists. "Regular" is defined as having already occurred and projected to occur more than once in ten years, other than maintenance-related occurrences. | WSSC, after consultation with the Director, should declare by resolution that it will **not** permit additional sewer hookups or commitments which would increase the frequency of overflows or user backups until relief measures are underway with a projected completion date of a year or less. Exemptions: public service buildings approved by the Director, and existing unconnected buildings creating immediate public health hazards as determined by the WSSC or the Director are exempt from any sewer hookup or commitment prohibition. Lots serving existing or proposed individually-owned single-family dwelling units abutting an existing sewer line and which the applicant owned or contracted for prior to the date of the moratorium resolution are exempt from any sewer hookup or commitment prohibition. |

5. **Sanitary Sewer Overflows** -- Sanitary sewers serve a vital function in the transport of wastewater from the customer to the treatment plant. Wastewater either flows by gravity or is pumped to the nearest wastewater treatment plant. WSSC's wastewater collection system is comprised of over 5,000 miles of sewer line and forty-four wastewater pumping stations. When sewers become blocked by things like grease or tree roots, wastewater can back up in the line and eventually overflow from a manhole. This is known as a sanitary sewer overflow (SSO). There are a number of other possible causes of SSOs including pipe deterioration,

undersized sewer lines, excess infiltration or inflow of stormwater and power outages at sewage pumping stations.

Most of WSSC's overflows are due to blockages caused by grease, tree roots, or other foreign objects and a small percentage are caused by power outages. Less than one percent are caused by "wet weather," i.e. the inflow of storm water. This attests to WSSC's commitment to maintaining and upgrading its system to keep up with the infrastructure needs of its expanding customer base.

Over the past several years the Environmental Protection Agency (USEPA) has developed specific Federal regulations to address SSOs. In 1999, EPA released "strawman" regulations for comment. These proposed regulations would require utilities to develop and implement a "Capacity, Management, Operation, and Maintenance (CMOM)" program. The CMOM will outline specific ways a utility such as WSSC will prevent and respond to SSOs. WSSC already has a number of procedures in place to minimize the occurrence of SSOs and to mitigate their impacts when they do occur. WSSC has started the process of adapting its procedures to EPA's proposed CMOM requirements.

The USEPA and the U.S. Department of Justice have initiated the development of an enforcement strategy for all major sewer systems with reported SSOs. In Maryland, this federal policy has included WSSC. Presently the WSSC is negotiating a consent agreement (order) with the U.S. Department of Justice to address past overflows and to adopt a monitoring and management system to prevent the occurrence of SSOs in the future.

The State of Maryland has placed new emphasis on its requirement to report all SSOs to the Department of the Environment (MDE) within twenty-four hours of their occurrence, as well as the need to notify the public whenever an SSO has any significant potential to affect public health or the environment. MDE has provided guidance suggesting that wastewater utilities need to work closely with local environmental and health departments to identify any such potential impacts and to notify the public when warranted. WSSC, in conjunction with Montgomery and Prince George's Counties, has developed procedures for this coordination and public notification.

Montgomery County DEP and WSSC are fundamentally committed to excellence in the safeguarding of public health and the protection of the environment and are committed to aggressive sanitary sewer overflow programs.

**6. Sewer Sizing Policies** -- WSSC's Design Manual provides both general and specific sewer design criteria and designates the WSSC Development Services Group with the responsibility for sizing the new sewer mains to be constructed within a proposed development. In general, sewer systems are designed for ultimate flow within the drainage area unless the WSSC determines that the County's land use policies allow for a lesser requirement.

For sewers serving a complete sewershed, the ultimate sewage flow is determined by assuming that the entire basin will develop in accordance with approved master plans. Sewer systems which serve only part of a sewershed are sized to serve the entire sewershed. Normally, sewer systems are designed to function by gravity. In special cases, gravity lines will be allowed to flow under a slight pressure head or surcharge.

**7. Pressure Sewer Systems** -- Where gravity sewers are not appropriate for use, WSSC can approve the use of pumping stations and force mains or grinder pumps and low-pressure sewers. Pumping systems are used where there are no receiving gravity sewers lower in a drainage basin (as in the Hawlings River watershed), or where the construction of gravity mains needed to connect with the existing gravity sewage system is either uneconomical or environmentally unacceptable (as at the Sheffield subdivision served by the Redland Park WWPS in the Rock Creek watershed).

WSSC's experience with grinder pumps and small-diameter, low-pressure sewer mains has revealed problems in some cases with objectionable odors and corrosion in the receiving gravity sewer mains. Before these problems became evident, WSSC had constructed several projects substantially dependent on grinder pump systems. Once they became aware of these problems, WSSC instituted a policy limiting the number of allowed grinder pumps within individual projects. WSSC also uses techniques such as weirs in house

connections and filters in manholes to mitigate the odor problems affecting customers connected to the receiving gravity sewers. As WSSC's experience with grinder pump systems has grown, empirical evidence has shown that the number of dwelling units connected to the pressure systems is not necessarily the critical factor in creating odor and corrosion problems. Rather, the evidence points to sewage lag time in the pressure system prior to its discharge into the receiving gravity sewers. A WSSC task force is currently evaluating this evidence and is expected to make new policy recommendations for the use grinder pump systems during 2003. Once adopted by WSSC, the County will incorporate those policies as a part of this Plan.

8. **Infiltration and Inflow (I/I) Control Program** -- Infiltration of groundwater into aging, defective or damaged sewers and the inflow of water from sources such as direct connections of roof leaders, area drains, drains from springs and swampy areas, and manhole covers may contribute to sewage collection system overloading or may stress the capacities of wastewater conveyance and treatment facilities.

WSSC has reviewed its collection system data and is aware of excess I/I in several of the sewer basins in the WSSD. In the past few years, WSSC focused a significant effort on evaluating the county's Rock Creek basin, which led to the development of a Sewer System Evaluation Survey (SSES) for that basin. The SSES recommendations included corrective actions for specific problems identified in manholes and sewer pipelines. The total estimated cost to rehabilitate the system defects identifies in the study area was approximately $10.6 million.

WSSC has identified other sewer basins in the WSSD as priority basins requiring SSES work. However, limited financial resources have limited WSSC's ability to address these issues in a timely fashion. In the FY 2003 WSSC budget both Montgomery and Prince George's Counties identified funding policies to begin addressing these I/I problems through the Sewer Reconstruction Program. Accordingly, WSSC has begun an SSES in the Cabin John basin and has agreed to provide the Counties with a list of problem basins and their priority for future SSESs. Analysis of the Cabin John basin flows revealed not only a problem with I/I, but also a potential sewage exfiltration problem.

The I/I control program also directly supports renewed federal initiatives for controlling Sanitary Sewer Overflows (SSOs) which include facility and manhole overflows as well as basement back-ups. Using I/I assessment techniques, WSSC explores the causes for each SSO event, and seeks resolutions to preclude future occurrences. Survey tools deployed during I/I or related work (physical inspection of manholes, TV inspection of sewers) yield rehabilitation recommendations which are implemented in the Sewer Reconstruction Program. In this manner, WSSC routinely detects and corrects leaking as well as non-leaking structural defects.

The sewer rehabilitation program needs greater coordination between WSSC and Montgomery County. WSSC needs to communicate to the County information related to how sewerage systems are evaluated, how capital resources are allocated within the program, and what systems have been and are scheduled for work. The County has similar information needs with regard to the water main rehabilitation program. The WSSC CIP allocates for both counties a total of $27.4 million in FY 2000 for these programs (Information Only Projects W-1.00 and S-1.00). The County presently has no basis to ensure that WSSC allocates these financial resources appropriately with regard to areas or systems with the greatest needs. County assessment of rehabilitation programs could lead to a better-coordinated infrastructure planning effort and better timing of required new capital projects.

| **Water and Sewer Plan Recommendation** |
| --- |
| WSSC needs to provide Montgomery and Prince George's Counties with a list of sewer basins prioritized for SSES work based on the impact of excess flows on sewer conveyance systems and treatment facilities. This list will need to be updated annually and accom-panied with a financial plan to allow these problems to be addressed in a timely manner. |

**9. Industrial Pretreatment Program** -- WSSC implements a federally-required pretreatment program, the Industrial Discharge Control Program (IDCP). The IDCP has four primary goals:

- To monitor and control the discharge of industrial waste into the sanitary sewer system.
- To prevent the discharge of pollutants which will interfere with the operation of wastewater treatment plants, including interference with sludge use and disposal.
- To prevent the discharge of pollutants which will pass through the treatment works or otherwise be incompatible with such works.
- To improve opportunities to recycle and reclaim municipal and industrial wastewater and sludge.

The program also helps protect WSSC personnel and WSSC sewerage systems by regulating the discharge of toxic, corrosive, and other prohibited substances into the sanitary sewer.

IDCP requirements apply to all industrial users within the WSSD, and include those industrial users whose wastewater is treated at the District of Columbia's Blue Plains WWTP. WSSC regulates industrial users in the WSSD through a variety of activities including field investigations and sampling, permitting, compliance reviews, and enforcement measures. In order to comply with WSSC discharge limitations, some industrial users are required to install pretreatment equipment to treat their wastewater prior to discharging it to WSSC's sanitary sewers. In some cases, the equipment may be relatively minor (e.g., silver recovery units or grease traps); in other cases, the required level of pretreatment can be extensive.

WSSC achieves the pretreatment program's goals by performing the following primary functions:

**a. Investigation/Monitoring** -- WSSC conducts on-site investigations of industrial users, evaluating industrial user processes, chemical usage, types and volumes of wastes generated, and methods of waste disposal. Compliance monitoring is conducted independently of the industrial user to determine whether their discharges meet WSSC standards. Grab and composite samples of the industrial user's processed wastewater are collected using manual and automatic sampling methods. Analytical results are then compared to WSSC limits to determine the industrial user's compliance status.

**b. Compliance/Enforcement** -- Discharge permit applications are sent to industrial users to determine if they should be permitted through the IDCP. WSSC issues discharge authorization permits to those industries qualifying as significant industrial users. The discharge permits authorize industrial users to discharge their process wastewater to WSSC's sanitary sewer system, specifying discharge limitations, restrictions and self-monitoring requirements. The permitted industrial user is required to perform monitoring of its wastewater discharges and report the results to WSSC. IDCP staff review the user industry's self-monitoring reports to determine compliance with its authorized discharge limitations. This review also assures that the sample collection, preservation, and analyses performed by, or on behalf of, the industrial user are conducted in accordance with approved methodologies and that the results accurately are represent the industry's discharges.

**c. Enforcement Action** -- WSSC takes enforcement actions against those industrial users who violate discharge limits or fail to comply with other regulatory requirements. Enforcement actions can include notices of violation, civil citations with monetary penalties, administrative orders, and termination of water/sewer service.

**d. Data Management** -- Through its pretreatment program, WSSC maintains electronic files and databases of information on industrial users. This information includes the results of industrial investigations, analytical data from the industrial user as well as WSSC, permit information (including limitations and special conditions), and enforcement actions taken against violators. WSSC recovers a portion of the pretreatment programs costs through an annual fee assessed to the permitted industrial users. The varying annual fees are based on the anticipated level of effort associated with the industrial users within specific industrial categories.

In addition to activities associated with regulating industrial users, WSSC also evaluates the wastewater characteristics of its wastewater treatment plants (Damascus, Parkway, Piscataway, Seneca and

Western Branch). WSSC also annually sampling of the influent and effluent for each plant for EPA designated priority pollutants. The analytical data is used to develop local limits for industrial users and to evaluate treatment plant compliance with water quality standards. WSSC is also required to report its monitoring results for each treatment plant to the State's DNR.

**10. Wastewater Treatment System Requirements: General Provisions** -- In addition to discharge and construction permit requirements on existing and new treatment plants administered by the State of Maryland, Montgomery County shall review and approve all new facilities and all significant modifications to existing facilities within the county. All new community and multi-use treatment systems and points of discharge shall be specifically delineated in this Plan prior to the issuance of final construction and discharge permits by the State of Maryland. In addition, the County government may require stricter levels of treatment where warranted by projected receiving water quality impacts resulting from the discharge. These requirements also apply to all individual systems exceeding 1,500 gallons per day average daily flow and all individual systems of any size requiring a groundwater or surface water discharge permit, except heat pump discharges. Permit applicants have the burden of adequately demonstrating to the County that the proposed facilities will not have a significant, detrimental impact on the surrounding community or receiving waters.

Proposed modifications to existing treatment facilities, including both system upgrading and expansion, are also subject to the County's approval. This includes any proposed community multi-use or individual system treatment facility or discharge point modification which requires a State construction and/or discharge permit. Any modifications requiring MDE's review and approval shall also require prior incorporation of the proposed modification in this Plan, as either a text amendment or as an adopted capitol improvement program (CIP) project. Specific proposals for new or modified facilities shall be submitted to the Director of DEP with supporting documentation as required by the Director.

The State of Maryland, as part of its efforts to improve the ecological health of the Chesapeake Bay, is investigating the impact of lowering the wastewater treatment plant nitrogen discharge standard from 8 milligrams per liter (mgl) to 3 mgl. This new standard would affect all of the wastewater treatment plants serving Montgomery County, and would have significant financial implications for WSSC and WASA with regard to the facility upgrades and treatment process improvements needed to comply with the lowered standard.

**11. Financing Sewerage Systems** -- WSSC uses several methods to fund the construction and operation of the sewerage system. Detailed information concerning WSSC's funding methods is included in Chapter 1, Section IV.A.

**C. Existing and Planned Sewerage Systems and Projected Needs --** The sewage collection and conveyance system within the WSSD consists of over 4,000 miles of gravity and force mains ranging from 6 to 102 inches in diameter and 52 wastewater pumping stations, including 26 stations in Montgomery County. This section presents an overview of the County's long-term sewerage system needs and anticipated constraints within each service area and individual sewershed. The anticipated sewerage system needs and constraints discussed in this section focus on the major components of WSSC's transmission and treatment facilities. The information presented here is based on the results of various studies as referenced at the end of this chapter.

The planned projects programmed in the WSSC CIP are intended to address the county's current and/or short-term wastewater conveyance or treatment needs. The CIP projects include funding and schedules for planning, design, land acquisition, and construction of facilities. These facilities often support new development in accordance with the County's approved plans and policies for orderly growth and development. Other projects are for system improvements and/or for compliance with environmental regulations and policies.

Flow projections within the WSSD are based on the County's adopted plans and approved service areas for future growth, and are in accordance with the County's latest master plans for development. M-NCPPC provided the population and growth estimates used in WSSC's studies. WSSC has developed flow projections to determine the approximate time a planning decision for each facility should be made.

Wastewater flow forecasts are developed from detailed analyses of existing flow records and projected additional future flow based on projected demographics, wastewater flow per household and per employment, and other factors such as infiltration (extraneous groundwater) and inflow. Population forecasting and flow projection are based on the best available data at the time the planning is conducted. WSSC re-evaluates actual conditions, project needs, etc. before implementing proposed projects.

Projected flows for all sewered basins in Montgomery County are summarized in a table included for sewershed. WSSC based these findings on an 80$^{th}$ percentile of historical flows and on Round 6 Cooperative demographic forecasts. The data also includes updated information regarding I/I control. WSSC' evaluation of the County's long-range sewerage system needs is based on these projections.

A comprehensive long-range strategic plan is under development at WSSC in coordination with Montgomery and Prince George's counties to evaluate the validity of adopted planning concepts, many of which were developed over twenty years ago and have not undergone a comprehensive review since their original adoption. These issues include sewage flow factors, capacity of regional facilities, updated environmental regulations, etc. This long range plan will also incorporate the results of the Potomac Interceptor Study. Relevant to this evaluation are the recent changes in water consumption patterns. The study will provide the WSSC and Montgomery and Prince George's Counties with a valuable tool for planning long-term sewage treatment needs, addressing concerns such as transmission capacity to and treatment capacity at the Blue Plains WWTP, and the timing and need for major capital investments. This comprehensive plan will be coordinated with the Blue Plains regional long-term Wastewater Management Plan which COG initiated in 2002.

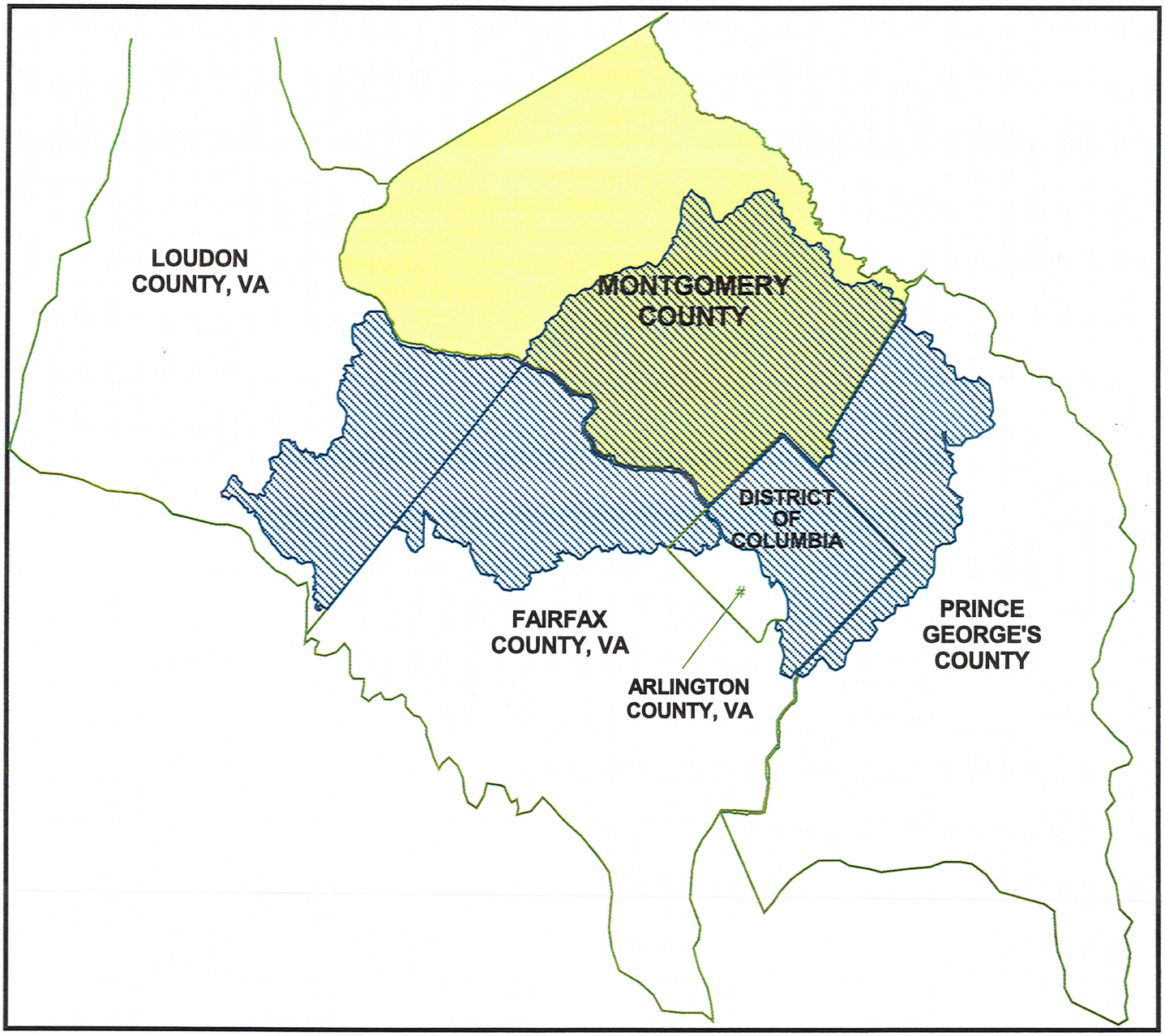
"Planned Sewerage Systems" refers to those projects which have been approved and programmed in a relevant capital improvements program (CIP). Appendix A provides a summary listing of CIP projects approved for FYs 2003 - 2008.

**1. Blue Plains Service Area** -- Most of the wastewater generated in Montgomery County (83.62 mgd in 2001) is treated at the Blue Plains WWTP, a facility located along the Anacostia River in Washington, D.C., and owned and operated by WASA. The county's flow contribution accounts for approximately 30 percent of the total flow at the facility. The Blue Plains Service Area encompasses much of the central and eastern part of the county (see Figure 4-F6). Currently, this service area also includes the Seneca Creek basin. The Seneca Creek WWTP offloads 5 mgd of sewage flow for treatment from the Seneca Creek basin system; remaining flows are pumped to the Muddy Branch basin for transmission to Blue Plains. During 2003, WSSC will complete an upgrade and expansion of the Seneca Creek WWTP from 5 mgd to 20 mgd. When WSSC completes this new facility, its serv ice area will become independent from the Blue Plains service area. Owing to this pending separation, this Plan generally treats the Blue Plains and Seneca Creek service areas as separate entities.

The Blue Plains service area also includes the Rockville Sanitary District. Specific information on the City's sewerage systems begins at Section III.

**a. Collection and Conveyance Systems** -- The principal sewer lines which convey the county's wastewater to the Blue Plains WWTP include the Potomac Interceptor (PI), the Maryland-Upper Potomac Interceptor (MUPI), the Rock Creek Trunk Sewers, the Little Falls Trunk Sewer, and the Anacostia Trunk Sewers. The general location and the sewer basins served by these major sewer lines are shown in Figure 4-F7. All the major sewer lines transferring flows to the Blue Plains WWTP are subjected to annual average and peak flow limitations identified in the IMA of 1985. The IMA annual average and peak flow limitations for the above sewer lines are listed in Table 4-T6.

## Figure 4-F6: Blue Plains Regional Boundaries



## Figure 4-F7: Blue Plains Service Area in Montgomery County

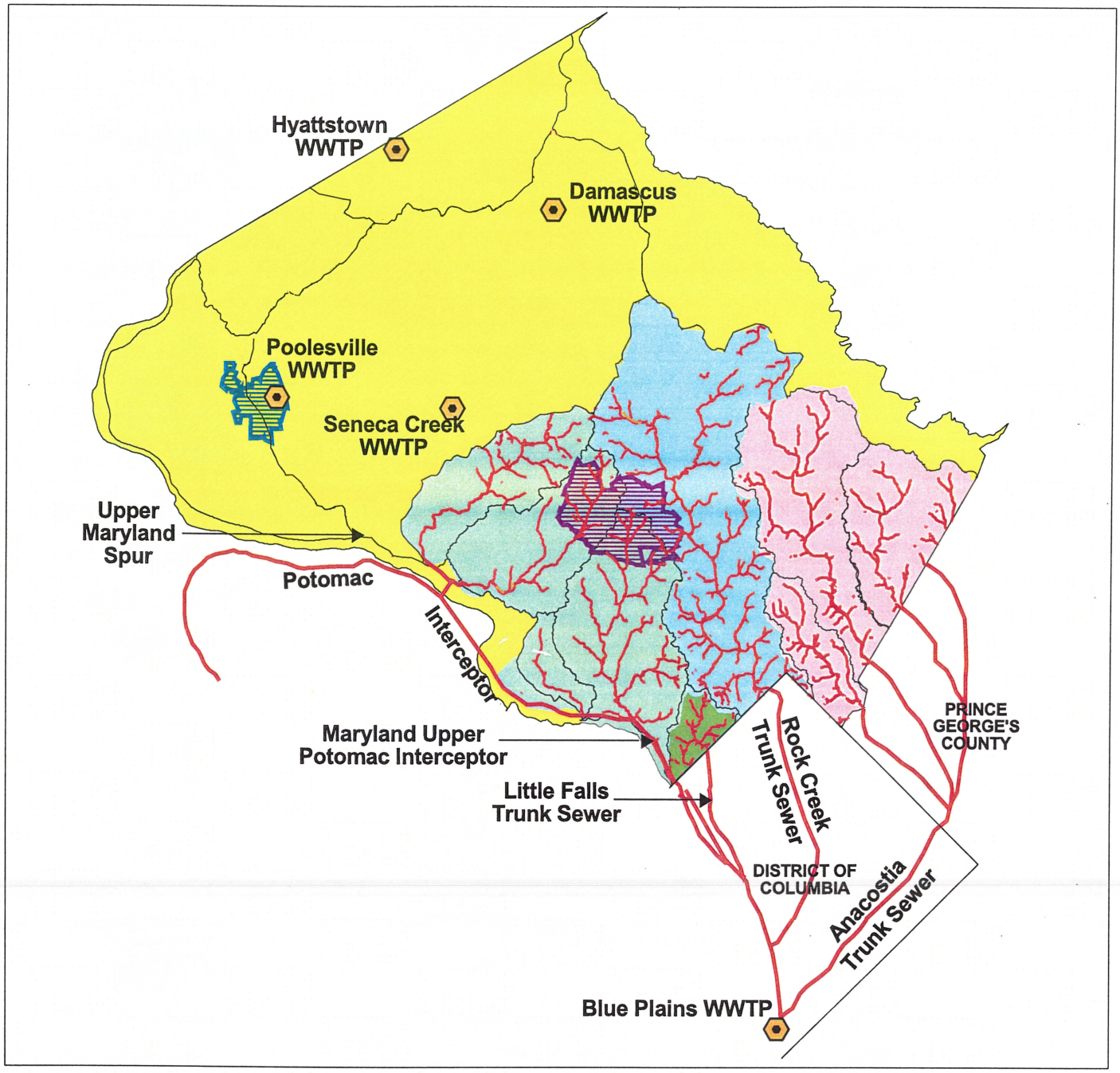


**Table 4-T6: Average Basin Flows and IMA Limitations for the Montgomery County Portion of the Blue Plains Service Area**

| Sewer Basin | Receiving Interceptor | IMA Limit (mgd) | |
|---|---|---|---|
| | | Annual Average | Peak |
| Muddy Branch* | PI | 15.5 | 40.3 |
| Cabin John | MUPI & PI | 11.0 | 48.3 |
| Rock Run | PI | 0.9 | 3.7 |
| Watts Branch | PI | 4.5 | 14.2 |
| Little Falls | UPI | 7.6 | 20.8 |
| Rock Creek | RCTS | 33.5 | 56.6 |
| Other Basins** | Anacostia & PI | NA | NA |
| **Total to Blue Plains WWTP** | | NA | **NA** |

* Current flows to Blue Plains from Muddy Branch includes flows from the Seneca Basin. This will discontinue in mid-2003 after the Seneca WWTP expansion is completed.

** Other Basins include flows from Anacostia and direct connections to the Potomac Interceptor.

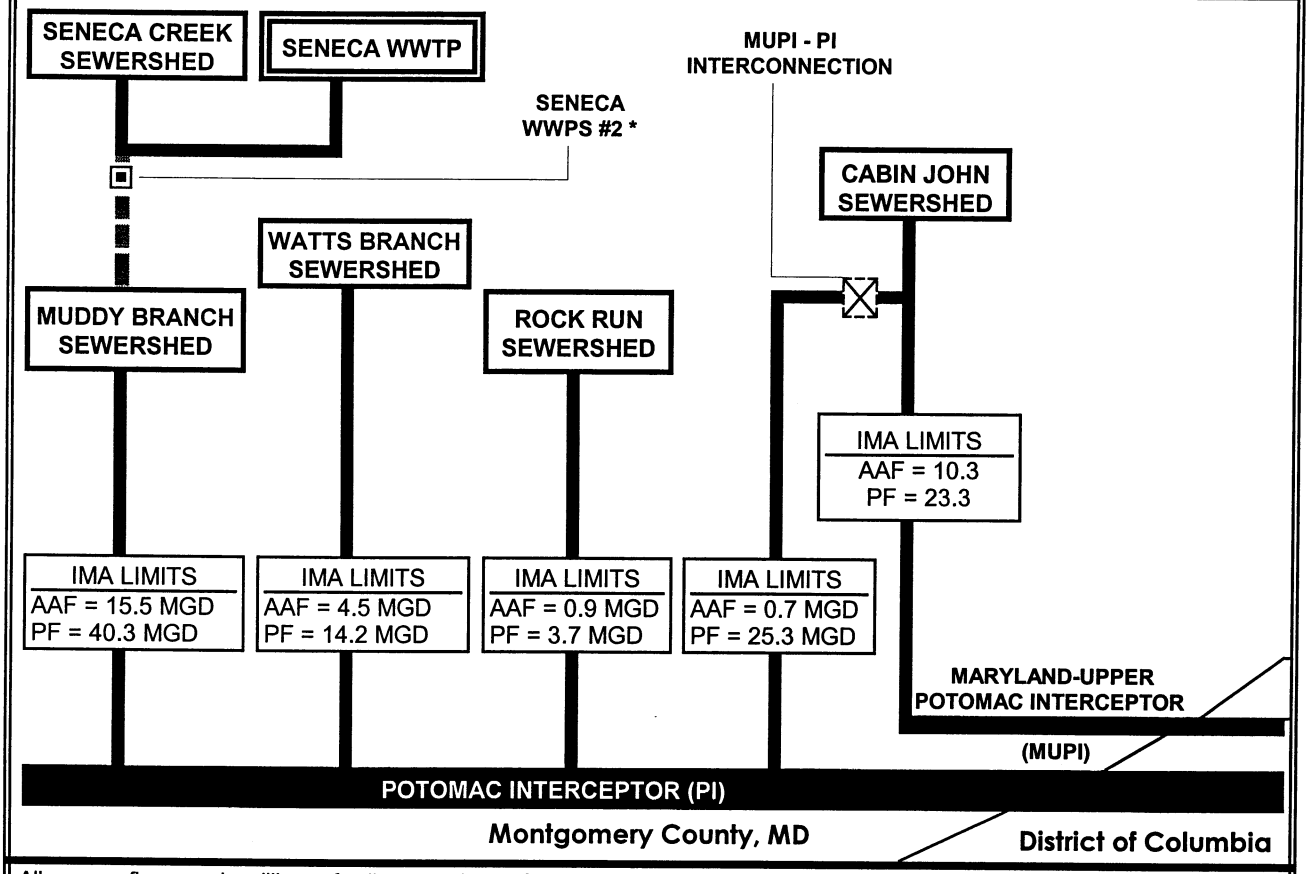
- All data include flows from the City of Rockville.
- Anacostia is a Bi-County Basin and capacity is available to both Counties on first come-first served basis. Flows from Montgomery County to the Anacostia Trunk Sewer are from the Northwest Branch, the Paint Branch, and the Sligo Creek sewer basins.

PI = Potomac Interceptor MUPI = Maryland Upper Potomac Interceptor
RCTS = Rock Creek Trunk Sewers NA = Not Analyzed or Not Applicable

**i. Potomac Interceptor and Tributary Sewersheds** -- In June 1960, the U. S. Congress authorized the District of Columbia to design, construct, operate, and maintain the Potomac Interceptor (PI), an interceptor sanitary sewer to connect Dulles International Airport with the District of Columbia system. The Act also directed the District of Columbia to build the sewer with sufficient transmission capacity to provide sewer service for projected community growth and development in the adjacent areas in the States of Maryland and Virginia . Because of the original purpose of this sewer, it is also referred to as the "Dulles Interceptor" by some of its user jurisdictions. The PI was completed in 1963 and consists of 42 miles of sewer line.

The Potomac Interceptor receives wastewater from various sewerage basins (sewersheds) along the length of its main stem, and drains into the Upper Potomac Interceptor Relief Sewer (UPIRS) in the District of Columbia. To take full advantage of the its hydraulic capacity and to control the flow, the PI has been interconnected at several locations with other principal sewers such as the Maryland-Upper Potomac Interceptor (MUPI). Sewersheds served within Montgomery County by the PI include the Muddy Branch, Watts Branch, and Rock Run basins. The Maryland Upper Potomac Interceptor (MUPI) is the upstream continuation of the UPIRS upstream across the District boundary where it carries flow principally from the Cabin John sewershed. Flows in excess of the MUPI's capacity are diverted to the PI through the PI-MUPI interconnection. (See Figure 4-F8.)

**Figure 4-F8: Montgomery County Sewage Flow to the Potomac Interceptor**




All sewage flows are in millions of gallons per day (MGD): AAF = Annual Average Flow PF = Peak Flow
* The majority of pumpover of flows from the Seneca sewershed into PI via the Muddy Branch sewershed will cease in mid-2003 on the completion of the Seneca WWTP expansion. Pumped flows from the Lower Seneca Basin will continue until a new trunk sewer connecting that basin with the Seneca WWTP is completed in Spring 2006.

Flows from the county's sewersheds to the PI are regulated through the Intermunicipal Agreement of 1985 (IMA). Figure 4-F8 is a schematic of the Potomac Interceptor and the tributary sewersheds from Montgomery County along its main stem. Also shown are the IMA flow limitations. Existing and projected flows from various sewersheds in Montgomery County to the PI relative to the IMA flow limitations are also discussed in this section.

The Blue Plains user jurisdictions conducted 1995 "Potomac Interceptor Engineering Study." This study utilized existing data on flows and conducted a static analysis of the PI's capacity. The consultant then used this information to project the impact of future flows on the interceptor's capacity. This analysis identified several sections of the PI that may experience capacity problems if development proceeded as planned in the user jurisdictions. The most immediate concerns were in the area below the Upper Maryland Spur and a section of the interceptor just above the District line. However, plans to expand the Seneca WWTP to a 20 mgd facility will remove enough sewage flow from the PI that these capacity concerns will not be a continuing concern.

The "Potomac Interceptor Engineering Study" helped to identify the priority areas for potential capacity concerns and the timing of these capacity issues. However, this study was a static analysis based on existing data. The Blue Plains user jurisdictions understood that this fairly simple analysis was limited in its scope and utility. A large interceptor such as the PI has very complex hydraulic characteristics and actual capacity of the interceptor needs a much more detailed analysis.

In 2000, the Blue Plains user jurisdictions tasked COG to develop a dynamic hydraulic model of the PI in order to adequately characterize the existing flows in the interceptor and evaluate the capacity of this vital regional sewerage facility. The dynamic model was completed and its results presented to the user jurisdictions in 2002. The model's analyses indicate that the PI has enough capacity to convey flows to Blue Plains for the next 25 years, based on the IMA allocations and on the planned implementation of the Seneca WWTP expansion and the Loudoun County Sanitation Authority's (LCSA) Broad Run WWTP. It is noteworthy that this model does not indicate a need for any further off-loading of flows from the PI. This conclusion has a direct impact on the prior assumptions developed in the early 1980's that recommended the Rock Run WWTP in Potomac as an off-load facility for the PI. The dynamic model clearly shows that the Rock Run WWTP is not needed to ensure PI capacity for the jurisdictions using the regional interceptor to carry sewage flows to the Blue Plains WWTP.

The PI dynamic hydraulic model will be useful as a tool to evaluate and plan various strategies for managing future wastewater flows in the basins that contribute flows to the PI. The PI dynamic model will be useful in the development of strategies for the Blue Plains long-term Wastewater Management Plan.

The following sections provide a general basin-by-basin description of existing and planned sewerage systems and projected needs for the sewersheds in Montgomery County served by the Potomac Interceptor.

**(a) Muddy Branch Basin** – The Muddy Branch basin originates in Gaithersburg in the central part of the county. The stream flows generally southwest and enters the Potomac River near Pennyfield Lock. The upper part of the basin is developed with moderate to high-density residential, commercial and institutional uses. The lower half of the basin has significantly lower density, characterized by large-lot residential development which uses septic systems.

**(i) Existing Systems** -- Wastewater collection service is provided by a system of trunk sewers which extend up into the basin along the main stem of Muddy Branch. The Muddy Branch Basin boundary, the sewerage systems layout, and the approximate locations of future capacity constraints in the Muddy Branch sewer lines are shown in Figure 4-F9.

Currently the Muddy Branch Trunk Sewer receives about 60 percent (approximately 9 MGD) of all the wastewater collected from the Seneca Basin. The transfer of sewage flows from the Seneca Basin into Muddy Branch system will discontinue in mid-2003, with the completion of the Seneca WWTP expansion. All wastewater flows that either originate in the Muddy Branch Basin, or transfer into the Muddy Branch Basin from the Seneca Basin, are discharged into the Potomac Interceptor system and conveyed to the Blue Plains WWTP in the District of Columbia. The Muddy Branch basin also receives pumped flows from the Sandy Branch WWPS located in the Watts Branch watershed near Travilah Road. WSSC currently maintains five permanent flow monitoring stations in this basin.

**(ii) Projected Needs** – Projected flows based on forecasted population and other flow factors for the Muddy Branch Basin are summarized in Table 4-T7. WSSC's Planning Group generated the data based on Round 6 Cooperative demographic forecasts and assuming 80$^{th}$ percentile flows based on flow records during the past 10 years.

## Figure 4-F9: Muddy Branch Sewer Network

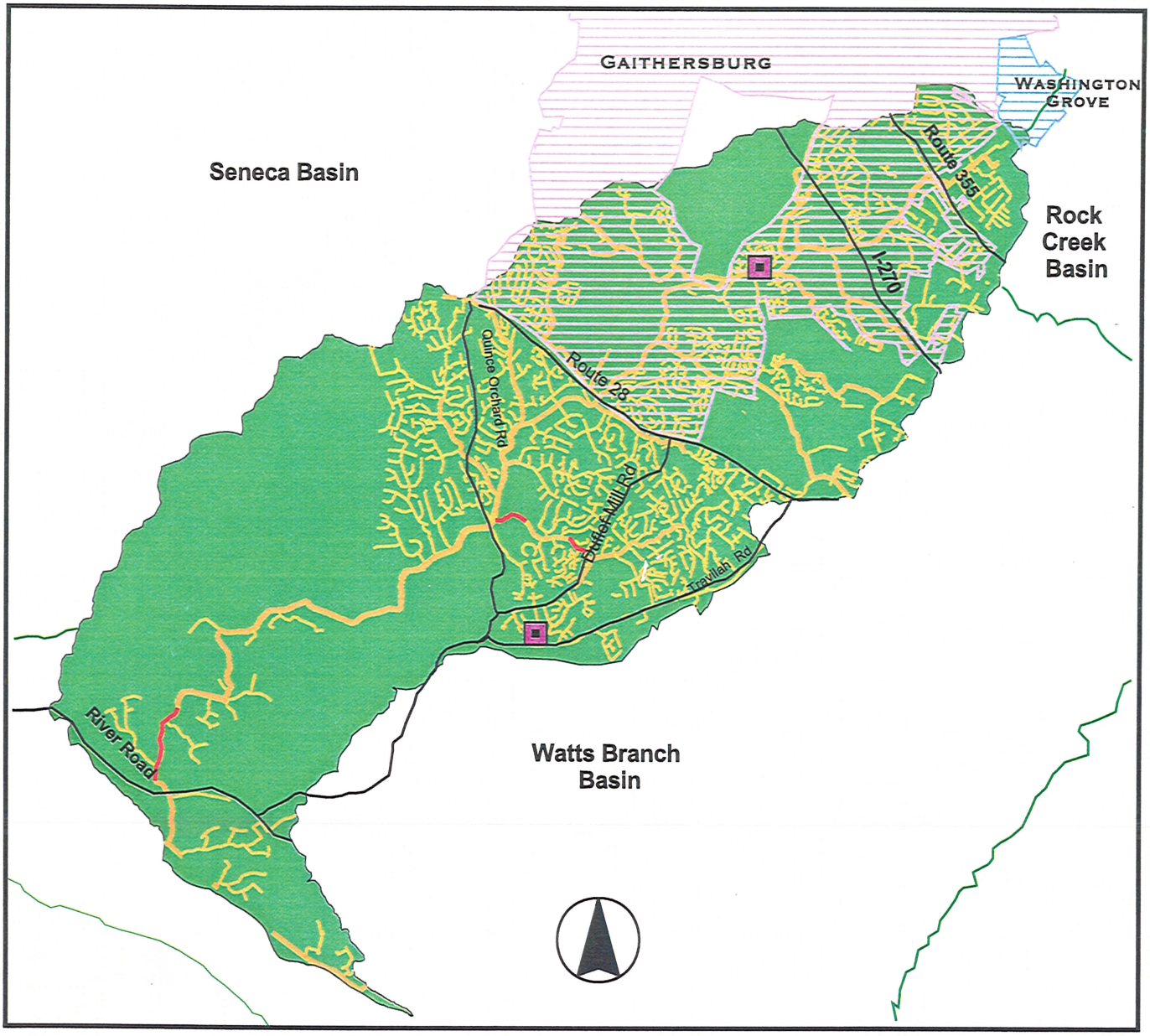


**Table 4-T7: Future Wastewater Flows to the Potomac Interceptor from Muddy Branch Basin**

| Year | | Average (mgd) | Peak (mgd) |
|---|---|---|---|
| 2005 | Projected Flow | 5.69 | 22.12 |
| | IMA Limitation | 15.50 | 40.30 |
| | Balance | **+9.81** | **+18.18** |
| 2010 | Projected Flow | 6.37 | 24.75 |
| | IMA Limitation | 15.50 | 40.30 |
| | Balance | **+9.13** | **+15.55** |
| 2015 | Projected Flow | 6.92 | 26.89 |
| | IMA Limitation | 15.50 | 40.30 |
| | Balance | **+8.58** | **+13.41** |

Through the 1994 WSSC Strategic Sewerage Study, and the 1988 Western Montgomery County Facility Plan, WSSC determined that the projected flows within the Muddy Branch Basin will exceed the Muddy Branch Trunk Sewer capacity in the future and will require relief. Approximately 2,000 feet of 36-inch sewer will be needed in the vicinity of Muddy Branch Park by the year 2010. Eight thousand feet of 24-inch relief sewer will be required around Haywire Farms and Travilah Acres by the year 2020.

**(b) Watts Branch Basin** – The Watts Branch basin originates in Rockville in the central part of the county. The stream flows generally southwest through western Potomac and enters the Potomac River just west and upstream from the WSSC Potomac Water Filtration Plant.

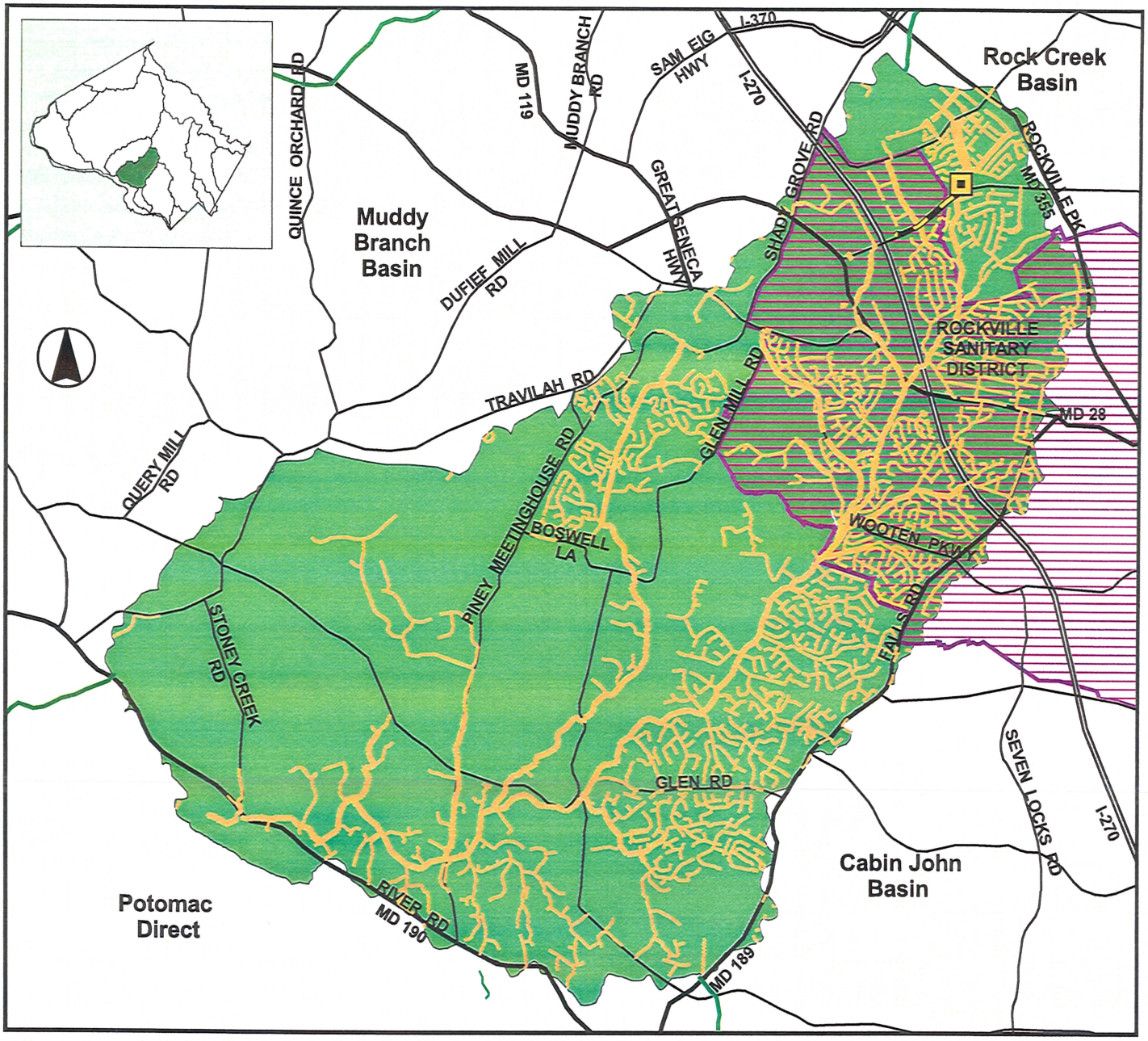
**(i) Existing Systems** -- Sewer service in Watts Branch Basin is presently provided by a trunk sewer system extending along Watts Branch which generally flows from northeast to southwest. The Watts Branch Basin serves an area of 22.6 square miles and includes a portion of the City of Rockville. WSSC operates two permanent flow monitoring sites in the Watts Branch Basin: one at the point of connection with the City of Rockville system and one at the lower end of the basin where the trunk sewer connects with the PI. The sewerage system is shown in Figure 4-F10.

Wastewater collected from the Watts Branch Basin is discharged to the PI and is treated at the Blue Plains Wastewater Treatment Plant. Discharges to the Potomac Interceptor are regulated through the Blue Plains IMA of 1985 and the 1966 Rockville-WSSC Agreement. The capacity of the Watts Branch Trunk Sewer is divided between the City of Rockville and the WSSC by their 1966 agreement. The peak flow capacity of Rockville's component of the trunk sewer is approximately 8 mgd, which corresponds to an average wastewater flow of 3 mgd. The trunk sewer's remaining capacity is allocated to flows collected from the WSSD.

A large percentage of this basin is not served by community sewerage systems, containing both open land and single family homes on larger lots with septic systems. Areas undergoing current or anticipated future development that will increase Watts Branch Basin wastewater flows include the following sites in the City of Rockville: the King Farm (440 acres), the Thomas Farm (270 acres), the Chestnut Lodge site (40 acres); and in Montgomery County: the Traville Tract (190 acres) in the headwaters of the Piney Branch Watershed and redevelopment sites at the Shady Grove Metro and along Route 355. Both the city and the county also have a limited number of small in-fill residential development sites. Future development using community sewer service within the Montgomery County portion of the basin will be directed to a large degree by the 2002 update of the Potomac Subregion Master Plan.

Service to the King Farm project in Rockville includes a wastewater pumping station and force main constructed to avoid the need for a relief sewer along Watts Branch through west Rockville.

## Figure 4-F10: Watts Branch Basin Sewer Network



Pumped flows discharge into the Watts Branch Trunk Sewer near Glen Hills. Appendix A provides a summary of planned WSSC Capital Improvement Program (CIP) projects, addressing wastewater conveyance needs and service improvements in the Watts Branch Basin.

**(ii) Projected Needs** – Projected flows and related IMA limits for the Watts Branch Basin are summarized in Table 4-T8. The WSSC Planning Group have generated this information based on Round 6 Cooperative demographic forecasts and on the 80th percentile of flows during the past 10 years.

**Table 4-T8: Future Wastewater Flows to the Potomac Interceptor from Watts Branch Basin**

| Year | | Average (mgd) | Peak (mgd) |
|---|---|---|---|
| 2005 | Projected Flow | 4.87 | 12.63 |
| | IMA Limitation | 4.50 | 14.20 |
| | Balance | **-0.37*** | **+1.57** |
| 2010 | Projected Flow | 5.53 | 14.34 |
| | IMA Limitation | 4.50 | 14.20 |
| | Balance | **-1.03*** | **-0.14*** |
| 2015 | Projected Flow | 5.76 | 14.95 |
| | IMA Limitation | 4.50 | 14.20 |
| | Balance | **-1.26*** | **-0.75*** |

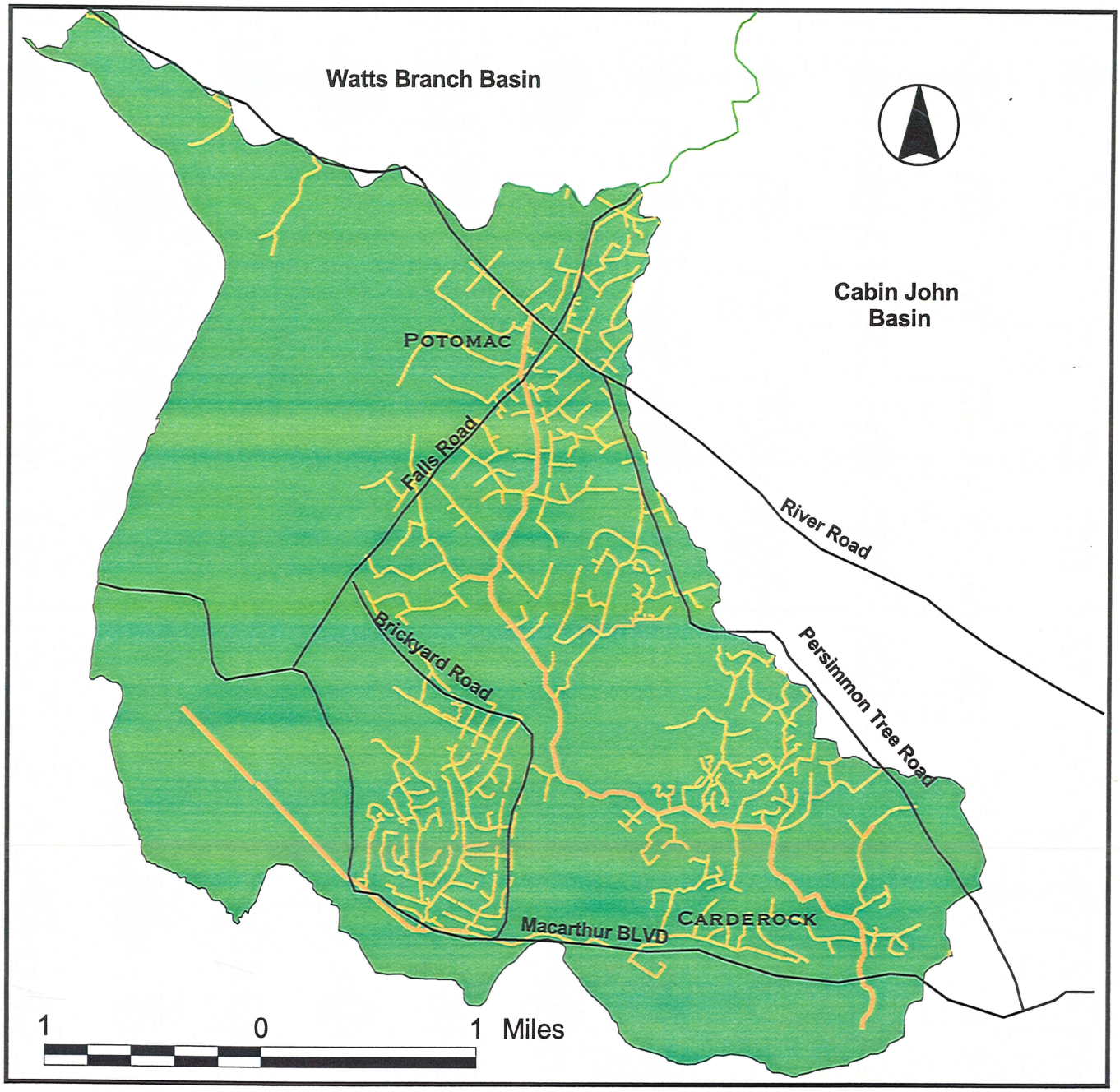
* Watts Branch flows in excess of IMA limits are off-set by under utilization of the PI upstream at Muddy Branch.

Both projected annual average and peak flows from the Watts Branch basin will likely exceed the IMA limits by 2010, although this will not be a major concern. Flows into the PI from the Muddy Branch basin, upstream from Watts Branch, will be significantly reduced due to the diversion of flows to the expanded Seneca WWTP which were previously routed through the Muddy Branch sewerage system to the PI. In 1995, WSSC evaluated existing and future sewerage system needs within the Watts Branch Basin through the Watts Branch Sewerage Basin Needs Analysis, which indicated that the basin's conveyance facilities will be able to handle the basin's anticipated wastewater flows through the year 2020. Based on ultimate flow projections, as shown in Figure 4-F10, the entire Watts Branch trunk sewer from Rockville-WSSD boundary downstream to the PI will require relief sometime beyond the year 2020. Future wastewater capacity constraints will be affected by the timing and type of development occurring on some of the major development sites within the sewershed.

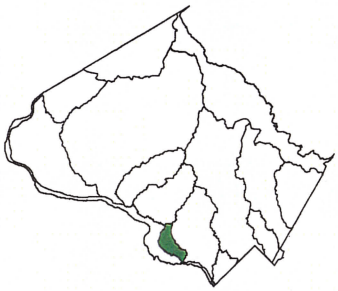
**(c) Rock Run Basin** – The Rock Run basin is located in the southern part of the county. For the purposes of this Plan, the basin includes areas served by sewerage systems which feed directly to the PI, rather than through the Rock Run Trunk Sewer. Rock Run originates in Potomac Village and flows southeast into the Potomac River near Carderock. Development within the basin is largely residential, with higher densities dependent on community sewer service generally east of Falls Road (Route 189).

**(i) Existing Systems** -- Wastewater collected within the Rock Run Basin is discharged into the PI system and conveyed to the Blue Plains WWTP in the District of Columbia. The Rock Run Basin is a relatively small basin, with predominantly moderate to low density zoning. The wastewater collection and conveyance facilities within the Rock Run Basin are adequate; there are no planned wastewater collection/conveyance projects, or proposed system modifications. The Rock Run Basin boundary and its major sewer lines are shown in Figure 4-F11.

## Figure 4-F11: Rock Run Basin Sewer Network




Sewer lines



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**(ii) Projected Needs** – Projected flows based on forecasted population and other flow factors and related IMA limits for the Rock Run Basin are summarized in Table 4-T9.

**Table 4-T9: Future Wastewater Flows to the Potomac Interceptor from Rock Run Basin**

| Year | | Average (mgd) | Peak (mgd) |
|---|---|---|---|
| 2005 | Projected Flow | 0.97 | 3.03 |
| | IMA Limitation | 0.9 | 3.7 |
| | Balance | **-0.07*** | **0.67** |
| 2010 | Projected Flow | 1 | 3.13 |
| | IMA Limitation | 0.9 | 3.7 |
| | Balance | **-0.1*** | **0.57** |
| 2015 | Projected Flow | 1.03 | 3.23 |
| | IMA Limitation | 0.9 | 3.7 |
| | Balance | **-0.13*** | **0.47** |

* **Rock Run flows in excess of IMA limits area off-set by under utilization of the PI upstream at Muddy Branch.**

**ii. Maryland-Upper Potomac Interceptor and the Cabin John Basin --** The Maryland-Upper Potomac Interceptor (MUPI) receives wastewater from the Cabin John basin, including parts of the City of Rockville, and from several mini-sewer basins within the Cabin John area along the Potomac River. The MUPI has a maximum capacity of 18.7 mgd. A 30-inch sewer line connects the MUPI to the PI just downstream from where wastewater from Cabin John Trunk Sewer discharges to the MUPI. When flow from the Cabin John Basin reaches the MUPI's maximum capacity, an automatic valve diverts the excess flow to the Potomac Interceptor. Both the MUPI and the PI drain into the Upper Potomac Interceptor (UPI) and Upper Potomac Interceptor Relief Sewer (UPIRS) in the District of Columbia.

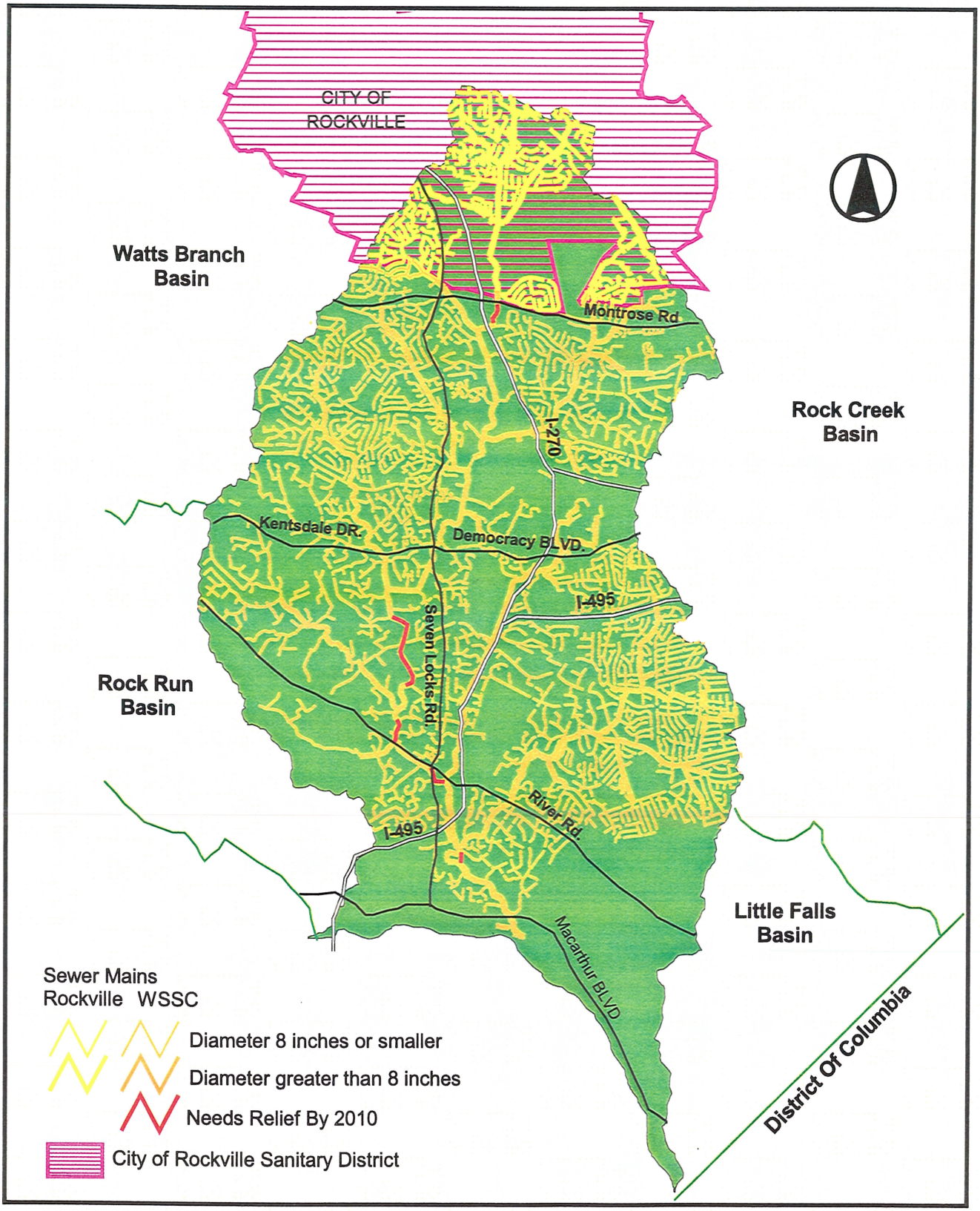
The Cabin John basin encompasses the entire 33 square mile drainage area of Cabin John Creek and includes portions of the Bethesda, Cabin John, Glen Echo, and Potomac communities, and portions of the City of Rockville. The stream originates in Rockville and flows south into the Potomac River near the Interstate 495 American Legion Bridge in Cabin John.

**(a) Existing Systems** -- Service within the basin is presently provided by a system of trunk sewers reaching up along Cabin John Creek, which runs generally from north to south, crossing Montrose Road, Democracy Boulevard, Interstate 495, and River Road. Major trunk sewer lines in this basin include the Buck Branch Trunk, the Minnehaha Branch Trunk, Booze Creek Trunk, and the Snakeden Branch Trunk. The sewerage system and basin boundaries are shown in Figure 4-F12.

Collected wastewater flows by gravity down the basin's sewer mains into the MUPI, then flows into the Upper Potomac Interceptor Relief Sewer in the District of Columbia, and is treated at the Blue Plains WWTP. Wastewater flows from this basin to the MUPI and the PI systems are is regulated through the 1985 Blue Plains IMA. The WSSC's allocated capacity from this basin to MUPI is divided between the City of Rockville and the WSSC as specified in the Rockville-WSSC Agreement of 1956.

The Cabin John basin is heavily to moderately developed, and wastewater flows from the basin are not expected to increase significantly during the next 15 years. The total annual average and peak flows allocated to the Cabin John basin in the MUPI-PI crossover system equals 11.0 MGD and 48.3 MGD respectively. Using the 1990 Cabin John Basin Reevaluation Study, WSSC has determined that sufficient capacity exists in the MUPI-PI system to handle the peak flows for ultimate conditions in this basin.

## Figure 4-F12: Cabin John Basin Sewer Network



The wastewater collection and conveyance facilities within the Cabin John basin are currently adequate and need no planned wastewater collection/conveyance projects or proposed system modifications. As part of the WSSC's new rehabilitation program to reduce potential Infiltration and Inflow (I/I), WSSC and Montgomery and Prince George's counties agreed that the Cabin John basin undergo a comprehensive basin study which is scheduled to start in July 2003.

**(b) Projected Needs** – Projected flows based on latest forecasted population (Round 6) and other flow factors for the Cabin John Basin are summarized in Table 4-T10. This table presents projected flows from the Cabin John Basin to the MUPI-PI crossover system and the IMA limitations. As can be seen, the projected annual average flows from this basin will exceed the IMA limit, although this will not be a major concern. Flows into the PI from the Muddy Branch basin, upstream from the Cabin John sewershed, will be significantly reduced due to the diversion of flows to the expanded Seneca WWTP which were previously routed through the Muddy Branch sewerage system to the PI.

**Table 4-T10: Future Wastewater Flows to the Maryland-Upper Potomac Interceptor (MUPI) and the Potomac Interceptor (PI) from the Cabin John Basin.**

| Year | | | Cabin John Basin Flows | | | |
|---|---|---|---|---|---|---|
| | | | Average (mgd) | | Peak (mgd) | |
| 2005 | Projected Flow | | 11.92 | | 31.13 | |
| | IMA Limitation | MUPI | 11.0 | 10.3 | 48.3 | 23.3 |
| | | PI | | 0.7 | | 25.0 |
| | Balance | | -0.92* | | +17.17 | |
| 2010 | Projected Flow | | 12.24 | | 31.96 | |
| | IMA Limitation | MUPI | 11.0 | 10.3 | 48.3 | 23.3 |
| | | PI | | 0.7 | | 25.0 |
| | Balance | | -1.24* | | +16.34 | |
| 2015 | Projected Flow | | 12.6 | | 33.77 | |
| | IMA Limitation | MUPI | 11.0 | 10.3 | 48.3 | 23.3 |
| | | PI | | 0.7 | | 25.0 |
| | Balance | | -1.60* | | +15.39 | |

NOTE: Data include flows from the City of Rockville
* Cabin John Flows in excess of IMA limits area off-set by under utilization of the PI upstream at Muddy Branch.

The 1990 "Cabin John Reevaluation Study" evaluated the adequacy of sewage collection and conveyance facilities within the Cabin John basin. The study concluded that, despite insignificant flow increases in this basin, approximately 11,500 feet of sewer may have insufficient capacity by the year 2010 and that frequently occurring surcharged conditions are expected. However, hydraulic evaluations indicate that the surcharge will not produce overflows until sometime after the year 2010. In addition, the 1995 "Rock Creek Conveyance Needs Analysis," indicated that the projected ultimate flows from the Cabin John basin may exceed the capacity of approximately 30,300 feet of existing Cabin John sewer mains. The approximate locations of projected capacity constraints in this basin are shown in Figure 4-F12.

**iii. Rock Creek Basin** – The Rock Creek basin is located in the southern and central parts of the county. The headwaters of Rock Creek originate in largely rural areas between Olney and Laytonsville. The stream flows generally south and enters the District of Columbia near Chevy Chase. The basin boundaries are roughly defined on the west by the Old Georgetown Road/Rockville Pike corridor and on the east by Georgia Avenue, and include portions of the following planning areas: Bethesda-Chevy Chase, Silver Spring, North Bethesda-Garrett Park, Kensington-Wheaton, Rockville, Aspen Hill, Olney, Gaithersburg, and

the Upper Rock Creek Watershed. Rock Creek is the most intensely developed sewer basin in Montgomery County.

**(a) Existing Systems** -- The Rock Creek Trunk Sewers consist of two parallel gravity interceptor sewers which carry the accumulated wastewater from of the Montgomery County's portion of the Rock Creek Basin south into the District of Columbia and to the Upper Potomac Interceptor Relief Sewer. These wastewater flows are treated at the Blue Plains WWTP. The Rock Creek Basin boundary, the major sewer lines layout, and the approximate locations of projected capacity constraints in this basin are shown in Figure 4-F13.

A portion of the wastewater generated in the Olney area in the Hawlings River (Patuxent River) Watershed is pumped into the Rock Creek Basin through the Reddy Branch WWPS, located just east of Brookeville. Within the basin, the North Branch WWPS pumps flows from development located north of Bowie Mill Road into a gravity sewer main at Cashell Road, conveying those flows to the North Branch Trunk Sewer. This pump around was constructed to avoid extending the North Branch Trunk Sewer upstream through environmentally sensitive park land.

A substantial amount of the County's current and anticipated development depends on the sewerage infrastructure in the Rock Creek Basin. The basin receives flows from much of the development and redevelopment planned for the Bethesda, Grosvenor, Nicholson, Rockville, and Shady Grove areas in the west and the Silver Spring, Wheaton, and Olney areas in the east.

The limited wastewater transmission capacity in the Rock Creek Trunk Sewers at the point where they enter the District of Columbia has been a major constraint in meeting the wastewater conveyance needs in the Rock Creek Basin since the early 1980s. The 1985 IMA limits the peak flow from Montgomery County through the Rock Creek Basin to the Blue Plains WWTP 56.6 MGD. The IMA also limits the trunk sewers' annual average flow to 33.5 mgd.

In 1983, the "Rock Creek Transmission Relief Facility Plan" provided for relief of existing surcharging and overflows in the Rock Creek sewers. This study also recommended a phased solution approach for providing future increases in wastewater flows while meeting the Blue Plains IMA limit. The Phase I recommendation was the Rock Creek Storage Facility, which WSSC built in 1991 just south of Randolph Road. This facility offloads and stores excess peak flows from the trunk sewers; the stored wastewater is gradually returned to the trunk sewers during times of lower flow. The storage facility provides flexibility in meeting the IMA peak flow limit of 56.6 mgd. WSSC assumes that the Rock Creek Storage Facility provides an additional 24 mgd to the IMA peak flow limit of 56.6 mgd (1994 WSSC Strategic Sewer Study). The Phase II recommendation from the 1983 study included the construction of a pump station and a force main to transfer the excess flows from the Rock Creek Basin to the Cabin John Basin. However, the latest interagency review of the flow data and sewer conditions through the recently completed Rock Creek Wastewater Facilities Project focused on providing additional peak flow storage within the Rock Creek sewershed, rather than pumping excess flows into the Cabin John sewerage system, which is also exceeding its average allocated capacity.

**(b) Projected Needs** – Table 4-T11 summarizes projected flows from the Rock Creek Basin, based on latest forecasted population (Round 6) and other flow factors, and the related IMA limitations at the District of Columbia line.

## Figure 4-F13: Rock Creek Sewer Network

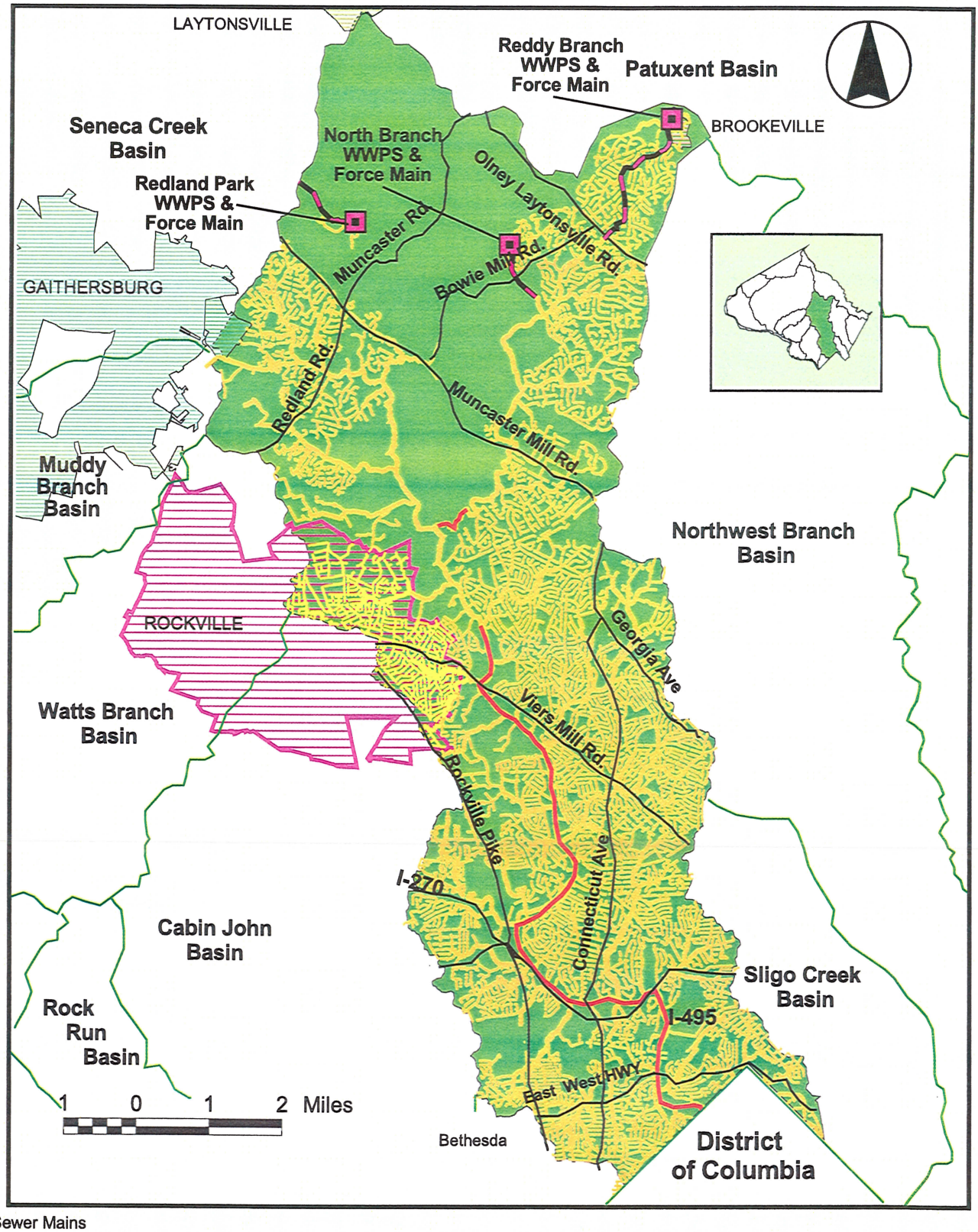


**Table 4-T11: Future Wastewater Flows to the Rock Creek Trunk Sewer**

| Year | | Average (mgd) | Peak (mgd) |
|---|---|---|---|
| 2005 | Projected Flow | 30.40 | 80.75 |
| | IMA Limitation | 33.5 | 56.6 (+24) |
| | Balance | **+3.1** | **-0.15** |
| 2010 | Projected Flow | 31.39 | 82.18 |
| | IMA Limitation | 33.5 | 56.6 (+24) |
| | Balance | **+2.11** | **-1.58** |
| 2015 | Projected Flow | 32.06 | *80.75* |
| | IMA Limitation | 33.5 | 56.6 (+24) |
| | Balance | **+1.44** | **-2.87** |

Notes: - WSSC has assumed that the Rock Creek Storage Facility (WSSC Strategic Sewerage Study of 1994) provides an additional 24 mgd to the IMA peak flow limit of 56.6 mgd. However, WSSC also expects that the 24 mgd is expected will gradually diminish as the peak flows become larger.
- Data includes flows from the City of Rockville.

The 1994 Strategic Sewerage Study characterized the conveyance situation in this basin as critical and recommended immediate action to address the basin's future sewerage needs. WSSC's 1995 Rock Creek Conveyance Needs Analysis examined the current and future wastewater flows and sewer capacities in Rock Creek. This analysis also examined wastewater flows in adjacent sewersheds which could be involved in the alternatives analysis for a pumpover of excess flows from the Rock Creek Basin. Based on the projected ultimate wastewater flows, this analysis concluded that the capacity of approximately 54,300 feet of existing sewer mains in the Rock Creek Basin may be exceeded by the year 2010. Figure 4-F13 shows the approximate locations of projected capacity constraints in this basin.

As indicated in the preceding table, the peak flows from the Rock Creek Basin will exceed the IMA limit by the year 2005, even with full utilization of the 24-MGD Rock Creek Storage Facility. The recommendations from the latest study of the sewerage conditions in the Rock Creek Basin (conducted during late 1990s and early 2000s through the Rock Creek Wastewater Facilities Project) included long-term relief project focused on providing additional peak flow storage within the Rock Creek sewershed, rather than pumping excess flows into another adjacent sewerage system. Short-term recommendations from this study included: construction of a limited amount of relief sewer, installation of control improvements to optimize the operation of the existing storage facility, and implementation of an infiltration/inflow control program in an effort to reduce excess peak flows in this basin.

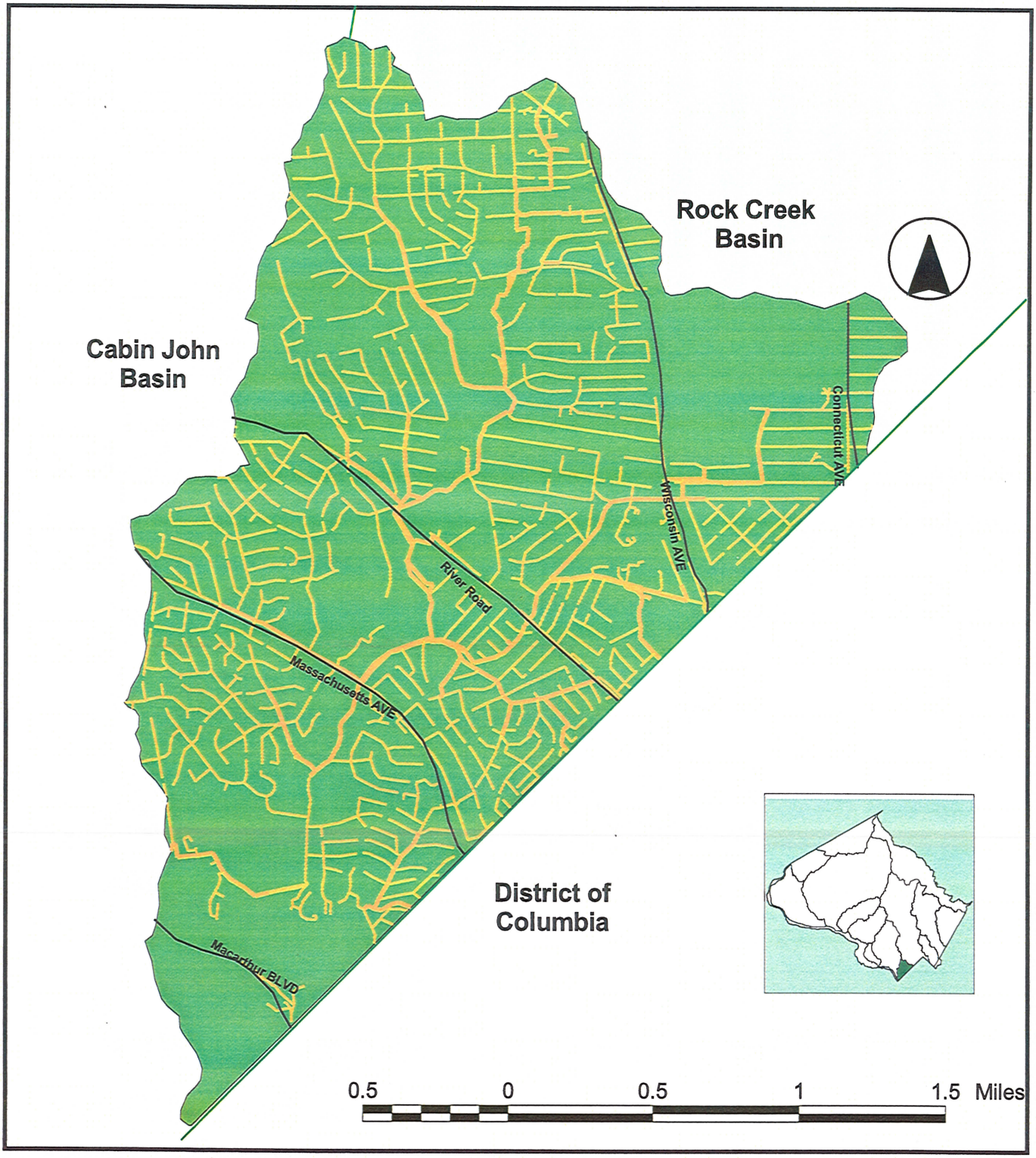
**iv. Little Falls Sewerage System** – The Little Falls Basin is relatively small and substantially developed. The basin encompasses the southern portions of the communities of Bethesda and Chevy Chase, near the District of Columbia.

**(a) Existing Systems** -- The Little Falls Trunk Sewer receives wastewater from the Little Falls basin and conveys it into the Upper Potomac Interceptor Relief Sewer (UPRIS) in the District of Columbia, where these flows are treated at the Blue Plains WWTP. Flows from the Little Falls Trunk Sewer into the UPRIS are regulated by the 1985 Blue Plains IMA.

Sewerage service is presently provided by a system of trunk sewer lines, reaching up into the basin along Little Falls Branch, with a major extension north of Massachusetts Avenue along Willett Branch. The wastewater collection and conveyance facilities within the Little Falls Basin are adequate and there are no planned wastewater collection/conveyance projects or proposed system modifications. Figure 4-F14 shows the Little Falls Basin boundary and its major sewer lines.

**(b) Projected Needs** – Table 4-T12 summarizes projected flows, based on latest forecasted population and other flow factors, and IMA flow restrictions for the Little Falls Basin.

## Figure 4-F14: Little Falls Basin Sewer Network




Sewer lines with 8 inch diameter and less

Sewer lines with diameter greater than 8 inches

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| Table 4-T12: Future Wastewater Flows from Little Falls Basin | | | |
|---|---|---|---|
| **Year** | | **Average (mgd)** | **Peak (mgd)** |
| **2005** | Projected Flow | 4.27 | 14.36 |
| | IMA Limitation | 7.6 | 20.8 |
| | Balance | **+3.33** | **+6.44** |
| **2010** | Projected Flow | 4.48 | 14.93 |
| | IMA Limitation | 7.6 | 20.8 |
| | Balance | **+3.12** | **+5.87** |
| **2015** | Projected Flow | 4.56 | 14.95 |
| | IMA Limitation | 7.6 | 20.8 |
| | Balance | **+3.04** | **+5.85** |

As indicated in the preceding table, WSSC does not expect the annual average and peak flows from the Little Falls Basin to exceed the IMA limitations before the year 2015. The 1994 WSSC Strategic Sewerage Study determined that the annual average IMA limitation will not be exceeded before 2030. The Little Falls Trunk Sewer has adequate capacity to receive the projected wastewater flows over the next 30 years.

**v. Anacostia Interceptor System** -- This sewerage system originated in the 1930's and is one of the oldest within the WSSD. Sewer service is presently provided to more than 80 percent of the Anacostia River Basin in Montgomery County, encompassing an area of about 39 square miles, and including communities in the following planning areas: Fairland - Beltsville, Colesville - White Oak, Cloverly - Norwood, Kemp Mill - Four Corners, Takoma Park, Silver Spring, Kensington - Wheaton, Aspen Hill, and Olney. Nearly all of the sewered portion of Eastern Montgomery County is situated within the upper reaches of the Anacostia River Basin. The Paint Branch sewer basin includes the watersheds of both Paint Branch and Little Paint Branch.

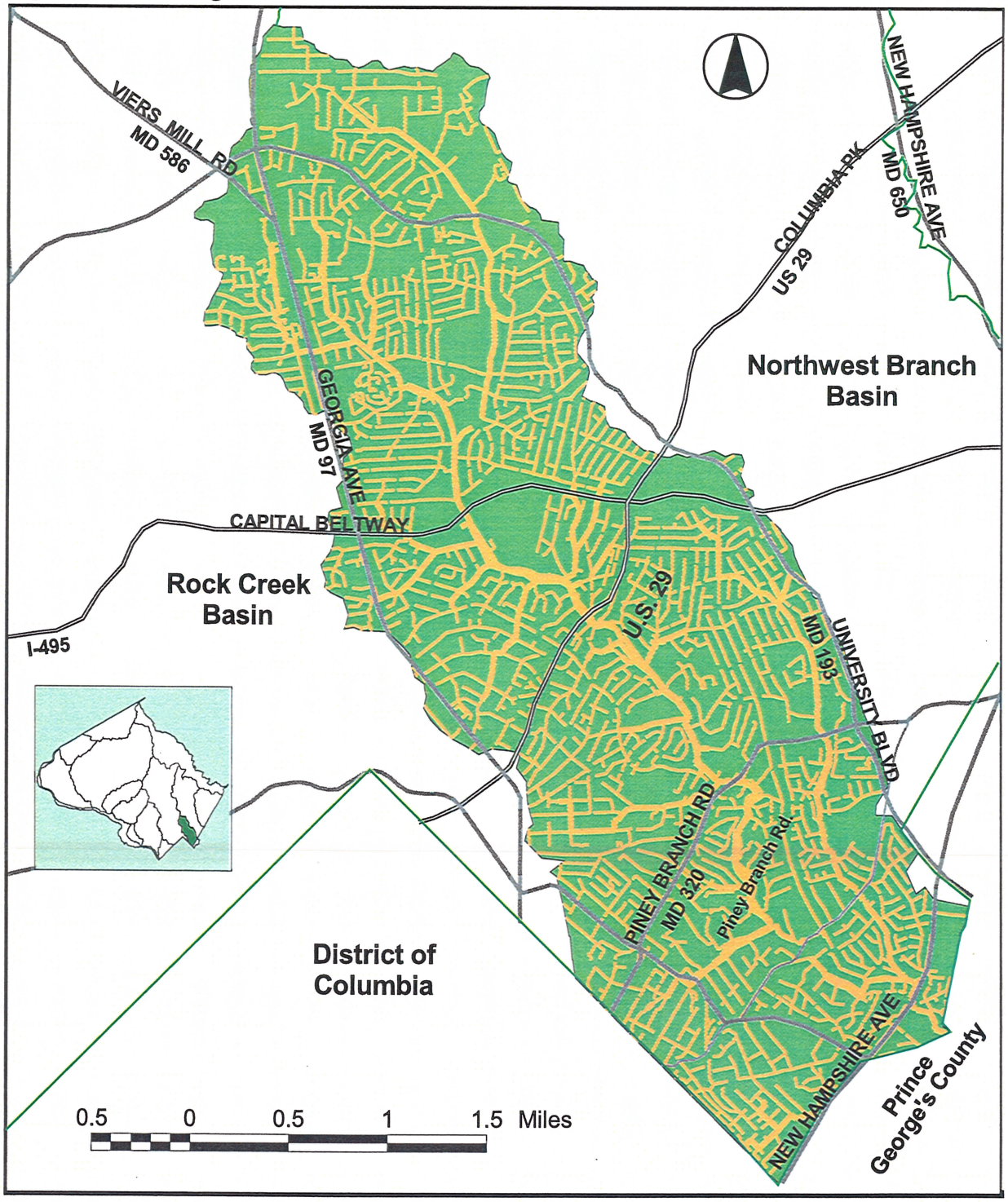
**(a) Existing Systems** – The Anacostia Interceptor System receives wastewater from both Prince George's and Montgomery Counties. The wastewater collection system consists of a network of trunk sewers reaching up along Sligo Creek, and Long, Northwest, Little Northwest, Buckhorn, Hollywood, Paint, and Little Paint Branches. The wastewater flows by gravity down the basin through Prince George's County to the Anacostia Pumping Station near the District of Columbia adjacent to the Anacostia River. From there, the wastewater is pumped through a force main to a gravity sewer parallel to the Anacostia River, then on to the Blue Plains WWTP for treatment. WSSC's use of the tributaries to Anacostia Interceptor System is governed by both the 1985 IMA and the Bi-County Agreement.

Major sub-basins served by the Anacostia Interceptor System in Montgomery County include Paint Branch, Northwest Branch, and Sligo Creek. A brief description of the sewerage systems in each of these three sub-basins follows.

**(i) Sligo Creek Basin** -- The Sligo Creek Basin is relatively small and substantially developed, covering an area from downtown Wheaton south to downtown Silver Spring. The trunk sewer parallels Sligo Creek and enters the Prince George's County east of the Silver Spring commercial center. This basin is shown in Figure 4-F15.

**(ii) Northwest Branch Basin** -- In addition to the wastewater generated within the Northwest Branch watershed, this sewerage system receives wastewater flows pumped from other watersheds through three pumping stations. In the Olney Planning Area, the James Creek WWPS pumps flows from the Hawlings River Watershed (from the area generally north of Route 108 and east of Georgia Avenue). In the Cloverly - Norwood Planning Area, flows are pumped from the Hawlings River Watershed

**Figure 4-F15: Sligo Creek Basin Sewer Network**




Sewer lines with 8-inch or smaller diameter

Sewer Lines with 10-inch or greater diameter

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(north of Route 108) through the Sandy Spring Meadows WWPS; flows are also pumped from the Patuxent River Watershed (northeast of New Hampshire Avenue) through the Sam Rice Manor WWPS. The Northwest Branch Basin is shown in Figure 4-F16.

**(iii) Paint Branch Basin** -- The Paint Branch Trunk Sewer traverses much of the southeastern part of Montgomery County. Trunk sewers parallel Paint Branch and its major tributaries, including Little Paint Branch. The Paint Branch Trunk Sewer enters Prince George's County in the White Oak area. The Paint Branch sewer basin is shown in Figure 4-F17.

**(b) Projected Needs** -- The available sewer capacity in the Anacostia Interceptor System service area is shared between Prince George's and Montgomery Counties on a first come-first served basis as specified in the Bi-County Capacity Agreement. Projected annual average and peak flows in this basin, which includes flows from both counties, are compared to the IMA limitation in Table 4-T13.

**Table 4-T13: Future Wastewater Flows from Anacostia River Basin**

| Year | | Average (mgd) | Peak (mgd) |
|---|---|---|---|
| 2005 | Projected Flow | 60.39 | 151.77 |
| | IMA Limitation | 83.2 | 185 |
| | Balance | **+22.81** | **+33.23** |
| 2010 | Projected Flow | 62.02 | 154.88 |
| | IMA Limitation | 83.2 | 185 |
| | Balance | **+21.18** | **+30.12** |
| 2015 | Projected Flow | 63.73 | 158.23 |
| | IMA Limitation | 83.2 | 185 |
| | Balance | **+19.47** | **+26.77** |

As indicated in the preceding table, the combined projected flows from both Montgomery and Prince George's Counties in the Anacostia Interceptor system will not exceed the IMA limitation before 2015.

**(i) Sligo Creek Basin** -- Much of the development potential in Sligo Creek is limited to redevelopment of existing commercial areas, such as the downtown areas of Silver Spring and Wheaton. WSSC does not anticipate future sewage capacity constraints within this basin.

**(ii) Northwest Branch Basin** -- The existing and anticipated future flows in the Northwest Branch Basin were analyzed in 1995 through the Rock Creek Conveyance Needs Analysis. The results indicate that the projected 2010 wastewater flows from the basin could exceed the capacity of approximately 12,700 feet of existing sewer mains (see Figure 4-F17). At present, major sewer lines within the basin have adequate capacity, and there are no planned CIP projects in this basin.

**(iii) Paint Branch Basin** -- Major sewer lines tributary to Anacostia Interceptor System in this basin have adequate capacity at present, and there are no planned CIP projects in this basin. However, considerable growth is expected to occur in this area along the U.S. Route 29 corridor. To examine the adequacy of the sewer system relative to the projected growth in this basin, WSSC performed an analysis in 1995 under the Eastern Montgomery County Master Plan Analysis. This analysis concluded that 9,500 feet of Paint Branch Trunk Sewer within Montgomery County will have capacity constraints under ultimate flow conditions. Results from this analysis and from the Paint Branch Sewer Facility Plan, conducted in 1984, are shown in Figure 4-F17.

## Figure 4-F16: Northwest Branch Basin Sewer Network

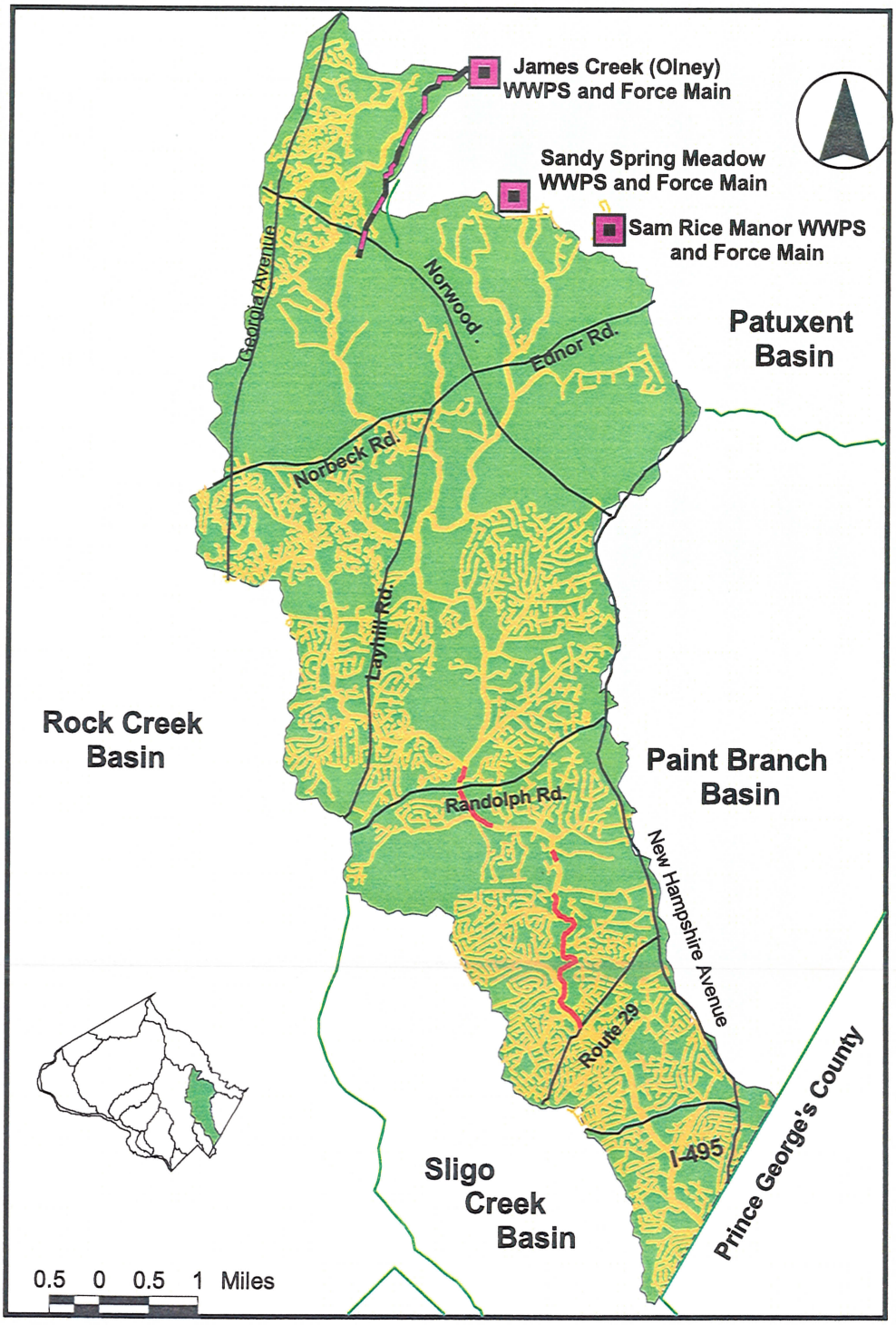
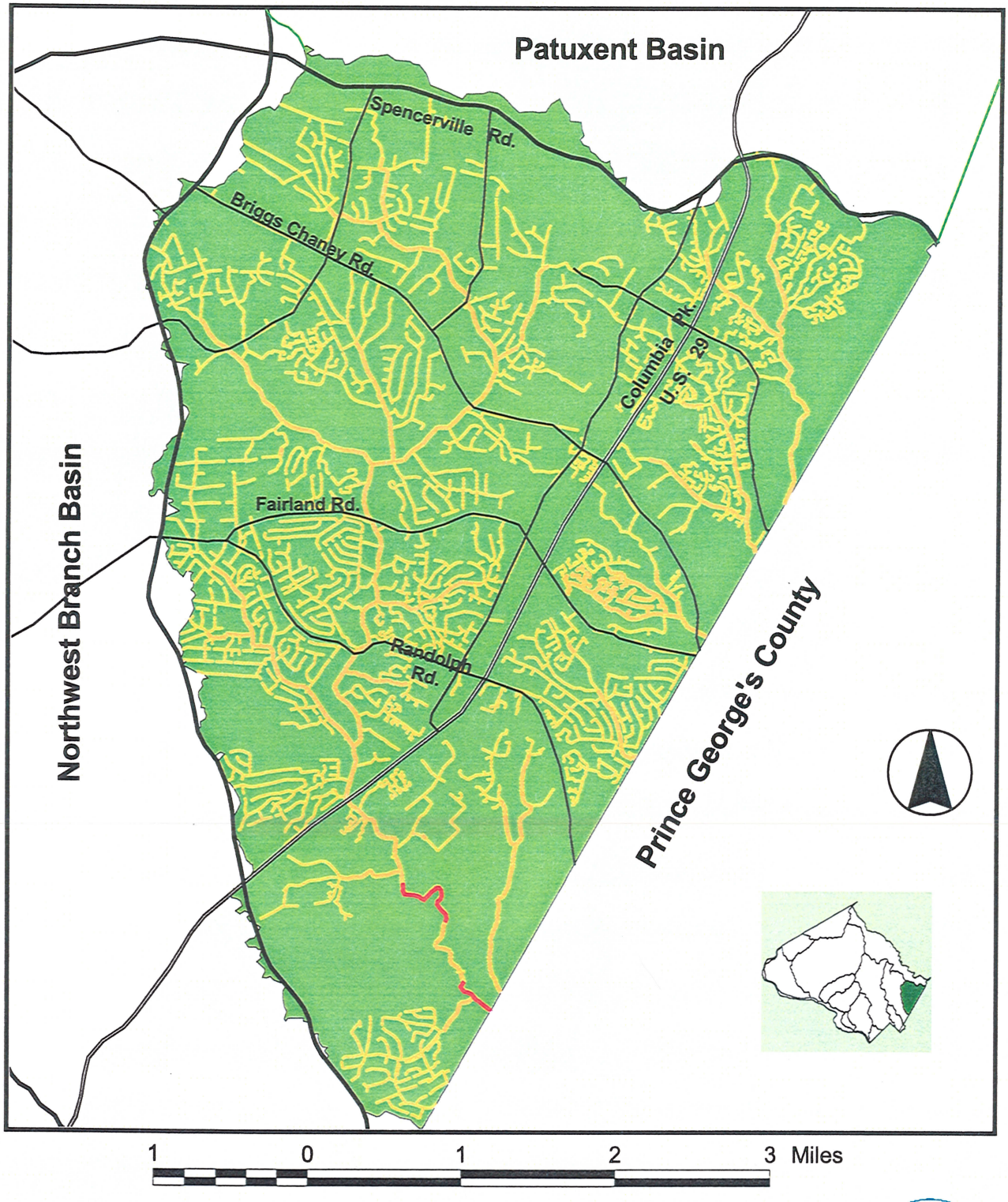


**Figure 4-F17: Paint Branch Basin Sewer Network**



**b. Treatment Facilities** -- The Blue Plains Wastewater Treatment Plan (WWTP) treats the majority of the wastewater generated within the Blue Plains service area. The Seneca WWTP offloads approximately 6 mgd of flow from the Great Seneca Creek system; the remaining 9 mgd flow is pumped into the Muddy Branch sewershed for transmission to the Blue Plains facility. However, by mid-2003, the expanded Seneca WWTP will treat all the wastewater generated within the Seneca Basin; none of these flows will be treated at Blue Plains. The planned Rock Run WWTP is considered as part of the Blue Plains service area since it was planned to off-load flows from the Potomac Interceptor system.

A general description and a brief discussion of issues relevant to each treatment plant are presented in the following sections. Table 4-T14 provides additional information on treatment plants the Blue Plains Service Area. Included in this table are other community system wastewater treatment plants located in the county.

**Table 4-T14: Community Wastewater Treatment Facilities in Montgomery County**

| • Facility Name & Owner/Operating Agency<br>• Facility Location<br>• Facility Coordinates | Type of Treatment | • Point of Discharge<br>• Permit No. | Design Capacity (mgd) | Comments/Status |
|---|---|---|---|---|
| SENECA SERVICE AREA FACILITIES | | | | |
| **Seneca WWTP** -- WSSC<br>Great Seneca Highway - Germantown<br>N475,200/E721,900 | Activated Sludge | Great Seneca Creek<br>91-DP-0156 | 5.0 | Expansion to 20 MGD by Summer 2003; until then, the plant treats flows offloaded from the Blue Plains WWTP service area. Ultimate design capacity is 26.0 MGD. |
| DAMASCUS, HYATTSTOWN, AND POOLESVILLE SERVICE AREA FACILITIES | | | | |
| **Damascus WWTP** -- WSSC<br>Log House Road - Damascus<br>N514,500/E741,500 | Activated Sludge | Magruder Branch<br>93-DP-0162 | 1.5 | |
| **Hyattstown WWTP** -- WSSC<br>Routes 355 & 109 - Hyattstown<br>N527,000/E710,500 | Physical/Bio-logical | Little Bennett Creek<br>96-DP-3200 | 0.015 | |
| **Poolesville WWTP** -- Town of Poolesville<br>Fisher Avenue - Poolesville<br>N476,250/E688,100 | Sequencing Batch reactor | Dry Seneca Creek<br>95-DP-0781 | 0.625 | MDE issued draft permit for process upgrade and expansion to 0.75 MGD. |

**i. Blue Plains Wastewater Treatment Plant** – The District of Columbia Water and Sewer Authority (WASA) owns, operates, and maintains the wastewater treatment facilities at Blue Plains, situated along the Anacostia River. The Blue Plains WWTP has been the primary wastewater treatment facility for the Washington Metropolitan Area since its construction in 1938. WASA is responsible for the design and construction of all projects at the plant. The facility has been improved and expanded over the years to provide better quality effluent and to increase capacity for population growth in the plant's service area. The principal jurisdictions using the Blue Plains facilities include: the District of Columbia; portions of Arlington, Fairfax and Loudoun Counties in Virginia; and most of Montgomery and Prince George's Counties in Maryland. The utilities serving these jurisdictions pay their proportionate share of capital and operating costs based on their treatment capacity allocation and actual flow to the plant. The use of this treatment plant is currently governed by the Intermunicipal Agreement of 1985 (IMA). The approximate boundaries of this service area are shown in Figure 4-F7.

The current total annual average allocated capacity at the Blue Plains WWTP is 370 mgd, the design capacity of this plant. The unit processes employed at the Blue Plains WWTP include the following:

- **Primary Treatment:** Screening, grit removal, primary clarification with metal salt addition for phosphorus removal

- **Secondary Treatment:** Activated sludge, addition of metal salts for phosphorus removal and secondary clarification
- **Advanced Treatment:** Nitrification with chemical addition, final clarification and filtration, denitrification
- **Disinfection:** Chlorination with sodium hypochlorite
- **Dechlorination:** Sulfur Dioxide
- **Solids Conditioning:** Centrifuge and belt filter dewatering
- **Solids Handling:** Land application by outside contractors and incineration at Fairfax County (see Section II.C.1.c. for additional information).

Appendix A of this Plan provides a summary of capital projects planned and currently underway to upgrade and expand the wastewater treatment plants serving the county, and to address facility maintenance.

Historically, nearly all of the wastewater generated in Montgomery County has been treated at the Blue Plains Wastewater Treatment Plant (WWTP). The plant currently receives more than 75 percent of Montgomery County's wastewater, or approximately 80 million gallons per day (MGD), accounting for approximately 30 percent of the total flow received at Blue Plains. All the wastewater collected by the county's community sewerage systems in the following basins is presently treated at the Blue Plains Wastewater Treatment Plant: Muddy Branch, Rock Creek, Watts Branch, Cabin John Creek, Rock Run, Little Falls Branch, Northwest Branch, Paint Branch, and Sligo Creek Basins. Although most of the WSSC wastewater generated within the Seneca Creek Basin is treated at the Seneca WWTP, the transfer of flows from this basin through the Muddy Branch basin to Blue Plains WWTP will discontinue in mid-2003 when the expansion of the Seneca WWTP to 20 MGD is complete.

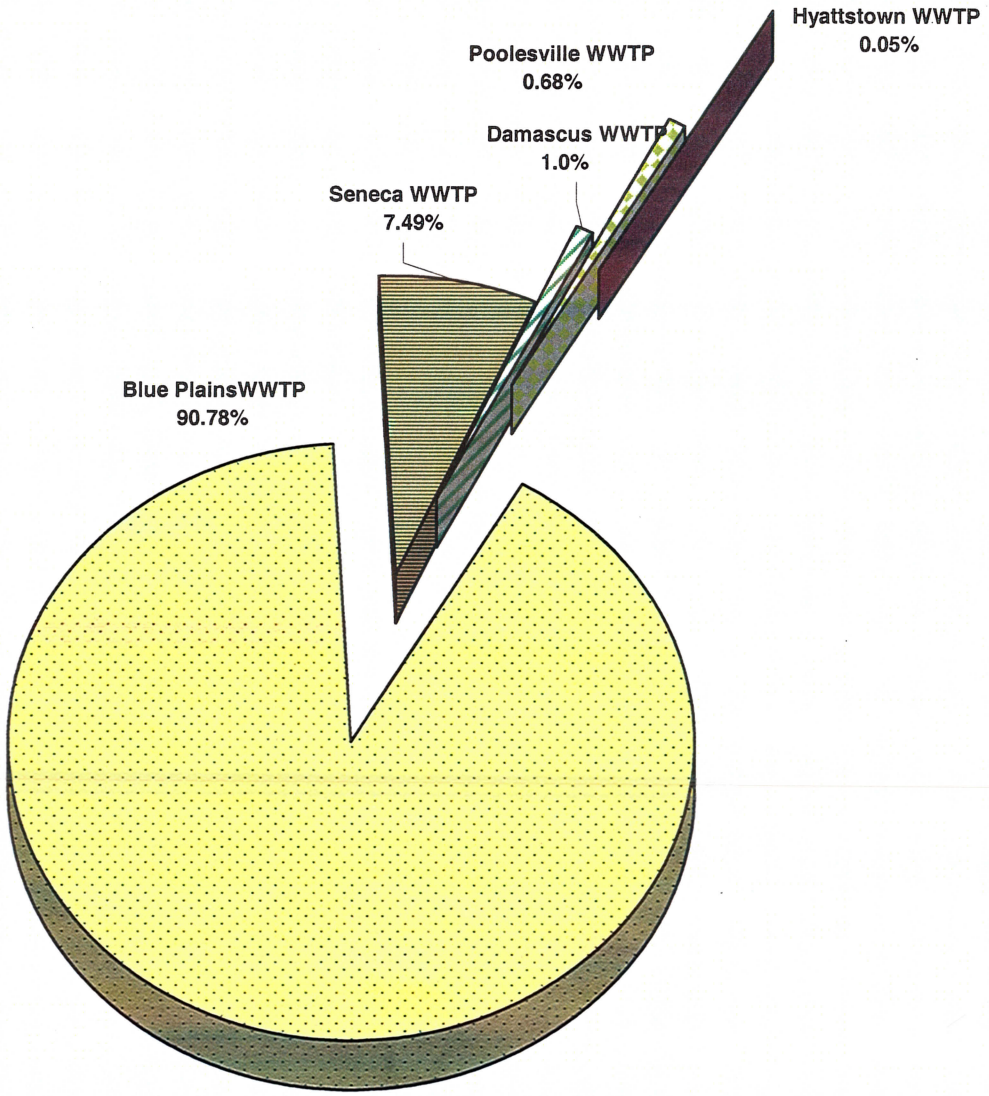
Table 4-T15 summarizes the actual flows received at Blue Plains during 2001 from each jurisdiction. In terms of flow contribution, the District of Columbia has historically been the largest user. For example, in 2001, WSSC flows accounted for 39 percent of the flows to the plant and the District of Columbia accounted for 49 percent. Blue Plains users daily average flows for the year 2001 and their respective IMA limitations are shown in Figure 4-F18.

**Table 4-T15: 2001 Actual Daily Average Wastewater Flows to the Blue Plains WWTP and IMA Limitations**

| 2001 | Total Flows to Blue Plains (mgd) | District of Columbia Flows (mgd) | WSSC Flows (mgd) | All Other Jurisdiction Flows (mgd) |
|---|---|---|---|---|
| January | 296.8 | 143.8 | 115.6 | 37.4 |
| February | 300.9 | 138.7 | 123.3 | 38.9 |
| March | 322.0 | 153.3 | 128.9 | 39.8 |
| April | 324.5 | 154.7 | 130.3 | 39.5 |
| May | 326.0 | 157.2 | 129.4 | 39.4 |
| June | 339.5 | 166.0 | 133.1 | 40.4 |
| July | 362.8 | 195.3 | 128.7 | 38.8 |
| August | 328.6 | 164.5 | 126.1 | 38.0 |
| September | 319.5 | 164.1 | 116.9 | 38.5 |
| October | 287.6 | 138.1 | 112.0 | 37.5 |
| November | 280.4 | 132.5 | 111.0 | 36.9 |
| December | 276.5 | 127.0 | 111.7 | 37.8 |
| **Daily Average** | **313.76** | **152.93** | **122.25** | **38.58** |
| **IMA Limitation** | **370.0** | **158.0** | **169.6** | **42.4** |

Source: Blue Plains Service Area - Monthly Flow Report
Notes: The allocation of 158 MGD annual average for the District of Columbia includes the 10 mgd reserved capacity for the Potomac Interceptor Users.

## Figure 4-F18: 2001 Daily Average Wastewater Treated in Montgomery County



As depicted in Figure 4-F18, WSSC has over 45 MGD in its remaining allocated capacity at Blue Plains. Presently, the District of Columbia often exceeds its allocated capacity, especially during wet weather conditions. WSSC's ability to use its full capacity allocation at Blue Plains will depend on significantly reducing the District's actual flows to the system. The District's excessive flows to Blue Plains will not conflict with WSSC's need for additional capacity until WSSC actually needs additional capacity. However, presently the District is using plant capacity allocated to and paid for by other Blue Plains user jurisdictions, including the WSSC.

| **Water and Sewer Plan Recommendation** |
|---|
| Montgomery and Prince George's Counties and WSSC need to encourage WASA to proceed with its recently released plan to reduce extraneous flows from the District's collection system. This to ensure that WSSC can utilize its allocated capacity at Blue Plains when Montgomery and Prince George's Counties need that additional capacity. In addition, the IMA signatories should investigate whether WASA should reimburse the other Blue Plains users for treatment capacity used in excess of the District of Columbia's IMA Allocation. This issue is being addressed through the Blue Plains Regional Long-Term Wastewater Management Plan and through the development of the annotated IMA. |

Based on data from all four publicly-owned wastewater treatment plants serving Montgomery County, as presented in Table 4-T16, the daily average of wastewater generated in Montgomery County during 2001 was 86.773 MGD. As shown in Figure 4-F18, the Blue Plains WWTP receives approximately 91percent of all community-system wastewater generated in Montgomery County.

**Table 4-T16: Wastewater Generated In Montgomery County in 2001***

| Service Area | Treatment Facility | Daily Average Flow Treated (mgd) |
|---|---|---|
| Blue Plains | Blue Plains WWTP | 83.620 |
| | Seneca WWTP | 6.495 |
| Damascus | Damascus WWTP | 0.869 |
| Hyattstown | Hyattstown WWTP | 0.042 |
| Poolesville | Poolesville WWTP | 0.596 |
| **TOTAL** | | 86.773 |

* Community systems only.

**ii. Seneca Wastewater Treatment Plant** – The Seneca WWTP offloads and treats approximately 6 mgd of the 15 mgd flow from the Great Seneca Creek sewerage system. However, with the completed expansion of the Seneca WWTP from 6 mgd to 20 mgd, expected by mid-2003, the majority of wastewater generated within the Seneca Basin will be treated at the Seneca WWTP. WSSC will temporarily continue to pump approximately 3.5 MGD from the Lower Seneca Basin, via the Muddy Branch sewerage system and the PI, to the Blue Plains WWTP. This pumpover will cease in Spring 2006 upon completion of the Lower Seneca Basin Sewer project, which will connect this sewerage system directly to the Seneca WWTP. This Plan generally treats the Seneca Service Area as separate from the Blue Plains Service Area. See Section II.C.2. for additional information.

**c. Biosolids Management** – Biosolids is a term adopted in recent years to refer to the municipal wastewater solids formerly referred to as sewage sludge. These solids are the residuals from the primary, secondary, and tertiary treatment processes at wastewater treatment plants. The residuals are usually thickened and dewatered into a "cake" that generally consists of 12-to-30-percent solids, depending on the technologies employed. Both federal and state regulations define the stabilization or pathogen reduction

techniques required to allow these solids to be recycled as biosolids. Biosolids are generally recycled as soil amendments or fertilizers by either direct land application or after being composted. Industrial pretreatment regulations ensure that metals and/or toxics are not significant components of biosolids. Both the EPA and MDE strongly support the beneficial reuse of biosolids, as opposed to disposal techniques such as incineration and land filling.

Biosolids are defined in State law as solid waste. The significance of this designation is that MDE requires the County to report on the planning and management of biosolids in the County's Solid Waste Management Plan. A restatement of the information reported in the Solid Waste Management Plan is contained here for the purpose of continuity, since biosolids are a product of wastewater treatment and must be managed as part of the wastewater treatment plant operations.

WSSC manages biosolids from each of the treatment plants they operate in Montgomery County and a portion of the biosolids from the Blue Plains WWTP in Washington D.C. Currently, the average finished biosolids production at the Blue Plains WWTP is approximately 1250 wet tons per day (wtpd), of which approximately 400 wtpd is land-applied by WSSC contractors. Biosolids production from the Seneca and Damascus WWTPs are approximately 15 wtpd and 2 wtpd, respectively. The biosolids from these facilities are managed by the WSSC through contracts for land application on farm lands.

i. **Biosolids Under the Intermunicipal Agreement of 1985** -- Treatment and disposal of biosolids produced at the Blue Plains WWTP is governed by the 1984 Memorandum of Understanding on Sludge (MOUS) and the 1985 IMA. The 1984 MOUS establishes an understanding with respect to soliciting and entering into contracts for the management of biosolids from Blue Plains between the District of Columbia, Montgomery and Prince George's Counties, WSSC, and Fairfax County. WSSC manages 80 dry tons/day (dtpd) of biosolids from the Blue Plains WWTP, the equivalent of 400 wtpd at 20 percent solids. The 1985 IMA originally provided for permanent biosolids management facilities at Blue Plains consisting of in-vessel composting and incineration, and for WSSC to use static pile composting at the Montgomery County Regional Composting Facility (MCRCF).

The 1985 IMA envisioned that WSSC would compost all of its share of biosolids at the MCRCF, located in the southeastern part of the county in the Calverton - White Oak area. As a regional facility, the MCRCF's capital and operating costs were shared by the Blue Plains users, under the terms of the IMA. The MCRCF was the only facility identified in the IMA for sludge management that was actually constructed and placed into operation. In 1998, DEP prepared a comparative economic analysis of biosolids composting at the MCRCF versus land application, concluding that annual cost savings to the region of approximately $4.0 million could be realized if the MCRCF were closed and the federal and State grants used to construct the facility did not have to be repaid. Closure of the MCRCF would also avoid any requirement for additional capital investment in the facility, enable the savings to be invested in the upgrades of the proposed biosolids facilities at Blue Plains, and relieve odor problems in surrounding communities caused by the facility. Accordingly, the County Executive recommended that the facility be closed. The IMA signatories agreed with the closure and U.S. EPA agreed WSSC did not have to repay the federal loans for the facility. As a result, WSSC ceased composting operations at the MCRCF in April 1999, diverting the approximately 200 wtpd of biosolids previously composted there to the land application program. WSSC maintains land application contracts to fulfill its responsibilities in this area. All the remaining Blue Plains biosolids are either land applied or incinerated in the Fairfax Resource Recovery Facility.

ii. **Land Application** -- Biosolids that are land applied are subject to requirements of State-issued sewage sludge utilization permits and nutrient management plans. The locations of the permitted sites are determined by the contractor that manages this material. The bidding process requires that each bidder have the necessary permitted sites to manage the biosolids. Historically, these sites have been on the Maryland Eastern Shore;, Frederick, Howard, and Prince George's Counties; or in Virginia. These areas are preferred for biosolids land application because they have large farms on gently sloping or flat land with well drained soils. Generally, most of the biosolids from the other WSSC treatment plants in Montgomery County (Seneca , Damascus, and Hyattstown WWTPs), are managed on farms in the county.

**iii. Blue Plains Biosolids Management Study of 1996** -- In 1996, the Blue Plains users conducted a study of Blue Plains biosolids issues. The Blue Plains Biosolids Management Study (BPBMS), evaluated both short-term and long-term issues associated with the management of the biosolids generated at Blue Plains. The justification for this study was that the long-range sludge management plan agreed to by the region in the 1985 IMA had not been implemented. The District of Columbia, according to the IMA plan, was to have built a sludge incinerator and an in-vessel composting system to manage all biosolids generated at Blue Plains, except for the 80 dtpd designated for WSSC. However, indications were that the IMA plan never would be implemented, since the District indicated in 1995 that they were not going to implement either the incinerator or the composting systems based on anticipated permitting problems and limited space at the Blue Plains plant. Accordingly, the regional Blue Plains partners initiated the biosolids management study to evaluate options for biosolids management given the identified District limitations.

The BPBMS evaluated the biosolids generation at Blue Plains, confirming that the generation rate was significantly lower than had occurred in previous years and was well below prior estimates. This lower production rate was due to significantly lower phosphorus levels in the influent to the plant and improved dewatering technology. Long-term biosolids production was nearly half of prior estimates (1000 wtpd versus 2000 wtpd). After a review of biosolids re-use and disposal options, land application was determined to be the most cost effective, long-term viable disposal option. The Blue Plains users then agreed to recommend a capital improvement program at Blue Plains that would optimize the biosolids for land application. This study recommended the construction of twelve egg-shaped anaerobic digesters at Blue Plains at an estimated cost of $175 million. These digesters would improve the quality and reduce the quantity of biosolids generated at the plant by 30 to 50 percent. Several other capital improvements were also recommended, including dewatering centrifuges, belt filter presses, chemical addition facilities, etc. The total biosolids program was estimated to cost $300 million. The implementation of this recommended program was identified as a high priority to the WASA Board of Directors and is included in the WASA CIP.

Based on the assumptions used in the study, it was also recommended that the MCRCF be included in this long-term biosolids management plan. However, Montgomery County's subsequent economic feasibility study of the MCRCF revealed that several key assumptions (e.g., grant repayment) were invalid and that the MCRCF was not a significant aspect of biosolids management plan for Blue Plains.

**iv. WASA Biosolids Study** -- In 1998, WASA funded a biosolids study for the Blue Plains WWTP to review the assumptions and technologies proposed in the 1996 Blue Plains Biosolids Management Study (BPBMS). WASA conducted this new study because the 1996 study was conducted prior to the existence of the WASA Board and management staff. Since the BPBMS proposed new capital spending of approximately $300 million, WASA felt it that it was important to update the BPBMS and to secure regional support for any recommended biosolids plan. Accordingly, during 1999 the WASA Biosolids study was conducted, including a "decision-science" regional participation process.

The conclusions of this new study process are very similar to the original conclusions of the BPBMS. It supports the investment of funds for digesters at Blue Plains, new dewatering centrifuges, and reliance on land application for the recycling of biosolids. The 1999 study also supports an investment in heat dryers/pelletization of biosolids if economical land application becomes a problem in the mid-Atlantic area. The Bi-County portion of the current WSSC CIP includes these facilities for the Blue Plains WWTP.

| **Water and Sewer Plan Recommendation** |
| --- |
| Montgomery County should continue working actively with WASA to implement the capital and operational improvements to the Blue Plains WWTP recommended in the 1996 Blue Plains Biosolids Management Study and 1999 WASA Biosolids Study. |

**c. Blue Plains Service Area Projected Wastewater Treatment Needs** -- Securing adequate wastewater treatment capacity to meet development objectives and related issues has been a major concern in Montgomery County since the early 1970's. A crisis in treatment capacity was marked by the enactment of a building moratorium in Montgomery County in 1970 due to limited treatment capacity at the Blue Plains WWTP. Since that time, the County has entered into regional wastewater treatment agreements to address

its treatment needs at the Blue Plains WWTP. The available treatment capacity at the Blue Plains WWTP continues to be governed by the IMA, which allocates the Blue Plains treatment capacity among its users which includes the WSSC. WSSC's allocated capacity is then shared between Montgomery and Prince George's Counties and the City of Rockville through the 1983 Bi-County Agreement and the WSSC-Rockville Agreements.

Projected flows based on forecasted population and other flow factors for Blue Plains service area are summarized in Table 4-T17. This data, produced by WSSC, is based on COG's Round 6 Cooperative demographic forecasts and WSSC's latest wastewater flow factors. As shown in this table, the county's projected wastewater treatment needs within the Blue Plains service area will be met well beyond the year 2015.

**Table 4-T17: Projected Flows and Available Treatment Capacity in the Blue Plains Service Area[1]**

| Sewer Basin | Projected Flows (mgd) | | |
|---|---|---|---|
| | 2005 | 2010 | 2015 |
| Anacostia [6] | 60.39 | 62.02 | 63.73 |
| Cabin John [2] | 11.92 | 12.24 | 12.6 |
| Little Falls | 4.27 | 4.48 | 4.56 |
| Muddy Branch | 5.69 | 6.37 | 6.92 |
| Rock Creek [2] | 30.4 | 31.39 | 32.06 |
| Rock Run | 0.97 | 1.0 | 1.03 |
| Watts Branch [2] | 4.87 | 5.53 | 5.76 |
| Other Montgomery County Flows [5] | 0.44 | 0.44 | 0.45 |
| Flows from Prince George's County [4] | 8.06 | 8.26 | 8.47 |
| **TOTAL** | **127.01 [3]** | **131.73 [3]** | **135.58 [3]** |
| Blue Plains WWTP | **Treatment Capacity (mgd)** | | |
| | 169.6 | 169.6 | 169.6 |
| | **Available Capacity (mgd)** | | |
| | **42.59** | **37.87** | **34.02** |

1 Data are based on latest (2002) WSSC projections.
2 Projected flows in Rock Creek, Cabin John and Watts Branch include flows from Rockville.
3 The allocated capacity to WSSC includes 9.3 mgd for the City of Rockville.
4 Other flows from Prince George's County include flows from Oxon Run, Piney Branch and Watts Branch.
5 For flows from smaller basins directly connected to the Potomac Interceptor.
6 Anacostia flows include flows from the Prince George's County.

**i. Proposed Rock Run Wastewater Treatment Plant** -- The previously-proposed Rock Run WWTP reflected the result of a search during the 1970's for additional treatment capacity within the Blue Plains service area of the Washington Suburban Sanitary District (WSSD). In 1978, in response to limited treatment capacity, Montgomery County conducted the "Mid-Term Study" to locate a site for a wastewater treatment plant and to identify the County's wastewater treatment capacity needs through the 1990's. After examining many alternatives, a site was selected in the Rock Run Basin for a 20 MGD plant. In conjunction with the selected site, studies were conducted for alternative levels of treatment and points of discharge. The recommended alternative was to pump flow from the Potomac Interceptor to the Rock Run WWTP for treatment, and to convey the treated effluent to the confluence of Little Falls Branch and the Potomac River. This would keeps the plant's discharge downstream of the District of Columbia water supply intake at the Little Falls Dam. This effluent routing assumed that a part of the Maryland-Upper Potomac Interceptor (MUPI)

would be used to serve as a portion of the discharge pipe, and that existing sewer connections to the MUPI would have to be transferred to the Potomac Interceptor.

While finalizing the design of the Rock Run WWTP, an agreement was reached through the 1985 IMA on expanding the Blue Plains WWTP to 370 mgd to meet regional wastewater treatment needs through 2005 for the entire metropolitan Washington area, including Montgomery County. Since there was no longer an immediate need to construct the plant at Rock Run, implementation of the proposed Rock Run WWTP was postponed to a time when the Blue Plains WWTP's available capacity would again approach full utilization. The construction of the Rock Run WWTP was one of the requirements of the 1983 Bi-County Agreement, which stipulated that the Rock Run WWTP would serve as the next increment of wastewater treatment capacity within the Blue Plains service area. The decision in the mid-1990s to expand the Seneca WWTP to 20 mgd further postponed the need for any additional treatment capacity in the Blue Plains Service Area for a minimum of 15 years. Although the 1983 Bi-County Agreement originally envisioned Rock Run WWTP as the next increment of wastewater treatment capacity in the WSSD, the Seneca WWTP effectively serves as that increment.

The Rock Run WWTP project has been included for many years in the planned WSSC Capital Improvement Program (CIP). The purpose of retaining the Rock Run WWTP facility in the CIP has been to keep the proposed facility in an active planning document, since the timing for the facility was not known. The Rock Run WWTP facility is shown in the CIP to have design and construction funded in the out-years, beyond the active six-year CIP period for capital project funding.

**ii. Rock Run WWTP Policy Issue** – In 1983, when there was a plan to build the Rock Run Wastewater Treatment Plant, the region was contending with and seeking solutions for several sewerage issues related to:

- A need for more treatment capacity in the Blue Plains Service Area.
- A perception that the PI would not have sufficient capacity for future PI users. And,
- A decision that Montgomery County should be the location for the next increment of treatment capacity the WSSC Blue Plains Service Area.

Several events and subsequent policies were adopted that today invalidate the crisis and concerns of the early 1980s. The major points of concern identified above have been resolved during the past twenty years as follows:

- The Blue Plains WWTP was approved for a significant capacity expansion by EPA in 1984, from 309 MGD to 370 MGD. This expansion increased WSSC's allocated capacity by 16.3 MGD from 153.3 MGD to 169.6 MGD. In addition, recent flow projections for the WSSC Blue Plains Service Area indicates that there is sufficient treatment capacity at Blue Plains for future planned development for beyond the next twenty years.

- The Blue Plains user jurisdictions recently completed the first dynamic hydraulic model of the PI and it shows that there is sufficient capacity in the PI for all planned uses in the next twenty years. And,

- In 1997, Montgomery County supported the replacement of the interim 5.0 MGD Seneca WWTP with a permanent 20.0 MGD WWTP that can be upgraded to 26.0 MGD if needed. Through this expansion, all Seneca Basin flows will be removed from the Blue Plains Service Area providing additional capacity in the PI system and the Blue Plains WWTP. This new capacity is the 20 MGD that was previously envisioned to be at Rock Run. Seneca WWTP is therefore the next increment of treatment capacity in the WSSC Blue Plains Service Area that was agreed to in the 1983 Bi-County Agreement. The Seneca WWTP expansion is 95% complete and expected to begin operation in mid 2003.

Montgomery County recognized the need to update not only these prior assumptions, but also to update and reevaluate the 1994 WSSC Strategic Sewerage Plan, based on the results of new capacity and flow analyses performed by both WSSC and WASA for the Blue Plains sewerage basins in the WSSD, the Potomac Interceptor, and the Blue Plains WWTP. This Water and Sewer Plan update represents a step in that continuing reevaluation process, bringing together these transmission and treatment capacity issues to make the following recommendation:

| **Water and Sewer Plan Recommendation** |
| --- |
| Based on the resolution of all the issues that resulted in the planning of Rock Run WWTP in late 1970s and early 1980s, it is now appropriate to remove the Rock Run WWTP from this sewerage system planning document and for the County to work with Prince George's County and WSSC to remove it from their plans. However, this Water and Sewer Plan does not make any recommendation concerning the disposition of the Rock Run WWTP site, which would be addressed, if necessary, through the appropriate review and coordination process by WSSC. |

2. **Seneca WWTP Service Area** -- The Seneca Service Area includes substantial portions of the Great Seneca Creek and Little Seneca Creek watersheds and serves the communities of Gaithersburg, Germantown and Clarksburg (see Figure 4-F19). The Great Seneca Creek watershed is the largest watershed in Montgomery County, with a drainage area of approximately 128 square miles. A rolling, hilly topography is characteristic throughout this drainage basin, and natural slopes of 15 percent or greater are not common. Steep slopes are found along some of the principal stream valleys. The I-270 corridor is the major development corridor extending from Bethesda to Clarksburg. For the most part, the areas within the watershed outside the I-270 corridor are low density residential and agricultural land uses, and are largely served by individual, on-site septic systems.

The expansion of the Seneca WWTP from 5.0 MGD to 20.0 MGD is presently at the final stages of construction. The facility design anticipates an eventual capacity expansion to 26.0 MGD. At the time of this Plan update, approximately 9 MGD of the wastewater generated in the Seneca Basin is conveyed to the Blue Plains WWTP for treatment via a pumpover to the Muddy Branch sewerage system. Because of existing conditions, the Seneca Basin is technically considered as part of the Blue Plains Service Area. Note that the Seneca Basin excludes the Damascus and Poolesville Service Areas, which are independent of the systems currently feeding into the Seneca and Blue Plains facilities. The Seneca WWTP expansion is expected to be completed in mid-2003,and all wastewater flows in this basin will be treated at the Seneca WWTP; no further wastewater flows will be transferred to the Blue Plains WWTP. Since the completion of the Seneca WWTP expected within the development time of this Plan, the sewer system in the Seneca Basin is addressed henceforth as the Seneca Service Area.

WSSC will continue to pump a small portion of the Seneca basin sewage flow into the Muddy Branch system for treatment at Blue Plains for an interim period following the start of operations at the expanded Seneca WWTP. These flows currently enter the Seneca system below the treatment plant's flow diversion. WSSC's Lower Seneca Facility Plan provides alternatives for conveying these sewage flows to the expanded plant. Implementation of this facility plan will result in the complete separation of the Seneca basin from the Blue Plains service area.

The removal of Seneca flows from the Blue Plains service area provides many benefits for the sewerage systems in Montgomery County and the Washington Suburban Sanitary District (WSSD). These benefits include:

- Minimizing the length of new and relief sewers required, with associated environmental and community benefits.
- Alleviating capacity constraints in the Muddy Branch sewer system.
- Relieving capacity and flow limitations in the Potomac Interceptor.
- Opening up additional treatment capacity for the WSSC at the Blue Plains WWTP.