

**MONTGOMERY COUNTY**  
**2018 – 2027 COMPREHENSIVE WATER SUPPLY**  
**AND SEWERAGE SYSTEMS PLAN**



Prepared by Montgomery County Department of Environmental Protection

**Montgomery County Comprehensive Water Supply and Sewerage Systems Plan**  
2018 - 2027 PLAN (County Council Approved – October 2018)

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## ***EXECUTIVE SUMMARY***

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The 2018 - 2027 Ten-Year Comprehensive Water Supply and Sewerage Systems Plan (Water and Sewer Plan or 2018 Plan) provides a substantial update and reorganization of the previous Plan. It includes updated information on County policies and plans and continues to use Geographic Information System (GIS) technology to provide maps that more accurately present water and sewer planning and infrastructure information.

This 2018 Plan includes the adopted policies and plans contained in the prior Plan and also in subsequent adopted Plan amendments, while deleting outdated or no longer relevant material. DEP has added updated information from a number of sources that reflect new information from both technical sources and related County plans. This information has been reorganized in the Plan's text, figures and maps with the intention of making it easier to understand and follow. Technical information has been summarized and presented on both a watershed and planning area basis in an attempt to allow interested parties the opportunity to focus on issues that organized by geographic area.

The purpose of the Comprehensive Water Supply and Sewerage Systems Plan is to provide an overview of the planning policies, needs, issues and planned infrastructure related to community and individual water and sewerage systems, public health, environmental protection and land-use issues in Montgomery County. It is intended to provide both background information and a planning basis for the evaluation of water supply and sewerage system needs in the county. It is also expected to allow a more thorough context for developing, analyzing, and evaluating the issues related to the review and implementation of the Capital Improvement Program (CIP), including the timing and funding of identified projects. It seeks to achieve this purpose by:

- ❖ Outlining planning principles and policies that relate to land-use planning, infrastructure development, public health, and environmental protection;
- ❖ Describing current conditions of the water supply and sewerage systems relative to condition, capacity, availability, and related issues;
- ❖ Identifying and prioritizing community needs for improved water supply and sewerage infrastructure;
- ❖ Identifying planning and infrastructure projects needed to address existing or projected needs.

To achieve this purpose, the Water and Sewer Plan is organized into four chapters and several appendices. These four chapters address the following major subject areas:

### ***Chapter 1: OBJECTIVES AND POLICIES***

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This chapter includes an introduction to the Comprehensive Water Supply and Sewerage Systems Plan, identifying its purpose, legal context, and governance issues. It outlines the plan's goals and objectives for the orderly and cost-effective development of community water supply and sewerage systems and summarizes the Plan's structure and content. Chapter 1 describes the planning process used in Montgomery County to stage and implement water and sewer infrastructure improvements, including identification of policies and a review of the procedures for the adoption of amendments and/or modifications to the Plan. This chapter includes both general and special-condition policies that have been adopted by the County Council for the designation of community

water and sewer service areas, which regulate water and sewerage system extensions, connections, and their staging.

The update of Chapter 1 continues a process of reorganization to assist those using the Plan. This particularly applies to those sections addressing governmental agency responsibilities, general service policies, special and restricted service area policies, and water and sewerage systems policies and financing.

The preceding changes are largely structural to the Plan, moving sections together with a common theme to provide for clarity, better continuity, and less redundancy. Chapter 1 incorporates text amendments approved by the County since adoption of the prior Plan update. Chapter 1 also provides new information, policy directions, and recommendations, as follow:

### **Dry Water and Sewer Mains (Sections II.D. & III.A.3.)**

The draft update removes the requirement for a developer to install dry water and/or sewer mains for projects in categories 3 and 4 where individual, onsite systems have been used in areas planned for future community sewer service. Some projects developed using dry mains constructed as far back as the 1970s and 1980s have never been connected to WSSC's community systems. These dry mains cannot be utilized for new community service without WSSC's evaluation of the need for main replacement or rehabilitation. Instead, an emphasis needs to be made on moving such projects forward with service area changes, if needed, and construction of new mains to implement community service, or to use individual systems under non-interim permits and revise the service areas to category 6.

### **General Water and Sewer Service Policies (Section II.F.)**

The draft update reorganizes these policies to better align them with zoning and land use categories (e.g.; residential, rural, commercial, etc.). These policies also, as needed, account for the recent changes to the County's zoning code. Each major section offers some background explanation or rationale for the various service policies, something that had not necessarily been provided previously in all cases. In addition, the policies addressing the provision of community water service without community sewer (large-lot water service) have been updated to account for WSSC's current main extension financing system.

### **Individual Systems (Sections II.G., III.B., & IV.D.)**

This update provides an expanded discussion about individual, onsite systems: wells and septic systems. Individual systems have become an increasingly important issue for communities as those systems age and require replacement under updated, more-stringent State and County regulations.

### **Special Policies for Water and Sewer Service (Section II.G.)**

- ❖ **Master Plan Recommended Exceptions (Section II.G.1.):** Details about these areas have been moved from Chapter 1 to Appendix C. Mapping has been added to better locate and define the areas affected by these recommendations.
  
- ❖ **Relief of Onsite System Concerns (Section II.G.2.):** This update rewrites this service policy with a focus on procedures for addressing onsite system failures both within and outside the planned community service envelopes. In addition, the procedures and requirements for initiating an onsite systems survey are revised from those adopted following the Glen Hills Study under CR

18-423. This update provides more detailed information about the onsite systems survey process.

- ❖ Abutting Mains Policy (Section II.G.3.): New language in this policy addresses the use of non-abutting service connections and the application of the policy in cases involving the subdivision process.
- ❖ Private Institutional Facilities Policy (Section II.G.4.): This update restructures the private institutional facilities (PIF) policy, largely from prior text, to create a more logical organization and provide additional background information on its rationale. The update also provides an explanation regarding why dedicated low-pressure sewer main do not have the potential to serve other abutting properties. This addresses an aspect of the PIF policy under which the Council has operated for many years, but that was not specifically covered in Plan text. This update adds a requirement for PIF applicants to submit a concept plan for the project for review and comment by the M-NCPPC Development Review Committee (DRC) prior to filing the category change request with DEP; the concept plan and DRC comments are provided as part of the category change application. This update also includes language that requires the County Council's reconsideration of a category change approval in the event that a concept development plan, considered and accepted by the Council as part of a PIF-based action, is subsequently and significantly revised.
- ❖ Onsite System Regulation Changes (Section II.G.9.): The draft update adds an explanation concerning why the policy cannot be automatically applied to properties established before 1963.
- ❖ Special and Restricted Service Areas (Section II.G.11.): Details about service policies in these areas have been moved to Appendix C. Mapping has been added to better locate and define the affected areas.

### **Community Systems Facilities (Section III.A.)**

- ❖ Limited Access Water and Sewer Mains (Section III.A.1.): The draft update includes text to clarify how a single main can be considered as limited access along only part of its length.
- ❖ Capital Projects (Section III.A.2.): The Plan updates this section to reflect changes in the use of capital projects in master plan staging, to more clearly define WSSC capital projects, and to briefly discuss capital programs for Rockville and Poolesville.
- ❖ Environmental Considerations for Community Systems Construction (Section III.A.4): The Plan update adds text that addresses the additional community systems costs involved with addressing environmental considerations.
- ❖ Facility Planning (Section II.A.5.): This section is revised to include relatively new WSSC facility planning programs such as the Asset Management Program and Business Case Analysis.

- ❖ Replacement and Repair of Aging Community Systems (Section II.A.5.g.): This new section addresses the needs involved with replacement and/or rehabilitation of community systems reaching the end of their useful lifespans.

### **Individual Systems Facilities (Section III.C.)**

- ❖ Rural Sanitation Planning Program (Section III.C.4.d.): This new section discusses the need for a comprehensive management program in the County for individual systems and makes a recommendation for a program to start to accomplish this.
- ❖ Multiuse Water Supply and Sewerage Systems (Section II.C.5.): The revised and updated text addresses policy constraints on multiuse systems, including capacity limits on multiuse systems in the AR Zone.

### **Community Systems Financing (Section IV.A.)**

- ❖ WSSC-Built Projects and Extension Subdistrict Projects (Sections IV.A.2.b. & IV.A.2.c.): The WSSC-Built Project section has been revised to summarize this water/sewer main construction and financing program which has seen only minimal use since the past ten years. A proposal for a potential alternative program is provided in the new Extension Subdistrict Projects, a new section that suggests a program using extension subdistricts to better allocate extension costs to all those benefitting or potentially benefitting from new service. Further work on this concept will be needed as well as coordination with WSSC's assessment policies.
- ❖ Service Connection Fees: The draft update has revised this section to 1) WSSC's two-tiered connection fee system, and 2) connection issues for SEP extension projects.

### **Adopting and Amending the Water and Sewer Plan (Section V.)**

- ❖ Triennial Comprehensive Update and Interim Amendment Processes (Section V.B. & V.C.): These revised sections more clearly address the triennial and interim Plan amendment processes, and better establish interim amendments as separate from, but contributing to the triennial update process. The Plan also updates schedules for MDE's consideration of triennial Plan updates and interim Plan amendments based on recent changes to state regulations.
- ❖ Administrative Delegation Policies (Section V.D.2.a.): The draft update proposes revisions for these sections to:
  - Remove language referring to DEP's denial of Plan amendments via the administrative process, it has never been used.
  - Remove the policy addressing administrative actions for public water service for child lots.
  - Replace the Direct Approval Process section with a new section addressing the Advance Action Process (health cases, abutting main & smaller multiuse systems).
- ❖ Approved Amendments (Section V.E.1.): This section includes text added to reinforce the new policy requiring the Council's reconsideration of PIF-based category changes where the PIF user significantly changes a concept development plan upon which the Council's original category change action was based.

- ❖ Conditionally-Approved Amendments (Section V.E.2.): Some Plan amendments, particularly category change requests, that receive a conditional approval action can sit dormant for many years without receiving a final approval action. In the interim, master plan and land use recommendations and service policies may change, affecting the validity of the conditions that existed at the time the conditional approval was granted. This update proposes a policy to establish five-year and ten-year sunsets for the final approval of conditionally approved amendments.
  
- ❖ Deferred Amendments (Section V.E.3.): To address a concern similar to the preceding conditional approval actions, this update recommends establishing a process for reviewing the status of deferred amendments and acting to deny such amendments, if appropriate based on new information. It also clarifies a process for deferred amendments that could subsequently qualify for an administrative action.

## ***Chapter 2: GENERAL BACKGROUND***

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Chapter 2 provides an overview of the natural and cultural environments in Montgomery County. This chapter identifies the environmental features and characteristics of the county that have a bearing on development patterns, natural resources and other factors related to the physical environment. DEP has used GIS-based graphics to depict information related to watersheds, stream classifications, topography, and other natural features, such as soils, geology and groundwater. This information provides the background for resource protection as it relates to water supply and sewerage system planning in Montgomery County.

This chapter also identifies the cultural environment that includes the planning issues related to demographics, land-use, and development. This information in coordination with the policies adopted in the county's General Plan and land-use master plans identifies the areas of the county that are subject to development in the future at densities that will require new or expanded water supply and/or sewerage systems.

## ***Chapter 3: WATER SUPPLY SYSTEMS***

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This chapter contains information about the various aspects of the county's water supply systems; including water supply sources, treatment, and distribution systems. It identifies the regional nature of the supply sources and the agreements that exist to address issues of water demand and drought management. There is also a discussion of the role of groundwater for both individual water supply systems and for the Town of Poolesville. In addition, the Chapter's discussion of rural sanitation issues now includes a table which summarizes known well water supply problem areas in the County. This information provides a basis for further investigations and actions to address these rural sanitation concerns.

### **Sanitary Districts (Section I.B):**

DEP has maintained the previous Plan structure addressing the three major community water supply systems in the county individually: WSSC, Rockville, and Poolesville. These systems are examined in detail with regard to their treatment, transmission and storage systems. In the geographically extensive WSSC system, graphics relate the various pressure zones to planning areas in the county. This information is provided to assist persons using this plan to understand the relationships between identified water supply projects to the identifiable geographic areas and



potential impacts to those areas. These system descriptions also include a summary of the system improvements and growth-related projects.

**Projected Water Supply System Needs (Sections II.F, III.E.5, and IV.F):**

Information is also provided on the projected needs of the major water supply systems in the County. The long-range planning is projected out up to 2040, with interim planning dates for facility requirements. Regional, Bi-County and County-wide systems needs are reviewed based on information obtained from various reports and projected population growth in these areas. This information is supported by the regional population projections ((MWCOG), local land-use plans (M-NCPPC), regional water supply projections (ICPRB) and Bi-County water supply needs (WSSC). The projects that are planned to address these identified needs are summarized in the text of this chapter and in the appendices to the Plan, which incorporates the project summary information of WSSC's most recent Capital Improvement Program (CIP).

In addition to this documentation of the county's community water systems, Chapter 3 also presents policy recommendations and directions related to water supply systems for future guidance. The Chapter's major recommendations are summarized as follows:

- ❖ Potential Use of Travilah Quarry for Additional Raw Water Storage (Section II.C. through II.C.5): The Travilah Quarry, which could supply up to 17 billion gallons of raw water storage, within several miles of the Potomac Water Filtration Plant. This quarry has been evaluated by WSSC for several years and this Plan, along with the Potomac Subregion Master Plan, encourages actions be taken to ensure its future availability to the water supply needs of the County and possibly the region.
- ❖ Investing in Major Water Supply System Infrastructure (Section II.E through II.E.6): Most of the water supply needs are addressed by the WSSC. As such, the Montgomery County Council directs the focus of WSSC's efforts in directing the WSSC's annual budget and the associated six-year Capital Improvements Projects (CIP). These documents in addition to this Plan allow the County Council to direct the policies and investments needed to meet the future needs of the County. In recent years the emphasis has been on investing in major water supply system infrastructure with a commitment to large diameter water main evaluations, rehabilitation and replacement efforts, particularly for the Pre-Stressed Concrete Cylinder Pipes (PCCP). Emphasis has also been placed on the sustainability of the small diameter water distribution pipes, adopting programs for the 1 percent replacement of these pipes. This program was adopted to allow a replacement interval of 100 years for these distribution mains, consistent with their expected useful life.
- ❖ Local and Regional Water Conservation Programs (Section II.F.2.c): In reference to local and regional water conservation programs, Chapter 3 urges the County's public agencies to lead by example with respect to water conservation measures. These conservation efforts are promoted by several mechanisms that require continued review and evaluation to be effective. Plumbing codes, water rates and unaccounted water use emphasized as key factors in ensuring efficient use of water resources for water supply needs.

**Chapter 4: SEWERAGE SYSTEMS**

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Chapter 4 describes the planning basis for the sewerage systems in the County. It identifies the regional, Bi-County, and system relationships that are based on both political and geographic boundaries.

**Introduction and Background:**

The County's sewerage systems are defined according to the treatment plant service areas, sewer basins and planning areas located in the County. Similar to Chapter 3, updates to sewerage systems are structured individually based on the three major community sewerage systems in the County which include the WSSC, the City of Rockville, and the Town of Poolesville. The WSSC system provides the majority of the community sewer service in the County. Accordingly, much of this chapter is dedicated to defining the regional agreements and policies that pertain to the WSSC system and how they relate to the provision of sewer service and capital project planning to meet anticipated system needs. The Chapter describes key policies, planning procedures, and references the Inter-Municipal Agreement (IMA) of 2012 as a significant long-range plan addressing the regional wastewater treatment needs of the region.

**Washington Suburban Sanitary District, Blue Plains WWTP, and IMA of 2012 (Sections I.A., I.B, and I.C):**

Over eighty percent of the wastewater collected in the community sewerage systems in Montgomery County is conveyed to the Blue Plains Wastewater Treatment Plant (WWTP) in Washington D.C. Accordingly, the provisions of the IMA that govern the terms and conditions of shared use of this facility with the District of Columbia, Fairfax County and other regional entities is described in detail. Important issues to the County relate to peak and average flow limitations to the sewers that convey flows to Blue Plains WWTP, allocated treatment capacities to the user jurisdictions and the capital improvement projects planned for this facility. Related to Blue Plains and the terms of the IMA are issues that involve the use of the facilities and the management of the sewage treatment process by-product, known as biosolids. The IMA of 2012 addresses the long-term use of this facility by Montgomery County and the region. This agreement was adopted with a ninety nine-year effective date that ensures the viable regional arrangement far into the future. Important to this duration are the mechanisms in the plan to allow it to be amended to meet future planning and regulatory requirements.

Chapter 4 reviews needs for the sewerage system on a sewershed basis provided by WSSC through their hydro-dynamic modeling of the sewerage system, identifying areas or parts of the sewerage systems requiring relief, either now or in the future. Chapter 4 also provides a brief discussion on rural sanitation issues and includes a table which summarizes known septic system problem areas in the County. This information provides a basis for further investigations and actions to address these rural sanitation issues.

Chapter 4 also presents policy and program recommendations and directions related to sewerage systems for future guidance. The Chapter's major recommendations are summarized as follows:

- ❖ WSSC Flow Modeling Integration (Section I.B.2): The Plan urges WSSC to integrate its flow modeling systems with the MC:MAPS geographic information system, which can provide direct access to modeling information WSSC needs from the County.
- ❖ Development of a Prioritized Listing of SSES Basins and a Financial Plan by WSSC (Section I.B.3): WSSC has been addressing a comprehensive maintenance, operations and management system for the past ten years. These issues affect capital expenditures, sewer overflow conditions, and regional agreements. This Plan suggests that WSSC develop a prioritized list of SSES basins and a financial plan to address the needs these studies reveal.

- ❖ County to Develop Program Addressing the Potential Sanitation Problems from Aging Individual, On-Site Systems in the County's Neighborhoods (Section V.B.3): The Plan recommends that the County should create, budget, and implement appropriate programs to research, prioritize, and address the potential sanitation problems from aging individual, on-site systems facing the County's neighborhoods. This will be especially important for large-lot neighborhoods located outside the areas planned for community water and sewerage systems.

Solving the concerns about older neighborhoods using individual on-site systems may require new and innovative solutions beyond the provision of community water and/or sewer service. These may include, but are not limited to:

- Proactive, periodic on-site systems maintenance and inspection programs coordinated with public outreach and education on individual systems maintenance;
- Alternative financing for relief systems (community or otherwise), including but not limited to special assessment districts, grants or loans from government resources, or utility assistance programs;
- Future policies that address sewerage needs in the older large-lot subdivisions that encourage environmental protection and promote the adopted land-use plans adopted for these areas.

## ***APPENDICES***

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The Plan's glossary has been moved to Appendix A. Capital program projects, previously summarized in Appendix A, are included in the Plan by reference to available documentation online. In Appendix B, inventories of the County's multiuse systems (large-capacity, individual, onsite water and sewerage systems) have been combined into a single table including both multiuse water and sewer systems. Appendix C includes information on exceptional water and sewer service policy areas, moved there from Chapter 1. Information in Appendix C also includes updates for the Glen Hills study area based on the sewer service policies resulting from the 2015 "Glen Hills Area Sanitary Study" and from policy revisions for onsite system surveys adopted in this Plan update. Appendix D includes updated municipal, county, state, and regional agency contact information. Appendix E, an addition to the Plan, includes an inventory of major public and institutional facilities in the county.

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