

Carroll County Water & Sewer Master Plan



*Adopted by Board of County Commissioners
February 21, 2019
Triennial Update*

Copies of the Carroll County Water & Sewer Master Plan are available...

In hardcopy or on CD at:

Carroll County Department of Planning
225 North Center Street, Suite 106
Westminster, Maryland 21157

Online (text and maps) at:

<http://ccgovernment.carr.org/ccg/plan/w-splan/default.asp>

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By phone: 410-386-5145

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INTRODUCTION

Title 9, Subtitle 5, Health-Environmental Article of the Annotated Code of Maryland, requires Carroll County to review and adopt a Water & Sewer Master Plan every three years. The Maryland Department of the Environment (MDE) Regulation 26.03.01 establishes procedures for implementing the law. This Water & Sewer Master Plan has been developed in accordance with those regulations. This plan is adopted by resolution of the Carroll County Commissioners and does not become effective until approved by MDE.

Carroll County has no central regulating authority that provides water and sewer service. Instead, it has a number of municipal systems and several County-owned community water and/or sewer systems. This Water & Sewer Master Plan encompasses all of Carroll County, including the County's eight incorporated towns and cities. The Carroll County 10-Year Solid Waste Management Plan and triennial updates; and the 2014 Master Plan Update, including the 2009 amendment of the Water Resource Element (WRE) by reference are adopted by the Carroll County Commissioners as separate documents and are incorporated by reference herein.

Carroll County's Water & Sewer Master Plan is broken into four chapters. The first chapter (Countywide Planning Context) addresses the general population and geographic characteristics of Carroll County. This chapter also provides an overview of planning policies, regulations and procedures within the county.

The second chapter (Water and Sewer Planning in General) specifically addresses the purpose and goals of water and sewer planning in Carroll County including: water and sewer related policies, severability, and water and sewer amendment procedures. In addition, the organization and management of the public community water and sewer systems is described, detailing the responsibilities of the municipalities and various County departments involved in oversight and operation of the systems.

The third chapter (Water Supply Facilities) describes groundwater and surface water conditions and existing and proposed water facilities by service area. For each water facility, there is a description of the current conditions, an analysis of needs, and recommendations for future system improvements. A section on regional water facilities addresses current and potential reservoir sites designed to meet water needs outside of municipalities.

The fourth chapter (Sewer Facilities) describes sewage disposal conditions and restrictions in the county. It also describes the existing and proposed public sewer facilities by service area. For each sewer facility, there is a description of the current conditions, an analysis of needs, and recommendations for future system improvements.

Definitions for terms commonly found throughout this document can be found in Appendix 1.

This Water & Sewer Master Plan is administered, implemented, and developed in accordance with:

1. The Code of Public Local Laws and Ordinances of Carroll County;
2. Carroll County Subdivision Regulations - Chapter 155;
3. Carroll County Zoning Ordinance - Chapter 158;
4. The applicable zoning ordinance and subdivision regulations of the county's eight incorporated towns;
5. Construction Codes – Chapter 170; and,
6. The Carroll County Master Plan, small area comprehensive plans, and all associated plan elements.

The MDE has regulatory authority over the systems described in this plan.

The Water & Sewer Master Plan is an implementing measure of the Carroll County Master Plan. It takes into account the policies and visions of the county and municipalities when deciding the areas that will be served with water and sewer. This document does not guarantee that the County or any municipality will provide the facilities needed to achieve the plan. Moreover, this document does not guarantee that facilities or service will be provided by the County or any municipality within the general timeframes (i.e., service area or service area categories) represented in this Plan.

If a property is not within the water and sewer service area, an amendment request can be submitted to change the category of the property if there is a particular need. Any revisions to the service areas must be made by the Planning Commission, Board of Commissioners, and MDE.

The requirements of the Water and Sewer Plan are severable, and if any of its requirements are held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining sections.

CHAPTER ONE: Countywide Planning Context

Section I: General Characteristics

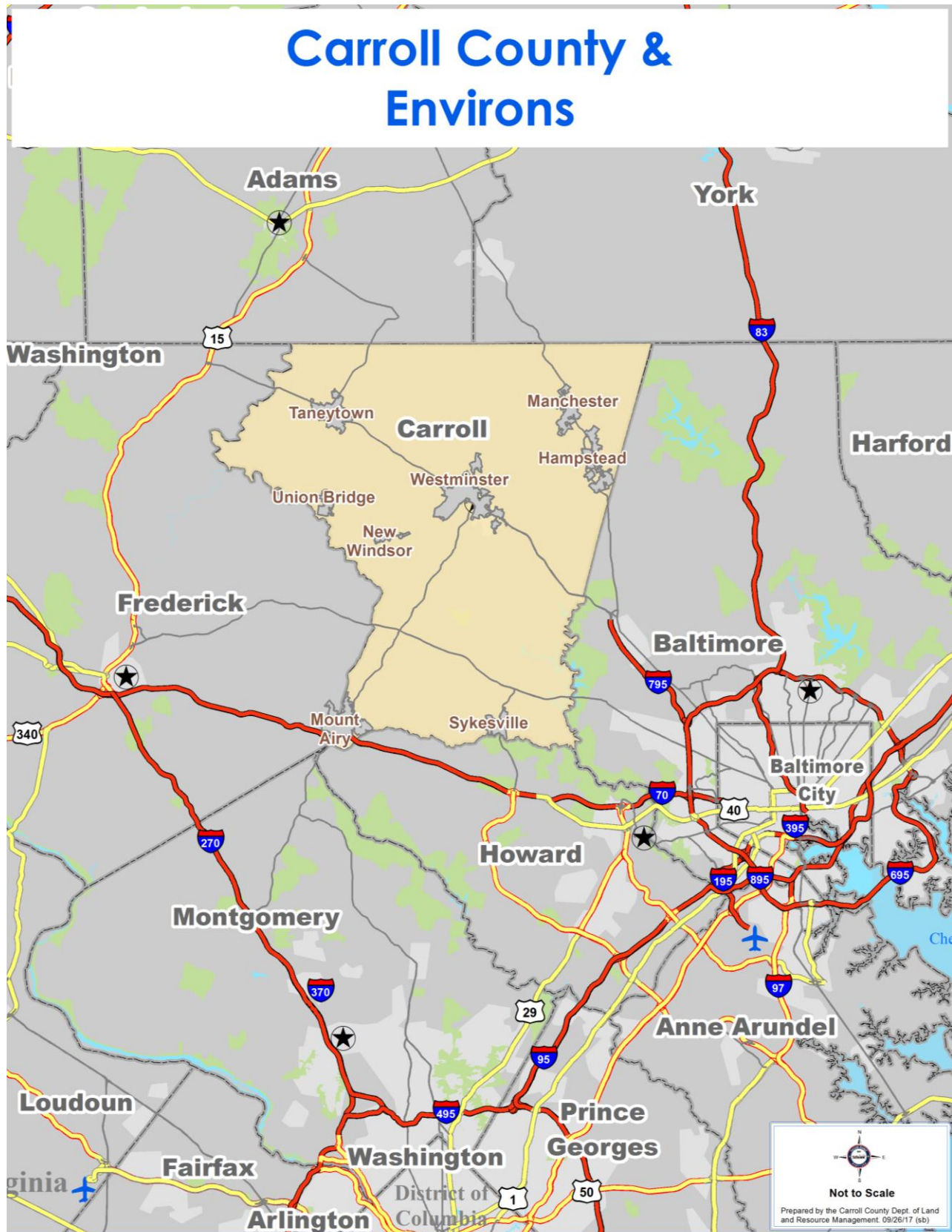
Carroll County is centrally located in Maryland, approximately nine miles west and northwest of Baltimore City. The county is 456 square miles in area and is bounded on the north by the State of Pennsylvania, on the south by Howard County (with the South Branch of the Patapsco River as the common border), on the east by Baltimore County, and on the west by Frederick County.

Topographically, the county has a ridgeline, called Parr's Ridge, running in a northeast-southwest direction, which divides the county into two parts. The area southeast of this ridge drains to the Gunpowder and Patapsco Rivers, while the area to the northwest drains toward the Monocacy River. Eventually, all of these rivers empty into the Chesapeake Bay.

Eight municipalities are located in the county, including the Towns of Hampstead, Manchester, Mount Airy, New Windsor, Sykesville, and Union Bridge and the Cities of Taneytown and Westminster (County Seat). About 28 percent of the county's population lives within the incorporated towns on about five percent of the land area.

Carroll County is a mix of small towns, suburban communities, and rural land. It is one of the most productive farming areas in Maryland and is among the leaders in agricultural land preservation nationwide. See Map 1: Carroll County and Environs Map.

Map 1



Section II: Physical Features

Carroll County's physical features are defined by its soils, geology, aquifers, streams and reservoirs and the areas that drain into them. In addition, the county's natural features include steep slopes, wetlands, and land cover, including forest land, cropland, and developed land.

Streams and Reservoirs

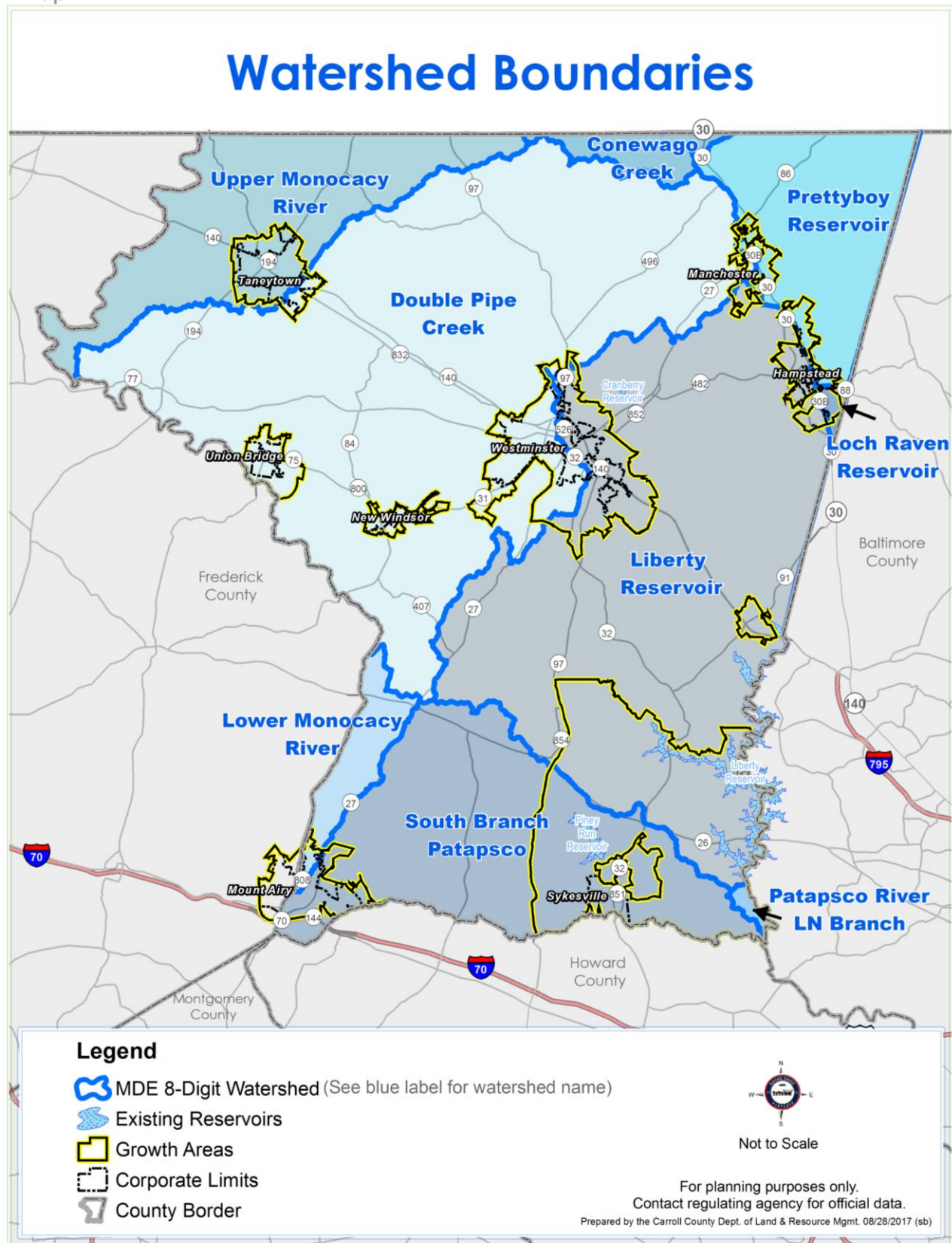
Many miles of streams traverse the county landscape. The utilization of these waterways is varied, ranging from agricultural uses such as irrigation and livestock watering to recreational uses such as fishing and boating. Carroll County contains all or part of nine 8-digit watersheds, which lie within four different 6-digit watersheds (Middle Potomac River, Conewago Creek, Gunpowder River, and Patapsco River). The 8-digit watershed boundaries are defined by some of the more notable geographic features in the county, including Parr's Ridge. Three of these watersheds drain to public drinking water reservoirs (See Map 2 MDE 8-Digit Watershed Boundaries).

Gunpowder Falls, Morgan Run, Beaver Run, Snowden's Run, Stillwater Creek, East Branch Patapsco River, Carroll Highlands Run, Autumn Run, Piney Run, Gillis Falls, Aspen Run, and South Branch Patapsco River are all Use III waters favorable to natural trout propagation because of their high water quality. Of these, all but Gillis Falls, Aspen Run, and South Branch Patapsco River, are further classified as Use III-P waters, which flow into a public water supply. The remaining streams in the county are either Use IV or Use I waters offering recreational fishing opportunities as well.

Many of the waterways in Carroll County are within the watershed of drinking water reservoirs. A small section of northeastern Carroll County drains into Prettyboy Reservoir and Loch Raven Reservoir in Baltimore County. About 130 square miles, or 28 percent of the county, drains into Liberty Reservoir in the southeast. Together, the three reservoirs are a major drinking water source for Baltimore City, Baltimore County, Harford County, Howard County, and parts of Carroll County and Anne Arundel County. Part of the drainage basin in the South Branch Patapsco River also drains into Piney Run Reservoir in southeastern Carroll County. This reservoir is designed to serve future populations, and is not currently in use as a drinking water source.

Due to the importance placed on protecting the quality of water entering these reservoirs, much of the land immediately surrounding the lakes are well forested and free from development. These reservoir sites provide opportunities for recreational activities.

Map 2



Stream Buffers and Wetlands

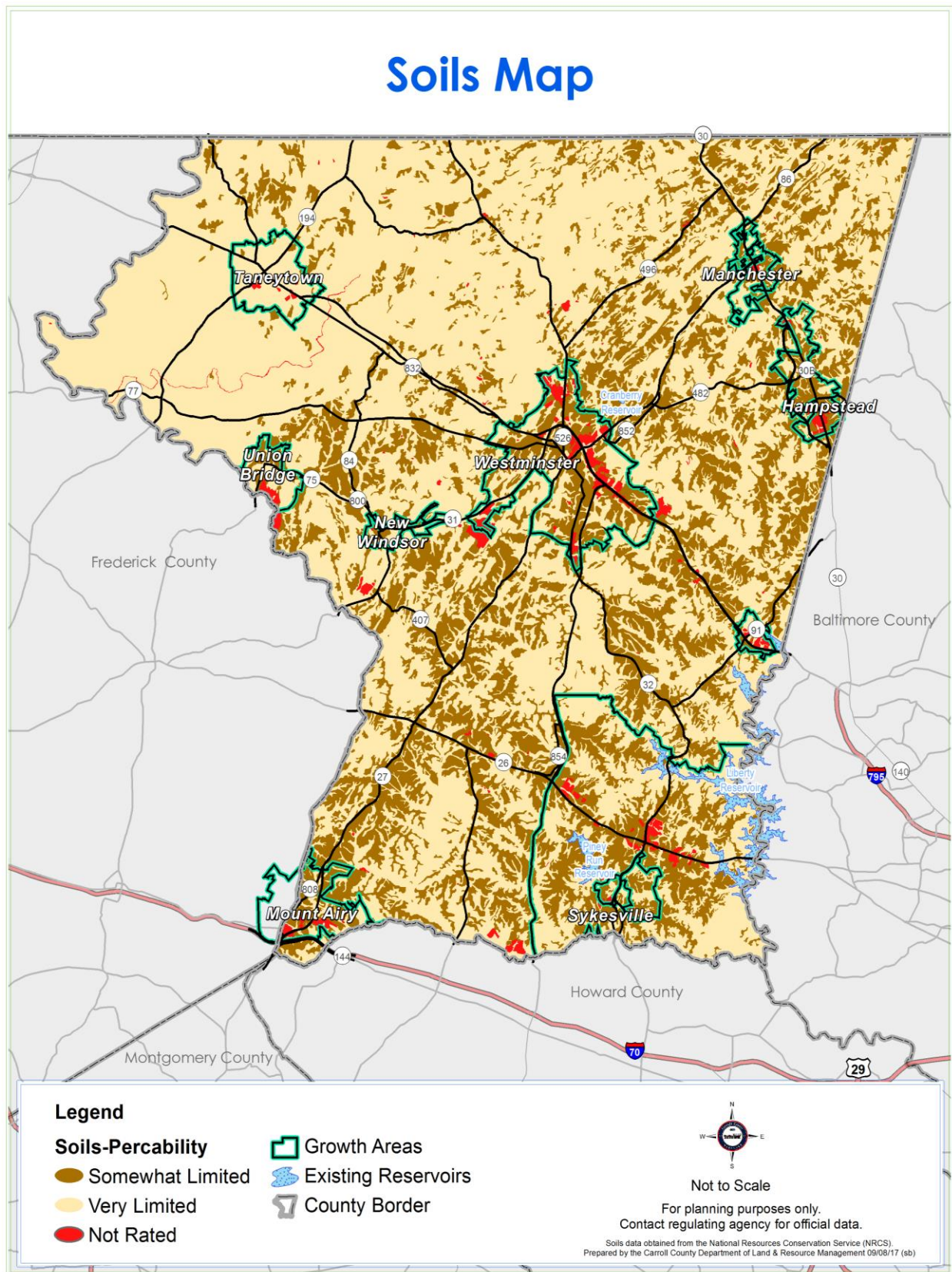
Water quality is of great importance for those areas draining into the reservoirs, but it is also important throughout the county. Carroll County requires a variable width buffer associated with streams through the subdivision process. It also prohibits building in the floodplains, which often include stream buffer areas.

Carroll County does not have any tidal wetlands due to its inland location, but it does have numerous non-tidal wetland areas associated with streams and floodplains. As a result, wetlands play a significant role for the county's streams, ensuring a more consistent delivery of water to the streams, both during drought and flood periods; and serving as natural filtration systems of nutrients.

County Soils

Much of the county's outstanding agricultural production levels depend upon the quality of its soils. The northwestern part of the county, is one of the most productive areas, and is suitable for most general types of farming. There are areas throughout the county that have soil that makes it difficult to farm due to the inability to hold moisture. This makes recharge and drainage also difficult. Residential development on these soils can be problematic as well, particularly in terms of foundation excavation and sighting of septic fields, but they are otherwise suitable for building upon. (See Map 3: Soils Map of Carroll County, MD.)

Map 3



Section III: Population

An important factor affecting the size and scope of water and sewer facilities is population. The distribution of population, population density, and the location of other users such as commercial and industrial facilities is determined to a great extent by the land use plan and zoning regulations of a jurisdiction.

Population Projections

Annual population projections produced by the Carroll County Department of Planning are primarily derived from the total number of households. The number of use and occupancy (U&O) certificates issued each year is used to determine household growth. Over the last decade, the county has experienced a steady growth in population and development activity. The Round 9 population projections were submitted to the Baltimore Metropolitan Council in December 2017. When comparing the results from the projections completed from the previous round, trends show a decrease in total population growth.

Based on current land use designations in the County and an average household size of 2.65 persons, the County is projected to grow to a total population of nearly 238,725 based on the current land use. Using the average number of U&Os issued over the last 10 years, it was determined that the county would add approximately 4,500 additional households, or roughly 300 units per year, between 2020 and 2045. See Map 4: Potential Residential Development.

Future Population

The table below shows the projected population in 2030 and the projected year the county would reach buildout under current land use designations. At this rate of growth, the county would reach a population of 185,150 around 2045. The County believes most of the residential development for the jurisdiction could be reached by 2065 with a population of 238,715. (See Table 1: Carroll County Population Projections).

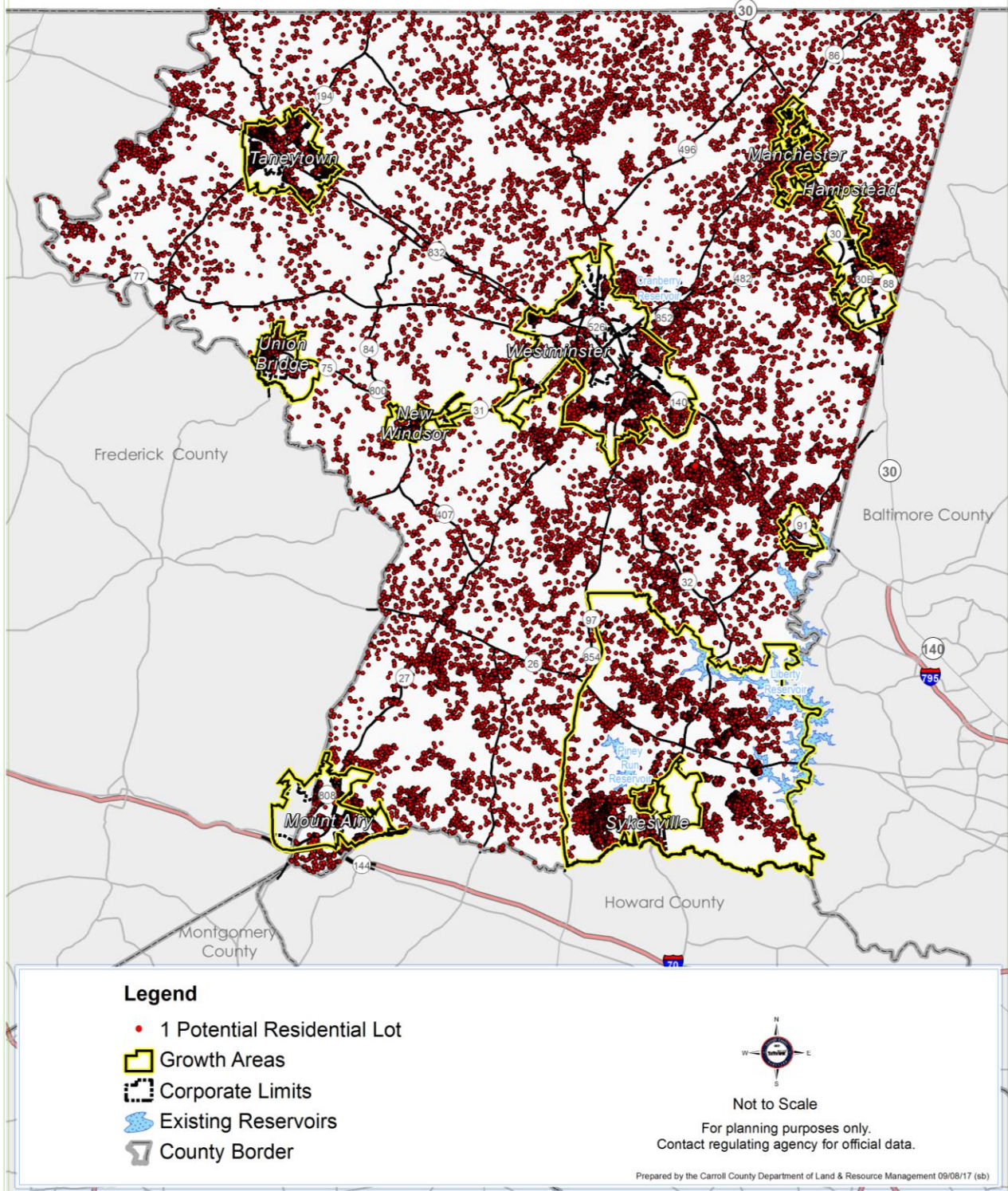
Table 1: Carroll County Population Projections

Population	2015	2020	2025	2030	2035	2040	2045
State	5,988,400	6,141,900	6,336,500	6,518,750	6,676,900	6,834,500	6,968,700
County	167,550	169,200	171,700	175,150	178,500	181,800	185,150

Source: Carroll County Department of Planning (Round 9 summary to BMC), Maryland Department of Planning, Projections and State Data Center, August 2017

Map 4

Potential Residential Development



Section IV: County Planning, Policies, Regulations, and Procedures

Comprehensive Planning

Master Plan and Comprehensive Plans

The Carroll County Board of Commissioners Adopted the 2014 County Master Plan on February 26, 2015. This plan is an update of the County's 2000 Master Plan. It is a culmination of approximately 2 years, and thousands of hours, of work by the Planning and Zoning Commission Members and county staff. Master Plans are important because they provide a coordinated and comprehensive look at individual parts of a community and integrate them in a way that helps to achieve the community's vision for the future.

Agriculture continues as the major industry in the county. This fact is recognized by the County Master Plan's goal of permanently preserving 100,000 acres of farmland. (See Map 5: Agriculture Land Preservation Easements). The County's locally successful and nationally recognized Agricultural Land Preservation Program will be maintained, continuing to preserve Carroll County's rural characteristics.

The County Master Plan includes a land use map that identifies the locations of general planned land use within the county, excluding DGAs. Small area comprehensive plans, each of which has its own land use map are prepared and adopted on a rotating basis for each of the eight incorporated municipalities and their surrounding DGAs, as well as the unincorporated communities of Eldersburg and Finksburg (see Map 6: County Land use Designations). Carroll's eight incorporated municipalities and their surrounding DGAs, and the unincorporated community of Eldersburg, will continue to accommodate the majority of growth in the county. Water and sewer serve or are planned to serve municipalities and their DGAs with the exception of Finksburg. At one time water and sewer provisions were planned for Finksburg. On November 5, 2015 the Carroll County Department of Planning and the Carroll County Health Department entered into an agreement to perform a Wasterwater Disposal System Survey for the Finksburg Corridor Area. Based on the survey findings, published in September of 2017, while none of the survey questions were geared to determine a level of interest in public sewer, participants often insisted on making their own opinion. Generally, most participants seemed to be resistant to the idea of public sewer. There were a small number of commercial owners who seemed very interested in a public sewer system for this area. At present, public water or sewer facilities do not serve Finksburg, nor is service planned for Finksburg.

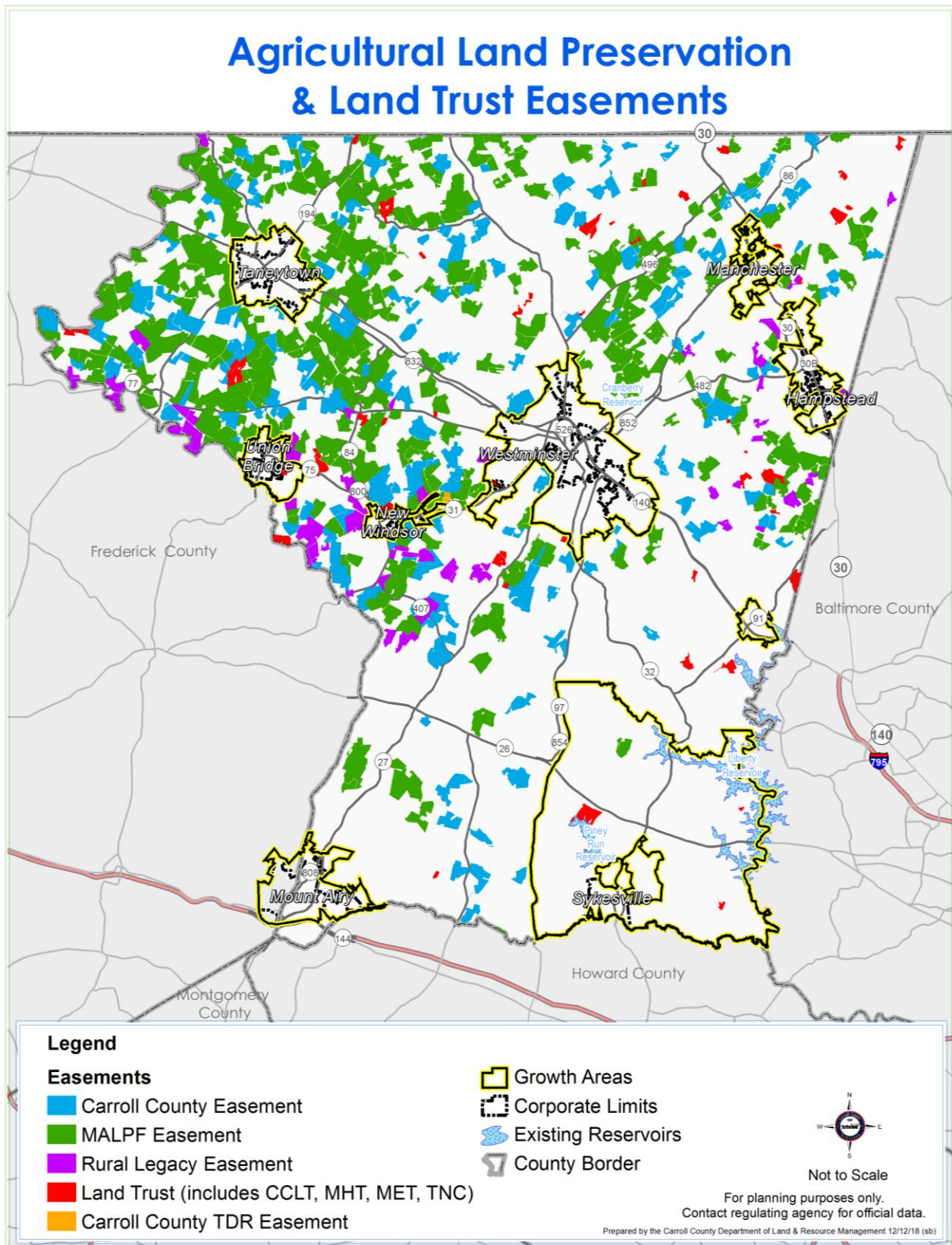
General Land Use Patterns

Historically, the majority of development in Carroll County has been directed to the county's eight Designated Growth Areas (DGAs), where public water and sewer facilities are available. Small area comprehensive plans are prepared for DGAs. Most of DGAs have a municipality at their center where residential, commercial and industrial development is concentrated. Directing growth to DGAs preserves farmland, maintains the rural character surrounding the

towns, and allows for more effective and efficient delivery of services. As a result, Carroll County has retained its rural, scenic and cultural character.

See Tables 2A & 2B: Land use Designations - Countywide.

Map 5



Map 6

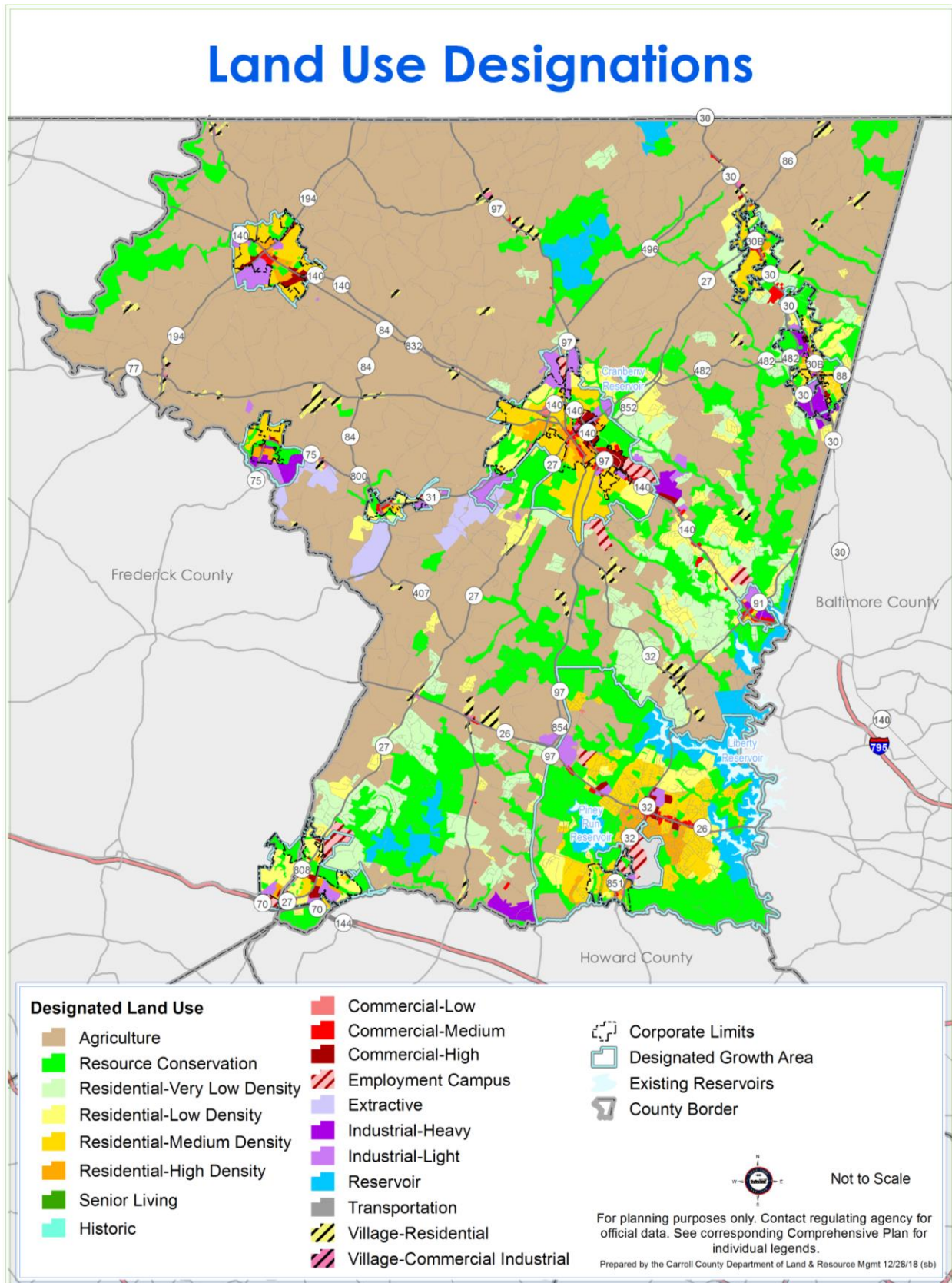


Table2A: Land Use Designations - Countywide

Land Use	Unincorporated County Outside GABs (Acres)	% of Unincorporated Outside GABs	Incorporated Towns (Acres)	% of Incorporated	Within GABs Outside Corporate Limits (Acres)	Within GABs Outside Corporate Limits	Total Acres*	% of Total
Agriculture	163,070	71.0%	0.0	0.0%	2,521	6.8%	165,591	59.2%
Conservation	34,878	15.2%	2,554	19.2%	17,893	48.4%	55,235	19.8%
Business	899	0.4%	1,646	12.4%	1,051	2.8%	3,596	1.3%
Industrial	4,206	1.8%	1,481	11.2%	2,496	6.8%	8,183	2.9%
Employment Campus	593	0.3%	262	2.0%	1,221	3.3%	2,076	.7%
Residential	25,949	11.3%	7,327	55.2%	11,789	31.9%	45,065	16.1%
Totals	229,595	100.0%	13,270	100.0%	36,971	100.0%	279,836	100.0%

Source: Carroll County Department of Planning, 2018

Table2B: Land Use Designations By Jurisdiction

Land Use	Freedom / Sykesville		Hampstead		Manchester		Mount Airy*		New Windsor		Taneytown		Union Bridge		Westminster	
	In Town	Out of Town / In GAB	In Town	Out of Town / In GAB	In Town	Out of Town / In GAB	In Town	Out of Town / In GAB	In Town	Out of Town / In GAB	In Town	Out of Town / In GAB	In Town	Out of Town / In GAB	In Town	Out of Town / In GAB
Agriculture	0	2,489	0	0	0	0	0	0	0	0	0	0	0	0	0	32
Conservation	286	15,056	747	276	356	61	258	386	95	54	237	147	114	330	461	1,583
Business	45	604	157	75	115	36	239	0	60	12	334	92	42	0	654	232
Industrial	0	456	503	58	0	0	218	6	80	87	204	454	90	471	386	964
Employment Campus	125	514	0	0	0	0	7	258	28	54	0	0	0	0	102	395
Residential	509	6,878	557	388	1,010	297	917	44	207	197	1,239	644	413	187	2,475	3,154
Totals	965	25,997	1,964	797	1,481	394	1,639	694	470	404	2,014	1,337	659	988	4,078	6,360

Source: Carroll County Bureau Department of Planning, 2018

*Mt. Airy numbers reflect Carroll County portion of Town.

Zoning

Zoning is one way to implement the County Master Plan. Zoning generally is guided by the land use plan. However, the two do not always match. It is expected that over time, as annexations occur and/or land uses change, zoning and land use designation will come to match.

The Agricultural zone is the largest zoning district in the County, consisting of 185,893 acres. The purpose of the Agriculture zone is to allow for agriculturally oriented uses and limit other uses.

The Conservation Zoning District is the second largest zone in the county, consisting of 60,116 acres; 2,306 acres of which are located in the towns, and 57,810 acres of which are located in the county. The purpose of the Conservation zone is to protect sensitive environmental features such as steep slopes, stream valleys, woodlands, and water sources. Permitted uses are limited to those that are fairly low impact, and design guidelines encourage clustering development away from environmental features to land that is more suitable for building upon.

The residential districts are located primarily in the county. Seventy-eight percent of all residential zoning is within the county, and 22 percent lies within the town boundaries.

Business zoning typically occurs in more densely populated areas, such as the towns and DGAs. Fifty-three percent of all business zoning is located in one of the major DGAs. The remaining business zoning is typically located at major crossroads, vestiges of small communities that sprung up around the commerce attracted to these areas. Similarly, industrial zoning is heavily concentrated in the DGAs, with 71 percent of all industrial zoning occurring in these growth areas.

A summary of the land area of the county by zoning classification follows in Table 3: Carroll County Zoning Classification - Acres.

Table 3: Carroll County Zoning Classification – Acres

Zoning	Unincorporated County (Acres)	% of Unincorporated	Incorporated Towns (Acres)	% of Incorporated	Total Zoned Acres*	% of Total
Agriculture	185,893	67.4%	0	0.0%	185,893	63.7%
Conservation	57,810	21.0%	2,306	17.2%	60,116	20.6%
Business	1,481	0.5%	1,640	12.1%	3,121	1.2%
Industrial	3,696	1.3%	1,530	11.3%	5,226	1.8%
Residential	26,853	9.7%	7,796	57.7%	34,649	11.9%
Historic	156	0.1%	1	0.0%	157	0.1%
Employment						
Campus	0	0	232	1.7%	232	.7%
Totals	275,889	100.0%	13,505	100.0%	291,705	100.0%

*Most roadways do not have a zoning classification and are not included in this table (11.857 acres)

Water Resources Element

The Water Resources Element (WRE), adopted by resolution, as part of the 2014 Comprehensive Plan, is an element of the 2000 Carroll County Master Plan Update. It is a requirement of 2006 House Bill 1141, passed during the 2006 session. The WRE requires counties and municipalities to account for the opportunities and limitations presented by water resources when planning for growth, including water supply; resource protection; and adequate receiving waters for the purpose of meeting water quality standards, localized total maximum daily loads (TMDLs) and the Bay TMDL.

The WRE was written as a joint effort between Carroll County and its municipalities. The plan provides recommendations for the county's water resources at the MDE 8-digit watershed level, and a countywide assessment of nonpoint pollution source issues. The County hired a consultant, Malcolm Pirnie, to help with the technical analysis required in the plan.

The WRE was adopted by the County on April 1, 2010, and subsequently by each municipality. This Water & Sewer Master Plan reflect many of the concepts and recommendations contained in the WRE acts as one of the WRE's implementation tools.

Water Resources Coordination Council

The Water Resources Coordination Council (WRCC) was formed in March 2007 to serve as the lead intergovernmental agency for water resource planning, development, and protection in Carroll County. The Council consists of representatives from each of the municipalities, the County, and the Carroll County Health Department. Additional coordination has been orchestrated between the County and MDE, Maryland Department of Planning (MDP) and Department of Natural Resources (DNR).

During development of the WRE, the council met once a month, providing a forum for questions and concerns. Each month the council would review changes that were made to the document as a whole, as well as each individual municipal section. WRC also used Capacity Management Plans (CMPs) to gather data for WRE preparation.

Water Conservation and Demand Management Efforts

Carroll County has been aggressively pursuing an understanding and development of its water resources for more than three decades. In the late 1970s, the County Commissioners made a commitment to evaluate the county's groundwater resources. This initial commitment led to the development of a comprehensive countywide water resource management program. Elements of that program have been implemented since that time, including a concerted effort to evaluate impacts and to manage and protect public water supplies. The program is currently located in the Bureau of Resource Management under the Carroll County Department of Land and Resource Management.

Water Resource Management Program

In 1988, House Bill 710 was enacted, authorizing Carroll County to develop, administer, and enforce a program to protect ground and surface waters through land use controls or other regulations. This Water Resource Management Program has numerous objectives that are directly intended to support the maintenance of public water supplies. These activities include the following:

1. Maintain and improve existing water supply sources
2. Develop new water supply sources
3. Design and implement special targeted water quality monitoring programs, i.e., Piney Run Reservoir
4. Delineate water resource protection areas
5. Develop and maintain water resource related databases
6. Promote a public education and information program
7. Evaluate potential funding mechanisms
8. Work directly with and support the incorporated towns on water resource and supply issues

The Program is also charged with the review of land development proposals with regard to the potential impact on community water supply resources. In that context, numerous databases of potential sources of water resource contamination are used in the review and source development process.

In April 2004, the County Commissioners adopted Ordinance No. 04-08, which created Chapter 154, Water Resource Management of the County Code. This new chapter formalized and strengthened the ability to manage and protect water resources within the county. The chapter provides for the delineation of management areas, and the ability to perform a water resource impact review on all proposed development projects within the county. In addition, water resource protection easements are required adjacent to streams, wells, and well sites when land is developed. Also adopted by resolution was the Water Resource Management Manual, which provides for management standards and design criteria relating to land use activities and management areas. Several municipalities, including the Towns of New Windsor, Manchester, Mount Airy, and Sykesville, also have adopted Chapter 154.

Designation of Water Resource Management Areas

The identification of public water supply sources is a key component in managing existing and future water supply needs. The aquifers and streams that feed the existing and future supplies must be protected to ensure that good quality is maintained and dependable yields are not reduced. Chapter 154 of the County Code designates the following Water Resource Management Areas associated with existing and future water supplies. See Map 7 for Water Resource Management Areas.

Carbonate Rock Area: The Carbonate Rock Area encompasses all areas that are currently known or suspected to be underlain by carbonate rocks. This includes the Wakefield Marble and Silver Run Limestone geologic units, as well as unnamed calcareous zones within schist and phyllite areas.

Wellhead Protection Area: The Wellhead Protection Area represents those regions that contribute groundwater to the indicated sources. These areas are based on “capture areas” as estimated from available field testing data, hydrologic flow equations, and groundwater availability estimates, in combination with the hydrogeological characteristics of the subject aquifers.

Aquifer Protection Area: The Aquifer Protection Area encompasses regions within 2,000 feet of each Designated Growth Area (DGA) boundary, as well as any watershed-draining tributary to the Aquifer Protection Area (APA). The groundwater recharge available is assumed to be that which could be captured by gravity drainage into each of these areas. These areas, therefore, constitute the potential groundwater resource available to serve DGAs into the future.

Surface Watershed Area: The Surface Watershed Area encompasses the drainage basins of all existing and proposed surface water reservoirs in Carroll County. The delineation of these areas is based on topography and gravity drainage to the reservoirs.

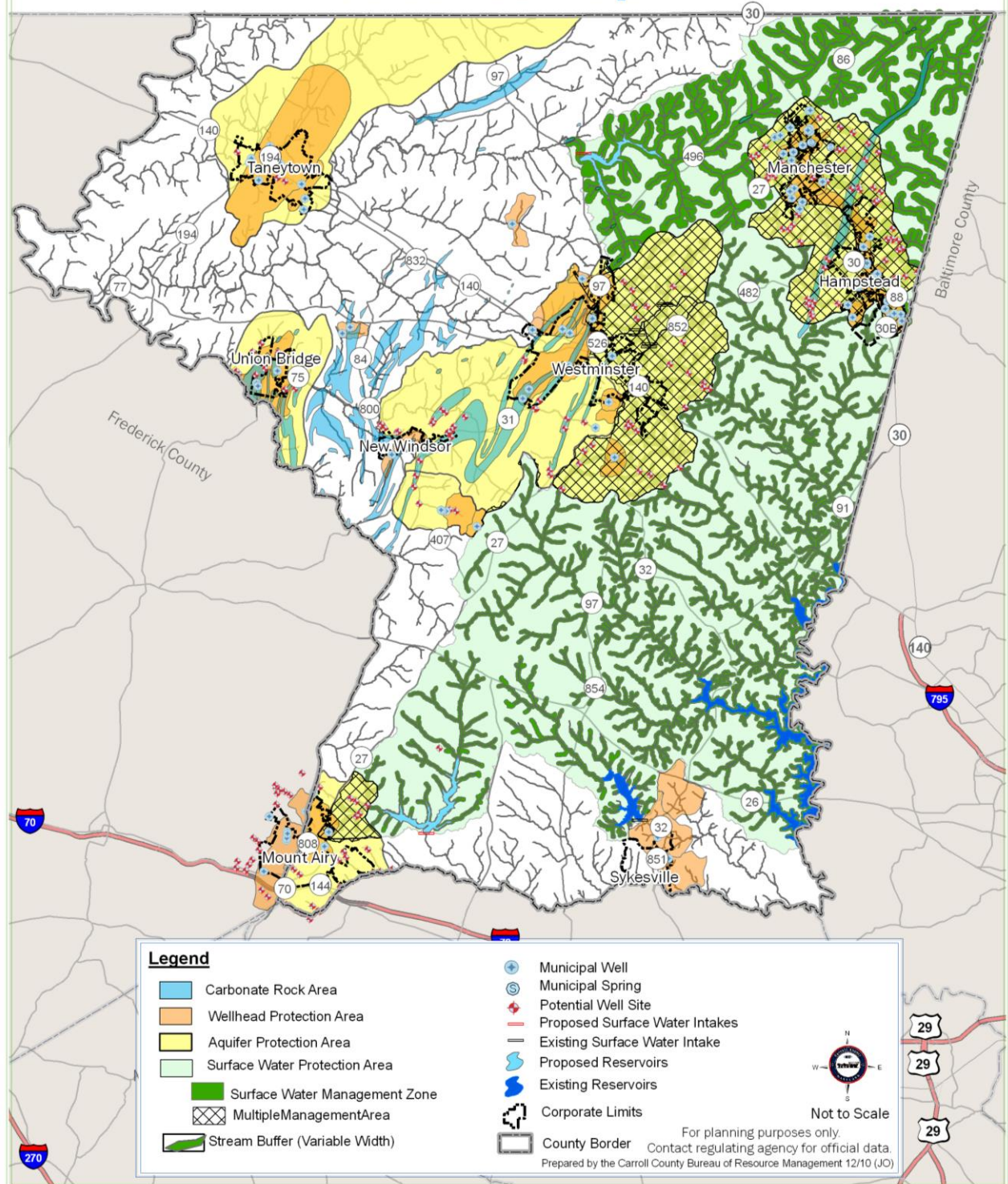
Countywide Water Conservation Program

The conservation of water is a fundamental aspect of resource protection and management. This component of Carroll County’s Water Resource Management Program consists of three elements: educate the public, update the plumbing code for new construction, and retrofit plumbing in existing construction.

Brochures, videos, and public speaking engagements are components of the educational effort. Information on water conservation is also made available through the County’s website through the Bureau of Utilities and Drought Information pages. The County mandates water conservation devices for new construction and requires that certain plumbing fixtures that are newly installed meet specified flow rates. See Map 7 for the Water Resource Management Area Guidance Map.

Map 7

Water Resource Management Area Guidance Map



CHAPTER TWO: Water and Sewer Planning in General

Section I: Purpose and Goals

Purpose

The purpose of the Water & Sewer Master Plan is to further public health and welfare in Carroll County through the orderly development and provisions of adequate water and sewer service. The Water & Sewer Master Plan implements and is consistent with the 2014 County Master Plan Update, 2010 WRE amendment and small area comprehensive plans. Through a coordinated effort with the municipalities, the Water & Sewer Master Plan sets priorities for water and sewer projects based on an evaluation of facilities usage, the need for upgrade and/or expansion, public health considerations, and planned growth patterns. (See Map 8: Planned Water Service Areas & Map 9: Planned Sewer Service Areas for service area boundaries).

Goals

The Water & Sewer Master Plan is based upon the goals and priorities established in the 2014 County Master Plan, which was adopted on February 26, 2015. Additionally, this Water & Sewer Master Plan incorporates goals and actions recommended in the small area comprehensive plans for the county's nine DGAs include:

- ♦ Finksburg Corridor Plan (adopted August 2013)
- ♦ Freedom Community Comprehensive Plan (adopted October 2018)
- ♦ Town of Sykesville Master Plan (adopted January 2011)
- ♦ Hampstead Community Comprehensive Plan (adopted by Town July 2010)
- ♦ Manchester Community Comprehensive Plan & Environs (adopted by Town April 2018)
- ♦ Mount Airy Environs Community Comprehensive Plan (adopted February 28, 2006)
- ♦ Town of Mount Airy Comprehensive Master Plan (adopted November 3, 2014)
- ♦ New Windsor Community Comprehensive Plan – amended (adopted by Town December 2010)
- ♦ Taneytown Community Comprehensive Plan (adopted by Town March 2010)
- ♦ Union Bridge Community Comprehensive Plan- amended (adopted April 2010)
- ♦ Westminster Environs Community Comprehensive Plan (adopted November 2007)
- ♦ City of Westminster Comprehensive Plan (adopted September 2009)

The Water & Sewer Master Plan implements the County Master Plan and community comprehensive plans and plan elements. To accomplish this, the Water & Sewer Master Plan has the following goals:

Goal 1: Establish cost-effective public water and wastewater facilities that are consistent with the type and timing of planned development;

Goal 2: Identify and plan for specific water and wastewater facilities that will accomplish Water Resource Element goals and strategies;

Goal 3: Provide information about private water and wastewater users to inform planning-related analysis and decision-making.

Maps

Maps 8 and 9 depict the various stages and timing of water and sewer planning that supports the fulfillment of the above stated goals. The service area categories are defined as follows:

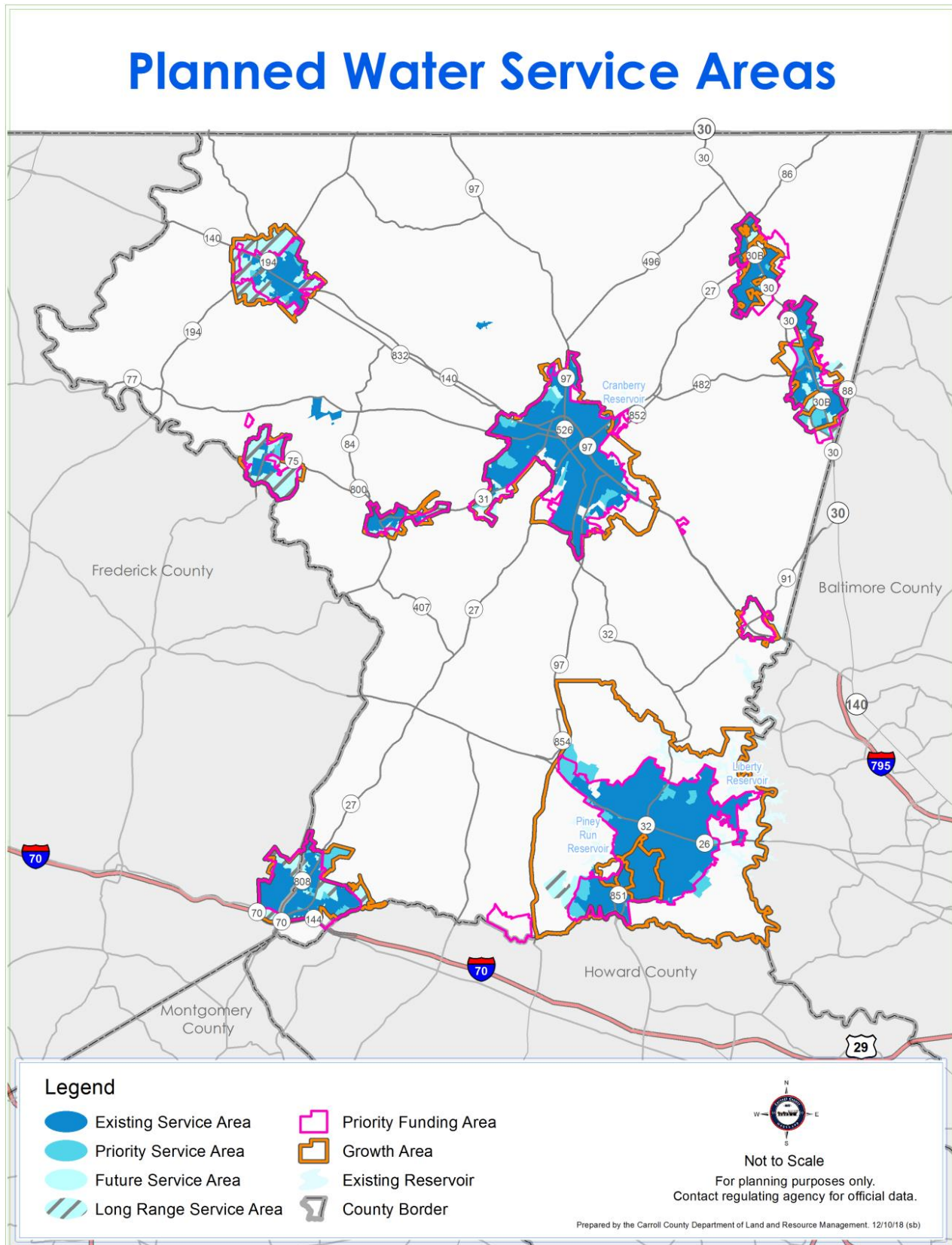
- Existing/Final Planning Service Area (W-1, S-1) - Areas served by community water supply or sewer systems which are either existing, under construction, or have final plans which have been completed. Public water or sewer service is assumed to be existing or under construction if it is in operation or under construction (where actual work is progressing or a notice to proceed has been issued with a contract for such work). Final planning means a work or works of a community water supply or sewer system for which contract plans and specifications have been completed. In areas where service is not yet available, public water or sewer service will be placed in operation immediately after construction is completed. This corresponds to the Existing (W-1, S-1) and Final (W-2, S-2) categories defined in COMAR.
- Priority Service Area (W-3, S-3) - Areas that will likely be served by community water supply or sewer systems for which the beginning of construction is anticipated to start within two years, or capital facilities are scheduled for implementation within the next six years and are possible within the framework of the six-year capital program, or areas that are planned to be served by a community system and are located adjacent to existing facilities of the system. Properties within the Priority Service Area are required, as a prerequisite to development, to connect to the community systems at the time of development. This category corresponds to 1-3 years (W-3, S-3) and 3-6 year (W-4, S-4) categories defined in COMAR.
- Future Service Area (W-5, S-5) - Areas where improvements to, expansion of, or construction of community water supply or sewer systems are planned for but are not anticipated to occur sooner than six years. The beyond six-year time frame is used to indicate that economic and other conditions and growth patterns may warrant extension of public services within the foreseeable future and should not be construed to mean that, immediately after six years, public facilities will be extended by the County or municipality. The W-5 and S-5 category is intended to be a planned

future growth area rather than a programmed growth area. This category corresponds to the 7-10 year (W-5,-S-5) categories defined in COMAR.

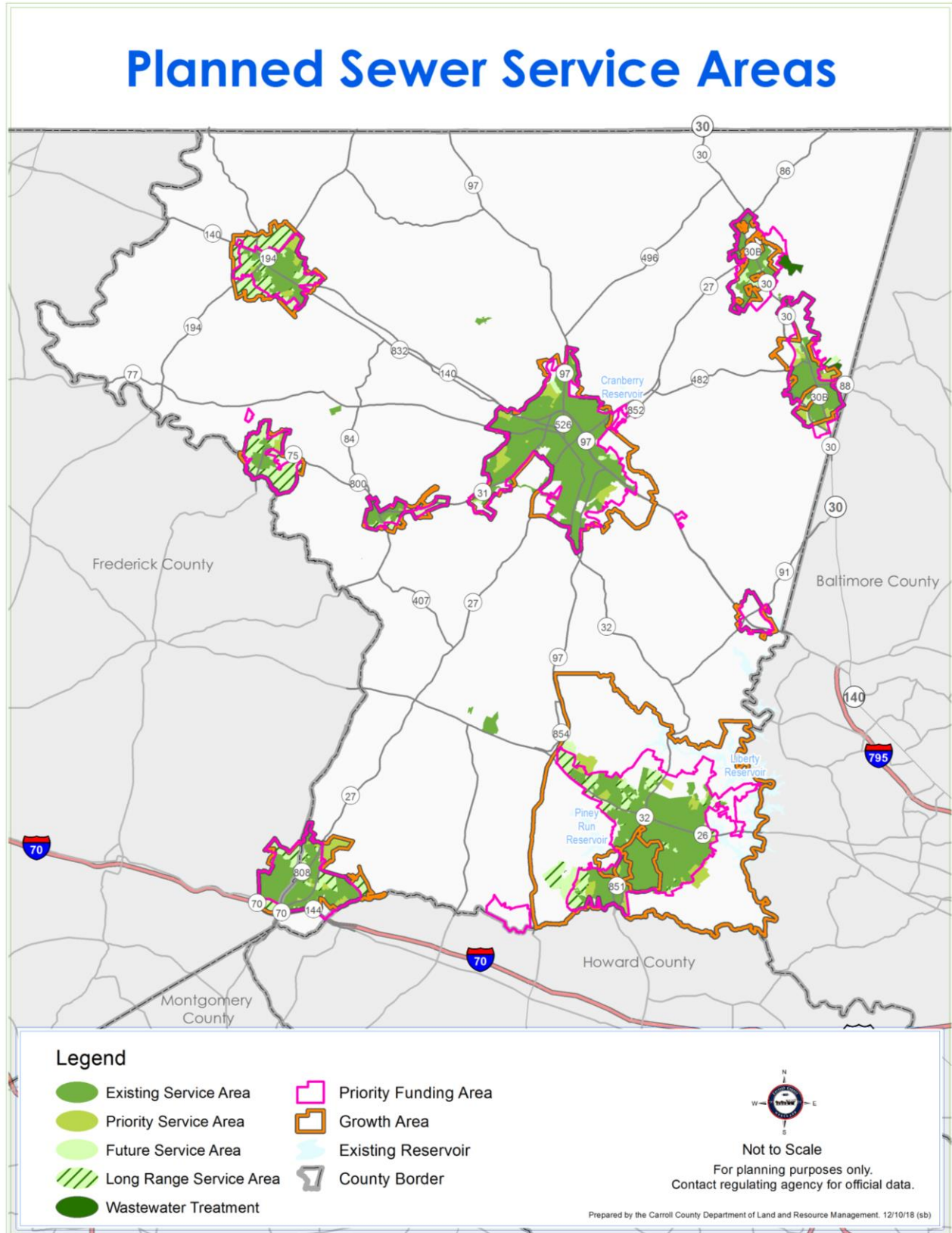
- Long Range Service Area (W-6, S-6) - Areas that are intended to be served by a public water and/or sewer system but not within the planning horizon of this plan.
- No Planned Service Area (W-7, S-7) - Areas not intended to be served by a public water and/or sewer system. These areas rely on individual water supply and sewer systems indefinitely.

See Map 8 for Planned Water Service Areas and Map 9 for Planned Sewer Service Area.

Map 8



Map 9



Section II: Organization and Management of Community Facilities

Pursuant to Title 9, Subtitle 5, Environment Article, Annotated Code of Maryland, the County Commissioners have overall responsibility to facilitate coordination of water and sewer planning throughout the County. The Carroll County Department of Planning facilitates the review and update of this document and any amendments in cooperation with and on behalf of the County and the eight municipalities, most of which own and operate their own public community water and/or sewer systems. All but Westminster provide service only to residents and businesses within the incorporated area.

Table 5 indicates the jurisdictional responsibility for developing and operating the particular utility system within each service area.

Table4: Jurisdictional Chart Relating To Development of Water and Sewer Facilities			
Authority	Jurisdiction	Planning	Operation
Carroll County Department of Public Works	Hampstead (S)	DP	DPW
	Sykesville-Freedom (W & S)	DP	DPW, MES
	Bark Hill (W)	DP	DPW
	Pleasant Valley (W & S)	DP	DPW
Mayor and Councils	Hampstead (W)	TOWN	TOWN
	Manchester (W & S)	TOWN	TOWN
	Mount Airy (W & S)	TOWN	TOWN
	New Windsor (W & S)	MES	MES
	Taneytown (W & S)	CITY	CITY
	Union Bridge (W & S)	TOWN	TOWN
	Westminster (W & S)	CITY DP	CITY
Maryland Environmental Service	Freedom WWTP	MES, DPW	MES
Code: DPW = Carroll County Department of Public Works MES = Maryland Environmental Service W = Water S = Sewer		Code: DP = Carroll County Department of Planning CITY DP = Westminster Department of Planning	

Responsibilities specifically related to the Water & Sewer Master Plan and its implementation can be summarized as follows:

Department of Planning

1. Provide overall management of the Water & Sewer Master Plan, including monitoring of implementation milestones.
2. In collaboration with the municipalities, update the Water & Sewer Master Plan on a three-year schedule and prepare biannual amendments as needed. Monitor the long-term fiscal feasibility of implementing the plan.
3. Work with Public Works to identify capital improvement program (CIP) projects and their timing.
4. Coordinate with municipalities for possible extension of water and sewer service into areas with water and sewer problems in the county.
5. Conduct initial public information meetings for preliminary evaluation and participate in subsequent meetings.
6. Provide technical planning assistance to other County departments and municipalities, when requested, on water and sewer matters.

Department of Land and Resource Management

1. Assist applicable departments in the preparation of applications for State and Federal permits.
2. Coordinate and perform studies related to water resource management, including well location and resource viability studies; sharing reports/data with all parties of interest.
3. Provide technical assistance to other County departments and the municipalities, on water resource management-related matters.
4. Coordinate special projects and studies related to contaminated site assessment and remediation.
5. Prepare and implement tracking of the WRE to the County's 2014 Master Plan Update and small area comprehensive plan updates.
6. Manage and implement the County and municipal responsibilities related to the National Pollution Discharge Elimination System (NPDES) permits.
7. Track and implement efforts related to TMDL responsibilities.

8. Provide County representation on the Reservoir Technical Group of the Baltimore Metropolitan Council.
9. Review, inspect, and enforce County Code requirements related to water resource management and protection.

Department of Public Works & Facilities

1. Develop budgets that will appropriately reflect needed improvements and/or expansions of water, sewer, and septage facilities.
2. Monitor water and sewer flows to determine timing of Capital Improvement Program (CIP) projects for new or expanded facilities.
3. Prepare reports on actual and committed flows, allocations, and potential flows from approved preliminary plans and site plans and provide to departments as requested.
4. Plan, design, and construct water and wastewater systems within the designated water and sewer service areas.
5. Operate and maintain County-owned water and wastewater treatment plants and systems.
6. Coordinate with municipal governments, as applicable, during the design, construction, and implementation phases of a project for the extension of community water and/or sewer service.
7. Manage grants for water and sewer projects.
8. Prepare and coordinate environmental permits for system expansions and maintain compliance with operating permits.

Department of the Comptroller

1. Develop funding mechanisms that will appropriately reflect needed improvements and/or expansions of water, sewer, and septage facilities.
2. Develop and monitor the formulation of rates for County water and sewer facilities.
3. Bill for and collect water and sewer payments and payments by septage haulers.
4. Assist in the review of the long-term fiscal feasibility of implementing the Water & Sewer Master Plan.

Department of Management and Budget

1. Recommend, with identified funding sources, budgets for improvements to water and sewer projects.
2. Provide grant identification and application assistance.
3. Provide assistance in financial analysis of proposed projects.
4. Monitor compliance with grant requirements, timelines, and budgets.
5. Review the long-term fiscal feasibility of implementing the Water & Sewer Master Plan.
6. Assist applicable departments in developing budgets that will appropriately reflect needed improvements and/or expansions of water, sewer, and septage facilities.

Carroll County Health Department - Bureau of Environmental Health

1. Identify areas with onsite wastewater disposal and water supply problems and work with the Department of Land Use, Planning, & Development to identify and update these areas in the Water & Sewer Master Plan.
2. Participate in public meetings to provide information on sanitary surveys and concerns about public health risks.
3. Participate in revisions and updates to the Water & Sewer Master Plan.

Municipalities

1. Develop budgets that will appropriately reflect needed improvements and/or expansions of water, sewer, and septage facilities.
2. Monitor water and sewer flows to determine timing of CIP for new or expanded facilities.
3. Prepare report on actual and committed flows, allocations, and potential flows from approved preliminary plans and site plans and provide as requested.
4. Plan, design, and construct water and wastewater systems within the designated water and sewer service areas served by the town.
5. Operate and maintain municipal water and wastewater treatment plants and systems.

6. Coordinate with the County, as applicable, during the design, construction, and implementation phases of a project for the extension of community water and/or sewer service.
7. Manage grants for water and sewer projects.
8. Prepare and coordinate environmental permits for system expansions and maintain compliance with operating permits.

Section III: Water- and Sewer-Related Policies

Connections to Water Supply and Wastewater Systems

In Carroll County, properties within the Existing/Final Planning (W-1 and S-1) and Priority (W-3 and S-3) Service Areas will be connected to the community water supply system and wastewater system at the time of development. It is the responsibility of the developer to arrange for the required engineering and infrastructure to make the connections. The procedure for obtaining water and sewer extensions is outlined in Appendix 4.

Interim individual systems may not be permitted where the utility of record or municipality has an official connection policy and/or code requirement that precludes interim individual systems. Where the utility of record or municipality does not have a connection policy and/or code requirement which precludes new interim individual systems, such interim systems may be considered by the utility of record or municipality where it has been adequately demonstrated that extraordinary or unusual circumstances exist and that authorizing an interim system will not compromise the integrity of the Water & Sewer Master Plan or the County or municipal comprehensive plan.

The Water & Sewer Master Plan's intent is to ensure that: (1) water and sewer service occurs as development occurs inside Priority Service Areas; and (2) water and sewer services can be accommodated by wells and septic systems within Future Service Areas (W-5 and S-5) unless otherwise required by the utility of record or municipality. If the latter is the case, the service area category must be changed to the Priority Service Area (W-3 and S-3) for MDE to issue construction permits. Under the Annotated Code of Maryland, Environment Article, the Carroll County Health Department has authority to grant exceptions to the County Water & Sewer Master Plan to remediate documented health hazards.

Reservoir Watershed Agreement

As part of the Baltimore region, Carroll County participated in the preparation of a Water Quality Management Plan for the Baltimore Metropolitan Region under Section 208 of P. L. 92-500 (Clean Water Act). A primary goal of that plan is to improve water quality within the three major reservoirs serving the Baltimore metropolitan area, which were all undergoing various stages of eutrophication (nutrient enrichment). As an outgrowth from that plan, the City of Baltimore and Baltimore and Carroll Counties entered into a Reservoir Watershed Management Agreement in 1979. Recognizing that the 1979 Agreement needed to be updated and strengthened, a new agreement was entered into by the City of Baltimore, Baltimore and Carroll counties, the Carroll and Baltimore County Soil Conservation District (SCD), and the Maryland Department of Agriculture (MDA) and MDE. This agreement established a Reservoir Watershed Management Program. The 1984 Agreement included an "Action Strategy for the Reservoir Watersheds" that applied a comprehensive, balanced set of new or enhanced point and non-point source pollution controls, and established a monitoring and reporting system to measure the extent to which goals were being achieved. In 1990, the agreement was reaffirmed by all participating jurisdictions and agencies and the "Action Strategy" was updated to include new initiatives. The agreement was reaffirmed

in 2003. In 2005, the agreement was revisited to update the action strategy. Over a two-year period, the signatories reviewed the Agreement's commitments and developed topical issue reports to address concerns set forth in federal and local regulatory changes over time. As a result, the signatories have jointly developed a new agreement and an action strategy that effectively updates the Agreement to address regulatory mandates today. Carroll County remains an active signatory and participant in that effort. The Baltimore Metropolitan Watershed Management Agreement is a model agreement involving a partnership among multi-jurisdictions toward a common goal.

No Guarantee of Service

The Water & Sewer Master Plan is an implementing measure of the Carroll County Master Plan. It takes into account the policies and visions of the county and municipalities when deciding the areas that will be served with water and sewer. This document does not guarantee that the County or any municipality will provide the facilities needed to achieve the plan. Moreover, this document does not guarantee that facilities or service will be provided by the County or any municipality within the general timeframes (i.e., service area or service area categories) represented in this Plan.

If a property is not within the water and sewer service area, an amendment request can be submitted to change the category of the property if there is a particular need. Any revisions to the service areas must be made by the Planning Commission, Board of Commissioners, and MDE.

Severability

The requirements of the Water and Sewer Plan are severable, and if any of its requirements are held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining sections.

Water & Sewer Master Plan Review and Amendment Procedures

Title 9, Subtitle 5 of the Environment Article of the Annotated Code of Maryland requires the governing body of the county, after reasonable opportunity for public hearing, to review the County Water & Sewer Master Plan every three years. Proposed facilities need to be included in the Plan to ensure eligibility for Federal and State grants and loans. State Water and Sewer Construction Permits will not be issued for certain projects unless they are incorporated in the County Water & Sewer Master Plan.

In addition, the governing body of the county may amend the Carroll County Water & Sewer Master Plan when necessary or when MDE requires it. The County's procedure for filing amendments can be found in Appendix 5. The following situations commonly trigger an amendment to the Carroll County Water and Sewer Plan:

- ♦ A project includes proposed water and sewer facilities and the site is designated No Planned Service, Future (7-to-10 Year) Service Area or Long Range Planning (+10 year) Service Area.
- ♦ A project involves the establishment of a multi-use system or the expansion of an existing use that would increase flows to over 5,000 gallons per day.
- ♦ A project involves the establishment or geographic and facility capacity expansion of a community water or sewer system.
- ♦ A project requires the construction of, or capacity changes or other major modifications to, pumping stations, wells or springs, water storage facilities, reservoirs, or treatment plants.
- ♦ There is a change in service area category.

Carroll County also has developed a process to evaluate potential water and sewer projects in the unincorporated areas of the county that currently are not in the Water & Sewer Master Plan. The Department of Planning is responsible for the first phase, the preliminary evaluation of a water and/or sewer project outside a planned service area. The Board of Commissioners then decides whether or not to proceed and to amend the Water & Sewer Master Plan to incorporate the project. If the decision is to proceed, the Department of Public Works is then responsible for the second phase: the facility planning and preliminary community investment plan estimate. If the Board of Commissioners decides to continue to advance the project, the third phase is also the Department of Public Works' responsibility. Phase three is the refinement of the capital improvement program estimate, design, and construction of the project.

CHAPTER THREE: Water Supply Facilities

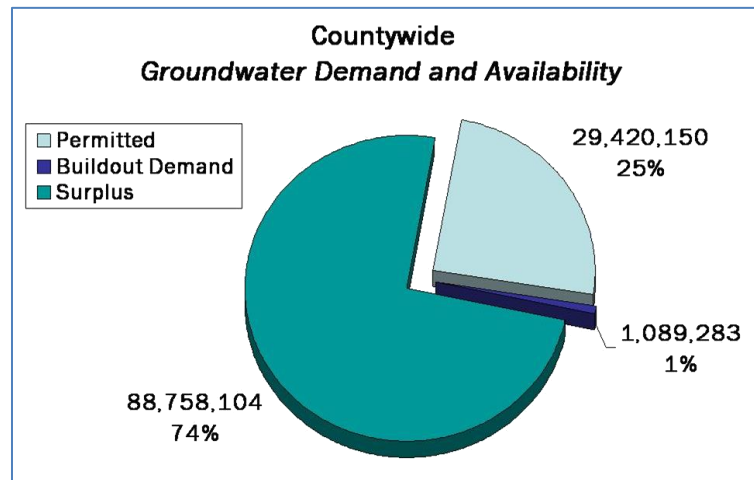
Section I: Groundwater

Groundwater is the principal source of both public and private potable water supplies in Carroll County.

Quantity

The majority of water demand in the county is met by groundwater wells with the exception of Westminster and Freedom Water Service Areas (WSAs) where the majority of demand is via reservoirs. According to the 2010 Carroll County Water Resources Element total water demand in the county was estimated at 20.2 million gallons per day (mgd). This represents water service to an estimated 42,600 equivalent dwelling units (EDUs). Groundwater supplied 15.6 mgd (78 percent) of that demand. Private residential wells demanded 8.0 mgd. Public water systems or private community water systems account for the remaining groundwater demand.

The County's WRE estimates a countywide potential water supply of 101.4 mgd at build out. In 2009, appropriations for groundwater were 18.3 mgd, almost 3.0 mgd more than the demand at that time. Estimated groundwater demand at buildout is 22.5 mgd. Although this is higher than the current appropriation, groundwater resources in the county theoretically are more than adequate to meet future demands as long as a higher appropriation is made by MDE. However, groundwater resources are not evenly distributed throughout the county and may not meet the local demands entirely in any given area. The WRE provides more detailed information that breaks down data by individual watersheds.



Quality

The quality of groundwater in Carroll County is generally excellent and, except for occasional instances, is acceptable for all uses. Most of the water is soft to moderately hard. Groundwater from the metamorphic rocks often has a low pH and consequently is corrosive (aggressive).

The quality of groundwater is influenced by both natural and human impacts. Rainfall can be contaminated with pollutants before infiltrating into the subsurface aquifers. Purification and mineralization of the water occurs as it percolates through the soil column. The degree

to which the groundwater quality is altered is a function of the groundwater travel time through the aquifer. Wells that are properly constructed and isolated from potential pollution sources should not have problems with pollution.

Groundwater pollution problems have been identified in several small communities in rural Carroll County. An inventory of water problem areas appears in each system's individual section. In many of these cases, individual wells have been contaminated by septic systems in close proximity. Small lot sizes prevent replacement of the individual septic systems. Approximately 20 communities have been identified by the local Department of Environmental Health as having groundwater contamination problems. Additionally, isolated instances of contaminated groundwater have been traced to leaking gasoline and mismanagement of oil storage tanks, leaks from industrial facilities, and landfills.

Groundwater Resource Development

The WRE is focused around diversifying the county's water supply sources in order to move away from a dependency on groundwater. However, it is important to remember that most systems throughout the county still rely heavily on groundwater.

Water Recharge Easements and Credits

The County is incorporating more protections for natural and cultural resources into easement documents, including provisions for groundwater protection.

After ensuring adequate water supply for the farming operation, the remaining groundwater on a preserved farm is restricted through a conservation easement. The easement language specifies the percentage of groundwater retained on site versus that which is reserved by the County for future transfer. The County then can transfer unused water credits to municipalities located in the same watershed as the preserved farm. This transfer is in accordance with MDE policies and regulations.

A Memorandum of Understanding (MOU) between the County and each municipality needing water recharge credits states that credits will only be transferred if growth is channeled to DGAs where infrastructure exists and residential densities are 3.5 dwelling units per acre or denser. Additionally, a second agreement between MDE, the County, and the municipality states the number of water recharge credits needed to serve the municipality, which is also reflected in MDE's Water Appropriation and Use Permit.

Several water recharge easements have been recorded to date, and MOUs between the County and two municipalities have been drafted. One easement has a fully executed MOU and Memorandum of Agreement (MOA) by the County, municipality, and MDE

Section II: Surface Water

Surface water is utilized in Carroll County community water systems in the Westminster and Sykesville/Freedom service areas.

Surface Water Quantity

In 2009, countywide surface water demand was 4.5 mgd (22 percent). The City of Westminster uses the Cranberry Reservoir and Hull Creek for surface water sources, and the Sykesville/Freedom area is served through a direct withdrawal from Liberty Reservoir. Additionally, in the event of an emergency, withdrawals are permitted from Dickenson Run and Medford quarry for the Town of New Windsor and the City of Westminster, respectively. Piney Run Reservoir was designed as a future water supply source and the County reserves the right to use it in the future.

It is estimated that countywide approximately 118.8 mgd of surface water flows through the county's streams. However, the State permits (appropriates) only a certain amount of surface water withdrawals for the county. This includes withdrawals used for the public water systems described above, as well withdrawals for agricultural irrigation, golf course irrigation, and some industrial operations. According to the 2010 Carroll County Water Resources Element, the total appropriation for surface water was 11.0 mgd, almost 6.5 mgd more than the demand at that time. Projected demand for surface water at buildout is estimated to be 8.0 mgd.

Surface Water Quality

To protect surface water quality, the State has adopted surface water quality standards, which include designated uses of the waters of the State (i.e., stream classifications), and water quality criteria to protect the designated uses. The standards, which are detailed in COMAR 26.08 of the Code of Maryland Regulations, were established to provide water quality for the designated uses of: water contact recreation; fishing; propagation of fish, other aquatic life, and wildlife; and agricultural and industrial water supply. The specific use classifications are:

State Water Quality Standards	
Use I	Water Contact Recreation and Protection of Aquatic Life
Use I-P	Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply
Use II	Shellfish Harvesting Waters
Use III	Natural Trout Waters
Use III-P	Natural Trout Waters and Public Water Supply
Use IV	Recreational Trout Waters
Use IV-P	Recreational Trout Waters and Public Water Supply

A Tier II water designation refers to Maryland's Antidegradation Policy. The Tier II designation protects streams of high quality, streams that exceed minimum water quality standards, from activities that would decrease the water quality. As a result, within the watersheds of Tier II streams, discharge permits or appropriation permits for new water supply wells – both of which could affect water quality – requires eliminating or reducing discharges or impacts.

Monitoring is required. As of 2009, seventeen streams in Carroll County, primarily in the eastern and southern portions of the county, were designated Tier II waters. See Map 10: High Quality (Tier II) Waters in Carroll County.

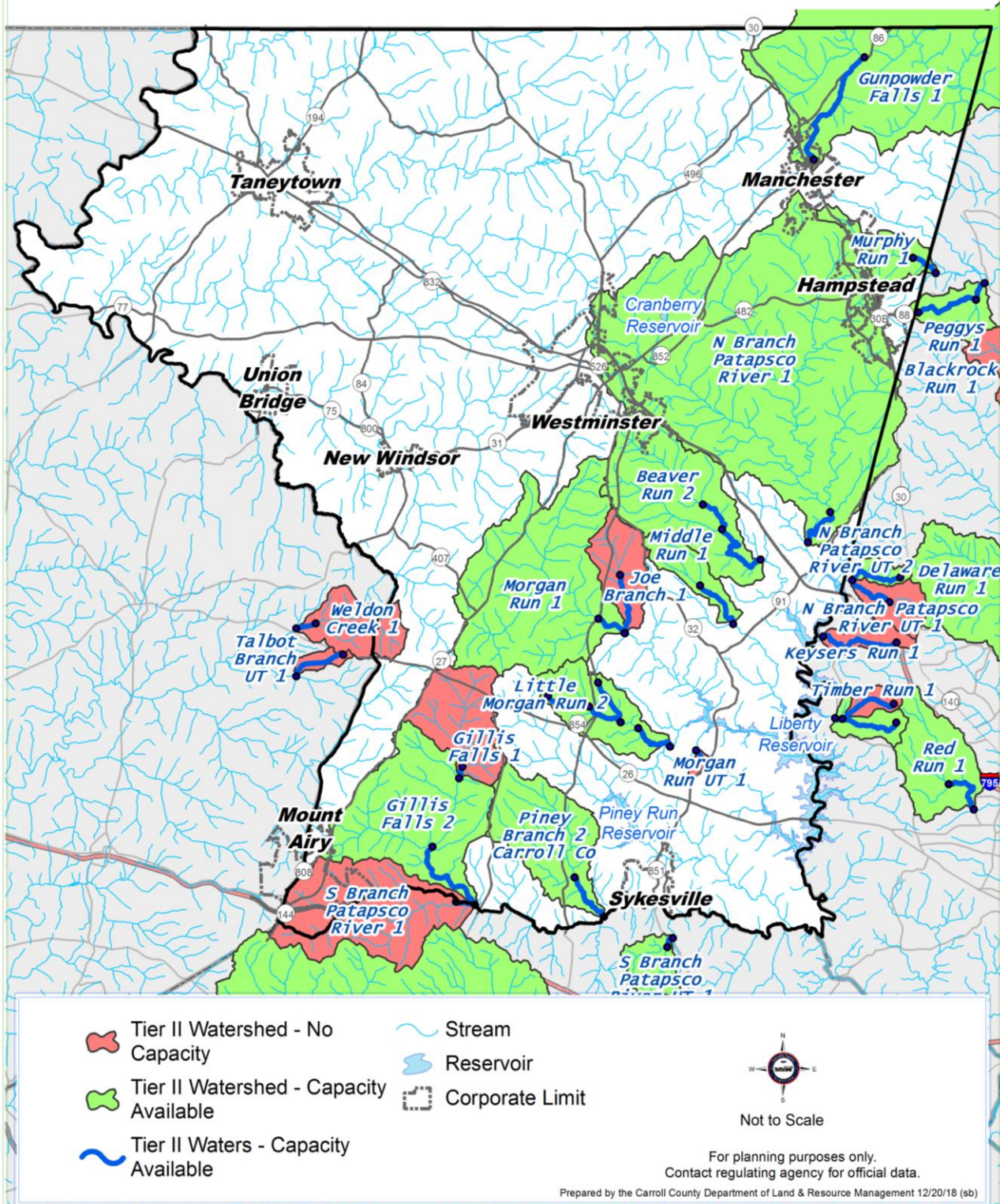
Total Maximum Daily Loads (TMDLs)

TMDLs are a requirement of the Federal Clean Water Act of 1972. Under this law, the State is required to identify “impaired” water bodies, or those water bodies that are too polluted to meet water quality standards. Impairments can come from nutrients such as nitrogen and phosphorus or from sediment, pathogens, mercury and other metals. Once a water body is deemed “impaired,” a TMDL or the maximum amount of a pollutant that the water body can assimilate and meet water quality standards is developed by MDE. State and local water quality management plans must be developed to address the cause of the impairment and meet TMDLs.

All of the watersheds in Carroll County (except Conewago Creek) have been identified as having impairing substances that do not meet water quality standards. A TMDL either has been set or is pending for all of these watersheds.

Map 10

High Quality (Tier II) Water



Section III: Existing and Proposed Water Facilities by Service Area

Regional Facilities

Current Conditions

Carroll County is committed to the development of a multi-resource public water supply system, utilizing both its ground and surface waters.

Sites on Piney Run, Gillis Falls, and Big Pipe Creek were identified as future reservoir sites in the 1960s. The Piney Run Reservoir in the southeastern portion of the County was completed in January 1975. The multi-purpose reservoir was designed to provide a safe yield of 3.5 mgd. Land is committed to protect the areas around the Union Mills Reservoir on Big Pipe Creek and the Gillis Falls Reservoir on Gillis Falls to provide for long-range water supplies. These will be regional water supply facilities, providing drinking water to areas of the County where there is an insufficient ground water supply. As of December 2010, the county owns 65 percent of the property for the Union Mills Reservoir and 83 percent of the Gillis Falls Reservoir.

Carroll County Government adopted a policy of pursuing a diversified and balanced approach to supplying the County's water needs that has been in place since the 1970 County Master Plan for Water and Sewer. This approach has followed through time and continues with the adoption of this Plan. The WRE discusses in greater detail each of the potential future regional facilities and long range water options. These options will be evaluated in greater detail as the need arises. However, none of these options are anticipated to be pursued within the next ten years.

Section IV: Existing and Proposed Water Facilities by Service Area

Bark Hill Water Service Area

Current Conditions

The Bark Hill WSA serving 65 EDUs and two non-residential users and comprising of approximately 140 acres, is located on the west side (and partially on the east side) of Raywell Avenue, between Bark Hill and Middleburg Roads. See Map 11: Bark Hill WSA. Permitted average daily use is 33,000 gpd. The 2017 average daily use was 14,890 gpd.

The water supply system serves an unincorporated Rural Village, Keyview Estates. It was constructed in 1993 to address groundwater contamination problems related to failing septic systems. The Carroll County Department of Public Works, Bureau of Utilities operates and maintains the system. Keyview Estates containing 36 lots (and 35 homes), is located on the south side of Middleburg Road. Lots sizes range from 20,000 to 35,000 square feet.

Water is supplied by two wells. The primary well, located southeast of the Bark Hill Road/Raywell Avenue intersection has a rated capacity of 60 gallons per minute. Water treatment includes liquid chlorination, in addition to softening and nitrate removal using ion exchange. Well #2 (k50), located northeast of Well #1 behind Francis Scott Key High School and has a rated capacity of 30 gallons per minute. The water supply system includes a 100,000-gallon elevated water tank, fire protection, and stable water pressure for approximately 65 homes. Byproducts from the water treatment process are discharged to the Bark Hill wastewater station and then pumped to the Union Bridge Wastewater Treatment Plant. See Table 5A for Bark Hill WSA for appropriations; Table 5B for Bark Hill WSA average daily use; and Table 5C for the storage tank/distribution system.

Table 5A: Bark Hill WSA Appropriations

6-Digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Permitted Average Daily Demand Maximum Usage (gpd)
Middle Potomac	Bark Hill wells (2)	CL1969G009 (06)	20,000	33,000

Table 5B: Bark Hill WSA Average Daily Use

Water Source	Storage Capacity (MGD)	Max. Safe Yield (MGD)	Avg. Daily Use (MGD)	Max. Peak Flow (MGD)	WTP Capacity (MGD)
Well #1 (County) Alternates with Well #2 (FSK*)	0.015 (combined wells 1& 2)	0.020 (combined wells 1& 2)	0.013 (combined wells 1& 2)	0.033 (combined wells 1& 2)	0.072 (combined wells 1& 2)

*Francis Scott Key High School

Map 11

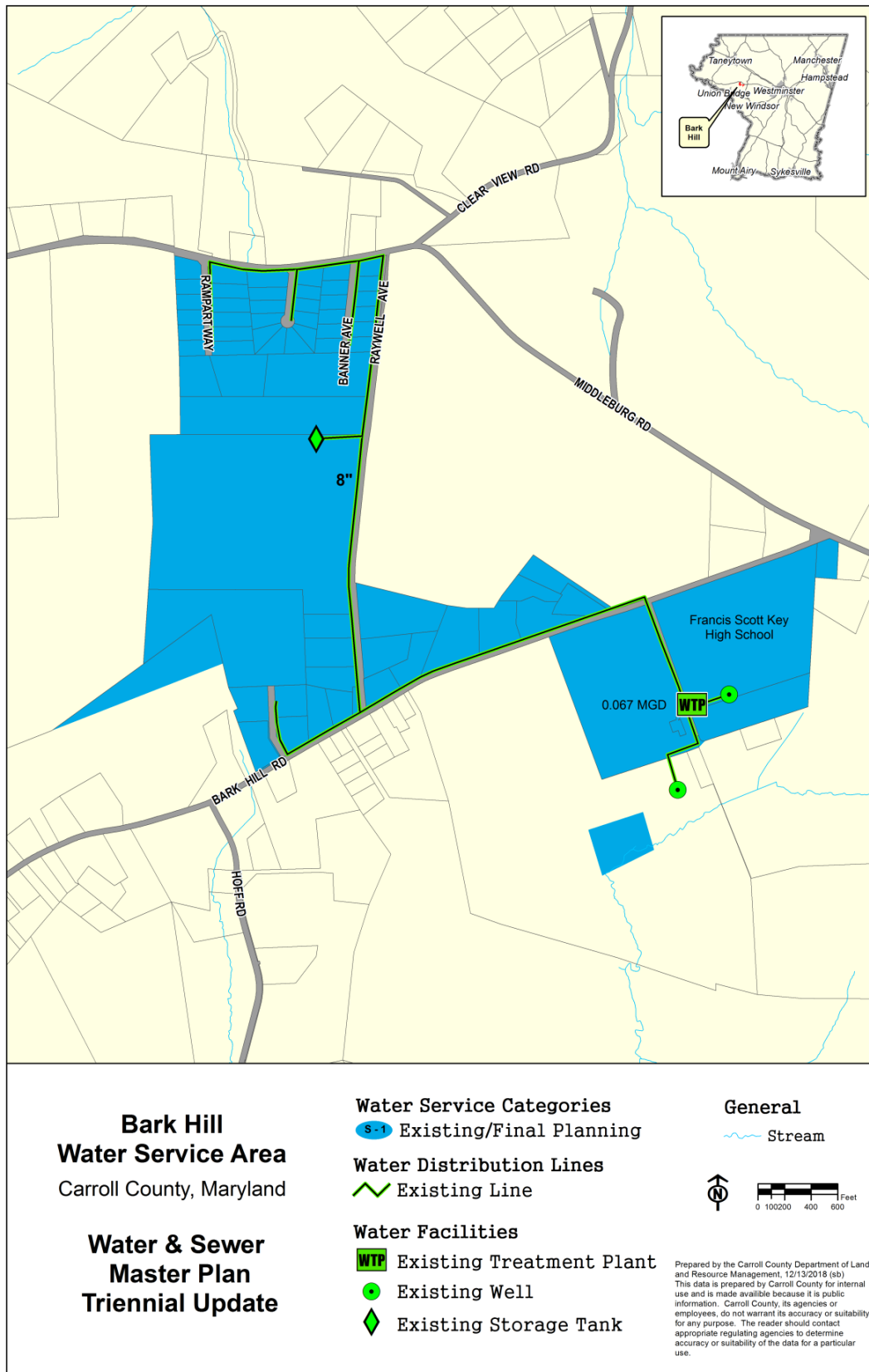


Table 5C: Bark Hill WSA Water Storage Tank

Storage Tank	Storage Capacity (mg)
Storage Tank #1	0.100

Allocation Procedure

Connection to the system is available to those properties located within the service area. There is no Allocation Procedure due to the limited number of properties in the area that have small lot sizes and failing septic systems.

Needs Analysis

No need exists for the Bark Hill expansion for the near term or immediate future. Maintenance is scheduled into the long term, 10+ years out.

Planned Projects and Recommendations

No capital projects are recommended for the Bark Hill system at this time. See Table 6C for Bark Hill WSA priority projects.

Table 5D: Bark Hill WSA Priorities Projects

Project Name	Planning Category	Description	Location	Capacity Added
Water Treatment Plant Improvements	Future (W-5) 10-Years	Replace water lines between well & well house; replace electrical lines for the plant	Water Treatment Plant	0 MGD

Freedom Water Service Area

Current Conditions

The Freedom WSA, located in the southeast portion of the county, serves 8,479 EDUs in the Freedom area, including the Town of Sykesville. Carroll County owns and operates the community water supply system. See Map 12: Freedom WSA. Permitted average daily use is 2.848 mgd. 2013 average daily use was 2.10 mgd.

Under agreement with the City of Baltimore, Carroll County purchases water for Freedom from the Liberty Reservoir. The agreement expires February 2020. The County receives the water by way of a floating surface water intake on Liberty Reservoir. Carroll County is authorized to withdraw a yearly daily average of 4.2 mgd; and a 6.0 mgd maximum daily average per month withdrawal. Raw water is treated at the County's WTP located at the end of Oakland Road. The WTP has a total design capacity of 6.0 mgd, which includes the existing 3.0 mgd (utilizing immersed membrane filtration). Prior to the filtration the water is pretreated by dissolved air flotation (DAF). Sodium hypochlorite is added for disinfection, sodium hydroxide is added for pH stabilization and fluoride is added for the prevention of dental decay. In addition, a parallel transmission main was installed from the treatment plant along Oakland Road and Mineral Hill Road to Oklahoma Road. Treated water from this line is fed into the existing distribution system at several points. Water storage is conducted through a 400,000 gallon tank that holds on-site finished water.

With the adoption of the 2018 Freedom Community Comprehensive plan, new potential properties were placed into the priority water service area as a result of the DLU changes proposed in the plan. Properties to the west of the Town of Sykesville are placed in the Future (7-10) and Long Range (+ 10) Water Service Area until they can be evaluated more thoroughly as part of a development process or future utility infrastructure project.

In addition to the water treatment plant on Liberty Reservoir, appropriations of 0.227 mgd from Fairhaven Well 22B; and 0.211 mgd from Raincliffe Well RC1 are available for consumption. See Table 6A for the Freedom WSA appropriations; Table 6B for the Freedom WSA average daily use; Table 6D for the Freedom WTP; and Table 6D for the Springfield Complex Water Tank System.

Table 6A: Freedom WSA Appropriations

6-Digit Watershed	Water Source	Permit Number	Permitted Average Daily Use (MGD)	Max. Average Daily Permitted Use(MGD)
Patapsco	Liberty Reservoir	CL1970S030 (01)	4.200	6.000
Patapsco	Fairhaven Well 22B	CL98G002 (01)	0.227	0.340
Patapsco	Raincliffe RC-1	CL1998G102 (01)	0.211	0.381
Total			4.368	6.722

Table 6B: Freedom WSA Average Daily Use

Water Source	Permitted Max. Safe Yield (MGD)	Ave. Daily Use (MGD)	Max. Peak Flow (MGD)
Liberty Reservoir	4.200*	2.210	2.715

Table 6B: Freedom WSA Average Daily Use

Water Source	Permitted Max. Safe Yield (MGD)	Ave. Daily Use (MGD)	Max. Peak Flow (MGD)
Well 22B- Fairhaven	0.340	0.150	0.360
Raincliffe RC-1 (not in use)	0.381	0.050	0.381
Total	4.921	2.410	3.456

*Actual Max. Safe Yield is 96 mgd.

Map 12

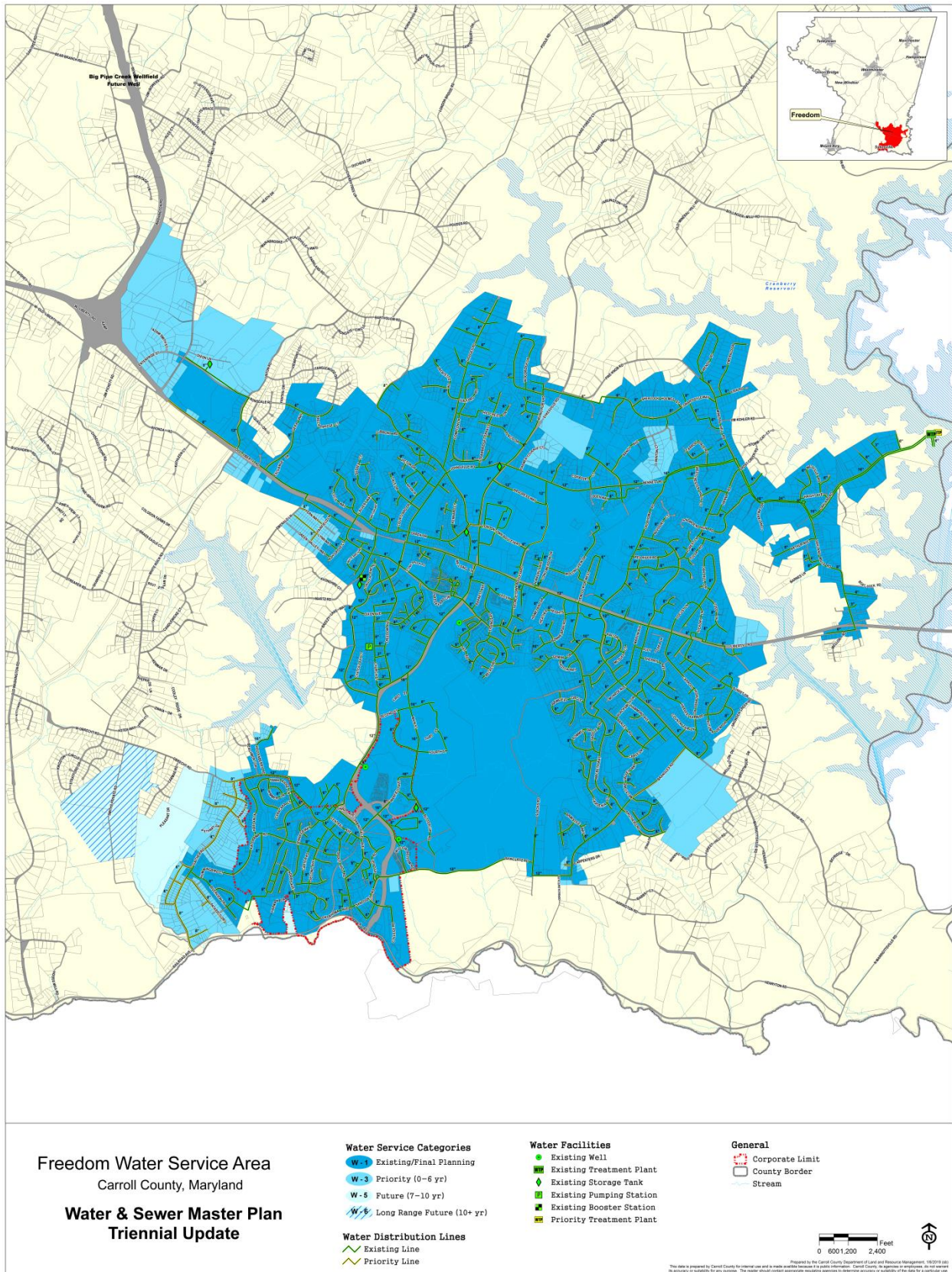


Table 6C: Freedom WTP

Distribution and Treatment System	Permitted Max. Safe Yield (MGD)	Ave. Daily Use (MGD)	Max. Peak Flow (MGD)
Freedom Water Treatment Plant	4.200	2.100	5.500

Under an agreement between Carroll County and the State of Maryland, five water tanks with a total storage capacity of 3.95 mg provide water to the Springfield Complex. The Springfield Complex currently includes a hospital operated by the State Department of Health and Mental Hygiene, a safety training center and the Warfield Complex, which was annexed by the Town of Sykesville and is being redeveloped for mixed uses. The agreement requires Carroll County to supply up to 400,000 gpd to the Springfield Complex. Maryland Environmental Service (MES) maintains the infrastructure on the Springfield Complex property, and Carroll County Bureau of Utilities maintains the meters.

Table 6D: Springfield Complex Water Tank System

Springfield Complex Water Tanks	Storage Capacity (mg)
Linton Springs Water Tank	0.500
Bartholow Road Water Tank	1.000
Springfield Water Tank	0.450
Liberty Road Water Tank	1.000
Martz Road Water Tank	1.000
Total Tank Storage	3.950

Allocation Procedure

Carroll County, owner and operator of the Freedom community water supply system, currently allocates water flows on a “first come, first served” basis. The code stipulates that allocations shall only be granted upon the execution and acceptance of a standard public works agreement or other agreement as required by County policy, the recordation of an approved subdivision plat, and payment of all applicable charges. To determine availability, the County allocates and records capacity or flows for single EDUs at the time building permits are approved, or at the time area connection charges and any other applicable charges are paid in full.

Needs Analysis

The County renewed its agreement with the City of Baltimore for Liberty Reservoir appropriations, which expires in February 2020, to ensure continued rights to Liberty reservoir as a water source. In addition, iron cast pipes in various locations throughout the distribution system are old and in need of replacement. For the long terms, the County will continue to evaluate the Freedom WSA infrastructure needs using its Freedom District Water Model Update.

A number of houses on Gaither Road are situated on lots less than half an acre in size and experience septic failures. The potential for contamination due to failing septic systems is due to the geography of the area and small lot sizes prohibiting replacement septic fields or restoration of existing fields. There are no replacement wells in this area.

Planned Projects and Recommendations

Below are the recommendations for the Freedom WSA, including its WTP and distribution system. See Table 6E for Freedom WSA priority projects.

Table 6E: Freedom WSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Sykesville Iron Pipe Replacement	Priority (W-3) 6 years	Replace 28,000-30,000 feet of cast iron pipe throughout town in phases	Phase I - Main Street, Springfield Ave., MD 851; future phases – various locations in Sykesville	0 MGD
Gaither Road Area	Priority (W-3) 6 years	8" water lines to serve existing communities	Gaither Road from Obrecht Road to County line	0 MGD

Long-Term Recommendations (10+ years)

- ♦ Resolve allocation issues related to Piney Run Reservoir/Gaither Road Area septic system failures
- ♦ Replace cast pipes in identified areas where need has been identified
- ♦ Based on the update of the Freedom District Water Model Update, identify projects for maintenance and operation purposes of the Freedom water distribution system

Hampstead Water Service Area

Current Conditions

The Town of Hampstead owns and operates the community water supply system which limits service to inside the corporate boundary. Approximately 100 residential and commercial units located in the County receive public water service through connection to the system. The policy to serve within town limits only was adopted in 1962. The existing and planned Water Service Area (WSA) is situated in the northeast section of the County along MD Business 30, serving 2,203 residential and commercial customers and covering approximately 2,555 acres. Permitted average daily use is 0.630 mgd. Average daily use is 0.346 mgd.

The system, which was built by the Town in 1936, is currently supplied by 21 wells. Of the 21 wells in the Town's inventory, 14 are operational; 4 are awaiting final approval from MDE to become operational, and well #15 has been removed from active status. All sources pump directly into the Hampstead system following chlorination and pH adjustment using soda ash and caustic soda. The operation and production of the pumps in the wells are controlled and monitored by a combination of time clocks and a Supervisory Control And Data Acquisition (SCADA) system. The Town currently has SCADA controls on 5 of the operational wells in addition to the Panther Drive and North Hampstead water storage tanks.

A 100,000-gallon storage tank was constructed on the central-eastern side of the Town on Hillcrest Street as part of the original water system built in the 1930's. The Hillcrest Street tank remains in service today. In 1975, the Town built a 500,000-gallon storage tank near the former North Carroll High School. In 2001, the Town built a 400,000-gallon storage tank near the North Carroll Shopping Center. These three tanks provide water storage of about one million gallons. The Town currently holds three (3) groundwater appropriation permits for a total average daily withdrawal of 630,000 gpd.

Table 7A: Hampstead WSA Appropriations

6-Digit Watershed	Water Source/Well	Permit Number	Permitted Av. Daily Use (gpd)	Av. Daily Demand Month of Max .Use (gpd)
Patapsco	11, 12, 20 ,21, 28, 29, 31, 32	CL1974G062 (07)	283,000	362,000
Gunpowder	19, 24, 25, 33, 34, 35, 36	CL1974G162 (03)	211,000	322,000
Gunpowder	13, 15, 22, 23, 26, 27	CL1974G362 (02)	136,000	200,000
Total			630,000	884,000

Map 13

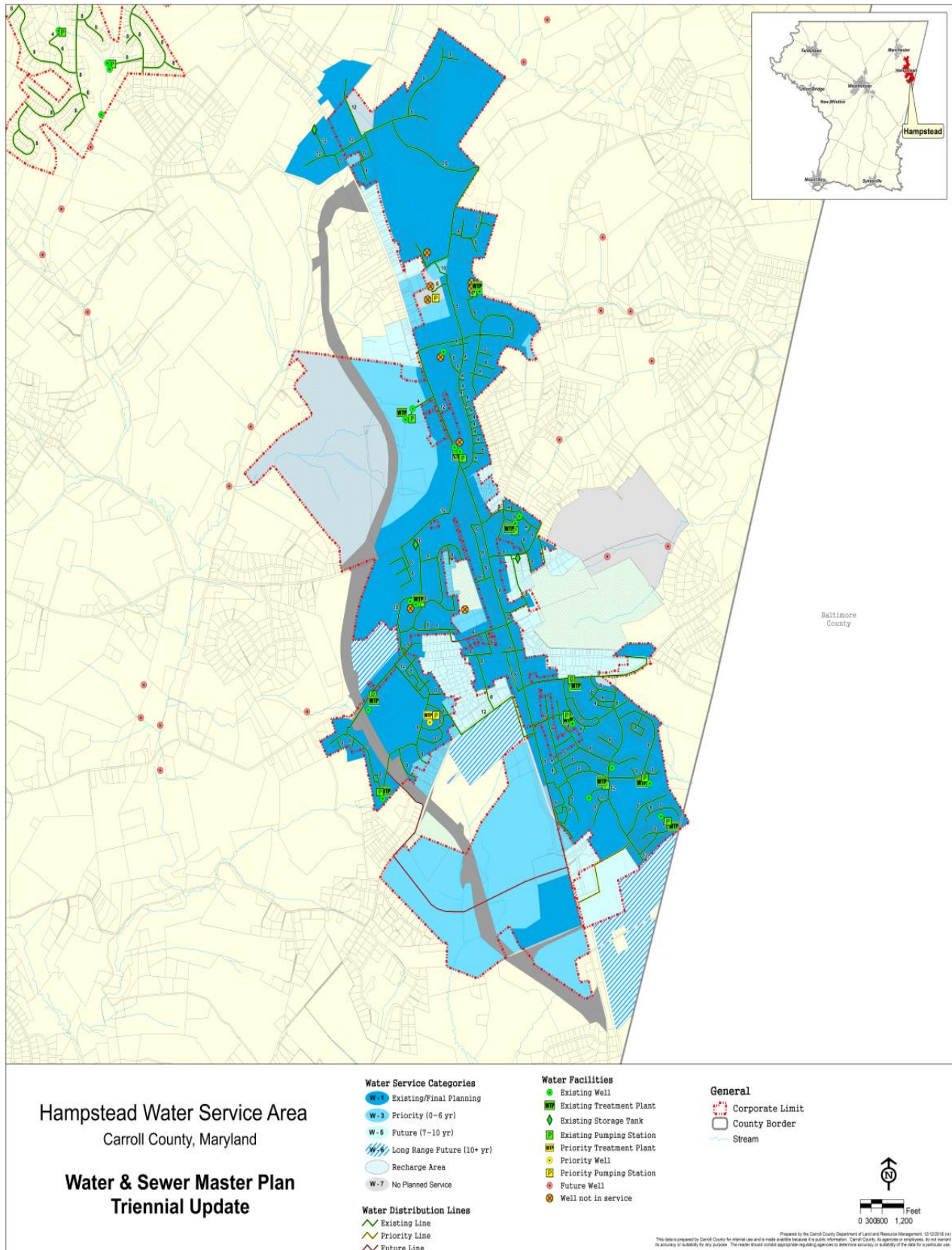


Table 7B: Hampstead WSA Storage Tanks

Storage Tank	Storage Capacity (mg)
Hillcrest Water Tank	.100
MD 482/Panther Drive Water Tank	.500
North Carroll Plaza Water Tank	.400
Total	1.000

Allocation Procedure

Allocations are on a “first come, first served” basis. Allocations are made within the permitted capacity. Prior to approving a development where the estimated consumption upon completion is equal to or greater than 5,000 gallons per day and or the size of the site developed is equal to or greater than 10 acres, the Town shall require the developer to furnish a water supply to deliver a water production well or wells that can produce 74 gallons of permitted water capacity per day for each equivalent dwelling unit (EDU) or commercial unit.

When a well meeting the above requirements cannot be located, the developer may apply to the Town Council for a waiver. If a waiver is approved, the developer shall be assessed a water replacement fee in the amount of \$2,250 for each equivalent dwelling unit (EDU); provided, however, that the Town has the needed capacity in the existing water system, as determined by the Town. The fee shall be payable prior to issuance of a building permit.

For a complete picture of the allocation process, please refer to Hampstead Code Article IV Section 132-12.

Needs Analysis

High nitrate water levels are found in Wells 20 and 21. The Town is looking into possible collaborations with a prospective developer to improve the pump facility to remove the nitrates and bring these wells back to active pumping status.

The Town is continuing to work on the replacement of the remaining 1936 water system. In the fall of 2016 work was completed on 90% of the original 1936 water system. We need to replace roughly 2009 feet of original 1936 water mains on the following streets:

- Upper Beckleystown Road
- Hillcrest Street
- Rinaman Avenue
- West Street
- Shiloh Avenue

The Town is also considering the replacement of the water main along Lower Beckleystown Road from Main Street to Dogwood Drive. This main was installed in the 1970's; however this section of 8" water main has been plagued by many main breaks, disrupting service to a day care facility, shopping center, and a senior living complex.

Although still in service and in fine working condition the water tower on Hillcrest Street has been a subject of discussion regarding future maintenance cost. The Town updated our water model in 2017 giving us future guidance on the direction the Town will need to take regarding this 100,000-gallon tank.

See Table 7C for Hampstead WSA water problem areas.

Table 7C: Hampstead WSA Water Problem Areas

Location	Population	Nature of Problem	Status
Town of Hampstead	6,200	Elevated nitrates Wells 20 and 21	Out of service
Hillcrest Street neighborhood (outside Town limits)	100	MTBE contamination	MDE investigation, carbon filtration, connection to public water
MD 482 and North Carroll Street	30	Petroleum contamination	Monitoring wells and mechanical recovery

The Town plans on building an oversized pumphouse in the future at North Carroll Farms that would connect Wells 33 and 34. Eventually the Stansbury Well and Triple Green Well will also be brought online at this pumphouse. The Town is hopeful that this, along with the addition of the Oakmont Green Well will address any water shortages that may occur 5+ years out.

Planned Projects and Recommendations

Below are the recommendations for the Hampstead WSA. See Table 8E for Hampstead WSA priority projects.

Table 7D: Hampstead WSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Wells 20 & 21	Priority (W-3) 5 Year	Rebuild Facility with nitrate removal	West of MD 30 East of Bypass	0.100 MGD (Currently Permitted but not in production)
Well 36	Priority (W-3) Immediate	Connect N. Carroll Farms Pump House #17	East of MD 30 South of Farm Woods Lane	0.100 MGD (Currently Permitted)
Water Main	Priority (W-3) 5 Year	Replace 1936 Mains	Side Streets off of Main Street	0.040 MGD
New Pumphouse	Priority (W-3) 5 Year	Construct a new pump house to benefit wells #20 & #21	Florida Rock Property	0.00 MGD
Appropriation Request	Future (W-5) 10 Year	Request an increase in Appropriations for existing wells	N/A	0.175 MGD

Long-Term Recommendations (10+ years)

- ♦ Drill and develop additional groundwater wells (based on the average MDE appropriation of existing Hampstead wells) to meet projected additional demand within the service area

Manchester Water Service Area

Current Conditions

The Town of Manchester owns and operates the public water system which limits service to its corporate boundary. The existing and planned WSA serves 1,750 EDUs, covers approximately 1,494 acres and is located in the northeast portion of the County along MD 30. See Map 14: Manchester WSA. 2016 average daily use was 0.292 mgd. Average daily appropriations are 0.581 mgd.

The system is currently supplied by 19 wells, Hillside Spring, and 12 pumping stations. Hillside Spring is a spring within the larger Walnut Street Area Spring system. Water is treated at each well pumping station. Treatment consists of chlorination at all 12 pumping stations. Soda ash is also added at all 12 pumping stations for pH control. The High School plant (TP15) also incorporates anion exchange for removal of nitrate.

Water storage for the Town of Manchester is comprised of three elevated water storage tanks. A 500,000-gallon storage tank is located on York Street on the northeast side of Town; a 100,000-gallon storage tank located on Park Avenue in the western part of Town; and 250,000 gallons at the Manchester Baptist Church. The current storage system is a “floating” system which means three tanks are connected and act as overflow for the distribution system. When demand is low, additional water in the system goes to the tank. When demand is high, water is relieved from the tanks by gravity. See Table 8A for Manchester WSA appropriations; Table 8B: Manchester WSA for average daily use; and Table 8C for Manchester WSA storage tanks.

Map 14

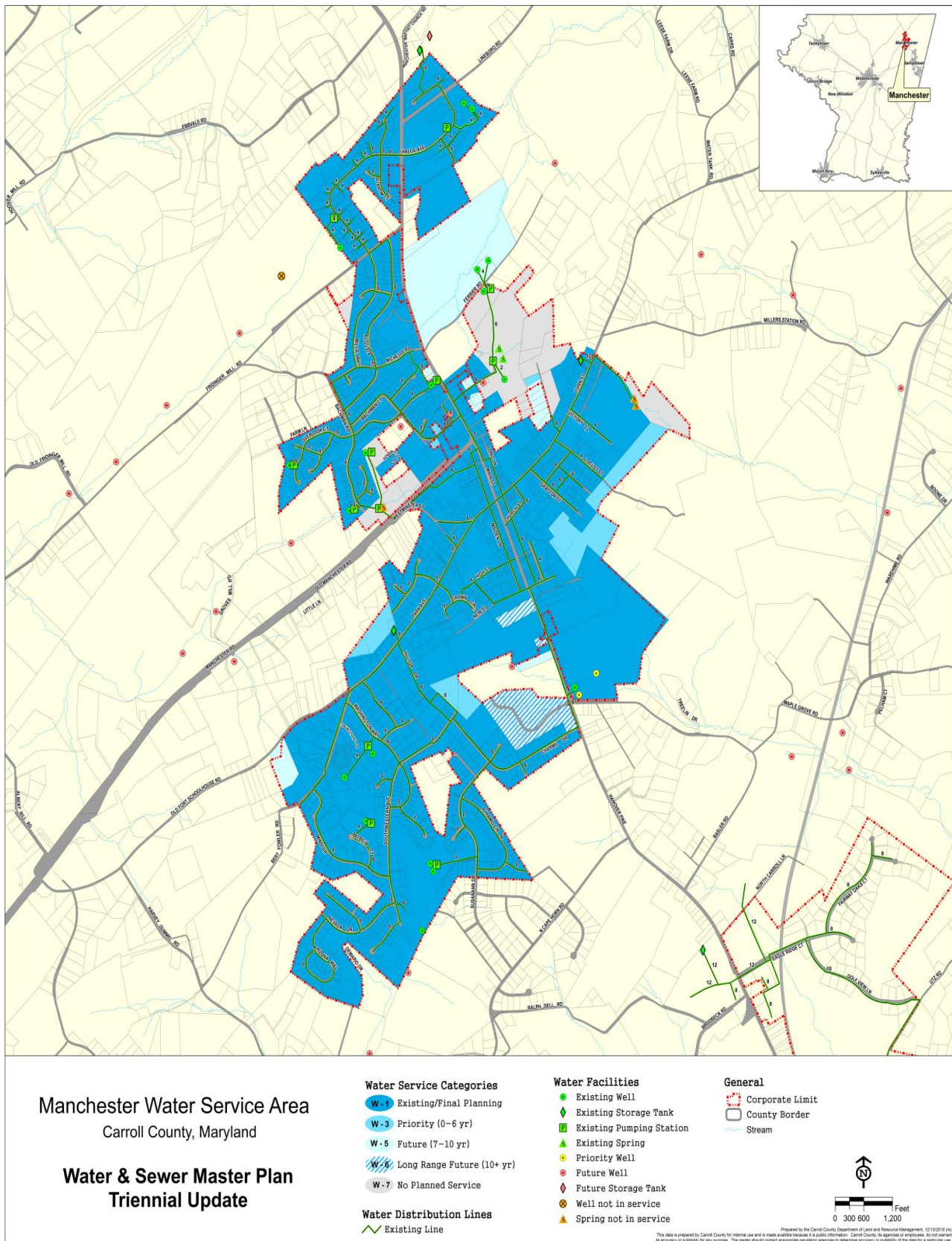


Table 8A: Manchester WSA Appropriations

6-Digit Watershed	Permit No.	Allocation		Wells/Springs Included in the Permit
		Average Daily Demand on Yearly Basis (gpd)	Daily Demand for Month of Maximum Use (gpd)	
Middle Potomac	CL1966G112(03)	134,000	199,000	<ul style="list-style-type: none"> ▪ Bachman Road Well (Well #4) ▪ Crossroads Well #1 (Well #8) ▪ Crossroads Well #2 (Well #9) ▪ Hallie Hill Well (Well #11)
Patapsco	CL1966G212(03)	38,000	63,000	<ul style="list-style-type: none"> ▪ Patricia Court Well (Well #7)
	CL1995G046(01)	69,700	116,400	<ul style="list-style-type: none"> ▪ Manchester Farms Well D
	CL2002G005(01)	6,000	10,000	<ul style="list-style-type: none"> ▪ Manchester Farms Well B (Well #10)
	CL2004G021(01)	9,300	11,800	<ul style="list-style-type: none"> ▪ Park Ridge Well (Well #13a) ▪ Park Ridge B Well (Well #13b)
Gunpowder	CL1966G012(11)	324,000	486,000	<ul style="list-style-type: none"> ▪ Walnut Street Spring Area ▪ MV1 Well #6 Route 30 Lippy ▪ MV2 Manchester V RW ▪ MV3 Manchester V TW4Alt ▪ Holland Drive Well (Well #2) ▪ Black Farm Well #1 (Hallie Hill L Well #14a) ▪ Black Farm Well #2 (Hallie Hill N Well #14b) ▪ Ferrier Road Wells (A, B, C) (Well #12) ▪ Walnut Street Well (Well #1)
Totals		581,000	886,200	

Since 2000, 9 new wells have been brought online. Most recently (2009), the Chauncy Hill Well, also known as Park Ridge B Well #13b, was connected. Hallie Hill Wells “L” and “N”, also known as Black Farms Well #1 and #2, were connected in 2007.

A hydraulic model of the Town’s entire water system was originally developed along with a 15-year projection for water storage needs. The hydraulic model is an ongoing process, as new water supplies or additional developments are brought onto the system the model is updated. If the update is not a Town project, the cost of the update is paid by the developer. Walnut Street Spring storage capacity is 47,965 gpd.

Table 8B: Manchester WSA Average Daily Use

Water Sources	Max. Safe Yield (MGD)	Avg. Daily Use (MGD)	Max. Peak Flow (MGD)
Bachman Road (Dell) Well	0.069	0.059	0.137
Park Ridge Well 13B	0.020	0.010	0.044
Crossroads #1 Well	0.038	0.034	0.076
Crossroads #2 Well	0.044	0.011	0.087
Holland Drive Well	0.041	0.014	0.083
Manchester Farms Well B	0.056	0.043	0.113
Manchester Farms Well D	0.010	0.005	0.008
Manchester Valley Wells (3 Wells)	0.100	0.040	0.075
Patricia Court Well	0.014	0.009	0.029
Hallie Hill Well	0.037	0.023	0.074
Hallie Hill "L" Well 14a	0.024	0.016	0.057
Hallie Hill "N" Well 14b	0.039	0.022	0.068
Ferrier Road Well A	0.020	0.018	0.052
Ferrier Road Well B	0.020	0.015	0.029
Ferrier Road Well C	0.019	0.014	0.038
Park Ridge Well 13A	0.029	0.006	0.055
Walnut Street Well	0.012	0.011	0.020
Total	0.592	0.350	1.045

Table 8C: Manchester WSA Storage Tanks

Storage Tank	Storage Capacity (mg)
Manchester Baptist Church Water Tank	0.250
Park Avenue Water Tank	0.100
York Street Water Tank	0.500
Total	0.850

Allocation Procedure

Prior to approving a development, the proposed use shall be considered in light of the Town's current water supply capacity, as limited by the Town's water appropriations, pumping capability, peaking and drought factors. If the Town determines that adequate water capacity for the proposed use, a fee of \$14,500 per EDU will be accessed, payable with the application of each building permit.

In addition, Chapter 241, the water section of the Town Code requires that public facilities, including water, be adequate for Planning Commission approval at each stage of the approval process.

Needs Analysis

The Huppmann Spring, which is part of the larger Walnut Street Area Spring system, has been out-of-service for approximately four years due to surface water influence. Manchester has identified potential municipal groundwater sources and completed rehabilitation of the Walnut Street Area Spring system to address susceptibility to surface water influence and

restore water quality. The Town is studying the extent of the contamination problems. Once studies are complete, the Town will develop a strategy to remediate water quality, if needed.

The Town has had a long-standing goal of developing an accurate and complete map of its distribution system. Such a comprehensive inventory is needed to make the most efficient decisions in emergency situations such as a water main break or if an individual home's water valve will not shut off.

Given that policy changes related to groundwater or changes in projected demand may occur in the future, additional water sources may need to be planned. See Table 8D: Manchester WSA Inventory of Manchester WSA water problem areas.

Table 8D: Manchester WSA Water Problem Areas

Location	Population	Nature of Problem	Status
Manchester	5,370	Impact of Surface Water Treatment Rule under the Safe Drinking Water Act on Town's springs	Under study
Sheetz Store		Petroleum and MTBE	Under Study

Planned Projects and Recommendations

See Table 8E for Manchester WSA priority projects.

Table 8E: Manchester WSA Priority Projects

Project Name	Planning Category	Description	Location	Added Capacity
Computer Mapping	Priority (W-3) Immediate	Develop mapping of complete water distribution system	Entire Town	0 MGD
Refurbish Walnut Street Springs	Priority (W-3) 5 Years	Refurbish springs to meet Surface Water Treatment Rule	North side of Town	.025 MGD
New Wells	Future (W-5) 10 Years	Develop and connect new wells	Walnut Street and Bachman Road	TBD*

* As conversations progress this additional capacity will be determined

Long-Term Recommendations (10+ years)

- ♦ Map the water distribution system for tracking purposes and make decisions in instances of drought in inadequate water supply.
- ♦ Maintain long term water source options at the Union Mills Reservoir and York PA Water System
- ♦ Maintain long-term options for non-groundwater water supply, including Union Mills Reservoir and connection to the York PA Water Company system

Mount Airy Water Service Area

Current Conditions

The Mount Airy WSA serves 3,300 EDUs and covers 3,280 acres in both Frederick and Carroll counties. The Town of Mount Airy owns and operates the community water supply system that provides water to Town residents only. Unincorporated areas planned for service must first be annexed into Town prior to appropriations. Appropriated average daily demand month of maximum use is 1,386,500 gpd; permitted average daily use is 927,000 gpd. See Map 15: Mount Airy WSA.

The Town of Mount Airy is unique among all municipalities in that it is not only divided between two counties it is also divided among five watersheds. The unconfined fractured rock aquifer within the Ijamsville Formation and Marburg Schist is the Town's water source. The system uses 10 wells to obtain its drinking water. The Mount Airy water supply is susceptible to nitrate contamination, VOCs (except well 8), SOC's, and radionuclides, but not susceptible to protozoans. Further, Wells #2 and #7 are susceptible to bacteria and viruses.

The Consent Order the Town entered into with MDE in June of 2007 was satisfied in the Fall of 2014; however, the Town still continues to track Water Allocations for each development. In September 2009, the Town's daily average water appropriation was increased from 865,000 gpd to 910,000 gpd.

To address the need for additional water sources/supply, the Town identified a new well at South Main Street, referred to as Well #11. Well #11 is currently on-line. In conjunction with re-appropriations of Well #6, appropriations from Well #11 satisfy the Consent Order. Permitted average daily use and actual average daily use is 927,000 mgd. See Table 9A for Mount Airy WSA appropriations. See Table 9B for Mount Airy WSA Average Daily Use; and Table 9C for Mount Airy WSA Storage Tanks.

Table 9A: Mount Airy WSA Appropriations
(as of August 2011)

6-Digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Daily Demand Month of Maximum Use (gpd)
Middle Potomac	Wells #1-4	FR1976G007(06)	255,000	347,000
Patapsco	Well #5	CL1987G076 (06)	43,000	80,000
Patapsco	Well #6	CL1987G176 (06)	149,000	180,000
Middle Potomac	Well #7	FR1976G107(02)	99,000	139,000
Patapsco	Well #8	FR1995G020(03)	150,000	210,000
Middle Potomac	Well #9	FR2001G022(02)	79,000	204,000
Patapsco	Well #10 (Flickinger)	CL2000G022 (03)	77,000	144,000
Patapsco	Well #11	CL2009G001(02)	75,000	82,500
Totals			927,000	1,386,500

Map 15

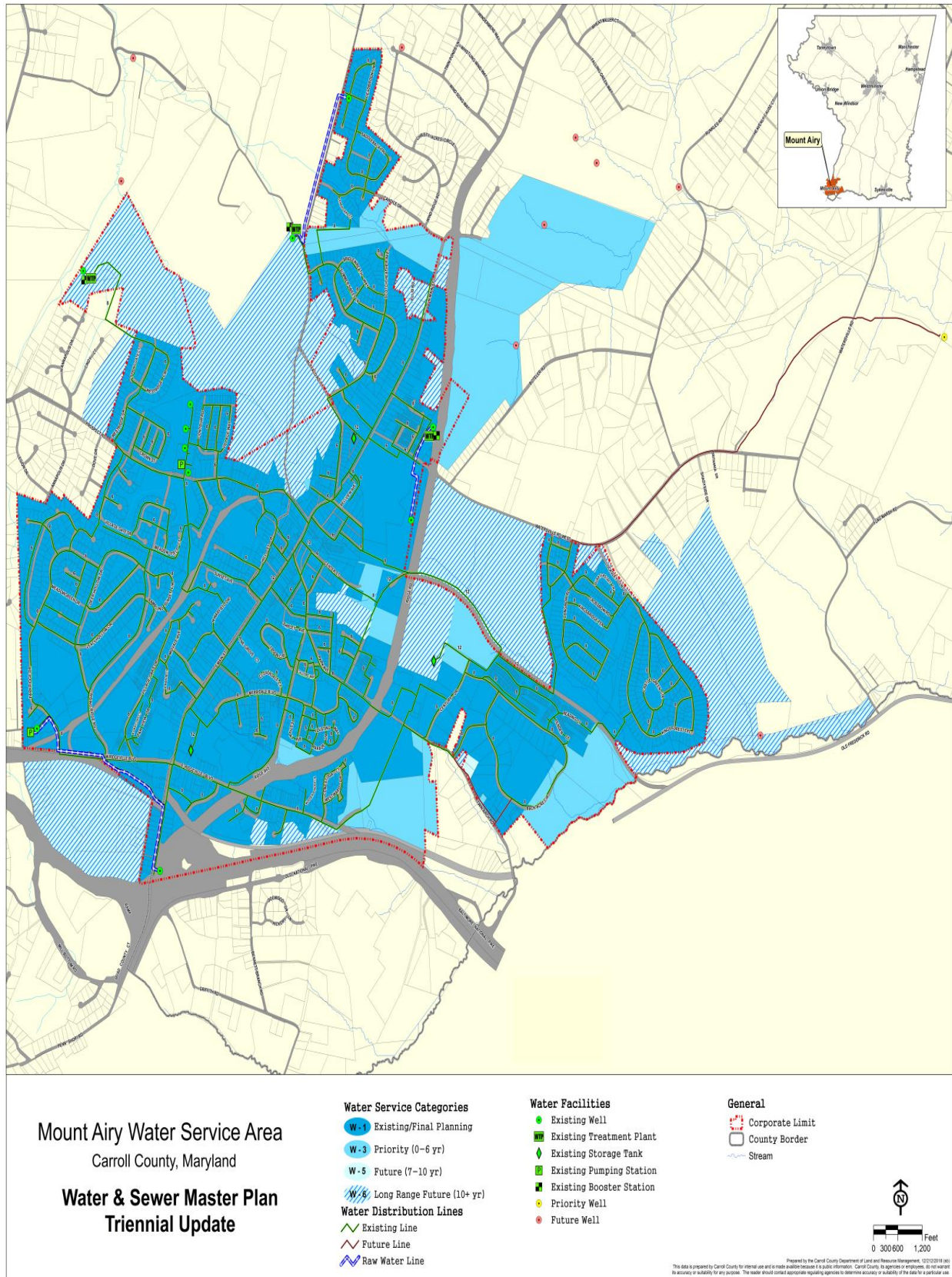


Table 9B: Mount Airy WSA Average Daily Use

Water Source	Max. Safe Yield (MGD)	Avg. Daily Use (MGD)	Max. Peak Flow (MGD)
Main Well Field (1- 4)	0.347	0.255	0.720
Well Fields 5 & 6	0.260	0.192	0.290
Well Fields 7 & 11	0.221	0.174	0.259
Well Fields 8 & 10	0.354	0.227	0.354
Well Field 9	0.204	0.079	0.288
Total	1.386	0.927	1.911*

*The Town only runs 2 of the 4 wells at any one time

Table 9C: Mount Airy WSA Storage Tanks

Storage Tank	Storage Capacity (mg)
Elevated Tank 1	0.200
Elevated Tank 2	0.500
Elevated Tank 3	1.005
Total	1.705

Allocation Procedure

The Town's Adequate Public Facilities Ordinance (APFO) requires the Planning Commission to review the adequacy of public facilities, including water upon submission of the first development plan by a developer. If water supply for any particular development is not adequate, the project may not proceed until such water supply becomes available. However, review of adequacy of facilities is not required for site plans for any lot contained within a commercial or industrial subdivision that received preliminary plan approval prior to April 5, 2005, unless the proposed development project is designated a "large water user". (A "large water user" refers to any proposed use which, according to water and use projections adopted by the Carroll County Health Department, will generate an average daily water consumption rate of greater than 2,500 gallons per day.)

Needs Analysis

Total future water demand assumes full build out within the growth area boundary, producing a water demand of 1,189,000 gpd. With current appropriations, the Town will need to identify an additional 262,000 gpd to meet future water demand needs. To address these needs, the Town will seek new water sources, preferably groundwater sources.

Currently, the Town is seeking MDE approval for appropriations to four wells on the Harrison/Leishear Properties (Wells #1, #3, #12, and #18). The Town is working on an agreement with the County, which owns the property, to utilize these wells. Based on the Town's testing, in accordance with MDE procedures, the wells have an anticipated (combined) appropriation amount of 152,000 gpd. The wells are situated in the Middle Run Stream subwatershed and are adjacent to the Town's Water Station #2, which was recently upgraded in 2016.

With the proximity of the wells and the need for treatment upgrade, it would be most feasible, and in the Town's best interest, to acquire water rights and easements on the

Harrison/Leishear property, and be granted the equivalent water recharge area of the Middle Run Stream subwatershed that will achieve adequate water supply at buildout. An estimated 300 gpd per acre is equivalent to 176,700 gpd of recharge area. The County has identified up to 589 acres that the Town may use for a recharge area. The Dorseytown is an area located outside of the incorporated limits of Mount Airy. The area experiences low well yields, requiring that the area be tied into Mount Airy's WSA. The Town must annex Dorseytown before service would be allowed/provided. See Table 9C for Mount Airy WSA water problem area.

Table 9C: Mount Airy WSA Water Problem Area

Location	Population	Nature of Problem	Status
Dorseytown	40	Low well yields	W-3 category

Planned Projects and Recommendations

See Table 9D for Mount Airy WSA priority projects.

Table 9D: Mount Airy WSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
New well connection and waterline	Priority (W-3) Immediate	Develop Wells #1, 3, 12, & 18 on Harrison/Leishear Property and pipe to Water Station #2 for Treatment and Distribution.	East of MD27 & North of Watersville Road	.152 MGD
Upgrade Water Plant #2	Priority (W-3) Immediate	Full Plant Upgrade	West of MD27 & North of Watersville Road	.152 MGD (Not additional capacity, treatment for new wells)
Upgrade Water Mains	Priority (W-3) 5 years	Hydraulics Upgrades	Entire System	0 MGD

Long-Term Recommendations (10+ years)

Note: These are options that will be considered for long-term supply. However, inclusion here does not imply that there is a definite plan to move forward with an option. Exploring additional sources, even for those systems that currently project enough capacity to meet demand is included, in order to be prepared for policy changes or other changes that would result in the need for additional available water capacity.

- ♦ Middle Run Branch (Gillis Falls) Well: Anticipated yield 0.050 mgd
- ♦ Surface Water Intake in Gillis Falls Area: Safe yield 0.85 mgd; develop new surface water intake on Carroll County-owned property near planned Gillis Falls Reservoir; 100-120 mg off-stream storage impoundment
- ♦ Interconnection with Freedom: Interconnect with the Freedom water system and purchase agreement to supply approximately 0.85 mgd; 9.7 miles
 - Piney Run Reservoir (as built): Safe yield 3.65 mgd with normal pool elevation of 524 ft.; existing reservoir; to serve as regional source of supply for Mount Airy and The Freedom WSA

- Piney Run Reservoir (expanded): Safe yield 4.11 mgd; increase capacity of existing reservoir by raising the spillway riser and emergency spillway; to serve as regional source of supply for Mount Airy and Freedom WSA
- ♦ Interconnection with Frederick County: Interconnection with Frederick County water system and purchase agreement to supply approximately 0.85 mgd (with a maximum agreement of 1.2 mgd)
- ♦ Gillis Falls Reservoir: Safe yield 3.85 mgd with normal pool elevation of 610 ft.; planned reservoir; to serve as regional source of supply for Mount Airy and Sykesville/Freedom Service Areas

The long-term water supply options, beyond further groundwater exploration, may not be financially feasible and may be severely limited due to capacity.

- ♦ Harrison/Leishear Wells #18, #12, #3 and #1 (Middle Run Branch): Anticipated yield 0.152 mgd on existing wells with water rights from Carroll County on adequate recharge land in the Middle Run subwatershed.
- ♦ Upper Linganore Watershed: Purchase additional land for recharge credits and/or obtain increased appropriations on existing wells 1-4 and well 10 via Senate Bill 674, otherwise known as the "Brinkley Bill."
- ♦ Groundwater Wells (South Branch of Patapsco): Drill and develop additional groundwater wells in the South Branch of the Patapsco watershed to meet projected additional demand up to 0.273 mgd. Includes areas north and south of I-70. The Town already has adequate recharge land to meet this additional capacity.
- ♦ Groundwater Wells (Upper Bush Creek): Drill and develop additional groundwater well(s) in the Upper Bush Creek watershed. This includes the annexation area south of West Ridgeville Blvd and West of South Main Street. Yields in this area will be limited due to available recharge land.
- ♦ Groundwater Well (Ben's Branch): Drill and develop a groundwater well in the Ben's Branch subwatershed of Lower Linganore. Anticipated yield 0.030 mgd with current quantity of recharge land.

New Windsor Water Service Area

Current Conditions

The community water supply system in New Windsor is owned by the Town and is operated by the Maryland Environmental Service (MES). The system serves 637 EDUs within the corporate limits of the municipality. The existing and planned service area is located in the west-central portion of the County and encompasses approximately 848 acres. See Map 16: New Windsor WSA. Permitted average daily use is 196,000 gpd and average daily demand of maximum use 184,000 gpd.

The New Windsor Municipal Water System is supplied by a network of connected springs and wells. Dennings Spring/Main Roops Spring Meadow Spring; Hillside Wells; and Dickerson Run. Water travels from Dennings Well through a 4 inch-diameter gravity waterline to Main Spring; from Main Spring through a 5 mile pipeline to the town limits; and then to the treatment facility. The two Hillside wells located at the south side of Hillside Drive pump water directly into the Town's water distribution system. Roops Meadow Spring and Dennings Spring, additional longstanding water sources for the system, are currently not utilized due to MDE's findings that the springs are under the influence of surface water. Treatment is required if they were to resume as water sources. The Town has an agreement with Lehigh Cement Company to use water pumped from the Lehigh New Windsor Quarry as a future water source.

The water from the Main Spring at Bowersox and the Dennings Well flows by gravity through a pipeline to a 50,000 gallon chlorine contact tank for treatment. From there the water flows through a booster pump station and pumped into the distribution system and ultimately into two water storage tanks.

The Hillside wells are also pumped into the distribution system. Storage consists of a 250,000 gallon finished water standpipe and a 375,000-gallon elevated water storage tank located on Town property next to the first tank.

Even though Roops Meadow Spring is currently not in use, a contingency plan remains in effect with the Lehigh Heidelberg Cement Group providing water in the event that quarry operations were to adversely affect Roops Meadow Spring. The Town is presently permitted for an average daily total demand of 196,000 gpd from the system's multiple sources. Actual average daily use was 106,000 gpd. See Table 10A for New Windsor WSA appropriations; see Table 10B New Windsor average daily use; and see Table 10C for New Windsor WSA Storage Tanks.

Table 10A: New Windsor WSA Appropriations

6-Digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Middle Potomac	Dennings Well/Main Spring Roops Meadow Spring	CL1978G022 (05)	143,000	202,000
Middle Potomac	Hillside Wells (No. 1 & 2)	CL1992G049 (02)	53,000	80,000
Total			196,000	282,000

Table 10B: New Windsor WSA Average Daily Use

Water Source	Max. Safe Yield (MGD)	Avg. Daily Use (MGD)	Max. Peak Flow (MGD)
Well/Spring Network (Dennings Well, Main Spring, Roops Meadow Spring)	.202	0.088	0.148
Hillside Wells (Nos. 1 & 2)	0.080	0.018	0.036
Total	0.282	0.106	0.184

Table 10C: New Windsor WSA Storage Tank

Storage Tank	Storage Capacity (mg)
Chlorine Contact Tank	0.500
Standpipe	0.250
Standpipe	0.375
Total	1.125

Allocation Procedure

New Windsor follows a “first come, first served” policy for the allocation of available water service. Subdivision or development activity is a developer or new-user expense. Currently there are no “set-aside” policies for business or industrial users. “Adequacy” of the water supply system is a prerequisite to executing public works agreements or making new connections for water service to new customers (*New Windsor Code §92-46*).

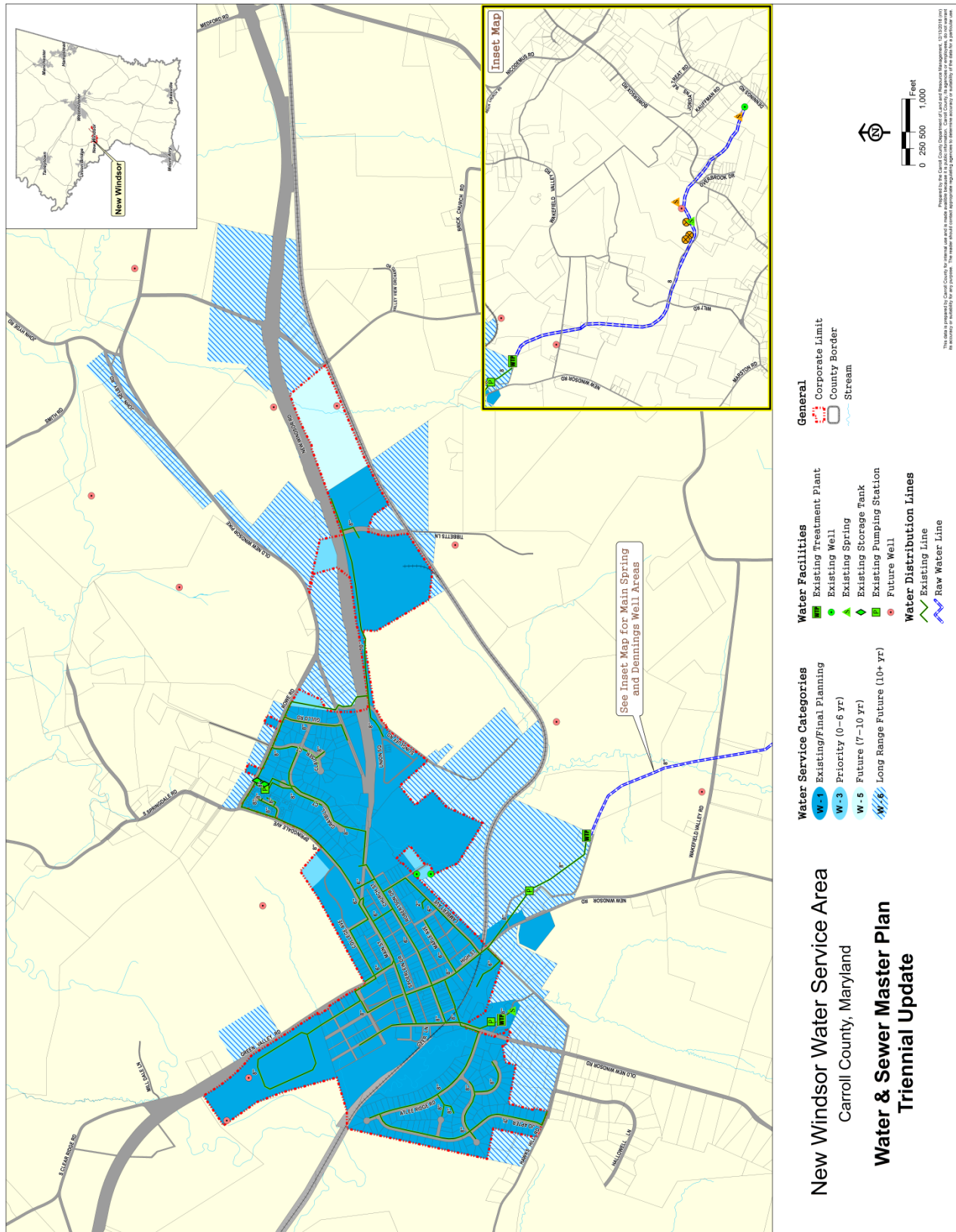
Needs Analysis

As mentioned above, Roops Meadow Spring is under the influence of surface water, requiring the Town to abandon its use until this influence is addressed. In addition, the threat of potential water source depletion from Lehigh New Windsor Quarry is a possibility. See Table 10D for New Windsor WSA water problem areas.

Table 10D: New Windsor WSA Water Problem Areas

Location	Population	Nature of Problem	Status
Roops Meadow Spring	n/a	Surface water influence	Currently offline
Roops Meadow Spring	n/a	Potential impact from Lehigh New Windsor Quarry	Lehigh contingency plan in effect

Map 16



Planned Projects and Recommendations

See Table 10E for New Windsor WSA priority projects.

Table 10E: New Windsor WSA Priority Projects

Project Name	Planning Category	Description	Location	Added Capacity
Rehabilitate Existing Tank (No. 1)	Priority (W-3) Immediate	Inspect, rehabilitate, paint	Rowe Road	0 MGD
Main Spring Farm Well (MSF-5)	Priority (W-3) 5 years	Well MSF-5; connect to system	Main Spring Farm	0 MGD
Main Spring Infrastructure	Priority (W-3) 5 years	Water control	Main Spring Farm	0 MGD
Main Spring Farm Pump	Priority (W-3) 5 years	Add second pump	Main Spring Farm	0 MGD
Test Well (MSF-6)	Priority (W-3) 5 years	Well MSF-6; resume pump testing	Main Spring Farm	0 MGD
1,800 Feet of 6-Inch Main	Future (W-5) 10 years	Improve distribution	Lambert/Hillside/Church	0 MGD
Water Audit	Priority (W-3) 5 years	Account for water loss	Wherever necessary	0 MGD
Main St. Project	Future (W-5) 10 years	Water main replacement to improve distribution	Main/High Streets	0 MGD
Roops Meadow Well	Priority (W-3) 5 years	Explore options to bring the well back online	Meadow Lane	0 MGD
Hillside Well (No. 1)	Priority (W-3) Immediate	Return to operability	Hillside Drive	0 MGD
Additional Water Sources	Future (W-5) 10 years	Explore, identify, acquire, develop	Various locations (include. Atlee Ridge & Snader property)	.25 MGD

Long-Term Recommendations (10+ years)

- ♦ Develop an agreement with Lehigh Heidelberg Cement Group to use water pumped from the Lehigh New Windsor Quarry as a potential future water source per existing agreement.
- ♦ Hillside Well 1 (2nd well @Hillside) Bring back online; anticipated yield 0.050 mgd
- ♦ Groundwater Wells: Drill and develop three groundwater wells (based on the average MDE appropriated of existing New Windsor wells) to meet projected additional demand requirements of approximately 198,000 gpd.
- ♦ Maintain long-term options for non-groundwater water supply, including Lehigh New Windsor Quarry, regional connections to Union Bridge water supply, and regional connection to Westminster Water Supply.

Pleasant Valley Water Service Area

Current Conditions

The Pleasant Valley WSA, comprising approximately 37 acres, is located on both sides of Pleasant Valley Road between Richardson Road and Hughes Shop Road. In 2017, an estimated 50 residential EDUs and the Pleasant Valley Fire Department used an average of 6,469 gpd. Permitted daily average use is 10,100 gpd. The original system dated back to around 1929. Pleasant Valley is an unincorporated Rural Village. See Map 17: Pleasant Valley WSA.

The community water supply system was privately owned until 1991 until the County acquired ownership of it in 1993. Construction of a new system was completed in 1994. The County installed meters, vaults, hydrants (for fire protection), a standpipe (0.050 gallon storage), and approximately 3,470 feet of 8-inch diameter ductile iron pipe (DIP) as part of the distribution system. The upgraded system provides 40 pounds of pressure per square inch (psi) at each house and 60 psi in the main line. By providing adequate and constant water pressure, the water system is safeguarded from the danger of contaminants being siphoned back into the system from the user end of the water pipe (e.g., a faucet or garden hose). Since completion of the system upgrade, the Carroll County Department of Public Works, Bureau of Utilities, has operated and maintained the new water supply system. See Table 11A for Pleasant Valley WSA appropriations and see Table 11B for Pleasant Valley WSA average daily use.

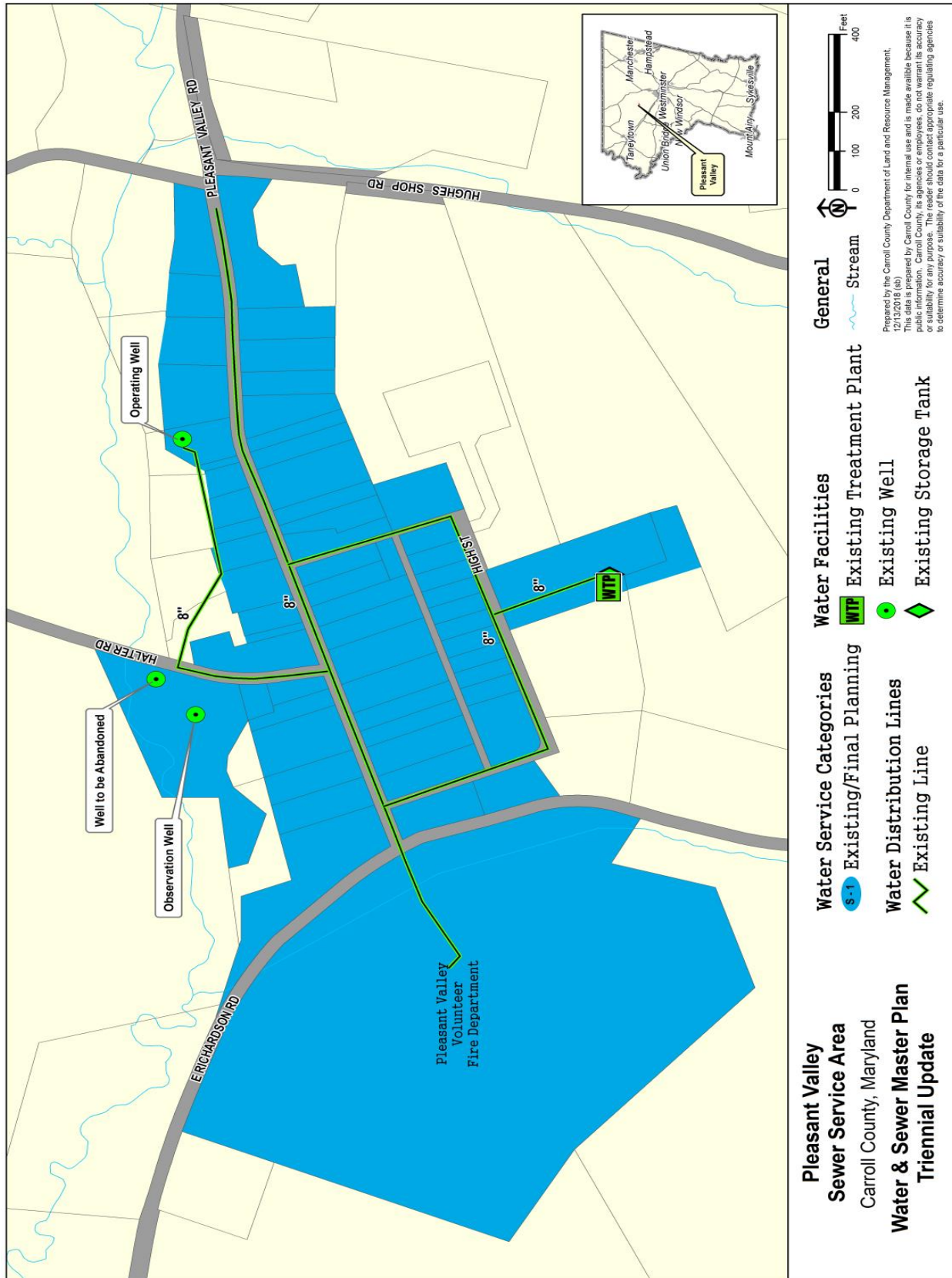
Table 11A: Pleasant Valley WSA Appropriations

6-Digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Middle Potomac	PW-A1	CL1995G053 (02)	10,100	17,000

Table 11B: Pleasant Valley WSA Average Daily Demand

Water Source	Storage Capacity	Max. Safe Yield (MGD)	Avg. Daily Use (MGD)	Max. Peak Flow (MGD)	WTP Capacity (MGD)
Water Standpipe	0.050	0.014	0.006	0.005	0.050
Water Treatment Facility	0	0.008	0.005	0.023	0.000
Well PW-A1/Observation Well	0.003	0.022	0.006	0.027	0.003
Total	0.053	0.044	0.167	0.055	0.053

Map 17



Allocation Procedure

Connection to the system is available to those properties located within the service area. There is no allocation procedure due to the limited number of properties in the service area and system capacity.

Needs Analysis

An agreement between Pleasant Valley Fire Department and Carroll County Government was signed May 2012 detailing the obligations of both parties upon upgrade of the Fire Department well. The well serves as a back-up to the primary well to provide redundancy and ensure enough water pressure for fire hoses.

Planned Projects and Recommendations

See Table 11C for Pleasant Valley WSA priority projects.

Table 11C: Pleasant Valley WSA Priority Projects

Project Name	Planning Category	Description	Location	Added Capacity
Pleasant Valley Well Upgrade	Priority (W-3) Immediate	Upgrade to the Fire Department Well which will serve as a backup to the primary well to provide redundancy.	Fire Department Property (E Richardson Road/S Pleasant Valley Road)	0 MGD
Upgrade / Replacement of existing water tank	Future (W-5) 10 years	Upgrade or replace existing tank due to problems and deterioration	South of High Street	0 MGD

Taneytown Water Service Area

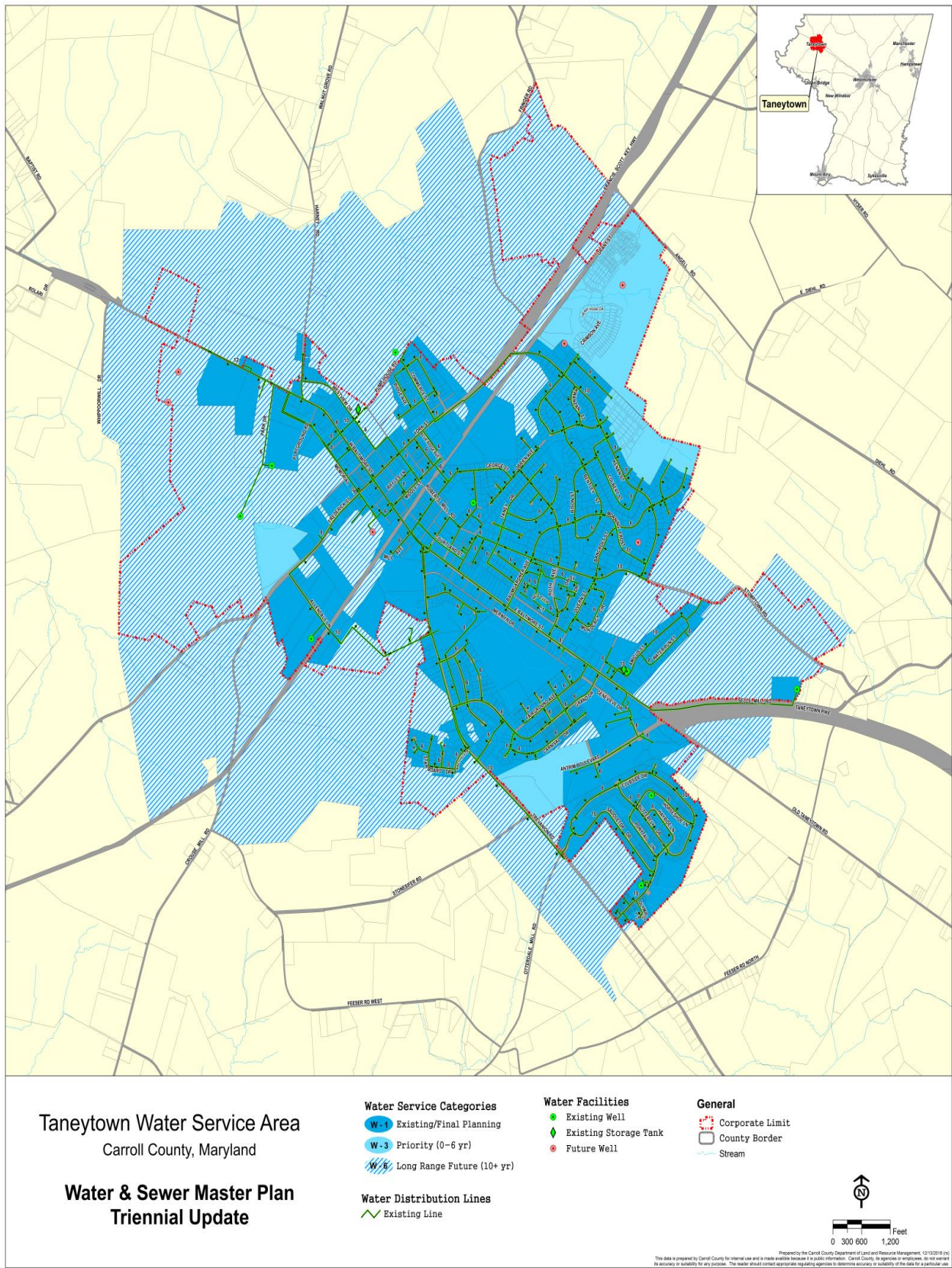
Current Conditions

The City of Taneytown owns and operates the community water supply system and generally limits service to the area located within the City's corporate boundary. Taneytown's WSA serves 2,793 accounts. The overall planned WSA covers approximately 3,134 acres within and bordering the municipality, and is situated in the northwest portion of the County along MD 140 and MD 194. See Map 18: Taneytown WSA. The City estimates that 79 percent of total consumption is generated by the residential population. Permitted daily use is 0.552 mgd. Average daily use is 0.355 mgd.

Taneytown's water supply system relies on groundwater which is supplied by eight municipal wells. Wells 8 and 9 have a permitted average day capacity of 190,000 gallons. Wells 11 and 12 have a permitted average day capacity of 118,000 gallons. Well 14 provides an additional 90,000 gallons average day capacity. Wells 15, 16 and 17 are permitted for a total of 154,100 gallons average day capacity. In order to address pumping limitations, Wells 11 and 12 alternate pumping.

When signaled by a level controller at the City's 150,000-gallon (0.150 mg) elevated storage tank, all wells currently on line (typically seven) are activated. Chlorination by chlorine gas, the only treatment used, occurs at each pumphouse, with the exception of Wells 9 & 12. Well 9 treatments include granular activated carbon treatment for volatile organic compounds. Water from Well 12 also is treated at the Well 11 pumphouse. After chlorination, water is piped directly into distribution mains and the City's two aboveground storage tanks, a 0.150-mg elevated tank and a 0.750-mg standpipe (0.460-mg usable storage). The combined usable storage of 0.610 mg provides a 1.5 days' supply of water based on actual consumption. In addition to maintaining constant pressure throughout the system, the storage tanks also provide an adequate supply for firefighting.

Map 18



The City had previously been under a Consent Agreement with MDE which ended June 4, 2012.

Unaccounted-for water is the difference between pump water and accounted-for water, which includes metered and other authorized unmetered water. Unaccounted-for water averages 8% which is attributed to the city's leak identification and repair program. The City installs data loggers in key locations, monitored semi-annually, or as needed based on pumping rates. The City adds loggers to the system each year working towards permanent installation of loggers throughout the City. The City replaces water meters as it becomes aware of any issues.

See Table 12A for Taneytown WSA appropriations; Table 12B for Taneytown WSA Average Daily Use; and Table 12C for Taneytown WSA Storage Tanks.

Table 12A: Taneytown WSA Appropriations

6-Digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Middle Potomac	Wells 8 & 9	CL1978G079 (10)	190,000	209,000
Middle Potomac	Wells 11 & 12	CL1978G279 (02)	118,000	130,000
Middle Potomac	Well 14	CL1978G179 (05)	90,000	197,000
Middle Potomac	Wells 15 & 16	CL2004G018 (03)	135,000	182,000
Middle Potomac	Well 17	CL2007G0003 (02)	204,500*	297,000
Total			737,500	1,015,000

* The existing permitted capacity of Well 17 is 19,100gpd, however the reliable yield of the Well is approximately 270,000 and a permitted daily average use of up to 204,500gpd is estimated. Additional recharge area will be obtained by the city through developers to meet future capacity needs, resulting in permitted capacity increases.

12B: Taneytown WSA Average Daily Use

Water Source	Max. Safe Yield (MGD)	Avg. Daily Use (MGD)	Max. Peak Flow (MGD)	WTP Capacity
Well 8	0.079	0.038	0.069	66 gpm
Well 9	0.187	0.079	0.095	137 gpm
Well 11	0.166	0.026	0.095	46 gpm
Well 12	0.202	0.036	0.114	64 gpm
Well 14	0.180	0.053	0.093	93 gpm
Well 15	0.125	0.035	0.081	61 gpm
Well 16	0.149	0.056	0.097	98 gpm
Well 17	0.270	0.034	0.069	59 gpm
Total	0.814	0.355	0.734	626 gpm

12C: Taneytown WSA Storage

Storage Tank	Storage Capacity (mg)
Pump House Rd. Standpipe	0.750
E. Baltimore St. Water Tower	0.150
Total	0.900

Allocation Procedure

City of Taneytown typically provides community water service on a “first come, first served” basis. Generally, the water capacity cannot be purchased in advance and is not held in reserve. However, the City has the ability to enter into Development Rights and Responsibility Agreements (DRRA) for specific circumstances. The Mayor and City Council allocate water with passage of a monthly resolution. Building permits are issued for new development only after all fees are paid, included are water connection and benefit-assessment charges, unless specified otherwise in a DRRA. Developers are also required to provide recharge area to offset proposed demand.

Needs Analysis

Additional sources must be developed to accommodate the growth planned for the Priority and Future Planning Categories. The City intends to utilize the additional capacity at Well 17 to meet future demand generated by future growth. Water recharge rates in the City and surrounding area are substantially lower than demand per acre projections for commercial or industrial uses and residential density desired for Priority Funding Areas (PFA). As a result residential developers are now required to provide recharge acreage which will be linked to well permit increases, adding time and expense to development projects.

Table 12D: Taneytown WSA Water Problem Areas

Location	Population	Nature of Problem	Status
City of Taneytown	Future Population	Insufficient recharge area for future growth	Under study

Planned Projects and Recommendations

See Table 12E for Taneytown WSA priority projects and below for a list of long term recommendations (10+ years).

Table 12E: Taneytown WSA Priority Projects

Project Name	Planning Category	Description	Location	Added Capacity
Antrim Blvd. Water Main	Priority (W-3) 5 years	Loop water main in Antrim Blvd to Trevanion Road	Antrim Blvd.	0 MGD
Water Storage Tanks Rehabilitation	Priority (W-3) Immediate	Cleaning, repair, and painting of both storage tanks	Breakiron Street and Pump House Road	0 MGD
Roberts Mill Water Main Replacement	Priority (W-3) 5 years	Replace deteriorated water main and services	Roberts Mill Road	0 MGD
Water System Telemetry Improvements	Priority (W-3) Immediate	Hardware, software, and programming to automate water system	Whole System	0 MGD

Long-Term Recommendations (10+ years)

- ♦ Identify and develop new water supplies adequate to support planned future growth.
- ♦ Continue to monitor and address sources of water loss.
- ♦ Maintain long-term options for non-groundwater water supply, including Big Pipe Creek.
- ♦ Amicus Street elevated water storage tank inspection & rehabilitation project.
- ♦ Westview Drive water main replacement project.
- ♦ Construct a new 500,000 gallon water storage tank to accommodate future growth and fire prevention in the Southeast section of Town.
- ♦ Upgrade Well 8. Project includes replacing the pump/pipe, controls, wiring and apparatus as needed. Rehab well house building (will need a new roof).
- ♦ Trevanion Road water service line replacement project.
- ♦ New Production Well project: to determine the location for a new production well and to bring it online.
- ♦ Memorial Drive water main replacement project.
- ♦ Demolish Well 13. This includes the well house, and abandoning well per Carroll County Health Department requirements.
- ♦ Upgrade Well 11. Replace pump/pipe, controls, wiring and apparatus as needed.
- ♦ Upgrade Well 12. Replace pump/pipe (well head only) and controls.
- ♦ Broad Street water main replacement project.
- ♦ Taney Drive water main replacement project.
- ♦ Upgrade Well 9. Replace pump/pipe, controls, wiring and apparatus as needed. Rehab well house.
- ♦ Replace the pump and pipes for Well 15.
- ♦ Water meter replacement project.
- ♦ Acquisition of Water Recharge land allow for future growth.

Union Bridge Water Service Area

Current Conditions

The Town of Union Bridge owns and operates the community water supply system, which serves approximately 1,049 people residing within the Town's corporate limits. The existing and planned service area is situated in the west-central portion of the County and encompasses approximately 1,352 acres. See Map 19: Union Bridge WSA. Permitted average daily use is 0.208 mgd. Average daily use is 0.105 mgd.

The Town is supplied by two wells used for drinking water. The Town's primary well (Well #1), located on West Locust Street, drilled in 1913 and purchased from the Union Bridge Water Company in 1963, is estimated to have a safe yield of 0.576 mgd. A second well (Well #2), which became operational in 2003, is located near Whyte Street on property owned by the Union Bridge Fire Company. The Town has secured an easement from the fire company for the well and a buffer area surrounding the wellhead. This well has an estimated safe yield of 0.101 mgd.

A third well (Phillips Property – Well #3) has been drilled north of MD 75 on property annexed by the Town in 1992. This property is proposed for residential and commercial development. Well #3 is housed in a wellhouse and is equipped with filtration and nitrate removal technologies. It has an estimated yield of 144,000 gpd. The well is connected by an 8-inch water main extension into the Town's system. This well is currently not in service.

The water supply system uses one glass-lined steel tank for storage. This elevated tank has storage capacity of 0.3 million gallon, and reserves a two- to three-day supply for residents in the event of a well failure. This elevated tank was constructed in 2003 and replaced a 0.29 million gallon ground level tank. The elevated tank significantly improves water pressure for residential use and fire protection. See Table 13A for Union Bridge WSA appropriations; Table 13B for Union Bridge WSA average daily use; and Table 13C for Union Bridge storage tank.

Map 19

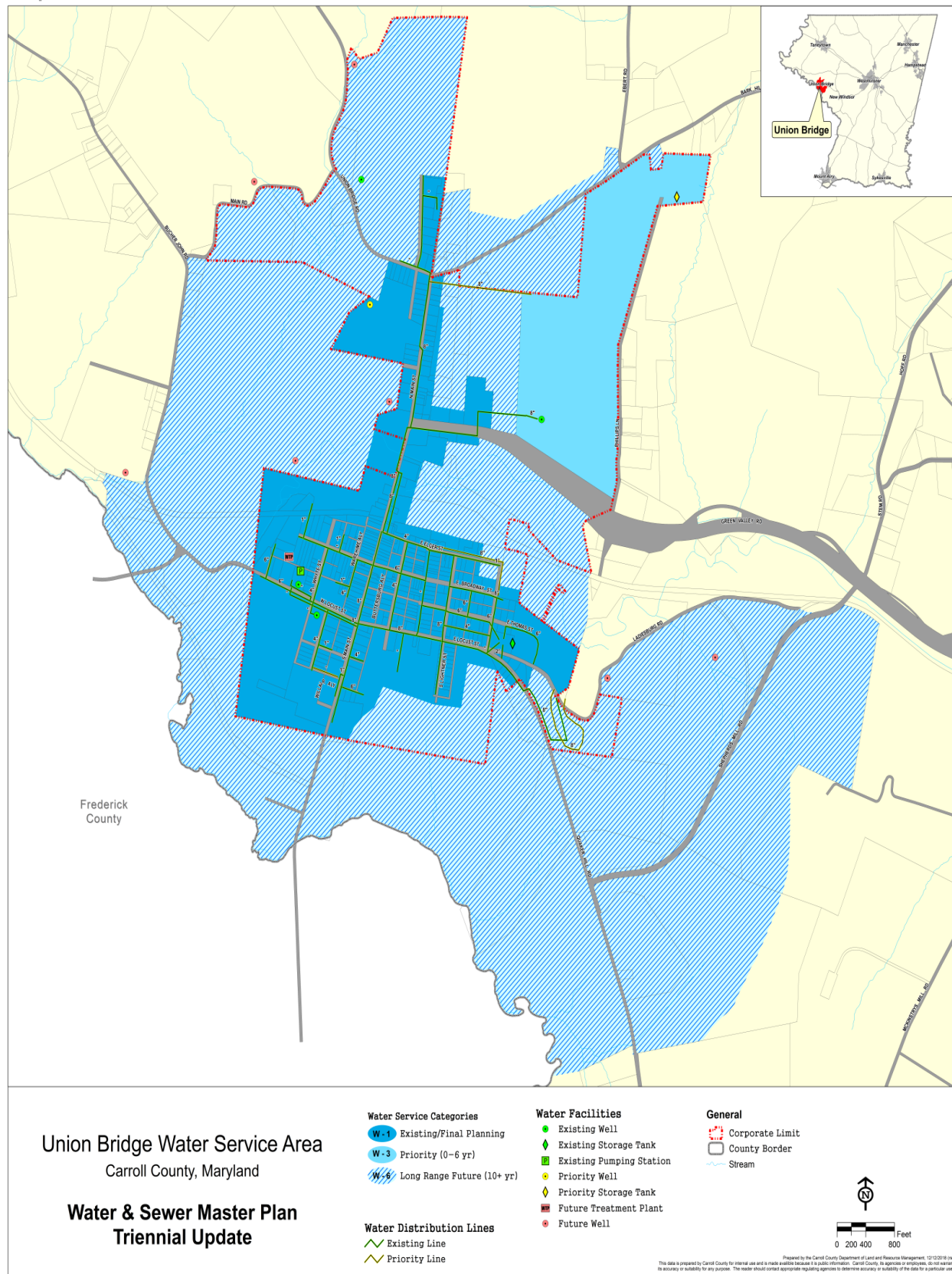


Table 13A: Union Bridge WSA Appropriations

6-Digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Middle Potomac	Locust St. and Whyte St. Wells (Wells #1 and #2)	CL1979G048 (05)	166,000	200,000
Middle Potomac	Phillips Well (Well #3) (not in use)	CL1979G148 (03)	42,300	82,000
Total			208,300	282,000

Table 13B: Union Bridge WSA Average Daily Use

Water Source	Max. Safe Yield (MGD)	Avg. Daily Use (MGD)	Max. Peak Flow (MGD)
Well (Locust Street) #1	0.576	0.133	unknown
Well (Whyte Street) #2	0.101	0.033	unknown
Well (Phillips Lane) #3	0.144	Pending	unknown
Total	0.821	0.166	unknown

Table 13C: Union Bridge WSA Storage Tank

Water Source	Storage Capacity (mg)
Elevated Storage Tank	0.300

Allocation Procedure

A lack of new subdivision activity in Union Bridge has resulted in a first come, first served allocation procedure for Town water services, subject to specific provisions in annexation agreements. Any new development activity that necessitates an expansion of the existing water system will be required to provide the additional water at the sole financial responsibility of the developer; no burden for the expansion will be borne by the existing residents of Union Bridge. No reservations or set aside policies are provided for business or industrial users. However, the Town reserves the right to adopt a policy to reserve a portion of its water and sewerage capacity for commercial and industrial uses. A water benefit assessment fee is charged for all new residential and commercial users.

Needs Analysis

To plan for and secure needed public drinking water to meet the demand generated by the approved Union Bridge Community Comprehensive Plan, the Town may consider working with the County to secure water recharge credits on properties covered by land preservation easements. MDE would need to approve deed restriction language to achieve the goal of allocability transference.

Once the Jackson Ridge (Phillips property) subdivision begins construction, the Phillips Well (Well #3) will need to be brought online to serve the development.

The West Locust Street Well #1 (the Town's primary well) is under the influence of surface water and needs to be rehabilitated. However, work on this well cannot proceed until

additional wells are in service that could provide the necessary capacity while the Town's primary well is down. See Table 13D for Union Bridge WSA water problem areas.

Table 13D: Union Bridge WSA Water Problem Areas

Location	Population	Nature of Problem	Status
Locust Street Well (Well#1)	1,049	influence of surface water	cannot proceed until add'l wells are online

Planned Projects and Recommendations

See Table 13E for Union Bridge priority projects.

Table 13E: Union Bridge WSA Priority Projects

Project Name	Planning Category	Description	Location	Added Capacity
Phillips Well (Well #3)	Priority (W-3) 5 years	Developer driven project to bring the well on line	Phillips Lane	.042 MDG*

* Capacity adding project is driven by the demand generated from the Jackson Ridge Development

Long-Term Recommendations (10+ years)

- ♦ Investigate the potential to withdraw water from the existing Lehigh pond to treat and use as potable water.
- ♦ Drill and develop additional groundwater wells (based on the average MDE appropriation of existing Union Bridge wells) to meet projected additional demand within the service area.
- ♦ Build 300,000 water storage tank on the Northeast quadrant of the Phillips property.
- ♦ Re-line and rehabilitate Well #1 to address surface water influence.

Westminster Water Service Area

Portions of the information provided in this chapter for the City of Westminster are excerpted from the most recent Water Supply Capacity Management Plan, submitted to the Maryland Department of the Environment in February 2018. The Westminster WSCMP was prepared for the City by GHD Pty Ltd.

Current Conditions

The City of Westminster's water supply system is comprised of 13 water supply wells (one additional well with the inclusion of the Bramble Hills System Well), one augmentation well, three surface water sources, an emergency surface water supply, an emergency ground water supply, and a 121.8-million gallon (MG) raw water reservoir. The City's treatment and storage system consists of two surface water treatment plants (WTPs), two booster pump stations, one clear water reservoir, and four finished water storage tanks. Although the City operates one large water system, the City manages and operates two sub-systems: Wakefield Valley System and Cranberry System. The Wakefield Valley system includes two wells (Well No. 1 and Well No. 2) and a water storage tank and the remaining assets are included in the Cranberry system. The Wakefield Valley Wells No. 1 and No. 2 were originally an independent water distribution system but have been connected by a valve with the City's Cranberry water distribution system. The valve connecting the two systems is normally closed; however, the systems can be used to supplement each other, if necessary. The Cranberry distribution system operates with a higher pressure; therefore, water enters the Wakefield Valley distribution system through a pressure reducing valve. The Wakefield Valley well pumps can be used to augment the water supply in the Cranberry distribution system. The operation of the City's existing facilities is described in more detail in the following sections.

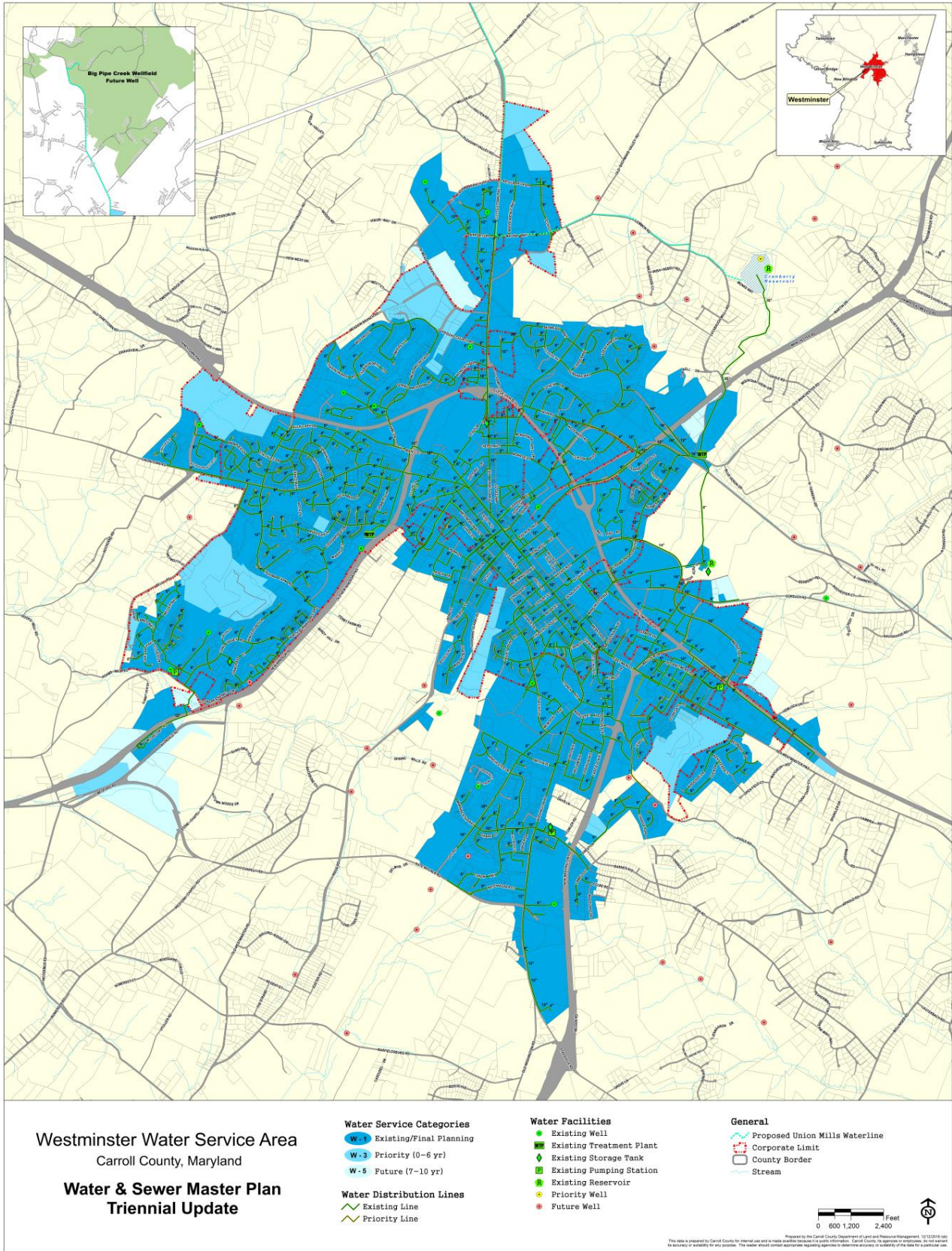
Regulatory Setting

The City of Westminster first developed a Water Supply Capacity Management Plan (WSCMP) in August 2006. The results of the August 2006 WSCMP indicated that the City had an existing *Drought of Record Water Deficit*. Upon completion of the WSCMP and following meetings with the Maryland Department of the Environment (MDE), the City entered into Agreement No. 998. Based on the requirements in Agreement No. 998, the City completed an Updated Water Supply Capacity Management Plan in 2008 in accordance with the 2006 MDE Water Supply Capacity Management Plan Guidance Document.

Since completion of the 2008 WSCMP, the City has pursued several actions to increase the available water supply and to mitigate increasing demands on the existing system. Further, following the last WSCMP (2014), the City has received increased permitting for existing wells in Wakefield Valley, adopted a new water allocation policy, and continues to make progress on the Gesell Well. In 2018, the Gesell Well is expected to be commissioned and provide 165,000 gpd of new allocable water for use.

In accordance with Agreement No. 998 and the 2008 WSCMP, the City has limited the approval of plats based on water supply availability, implemented water conservation programs, performed water audits, updated water metering and billing systems, and implemented regulations to allow water restrictions in the event of a drought. The City is pursuing short-, mid- and long-term strategies in order to increase its supply of water from existing sources and expand access to new sources, including water reuse options.

Map 20



Updated Charts from 2014 Carroll County Water & Sewer Master Plan

The chart below provides updated information from the City of Westminster's Public Works Department in response to a request by Carroll County Department of Planning for updated information in this format.

Westminster Water Service Area Appropriations UPDATED

6-digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Middle Potomac	Cranberry Water Treatment Plant	CL1957S002(10)	2,000,000	3,000,000
Middle Potomac	Koontz Well John Street (for stream augmentation only)	CL1977G036(07)	500,000	750,000
Middle Potomac	Air Business Center (Well #4)	CL1977G136(06)	86,000	94,000
Middle Potomac	County Maintenance Facility (Well #3)	CL1977G236(05)	100,000	120,000
Middle Potomac	South Center Street (Well #6)	CL1977G336(04)	95,000	111,000
Middle Potomac	Krider's Church Road (Well #5)	CL1977G436(04)	230,000	280,000
Middle Potomac	Wakefield Valley Wells (1 & 2)	CL1977G536(04)	293,000	500,000
Middle Potomac	Carfaro (Well #7)	CL1977G636(05)	233,000	303,000
Middle Potomac	Vo-Tech (Well #8)	CL1977G736(04)	119,000	155,000
Middle Potomac	Koontz Property (Wells 9 & 10)	CL1977G836(03)	125,000	130,000
Middle Potomac	Roops Mill (Well #11)	CL2000G025(03)	120,000	150,000
Middle Potomac	Gesell Well (Well #12)*	CL2007G019(01)	330,000*	1,532,000
TOTAL			4,231,000*	7,125,000
Note: Medford Quarry (Emergency Source)		CL2002G042(03)	482,000	750,000

* Gesell Well (Well #12) is in the process of being commissioned for 165,000 gpd of new allocable water.

The chart below provides updated information from the City of Westminster's Public Works Department in response to a request by Carroll County Department of Planning for updated information in this format.

**Westminster Water Service Area Daily Use
UPDATED**

Water Source	Storage Capacity (MG)	Maximum Safe Yield (MGD)	Average Daily Use (MGD)	Maximum Peak Flow (MGD)	WTP Capacity (MGD)
Cranberry Water Treatment Plant		3.000	1.800	3.000	2.750
Wells 1 and 2 – Wakefield		0.500	0.183	0.500	0.197
Well 3 – County Maintenance		0.120	0.085	0.120	0.100
Well 4 – Air Business Center		0.094	0.072	0.094	0.170
Well 5 – Krider's Church Road		0.280	0.158	0.280	0.230
Well 6 – South Center Street		0.111	0.105	0.111	0.100
Koontz Creamery (John Street)		0.750	0.255	0.750	0.500
Well 7 – Carfaro		0.303	0.130	0.303	0.300
Well 8 – Vo-Tech		0.155	0.082	0.155	0.199
Wells 9 and 10 – Koontz Property		0.130	0.080	0.130	0.125
Well 11 – Roops Mill		0.150	0.106	1.532	0.150
Well 12 - Gesell*		1.532	-	1.532	-
Raw Reservoir Cranberry	125				
Wakefield Valley Water Storage Tank	2				
Clear Reservoir	1				
McDaniel College Water Tank	.5				
Hook Road Water Tank	1.5				
Gorsuch Road High Zone Water Tank	2				
Hook Road Booster Tank	-				
High Zone Booster Station	-				
TOTAL	132	4.125	3.056		

Additionally, a comparison of the updated charts from the prior Carroll County Water & Sewer Master Plan reveals that there may be the future potential for the City to recapture some already allocated water.

**Westminster Water Service Area Daily Use Comparison
NEW**

Water Source	Permitted Daily Average Use (MGD)	Reported Average Daily Use (MGD)	Potentially Re-Allocable (MGD)
Wells 1 and 2 – Wakefield	0.293	0.183	0.110
Well 3 – County Maintenance	0.100	0.085	0.015
Well 4 – Air Business Center	0.086	0.072	0.014
Well 5 – Krider’s Church Road	0.230	0.158	0.072
Well 6 – South Center Street	0.095	0.105	-0.010
Well 7 – Carfaro	0.233	0.130	0.103
Well 8 – Vo-Tech	0.119	0.082	0.037
Wells 9 and 10 – Koontz Property	0.125	0.080	0.045
Well 11 – Roops Mill	0.120	0.106	0.014
Well 12 - Gesell*	-	-	-
TOTAL	1.401	1.001	0.400

* Gesell Well (Well #12) is in the process of being commissioned for 165,000 gpd of new allocable water.

Due to water conservation measures over many years, the City has evidence from its own data and from large, institutional users that water use for current, existing uses has been decreasing significantly. As a result, in the future the City will be looking for ways to recapture allocable water in conjunction with the Maryland Department of the Environment, so water savings from good practices could be re-allocable.

This is especially important since the City is currently only able to allocate for new water uses from the Gesell Well, which is expected to be commissioned with 165,000 gpd in 2018. The unused water above, which appears to be about 400,000 gpd, would be in addition to any water from the new Gesell well.

Needs Analysis

Ground Water Supply

The City has appropriation permits for 13 water supply wells located throughout the City (one additional well with the inclusion of the Bramble Hills System Well). In addition, the City owns and operates the Koontz Creamery well that is used to augment an unnamed tributary of the Patapsco River. The operation of the Koontz Creamery well is discussed in more detail in the following sections. The table below summarizes the permitted capacities of the existing wells. The operation and production of the wells are explained in more detail in the following sections.

Permitted Well Withdrawal Capacities

Well No.	Source	Annual Average Permitted Withdrawal (MGD)
1 & 2	Wakefield Valley	0.293
3	County Maintenance Building	0.100
4	Airport (Air Business Center)	0.086
5	Krider's Church Road	0.230
6	South Center Street	0.095
7	Carfaro	0.233
8	Vo-Tech	0.119
9 & 10	Koontz Property	0.095
11	Roop's Mill	0.120
12	Gesell ⁽¹⁾	0.1375
N/A	Greenvale Mews ⁽¹⁾	0.027
N/A	Koontz Creamery ⁽²⁾	0.500

Notes:

1. The Gesell, Greenvale Mews Well, and Little Pipe Creek intake are all supplementary to each other. Their combined annual average permitted withdrawal is 0.330 MGD.
2. Koontz Creamery well is used to augment an unnamed tributary of the Patapsco River during low flow periods to maintain low flow stream requirements. At this time, the Koontz Creamery well cannot be used as a drinking water supply well.

Surface Water Supply and Storage

The City of Westminster has three surface water sources, one emergency water supply, and one augmentation well to supplement the surface water to meet flow-by requirements during lower flow periods. Two surface water intakes are located on tributaries that feed the Patapsco River. One surface water intake is located on Cranberry Branch, which is a tributary of the West Branch of the Patapsco River. Approximately 7,500-feet of 30-inch transmission line are used to convey water by gravity from Cranberry Branch into a raceway and to the Cranberry WTP for treatment.

The second surface water intake is located on a tributary of the West Branch of the Patapsco River known as Hull Creek. A small surface water impoundment and an infiltration

gallery are located in Bennett Cerf Park. Raw water flows by gravity through a transmission line to the Cranberry WTP for treatment. The third surface water intake is Little Pipe Creek.

The City also owns and operates the Cranberry Reservoir, which is a 121.8-MG raw water reservoir located along Cranberry Branch north of Lucabaugh Mill Road. The water in the Cranberry Branch Reservoir is used when low flow conditions result in inadequate surface water supply from Cranberry Branch and Hull Creek. In 2011, a solar-powered mixer was installed in the reservoir to address stratification and mitigate algal growth. Raw water from the reservoir flows by gravity through the 30-inch transmission main to the Cranberry WTP. During periods of higher stream flow, a raw water pump, 600 gpm (0.864 MGD), is used to pump water from Cranberry Branch into the Cranberry Reservoir.

The City maintains a water appropriation and a use permit that governs the withdrawal from the two surface water intakes from the Patapsco River. The permit allows an annual daily average The Koontz Creamery well was purchased by the City in 1974 to meet the City's increasing water demand; however, the ground water supply to the Koontz Creamery well is contaminated with hydrocarbons. Therefore, it is not directly connected to the City's potable water system. Due to the increased withdrawal from Cranberry Branch and Hull Creek, MDE permitted the augmentation of the river flow with pumped water from the Koontz Creamery well through a state-approved discharge permit. The mixing, dilution, and aeration of the Koontz Creamery well water dissipates the hydrocarbons. The City maintains Water Appropriation and a Use Permit that allows a water withdrawal of an annual average of 0.5 MGD and daily average of 0.75 MGD for the month of maximum use. The water from the Koontz Creamery well is pumped into an unnamed tributary of West Branch to augment the flow in the West Branch Basin when the flow at the gauge station is less than 0.85 cfs (0.549 MGD) and continues to augment flow until the stream flow exceeds 1.62 cfs (1.05 MGD). The Koontz Creamery Well Preliminary Engineering Report Evaluation / Concept Design was finalized in January 2008. The 2106 WSCMP recommendation was to operate the well continuously and limit withdrawals during low-flow conditions to maintain flow-by requirements. This recommendation would require a permit modification to eliminate the low-flow augmentation limitation. Approval and implementation of the recommendations would increase the reliable capacity from the surface water system.

The City also has a water appropriation and use permit for surface water withdrawal from Little Pipe Creek. The City is authorized to withdraw a daily average of 0.165 MGD on a yearly basis and a maximum daily withdrawal of 1.1 MGD. The permit became effective on August 1, 2011. The Little Pipe Creek permit is a joint permit with the Gesell and Greenvale Mews well permits. Any source may utilize the entire combined permitted amount (0.330 MGD). The flow-by conditions of the permit require that a continuous flow-by of at least 1.5 cfs (0.969 MGD) be maintained downstream of the intake from July 1st to November 30th. From December 30th to June 30th, a continuous flow-by of at least 3.0 cfs (1.94 MGD) downstream of the intake is required. The City is currently able to allocate water from Gessell.

In addition, there is a permit that defines the conditions for an emergency withdrawal during a City water supply emergency (drought conditions). The City may withdraw water, via an emergency pump, from the West Branch of the Patapsco River at the Cranberry WTP when

low flow conditions exist provided the withdrawal is authorized in writing by the Administration (Maryland Department of the Environment) and water use restrictions have been instituted within the Westminster service area. Two emergency pumps, 600 gpm each (0.86 MGD), are available to transfer water from the West Branch to the Cranberry WTP. Additionally, all water withdrawn from the West Branch must be returned by pumping the Koontz Creamery well.

Permitted Well Withdrawal Capacities

Location Name	Permit Number	Annual Average Permitted Withdrawal (MGD)
Cranberry Branch & West Branch	CL1957S002(09)	1.838
Little Pipe Creek ⁽¹⁾	CL2006S025(01)	0.165

Note:

1. The Gesell, Greenvale Mews Well, and Little Pipe Creek intake are all supplementary to each other. Their combined annual average permitted withdrawal is 0.330 MGD.

Medford Quarry Emergency Water Supply

The Medford Quarry is located in Carroll County on approximately 397 acres generally bounded by Stone Chapel Road and Maryland Route 31. Ground water percolates into the quarry in excess of the quarry's needs. In June 2005, the City signed an agreement which provides the City access to excess ground water that enters the quarry. MDE approved the agreement, which provides the City raw water to serve the existing water customers. The Medford Quarry pump station and pipeline project was completed in 2009 and is operational. However, the permit has been updated recently due to recommendations from the 2014 WSCMP. The Water Appropriation and Use Permit No. CL2002S042(03) allows the use of Medford Quarry as an emergency water supply. The permitted withdrawal limitations are 0.482 MGD on an average daily basis, and 0.750 MGD on a maximum daily basis.

Permitted Raw Water Source Summary

The City has several ground water and surface water sources to provide raw water to the City's treatment plants or distribution systems. Table 3 summarizes the existing permitted capacity of the various sources, representing the annual average permitted capacity during average rainfall conditions. The reliable capacity under drought conditions is discussed in the following sections.

Permitted Raw Water Sources

Source	Annual Average Permitted Withdrawal (MGD)
Wakefield Well Nos. 1 & 2	0.293
Cranberry System Wells No. 3 – No. 11	1.078
Little Pipe Creek, Well No. 12 Gesell, and Greenvale Mews Well ⁽¹⁾	0.330
Cranberry System Surface Water Sources ⁽²⁾	1.838
Total Sources	3.539
Koontz Creamery ⁽³⁾	0.500
Medford Quarry Emergency Supply ⁽⁴⁾	0.480

Notes:

1. The Gesell, Greenvale Mews Well, and Little Pipe Creek intake are all supplemental to each other. Their combined annual average permitted withdrawal is 0.330 MGD.
2. The Total Sources value was calculated by summing Wakefield Well No. 1 & 2, Cranberry System Wells No. 3 – No. 11, Little Pipe Creek, Gesell Well, and Greenvale Mews Well, and Cranberry System Surface Water Sources.
3. Koontz Creamery well is used to augment a tributary of the Patapsco River during low flow periods to maintain low flow stream requirements. At this time, Koontz Creamery cannot be used as a drinking water supply.
4. The Medford Quarry Emergency Supply can only be used during emergency conditions.

Average Daily Use

The City's water system serves residential customers within the City's boundaries as well as customers in portions of Carroll County. The population served by the City's water system is summarized on the next page. Water usage is summarized per capita based on the total water sold and the total water produced by the Cranberry and Wakefield systems.

Water Usage per Capita in Cranberry and Wakefield Systems

Year	Water Quantity (MGD)	Total Population Served ⁽¹⁾	Water Usage Per Capita (gpd/capita) ⁽²⁾
Sold Water			
2013	1.99	28,945	68.8
2014	2.13	29,077	73.3
2015	1.96	29,139	67.3
Total Delivered			
2013	2.71	28,945	93.5
2014	2.57	29,077	88.5
2015	2.66	29,139	91.2

Notes:

1. Based on data provide by the City of Westminster Finance and Planning Departments.
2. Water Usage Per Capita = Water Quantity (MGD) * 1,000,000 gal/MG / Total Population Served

Historical Growth Rates

From 2013 through 2015, the residential connections were used to determine the rate of growth for overall increase in residential and non-residential connections. The table below indicates the number of new residential and non-residential connections to the system.

Historical Change in Residential and Non-Residential Connections

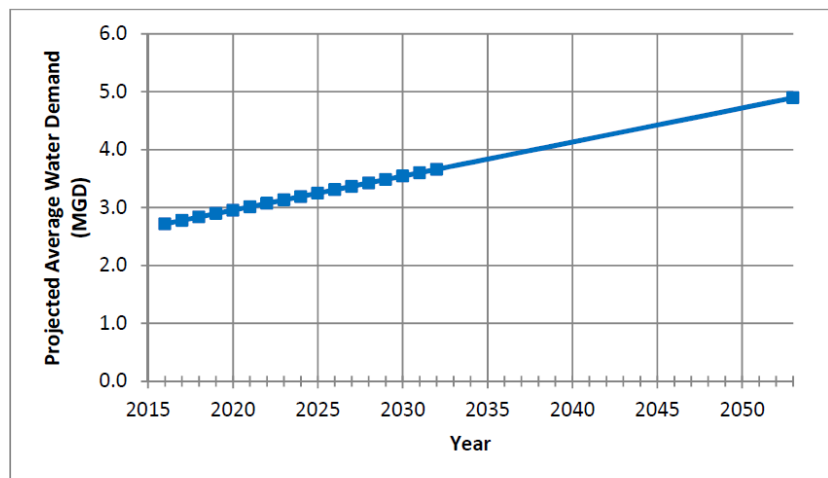
Year	New Residential Connections	New Non-Residential Connections	Overall New Connections
2013	159	-151	8
2014	134	-5	129
2015	103	-2	101
Annual Average	132	-53	79

Projected Growth

The projected build-out for residential connections is based on historical growth trends, number of issued building permits, planned and projected developments and current zoning. The graph on the following page shows the projected growth for the in-City connections and County connections through an estimated build-out year of 2053.

As a result of the City's allocation policy in place since 2015, which allocates a maximum of 0.0588 MGD of water per year, the growth rate of new water was effectively capped. Although this was an effective approach, the City paused all allocations when the planned addition of the Gesell Well was delayed by the required installation of filtration equipment. Gesell Well is in the process of being commissioned for 165,000 gpd of allocable water. The City expects to adopt a new allocation system to allocate this water.

Projected Build-out Water Demand



New Allocations Procedure

On June 23, 2017, the City temporarily suspended the processing of applications requiring a net new water allocation for nine months. The City expects to be able to process applications, after Friday, March 23, 2018, absent unforeseen circumstances, as of the date of submittal of this chapter.

The City adopted a new allocation policy on March 26, 2018. The policy addresses the allocable water pursuant to the current permits issued by the Maryland Department of the Environment. With the commissioning of the Gesell Well, there is a total of 173,447 gpd of allocable water available for new water uses.

Recommendations for Long-Term System Growth (10+ years)

The 2018 Westminster Water Supply Capacity Management Plan recommended the following for future projects to increase the water supply capacity available to the City of Westminster in future years.

- **Big Pipe Creek:** The use of Big Pipe Creek at Union Mills has been in the Carroll County Water & Sewer Master Plan since the 1960s. Big Pipe Creek has a significantly larger watershed than the existing Cranberry intake, which results in a substantial increased baseline stream flow when compared to the existing Cranberry Branch water supply. The initial plan to utilize Big Pipe Creek involved the construction of the raw water intake, off-line reservoir, raw water pump station and raw water main to transfer water into the existing water system.
- **Hyde's Quarry:** Hyde's Quarry is located within a 60.15 acre parcel owned by the Commissioners of Carroll County. The quarry itself is approximately 8.3 acres in size, with no obvious tributaries adding to or draining from the quarry. Preliminary testing/monitoring of Hyde's Quarry has shown promise for significant withdrawals without deleterious effects on nearby water resources.
- **Purchase of Finished Water from City of Baltimore:** The City of Baltimore has a large water supply and treatment system. An agreement could be developed to allow the City of Westminster to purchase water from the City of Baltimore.
- **Purchase of Finished Water from a Private Pennsylvania Water System:** A private Pennsylvania water system has a large water supply and treatment system. An agreement could be developed to allow the City of Westminster to purchase water from this private supplier.
- **Conservation:** Continue to encourage commercial water users to practice water reuse. Although some commercial users are currently reusing water, increasing the amount of water reuse would be advantageous for reducing future water demand.

Additionally, the City is actively pursuing water re-use and is approaching the State regarding this issue.

Future Solutions Advantages and Disadvantages

Big Pipe Creek	Hydes Quarry	Purchase of Finished Water
Advantages: <ul style="list-style-type: none"> Identified as future reservoir site by City, County and MDE in 1960s Largest untapped water source within close proximity of the City (Approx. 12 mi. from city) Staged Implementation option Provides ability to meet minimum stream flow requirements at Cranberry Gauge Station Identified as future reservoir site by City, County and MDE in 1960's Consistent with State's Smart Growth Initiative City owned infrastructure 	Advantages: <ul style="list-style-type: none"> Withdrawal of 600,000 GPD observed during testing without deleterious effects on nearby water resources 1.35 MGD withdrawal achievable for a limited amount of time Owned by the Commissioners of Carroll County Currently recommend a surface water annual average appropriation of 400,000 gallons per day (GPD) and max daily withdrawal of 800,000 GPD 	Advantages: <ul style="list-style-type: none"> Reduced infrastructure required with construction of raw water main and pump station for conveying water from Reisterstown Potential reduction in MDE permitting requirements Potential reduction in operational complexity Wells become back-up supply Provides ability to meet minimum stream flow requirements at Cranberry Gauge Station
Big Pipe Creek	Hydes Quarry	Purchase of Finished Water
Disadvantages: <ul style="list-style-type: none"> Extended permitting process Substantial capital cost for raw water main and raw water storage reservoir Requires cooperative effort between City, Carroll County and MDE 	Disadvantages: <ul style="list-style-type: none"> Results of testing are not necessarily indicative of anticipated yields under summertime or drought conditions. Further testing/monitoring recommended 	Disadvantages: <ul style="list-style-type: none"> Reliance on the an outside source for finished water with significant reduction in operational control Potential political ramifications Substantial capital and operating costs for purchase of finished water Potential for disinfection by-product formation due to long travel time for finished water Requires cooperative effort between City of Westminster, Carroll County, MDE and the water supplier

Priority Projects for Continuous System Upgrades

The final section of this chapter updates the priority projects identified by the City of Westminster's Public Works Department. These are in addition to the recommendations identified in the 2018 Water Capacity Management Plan above. These projects represent continuous and ongoing system upgrades.

The chart below provides updated information from the City of Westminster's Public Works Department in response to a request by Carroll County Department of Planning for updated information in this format.

Westminster Water Service Area Priority Projects

Project Name	Planning Category	Description	Location	Added Capacity
Main Street Water Main	Priority (W-3) 5 years	Upgrade existing line to 12" water main	Main St. from Longwell Ave. to Penn Ave.	0 MGD
Water Treatment Plant Supply Main	Priority (W-3) 10 years	Renovate 30" water transmission line	Supply line from raw reservoir to Water Treatment Plant at Cranberry	0 MGD
Park Avenue Water Main	Priority (W-3) 5 years	Replace two 4" waterlines with 6" water main	Park Avenue from W. Green St. to W. George St.	0 MGD
Winters Street Water Main	Priority (W-3) 5 years	Replace existing lines with 6" water main	Winters St. from Railroad Ave. to John St.	0 MGD
Ridge Road Water Main	Priority (W-3) 5 years	Design and construct an 8" and 6" water main as a replacement for an old 2" and 4" main	Old New Windsor Rd. to Westmoreland St. to the dead end of the line on Ridge Road	0 MGD
Sophia Ave. Water Main	Priority (W-3) 5 years	Design and construct an 8" ductile iron water main, replaces existing asbestos concrete pipe	Fairfield Ave. to Gist and Washington Roads	0 MGD
John St. Water Main	Priority (W-3)	Design and construct 6" water main replacement	John St. between W. Main St. and Winters Alley	0 MGD

Replacement (only)

Replacement				
James St. Water Main Replacement	Priority (W-3) 5 years	Design and construct 6" water main replacement	James St. from Kemper Ave. to the alley	0 MGD
MD 27 Water Main	Priority (W-3) 5 years	Replace existing main with a new 16" DIP main to reduce breaks	MD 27 corridor	0 MGD
Big Pipe Creek Pipeline/Well Field	Future (W-5) 10 years	Design and construct a pipeline from Union Mills to the City of Westminster and develop well field to augment existing sources	Union Mills to Westminster along MD Route 97	.5 MGD
MD 140 Parallel Water Main	Future (W-5) 10 years	Construction of parallel main to equalize pressure and improve system operations	MD 140 corridor	0 MGD
Increased Reservoir Surface Elevation	Future (W-5) 10 years	Increase capacity of reservoir by increasing the water surface elevation	Cranberry Reservoir	0 MGD
Interzone Main	Future (W-5) 10 years	Connect zones with a new 12" main to enhance operations	Poole Road vicinity	0 MGD
New Water Supply	Priority (W-3) 5 years	Study and develop a new water source	Westminster area	TBD
Little Pipe Creek Intake	Priority (W-3) immediate	Design and construct intake near City's WWTP to supplement Gesell Well, Bramble Hills	MD Route 31 and Old New Windsor Road	.5 MGD

Projected Water Supply Demands and Projected Capacity

The following table summarizes projected water demand over the next ten years. It incorporates planned capacity improvements that respond to the demand projections.

Table 15 ¹																		
Projected Water Supply Demands and Planned Capacity																		
Service Area	Present Year						Priority Planning (0-6 Year)						Future Planning (7-10 Year)					
	Res. Pop. Ser.	G P C D	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.	G P C D	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.	G P C D	Capacity Million Gal. Daily (MGD)			
			Res. Dem.	Oth. Dem.	Tot. Dem.	Ex. Cap.			Res. Dem.	Oth. Dem.	Tot. Dem.	Pl. Cap.			Res. Dem.	Oth. Dem.	Tot. Dem.	Pl. Cap.
Freedom/Sykesville	22,867	80	1.837	0.097	1.934	4.427	31,775	85	2.71	0.499	3.209	4.427	31,199	86	2.73	0.514	3.244	7.0
Hampstead	5,960	47	0.279	0.072	0.351	0.630	7,540	55	0.420	0.277	0.697	0.770	8,021	57	0.464	0.290	0.754	0.945 ²
Manchester	5,370	47	0.256	0.036	0.292	0.581	6,550	55	0.361	0.048	0.409	0.606	6,884	56	0.391	0.048	0.439	0.606
Mount Airy ³	9,786	64	0.628	0.177	0.805	0.927	10,139	68	0.692	0.305	0.997	1.079	10,139	68	0.692	0.305	0.997	1.079
New Windsor ⁴	1,449	62	0.090	0.016	0.106	0.196	2,054	63	0.130	0.050	0.180	0.196	2,054	63	0.130	0.218	0.348	0.446
Taneytown ⁵	7,017	40	0.280	0.075	0.355	0.601	8,781	50	0.434	0.157	0.591	0.601	8,781	50	0.434	0.157	0.591	0.601
Union Bridge	977	55	0.053	0.045	0.098	0.208	1,803	74	0.134	0.074	0.208	0.250	1,803	74	0.134	0.074	0.208	0.250
Westminster ^{6,7}	29,308	91	2.66	0.396	3.056	4.231	30,464	91	2.768	0.465	3.233	4.731	30,464	91	2.768	.531	3.299	5.231

¹ See Appendix 3 Method for Projecting Water Supply and Sewer Demands.

² Florida Rock Property has a total allocation of 82,816 gpd. On the Water Map for Hampstead this property shows as Priority. The allocation is split 63,816 gpd in the Priority Water Service Area and 19,200 gpd in the Future Service Area.

³ Mount Airy's Total Demand includes 119,640 gpd to account for drought conditions (which is 12% of total demand). The Priority calculations were provided by the Town of Mount Airy.

⁴ New Windsor's Priority and Future calculations are based on 165 gal per unit for residential demand.

⁵ Mount Airy, Taneytown and Union Bridge do not have any properties in the Future Planning Category.

⁶ Westminster's Priority and Future calculations are based on 235 gal per unit for residential demand and 55 gallons/1,000 s.f. other demand.

⁷ Westminster does not have any residential properties in the Future Planning Category.

Section V: Unincorporated Water Supply

Approximately 257,324 acres or 89 percent of the total land in Carroll County lie outside of existing or planned public water supply service areas. Properties located outside of a public water supply service area derive water from private wells. These wells are not required to have appropriation permits from MDE, primarily because they withdraw less than 10,000 gallons per day of water. However, there are some uses, such as schools, industries, mobile home parks and recreational facilities that are not in a public water supply service area and withdraw low to moderate amounts of water using a private well. In addition, some water supply exploration and development projects maybe located outside the traditional/currently planned water service areas. These uses withdraw enough water that MDE has determined that an appropriations permit is necessary. This section of the plan covers such uses.

Current Conditions

Most of the private wells that have relatively moderate demand numbers are not intended to accommodate growth. They serve a specific purpose or population that is not expected to change significantly over time. The demand numbers and inventory of appropriations provided in the tables below reflect this. See Table 15A for the County's unincorporated water supply on the following page.

Table 15A: County Unincorporated Water Supply

SERVICE AREA	PRESENT YEAR						PRIORITY PLANNING (0-6 Year)						FUTURE PLANNING (7-10 Year)					
	POPULATION			GCPD	CAPACITY MILLION GAL. DAILY (MGD)		POPULATION			GCPD	CAPACITY MILLION GAL. DAILY (MGD)		POPULATION			GCPD	CAPACITY MILLION GAL. DAILY (MGD)	
	TOT.	SER.	UNS.		DEMAND	EXISTING CAPACITY	TOT.	SER.	UNS.		DEMAND	PLANNED CAPACITY	TOT.	SER.	UNS.		DEMAND	PLANNED CAPACITY
PUBLIC SCHOOLS ¹																		
Charles Carroll Elem. ²			0			0.0064						0.0064						0.0064
Mechanicsville Elementary		541	0	3.0	0.0016	0.0140		568	0	10.0	0.0057	0.0075		612	0	10.0	0.0061	0.0075
Sandymount Elementary		523	0	3.8	0.0016	0.0050		552	0	10.0	0.0055	0.0050		595	0	10.0	0.0059	0.0050
South Carroll High School		1,146	0	10	0.0049	0.0100		968	0	12.5	0.0121	0.0100		1,011	0	12.5	0.0126	0.0100
Winfield Elementary		638	0	4.0	0.0022	0.0027		676	0	10.0	0.0068	0.0027		726	0	10.0	0.0073	0.0027
Runnymede Elementary		655	0	3.4	0.0019	0.0250		696	0	10.0	0.0070	0.0250		754	0	10.0	0.0075	0.0168
PRIVATE COMMUNITY, MULTI-USE, OR PRIVATE SCHOOL																		
Ashley MHP	153	153	0	75	0.0115	0.0070	153	153	0	75	0.0115	0.0070	153	153	0	75	0.0115	0.0070
Bowling Brook Prep. School	149	149	0	58	0.0086	0.0330	523	523	0	73	0.0383	0.0330	523	523	0	73	0.0383	0.0330
Gaither Manor Apartments	400	400	0	75	0.0300	0.0250	400	400	0	75	0.0300	0.0250	400	400	0	75	0.0300	0.0250
Gerstell Academy	205	205	0	2.5	0.0005	0.0240	400	400	0	12.5	0.0050	0.0240	690	690	0	12.5	0.0086	0.0240
Golden Age Guest Home	50	50	0	100	0.0050	0.0056	50	50	0	100	0.0050	0.0060	50	50	0	100	0.0050	0.0060
Hillandale MHP	438	438	0	60	0.0263	0.0140	438	438	0	60	0.0263	0.0140	438	438	0	60	0.0263	0.0140
Lakeview MHP	99	99	0	75	0.0074	0.0800	99	99	0	75	0.0074	0.0800	99	99	0	75	0.0074	0.0800
Pheasant Ridge Estates MHP	303	303	0	75	0.0227	0.0200	303	303	0	75	0.0227	0.0200	303	303	0	75	0.0227	0.0200
Pleasant View Nursing Home	100	100	0	100	0.0100	0.0090	100	100	0	100	0.0100	0.0090	100	100	0	100	0.0100	0.0090
Ramblin' Pines Campground	468	468	0	57	0.0267	0.0461	468	468	0	57	0.0267	0.0461	468	468	0	57	0.0267	0.0461
Reservoir MHP	84	84	0	75	0.0063	0.0066	84	84	0	75	0.0063	0.0066	84	84	0	75	0.0063	0.0066
River Valley Ranch	477	477	0	50	0.0239	0.0239	477	477	0	50	0.0239	0.0239	477	477	0	50	0.0239	0.0239
Rock Brook MHP	123	123	0	75	0.0092	0.0130	123	123	0	75	0.0092	0.0075	123	123	0	75	0.0092	0.0075
Shields Todd Village MHP	234	234	0	75	0.0176	0.0200	234	234	0	75	0.0176	0.0200	234	234	0	75	0.0176	0.0200
Sullivan's MHP	123	123	0	75	0.0092	0.0088	123	123	0	75	0.0092	0.0088	123	123	0	75	0.0092	0.0088
Taylorville M HP	60	60	0	75	0.0045	0.0045	60	60	0	75	0.0045	0.0045	60	60	0	75	0.0045	0.0045
Westminster First Church of the Nazarene							2,230	2,230	0	2.5	0.0055	0.0055	2,230	2,230	0	2.5	0.0055	0.0055
PARKS																		
Camp Hashawha	128	128	0	75	0.0096	0.0096	128	128	0	75	0.0096	0.0096	128	128	0	75	0.0096	0.0096
Gillis Falls							500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050
Patapsco State	1,000	1,000	0	10	0.0100	0.0100	1,000	1,000	0	10	0.0100	0.0100	1,000	1,000	0	10	0.0100	0.0100
Piney Run	500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050
INDUSTRIAL - COMMERCIAL																		
Congoleum Industries	230	230	0	20	0.0046		230	230	0	20	0.0046		230	230	0	20	0.0046	
Development Company of America (Bethel Rd.)	530	530	0	20	0.0106		530	530	0	20	0.0106		530	530	0	20	0.0106	
Finksburg Plaza	500	500	0	20	0.0100	0.0100	500	500	0	20	0.0100	0.0100	500	500	0	20	0.0100	0.0100
Hampstead Industrial Center (former Black & Decker Manufacturing)	472	472	0	20	0.0094		600	600	0	20	0.0120		1,000	1,000	0	20	0.0200	
Joseph A. Bank Clothing	250	250	0	25	0.0063		250	250	0	25	0.0063		250	250	0	25	0.0063	
South Carroll Swim Club	1,234	1,234	0	3	0.0037	0.0077	1,234	1,234	0	10	0.0123	0.0077	1,234	1,234	0	10	0.0123	0.0077
PUBLIC COMMUNITY																		
Totals																		

¹ Includes staff at school² School is closed, building to be used for multi-purpose

See Table 15B for unincorporated county water appropriations.

**Table 15B: Unincorporated County Water Appropriations
(non-municipal and non-agricultural)**

Permit No.	GW* or Surface	Owner	Average Daily Demand (gpd)	Max Day Demand (gpd)	Aquifer Name
Quarries					
CL1970G005	GW	Blue Grass Materials, LLC.	3,240,000	6,375,000	Wakefield Marble
CL1987G083	GW	Lehigh Cement Company	1,000,000	2,000,000	Wakefield Marble
CL1997G026	GW	Blue Grass Materials, LLC.	1,000,000	2,000,000	Wakefield Marble
Industrial					
CL1993S019	S	Congoleum Corporation	500,000	850,000	North Branch
CL1966G029	GW	BTR. Hampstead, LLC.	300,000	360,000	Up. Pelitic Schist Wissahickon
CL2004G019	GW	The ESAB Group, Inc.	144,000	150,000	New Oxford Formation
CL1991S032	S	Colonial Pipeline Company	62,100	720,000	South Branch
CL1987G107	GW	Rite of Passage, LLC.	33,000	53,000	New Oxford Formation
CL1951G002	GW	Thomas, Bennett And Hunter, Inc.	30,000	50,000	Wakefield Marble
CL1965G006	GW	Todd Village, LLC	20,000	35,000	Wissahickon Formation
CL1981G026	GW	S & G Concrete Co.	10,000	12,000	Wissahickon Formation
CL1965G013	GW	Carroll County Board Of Education	10,000	15,000	Up. Pelitic Schist Wissahickon
CL1957G005	GW	Development Company Of America, LLC	10,000	15,000	Up. Pelitic Schist Wissahickon
CL1967G008	GW	AT&T Corp.	9,800	12,700	Up. Pelitic Schist Wissahickon
CL1977G054	GW	Pleasant View Nursing Home	9,000	12,000	Ijamsville Form.-Marburg Schist
CL1981S016	S	CDJ Distillery, LLC	4,900	15,000	Unnamed Tributary
CL2006G024	GW	Mudgett Family, LLC	1,000	1,500	Wissahickon Formation
CL2006G023	GW	Mudgett Family, LLC	500	800	Wissahickon Formation
Private					
CL1963G001	GW	William Schneider Co. Inc., The	20,000	25,000	Wissahickon Formation
CL1960G009	GW	Pheasant Ridge Estates, Inc.	20,000	30,000	Ijamsville Form.-Marburg Schist
CL1970G001	GW	Hillandale, Inc.	14,000	16,000	Up. Pelitic Schist Wissahickon
CL1963G004	GW	Ashley, Michael, Todd	7,000	10,000	Up. Pelitic Schist Wissahickon
MDG490479	GW	Maryland Materials	684,000	1,026,000	
Totals			5,249,300	10,376,300	

*GW = groundwater

Source: Maryland Department of the Environment, July 2009

A number of small communities experience water contamination issues attributed to petroleum and other contaminants. Identifying these areas allows for the possibility that remediation may occur at some point in the future. See Table 15C for unincorporated county water problem areas.

Table 15C: Unincorporated County Water Problem Areas

Area	Location	Population	Nature of Problem	Status
Black & Decker	MD 30		Chemical contamination	Remediation is underway
Finksburg: Pow-r-matic	MD 140 near MD 91	-	Industrial solvent contamination - 2 wells	Remediation is complete; contamination is still present
Finksburg: MD 140 Corridor	MD 140 south of MD 91	20	Petroleum contamination - 10 wells	Remediation is complete; contamination is still present
Finksburg: MD 140 Corridor	East of Brown Rd. to Baltimore Co. line	327	a. Mobile Home Park - high nitrates b. Health issues related to solvent and petroleum contaminations c. Health issues related to salt contamination	None planned
Finksburg-MD 140 Corridor	MD 140 and Suffolk Road	-	High salt levels	None planned
Catalyst Research	Poole Road	-	Contamination including industrial solvents - 2 wells, 1 surface supply	Remediation is complete; contamination is still present
Taylorsville	North of MD 26/MD 27 intersection	-	Petroleum contamination	Remediation is complete; contamination is still present
Taylorsville	Half-mile radius of MD 26/MD 27 intersection	-	Health issues related to salt, petroleum, and nitrate contamination; low well yields	None planned
Colonial Pipeline	East of Morgan Rd., north side of Carroll-Howard County line	-	Petroleum contamination	Remediation is underway
Smallwood Lineboro	MD 32 and Deer Park Rd. Lineboro Rd. (MD 86) south of Pennsylvania State line	- 152	Petroleum contamination Contaminated wells	Under study None planned
Gamber	MD 32 and MD 91	-	Petroleum contamination	Under study
Winfield	MD 26 and MD 94	-	Petroleum contamination	Under study
Alesia	Hoffmanville and Grave Run Road area	30	Volatile organic (fuel) contamination	Under study
Finksburg	Sullivan Mobile Home Park	123	MTBE contamination	Under study

Needs Analysis

At this time, the majority of the systems and problem areas noted in this section are not planned to be connected to a public water supply system. If service areas change or regional water supplies are developed that make connection to a public system more feasible, some of these areas could be connected to a public water supply in the future. Remediation of individual problem areas will be the responsibility of private property owners.

Planned Projects and Recommendations

In coordination with the City of Westminster, begin to explore the possibility of using Hyde's Quarry as a future water source.

CHAPTER FOUR: Sewer Facilities

Section I: General Sewage Disposal

General Overview

At present, the vast majority of county residents are not connected to a community sewer system. It is estimated that in 2010 approximately 32,148 residential septic systems existed in the county, of which 9,178 were located within a designated growth area and may have the potential to be connected to a municipal sewer system at some time in the future. With an estimated 61,594 households existing in the county in 2010, the number of residential septic systems currently in use represents 52 percent of households.

This section contains a general overview of countywide sewage disposal now and in the future as it relates to treatment plant points of discharge, the quality of the streams, and soil conditions for individual disposal systems.

Watersheds

The watershed into which municipal sewage effluent is discharged is significant, particularly because it may result in limitations being placed on the discharge. The county falls within nine major watersheds, three of which have their upper reaches in the State of Pennsylvania. The acreage within each watershed that lies in Carroll County is tabulated below (see Table 16).

Table 16: 8-Digit Watersheds

Watershed	Acres
Lower North Branch Patapsco	565
Liberty Reservoir	87,251
South Branch Patapsco	38,736
Upper Monocacy	27,124
Lower Monocacy	5,463
Double Pipe Creek	105,456
Conewago Creek	3,468
Prettyboy Reservoir	21,024
Loch Raven Reservoir	592
Total	289,679

Source: Carroll County Bureau of Comprehensive Planning, 2013

A brief description of each watershed can be found in the Water Resources Element of the Carroll County Master Plan. Watershed information relates to water and sewer planning most directly in terms of the watershed into which each wastewater system discharges. This information is described for each wastewater system in Section III.

Restriction on New Municipal Discharges

Within the Liberty, Prettyboy, and Loch Raven Reservoir drainage areas, new municipal discharges exceeding 1,000 gpd are prohibited except where failing septic systems must be addressed. This is a direct response to the Reservoir Watershed Management Agreement, a more detailed description of which can be found in Section III of Chapter 2 of this plan.

Soil Disposal System

The ability of the soil to absorb septic tank effluent on a long-range basis is important in the extensive use of individual disposal facilities. Factors influencing the suitability of soils for soil-absorption systems are drainability of the effluent, groundwater level, ability to filter the effluent, and ground slope.

Problem Areas

As mentioned in Chapter Three, Water Supply Facilities, some of the County's older communities are experiencing groundwater contamination due to inadequate septic systems. Existing and potential sewerage problem areas in the County are listed in Section II of this chapter under the Unincorporated Sewer Service Areas section on the table entitled Table 27B "Unincorporated Sewage Area Problem Areas." In order to enhance the water quality in these problem areas, alternative or updated methods of sewage disposal must be implemented. These areas are regulated by the Carroll County Health Department.

Section II: Existing and Proposed Sewer Facilities by Service Area

The following sections describe the County's nine existing publicly owned community sewer systems and the plan for serving the corresponding sewer service areas (SSAs).

Connection to Community Sewer System

In Carroll County, properties within the Existing/Final Planning (S-1) and Priority (S-3) Service Areas will be connected to the community sewer system at the time of development.

It is the responsibility of the developer to arrange for the required engineering and needed lines and facilities to make the connections. Interim individual systems may not be permitted where the utility of record or municipality has an official connection policy and/or code requirement that precludes interim individual systems. Where the utility of record or municipality does not have a connection policy and/or code requirement which precludes new interim individual systems, such interim systems may be considered by the utility of record or municipality where it has been adequately demonstrated that extraordinary or unusual circumstances exist and that authorizing same will not compromise the integrity of the Water & Sewer Master Plan or the County or Municipal Comprehensive Master Plan. It is the intention of the Water & Sewer Master Plan that:

- ♦ Development in the Priority Service Area will not occur without connection to the community system.

- ♦ Development within the Future Service Area (S-5) will be permitted to develop on individual sewer systems, unless
 - Connection to the community system is required by the utility of record or municipality, or
 - Is requested, in which case the service area category must be changed to the Priority Service Area (S-3) in order for the Maryland Department of the Environment to issue construction permits.
 - Under the Annotated Code of Maryland Article 26 - Environment, Section 9-513 the Carroll County Board of Health has authority to grant exceptions to the County Water and Sewer Plan.

Freedom Sewer Service Area

Current Conditions

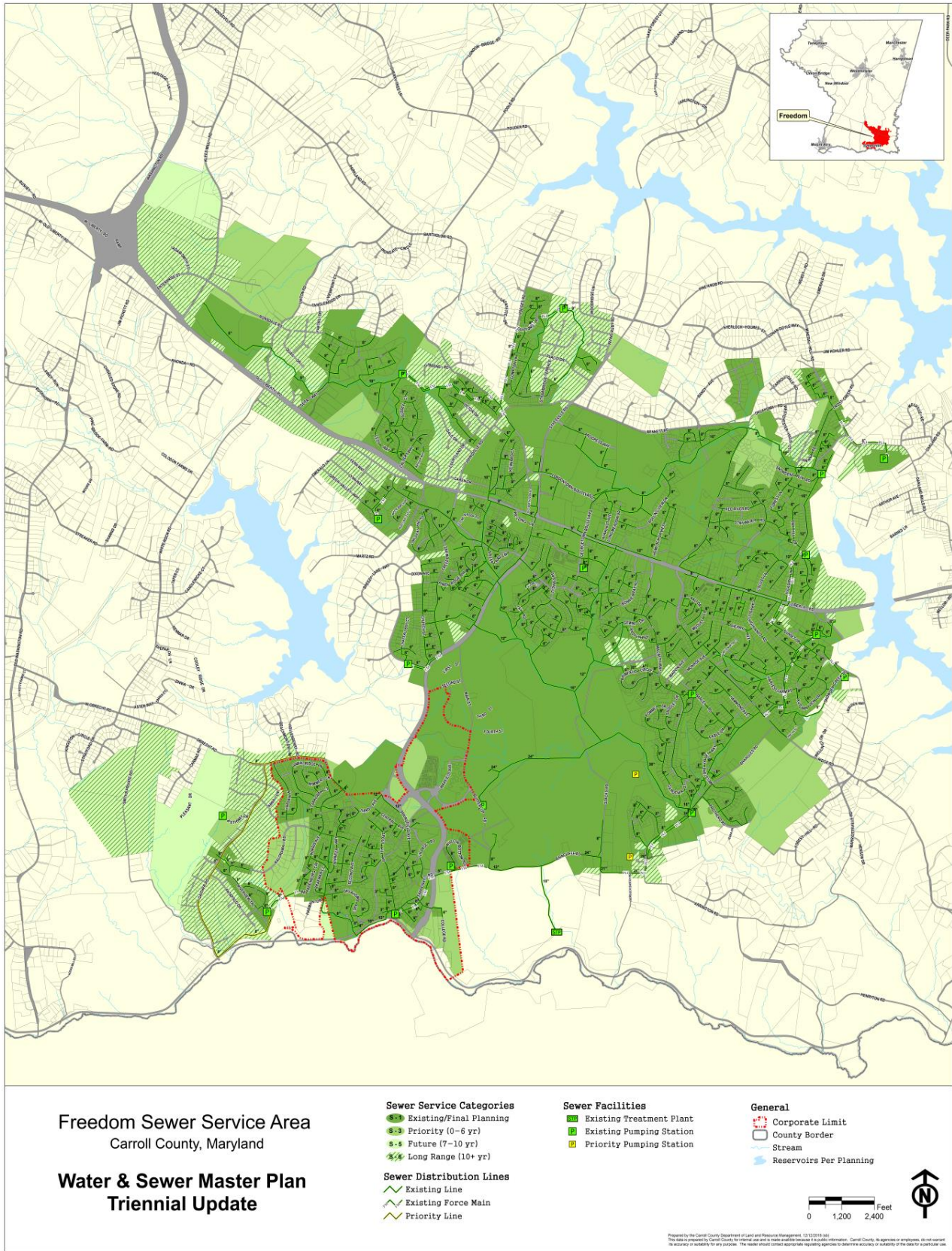
The Freedom SSA is located in southeastern Carroll County and covers approximately 6,755 acres and serves 8,479 EDUs in the Freedom area, including the Town of Sykesville. The Freedom Wastewater Treatment Plant (WWTP) is located near and discharges to the South Branch of the Patapsco River off Raincliffe Road, approximately 2,000 feet east of the Town of Sykesville. See Map 21: Freedom SSA.

The WWTP is owned by the State of Maryland. Operation and maintenance of the plant is the responsibility of Maryland Environmental Service (MES). The County owns and operates the sewage collection and conveyance system, including gravity sewers, force mains, and 11 pumping stations. Maintenance and operation of the sewer lines within the Springfield Complex is the responsibility of MES.

The Freedom WWTP has a design capacity of 3.5 mgd, with a three-year average flow from 2015-2017 of approximately 2.025 mgd. MES is allocated 0.76 mgd for use by State institutions (Springfield complex), and the County is allocated the remaining 2.74 mgd, excluding estimated inflow and infiltration of stormwater (I&I).

The Freedom WWTP process consists of: screening and grit removal; primary sedimentation; an activated sludge process for biological reduction of Biochemical Oxygen Demand (BOD), suspended solids and nitrogen; phosphorus reduction by chemicals; filtration; ultraviolet disinfection; and, effluent aeration by a cascade. Combined primary and waste-activated sludge is thickened by gravity thickeners. The sludge is dewatered by a belt-filter press and stabilized by the addition of quicklime. Each belt-filter is capable of processing 10,130 pounds of solids in a seven-hour shift having a minimum dry solid of 20 percent and a solids capture of 95 percent.

Map 21



Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

See Tables 17A-17D for Freedom SSA infrastructure.

Table 17A: Freedom SSA Treatment Plant

WWTP Treatment	Points of Discharge	WWTP Design Capacity (MGD)	Average Flows (MGD)	Method of Sludge Disposal
Activated sludge	South Branch Patapsco River	3.500	2.025	Land application and evaporation
Discharge Permit Number: 10DP0670 NPDES Number: MD0021512				

Table 17B: Freedom SSA Interceptors

Interceptor	Diameter (inches)	Average Day Flow (MGD)	Design Flow (MGD)
Piney Run – West	24	0.300	4.100
Piney Run – East	18	0.370	2.350
Piney Run – North	18	0.321	2.350
Piney Run – South	30	0.991	6.500
Total		1.982	15.30

Table 17C: Freedom SSA Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
Piney Run #1	N 1331954.74 E 622066.11	3	7.350	10.972	1.352
Sykesville #2	N 1321049.53 E 618402.43	2	0.954	1.340	.230
Carroll Highlands #3	N 1336546.93 E 628512.68	3	1.261	5.394	.248
Lake Forest #4	N 1336160.08 E 631389.92	3	0.860	4.806	.277
Snowdens Run #5	N 1336740.54 E 634314.80	2	0.757	3.888	.141
Pine Hill #6	N 1337589.35 E 626974.86	2	0.154	0.295	.034
Water's Edge #20	N 1321514.27 E 627441.73	2	0.201	n/a	.010
Fairhaven (private)	N 1320315.91 E 623457.36	2	0.288	0.144	n/a
Edgewood #15	N 1321313.83 E 637927.83	2	0.720	n/a	.094
Patapsco Valley #16	N 1316330.09 E 618479.50	2	0.360	n/a	.013
Stone Manor #17	N 1327247.96 E 640303.97	2	0.468	n/a	.031
Woodsyde Estates #18	N 1320426.06 W 632663.82	2	0.187	n/a	.009
South Carroll Senior Center	N1339305.83 E634903.56	2	n/a	n/a	.002
Raincliffe	N1323106.83 E620133.35	2	n/a	n/a	.012
Total		31	13.560	26.839	1.582

*Coordinate locations are Maryland State Plane 1983 Datum.

Table 17D: Freedom SSA Force Mains

Force Main	Maximum Day Pumpage (MGD)	Diameter (inches)	Design Flow (MGD)
Sykesville (Sta #2)	.300	10	Force Main capacity designed for station
Water's Edge (Sta #20)	.015	4	n/a
Snowdens Run (Sta #5)	.196	14	n/a
Lake Forest (Sta #4)	.585	16	n/a
Carroll Highlands (Sta #3)	.375	18	n/a
Pine Hill (Sta #6)	.053	6	n/a
Piney Run (Sta #1)	4.425	20	Force Main capacity designed for station
Edgewood (Sta #15)	.166	10	n/a
Stone Manor (Sta #17)	.066	6	n/a
Woodsyde	.013	6	n/a
Raincliffe	.019	4	Force Main capacity designed for station
South Carroll Senior Center	.007	3	n/a
Patapsco Valley Overlook (PVO) (Sta #16)	.0021	6	n/a
Total	2.620		

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

Solids removed by the primary clarifier, aeration basins, and the secondary clarifiers are pumped from the gravity thickeners to either of two sludge storage tanks. The sludge storage tanks are converted aerobic digesters each with a volume of approximately 164,000 gallons. Each storage tank is equipped with an air diffusion system and vertical mechanical aerator, both useful in minimizing odor problems, preventing solids from settling, and improving the dewatering characteristics of the sludge.

The discharge piping of the three sludge transfer pumps is manifolded together to pump sludge to either a belt-filter press, a tank truck loading connection, or to the sludge drying beds. The plan uses the lime stabilization process for production of stabilized sludge. Sludge discharged from the drying bed is undigested, and requires stabilization prior to final disposal. See Table 17E for Freedom SSA Sludge Management.

Table 17E: Freedom SSA Sludge Management

Quantity	Quality	Method of Disposal/Use	Permit #s	Future Disposal Method	Problems
705 dry tons /year; 3,323 wet tons /year	Lime stabilization	Agricultural land application in Virginia and County landfill	S-99-06-3619-L	Agricultural land application, landfill	None

Allocation Procedure

Carroll County, with 85 percent (+/-) of flows through the Freedom WWTP, administers sewer flow allocations for new development. Allocation is made on a “first come, first served” basis. Each development can request a maximum allocation of 25 sewer hook-ups per quarter. This only applies to residential projects. Allocations are granted based on the Code of Public Local Laws and Ordinances of Carroll County, Chapter 179 – Sewer and Water (formerly County Ordinance No. 46). The code stipulates that allocations shall only be granted upon the execution and acceptance of a standard public works agreement or other agreement as required by County policy, the recordation of an approved subdivision plat and payment of all applicable charges. To determine availability, the County allocates and records capacity or flows for single equivalent dwelling units (EDUs) at the time building permits are approved or at the time area connection charges and any other applicable charges are paid.

For the Freedom SSA, allocations represent capacity set aside to accommodate development for which area connection charges have been paid. These are typically sites for which building permits have already been issued, a site plan has been approved or a minor subdivision has been approved. The capacity is “set aside” for two years after the area connections charges are paid. After two years, it is assumed that the development is connected to the system.

The Carroll County Board of Commissioners may reserve up to 15 percent of treatment plant capacity for industrial use. This number comes from the 2.6 million gallons allocated to Carroll County that are set aside for industrial uses. Also, MES, operators of the WWTP, reserves a flow of 20,000 gallons for its use. This is part of the 0.9 mgd that is reserved for the State of Maryland (Springfield Complex).

The adopted 2018 Freedom Community Comprehensive Plan could potentially add approximately 921 new dwelling units (over what is currently planned), 76 acres of new commercial/ industrial, and 128 acres of Employment Campus properties into the Sewer Service Areas. This new development, along with the slight increase in density on already existing properties within the sewer service area, would generate approximately 478,700 gpd of sewer demand. There are approximately 707,200 gpd reserved for future development; this does not include Warfield at Historic Sykesville. This allocation is set aside from the total available supply number. Existing and Priority Service Areas account for 457,000 gpd in existing future development potential. Of this, there are approximately 250,000 gpd remaining for additional future development.

However, there are approximately 229,250 gpd within the planned service area; this includes Existing/Final Planning, Priority and Future Service Area, reserved for approximately 900 homes with septic systems. This represents a surplus capacity that could be reallocated. Twenty percent (20%) of this reallocated sewer capacity is being reserved for future emergency connections. There are multiple benefits to reallocating capacity to potential growth. Currently, the system is underutilized. The development proposed in this Plan would create new users for the system that would provide funding, through area connection charges, needed for system improvements and infrastructure enhancements.

When adding together the remaining allocation plus the recaptured supply, there are 478,700 gpd available to serve existing and new properties in both the Existing and Priority Service Areas. This leaves 20,200 gpd unable to be served by the current system. Therefore, this demand will be placed into the Future (7-10 year) and Future (+ 10) service area categories until a capacity enhancing project is completed to meet the projected demand and CIP projects can be budgeted for.

Needs Analysis

The County is working to create a process that will evaluate future demand. When capacity of the WWTP reaches 85% it will trigger the County to move forward with an expansion to the plant.

See Table 17F for Freedom SSA sewage problem areas.

Table 17F: Freedom SSA Sewage Problem Areas

Location	Population (Where Applicable)	Nature Of Problem	Status
Gaither Area	383	Septic Problems, small lots, and limited soil capabilities	Under Study

Planned Projects and Recommendations

See table 17G for Freedom SSA priority projects.

Table 17G: Freedom SSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Sykesville Sewer Line Replacement	Future (S-5) 10 years	Replace 28,000-30,000 feet of sewer lines concurrent with replacement of cast iron water lines in phases	Phase I – Main Street, Springfield Ave., MD 851; future phases – various locations in Sykesville	0 MGD
Relief Gravity Sewer Replacement	Priority (S-3) 5 years	Replace gravity sewer lines	Various locations	0 MGD
Expand WWTP	Priority (S-3) or Future (S-5) 5-10 years	Increase the capacity at the WWTP from 3.5 MGD to 4.0 MGD	1 mile east of Sykesville and south of Raincliffe Road	.500 MGD

Long-Term Recommendations (10+ years)

- ♦ Work with MES to complete an inflow and infiltration (I&I) study that would identify where reductions could result in regaining capacity
- ♦ Work with MES and the State to recapture a portion of the sewer capacity reserved for the State so that it can be used throughout the Freedom sewer service area
- ♦ Expand the WWTP to realize 4.67 mgd which is the current assigned Maryland Tributary Strategy nutrient loading cap in the future.

Hampstead Sewer Service Area

Current Conditions

Carroll County owns and operates the public sewer system that serves both the Town of Hampstead and adjoining areas in the county. The Hampstead SSA comprises approximately 1,572 acres, which are located in the northeast section of the County along MD 30 and serves 2,257 EDUs. See Map 22: Hampstead SSA. The plant discharges into Piney Run, within the headwaters of Loch Raven Reservoir.

The Hampstead sewer system consists of a collection system, six pumping stations, and a sewage treatment plant. The treatment plant is located southeast of the Town, near the boundary with Baltimore County. The treatment plant is accessed via a service road off of North Woods Trail.

The Hampstead WWTP provides advanced secondary treatment of domestic wastes using an activated sludge treatment process. Activated sludge plants use a variety of mechanisms and processes and dissolved oxygen to promote the growth of biological flocculants that substantially break down organic material. It also traps particulate material and can, under ideal conditions, convert ammonia to nitrite and nitrate ultimately to nitrogen gas. The plant has a design capacity of 0.900 mgd, with a three-year average flow from 2015-2017 of approximately 0.316 mgd, excluding estimated I&I.

Since the mid-1990s, the plant has been the subject of litigation focused on alleged negative effects that the temperature of the plant's effluent may have on the receiving stream (Piney Run). As the plant was not previously subject to any temperature limitation, compliance violations were not found. However, as a result of the litigation and subsequent regulatory and policy changes, MDE modified the plant's NPDES permit. It placed a temperature limitation on the plant's effluent of 68 ° F (20 ° C) and added thermal monitoring requirements. The permit modification became effective on February 1, 2004.

When the temperature rises during the summer months, past monitoring data suggested that the temperature of the plant's effluent may exceed the permit limitation of 68 ° F (20 ° C) or upstream ambient temperature. As technical response to compliance, Carroll County has designed, but has not installed, chiller equipment, and has been issued a permit by MDE to construct the chiller system. Desiring to pursue an alternative that was both less costly and less energy consumptive, as well as potentially less environmentally invasive, Carroll County has worked with a consultant to evaluate different alternatives. The alternative selected by the County is to split the discharge point of the Hampstead Wastewater Treatment Plant. As previously stated, the Hampstead WWTP currently discharges to Piney Run, which is a Designated Use 111-P stream within the headwaters of Loch Raven Reservoir. In order to address the effluent temperature matter, the County proposes to keep the current outfall and utilize an existing outfall in conjunction with an industrial discharge at the BTR property. The BTR

outfall discharges to an unnamed tributary of Deep Run, which is a Designated Class 1-P stream in the watershed of Liberty Reservoir.

The County also plans to upgrade the Hampstead WWTP to meet ENR standards to treat for nutrient loads for flow up to 1.20 MGD.

For planning purposes, the future proposed capacity is 1.20 mgd and is shown in Table 32 in the "Future Planning" category. Likewise, for planning purposes, the sewer service area associated with the future proposed increase in capacity is shown on Map 22.

There are TMDL aggregated Wasteload Allocations for phosphorus, sediment and bacteria for Liberty Reservoir, as indicated below:

TP	2,498.81 lbs /year
TSS	60.75 tons /year
Bacteria	1,045 Billion MPN E.coli / year

In addition, the "Reservoir Watershed Management Agreement of 2005" (see page 31) and the "2005 Action Strategy for the Reservoir Watersheds" limit the phosphorus concentration of the effluent from the Hampstead WWTP and the total phosphorus load delivered to Liberty Reservoir, as indicated below:

"Hampstead WWTP will continue to meet the requirements of its NPDES discharge permit (issued by MOE in 1997), which requires an effluent phosphorus concentration below 0.3 mg/l."

"When a phosphorus loading goal has been established through the TMDL process for each reservoir, MOE, through its NPDES permit program, will not permit an increase in the total phosphorus load delivered to the reservoirs."

In order to evaluate the technical feasibility of expanding the capacity of the Hampstead WWTP to 1.20 mgd, a splitting of the Hampstead discharge between the Loch Raven Reservoir and Liberty Reservoir Watershed was proposed. Carroll County requested that MDE conduct a preliminary analysis of the County's ability to comply with the requirements of the "2005 Action Strategy for the Reservoir Watersheds" while meeting the TMDL limits for Liberty Reservoir. MDE's preliminary analysis indicates that if the Hampstead WWTP were upgraded to meet ENR standards and if the discharge point of the WWTP were re-located to an additional outfall on the BTR property (which discharges to a tributary of Deep Run in the watershed of Liberty Reservoir), it would be technically possible for the WWTP to comply with the phosphorus limits established in the Action Strategy and the phosphorus, sediment and bacteria Wasteload Allocations established by the TMDL for Liberty Reservoir. In the future, as flows from the Hampstead WWTP increase, the allocation in the Liberty

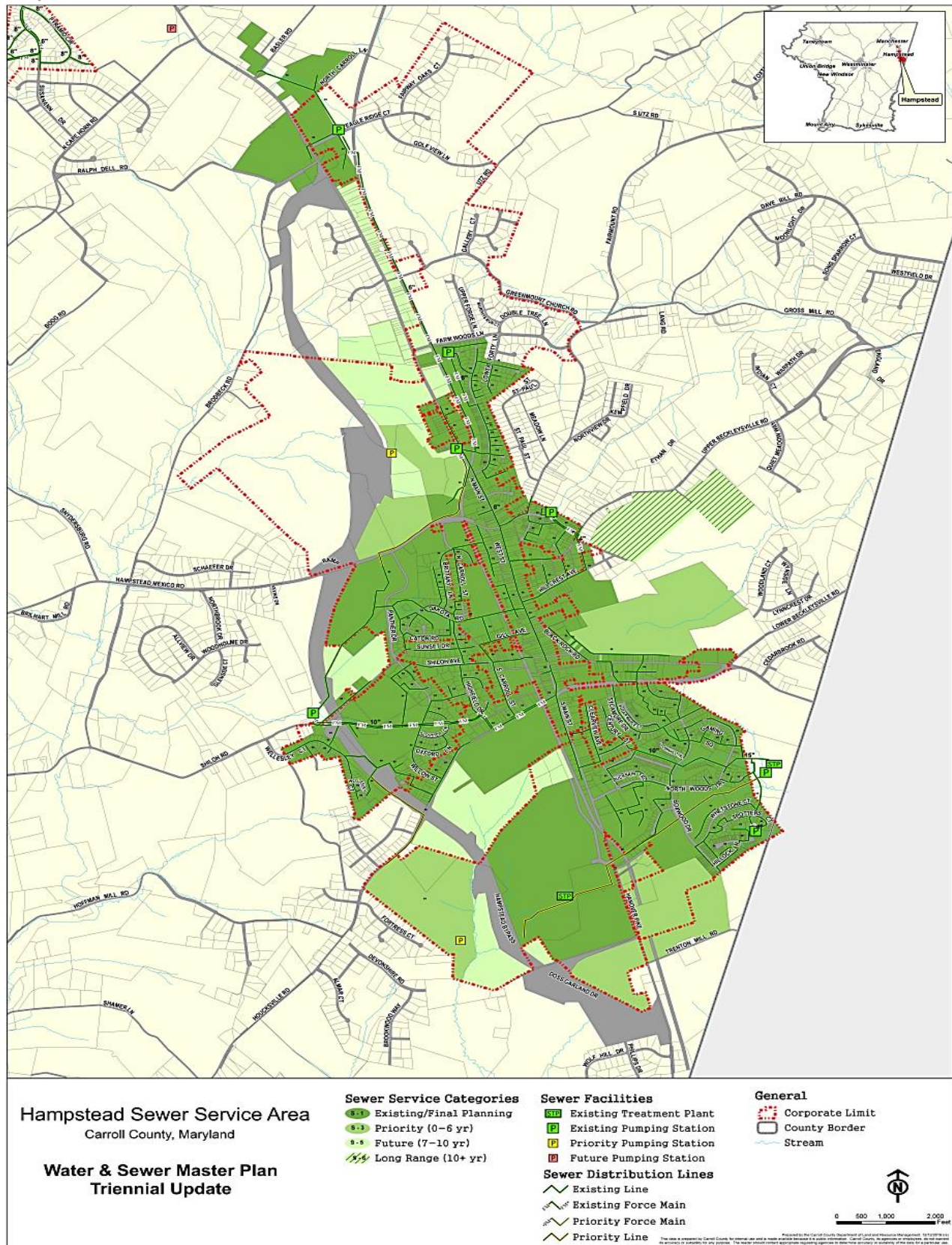
Reservoir TMDL may need to be updated to redistribute the WLAs assigned to point sources within the aggregated WLA.

Carroll County submitted an application for an AEL (Alternate Effluent Limit) in connection with its application for a renewal discharge permit. On July 9, 2004, Carroll County submitted a Study Plan for AEL for review by MOE. On December 21, 2005, Carroll County submitted its Final Report in connection with its Study Plan to MOE. MOE requested additional information resulting in Carroll County submitting a supplemental report to MDE on May 7, 2006.

Based on the analysis and documentation submitted to MDE requesting AEL, Carroll County believes that it has demonstrated that the temperature of the treated effluent discharged thus far has done no harm to the thriving indigenous community of shellfish, fish and wildlife in and on Piney Run. MOE is currently reviewing Carroll County's request for an AEL, thus it remains pending. The plant is being operated under a Consent Judgment Agreement that places any violations in abeyance until the resolution of the AEL process.

The State issued a draft permit, incorporating the AEL, on August 19, 2013. The AEL is proposed to be applicable only up to an annual average flow of 0.750 mgd. The County has been actively engaged in discussions with MOE regarding the draft permit. In late 2014, County representatives proposed to MOE the relocation of the current outfall, as part of the plant upgrade to Enhanced Nutrient Removal (ENR) scheduled to be completed by 2018. This proposal has since been modified to a split discharge between the Loch Raven and Liberty Reservoir watersheds. Partial flows would be piped and discharged into the Patapsco River watershed approximately 1 mile to the west of its current location. The proposed plan as shown on Map 22 reflects the pipeline path and outfall location as agreed upon with MDE.

Map 22



Inventory of Existing Sewerage Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

See Tables 18A-18D for Hampstead SSA infrastructure.

Table 18A: Hampstead SSA Treatment Plant

WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (mgd)	Average Flows (mgd)	Method of Sludge Disposal
Extended aeration	Piney Run	.900	.527	Sludge press; cake form is trucked to Northern Landfill
Discharge Permit Number: 88DP0594C NPDES Number: MD0022446				

Table 18B: Hampstead SSA Interceptors

Interceptor	Diameter (inches)	Average Day Flow (mgd)	Design Flow (mgd)
Main Interceptor	15	n/a	n/a

Table 18C: Hampstead SSA Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (mgd)	Normal Pumping Capacity (mgd)	Average Day Pumping (mgd)
Eagle Ridge	N 393817.83 W76 7154.74	2	n/a	0.196	0.004
North Carroll Farms Station #20	N 713011.99 E 1352660.68	2	0.168	n/a	n/a
North Station #8	N 710613.53 E 1352919.14	2	0.040	n/a	0.025
Small Crossings Station #9	N 709347.37 E 1354734.57	2	0.018	n/a	n/a
Shiloh Station #11	N 704552.54 E 1349785.75	3	0.500	n/a	n/a
Roberts Field Station #14	N 701892.64 E 1358892.42	2	0.031	n/a	n/a
Hampstead WWTP	N 703565.58 E 1358927.42	3	0.900	n/a	n/a
Total		16	1.657	.196	.004

*Coordinate locations are Maryland State Plane 1983 Datum.

Table 18D: Hampstead SSA Force Mains

Force Main	Maximum Day Pumpage in MGD (date)	Diameter (inches)	Design Flow (mgd)
Shiloh Station #11	No Flow Meter	10	1.000
North Station #8	No Flow Meter	6	-
Small Crossings Station #9	No Flow Meter	4	-
Roberts Field #14	No Flow Meter	4	-
North Carroll Farms #20	No Flow Meter	4	-
Eagle Ridge	No Flow Meter	6	-
Total			1.000

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

The Hampstead Sewage Treatment Plant generates approximately 943 wet tons of sludge per year. The wet sludge is processed through a screw press process and deposited in roll off dumpsters. Dry sludge is taken to the Northern Landfill for ultimate disposal. See Table 18E for Hampstead SSA Sludge Management.

Table 18E: Hampstead SSA Sludge Management

Quantity (tons/yr)	Quality	Method of Disposal/Use	Permit #s	Future Disposal Method	Problems
943 wet 159 dry (15% solid)	Digested liquid sludge, 1% solids, aerobic digestion	Dewatered sludge hailed to McGill, Virginia for composting	2014-STR-5869	No change anticipated	None

Allocation Procedure

Sewage capacity is allocated on a “first come, first served” basis. The amount of the allocation is based on meter size (e.g., for residential units served by a 5/8-inch meter, the County allocates 225 gpd). Sewage flows are allocated to development following final approval of the record plat or site plan mylars by the County Bureau of Engineering. A maximum of 25 sewer hook-ups may be approved per quarter for each development.

As of 2011, the Board of County Commissioners has 41,850 gallons of the treatment plant’s capacity reserved for industrial uses.

Needs Analysis

Because much of the Hampstead sewer system dates to the 1970s, numerous components are showing their age. A continual process to update and upgrade the system is being undertaken. In particular, there are two clarifiers in use currently that treat 700,000 gallons of sewage. Ideally there should be two clarifiers to handle the *full* capacity of the wastewater treatment plant, *plus* two additional clarifiers that would create redundancy for the full system. However, clarifiers will not be needed once the wastewater treatment plant is upgraded to an ENR process; the need for and/or timing of adding clarifiers to the existing system would be dependent upon the timing of the ENR upgrade.

In 2009, the County hired a consultant to complete the *Hampstead Sewer System Preliminary Infiltration & Inflow Study*. The study identified specific locations where I&I were occurring throughout the Hampstead sewer system. It estimated that approximately 325,000 gallons (or 57 percent) of treatment capacity were being lost to I&I. The study also identified locations where improvements could be targeted to recapture the greatest amount of capacity. Based on these targeted improvements, it was estimated that approximately 105,000 gallons of capacity currently being lost to I&I could be recaptured. However, in 2011, some of these improvements were completed. Pipes leading into the WWTP and running under a tributary of North Piney Branch were lined, for a measured reduction in I&I of 100,800 gpd.

The County continues to work towards resolving the thermal limitations issue with MDE. Until these issues are resolved, several potential projects (including Enhanced Nutrient Removal upgrades) remain on hold. See Table 18F for Hampstead SSA sewage problem areas.

Table 18F: Hampstead SSA Sewage Problem Areas

Location	Population (Where Applicable)	Nature Of Problem	Status
Green mount	214	Septic Problems, small lots, and limited soil capabilities	Under Study

Planned Projects and Recommendations

See Table 18G for Hampstead SSA priority projects.

Project Name	Planning Category	Description	Location	Capacity Added
Hampstead Trade Center	Priority (S-3) 5 Years	Pumping station, 8" collector line, force main	Hampstead North Business Center	0 MGD
IDA Property	Future (S-5) 10 Years	Pumping station, 8" collector line, force main	IDA property west of MD 30.	0 MGD
Upgrade WWTP	Priority (S-3) 5 Years	Upgrade treatment process to ENR	Existing WWTP	0 MGD
Hampstead Sewer Main Upgrade	Priority (S-3) 5 Years	Replace 4,750 feet of existing clay pipes per year starting in FY19	Throughout Town	0 MGD
West Hampstead Collector Sewer Main Repair	Priority (S-3) 5 Years	Repair the clay sewer mains	Carroll Street, Houcksville Road, Gill Avenue and Shiloh Road	0 MGD

Long-Term Recommendations (10+ years)

- ♦ Implement the targeted improvements to the collection system recommended in the I&I study.
- ♦ Renovate/upgrade the control room at the WWTP
- ♦ Upgrade controls at the Influent Pumping Station at the WWTP
- ♦ Replace the generator at the WWTP with a bigger unit.
- ♦ Possibly install additional clarifiers at the WWTP
- ♦ Identify specific industrial areas for which Commissioner-reserved treatment capacity will be used, to avoid preemption of the capacity by other development.

- ♦ Implement any projects associated with the resolution of the thermal limitation issue, including possible discharge chillers or their alternatives.
- ♦ Undertake Enhanced Nutrient Removal upgrades to the wastewater treatment plant, pending resolution of the thermal limitation issue.

Manchester Sewer Service Area

Current Conditions

The Town of Manchester owns and operates its sewer system and limits service to the corporate boundary. The Manchester SSA area comprises about 1,262 acres located in the northeast corner of the county along MD 30 and serves 1,840 EDUs. Manchester WWTP capacity is 0.500 mgd. Average flow is 0.307 mgd.

The existing sewer system became operational in 1969 and consists of a collection system, eleven pumping stations, and a sewage treatment plant located east of Beaver Street. A spray irrigation facility is also utilized in the waste treatment process, and is located south of Manchester on Warehime Road. Sewage flow is primarily domestic, with a small amount of commercial waste.

The sewage treatment plant is a package secondary treatment facility utilizing contact stabilization with anaerobic digestion of sludge. The design capacity is 0.500 mgd, with a three-year average flow from 2008-2010 of approximately 0.357 mgd, excluding estimated I&I. Effluent from the treatment plant is pumped from the treatment plant via a 14-inch diameter force main to a 5.0 mg storage lagoon, and in turn, spray irrigated onto Town-owned irrigation fields. The Town of Manchester utilizes and harvests a crop of reed canary grass for nutrient uptake on the spray irrigation fields. The Town is allowed to spray irrigate March 1 through November 30. For the remaining 3 months, December 1 through February 28, the plant's effluent is discharged into George's Run, which is a tributary of Prettyboy Reservoir in Baltimore County. The Town is permitted to spray 0.5 mg of effluent per day. See Tables 19A-19D for Manchester SSA infrastructure.

Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

Table 19A: Manchester SSA Treatment Plant

WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Flows Average/Peak	Method of Sludge Disposal
WWTP activated sludge contact stabilization with land application via spray irrigation	Land application via spray irrigation /George's Run (winter)	0.500	0.356/ 0.499 mgd	Stabilized sludge is dewatered onsite and is trucked to the Cumberland County Landfill by the Town and by an independent hauler
Discharge Permit Number: 00DP0642 NPDES Number: MD0022578				

Map 23

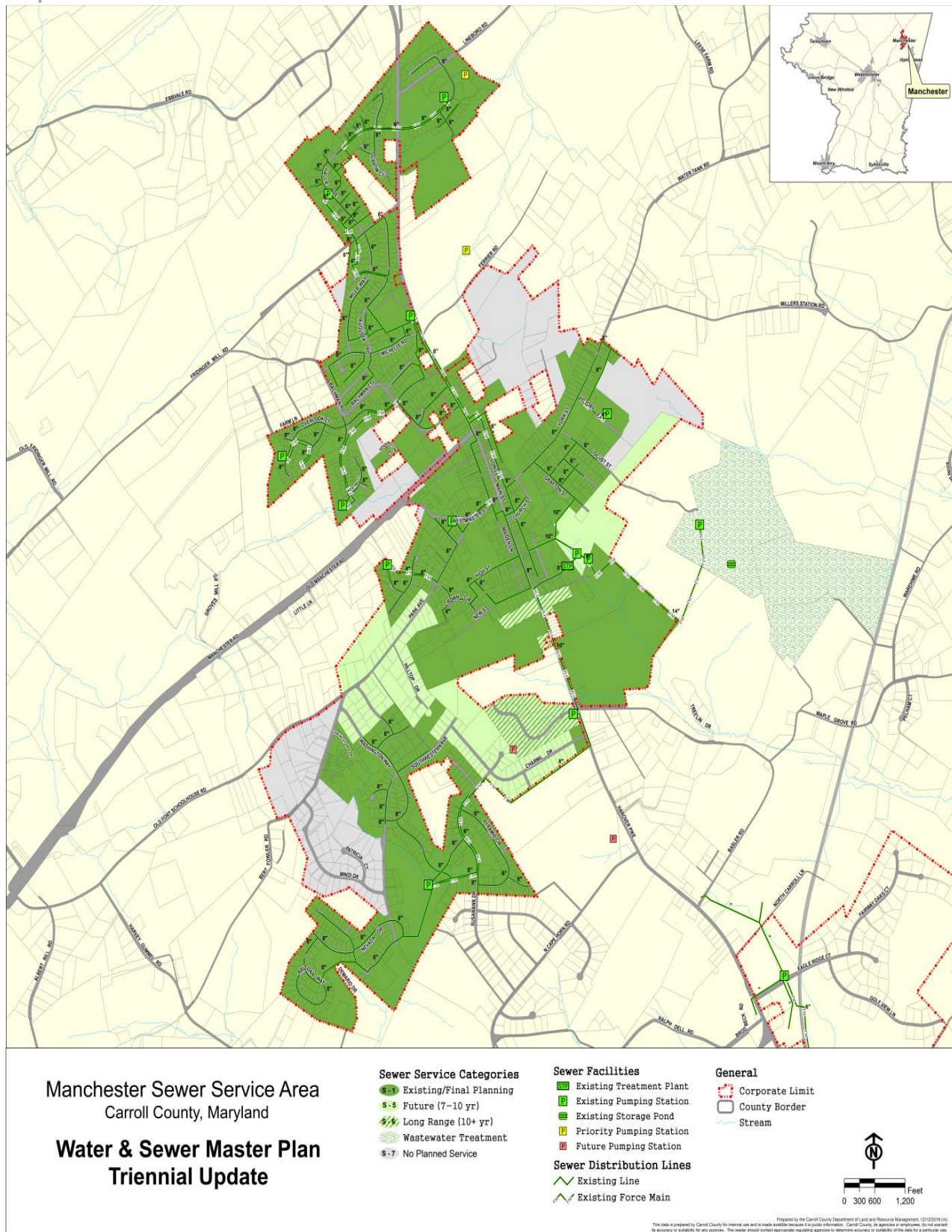


Table 19B: Manchester SSA Interceptors

Interceptor	Diameter (inches)	Average Day Flow (MGD)	Design Flow (MGD)
Main Influent line to WWTP	16	0.356	2.000
Northern Line	8	0.056	1.800
Westminster Street	8	Not metered	0.288
Hallie Hills #1	8	Not metered	0.518
Hallie Hills #2	8	Not metered	0.500
Coachman Way	8	Not metered	0.288
Victory Street	6	Not metered	0.072
Southern Line	8	0.038	1.000
Crossroads Overlook #1	8	Not metered	0.700
Crossroads Overlook #2	8	Not metered	0.288
Total		0.450	7.454

Table 19C: Manchester SSA Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
Manchester WWTP	N 725574.11 E 1346217.60	2	2.000	0.250	0.237
Westminster Street	N 726009.53 E 1343736.75	2	0.144	Unknown (No Flow Meter)	0.030 (Est.)
Hallie Hills Station #1	N 3940.525 W 7653.793	2	0.259	n/a No Flow Meter	0.030 (Est.)
Hallie Hills Station #2	N 3940.790 W 7653.294	2	0.250	n/a No Flow Meter	0.014 (Est.)
Maple Grove Road (South Station)	N 725250.08 E 1346561.88	2	0.500	0.038	0.038
Michelle Road (North Station)	N 729472.59 E 1343058.31	4	0.450	0.056	0.056
Park Ave. Estates Station	N 725229.83 E 1342521.64	2	0.144	Unknown (No Flow Meter)	0.100 (Est.)
Victory Street	N 727741.06 E 1347311.20	2	0.036	Unknown (No Flow Meter)	0.002 (Est.)
Effluent P.S. to Lagoon	N 725270.33 E 1346551.75	2	2.100	0.356	0.356
Manchester Farms	N 1343199.85 W 718901.51	4	0.430	n/a No Flow Meter	0.032 (Est.)
Crossroads Station #1	N 1341755.22 W 726143.27	2	0.350	n/a No Flow Meter	0.045 (Est.)
Crossroads Station #2	N 393976.50 W 765398.70	2	0.144	n/a No Flow Meter	0.180 (Est.)
Irrigation Pump Station (Spray Fields)	N 725857.64 E 1348779.45	3	1.600	0.339	0.498
Total		31	8.407	1.039	1.618

* Coordinate locations are Maryland State Plane 1983 Datum.

Table 19D: Manchester SSA Force Mains

Force Main	Maximum Day Pumpage in MGD (date)	Diameter (inches)	Design Flow (MGD)
Westminster Street	Unknown (No Flow Meter)	4	0.300
Millie Way	Unknown (No Flow Meter)	4	0.030
Coachman Way	Unknown (No Flow Meter)	4	0.290
Christmas Tree Lane (Victory St.)	Unknown (No Flow Meter)	2	0.036
Lagoon	0.490 (05/4/09)	14	4.200
Sprayfields	0.498 (8/13/99)	10	1.600
Hanover Pike (North Station)	n/a	10	1.800
Hanover Pike (South Station)	n/a	10	2.000
Westminster Street (from Crossroads Station #1)	No Flow Meter	4	0.350
Susanann Drive	No Flow Meter	6	0.860
Main St. to Long Lane (North Station)	0.048	10	2.000
Westminster Street (Westminster St. Station)	Unknown	4	0.144/pump
Hallie Ave. to Millie Way (Hallie Hill Station)	Unknown	6	0.091
Hallie Ave West to Hallie Ave.	Unknown	6	0.145
Coachman Way (Park Ave. Station)	Unknown	4	0.144/pump
Christmas Tree Lane (Victory St. Station)	Unknown	2	.3600
Eff. Line to Lagoon (Eff. Pump Station)	0.534	14	2.100
Eff. Line to Sprayfields (Sprayfield Station)	0.499-Based on Lagoon Level	2-10	4.800
Westminster Street (Crossroads Station #1)	Unknown	6	0.350/pump
Overlook Court (Crossroads Station #2)	Unknown	4	0.144/pump
Susanann Drive (Manchester Farms Station)	Unknown	6	0.430/pump
WWTP	0.497 (12/20/09)	8	2.000
Total	2.566		24.174

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

The Manchester Wastewater Treatment Plant generates approximately 1.6 million gallons of wet sludge per year. The stabilized sludge which is generated at the facility is dewatered via a belt-filter press. Dewatered sludge cake is then transported to the Cumberland County Landfill for disposal. The average amount of dewatered sludge transported is 23 tons per month, or 283.6 tons per year. See Table 19E for Manchester SSA Sludge Management.

Table 19E: Manchester SSA Sludge Management

Quantity	Quality	Method of Disposal/Use	Permit #s	Future Disposal Method	Problems
Average of 23 tons of dewatered sludge per month	Digested liquid sludge, 19% solids, aerobic digestion	Dewatered sludge transported to Carroll County Northern Landfill	S-02-06-4853L	Agricultural land application, composting	None

Allocation Procedure

Allocations are made on a “first-come, first-served” basis following approval of a site plan or subdivision. Flows for residential development are calculated at 375 gallons per dwelling unit per day. Commercial and industrial flows are calculated by the applicant’s engineers and reviewed by the Town.

In addition, Section 173 “Sewer” section of the Town Code requires that public facilities, including sewer, be adequate in order for the Planning Commission to approve a project at each stage of the development approval process.

Needs Analysis

No further expansion of the existing 0.500 mgd wastewater treatment plant capacity is contemplated or planned. The planned service area has been scaled to the remaining capacity of the existing facility, consistent with the Comprehensive Plan for Manchester and Environs, as amended. The Town’s sewer system experiences infiltration & inflow (I&I), which results in additional flows of approximately 33,254 gpd to the wastewater treatment plant. In an effort to reduce I&I, the Town conducted an I&I study to determine levels of inflow and made system improvements to address the problem. This will make the most efficient use of the system and allow available capacity to be allocated to the planned service area. Periodic monitoring and correction of future problem areas will continue to be necessary.

In the southwestern end of Town, there are existing homes and areas planned for development but sewer lines do not currently exist to serve them. Most notably, the existing homes on Charmil Drive are not served by public sewer. The sewer line that carries wastewater from Manchester Farms could, in the future, serve approximately 24 homes along the south side of Charmil Drive. However, service to the remaining homes in the Charmil Drive area would still require construction of additional sewer lines. See Table 19F: Manchester SSA sewage problem areas.

Table 19F: Manchester SSA Sewage Problem Areas

Location	Population (Where Applicable)	Nature Of Problem	Status
Charmil Drive	171	Groundwater contamination from failing septic systems in the area	Extend community sewer service to this area

Planned Projects and Recommendations

See Table 19G for Manchester SSA priority projects.

Table 19G: Manchester SSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Infiltration/Inflow Improvements	Priority (S-3) 5 years	Continue to locate and remedy areas experiencing I&I problems	Various locations throughout the Town	.045 MGD*
Computer Mapping	Priority (S-3) Immediate	Develop computer mapping of complete wastewater collection system	Entire Town	0 MGD
New Pumping Station	Priority (S-3) 5 years	Develop and connect new pump station to serve the Harrell property	Harrell property	Estimated .050 MGD
Subsurface Discharge	Priority (S-3) 5 years	Design and explore feasibility of sub surface discharge in order to utilize the spray fields year round	Spray Irrigation Facility	0 MGD
Wastewater Treatment Plant Upgrades	Future (S-5) 10 years	Improvements to meet Enhanced Nutrient Removal goal	Existing WWTP	.250 MGD*

*These projects will be completed if grant funding becomes available

Long-Term Recommendations (10+ years)

- ♦ Explore options for providing public sewer service to existing developed areas in Town that currently are not served.

Mount Airy Sewer Service Area

Current Conditions

The Town of Mount Airy owns and operates the community sewer system, which is located in the southwest corner of the County. See Map 24: Mount Airy SSA. The Mount Airy SSA covers approximately 3,280 acres and serves 3,160 EDUs. See Map 24: Mount Airy SSA. Mount Airy WWTP design capacity is 1.2 mgd. Average flows are 0.640 mgd.

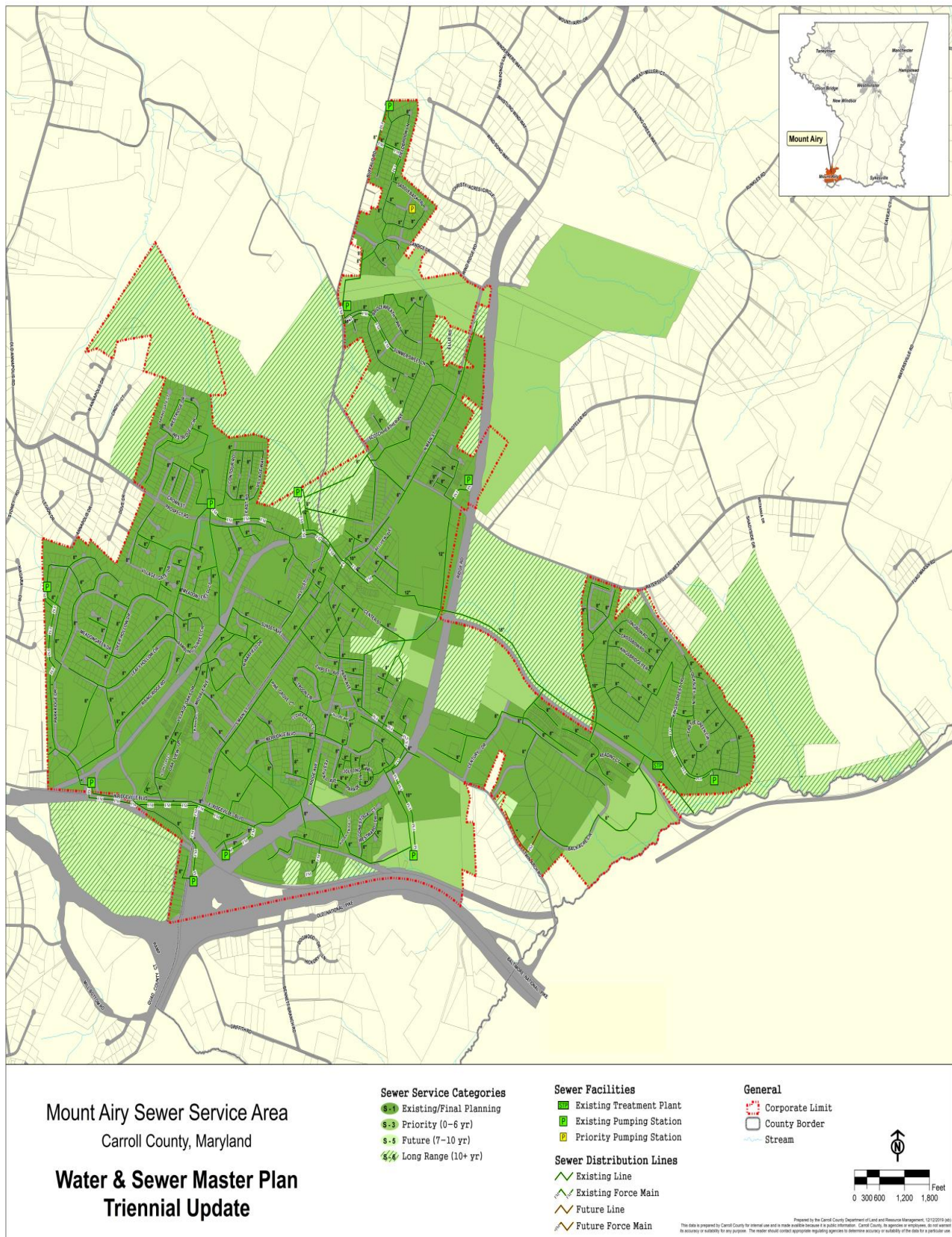
The plant discharges to the South Branch of the Patapsco River. No expansion is anticipated for Mount Airy's WWTP; however, the plant was upgraded to ENR in 2011. Environmental factors limit the ability to further expand the plant beyond the current 1.2 mgd capacity.

The Mount Airy sewer system includes eleven pumping stations, interceptors and collection lines ranging from 6-inch to 15-inch diameter, and a WWTP. The WWTP is located one mile east of MD 27 and south of Watersville Road. The plant discharges treated wastewater into the South Branch of the Patapsco River, and has a design capacity of 1.2 mgd, with a two-year average flow from 2015-2016 of approximately 0.725 mgd, including a significant amount of I&I. The Town continues to work on lowering I&I issues since 2007 by initiating a metered approach to finding the largest sources of breach into the collection system.

The treatment process consists of Biological Nutrient Removal (BNR) Five Stage (anaerobic, anoxic, oxic, anoxic, oxic) Bardenpho Process with the following : bar screen, grit removal, aeration, clarification, ultraviolet disinfection, post aeration, solids process, sludge holding and belt-filter dewatering press with lime stabilization. A Severn-Trent Denitrification System filters to Enhanced Nutrient Removal (ENR) requirements of 3.0 mg/l Total Nitrogen and 0.3m/l Total Phosphorus.

The estimates do not reflect factors unique to this municipal system that may have been considered in the CMP worksheet calculations.

Map 24



Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

See Tables 20A-20D for Mount Airy SSA Infrastructure.

Table 20A: Mount Airy SSA Wastewater Treatment Plant

WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Average Flows (MGD)	Method of Sludge Disposal
ENR	South Branch Patapsco River	1.200	0.725	Lime stabilized sludge is hauled to be land applied on farms and/or disposed of at Carroll County Landfill.
Mount Airy WWTP Discharge Permit Number: 00DP0641A NPDES Number: MD0022527A				
Town of Mount Airy Water System Discharge Permit Number: 00HT9535 NPDES Number: MDG679535				

Table 20B: Mount Airy SSA Interceptors

Interceptor	Diameter (inches)	Average Day Flow (MGD)	Design Flow (MGD)
Station 1 (2 interceptors)	8	0.375	0.936
Station 2	8	0.005	0.259
Station 3	8	0.055	0.720
Station 4 (3 interceptors)	8	0.175	0.576
Station 5 (3 interceptors)	10 (1) 8 (2)	0.350	0.936
Station 6	6	0.015	0.252
Station 8	8	0.030	0.288
Station 9	8	0.080	0.288
Station 10	8	0.025	0.374
Station 7	8	0.030	0.216
Wastewater Treatment Plant	15	0.722	1.200
Total		1.862	6.045

Table 20C: Mount Airy SSA Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
Station 1	N 617782.66 E 1270540.77	4	0.936	n/a	0.300
Station 2	N 617320.16 E 1265265.77	2	0.259	n/a	0.002
Station 3	N 619051.41 E 1262790.77	2	0.720	n/a	0.056
Station 4	N 624213.91 E 1265703.27	4	0.576	n/a	0.157
Station 5	N 624488.91 E 1267753.27	2	0.936	n/a	0.250
Station 6	N 624632.66 E 1271809.52	2	0.252	n/a	0.008
Station 7	N 617782.66 E 1266084.52	2	0.216	n/a	0.014
Station 8	N 622676.41 E 1261740.77	2	0.288	n/a	0.021
Station 9	N 627882.66 E 1268847.02	2	0.288	n/a	0.013

Table 20C: Mount Airy SSA Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
Station 10	N619113.35 E1277753.81	1	0.374	n/a	0.001
Station 11	N631608.62 E1269968.0	1	0.173	n/a	n/a
Total		24	3.103	n/a	0.822

*Coordinate locations are Maryland State Plane 1983 Datum.

Table 20D: Mount Airy SSA Force Mains

Force Main	Maximum Day Pumpage in MGD (date)	Diameter (inches)	Design Flow (MGD)
Station 1	0.601 (01-30-01)	10	0.936
Station 2	0.003 (11-20-01)	6	0.259
Station 3	0.069 (03-06-01)	8	0.720
Station 4	0.245 (03-29-01)	6	0.576
Station 5	0.534 (09-24-01)	10	0.936
Station 6	0.012 (07-24-01)	6	0.252
Station 7	0.023 (07-27-01)	6	0.216
Station 8	0.028 (03-29-01)	8	0.288
Station 9	0.020 (12-27-01)	8	0.288
Station 10	0.002	6	0.374
Total	1.537		4.845

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

The Mount Airy Sewage Treatment Plant produces 1,300 wet tons of sludge per year. The sludge is held in a 300,000- gallon aerobic digester. The sludge is then pumped to a belt-filter press. The sludge is then dewatered and lime stabilized.

The Town has a contract to land apply the lime stabilization sludge. The Town also has permits to dispose of sludge at the Carroll County landfill during times that it cannot be land applied. See Table 20E for the Mount Airy SSA Sludge Management.

Table 20E: Mount Airy SSA Sludge Management

Quantity	Quality	Method of Disposal/Use	Permit #s	Future Disposal Method	Problems
1213 wet tons/ 198 dry tons	Lime Stabilization	Agricultural land use, landfill application	S-03-06-4513-L S-03-10-4982-L S-01-06-4789-A	Same	None

Allocation Procedure

Each building permit is reviewed for allocation needs and for conformance with the Town's Adequate Public Facilities Ordinance.

Needs Analysis

Mount Airy experiences infiltration and inflow (I&I) in its sewer system that was estimated at approximately 120,000 gpd in 2007. Every year the Town is making improvements to reduce the I&I and will continue to address this problem in upcoming years. Monitoring and correction of these problems will help to prevent unnecessary flows to the wastewater treatment plant and allow capacity to be used elsewhere in the service area.

The large tract of land known as the Harrison-Leishear property may have significant development potential in the near future. This area currently is not improved with any public sewer infrastructure, which would need to be in place for the property to realize its full development potential.

The total future wastewater demand assumes that everything within the GAB build out according to the adopted land use plan. If this were to occur, the total future wastewater demand for the Mount Airy WWTP would be 1,064,000 gpd.

If Mount Airy were to build out according to the planned land uses adopted within the GAB, the Town would have sufficient capacity available with current wastewater flows.

The existing design capacity (1.2 mgd) of the Mount Airy WWTP represents the controlling limitation under current and future conditions.

Site constraints at the WWTP include a stream, floodplain, forest conservation, and a stormwater management facility; although, the design capacity of the existing plant is adequately sized to accommodate future growth. Due to the constraints referenced above the system may not be able to expand beyond the current 1.2 mgd.

The Mount Airy WWTP discharges approximately 3 river miles upstream of a Tier II segment of the South Branch of the Patapsco River. Given the high levels of treatment and large distance to the segment, the Tier II designation is not expected to represent a controlling limitation on the Mount Airy WWTP discharge.

The Mount Airy WWTP NPDES permit includes standard limits for secondary treatment facilities, and is fully protective of receiving waters. Limits for parameters, such as ammonia, were derived for local water quality protection and are expected to remain achievable even under higher effluent flows.

Planned Projects and Recommendations

See Table 20F for Mount Airy SSA priority projects.

Table 20F: Mount Airy SSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Infiltration/Inflow Reduction	Priority (S-3) Immediate	Monitor and make improvements	Entire System	0 MGD
Pumping Station	Priority (S-3) Immediate	New pumping station	NE corner of MD 27 and Watersville Road (Harrison-Leishear property)	0 MGD
Sewer Lines	Priority (S-3) Immediate	New sewer lines	NE corner of MD 27 and Watersville Road (Harrison-Leishear property)	0 MGD
Discharge Temp Reduction	Priority (S-3) 10 years	NPDES Permit Requirement	Mount Airy WWTP	0 MGD

New Windsor Sewer Service Area

Current Conditions

The Town of New Windsor owns the community sewer system, which is operated by the MES. Located in the west-central portion of the County, the New Windsor SSA covers approximately 945 acres and serves 618 EDUs. See Map 25: New Windsor SSA. Generally, the Town limits service to the area located within the Town's corporate boundary. New Windsor WWTP design capacity is 0.115 mgd. Average flows are 0.079 mgd.

The New Windsor wastewater system consists of collection lines, five pumping stations, and a wastewater treatment facility. The design capacity of the new wastewater treatment facility is 0.115 mgd.

The new WWTP facility is located at the north end of Water Street. The treated effluent is discharged to Dickenson Run. Upgraded laboratory facilities provide more effective monitoring of the treatment process, including a computerized effluent flow meter. Influent is metered, and sewer rates are based on metered water use.

The Town constructed a 0.115 mgd treatment plant to replace the lagoon system. The plant is a Continuous Sequencing Batch Reactor Process (CSBR) system. The lagoons have been phased out and decommissioned. The Town has dredged and regraded the lagoons, and is working on converting the land to ballfields/recreational areas.

The Town is installing a sludge press that will dewater the sludge going through the WWTP.

Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

See Tables 21A-21D for New Windsor SSA infrastructure.

Table 21A: New Windsor SSA Treatment Plant

Service Area and/or WWTP Name	WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Flows Average/ Peak	Method of Sludge Disposal
New Windsor	CSBR*	Dickenson Run	0.115	n/a	-
Total			0.115	n/a	

Discharge Permit Number: 05DP0640 **NPDES Number:** MD0022586

* new plant is replacing lagoon system; lagoons to be phased out

Map 25

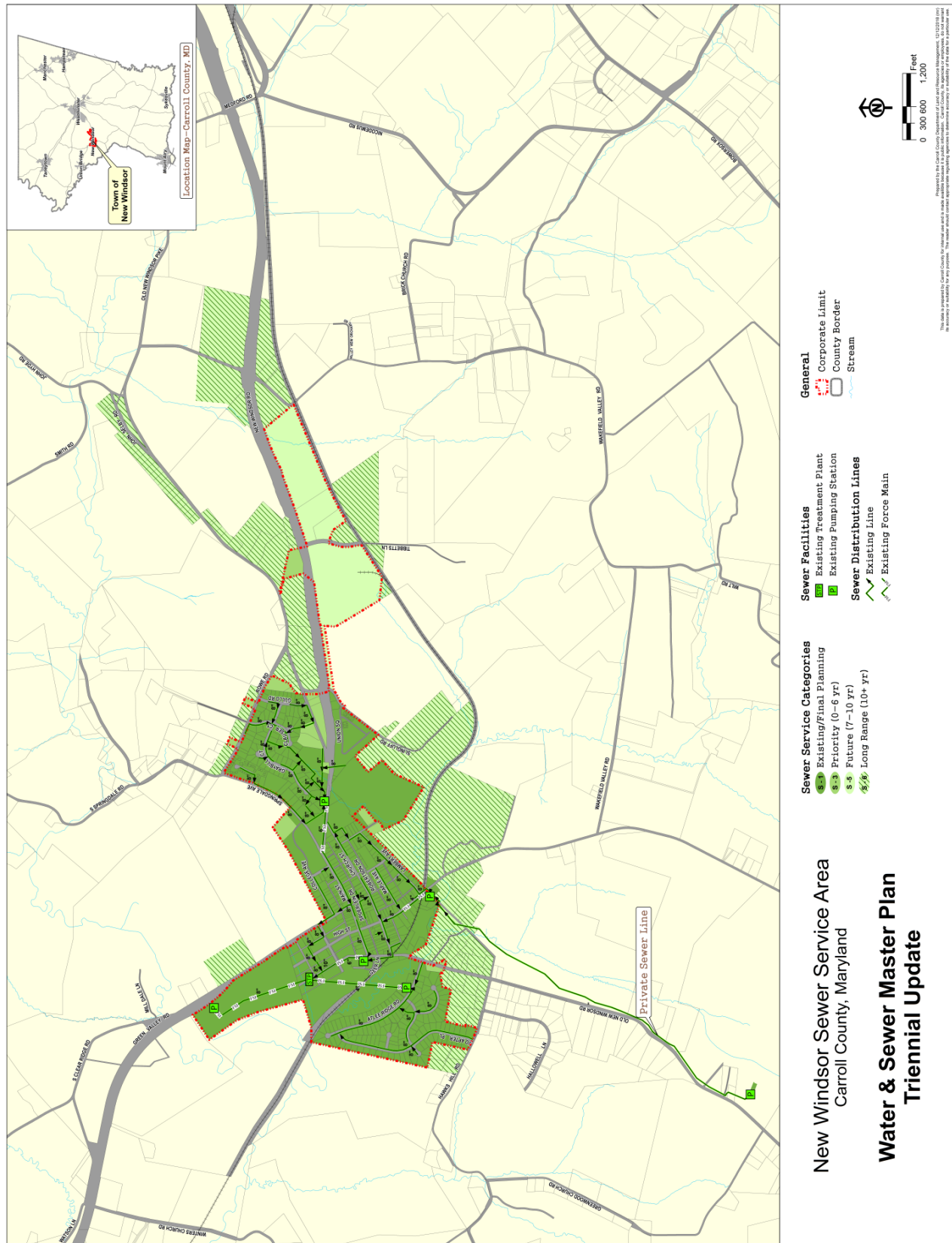


Table 21B: New Windsor SSA Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
Coe Drive	N 1282398.94 E 682149.41	2	0.086	-	-
Main Street	N 1281218.44 E 683323.49	2	0.230	-	-
Blue Ridge	N 1284087.93 E 684060.74	2	0.456	-	-
New Windsor Middle School	N 1280371.56 E 686114.35	2	0.036	-	-
Atlee Ridge	N 1280737.26 E 682521.52	2	0.344	-	-
Total		10	1.152		

*Coordinate locations are Maryland State Plane 1983 Datum.

Table 21C: New Windsor SSA Force Mains

Force Main	Maximum Day Pumpage in MGD (date)	Diameter (inches)	Design Flow (MGD)
Coe Drive	-	4	-
Main Street	-	6	-
Atlee Ridge	-	4	-
Blue Ridge	-	6	-
New Windsor Middle School	-	2	-

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

The Town currently hauls liquid sludge to the Westminster Septage Facility. After the installation of the Sludge Press is complete, the dewatered sludge will be hauled utilizing the Carroll County's contracted sludge hauler. See Table 22E for New Windsor SSA sludge management.

Table 21D: New Windsor SSA Sludge Management

Quantity	Quality	Method of Disposal/Use	Permit #s	Future Disposal Method	Problems
400,000 gal/year liquid sludge	-	Hauled to Westminster Septage Facility	-	Installing a Sludge Press to dewater sludge. After completion, dewatered sludge will be hauled utilizing Carroll County's contracted sludge haulers	-

Allocation Procedure

The Town of New Windsor usually provides sewer capacity on a “first come, first served” basis. Available capacity has been allocated to provide for the current development. Any expansion of the Town’s sewer facilities necessitated by development will be paid for by the developer.

Needs Analysis

The Town of New Windsor has recently upgraded their Wastewater Treatment Plant but the upgrade did not address the amount of infiltration and inflow that is entering the plant. The Town has an average of approximately 25,000 gpd of I&I within their system. The streetscape project that is set to start in 2017 includes a project that will line the sewer lines. According to the town, this project will recapture more than 17,000 gpd of I&I.

Planned Projects and Recommendations

See Table 21E for New Windsor SSA priority projects.

Table 21E: New Windsor SSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Wastewater Treatment Plant Upgrades	Future (S-5) 10 years	Improvements to meet Enhanced Nutrient Removal goal	Existing WWTP	0 MGD
Wastewater Treatment Plant Expansion	Future (S-5) 10 years	Expand WWTP to reach planned capacity of .250 MGD	Existing WWTP	.115 MGD
Main Street Project	Priority (S-3) Immediate	Lining the sewer pipes	Main/High Streets	0 MGD
Installation of Sewage Press	Priority (S-3) Immediate	Install a Sewage Press to dewater sludge produced at the WWTP	Existing WWTP	0 MGD

Long-Term Recommendations (10+ years)

- ♦ Identify use or remediation options for lagoons once new WWTP is operational.
- ♦ Conduct an I&I study to determine current level of inflows from I&I to potentially regain some capacity; make system improvements to reduce I&I.
- ♦ Investigate reuse of Town’s treated effluent through spray irrigation at ballfields, for firefighting, industrial operations, or other appropriate uses.

Pleasant Valley Sewer Service Area

Current Conditions

The Pleasant Valley planned SSA, comprising approximately 35 acres, is located on both sides of Pleasant Valley Road between Richardson and Hughes Shop Roads. An estimated 50 residences, five businesses, and the Pleasant Valley Fire Department are located within the area, which is a designated Rural Village. See Map 27: Pleasant Valley SSA. The system is owned and operated by the County. Effluent is discharged into Bear Branch, which is in the Double Pipe Creek watershed. Pleasant Valley WWTP design capacity is 0.019 mgd. Average flows are 0.003 mgd.

In 1994, the County constructed a conventional gravity collection system. It consists of 2,850 linear feet of collection mains that intercept and convey flows from the individual house service laterals. Twelve manholes provide access to the collection mains for maintenance purposes. Flows are transported by gravity to the treatment plant.

The wastewater treatment facility is a Sequencing Batch Reactor (SBR) with a design capacity of 0.019 mgd, and a three-year average flow from 2015-2017 of approximately 0.005 mgd, excluding estimated I&I. The facility is located on the west side of Halter Road, south of Bear Branch.

The SBR system relies on the biological digestion of wastes contained in the wastewater to meet effluent discharge criteria. This system requires a sludge holding tank and a disinfection chamber to retain solids and to disinfect the reactor effluent.

Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

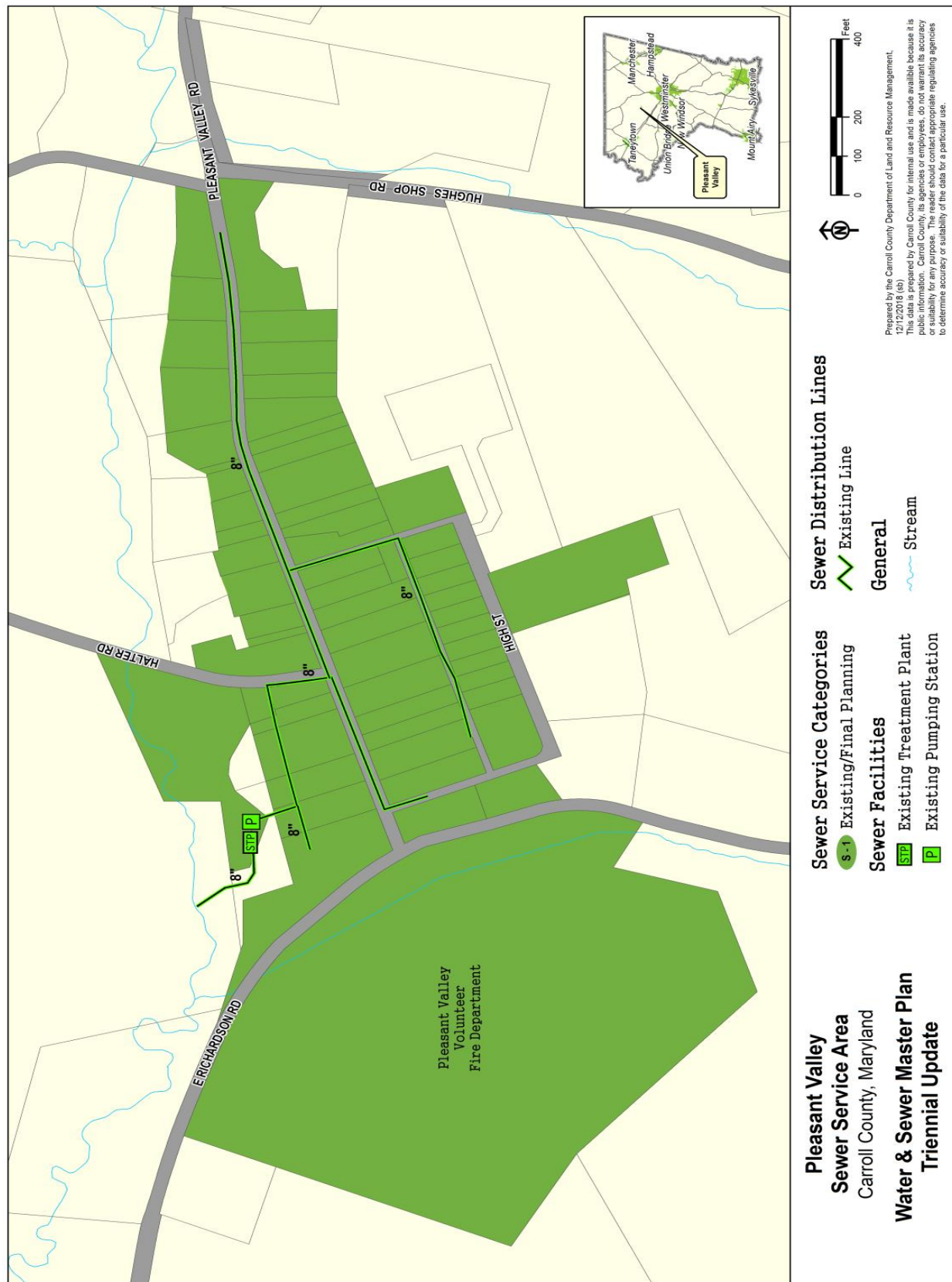
See Table 22A for Pleasant Valley SSA infrastructure.

Table 22A: Pleasant Valley SSA Treatment Plant

Service Area and/or WWTP Name	WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Flows Average/Peak (MGD)	Method of Sludge Disposal
Pleasant Valley	SBR	Bear Branch Big Pipe Creek	0.019	0.003/0.003 (MGD)	Transportation of Sludge

Discharge Permit Number: 09DP3044 NPDES Number: MD0066745

Map 26



Sludge Management

The sludge is transported to the County-owned sludge facility at the Westminster Wastewater Treatment Plant. See Table 22B for Pleasant Valley SSA Sludge Management.

Table 22B: Pleasant Valley SSA Sludge Management

Quantity (tons/yr)	Quality	Method of Disposal/Use	Permit #s	Future Disposal Method	Problems
2.484 dry 359 wet	Aerobically digested	Hauled to the Westminster Septage facility	2008-STR- 5384	n/a	n/a

Allocation Procedure

Connection to the system is available to those properties located within the service area. There is no Allocation Procedure due to the limited number of properties in the service area and system capacity.

Needs Analysis

Information does not currently exist to determine the amount of flow in Pleasant Valley that may be attributable to I&I. Projects aimed at reducing I&I could recapture any capacity being lost.

Planned Projects and Recommendations

There are no planned projects at this time.

Taneytown Sewer Service Area

Current Conditions

The City of Taneytown owns and operates the community sewer system and generally limits service to the area located within the City's corporate boundary. The entire planned sewer service area comprises approximately 3,135 acres and is situated in the northwest portion of the County and serves 2,793 accounts. See Map 28: Taneytown SSA. The treated effluent is discharged to Piney Creek, which is in the Upper Monocacy River watershed. See Table 23E for Taneytown WWTP Design capacity is 1.1 mgd. Average flows are 0.706 mgd.

The Taneytown community sewer system is composed of collection lines, four pumping stations, and a WWTP. The City's WWTP was put into service in 2000. It has an average daily flow design capacity of 1.1 mgd, with a three-year average flow from 2014-2016 of approximately 0.775 mgd including I&I. Hydraulically, the plant can treat a peak flow of 5.0 mgd. Sewage is treated via the sequence batch reaction process. The WWTP was upgraded to meet enhanced nutrient removal (ENR) discharge limits in 2016.

Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

See Tables 23A-23D for Taneytown SSA infrastructure.

Table 23A: Taneytown SSA Treatment Plant

WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Average Flows (MGD)	Method of Sludge Disposal
Activated sludge/ENR	Piney Creek	1.100	0.706	Land application

Discharge Permit Number: 00DP0687A NPDES Number: MD0020672

Table 23B: Taneytown SSA Interceptors

Service Area and/or WWTP Name	Interceptor	Diameter (inches)	Average Day Flow (MGD)	Design Flow (MGD)
Taneytown	Main	12, 15, 18	0.706	5.000

Map 27

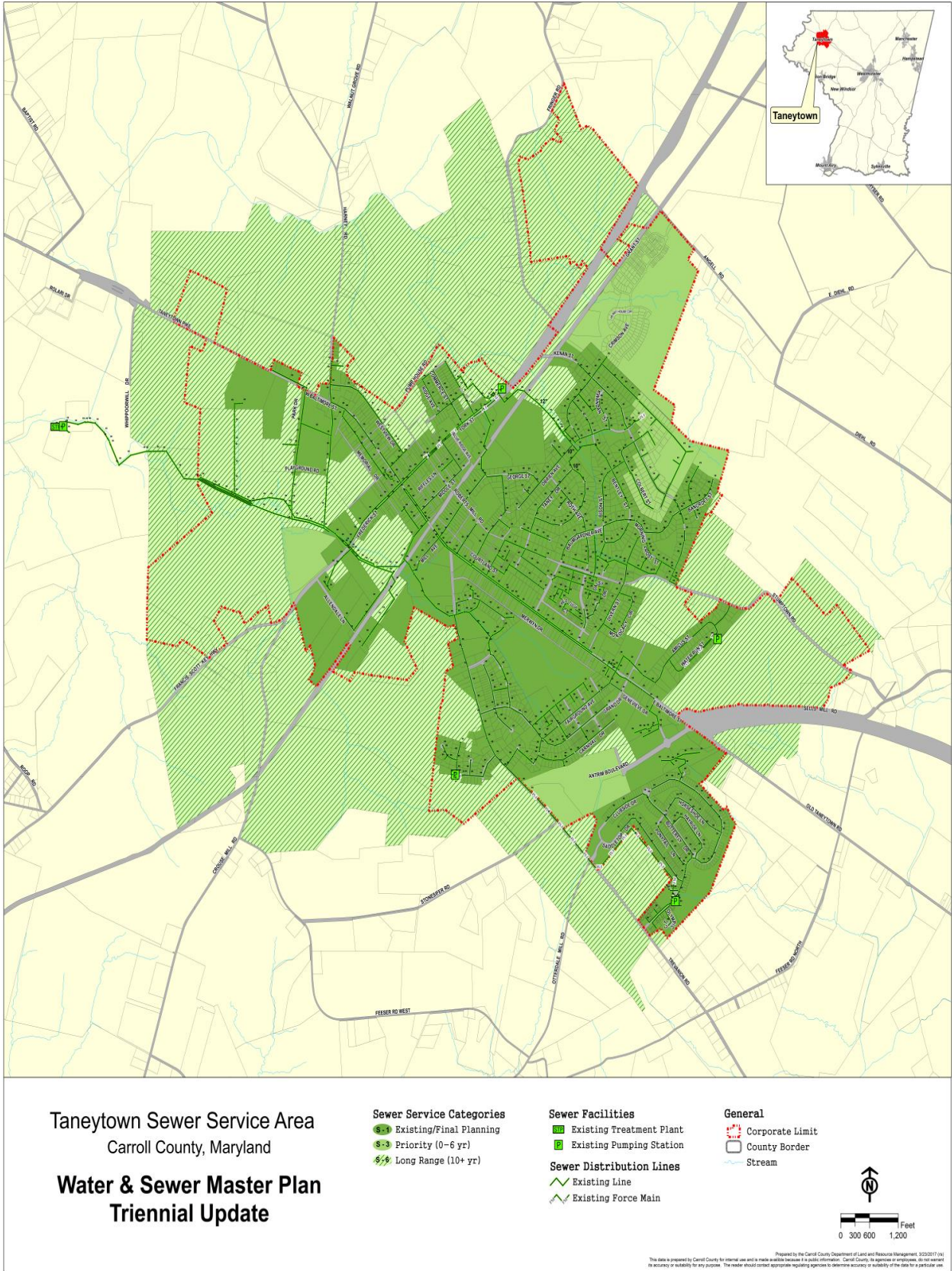


Table 23C: Taneytown SSA Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
York Street	N 727472.49 E 1264460.76	3	1.152	2.304	0.2390
Wheatfields	N 720824.54 E 1263817.06	2	0.140	0.140	0.0110
Carroll Vista	N 718575.85 E 1268438.20	2	0.425	0.425	0.0374
Creekside	N 723194.41 E 1269294.18	2	0.144	0.144	0.0050
Total		9	N/A	3.013	0.2924

*Coordinate locations are Maryland State Plane 1983 Datum.

Table 23D: Taneytown SSA Force Mains

Force Main	Maximum Day Pumpage in MGD	Diameter (inches)	Design Flow (MGD)
York Street	1.963	12	2.304
Wheatfields	0.072	4	0.140
Carroll Vista	0.204	6	0.425
Creekside	0.019	6	0.144
Total			3.013

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

Sludge is disposed of by land application, which is handled by an outside contractor (Enviro-Organic Technologies), which holds all applicable permits for fields that are applied to. The material is cake solids that are incorporated into the fields before the end of the day on which it is applied. The WWTP disposed of 342.12 wet Tons of sludge from January 1, 2016 to December 31, 2016.

Table 23E: Taneytown SSA Sludge Management

Quantity	Quality	Method of Disposal/Use	Permit #s	Future Disposal Method
342.12 wet Tons/year	15.48% solids Belt Press Dried	Dried sludge applied to farmland	2014-STF-5816-sewage sludge utilization permit. All other Permits for land application are held by the contractor (Enviro-Organic Technologies).	N/A

Allocation Procedure

A property owner, developer, or individual seeking site plan or subdivision approval must obtain certification of sewer adequacy, prior to final approval by the City, for any part of a proposed development project that will be recorded in the Land Records of Carroll County. The sewer allocation will be based upon approved regulations of the Maryland Department of the Environment. Sewer allocations are assigned and held in reserve at no charge for one year following the effective date of plan approval. The allocation may be renewed once for a one-year period only upon payment of a sewer allocation reservation fee. The fee is \$250 per lot or dwelling unit that does not possess a valid building permit. The fee is in addition to any other fee or charge that the City may assign.

The sewer allocation is effective for one year from the date of allocation. If actual construction on the development project has not commenced by the end of the one-year period, as evidenced by the possession of a valid building permit, the allocation expires unless renewed for the additional year. Once an allocation has expired, the owner, developer, or individual must reapply for a sewer allocation unless specified otherwise in a DRR.

Needs Analysis

The area served by the sewer system is nearly the same as that served by the water supply system. The recorded sewage flows are substantially higher than the recorded water demand. This differential is the result of I&I of stormwater and groundwater into the sewer collection system. Part of the problem stems from the fact that the original collection system was installed with terra cotta clay pipe, much of which still remains in the system. This material tends to form cracks over time, which invites the flow of water from saturated soil into the pipe during storm events. The City has taken several steps in recent years to address this problem. It regularly inspects the lines with video equipment, completing one-third of the system each year, to identify and then correct any problems.

Depending on when and how much of the infiltration and inflow problem is corrected, the design capacity and permitted capacity of the WWTP may be insufficient to serve the Priority and Future service areas depicted in this plan.

See Table 23F for Taneytown SSA sewage problem areas.

Table 23F: Taneytown Sewage Problem Areas

Location	Population (Where Applicable)	Nature Of Problem	Status
Various locations throughout the City	n/a	Tree roots have penetrated the main sewer lines.	The city contracts a root control company to chemically treat these areas on an as needed basis. Pipe lining will be considered as a permanent fix.

Planned Projects and Recommendations

See Table 23G for Taneytown SSA priority projects.

Table 23G: Taneytown SSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Sewer Lines	Future (S-5) 5 Year	Replacement and repair of existing sewer lines	Commerce Street, Windy Hills Drive, Roberts Mill Road	0 MGD
Meades Crossing Pump Station	Priority (S-3) Immediate	Construct a new Pump Station to convey development plans	Meades Crossing	.082 MGD
Belt Filter Press Replacement	Priority (S-3) Immediate	Replace belt filter press at WWTP	Existing WWTP	0 MGD

Long-Term Recommendations (10+ years)

- ♦ Continue CCTV inspection and assessment of collection system to priority projects to reduce I&I
- ♦ Windy Hills Sewer pumping station rehabilitation project.
- ♦ Carroll Vista Sewer pumping station rehabilitation project.
- ♦ York Street sewer pumping station rehabilitation project.
- ♦ Creekside Sewer pumping station rehabilitation project.
- ♦ Demolish old WWTP.

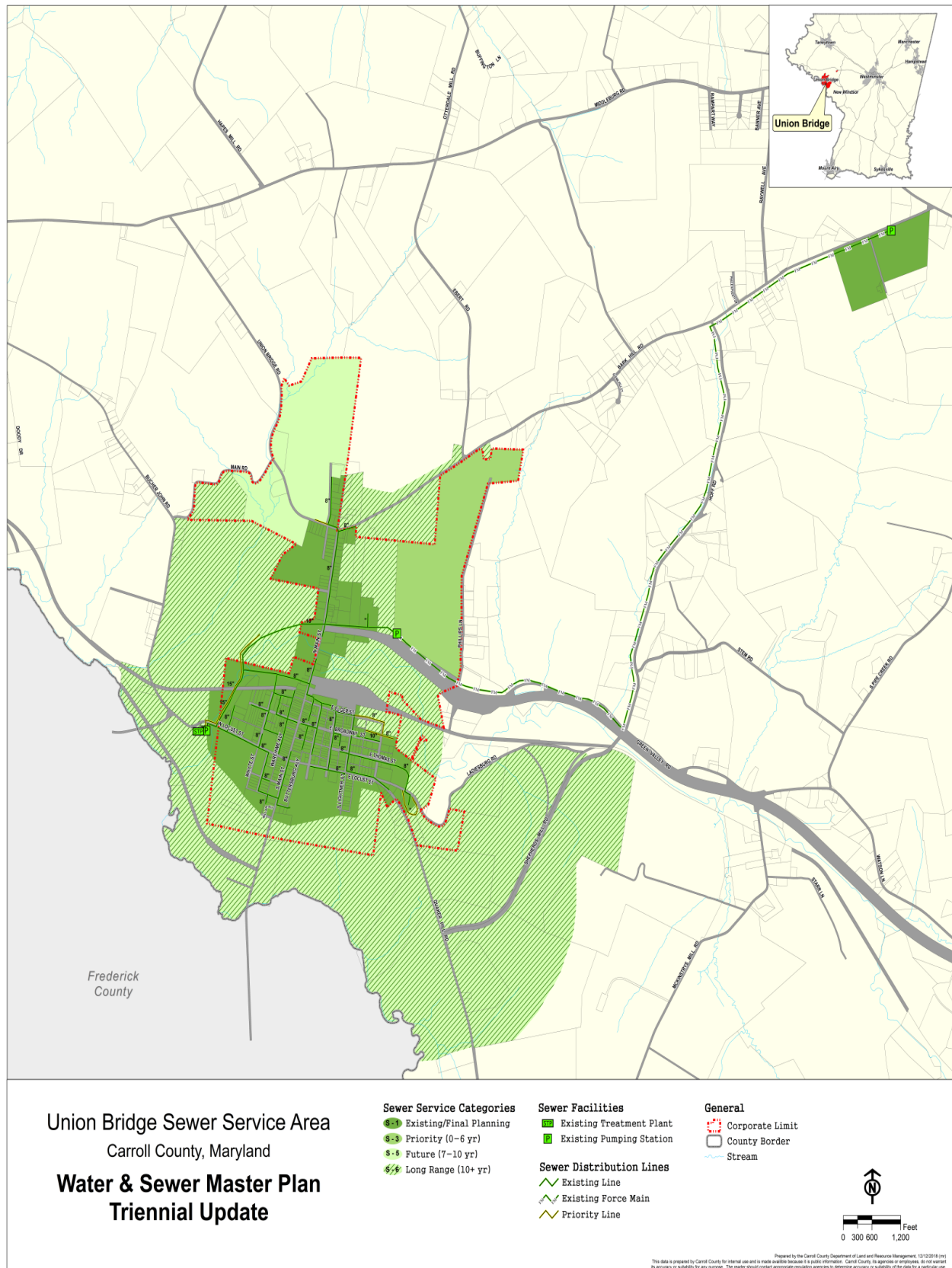
Union Bridge Sewer Service Area

Current Conditions

The Town of Union Bridge owns and operates the community sewer system. The service area is located in western Carroll County and covers approximately 1,406 acres and serves 410 EDUs. See Map 29: Union Bridge SSA. The Union Bridge WWTP discharges into Little Pipe Creek, which is in the Double Pipe Creek watershed. The Union Bridge sewer system consists of a collection system, one pumping station, and a WWTP. The WWTP has a design capacity of 0.200 mgd, with a three-year average flow from 2014-2016 of approximately 0.166 mgd, including I&I. Individual service is not metered. Much of the system is gravity fed to a wet well from which all sewage is pumped into the plant.

The Town has a policy of only serving properties within its corporate limits, with the exception of Francis Scott Key High School, which is served with public sewer from the town to address on-site waste disposal problems.

Map 28



Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

See Tables 24A-24C for Union Bridge SSA infrastructure.

Table 24A: Union Bridge SSA Treatment Plant

Service Area and/or WWTP Name	WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Average Flows (MGD)	Method of Sludge Disposal
Union Bridge	Activated sludge	Little Pipe Creek	0.200	0.166	Transported to other WWTP
Discharge Permit Number: OODP0774 NPDES Number: MD0022454					

Table 24B: Union Bridge SSA Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
WWTP (Locust Street)	N 1260314.15 E 692726.85	2	0.375 (total)	0.140	0.140
Francis Scott Key High School	N1274660.91 E701504.92	2	0.025	n/a	n/a
Total		4	0.400	0.140	0.140

*Coordinate locations are Maryland State Plane 1983 Datum.

Table 24C: Union Bridge SSA Force Mains

Force Main	Maximum Day Pumpage (MGD)	Diameter (inches)	Design Flow (MGD)
Locust Street	0.325	8	0.200
(FSK force main)	n/a	3 & 4	0.025
Total	0.325		0.225

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

The Town's sludge is disposed of by transporting it to the County-owned sludge facility at the Westminster Wastewater Treatment Plant. The Town transports 640.2 tons of wet sludge and 15.36 tons of dry sludge. See Table 24D for Union Bridge SSA sludge management.

Table 24D: Union Bridge SSA Sludge Management

Quantity (tons/yr)	Quality	Method of Disposal/Use	Permit #	Future Disposal Method	Problems
640.2 wet 15.36 dry	3% solids removed from digesters, no metal excess	Transported to another WWTP	2012-STR-3055	-	None

Allocation Procedure

The allocation policy for available sewer capacity in Union Bridge is first come, first served allocation procedure for Town water services, subject to specific provisions in annexation agreements. Costs for expansion of sewer capacity due to new development are the responsibility of the developer. The Town also charges a sewer benefit-assessment fee for every new unit.

The Town of Union Bridge will only allocate capacity to within 0.020 mgd of the design and permitted capacity, which is 0.200 mgd. The purpose for this policy is to avoid planning to the limits of the wastewater treatment plant's capacity. If system use reaches within 0.020 mgd of the plant's capacity, developers will be responsible for providing and/or paying for the needed system improvements. No reservations or set-aside policies for businesses or residential developers are currently provided. However, such a policy may be considered by the Town.

Needs Analysis

Current estimates, based on MDE formulas used in the WRE for estimating I&I, suggest that 26 percent of flows in Union Bridge may be attributable to this problem. Projects aimed at reducing I&I could recapture this capacity. Union Bridge is aware that work to recapture I&I throughout its system is needed. In January 2017, the Town filed an application with MDE for a project that would locate and repair the majority of the I&I problems within town.

A preliminary expansion study was completed in February 2005. The study recommends that a new WWTP be constructed at a different location in order to locate the plant out of the floodplain. The next phase of this project will be final design of a new treatment plant with a design capacity of 0.800 mgd. This phase of the project currently is not funded.

In addition, the Town may conduct a flow monitoring program to determine peak hourly flows and the amount of inflow to the sewer main along Little Pipe Creek. The Town is also reviewing the feasibility of and need to replace and enlarge this sewer main to serve new development. The cost of these improvements will be borne primarily by developers. See Table 24E for Union Bridge sewage problem areas.

Table 24E: Union Bridge SSA Sewage Problem Areas

Area Name	Location	Population (Where Applicable)	Nature Of Problem	Status
Town of Union Bridge	Throughout the system	1,042	I&I	Currently being studied

Planned Projects and Recommendations

See Table 24F for Union Bridge SSA priority projects

Table 24F: Union Bridge SSA Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Infiltration/Inflow Reduction	Priority (S-3) Immediate	Begin an expanded program of infiltration/inflow reduction program	Throughout the system	TBD
WWTP Expansion 1	Priority (S-3) 5 Years	Developer driven expansion of the WWTP	Current WWTP	.046 MGD*
WWTP Expansion 2	Future (S-5) 10 Years	Developer driven expansion of the WWTP	Current WWTP	.069 MGD*
*WWTP Expansion 1 is driven by the demand generated from the Jackson Ridge Development				
*WWTP Expansion 2 is driven by the demand generated from the Villages of Union Bridge				

Long-Term Recommendations (10+ years)

- ♦ Conduct a video survey of sewer lines to detect areas of infiltration/inflow or other problems.
- ♦ In the event the current WWTP cannot be expanded, acquire land for and construct new 0.8 mgd WWTP.
- ♦ Improvements to meet Enhanced Nutrient Removal goal at the existing WWTP.
- ♦ Replace existing 10" sewer with a new 15-inch sanitary interceptor sewer from the WWTP to Manhole No. 6
- ♦ Construct 8" collector sewer lines North of MD 75 on the Phillips property.
- ♦ Explore options for using spray irrigation to create capacity at the WWTP if it is expanded.
- ♦ Investigate the potential to use WWTP treated effluent for Lehigh cooling operations.
- ♦ Projects may be contingent on Public Works Agreements and private sector development activity.

Westminster Sewer Service Area

Portions of the information provided in this chapter for the City of Westminster are excerpted from the most recent Wastewater Capacity Management Plan, submitted to the Maryland Department of the Environment in January 2018. The WWCMP was prepared by Whitman, Requardt and Associates, LLP.

Current Conditions

The City of Westminster owns and operates the Westminster Wastewater Treatment Plant (WWTP) that treats wastewater from the Westminster sewage service area. The WWTP, located on Old New Windsor Pike in Westminster, was originally constructed in 1973 and discharges to the Little Pipe Creek, a tributary to the Double Pipe Creek, a major tributary to the Monocacy River. The WWTP has been expanded and upgraded over time to provide biological nutrient removal (BNR) levels of treatment. The WWTP is an activated sludge treatment system permitted for an annual average flow of 5.0 million gallons per day.

The City recognizes that infiltration and inflow (I&I) into the sewage collection system is a significant contributor to the annual average flows to the WWTP. The City has undertaken several I&I studies and completed several collection system rehabilitation projects. The City has additional rehabilitation projects currently in progress, including replacement of 805 LF of collection pipeline, grouting of 685 pipe joints, restoration of 15 manholes, and installation of 1,100 LF of pipeline repair liner. A second phase will include replacement of an additional 320 LF of collection pipeline, grouting of 400 pipe joints, 25 manhole restorations, and installation of 25 LF of pipeline repair liner.

The Westminster WWTP has been operating above 80% of its design and permit capacity since at least 2005. The City has been actively working to secure sufficient available wastewater treatment capacity.

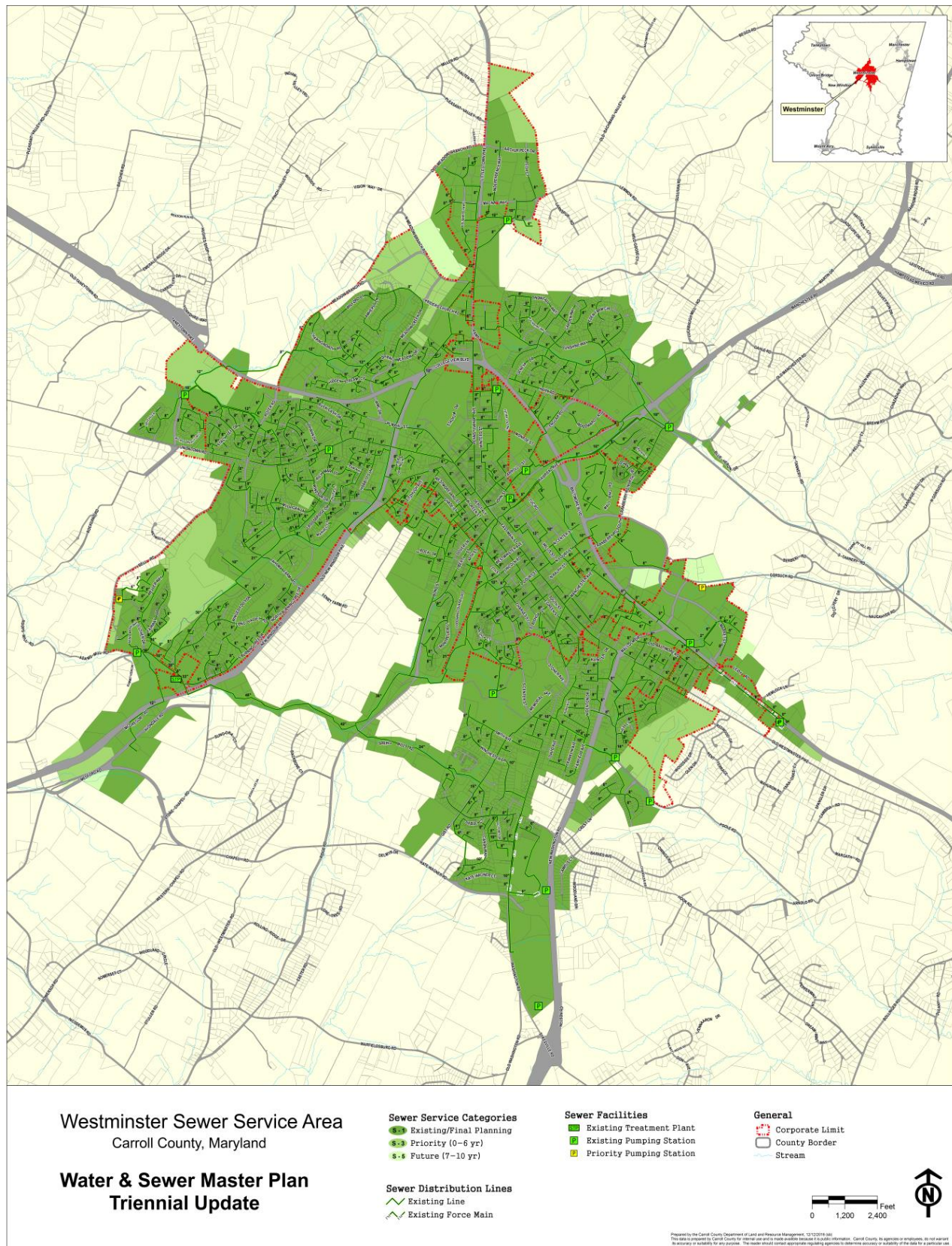
To address the gap in capacity versus anticipated increase in wastewater flows, the City's *2009 Comprehensive Plan* included plans to upgrade the WWTP to provide Enhanced Nutrient Removal (ENR) levels of treatment, and expand the capacity to 6.5 MGD annual average flow design capacity. The City has designed an upgrade of the WWTP to provide ENR levels of treatment (i.e., effluent annual average total nitrogen concentration of less than 4 mg-N/L, and total phosphorus of less than 0.3 mg-P/L) at a design annual average flow of 5.0 MGD. The ENR upgrade project is now ready for construction in 2018.

Regulatory Setting

The Maryland Department of the Environment (MDE) requires municipalities operating wastewater treatment plants at flows above 80% of their design capacity to complete an Available Capacity Report, a Wastewater Capacity Management Plan (WWCMP) and a Municipal Sewage Capacity Report (MSCR). The Available Capacity Report provides information on WWTP flows, treatment and permitted capacity. The WWCMP is a planning and engineering tool used to monitor the relationship between WWTP capacity and

collection system growth. The MSCR evaluates the treatment plant's capacity and performance, and provides guidance for steps to be taken to provide sufficient WWTP capacity for expected growth. The WWCMP consolidated the information in lieu of three documents. This chapter draws from the WWCMP and updates the charts from prior Carroll County Water & Sewer Master Plans.

Map 29



Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations and Force Mains

Westminster Sewer Service Treatment Plant

WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Average Flows (MGD)	Method of Sludge Disposal
Activated sludge	Little Pipe Creek	5.000	4.832	Integrated Agronomics is contacted to remove and dispose of sludge by landfilling in Pennsylvania and Virginia
Westminster WWTP Discharge Permit Number: 14DP0837			NPDES Number: MD0021831	

Westminster Sewer Service Interceptors

Interceptor	Diameter (inches)	Average Day Flow (MGD)	Design Flow (MGD)
Copp's Branch	18-30	Not metered	-
Meadow Branch	12	Not metered	-
Maryland 27	24-48	Not metered	-

Westminster Sewer Service Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
1 Sullivan Avenue	N 699738.85 E 1312599.55	2	0.374	0.051	0.051
3 John Street and Railroad Avenue to Monroe	N 696845.29 E 1314524.55	2	0.676	0.061	0.061
4 John Street and Carroll Street to MD 140	N 695828.31 E 1313919.20	2	0.640	0.036	0.036
5 Cranberry	N 698394.98 E 1319778.95	2	3.168	1.900	1.900
6 Vo-tech	N 681626.90 E 1315263.07	2	0.518	0.050	0.050
7 MD 140 to Hemlock Lane	N 687704.57 E 1323834.77	2	0.180	0.020	0.020
8 MD 140 and Old Baltimore Pike	N 690586.02 E 1320529.58	2	0.432	0.051	0.051
12 Airport Industrial Park	N 705925.48 E 1313822.35	2	0.864	0.066	0.066
13 Near Carroll Lutheran Village	N 690247.02 E 1300214.17	2	0.720	0.032	0.032
14 Near Roops Mill	N 699569.35 E 1301957.57	2	0.720	0.275	0.275
15 Poole Road	N 686433.34 E 1317793.41	2	0.720	0.209	0.209
Total		22	9.012	2.751	2.751

Westminster Sewer Service Pumping Stations

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
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*Coordinate locations are Maryland State Plane 1983 Datum.

Westminster Sewer Service Force Mains

Force Main	Maximum Day Pumpage in MGD	Diameter (inches)	Design Flow (MGD)
Old Bachman Valley Road	Not metered as such. Unable to provide.	8	0.124
Bond St./MD 27	Not metered as such. Unable to provide.	16	3.168
John Street (2)	Not metered as such. Unable to provide.	8 & 8	0.097 & 0.092
MD 140 (2)	Not metered as such. Unable to provide.	6 & 6	0.026 & 0.062
The Greens	Not metered as such. Unable to provide.	10	0.103
Vo-Tech	Not metered as such. Unable to provide.	10	0.074
Sullivan Avenue	Not metered as such. Unable to provide.	6	0.054
Poole Road	Not metered as such. Unable to provide.	10	0.103
Carroll Lutheran Village	Not metered as such. Unable to provide.	10	0.062
Total			3.811 & 3.842

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

Sludge from the wastewater treatment plant presently is hauled from the plant and applied to farmland or transported to a landfill in Virginia. As part of the most recent upgrade to the plant, the volume of sludge is now reduced by a dewatering process. In conjunction with upgrades being made to the wastewater treatment plant to add Enhanced Nutrient Removal, the City is investigating a sludge drying system. Dried sludge could then be transported and burned at a cement manufacturing facility in nearby Union Bridge, Maryland or used as a soil conditioner. See table below for sludge management.

Westminster Sewer Service Sludge Management

Quantity (tons/yr)	Quality	Method of Disposal/Use	Permit #s	Future Disposal Method	Problems
5,187.44 wet	Dewatered to 15% solids	Landfill Disposal	Intergrated holds permit	Sludge drying system	None

Carroll County entered into an agreement with the City of Westminster in 1987 to construct, operate and maintain a septage receiving and pre-treatment facility at the Westminster WWTP. This facility opened in 1993. The septage facility receives and treats septage pumped from septic systems, holding tanks, and dry wells located throughout the County, and leachate removed from County landfills.

The septage and leachate is discharged by haulers who are authorized and licensed by the County. The septage facility is designed to receive average daily combined flows of 26,000 gallons, with a peak daily combined flow not to exceed 39,000 gallons. Following pre-treatment, which consists of removal of Biochemical Oxygen Demand (BOD), the solids are dewatered and the septage sludge cake is hauled by truck to the County Landfill. The liquid removed from the septage is treated in the City's WWTP and discharged in accordance with the City's NPDES permit. All normal expenses associated with the operation and maintenance of the septage facility are the County's responsibility. The Board of County Commissioners approved a \$4M upgrade to the septage facility to produce cleaner effluent which will ensure that the City of Westminster's WWTP can meet enhanced nutrient removal requirements imposed by the Maryland Department of the Environment.

Allocation Procedure

On June 23, 2017, the City temporarily suspended the processing of applications requiring a net new water allocation for nine months. Concurrently with the water suspension, the City was also preparing an update to its WWCMP. The City decided to wait for completion of the WWCMP, before reviewing applications for sewer allocations, since WWTP capacity is reviewed by the update. The City expects to be able to process applications, after Friday, March 23, 2018, absent unforeseen circumstances, as of the date of submittal of this chapter.

Westminster's Sewer Service Area presently extends outside its corporate limits. In August 2002, the Mayor and Common Council adopted Good Cause Waiver legislation for the extension of public water and sewer outside the corporate limits. That legislation requires new or redevelopment projects to be in compliance with the Town-County Agreement, which stipulates that for property contiguous to the corporate limits, the owner must initiate annexation of the property into the City in order for the property to be served. If the property does not meet the test for annexation, the owner must file a Good Cause Waiver application with the City. In order for the Mayor and Common Council to approve a Good Cause Waiver, the property must be identified as S-1 or S-3 in the Carroll County Water & Sewer Master Plan. If approved, the applicant must also execute an "Intent to Annex" agreement. The applicant must also obtain a sewer allocation from the City. These procedures provide control over the extension of City utilities outside the City limits.

Needs Analysis

Estimated wastewater demands from incompletely built and unbuilt parcels were considered in short-term and long-term categories as part of the 2018 WWCMP. The short-term category included known projects with and without approved building permits. Projects were evaluated regarding expected timeframe and whether or not they already had an MDE-approved allocation. The chart on the following page indicates the short-term and allocated categories to correspond with the timeframe of this chapter.

The WWTP is also being upgraded to provide ENR levels of treatment for an annual average design flow of 5.0 MGD. The construction of ENR-related improvements will take several years to complete. The 2015-2017 operating data was used in determining the available

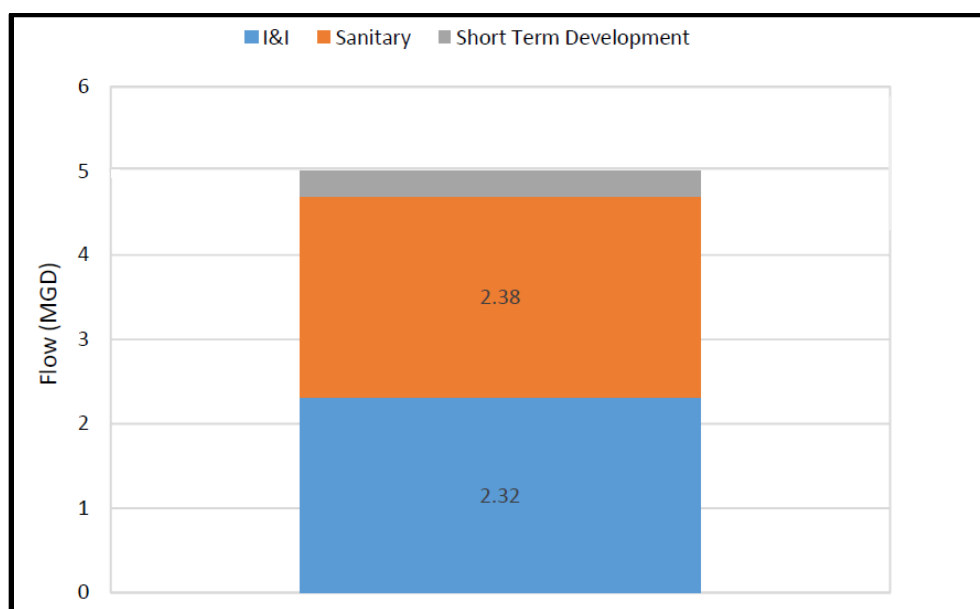
wastewater capacity compared to an annual average of 5.0 MGD design and permit flow. The chart on the following page shows capacity.

Wastewater Demand with I&I for Current Planning Period

	Demands	Associated I&I	Total Wastewater
	<i>gpd</i>	<i>gpd</i>	<i>gpd</i>
Allocated Demand	90,605	17,214	107,819
Short-term Demand	181,571	24,498	206,069
TOTALS	272,176	41,712	313,888

The remaining capacity at the WTP is approximately 300,000 gpd, which corresponds with the known short-term and allocated demands for wastewater capacity. As a result, the City expects to adopt a new allocation policy to address the existing needs and demand and match them to remaining capacity.

WTP Remaining Capacity for Current Planning Period



Despite the current flows nearing the design flow, the WWTP has consistently performed very well, providing effluent quality better than the NPDES discharge permits for every month of the 2015-2017 period. There have been no reported bypasses or overflows during this period.

The City continues to operate its plant well within current NPDES permit limits. The planned ENR project incorporates state-of-the-art nutrient removal technology. Once this ENR project

has been completed, this technology will limit future design and permitted capacity expansion to 6.5 MGD.

As noted earlier, the City is also conducting a major study to identify and reduce I&I from the major interceptor that conveys flow to the plant. This project could be completed either in-lieu of or in concert with a future expansion project. Other I&I initiatives are in progress as described in earlier sections.

Priority Projects

The charts below represent updated information as provided by the City of Westminster's Public Works Department in response to a request by Carroll County Planning for updated information in this format.

Westminster Sewer Service Area Sewage Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Sewer System Rehabilitation	Priority (S-3) Immediate	Rehabilitate leaking mains	Throughout the City's 65 miles of sewerage collection system	1.76 MGD
Rehabilitate Pump Station 15	Priority (S-3) 5 Years	Replace pumps	Poole Road off MD 97	0 MGD
Upgrade Pump Station 12	Priority (S-3) 5 Years	Install two new submersible pumps, a new wet well, valve vault, and piping	Old Bachman's Valley Rd. adjacent to West Branch Trade Center Industrial Park	0 MGD
WWTP Expansion	Priority (S-3) 5 Years	Expand Treatment Capacity	WWTP on MD Route 31	1.5 MGD
Enhanced Nutrient Removal	Priority (S-3) Immediate	Install new treatment technology	Wastewater Treatment Plant	0 MGD
Upgrade of the Pre-treatment Septage Facility	Priority (S-3) Immediate	Upgrade the septage facility to produce cleaner effluent	Existing WWTP	0 MGD

Long-term Recommendations (10+ years)

The 2018 WWCMP identified current trends towards decreasing influent flows. Along with the ongoing and planned I&I reduction efforts, there should be long-term, reduced wastewater inflows over time. It is also anticipated the City of Westminster will continue to have a limited water supply, which will limit the actual increase in wastewater flows. A new allocation policy will further control the growth of flows.

Finally, the proposed ENR upgrade for the WWTP is now ready for construction. When the ENR upgrade is complete and operational, a complete re-evaluation of the treatment plant's hydraulic and treatment capacity is recommended. Through a combination of flow

equalization and incremental improvements at the WWTP, the system's capacity could be increased with relatively modest capital investments.

Projected Sewer Supply Demands and Projected Capacity

The following table summarizes projected sewer demand over the next ten years. It incorporates planned capacity improvements that respond to the demand projections.

Table 32⁸ Projected Sewerage Demands and Planned Capacity*																		
<u>Service Area</u>	<u>Present Year</u>						<u>Priority Planning</u> (0-6 Year)						<u>Future Planning</u> (7-10 Year)					
	<u>Res. Pop. Ser.¹</u>	<u>G P C D</u>	<u>Capacity</u> Million Gal. Daily (MGD)				<u>Res. Pop. Ser.²</u>	<u>G P C D</u>	<u>Capacity</u> Million Gal. Daily (MGD)				<u>Res. Pop. Ser.³</u>	<u>G P C D</u>	<u>Capacity</u> Million Gal. Daily (MGD)			
			<u>Res. Dem.</u>	<u>Oth. Dem.</u>	<u>Tot. Dem.</u>	<u>Ex. Cap.</u>			<u>Res. Dem.</u>	<u>Oth. Dem.</u>	<u>Tot. Dem.</u>	<u>Pl. Cap.</u>			<u>Res. Dem.</u>	<u>Oth. Dem.</u>	<u>Tot. Dem.</u>	<u>Pl. Cap.</u>
Freedom/Sykesville	22,867	80	1.837	.097	1.934	2.74 ⁹	29,172	84	2.441	0.488	2.929	3.500	29,177	87	2.656	.548	3.204	3.500
Hampstead	6,002	77	0.466	0.076	0.542	0.900	7,486	80	0.598	0.245	0.843	0.900	8,039	80	0.647	0.311	0.958	0.900
Manchester	3,512	77	0.271	0.036	0.307	0.500	4,304	79	0.342	0.048	0.390	0.595	4,548	80	0.364	0.048	0.412	0.845
Mount Airy ¹⁰	9,786	64	0.627	0.177	0.804	1.200	10,248	65	0.666	0.373	1.039	1.200	10,248	65	0.666	0.373	1.039	1.200
New Windsor ¹¹	1,399	48	0.067	0.012	0.079	0.115	2,004	53	0.106	0.026	0.132	0.115 ¹²	2,004	53	0.106	0.066	0.172	0.230
Taneytown ¹³	7,017	80	0.558	0.198	0.756	1.100	8,801	81	0.714	0.275	0.989	1.182	8,801	81	0.714	0.275	0.989	1.182
Union Bridge	977	81	0.079	0.080	0.159	0.200	1,794	87	0.159	0.097	0.256 ¹⁴	0.246	2,601	91	0.238	0.097	0.335	0.315
Westminster	28,839	144	4.156	0.676	4.832	5.000	29,995	142	4.264	0.745	5.009	6.5	29,995	142	4.264	.811	5.075	6.5

⁸ See Appendix 3 Method for Projecting Water Supply and Sewer Demands. Note: Table 32 corresponds with MDE's required Table 32 and is therefore out of sequence with preceding and succeeding table numbers.

⁹ This number represents the Carroll County portion of the capacity

¹⁰ The Priority calculations are based on the Mount Airy's "pipeline" allocations and were provided to the County by the Town.

¹¹ New Windsor's Priority and Future calculations are based on 165 gal per unit for residential demand.

¹² New Windsor will be eliminating this deficit by conducting an I&I project that will recapture more than 17,000 gpd.

¹³ Mount Airy and Taneytown do not have any properties in the Future Planning Category.

¹⁴ Union Bridge will be eliminating this deficit by conducting an I&I project that will recapture more than 10,000 gpd

Unincorporated Sewer Service Areas

Current Conditions

Most of the private sewer systems that have relatively higher demand numbers are not intended to accommodate growth. They serve a specific purpose or population that is not expected to change significantly over time. The demand numbers and inventory of facilities provided in the tables that follow reflect this.

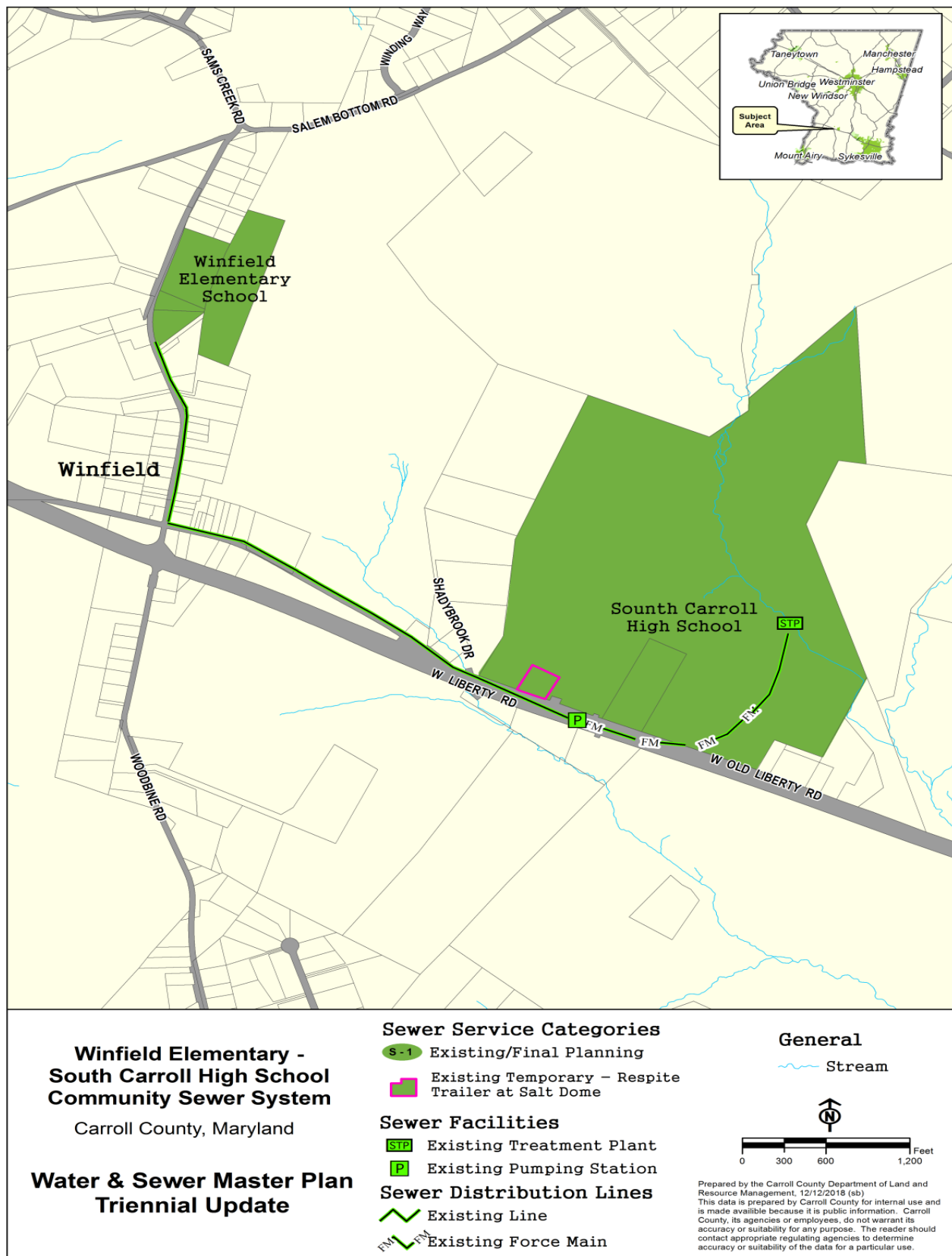
Approximately 260,076 acres or 90 percent of the total land, in Carroll County lie outside of any existing or planned public sewer service area. Properties located outside of a public sewer service area dispose of waste using private septic or sewer systems. These systems generally are not required to have discharge permits from MDE, primarily because they handle less than 5,000 gallons per day of sewage. However, there are some uses, such as schools, industries, mobile home parks and recreational facilities that are not in a public sewer service area and treat moderate amounts of sewage using a private, multi-use or community sewer system. These uses treat enough sewage that MDE has determined that a discharge permit is necessary. This section of the plan covers such uses. See Table 27A for unincorporated area future wastewater demand on the following page.

Table 27A: Unincorporated Area Future Wastewater Demand

SERVICE AREA	PRESENT YEAR						PRIORITY PLANNING (0-6 Year)						FUTURE PLANNING (7-10 Year)					
	POPULATION			GCPD	CAPACITY MILLION GAL DAILY (MGD)		POPULATION			GCPD	CAPACITY MILLION GAL DAILY (MGD)		POPULATION			GCPD	CAPACITY MILLION GAL DAILY (MGD)	
	TOT.	SER.	UNS.		DEMAND	EXISTING CAPACITY	TOT.	SER.	UNS.		DEMAND	PLANNED CAPACITY	TOT.	SER.	UNS.		DEMAND	PLANNED CAPACITY
PUBLIC SCHOOLS ¹																		
Charles Carroll Elementary						0.0100						0.0100						0.0100
Francis Scott Key High		921		6.5	0.0082	0.0170												
Mechanicsville Elementary		541		2.0	0.0017	0.0170		568		10.0	0.0075	0.0170		612		10.0	0.0077	0.0170
Sandymount Elementary		523		3.8	0.0024	0.0120		552		10.0	0.0064	0.0120		595		10.0	0.0066	0.0120
Runnymede Elementary		655		2.3	0.0016	0.0250		696		10.0	0.0079	0.0250		754		10.0	0.0081	0.0250
PRIVATE COMMUNITY, MULTI-USE, OR PRIVATE SCHOOL																		
Ashley Mobile Home Park (MHP)	153	153	0	60	0.0092	0.0110	153	153	0	60	0.0092	0.0110	153	153	0	60	0.0092	0.0110
Bowling Brook Prep. School	149	149	0	53	0.0079	0.0250	523	523	0	66	0.0345	0.0350	523	523	0	66	0.0345	0.0350
Gaither Manor Apartments	400	400	0	60	0.0240	0.0450	400	400	0	60	0.0240	0.0450	400	400	0	60	0.0240	0.0450
Gerstell Academy	205	205	0	2.5	0.0005	0.0114	400	400	0	10	.0040	0.0114	690	690	0	10	0.0059	0.0114
Golden Age Guest Home	50	50	0	100	0.0050	0.0056	50	50	0	100	0.0050	0.0056	50	50	0	100	0.0050	0.0056
Hillandale MHP	438	438	0	60	0.0263	0.0326	438	438	0	60	0.0263	0.0326	438	438	0	60	0.0263	0.0326
Lakeview MHP	99	99	0	75	0.0074	0.0074	99	99	0	75	0.0074	0.0074	99	99	0	75	0.0074	0.0074
Lakeview Nursing Home	60	60	0	100	0.0060	0.0070	60	60	0	100	0.0060	0.0070	60	60	0	100	0.0060	0.0070
Pheasant Ridge Estates MHP	303	303	0	60	0.0182	0.1125	303	303	0	60	0.0182	0.1125	303	303	0	60	0.0182	0.1125
Pleasant View Nursing Home	100	100	0	90	0.0090		100	100	0	90	0.0090		100	100	0	90	0.0090	
Ramblin' Pines Campground ²	468	468	0	57	0.0267	0.0267	468	468	0	57	0.0267	0.0267	468	468	0	57	0.0267	0.0267
Reservoir MHP	84	84	0	60	0.0050	0.0070	84	84	0	60	0.0050	0.0070	84	84	0	60	0.0050	0.0070
River Valley Ranch	477	477	0	50	0.0239	0.0250	477	477	0	50	0.0239	0.0250	477	477	0	50	0.0239	0.0250
Rock Brook MHP	123	123	0	60	0.0074	0.0090	123	123	0	60	0.0074	0.0090	123	123	0	60	0.0074	0.0090
Shields Todd Village MHP	234	234	0	60	0.0140	0.0150	234	234	0	60	0.0140	0.0150	234	234	0	60	0.0140	0.0150
Sullivan's MHP	123	123	0	60	0.0074	0.0090	123	123	0	60	0.0074	0.0090	123	123	0	60	0.0074	0.0090
Taylorville MHP	60	60	0	60	0.0036	0.0050	60	60	0	60	0.0036	0.0050	60	60	0	60	0.0036	0.0050
Westminster First Church of the Nazarene	-	-	-	-	-	-	2,230	2,230	0	2.5	0.0055	0.0055	2,230	2,230	0	2.5	0.0055	0.0055
PARKS																		
Camp Hashawha	120	120	0	75	0.0090	0.0090	120	120	0	75	0.0090	0.0090	120	120	0	75	0.0090	0.0090
Gillis Falls							500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050
Patapsco State	1,000	1,000	0	10	0.0100	0.0100	1,000	1,000	0	10	0.0100	0.0100	1,000	1,000	0	10	0.0100	0.0100
Piney Run	500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050	500	500	0	10	0.0050	0.0050
INDUSTRIAL – COMMERCIAL																		
Congoleum Industries	230	230	0			0.6500	230	230	0			0.6500	230	230	0			0.6500
Development Co. of America	530	530	0	10	0.0053		530	530	0	10	0.0053		530	530	0	10	0.0053	
Finksburg Plaza	500	500	0	20	0.0100	0.0100	500	500	0	20	0.0100	0.0100	500	500	0	20	0.0100	0.0100
Hampstead Industrial Center	472	472	0	30	0.01425	0.1500	600	600	0	24	0.01425	0.1500	1,000	1,000	0	15	0.0150	0.1500
Joseph A. Bank ³	250	250	0	18	0.0050	0.0050	-	-	-	-	-	-	-	-	-	-	-	-
North Carroll Shopping Plaza	400	400	0	20	0.0080	0.0080												
South Carroll Swim Club	1,234	1,234	0	3	0.0037	0.0150	1,234	1,234	0	10	0.0123	0.0150	1,234	1,234	0	10	0.0123	0.0150
PUBLIC COMMUNITY																		
Winfield Elementary/South Carroll High Schools		1,784		3.2	0.005	0.0500		1,644		12.5	0.0250	0.0500		1,737		12.5	0.0250	0.0500
TEMPORARY																		
Respite Trailer at Old Liberty Road Salt Dome Storage ⁴		18		.15	.0000027	0.0500		18		.15	.0000027	0.0500		18		.15	.0000027	0.0500

¹ Includes staff at school² Data pertains to peak use generally during summer months³ Table reflects assumption that Jos. A. Bank will be connected to the Hampstead public sewer system before the Priority planning years.⁴ Temporary Use-Increases demand to Winfield Elementary/South Carroll High School waste water by a miniscule amount, 1,000 gallons per year.

Map 30



Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations, and Force Mains

See Table 27B for unincorporated area treatment plants; Table 27C for unincorporated area force mains– schools; and Table 27D: unincorporated area discharge permits.

Table 27B: Unincorporated Area Treatment Plants

Service Area and/or WWTP Name	WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (mgd)	Flows Average/Peak
Industrial/Commercial				
Congoleum, Inc.	Trick filt. series, ponds	N. Branch Patapsco River	.65	.65
Development Co. of America	Evap. Pond	.10 mg pond	Unknown	.01
Finksburg Plaza		Sub-surface		.010
Hampstead Industrial Center	Extended aeration & activated sludge	East Branch Patapsco River	.15	.15
Joseph A Bank		Sub-surface	.005	.005
South Carroll Swim Club		Sub-surface		.004
Private Community, Multi-Use, or Private School				
Bowling Brook Prep. School	Package plant	Monocacy River	.025	.007/
Gaither Manor Apartments	E.A. + sand	Trib. to S. Branch Patapsco River	.045	.017/.020
Gerstell Academy		Sub-surface	.011	0.0005
Golden Age Guest Home	Land disposal		.005	
Mobile Home Parks				
Ashley Mobile Home Park (MHP)	Land disposal		.011	Unknown
Hillandale MHP	Land disposal		.033	Unknown
Lakeview Nursing Home	Land disposal		.007	Unknown
Pheasant Ridge Estates MHP	Package	S. Branch Patapsco	.112	.015/
Ramblin' Pines Campground	Land disposal		.027	Unknown
Reservoir MHP	Land disposal		.007	Unknown
River Valley Ranch	Land disposal		.025	Unknown
Rock Brook MHP	Land disposal		.009	Unknown
Shields Todd Village MHP	Land disposal		.015	Unknown
Sullivan's MHP	Land disposal		.009	Unknown
Taylorsville MHP	Land disposal		.005	Unknown
Public Schools				
Winfield Elementary / South Carroll High	Sequential Batch Reactor	Piney Run	.050	.005/.014
Runnymede Elementary	Sequential Batch Reactor	Bear Branch	.025	.002/.018
Charles Carroll Elem.	Land disposal		.010	.003
Mechanicsville Elem.	Land disposal		.017	.002
Sandymount Elem.	Land disposal		.012	.002

Table 27C: Unincorporated Area Force Mains– Schools

Service Area and/or WWTP Name	Force Main	Maximum Day Pumpage in MGD (date)	Diameter (inches)	Design Flow (mgd)
Winfield Elementary/ South Carroll High	Old Liberty Road	.080 (10/20/01)	4	.050

Table 27D: Unincorporated Area Discharge Permits

Name	City	Permit	NPDES Number
Hampstead Industrial Center	Hampstead	02DP0022	MD0001881
Bowling Brook Preparatory School	Keymar	00DP3172	MD0067571
Congoleum Corporation	Finksburg	02DP0422	MD0001384
Gaither Manor Apartments WWTP	Sykesville	01DP0779	MD0022845
Gerstell Academy	Finksburg	98DP3276	
Pheasant Ridge WWTP	Mount Airy	99DP1016	MD0024546
Rivers Downs Development	Finksburg	97DP3222A	
Runnymede WWTP	Westminster	02DP2912	MD0065927
South Carroll High School WWTP	Eldersburg	98DP1028	MD0024589
South Carroll Swim Club	Westminster	01DP3382	
Todd Village Mobile Home Park	Finksburg	04DP3268	

Source: Maryland Department of the Environment, 2005

Sludge Management

Waste from individual septic systems, including community and multi-use sewer systems, is pumped by private contractors and hauled to the Westminster wastewater treatment plant or to other wastewater treatment plants outside the county.

Needs Analysis

At this time, the majority of the systems and problem areas noted in this section are not planned to be connected to a public sewer system. If service areas change and make connection to a public system more feasible, some of these areas could be connected to a public sewer system in the future. Remediation of individual problem areas will be the responsibility of private property owners, or in conjunction with public grant and loan programs.

A number of small communities have failing septic systems due to small lots or other geographic conditions. Identifying these areas allows for the possibility that solutions may be sought at some point in the future. See Table 27E for unincorporated sewage area problem areas.

Table 27E: Unincorporated Sewage Area Problem Areas

Area Name	Location	Population	Nature Of Problem	Status
Carrollton	E.D. #4		Small lots; soil limitations	
Cedarhurst	E.D. #4		Small lots; soil limitations	
Detour - Keymar - Bruceville	E.D. #10	160	Failing septic systems; small lots; clay soils	Unknown at this time
Frizzellburg	E.D. #2			
Gaither	E.D. #14		Small lots; soil limitations	
Key View (Bark Hill)	E.D. #2	36	Failing septic systems; too rapid infiltration	Unknown at this time
Lineboro	E.D. #6		Small lots; soil limitations	
Linwood	E.D. #12		Small lots; soil limitations	
Marston	E.D. #11		Small lots; soil limitations	
Mayberry	E.D. #2		Small lots; soil limitations	
Melrose	E.D. #6		Small lots; soil limitations	
Middleburg - Feesersburg	E.D. #10	130	Failing septic systems; small lots; clay soils	Unknown at this time
Patapsco	E.D. #4		Small lots; soil limitations	
Priestland	E.D. #12		Small lots; soil limitations	
Rockbrook Trailer Park - Fairmount Rd.	E.D. #6	120	Trailer park without replacement area	Unknown at this time
Silver Run	E.D. #3		Small lots; soil limitations	
Snydersburg	E.D. #8		Failing septic systems; limited soil capabilities; small lots	Unknown at this time
Starners Dam	E.D. #1		Small lots; soil limitations	
Twin Arch Road	E.D. #13	50	Failing septic systems; high groundwater	Unknown at this time
Tyrone	MD 832, E.D. #2	50	Failing septic systems; small lots; clay soils	Unknown at this time
Union Mills	E.D. #3		Small lots; soil limitations	
Uniontown	E.D. #2		Small lots; soil limitations	
Watersville			Small lots; soil limitations	
Woodbine	E.D. #14		Small lots; soil limitations	

Planned Projects and Recommendations

No immediate or near future planned wastewater projects exist in the unincorporated part of the county at this time. However, the County plans to study options for addressing expiration of the Gaither Manor WWTP permit and options for future service to that area 10+ years out.

Section III: Financial Management Plan

This section addresses the fiscal health of publicly owned community sewerage systems located throughout Carroll County.

The wastewater treatment systems serving Mount Airy, Manchester, Westminster, Union Bridge, New Windsor, and Taneytown are individually owned and operated by the respective municipalities. Costs and revenues are primarily generated by the users of each system.

The systems serving Hampstead and Pleasant Valley are owned and operated by Carroll County as an Enterprise Fund. A summary of the Utilities Enterprise Budget for FY11-16 Community Investment Plan can be found in Appendix 6. For purposes of fiscal accounting provided in this Section, the Freedom system is divided into two segments. The Freedom WTP is owned by the State of Maryland and is operated by MES. The sewage collection and conveyance network is owned and operated by the County as an Enterprise Fund. Since the treatment plant's flows are attributed to both the County and State institutions, the costs (or revenues) are shared by the County and MES. Costs are proportionate to the share of flows (for monthly maintenance) and the volume allocated to each user (for any upgrades costs). Currently, approximately 85 percent of the flows are generated by the County, 15 percent by MES. Consequently, 85 percent of costs (or revenues) accruing to the Freedom WTP are generated by the County, 15 percent by MES (including the Springfield Hospital Complex).

The sewage treatment system serving South Carroll High School was replaced in 1992 by a sequential batch reactor (SBR) sewage treatment plant to serve Winfield Elementary School in addition to the high school. The system is owned and operated by the Carroll County Department of Public Works, Bureau of Utilities. Operating costs are paid by the Board of Education to the Bureau of Utilities and are based on standard user fees. The Winfield Volunteer Fire Department is also connecting to the system and will be charged standard user fees.

APPENDIX 1: Definitions

Community Sewer System – A system, publicly or privately owned, serving two or more individual lots, for the collection and disposal of sewer or industrial wastes of a liquid nature, including various devices for the treatment of such sewage and industrial wastes.

Community Water Supply System – A system, publicly or privately owned, serving two or more individual lots, comprised of a source and the surrounding area from which water is supplied, and a distribution system, including treatment and storage facilities.

Comprehensive (or Master) Plan – A composite of maps and written text, the purpose of which is to guide the systematic and harmonious physical development of the County and its municipalities. For unincorporated areas, it is adopted by the Board of County Commissioners under the provisions of Article 66B; for incorporated areas, it is adopted by the Mayor and Council of each respective municipality under the provisions of The Land Use Article or 23A.

Water and Sewer Master Plan – A comprehensive plan providing throughout the County, including all municipalities, adequate water supply systems and sewer systems, publicly or privately owned, and comprising all amendments and revisions thereto.

Denied Access – Water and sewer infrastructure, existing or planned, which are located outside the water and sewer planned service areas, are automatically deemed “denied access” facilities for new connections by individual lots. This designation applies to all water and sewer facilities as of the date of adoption of the Carroll County Water & Sewer Master Plan.

Designated Growth Area – An area on the countywide master plan for which a more detailed comprehensive plan has been prepared. Most of the DGAs have a municipality at their center. These are the areas in the county where the majority of residential, commercial, and industrial development is concentrated, as they are generally also the areas where public and private services are available.

Individual Sewer System – A single system of sewers and piping, treatment tanks or other facilities, having a treatment capacity of 5,000 gpd or less, serving only a single lot, and disposing of sewage or industrial wastes of a liquid nature, in whole or in part, on or in the soil of the property, into any waters of this State, or by other methods.

Individual Water Supply System – A single system of piping, pumps, tanks, or other facilities, utilizing a source of ground or surface water to supply only a single lot and having a capacity of 5,000 gpd or less.

Interim Individual System – For areas located within the Existing/Final Planning or Priority Service Areas (W-1,3 or S-1,3), an individual sewer or water supply system which is permitted to serve a single lot only until the community water supply or sewer system becomes available, at which time the lot must connect to the community system within one year.

Lot – A piece or parcel of land occupied, or intended to be occupied, by a principal building and its accessory buildings and uses and which is part of a subdivision which is recorded in the Office of the Clerk of the Circuit Court of Carroll County, or is described by metes and bounds, the description of which has been so recorded.

Multi-Use Sewer System – A system which may be owned or operated by an individual or group of individuals under private or collective ownership, but is not publicly owned or operated. Such a system, which serves a single lot and a number of individuals, includes the collection and disposal of sewage or industrial wastes of a liquid nature, including various devices for the treatment of such wastes, and has a treatment capacity in excess of 5,000 gpd.

Multi-Use Water Supply System – A system which may be owned or operated by an individual or group of individuals under private or collective ownership, but is not publicly owned or operated. Such a system, which serves a single lot and a number of individuals, is comprised of piping, pumps, tanks, or other facilities, which utilize a source of ground or surface water and has a capacity in excess of 5,000 gpd.

Nonpoint Source – Pollution originating from land runoff where no specific outfall can be identified.

Plan Map – The Plan contains two series of maps of different scales for each of the water supply and sewer systems. One series, comprised of two generalized maps (a countywide water map and sewer map), at the scale of 1 inch = 1 mile, is for orientation purposes only. These maps identify the location of community and multi-use water supply and sewer systems. The other series of maps, ranging in scale from 1 inch = 400 feet to 1 inch = 1,000 feet, are the official map series for the community water supply and sewer systems.

Planned Service Area Category –

Existing/Final Planning Service Area (W-1, S-1) - Areas served by community water supply or sewer systems which are either existing, under construction, or have final plans which have been completed. Public water or sewer service is assumed to be existing or under construction if it is in operation or where actual work is progressing or a notice to proceed has been issued with a contract for such work. Final planning means a work or works of a community water supply or sewer system for which contract plans and specifications have been completed. In areas where service is not yet available, public water or sewer service will be placed in operation immediately after construction is completed. This category corresponds to the Existing (W-1, S-1) and Final (W-2, S-2) categories defined in COMAR.

Priority Service Area (W-3, S-3) - Areas that will likely be served by community water supply or sewer systems for which the beginning of construction is anticipated to start within two years, or capital facilities are scheduled for implementation within the next six years and are possible within the framework of the six-year capital program, or areas that are planned to be served by a community system and are located adjacent to existing facilities of the system. Properties within the Priority Service Area are required, as a prerequisite to development, to connect to the community systems at the time of development. This category corresponds to 1-3 years (W-3, S-3) and 3-6 year (W-4, S-4) categories defined in COMAR.

Future Service Area (W-5, S-5) - Areas where improvements to, expansion of, or construction of community water supply or sewer systems are planned for but are not anticipated to occur sooner than six years. The beyond six-year time frame is used to indicate that economic and other conditions and growth patterns may warrant extension of public services within the foreseeable future and should not be construed to mean that, immediately after six years, public facilities will be extended by the County or municipality. The W-5 and S-5 category is intended to be a planned future growth area rather than a programmed growth area. This category corresponds to the 7-10 year (W-5,-S-5) categories defined in COMAR.

Long Range Service Area (W-6, S-6) - Areas that are intended to be served by a public water and/or sewer system but not within the next 10 years.

No Planned Service Area (W-7, S-7) - Areas not intended to be served by a public water and/or sewer system. These areas rely on individual water supply and sewer systems indefinitely.

Private Water or Sewer System - A system which is owned, operated, maintained, and exclusively controlled by one or more individuals, corporations, or other business entities, and serves one or more lots and one or more users.

Public Water or Sewer System - A system which is owned, operated, maintained, and exclusively controlled by a political subdivision, and serves one or more lots and one or more users.

Sewer Service Area - That area served by, or potentially served by, a system of sanitary sewers connected to a treatment plant under the control of a single unit or agency. The service area defines the area within which land uses will connect to a community sewer system. Land uses that are beyond the service area boundary (i.e., are located in the No Planned Sewer Service Area) will be served by individual sewer systems. Connection to a community sewer system is therefore based upon the location of a specific land use relative to the sewer service area, irrespective of property boundaries or the location of existing or planned sewer facilities.

Water Service Area - That area served by, or potentially served by, a water distribution system under the control of a single unit or agency. The service area defines the area within which land uses will connect to a community water supply system. Land uses that are beyond the service area boundary (i.e., are located in the No Planned Water Service Area) will be served by individual water supply systems. Connection to a community water supply system is therefore based upon the location of a specific land use relative to the water service area, irrespective of property boundaries or the location of existing or planned water facilities.

APPENDIX 2: Proposed Projects for the Regional Areas Using Water Resources Element

Piney Run Reservoir

Piney Run is a 298-acre reservoir located in the south-central part of Carroll County. It was constructed in 1975 for three purposes: flood control, water supply, and recreation. To support the development of the lake toward its use as a water supply, the County established two monitoring programs.

In 2003, Carroll County initiated the development of a Watershed Management Plan for the Piney Run Watershed. In connection with that, Carroll County has undertaken the development of a Comprehensive Management Plan for the Piney Run Reservoir Watershed. This effort is comprised of two phases:

1. Phase 1 includes data collection and water quality modeling. The goal of Phase 1 is to collect data and model the Piney Run Reservoir using an integrated approach to establish baseline conditions within the reservoir and the watershed to support Phase 2 of this study.
2. Phase 2 will expand on the data collected and model developed in Phase 1 to characterize the watershed, analyze the model results, identify nutrient loading areas, and provide strategies for addressing physical, ecological, and social opportunities within the watershed. The goal of Phase 2 is to develop a comprehensive watershed management plan for the Piney Run Reservoir Watershed.

The intent of the Piney Run Watershed Management Plan development process is to identify problem areas and propose actions using Phase 1 modeling, previously collected data, and stakeholder involvement. Phase 2 is expected to involve interaction with stakeholders from outside County Government (farmers, recreational councils, local schools, citizens, etc.) to help define overall goals and to develop planning-level concepts and costs for project implementation that will assist with watershed management efforts. This work is being performed under the County's MS4 NPDES Program and stands to set the standard for future development of management plans in other watersheds within Carroll County.

Needs Analysis

Carroll County is committed to the development of a multi-resource public water supply system, utilizing both its ground and surface waters. Although ground and surface water are considered a single resource in Carroll County, two specific initiatives keyed toward the provision and protection of surface water has been undertaken. Another major initiative has been taken in concert with groundwater protection.

Planned Projects and Recommendations

The WRE included recommendations for regional water supplies that would help meet the water demands projected for the planned development of the county, its municipalities and their designated growth areas. The following projects are included in that document as regional water supply options that will address future demands and allow the County and its municipalities to be prepared for policy changes or other changes that would result in the need for additional available water capacity or other future scenarios.

- ♦ Piney Run Reservoir (as built): Safe yield 3.65 mgd with normal pool elevation of 524 ft; existing reservoir; to serve as regional source of supply for Mount Airy and Sykesville/Freedom Service Areas. Direct pumping of raw water from Piney Run to Liberty to augment 'flows' at Liberty Reservoir accompanied by an increase in withdrawal from Liberty OR Water treatment plant at Piney Run
- ♦ Piney Run Reservoir (expanded): Safe yield 4.11 mgd; increase capacity of existing reservoir by raising the spillway riser and emergency spillway; to serve as regional source of supply for Mount Airy and Sykesville/Freedom Service Areas.
- ♦ Gillis Falls Reservoir (as planned): Safe yield 3.85 with normal pool elevation of 610 ft.; planned reservoir; to serve as regional source of supply for Mount Airy and Sykesville/Freedom Service Areas.
- ♦ Surface water intake from Gillis Falls Area: Safe yield 0.85 mgd; develop new surface water intake on Carroll County-owned property near planned Gillis Falls Reservoir; 100-120 mg off-stream storage impoundment.
- ♦ Union Mills Reservoir: Safe yield 3.76 mgd with normal pool elevation of 610 ft.; planned reservoir; to serve as regional source of supply for Westminster, Hampstead, Taneytown, and Manchester Service Areas.
- ♦ Prettyboy Reservoir: Based on Baltimore City's plans to develop 120 mgd treatment plant for its Susquehanna River intake and the resulting increased system reliability, purchase excess capacity from Prettyboy Reservoir. Conceptual plans for a 3.0 mgd intake and 7.5 mile long, 16 inch raw water pipeline from Prettyboy Reservoir to a new 3.0 mgd WTP in Hampstead. Requires a high service pump station located at intake site.
- ♦ York Water Company: Interconnection with York Water Company (in Pennsylvania) to provide approximately 0.90 mgd of finished water to Manchester and Hampstead. Requires a purchase agreement among all parties. This option would require need and participation of Manchester. May not be necessary under normal operating conditions, but would provide ability to move water during extraordinary conditions, such as extreme drought. York County has asked that if a decision is made to proceed with this option, any water main running through Established Rural Areas of York County should only be for conveyance to the Towns of Manchester and Hampstead and not to serve the rural areas in York County. The only exception would be unless public health, safety, and welfare issues are identified to justify such service. York County also

requested that they be involved in any discussions or meetings with York Water Company related to this issue.

- ♦ Interconnection with Freedom: Interconnect with the Mount Airy and Sykesville/Freedom water system and purchase agreement to supply approximately 0.85; 9.7 miles.
- ♦ Interconnection with Fredrick County: Interconnect the Mount Airy and Fredrick County water system and purchase agreement to supply approximately 0.85 mgd (with a maximum agreement of 1.2 mgd).
- ♦ Lehigh Quarry (Union Bridge): Use Lehigh Quarry in Union Bridge as a raw-water reservoir to supply approximately 0.6 mgd to Union Bridge; due to contamination concerns, this option is more feasible once quarry operations cease.
- ♦ Lehigh Quarry (New Windsor): Use Lehigh Quarry near New Windsor as a raw-water reservoir to supply approximately 0.25 mgd to New Windsor; preferred method of transferring water to the WTP is via a release to the nearby stream, and a subsequent withdrawal at the treatment plant.
- ♦ Regional Connection to Westminster: Connect New Windsor to Westminster water supply; approximately 2 miles to raw water or 3 miles to treated water
- ♦ Regional Connection to Union Bridge: Connect New Windsor to Union Bridge water supply subsequent to Union Bridge connecting to the Union Bridge Lehigh Quarry
- ♦ Big Pipe Creek: Develop new surface water intake on Big Pipe Creek to serve Taneytown; safe yield 0.4 mgd; with 2.0 mgd intake and 125 mgd storage impound

APPENDIX 3: Method for Projecting Water Supply and Sewer Demand

The methodology used in this Water & Sewer Master Plan to determine available capacity and projected demand is different than what was used to develop the Water Resources Element. The Water and Sewer Plan followed the requirements of COMAR while the Water Resources Element used the methodology set forth by the MDE Guidelines titled “Guidance Document: Water Supply/Wastewater Capacity Management Plans.” Due to the different methodologies and the two documents reflecting data from different time periods, the County recognizes that the information in these documents is not exactly the same.

Estimates and projections of population within the community planned water and sewer service areas and estimates and projections of water and sewer demand are summarized in Tables 15 (water) and 26 (sewerage). The estimates are based on current development that is connected to the relevant community system and actual flows generated by that development within the service area. The service areas are divided into three service categories (Existing/Final Planning, Priority, and Future Service Areas). Projections, which are calculated for average-day demand, are based on total buildout of the service area by category and the land uses and densities as permitted by current zoning. Projections in each successive service category are cumulative. Consequently, projections for the Future Service Area correspond to total population and demand projections for the entire planned service area.

Tables 15 and 26 divide the planned service areas into three phases (Present Year, Priority Planning, and Future Planning), which generally correspond to the three service area categories referenced above. Calculations by phase are summarized as follows:

- Present Year – This column relates to developed areas located within the Existing/Final Planning Service Area that are served by the community water supply and/or sewerage system, and the actual water and sewer flows which are recorded by the utility. Projection of population and flows for the undeveloped areas of the Existing/Final Planning Service Area, as well as unserved developed areas, are included in the Priority Planning phase.

The Residential Population column is an estimate of the number of residents (including apartment dwellers) whose dwelling units are connected to the community system (Population Served).

The GCPD (gallons per capita per day) column is based on an estimate of actual Residential Demand divided by the Population Served.

The Capacity (in mgd) column includes:

1. An estimate of actual Residential Demand. This estimate is based on flows which are processed (actual flows) by the community sewerage or water supply system and is measured at the wastewater treatment plant (Table 26), or at the community system well as it is pumped from the ground (for water systems relying on wells and groundwater) or as metered at the reservoir (for water systems relying on surface water) (Table 15). To determine the portion of these actual flows that are attributable to residential demand, County staff collected this information for the Capacity Management Plans for each of the systems. The residential demand was given to the County as a

percentage of the total demand from the operators. This proportion is then applied to actual flows measured at the system (e.g., wastewater treatment plants, system wells, reservoirs) to derive an estimate of residential actual flows (Residential Demand).

2. An estimate of Other Demand, which is everything that is not residential (commercial, industrial, institutional, recreational, etc.). This estimate is generally the difference between actual flows measured at the system minus the estimated Residential Demand. Other Demand pertains to current development that is connected to the community system.

3. Total Demand is the total estimated flows that are processed by the community system as measured at the treatment plant, wells, and/or reservoir.

4. Existing Capacity represents the combined permitted flows for all water sources (e.g., wells, reservoirs) comprising the current water supply system (Table 15) and the current permitted capacity of the wastewater treatment plant (Table 26). For wastewater this includes I&I.

- **Priority Planning** – This column combines the current served development from the Present Year column with infill development areas in the Existing/Final Planning, properties in the Priority Service Areas, and properties within the Priority Planning Area that are currently on well or septic that could potentially connect to the system.

The Residential Population column includes:

1. Population calculations that are made for the number of existing dwelling units that is located within the Existing/Final Planning and Priority Service Areas that are not currently served.

2. Population calculations that are based on the potential lot yield for infill development areas in the Existing/Final Planning, properties in the Priority Service Areas, and properties within the Priority Planning Area that are currently on well or septic that could potentially connect to the system. These calculations are based on the County's Buildable Land Inventory (BLI).

The projected number of dwelling units (both existing and future development) is multiplied by the average number of persons per household to derive population. The persons per household is estimated for each community and is based on 2010 Census data. The multipliers are as follows:

Community	Persons per Household
Freedom/Sykesville	2.82
Hampstead	2.81
Manchester	2.81
Mount Airy	3.00
New Windsor	2.52
Taneytown	2.85
Union Bridge	2.54
Westminster	2.32

The Population Served (under Present Year) is added to the existing and future population located within the Existing/Final Planning and Priority Service Areas. This number is then assigned as Population Served for the Priority Planning phase. It is assumed that all dwellings will be served at full buildout in this phase.

Water and sewer demand (Tables 20 and 32) is projected at 250 gallons per unit per day (unless otherwise indicated) for units added to the existing ones.

The Capacity column includes:

1. Residential Demand is figured at 250 gallons per additional unit (unless otherwise indicated) added to the Existing Residential Demand.
2. Other Demand for areas in the Priority Service Area are projected based on acreages of commercial and industrial zoning. Water and sewer demand are projected at 700 gallons per acre for Business zoning and at 800 gallons per acre for Industrial zoning. The Other Demand flow estimated in the Present Year column is added to the projected Other Demand in the Priority Service Area. The Other Demand of the Priority Planning phase is the sum of these two Other Demands.
3. Total Demand is the sum of Residential Demand and Other Demand.
4. Planned Capacity represents the utility's plans for expanding the capacity of the community system.
 - Future Planning – This column combines the current development from the Present Year column, existing (but unserved) and projected development within the Existing/Final Planning and Priority Service Areas, and existing (but unserved) and projected development within the Future Service Area. Once again, this includes properties that are currently on well and septic but could potentially one day hook into the system.

The method for projecting and summing population and demand data are the same as for the Priority Planning phase. Since the numbers are cumulative, the data contained in the Future Planning column pertain to the entire planned service area for the next 10 years.

Residential Buildable Land Inventory Table

BLI Estimates for Triennial Update of Water and Sewer Plan

Water Service Area

BLI Medium-Range Calculations

Based on Land Use Designations in the Priority, Future, Long Range and No Planned Service Areas; based on zoning in Existing/Final area

System	PLY within Existing/Final	PLY within Priority	PLY within Future	PLY within Long Range	PLY within No Planned Service	PLY totals
Freedom(excludes Sykesville)	1955	994	86	509	0	3544
Sykesville	536	0	2	0	0	
Freedom System Total	2491	994	88	509	0	4082
Hampstead	221	665	108	659	15	1688
Manchester	333	70	138	41	14	596
Mt. Airy	73	81	0	542	0	696
New Windsor	234	6	0	156	0	396
Taneytown	143	476	0	1111	0	1730
Union Bridge	148	183	0	1128		1459
Westminster	680	432	0	0	0	1112

Calculations completed March 2017 using data as of December 2016

Sewer Service Area

BLI Medium-Range Calculations

Based on Land Use Designations in the Priority, Future, Long Range and No Planned Service Areas; based on zoning in Existing/Final area

System	PLY within Existing/Final	PLY within Priority	PLY within Future	PLY within Long Range	PLY within No Planned Service	PLY totals
Freedom(excludes Sykesville)	1284	680	368	860	0	3192
Sykesville	369	82	2	0	14	467
Freedom System Total	1653	762	370	860	14	3659
Hampstead	273	583	121	0	0	977
Manchester	260	36	55	49	196	596
Mt. Airy	70	84	0	542	0	696
New Windsor	229	11	0	156	0	396
Taneytown	143	476	0	1111	0	1730
Union Bridge	138	183	318	835	0	1474
Westminster	32	432	0	0	0	464

Commercial and Industrial Buildable Land Inventory Tables

Based on FLU and 2017 Water Service Area
Freedom Area

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial *	202	700	141,400
Industrial	68	800	54,400
Water - Priority			
Commercial	136	700	95,200
Industrial	139	800	111,200
Water - Future			
Commercial	21	700	14,700
Industrial	0	800	-
Water - Long Range			
Commercial	0	700	-
Industrial	0	800	-

*Includes Town of Sykesville

Based on FLU and 2017 Sewer Service Area
Freedom Area

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial *	360	700	252,000
Industrial	23	800	18,400
Sewer - Priority			
Commercial	123	700	86,100
Industrial	43	800	34,400
Sewer - Future			
Commercial	0	700	-
Industrial	75	800	60,000
Sewer - Long Range			
Commercial	0	700	-
Industrial	0	800	-

*Includes Town of Sykesville

Based on 2017 Water Service Area
Town of Hampstead

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	27.6	700	19,320
Industrial	52.7	800	42,160
Water - Priority			
Commercial	21	700	14,700
Industrial	162.3	800	129,840
Water - Future			
Commercial	4.2	700	2,940
Industrial	4.3	800	3,440
Water - Long Range			
Commercial	2.5	700	1,750
Industrial	27.2	800	21,760

Based on 2017 Sewer Service Area
Town of Hampstead

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	29.7	700	20,790
Industrial	87	800	69,600
Sewer - Priority			
Commercial	18.5	700	12,950
Industrial (includes EC)	82.2	800	65,760
Sewer - Future			
Commercial	7.9	700	5,530
Industrial	75.9	800	60,720
Sewer - Long Range			
Commercial	0	700	0
Industrial	0	800	0

Based on 2017 Water Service Area
Town of Manchester

Category	Buildable Acres**	GPD	Demand
Water - Infill			
Commercial	17.5	700	12,250
Industrial	0	800	-
Water - Priority			
Commercial	2.5	700	1,750
Industrial	0	800	-
Water - Future			
Commercial	0	700	-
Industrial	0	800	-
Water - Long Range			
Commercial	0	700	-
Industrial	0	800	-

*In Town properties - Zoning, Environs properties - DLU

** Includes vacant and partially developed property

Based on 2017 Sewer Service Area
Town of Manchester

Category	Buildable Acres**	GPD	Demand
Sewer - Infill			
Commercial	17.5	700	12,250
Industrial	0	800	-
Sewer - Priority			
Commercial	2.5	700	1,750
Industrial	0	800	-
Sewer - Future			
Commercial	0	700	-
Industrial	0	800	-
Sewer - Long Range			
Commercial	0	700	-
Industrial	0	800	-

*In Town properties - Zoning, Environs properties - DLU

** Includes vacant and partially developed property

Based on 2017 Water Service Area
Town of Mount Airy

Category	Buildable Acres*	GPD	Demand
Water - Infill			
Commercial	15.1	700	10,570
Industrial	55.8	800	44,640
Water - Priority			
Commercial	31.3	700	21,910
Industrial (includes EC)	148.3	800	118,640
Water - Future			
Commercial	0	700	-
Industrial	0	800	-
Water - Long Range			
Commercial	0	700	-
Industrial	0	800	-

*Only Carroll County portion of Mt Airy

Based on 2017 Sewer Service Area
Town of Mount Airy

Category	Buildable Acres*	GPD	Demand
Sewer - Infill			
Commercial	15.1	700	10,570
Industrial	55.8	800	44,640
Sewer - Priority			
Commercial	31.3	700	21,910
Industrial (includes EC)	148.3	800	118,640
Sewer - Future			
Commercial	0	700	-
Industrial	0	800	-
Sewer - Long Range			
Commercial	0	700	-
Industrial	0	800	-

*Only Carroll County portion of Mt Airy

Based on 2017 Water Service Area
Town of New Windsor

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	0.4	700	280
Industrial (includes EC)	37.4	800	29,920
Water - Priority			
Commercial	0	700	-
Industrial (includes EC)	5.3	800	4,240
			-
Water - Future			
Commercial	0	700	-
Industrial	25.4	800	20,320
Water - Long Range			
Commercial	10	700	7,000
Industrial (includes EC)	101.2	800	80,960

Based on 2017 Sewer Service Area
Town of New Windsor

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	0.4	700	280
Industrial (includes EC)	12.1	800	9,680
Sewer - Priority			
Commercial	0	700	-
Industrial (includes EC)	5.3	800	4,240
Sewer - Future			
Commercial	0	700	-
Industrial (includes EC)	50.7	800	40,560
Sewer - Long Range			
Commercial	10	700	7,000
Industrial (includes EC)	101.2	800	80,960

Based on 2017 Water Service Area
Taneytown *

Category	Buildable Acres**	GPD	Demand
Water - Infill			
Commercial	36.4	700	25,480
Industrial	30.7	800	24,560
Water - Priority			
Commercial	43.7	700	30,590
Industrial	0	800	-
Water - Future			
Commercial	0	700	-
Industrial	0	800	-
Water - Long Range			
Commercial	112.1	700	78,470
Industrial	453.2	800	362,560

*In Town properties - Zoning, Environs properties - DLU

** Includes vacant and partially developed property

Based on 2017 Sewer Service Area
Taneytown*

Category	Buildable Acres**	GPD	Demand
Sewer - Infill			
Commercial	32.6	700	22,820
Industrial	29.8	800	23,840
Sewer - Priority			
Commercial	28.5	700	19,950
Industrial	0	800	-
Sewer - Future			
Commercial	0	700	-
Industrial	0	800	-
Sewer - Long Range			
Commercial	103.5	700	72,450
Industrial	454.1	800	363,280

*In Town properties - Zoning, Environs properties - DLU

** Includes vacant and partially developed property

Based on 2017 Water Service Arera
Union Bridge *

Category	Buildable Acres**	GPD	Demand
Water - Infill			
Commercial	7.6	700	5,320
Industrial	24.2	800	19,360
Water - Priority			
Commercial	6.5	700	4,550
Industrial	0	800	-
Water - Future			
Commercial	0	700	-
Industrial	0	800	-
Water - Long Range			
Commercial	5.5	700	3,850
Industrial	299.6	800	239,680

*In Town properties - Zoning, Environs properties - DLU

** Includes vacant and partially developed property

Based on 2017 Sewer Service Area
Union Bridge*

Catergory	Buildable Acres**	GPD	Demand
Sewer - Infill			
Commercial	3.8	700	2,660
Industrial	11.9	800	9,520
Sewer - Priority			
Commercial	6.5	700	4,550
Industrial	0	800	-
Sewer - Future			
Commercial	0	700	-
Industrial	0	800	-
Sewer - Long Range			
Commercial	9.3	700	6,510
Industrial	311.9	800	249,520

*In Town properties - Zoning, Environs properties - DLU

** Includes vacant and partially developed property

Based on 2017 Water Service Area
City of Westminster

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	75.4	700	52,823
Industrial	130.01	800	104,010
Water - Priority			
Commercial	0	700	0
Industrial	91.33	800	73,068
Water - Future			
Commercial	0	700	0
Industrial	83.01	800	66,412
Water - Long Range			
Commercial	2.5	700	1,750
Industrial	83.01	800	21,760

Based on 2017 Sewer Service Area
City of Westminster

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	75.4	700	52,823
Industrial	201.84	800	161,474
Sewer - Priority			
Commercial	0	700	0
Industrial	91.33	800	73,069
Sewer - Future			
Commercial	0	700	0
Industrial	15	800	8,984
Sewer - Long Range			
Commercial	0	700	0
Industrial	2.56	800	2,048

Appendix 4: Procedure for Obtaining Water or Sewer Extension



CARROLL COUNTY MARYLAND

225 N. Center Street
Westminster, Maryland 21157

DATE April 5, 1983	POLICY NUMBER 51-83 PW
SUPERSEDES POLICY NUMBER	PAGE 1 OF 2

PROCEDURE FOR OBTAINING WATER OR SEWER EXTENSIONS BY DEVELOPERS

Purpose: To provide procedures extending water and sewerage facilities to residential subdivisions or other type development whereby the responsibilities of the developer and County are clearly outlined as to acquisition of rights-of-way, preparation of plans and specifications, and payment of costs for such extensions.

1. The Developer shall show on his subdivision plat a 20-foot utility easement on the sides and back of each lot, unless otherwise noted, which shall be granted to the County by Deed of Easement.
2. The plans for construction and specifications of water and sewer system shall be furnished to the County by developers of all new subdivision wherein water or sewer systems are required. Developers shall have the right to select a certified engineer (with specific background in water and sewer design) from a list of engineers who have been pre-qualified by County, for the preparation, at their expense, of the plans and specifications, subject to their plans and specifications being reviewed for approval by the County's consulting engineer.
4. The developer shall pay for the County's engineering fees incurred in reviewing subdivision plans as they relate to public water and sewer plans.
5. The developer shall be responsible to secure all necessary rights-of-way and easements in a form satisfactory to County.
6. Where the proposed extension is not a planned or projected system included in the County Water & Sewer Master Plan at the time of execution of a Public Works Agreement and a transmission line is extended for the benefit of developer for furnishing of service to his subdivision, the developer shall pay the total cost of construction, plus overhead charges as established by County.
7. Where the proposed extension is a planned or projected system included in the County Water & Sewer Master Plan at the time of execution of the Public Works Agreement and transmission line is extended for the benefit of developer for furnishing of service to



DATE April 5, 1983	POLICY NUMBER 51-83 PW
SUPERSEDES POLICY NUMBER	PAGE 2 OF 2

CARROLL COUNTY MARYLAND

225 N. Center Street
Westminster, Maryland 21157

**PROCEDURE FOR OBTAINING WATER OR SEWER
EXTENSIONS BY DEVELOPERS**

his subdivision, County shall contribute an amount equal to the difference in actual construction costs, without regard to overhead or administrative expenses which results from subtracting the costs necessary to construct a transmission line to serve the developer's subdivision alone from those costs actually spent on the required system. County's contribution shall be made from area connection charges received from persons who connect as a result of the extension of the transmission line during a ten-year period measured from the date of execution of the Public Works Agreement. Payments to developer shall cease upon the expiration of the ten-year period, regardless of any remaining balance.

AREA OF
RESPONSIBILITY

Department of Public Works
(Bureau of Utilities)

APPROVED BY:
COUNTY COMMISSIONERS OF CARROLL COUNTY

John L. Armacost, President
Jeff Griffith, Vice-President
William V. Lauterbach, Jr., Secretary

DATE: April 5, 1983

APPENDIX 5: Procedure for Water & Sewer Master Plan Amendments

1. Following the submission deadline, the Department of Planning will prepare a staff report to the Carroll County Planning and Zoning Commission for each requested amendment, including the specific changes to the Water/Sewer Plan involved with the amendment request and staff recommendations. During the preparation of the staff report, if the requested amendment is one that was generated by a municipality or the County and has not been reviewed by the Health Department of the Department of Public Works, the County Planning Department will send the application to the those agencies for review and comment. Those comments will be reflected in the staff report. Notification of the Planning Commission meeting at which the amendments will be discussed will be sent to the Town and staff (if applicable), any adjoining jurisdictions, Baltimore City (if applicable), and the applicant(s) for review and comment.
2. The Planning and Zoning Commission will consider the cycle amendment package during a regular monthly public meeting as determined in the Cycle Schedule. Following the presentation of the staff report, public involvement, and deliberation, the Planning and Zoning Commission will vote to certify or not certify each amendment as consistent with the Carroll County Master Plan. For those amendments that are certified as consistent by the Planning Commission, the Commission will forward the staff report and its action along with a recommendation on each amendment to the Board of County Commissioners.
3. If, at any time during the process, the applicant wishes to withdraw the application, a request to withdraw must be submitted in writing to the Planning Director. This should occur no later than two (2) weeks prior to the Planning and Zoning Commission's scheduled meeting to take action on the amendments.
4. After receipt of the Planning and Zoning Commission's action and recommendation, the Board of County Commissioners will schedule a public hearing in accordance with applicable state law. The public hearing should be scheduled no less than 30 days after the initial notification to stakeholders (see 1. above). The following stakeholders will be notified of the public hearing and the requested amendments under consideration at least 14 days prior to the hearing:
 - a. Biannual Updates – Mayors and staff of any towns with affected systems; adjoining jurisdictions; Baltimore City, if amendments apply to systems in the eastern portion of the County, state agencies, BMC, and the applicant(s).
 - b. Triennial Updates – Mayors and staff of each municipality in the County; adjoining jurisdictions; Baltimore City, state agencies, and BMC.

Additionally, the public will be notified through legal advertisements in local newspapers published two (2) times at least 14 days prior to the hearing). The staff reports and any attached maps/tables will be posted on the County website prior to the hearing as well.

5. Following the required notice, the Board of County Commissioners will conduct a public hearing on the cycle amendments.

6. The Board of Commissioners will deliberate on the amendments, taking all comments into consideration, and take action by resolution (drafted by County Planning staff) to adopt or deny each amendment in the amendment cycle. One resolution covering all of the amendments should be prepared and brought to the public hearing so that it can be signed if the amendments are adopted that day.
7. Following adoption by the Board of County Commissioners, the adopted amendments will be forwarded to Maryland Department of the Environment (MDE) for final approval. Notification of the Board's action will be sent to the stakeholders notified in 4.a. and b. above.
8. The cycle amendments become effective upon approval by MDE. The Planning Department will make necessary changes to the Plan text and maps to reflect the MDE approved amendments. Notification of final approval/disapproval will be sent to the applicant(s) and Town(s), as appropriate.

APPENDIX 6: Carroll County FY 2019 – 2024 Community Investment Plan (Utilities Enterprise)

COMMUNITY INVESTMENT PLAN FOR FISCAL YEARS 2019 TO 2024

	2019	2020	2021	2022	2023	2024	Prior Allocation	Balance To Complete	Total Project Cost
UTILITIES ENTERPRISE FUND:									
Billing Software	\$0	\$0	\$0	\$0	\$28,000	\$0	\$0	\$0	\$28,000
Fairhaven Well House Rehabilitation	0	0	125,000	0	0	0	0	0	125,000
Freedom Sewer Rehabilitation	0	175,000	181,000	190,000	204,000	210,000	0	0	960,000
Freedom Wells and Connections	765,000	97,000	367,000	250,000	836,000	0	217,000	0	2,532,000
Freedom WTP Membrane Replacement	174,000	174,000	174,000	174,000	174,000	174,000	0	0	1,044,000
Hampstead Sewer Rehabilitation	0	55,000	264,000	280,000	290,000	310,000	0	0	1,199,000
Hydrant Replacements	160,000	99,000	0	0	0	0	124,000	0	383,000
North Pump Station Upgrade	0	180,000	0	0	0	0	2,260,000	0	2,440,000
Patapsco Valley Pump Station Upgrade	0	0	0	0	0	305,000	0	2,210,000	2,515,000
Pleasant Valley WWTP Rehabilitation	0	0	0	0	0	387,000	0	0	387,000
Raincliffe WTP Rehabilitation	231,000	0	0	0	0	0	0	0	231,000
Runnymede Wastewater Treatment Facility Rehabilitation	0	0	0	0	297,000	0	0	0	297,000
Sewer Grinder Installation/Rehabilitation	60,500	60,500	60,500	0	0	0	0	0	181,500
Sewer Manhole Rehabilitation	0	80,000	83,000	87,000	91,000	96,000	0	0	437,000
Sewer Pipe Repair, Replacement, and New Installations	0	110,000	116,000	121,000	128,000	134,000	0	0	609,000
Shiloh Pump Station Expansion	0	0	0	0	220,000	1,455,000	0	0	1,675,000
South Carroll Wastewater Treatment Facility Rehabilitation	0	385,000	0	0	0	0	0	0	385,000
Standby Generator Replacement	0	147,000	144,000	37,000	66,000	66,000	0	0	460,000
Stream Bank Stabilization	99,000	0	0	0	0	0	0	0	99,000
Sykesville Pump Station Expansion	0	0	0	0	290,000	2,106,000	0	0	2,396,000
Tank Rehabilitations and Replacements	640,000	640,000	640,000	640,000	640,000	640,000	0	0	3,840,000
Town of Sykesville Streetscape Water and Sewer Upgrades	700,000	715,000	737,000	0	0	0	550,000	0	2,702,000
Town of Sykesville Water and Sewer Upgrades	0	0	1,065,000	1,090,000	1,122,000	0	0	0	3,277,000
Warfield Complex Water/Sewer Rehabilitation	335,500	0	0	0	0	0	0	0	335,500
Water Main Loops	0	440,000	440,000	440,000	440,000	440,000	352,000	0	2,552,000
Water Main Valve Replacements	357,000	357,000	357,000	357,000	357,000	357,000	0	0	2,142,000
Water Meters	610,500	632,500	649,000	671,000	687,500	709,500	0	0	3,960,000
Water Service Line Replacement	268,400	281,800	295,900	310,800	326,700	342,600	0	0	1,826,200
Water/Sewer Studies	324,500	280,500	0	0	0	0	968,000	0	1,573,000
Winfield Pump Station Rehabilitation	0	0	0	181,500	0	0	0	0	181,500
UTILITIES ENTERPRISE FUND TOTAL	\$4,725,400	\$4,909,300	\$5,698,400	\$4,829,300	\$6,197,200	\$7,732,100	\$4,471,000	\$2,210,000	\$40,772,700
SOURCES OF FUNDING:									
Transfer from General Fund	\$0	\$385,000	\$0	\$181,500	\$297,000	\$0	\$0	\$0	\$863,500
Transfer from IDA	300,000	0	0	0	0	0	0	0	300,000
Enterprise Fund - Utilities	0	0	0	0	0	0	550,000	0	550,000
Utilities Maintenance Fee	640,000	640,000	640,000	640,000	640,000	640,000	352,000	0	4,192,000
Utilities Sewer User Fees	631,979	1,255,500	1,749,500	1,260,000	1,609,000	3,083,500	1,130,000	0	10,719,479
Reallocated Utilities Sewer User Fees	95,271	0	0	0	0	0	0	0	95,271
Utilities Water User Fees	3,058,150	2,538,800	3,308,900	2,747,800	3,396,200	2,023,100	1,309,000	0	18,381,950
Area Connection Charges	0	90,000	0	0	255,000	1,985,500	1,130,000	2,210,000	5,670,500
UTILITIES ENTERPRISE FUND TOTAL	\$4,725,400	\$4,909,300	\$5,698,400	\$4,829,300	\$6,197,200	\$7,732,100	\$4,471,000	\$2,210,000	\$40,772,700