Carroll County Water & Sewer Master Plan

2023
Triennial Update

LIST OF MAPS

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, serviceability, 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 considers 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

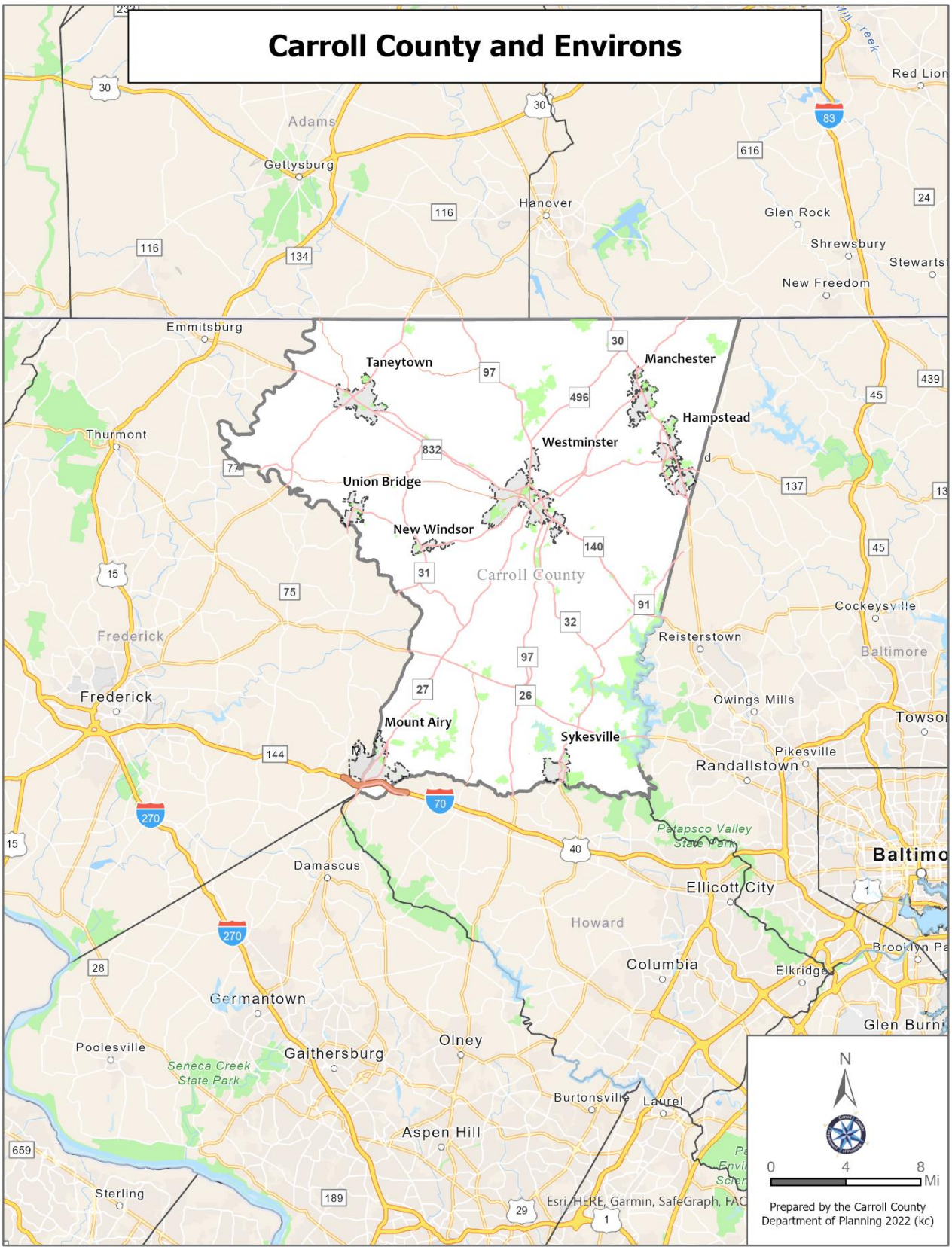
Carroll County is centrally located in Maryland, approximately nine miles west and northwest of Baltimore City. The county is 456 square miles in area and is bounded on the north by the State of Pennsylvania, on the south by Howard County (with the South Branch of the Patapsco River as the common border),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

Eight municipalities are located within 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


Carroll County and Environs
Adams
Gettysburg
Hanover
Red Lion
Glen Rock
Shrewsbury
New Freedom
Emmitsburg
Taneytown
Manchester
Hampstead
Westminster
Thurmont
Union Bridge
New Windsor
Carroll County
Frederick
Mount Airy
Sykesville
Reisterstown
Cockeysville
Baltimore
Owings Mills
Towson
Pikesville
Randallstown
Patapsco Valley State Park
Damascus
Ellicott City
Howard
Columbia
Elkridge
Germantown
Olney
Gaithersburg
Poolesville
Seneca Creek State Park
Burtonsville
Laurel
Aspen Hill
Sterling
Glen Burnie
N
0 4 8 Mi
Esri, HERE, Garmin, SafeGraph, FAO
Prepared by the Carroll County Department of Planning 2022 (kc)

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

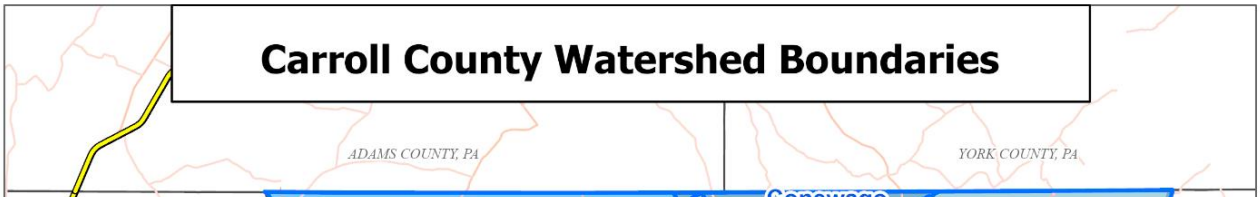
Many miles of streams traverse the county landscape. The utilization of these waterways is varied, ranging from agricultural uses such as irrigation and livestock watering to recreational uses such as fishing and boating. Carroll County contains all or part of nine 8-digit watersheds, which lie within 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

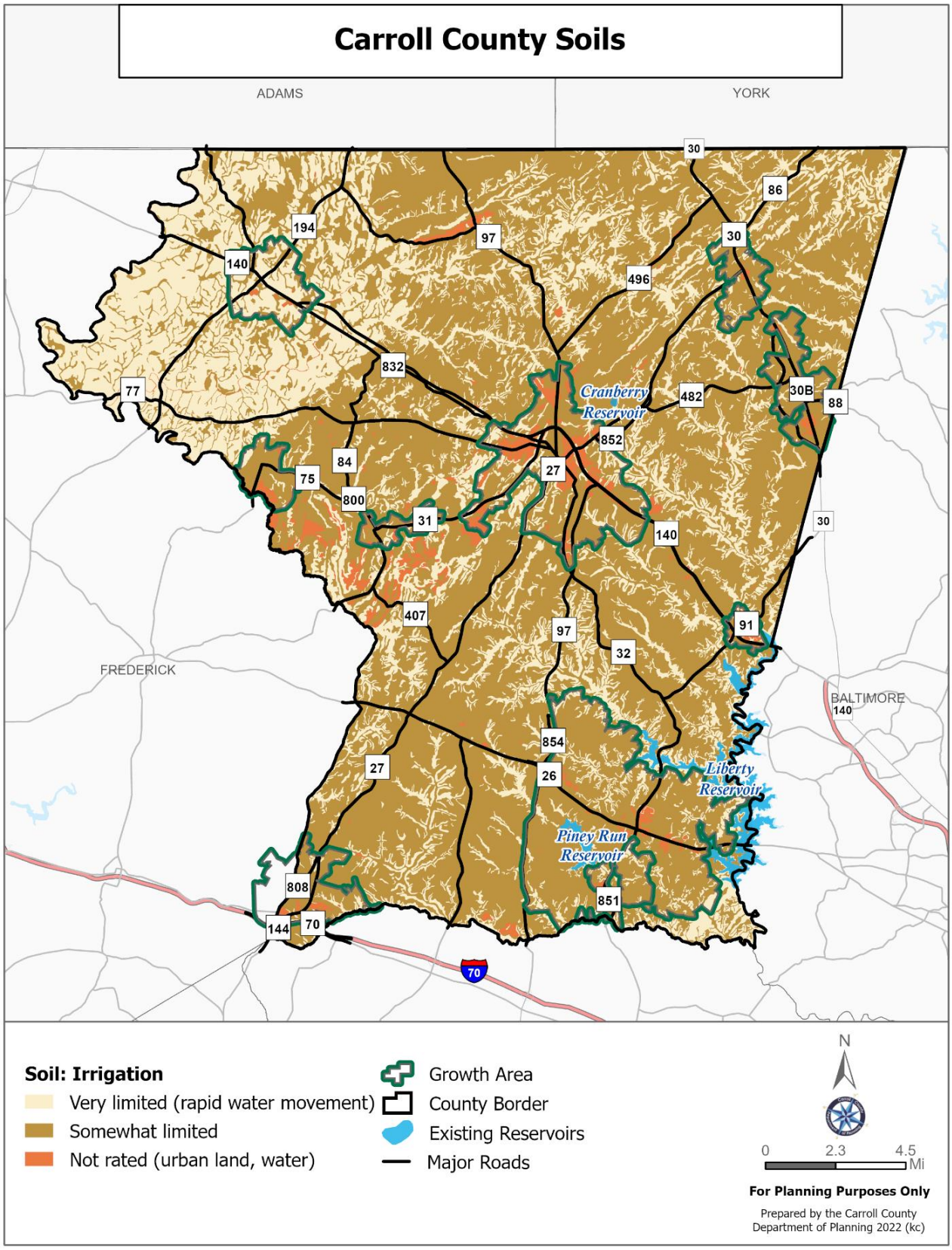
Water quality is of great importance for those areas draining into the reservoirs, but it is also important throughout the county. Carroll County requires a variable width buffer associated with streams through the subdivision process. It also prohibits building in the floodplains, which often include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


Carroll County Soils
ADAMS
YORK
FREDERICK
BALTIMORE
Cranberry Reservoir
Liberty Reservoir
Piney Run Reservoir
30
86
194
97
140
496
30
832
77
482
30B
88
852
84
27
75
800
31
140
30
407
97
91
32
140
854
27
26
70
808
144
851
Soil: Irrigation
Very limited (rapid water movement)
Somewhat limited
Not rated (urban land, water)
Growth Area
County Border
Existing Reservoirs
Major Roads
N
0
2.3
4.5
Mi
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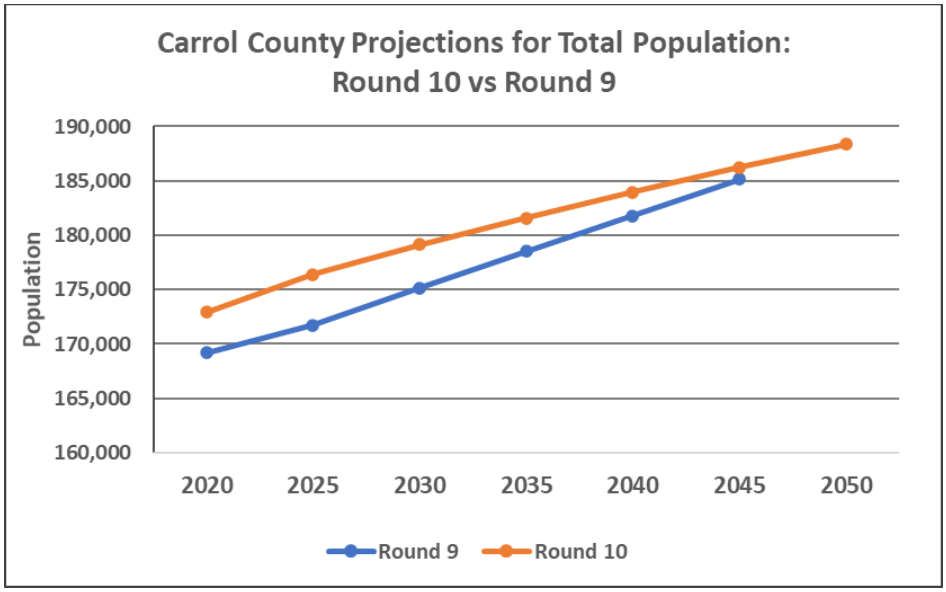
Section III: Population

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 potential water and sewer users (residential and commercial/industrial facilities) is determined to a great extent by the land use plan and zoning regulations of a jurisdiction.

Population Projections
Annual population estimates and projections for Carroll County are based on household population estimates plus group quarters population estimates. Group Quarters (GQ) populations are residential group living arrangements such as: nursing homes, assisted living facilities, group homes, incarceration in detention centers (jails), college dormitories/residences, etc. Annual total population estimates produced by the Carroll County Department of Planning are primarily derived from total number of households, average occupancy rates, and average household size (adjusted to account for group quarters population). Specifically, use and occupancy (U&O) certificates issued by month and by year, are used to estimate growth in households and population.

Over the last decade, the County has experienced a steady growth in population and development activity with an increase in growth over the recent several years (2019 to 2022). The Round10 population projections (based on the 2020 Census) were submitted to the Baltimore Metropolitan Council in April 2022. When comparing the results from projections completed from the previous Round 9, Round 10 growth trends show an increase in total population growth for years 2020 to 2025 with a gradual flattening in growth for years 2030 to 2050.

Chart 1: Round 10 vs Round 9 Total Population Projections for Carroll County



Based on the current and projected number of households and an average household size of 2.68 (2020 Census), the County is projected to grow to a total population of nearly 188,357 by year 2050 (including group quarters). The projected growth in households is based on past and current growth in use and occupancy permits; and, also based on current zoning and future land use designations. The current zoning along with future land use designations as defined by Carroll County's most recent Comprehensive Master Plan (2019 Amended), essentially determines the land development that is possible in Carroll County for approximately 10 to 30 years going forward.

Table 1: Total Population Projections (Round 10 vs Round 9)

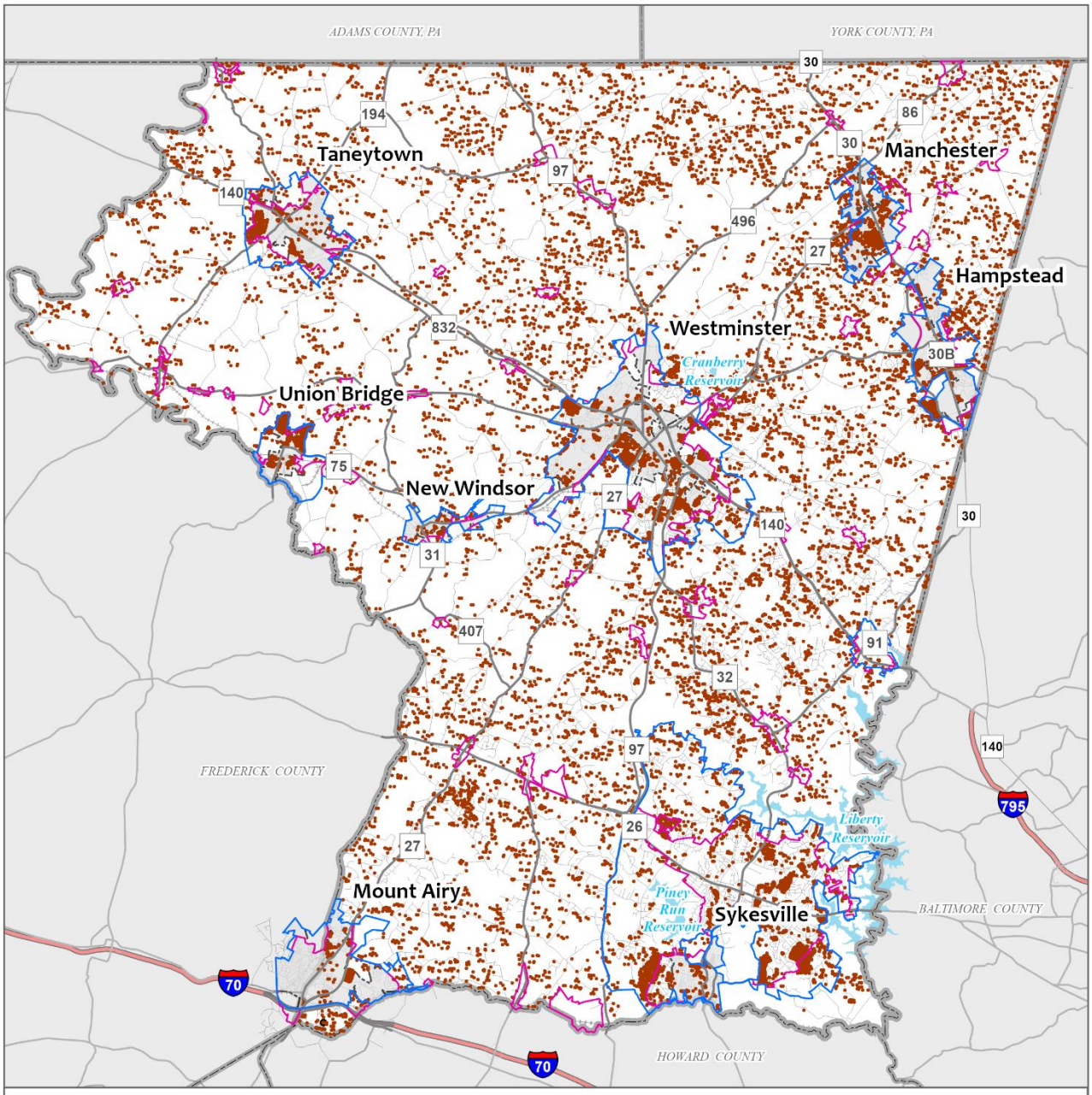
	2020	2025	2030	2035	2040	2045	2050
Round 10	172,891	176,399	179,140	181,580	183,956	186,253	188,357
Round 9	169,200	171,700	175,150	178,500	181,800	185,150	

Future Population based on Potential Land Development

Estimates for the total potential land development for the County is currently provided in Carroll County's Buildable Land Inventory (i.e., residential BLI, commercial BLI).

Based on the latest growth projections (Round 10) and based on Carroll County's latest Buildable Land Inventory revised in 2022 (19,443 possible residential lots), County land use policies and population estimates are leading to a build-out of the County's residential land by the year 2110 with an approximate total build-out population of ≈ 224,536 (≈ 219,186 household population + ≈ 5,350 GQ population). (See Map 4: Potential Residential Development).

Map 4



2022 Potential Residential Development

Legend

- 1 Residential Lot
- Municipal Growth Area/ Designated Growth Area
- Priority Funding Area
- Corporate Limit
- County Border

0 1.25 2.5 5 Mi

N

Prepared by the Carroll County Department of 05/2023 (kc)

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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, and was amended in September of 2019. 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.

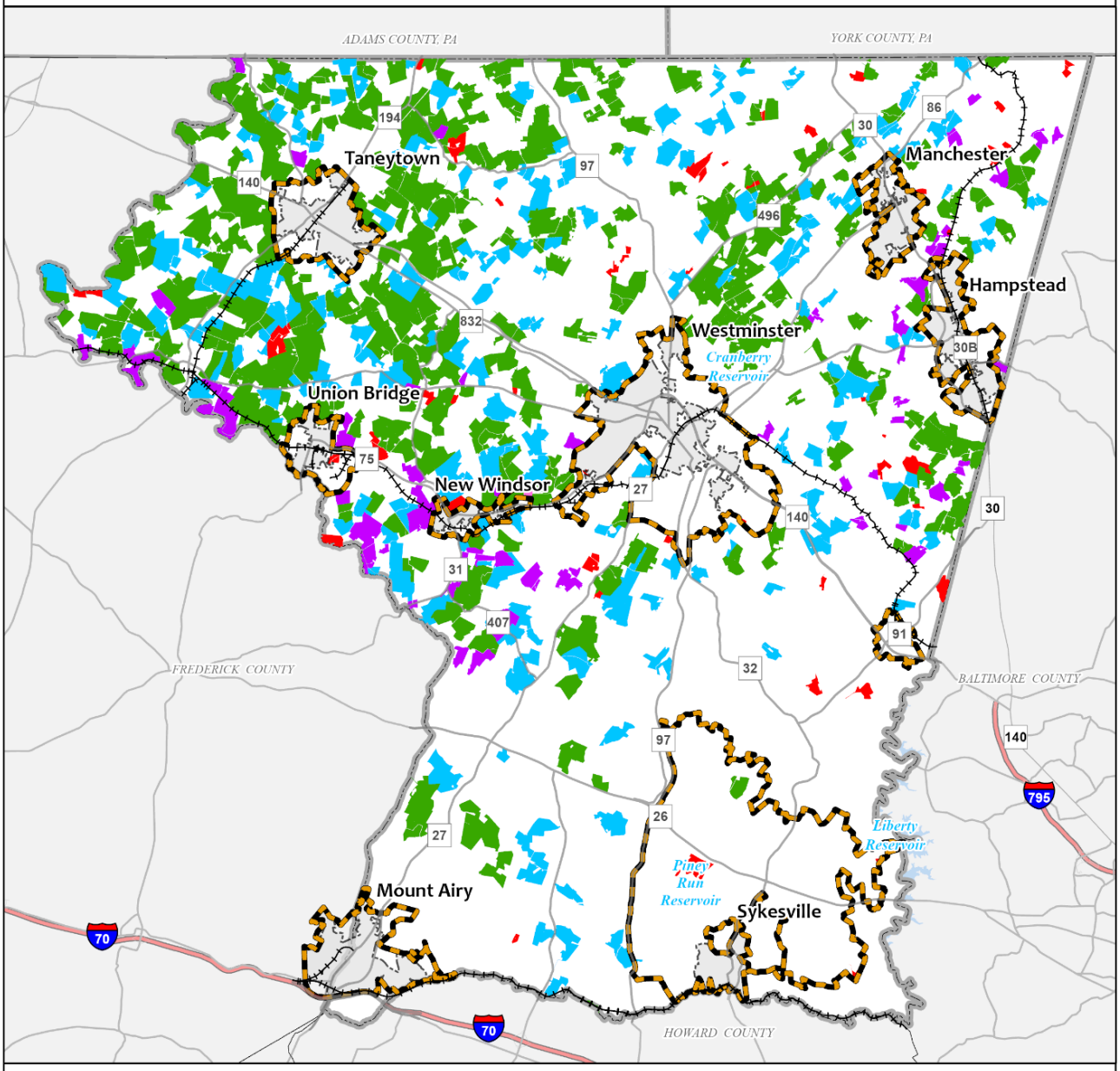
The County Master Plan includes a land use map that identifies the locations of general planned land use within the county, excluding DGAs. Small area comprehensive plans, each of which has its own land use map are prepared and adopted on a rotating basis for each of the eight incorporated municipalities 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 Wastewater 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

Agricultural Land Preservation & Land Trust Easements



Easements

- MALPF Easement
- Rural Legacy Easement
- Carroll County Easement
- Land Trust (includes CCLT, MHT, MET, TNC)
- Carroll County TDR Easement

- Growth Areas
- Corporate Limit
- County Border
- Existing Reservoirs

0 2 4 Mi

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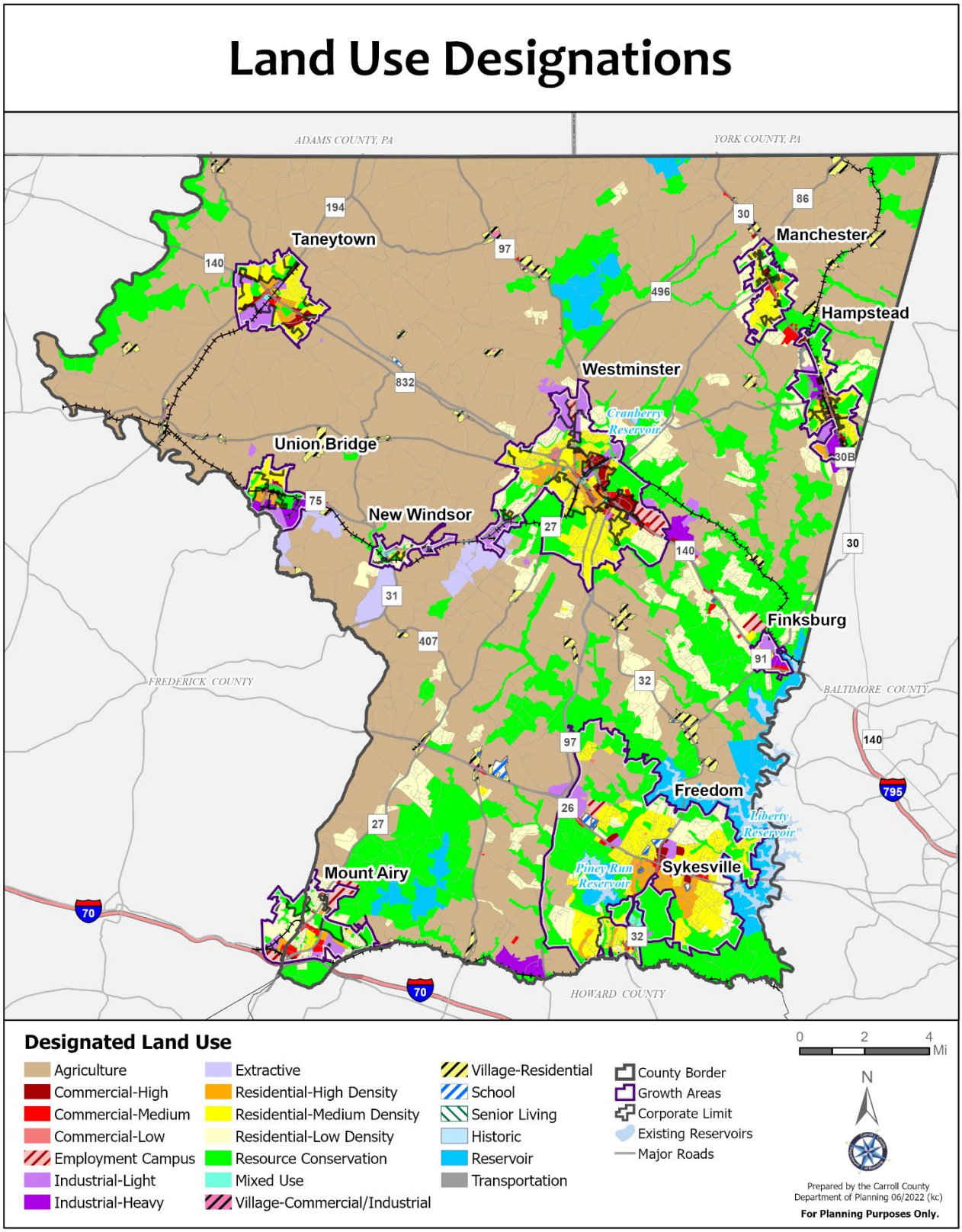
Map 6


Land Use Designations
ADAMS COUNTY, PA
YORK COUNTY, PA
FREDERICK COUNTY
BALTIMORE COUNTY
HOWARD COUNTY
Taneytown
Manchester
Hampstead
Westminster
Union Bridge
New Windsor
Finksburg
Freedom
Sykesville
Mount Airy
Cranberry Reservoir
Liberty Reservoir
Piney Run Reservoir
194
140
97
496
86
30
832
30B
75
27
31
407
91
32
26
795
70
Designated Land Use
Agriculture
Commercial-High
Commercial-Medium
Commercial-Low
Employment Campus
Industrial-Light
Industrial-Heavy
Extractive
Residential-High Density
Residential-Medium Density
Residential-Low Density
Resource Conservation
Mixed Use
Village-Commercial/Industrial
Village-Residential
School
Senior Living
Historic
Reservoir
Transportation
County Border
Growth Areas
Corporate Limit
Existing Reservoirs
Major Roads
0 2 4 Mi
N
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*Mt. Airy numbers reflect Carroll County portion of Town.

Table2A: Land Use Designations - Countywide

Designated Land Use	Unincorporated County Outside GABs (acres)	% of Unincorporated	Incorporated Towns (Acres)	% of Incorporated	Within GABs Outside Corporate Limits (Acres)	Within GABs Outside Corporate Limits %	Total Acres*	% of Total
Agriculture	166,593	*68.2%*	0	*0.0%*	1,987	*6.4%*	168,579	*58.4%*
Commercial	770	*0.3%*	1,538	*11.5%*	1,089	*3.5%*	3,397	*1.2%*
Employment Campus	299	*0.1%*	137	*1.0%*	832	*2.7%*	1,268	*0.4%*
Industrial	1,568	*0.6%*	1,401	*10.5%*	2,735	*8.8%*	5,704	*2.0%*
Mixed Use	0	*0.0%*	233	*1.7%*	14	*0.0%*	246	*0.1%*
Other (Schools, Historic, etc.)	19,049	*7.8%*	85	*0.6%*	2,414	*7.8%*	21,549	*7.5%*
Residential	15,955	*6.5%*	7,451	*55.6%*	11,824	*38.0%*	35,230	*12.2%*
Resource Conservation (incl. reservoirs)	40,177	*16.4%*	2,558	*19.1%*	10,184	*32.8%*	52,919	*18.3%*
Totals	**244,411**	***100.0%***	**13,402**	***100.0%***	**31,078**	***100.0%***	**288,891**	***100.0%***

Source: Carroll County Department of Planning, 2022

Table2B: Land Use Designations By Jurisdiction (acreages)

Designated Land Use	Finksburg	Freedom / Sykesville		Hampstead		Manchester		Mount Airy*		New Windsor		Taneytown		Union Bridge		Westminster	
	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	In Town	Out of Town / In GAB
Agriculture	0	0	1,954	0	0	0	0	0	0	0	0	0	0	0	0	0	32
Commercial	131	59	511	158	79	117	34	239	0	5	12	317	91	42	0	613	217
Employment Campus	0	0	128	0	0	0	0	8	258	28	51	0	0	0	0	101	395
Industrial	283	68	420	363	41	0	0	217	6	80	87	204	455	137	424	399	950
Mixed Use	0	123	0	0	0	0	0	0	0	55	0	17	0	0	0	37	14
Other*	0	0	2,402	85	12	0	0	0	0	0	0	0	0	0	0	0	0
Residential	92	592	6,778	643	387	1,047	259	917	44	206	197	1,239	643	413	188	2,470	3,158
Resource Conservation*	73	1,473	6,160	715	238	355	62	258	386	94	55	237	147	134	310	473	1,571
Totals	**579**	**2,315**	**18,353**	**1,965**	**758**	**1,520**	**355**	**1,638**	**694**	**469**	**403**	**2,015**	**1,336**	**726**	**922**	**4,095**	**6,338**

Source: Carroll County Bureau Department of Planning, 2022
**Excludes Frederick County Portion*
**Resource Conservation includes reservoirs*
**Other includes schools, historic, transportation, etc.*

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 185,497 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 59,669 acres; 1,927 acres of which are in the towns, and 57,810 acres of which are 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 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	185,497	*67.26%*	0	*0.00%*	185,497	*64.10%*
Commercial	1,659	*0.60%*	2,075	*15.28%*	3,734	*1.29%*
Employment Campus	131	*0.05%*	122	*0.90%*	253	*0.09%*
Industrial	3,767	*1.37%*	1,506	*11.09%*	5,273	*1.82%*
Mixed Use	0	*0.00%*	167	*1.23%*	167	*0.06%*
Residential	26,853	*9.74%*	7,775	*57.25%*	34,627	*11.97%*
Resource Conservation	57,742	*20.94%*	1,927	*14.19%*	59,669	*20.62%*
Other	156	*0.06%*	9	*0.06%*	165	*0.06%*
Totals	**275,805**	***100.00%***	**13,580**	***100.00%***	**289,385**	***100.00%***

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.
update
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.

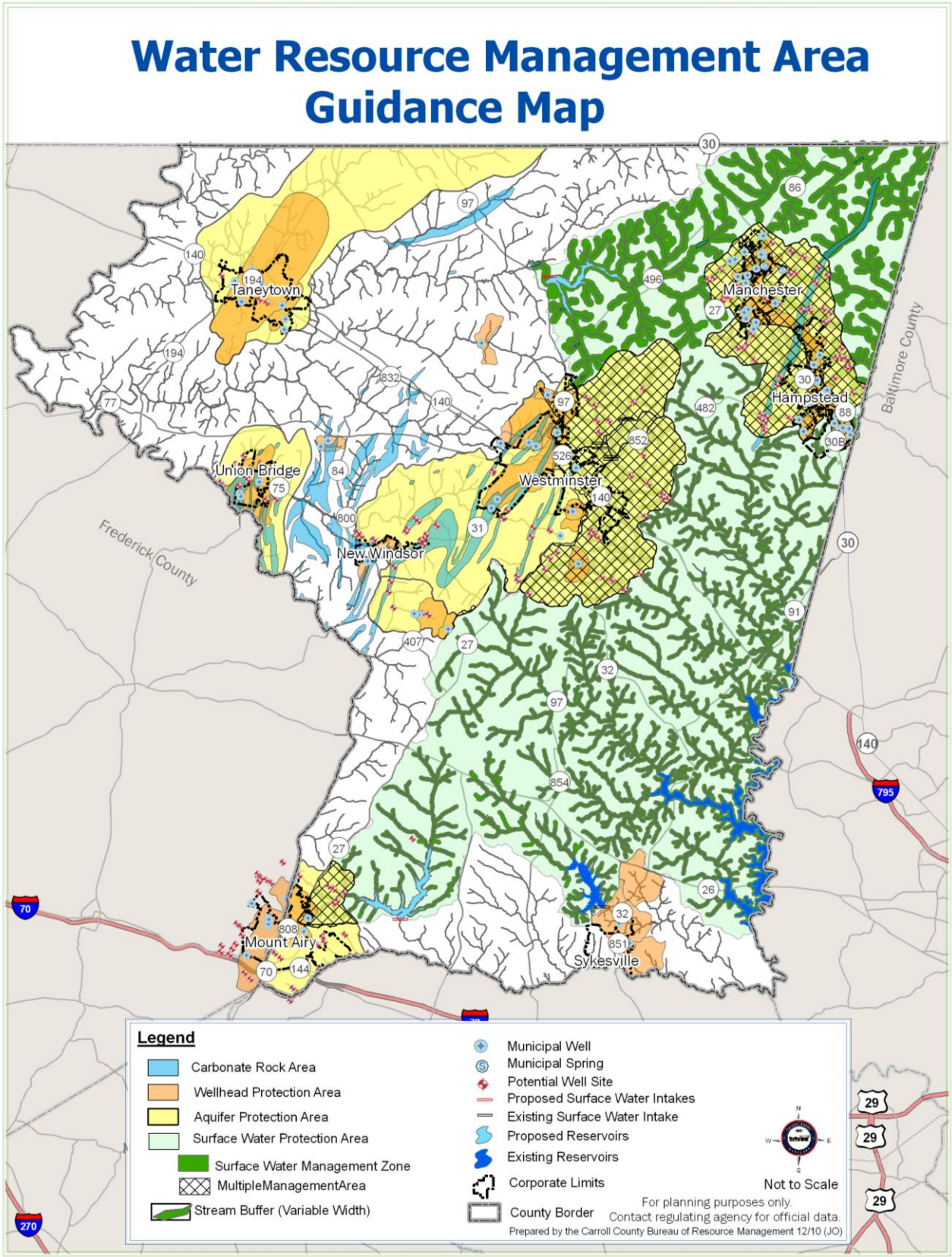
Surface Watershed Area: The Surface Watershed Area encompasses the drainage basins of all existing and proposed surface water reservoirs in Carroll County. The delineation of these areas is based on topography and gravity drainage to the reservoirs.

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
Taneytown
Manchester
Hampstead
Union Bridge
Westminster
New Windsor
Mount Airy
Sykesville
Frederick County
Baltimore County
Legend
Carbonate Rock Area
Wellhead Protection Area
Aquifer Protection Area
Surface Water Protection Area
Surface Water Management Zone
MultipleManagementArea
Stream Buffer (Variable Width)
Municipal Well
Municipal Spring
Potential Well Site
Proposed Surface Water Intakes
Existing Surface Water Intake
Proposed Reservoirs
Existing Reservoirs
Corporate Limits
County Border
Not to Scale
For planning purposes only.
Contact regulating agency for official data.
Prepared by the Carroll County Bureau of Resource Management 12/10 (JO)

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, Amended 2019. 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 June 2021)
- Hampstead Community Comprehensive Plan, Amended 2017 (adopted by Town October 2017)
- 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

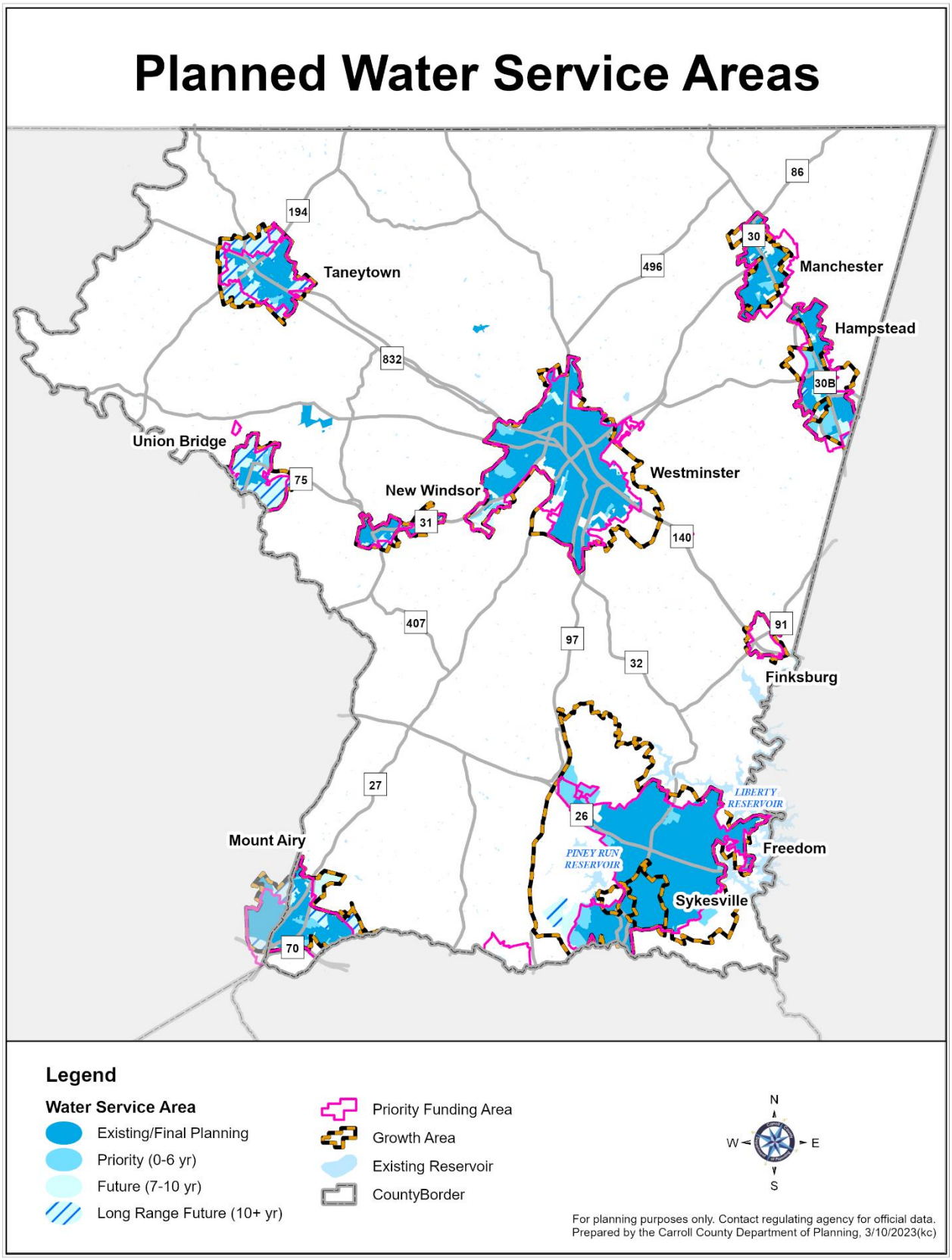
future growth area rather than a programmed growth area. This category corresponds to the 7-10-year (W-5, -S-5) categories defined in COMAR.

- 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


Planned Water Service Areas
194
Taneytown
832
Union Bridge
75
New Windsor
31
Westminster
140
496
86
30
Manchester
Hampstead
30B
407
97
32
91
Finksburg
27
26
LIBERTY RESERVOIR
PINEY RUN RESERVOIR
Freedom
Sykesville
Mount Airy
70
Legend
Water Service Area
Existing/Final Planning
Priority (0-6 yr)
Future (7-10 yr)
Long Range Future (10+ yr)
Priority Funding Area
Growth Area
Existing Reservoir
CountyBorder
N
W
E
S
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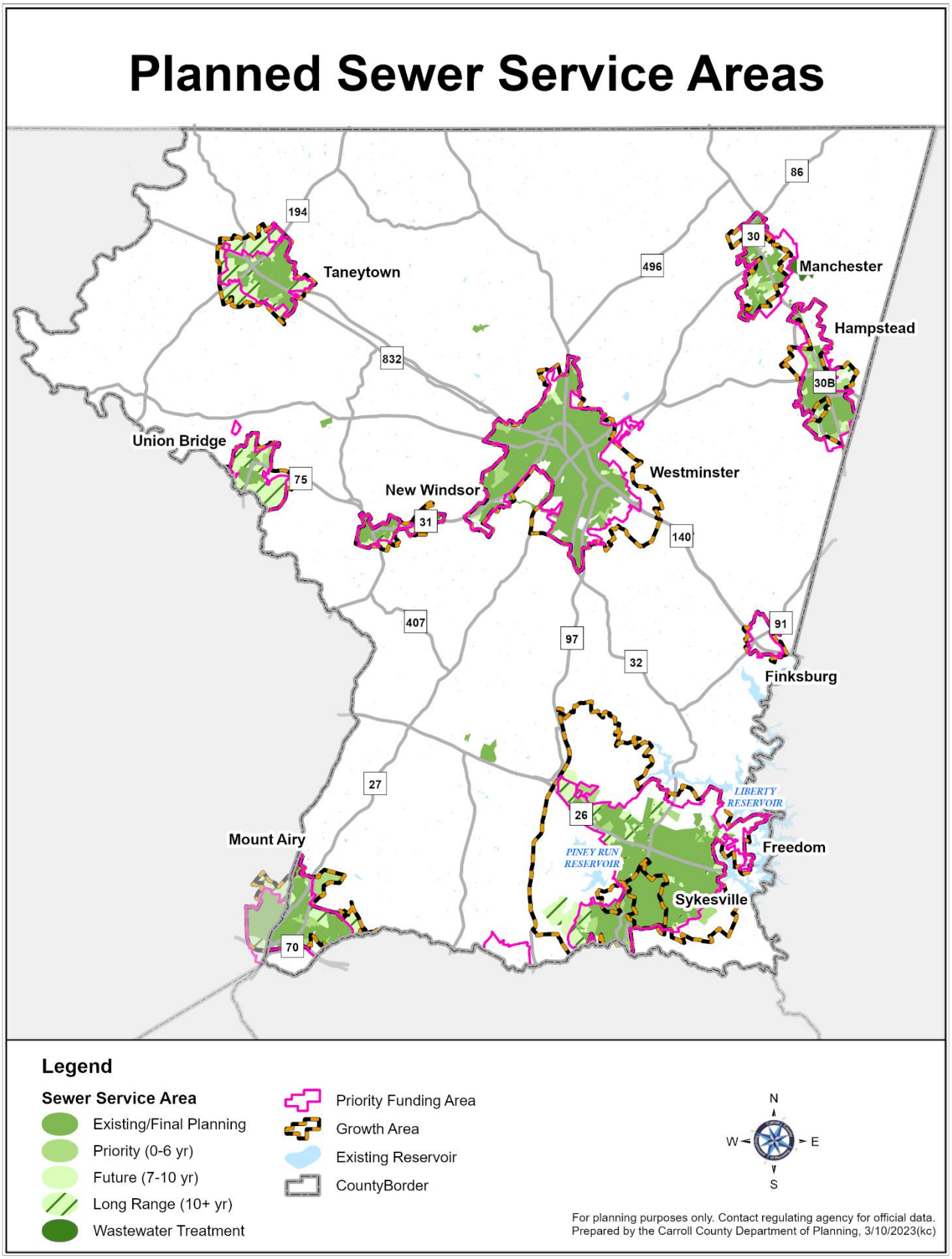
Prepared by the Carroll County Department of Planning, 3/10/2023(kc)

Map 9


Planned Sewer Service Areas
Taneytown
Manchester
Hampstead
Union Bridge
New Windsor
Westminster
Finksburg
Mount Airy
Freedom
Sykesville
LIBERTY RESERVOIR
PINEY RUN RESERVOIR
194
86
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832
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75
31
140
407
97
91
32
27
26
70
Legend
Sewer Service Area
Existing/Final Planning
Priority (0-6 yr)
Future (7-10 yr)
Long Range (10+ yr)
Wastewater Treatment
Priority Funding Area
Growth Area
Existing Reservoir
CountyBorder
N
W
E
S
For planning purposes only. Contact regulating agency for official data.
Prepared by the Carroll County Department of Planning, 3/10/2023(kc)

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

Table 4: 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 considers 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 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 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

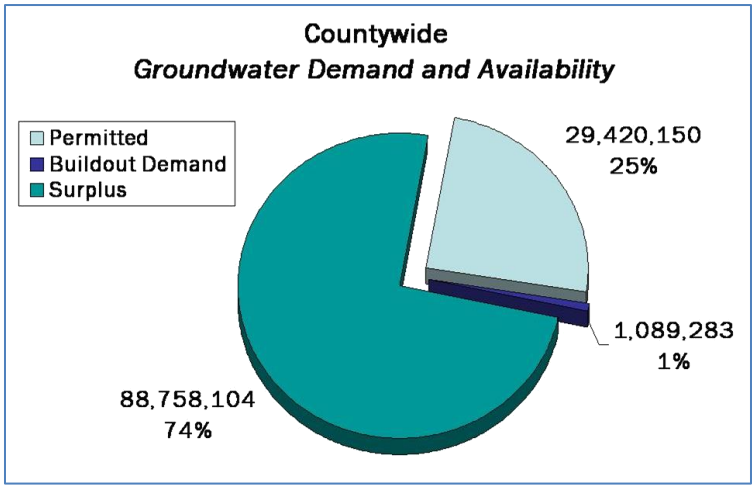
Section I: Groundwater

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 the Westminster and Freedom Water Service Areas (WSAs) where the majority of demand is met via reservoirs. According to the 2010 Carroll County Water Resources Element, total water demand in the county at that time 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 the total demand. Private residential wells accounted for 8.0 mgd of the total groundwater demand. Public water systems or private community water systems account for the remaining groundwater demand.

The County's WRE estimates a countywide potential groundwater availability 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 was 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 factors. Rainfall can sometimes become contaminated with pollutants before infiltrating into subsurface aquifers. Purification and mineralization of the water typically 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 and proximity to contaminant sources. Wells that are properly constructed and isolated from potential pollution sources are less susceptible to water quality issues.

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 provides options for diversified water supply sources should the need arise for any of the public water supply systems need to move in that direction. Currently, many of the systems still rely heavily on groundwater sources.

Water Recharge Easements and Credits

For many years, 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 qualifying 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 potential transfer. The County can then 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 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.

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 26.08.02.02 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 was established to protect water quality in streams that exceed minimum 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 other discharges or impacts. Monitoring is required. As of the 2021 review, seventeen stream segments or catchments 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.

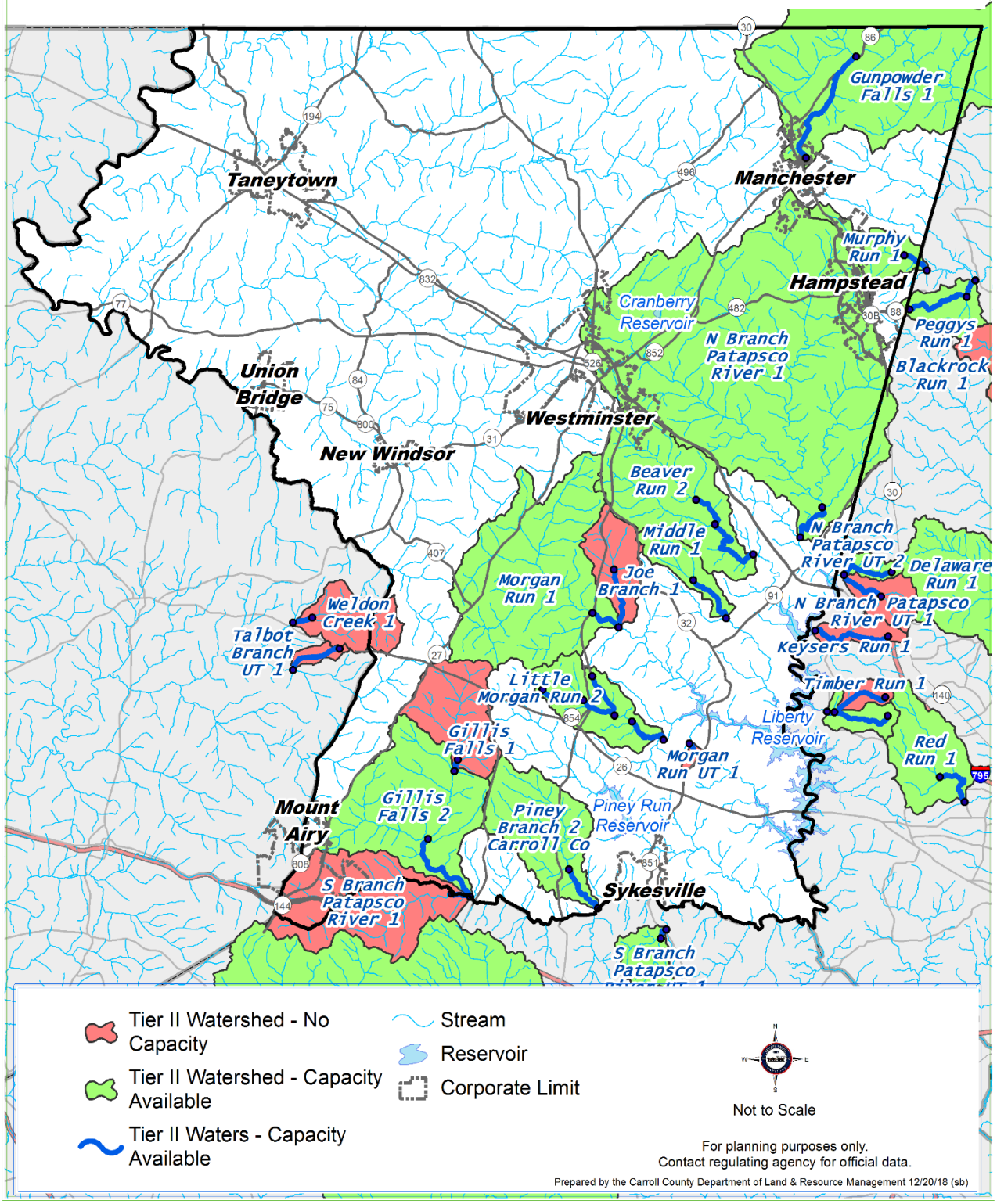
Total Maximum Daily Loads (TMDLs)

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 do not meet their designated water quality standards. Impairments can come from nutrients such as nitrogen and phosphorus, sediment, pathogens, mercury, and other metals. Once a water body is deemed "impaired," a TMDL, which is the maximum amount of a pollutant that the water body can assimilate and still meet water quality standards, is developed by MDE. To reduce pollutants of the receiving waters and address identified impairments, watershed implementation plans are required to be developed, at both the State and Local level. These plans define their respective restoration strategy to meet the established TMDL.

All the watersheds in Carroll County (except Conewango 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 these watersheds. Watershed implementation plans for all EPA approved TMDLs in Carroll County have been developed and approved by MDE.

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 groundwater supply. As of December 2010, the county owned 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 long-range 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 Ray well Avenue, between Bark Hill and Middleburg Roads. See Map 11: Bark Hill WSA. Permitted average daily use is 20,000 gpd. The 2022 average daily use was 13,281 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

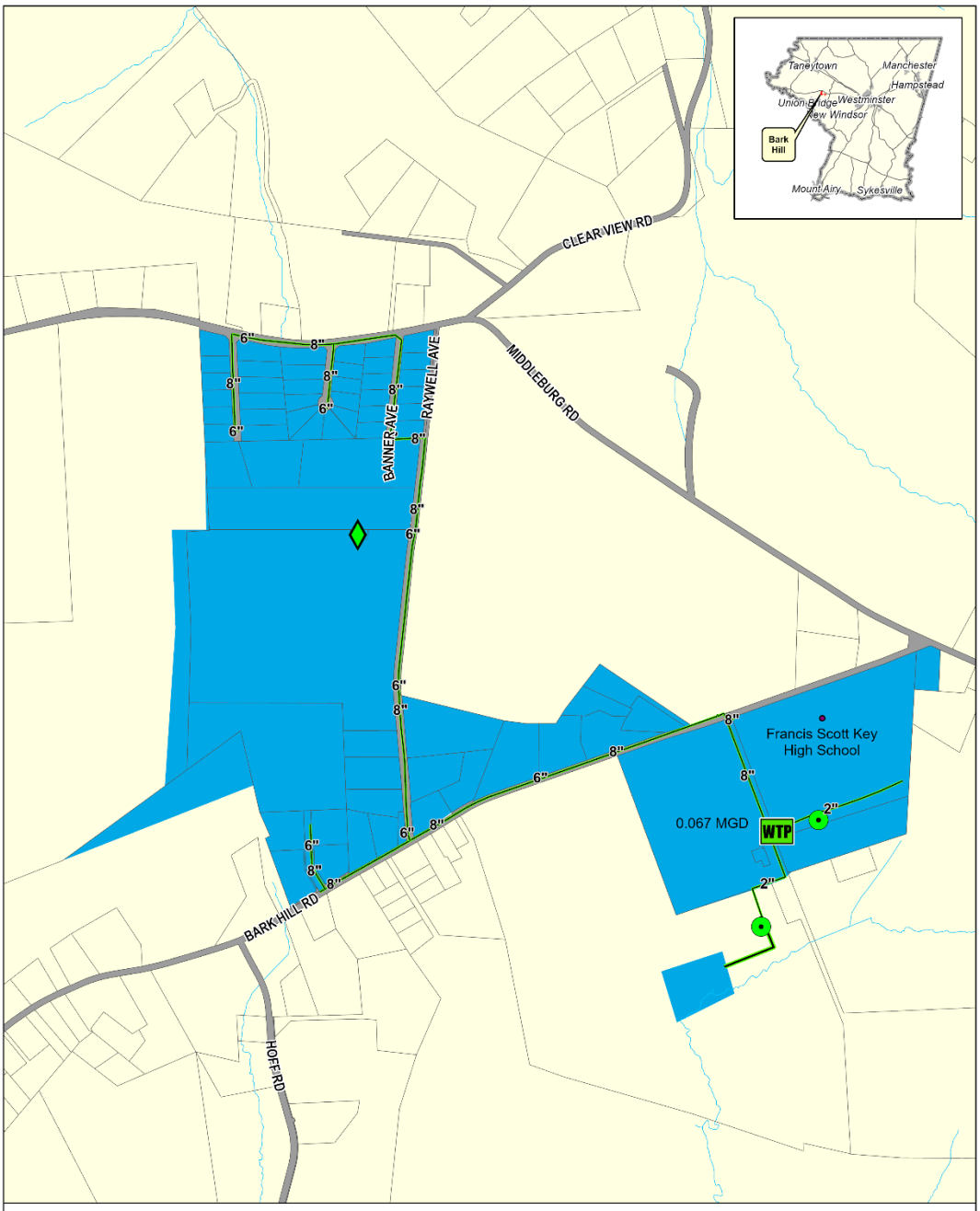
6-Digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Permitted Average Daily Demand Maximum Usage (gpd)
Middle Potomac	Bark Hill wells (2)	CL1969G009 (06)	20,000	33,000

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)	0.015 (combined wells 1& 2)	0.033 (combined wells 1& 2)	0.072 (combined wells 1& 2)

*Francis Scott Key High School

Map 11



Bark Hill
Water Service Area
Carroll County, Maryland

Water & Sewer Master Plan Triennial Update 2023

Water Service Categories
S-1 Existing/Final Planning

Water Distribution Lines
Existing Line

Water Facilities
WTP Existing Treatment Plant
Existing Well
Existing Storage Tank

General
Stream

N
0 100200 400 600 Ft

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 5D 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, 2020 average daily use was 2.04 mgd.

The current lease and agreement between the County and the City of Baltimore to provide for both the operation of the Freedom District Water Treatment Plant and a continuous supply of raw water from the Liberty Reservoir was signed by the City of Baltimore with an effective date of February 3, 2021. Terms contained within this lease and agreement allow for potential renewals through June 30, 2035. 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 filtration, the water is treated with enhanced coagulation (coagulant and sulfuric acid (only used in summer months) for reduced disinfect byproduct formation), mixing, flocculation, and dissolved air floatation (DAF). Sodium hypochlorite is added for disinfection, sodium hydroxide is added for pH stabilization, zinc orthophosphate is added for corrosion control, and fluoride is added for the prevention of dental decay. The Freedom District water service has had one documented violation to drinking water standards regarding disinfection byproducts since the new plant became operational approximately ten years ago. This occurred in the October 2015 to December 2015 time period as summarized in Appendix 7. 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 ore 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. As the Raincliffe well is not currently in use or piped to a treatment plant, a construction permit and water quality testing would be required before this well could be used. 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 Raincliffe RC-2 Freedom Park FP-6	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
Well 22B- Fairhaven (not in use)	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.
** Total allocated withdraw between all three wells.

Map 12

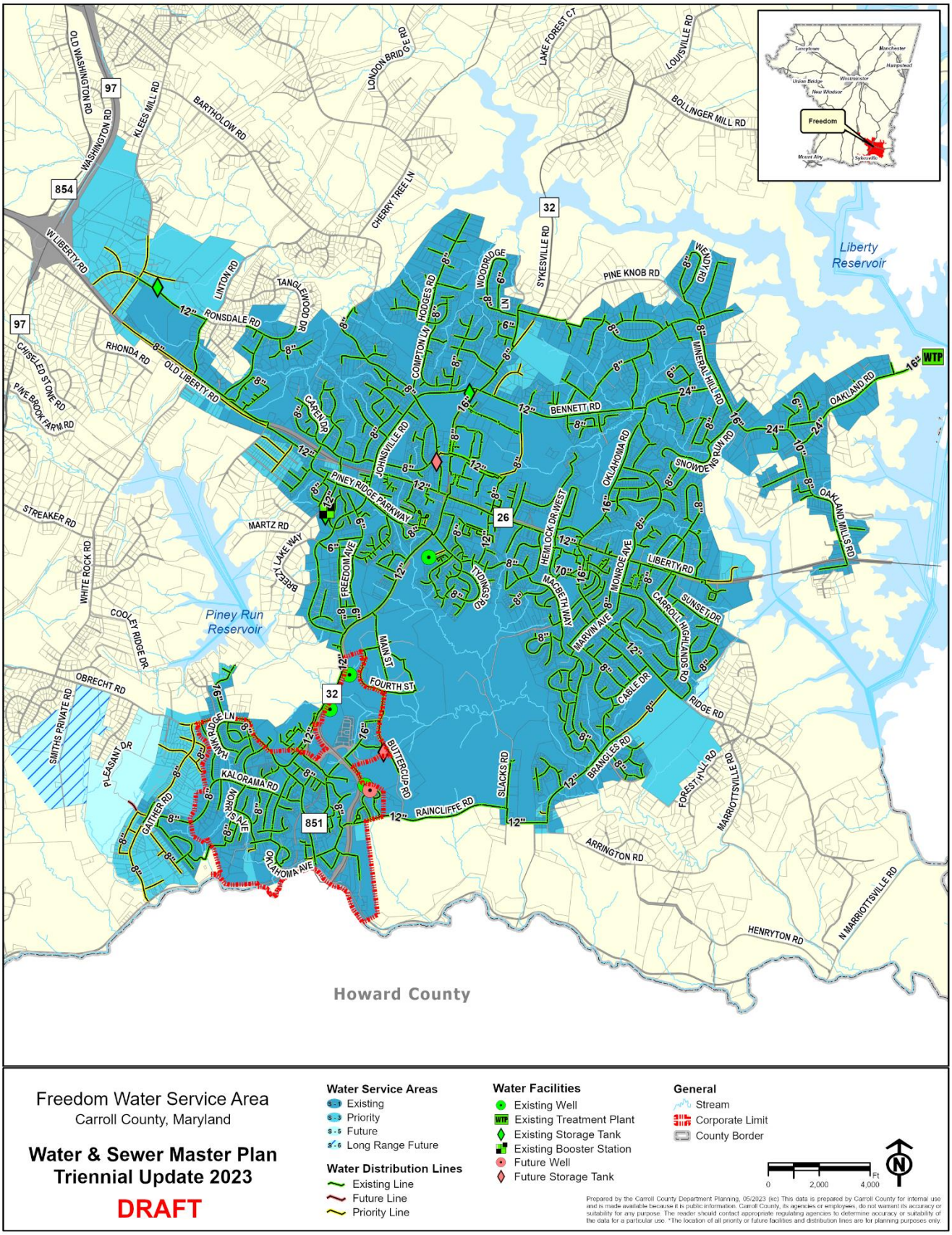

Freedom Water Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Triennial Update 2023
DRAFT
Water Service Areas
Existing
Priority
Future
Long Range Future
Water Distribution Lines
Existing Line
Future Line
Priority Line
Water Facilities
Existing Well
Existing Treatment Plant
Existing Storage Tank
Existing Booster Station
Future Well
Future Storage Tank
General
Stream
Corporate Limit
County Border
Howard County
Liberty Reservoir
Piney Run Reservoir
WTP
Freedom
Prepared by the Carroll County Department Planning, 05/2023 (kc) This data is prepared by Carroll County for internal use and is made available because it is public information. Carroll County, its agencies or employees, do not warrant its accuracy or suitability for any purpose. The reader should contact appropriate regulating agencies to determine accuracy or suitability of the data for a particular use. *The location of all priority or future facilities and distribution lines are for planning purposes only.

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	2.039	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, 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 (not in use/offline)	*1.000*
Springfield Water Tank[1] (not in use/offline)	*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 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, terms contained within this agreement allow for potential renewals through June 30, 2035, 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.

Several 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

[1] Not in Service

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	Future (W-5) 6 - 10 years	8" water lines to serve existing communities	Gaither Road from Obrecht Road to County line	0 MGD
Water Main Loop	Existing (W-1)	Loop water main for redundancy	Kennard Court to Lawrence Lane	0 MGD
Water Main Loop	Existing (W-1)	Loop water main for redundancy	Carroll Highlands to Sunset Road	0 MGD
Booster Pump Station – Barthalow Tank	Existing (W-1)	Provide redundancy to ensure flow to Linton & Mantz tank service areas; also improve pressure to service area	Barthalow Tank	0MGD

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
- Connect small residential lots currently on well to the 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 Main Street (former MD Business 30), serving 2,219 residential and commercial customers and covering approximately 2,555) acres. Permitted average daily use is 0.630 mgd. Average daily use is 0.337 mgd.

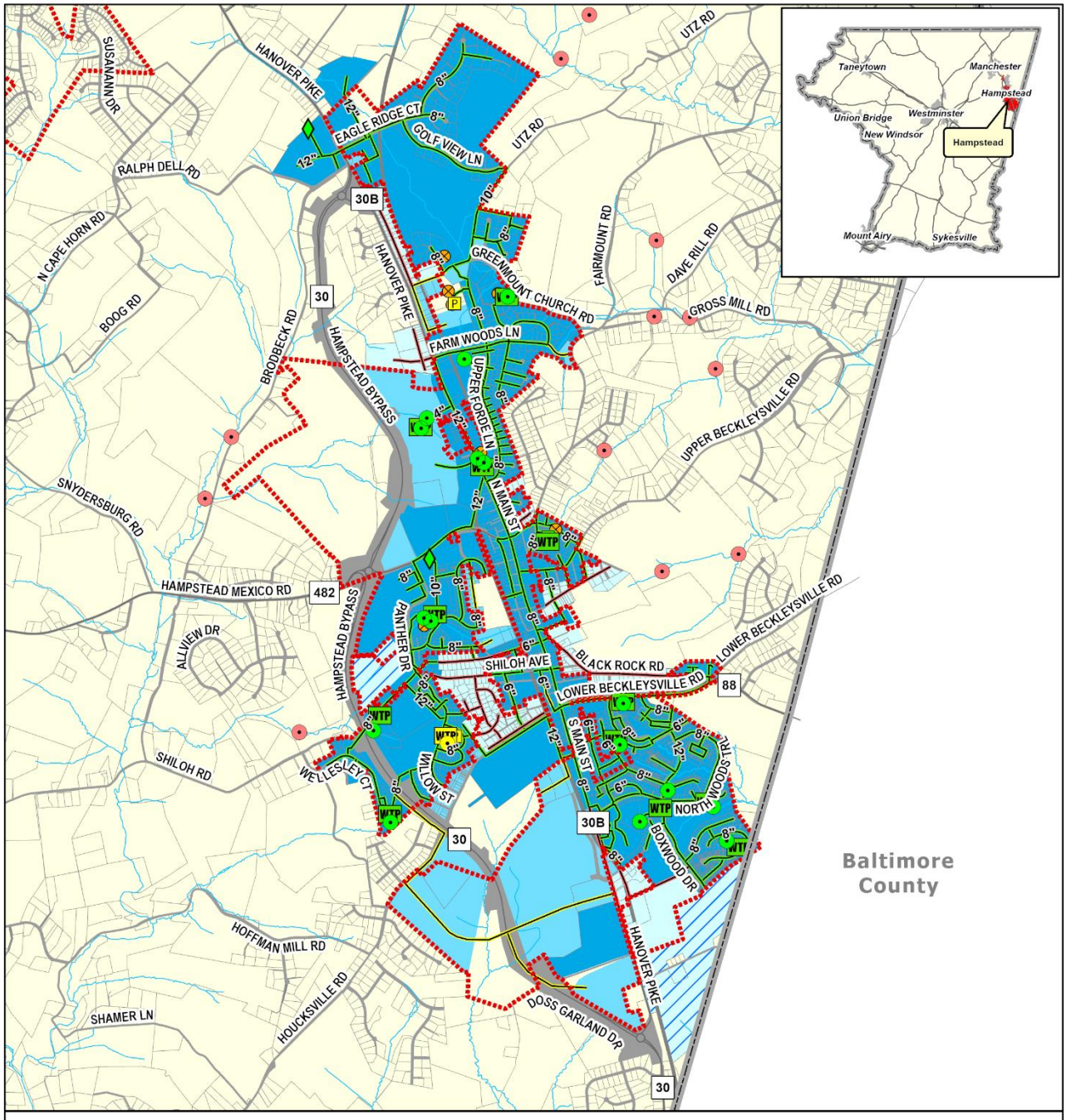
The system, which was built by the Town in 1936, is currently supplied by 21 wells. Of the 21 wells in the Town's inventory, 14 are operational; Wells 24 and 25 were disconnected from the system due to PFAS level exceeding EPA Advisory Level, and well #15 has been removed from active status. All sources 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 but the tank was removed from service in 2021. 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 two tanks provide water storage of about 900 thousand 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 (08)	283,000	362,000
Gunpowder	19, 24, 25, 33, 34, 35, 36	CL1974G162 (05)	211,000	322,000
Gunpowder	13, 15, 22, 23, 26, 27	CL1974G362 (03)	136,000	200,000
Total			***630,000***	***884,000***

Map 13



Hampstead Water Service Area
Carroll County, Maryland

Water & Sewer Master Plan Triennial Update 2023

DRAFT

Water Service Areas
- W - 1 Existing/Final Planning
- W - 3 Priority (0-6 yr)
- W - 5 Future (7-10 yr)
- W - 6 Long Range Future (10+ yr)

Water Distribution Lines
- Existing Line
- Priority Line
- Future Line

Water Facilities
- WTP Existing Treatment Plant
- Existing Well
- Existing Storage Tank
- P Existing Pumping Station
- WTP Priority Treatment Plant
- Priority Well
- P Priority Pumping Station
- Future Well
- Well not in service

General
- County Border
- Corporate Limit
- Stream

0 1,500 3,000 Ft

Table 7B: Hampstead WSA Storage Tanks

Storage Tank	Storage Capacity (mg)
MD 482/Panther Drive Water Tank	.500
North Carroll Plaza Water Tank	.400
Total	*.900*

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 375 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 has completed many projects in the past few years, including the replacement of the remaining 1936 water system.

The Town replaced the water main along Lower Beckleysville 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.
The Town recently awarded a contract for the removal of 2,800 linear feet of Asbestos Cement Pipe along Gillis Avenue, Shiloh Avenue, and South Carroll Street. The replacement pipe is ductile iron.

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	6,288	Elevated nitrates Wells 20 and 21	Out of service

Table 7C: Hampstead WSA Water Problem Areas

Location	Population	Nature of Problem	Status
Town of Hampstead	6,288	New emerging contaminant, PFAS	Strategic Planning and Engineering Phase

Planned Projects and Recommendations

Below are the recommendations for the Hampstead WSA. See Table 7D 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 and PFAS Removal	West of MD 30 East of Bypass	0.0 MGD (Currently Permitted but not in production)
Water System Centralization and PFAS Removal Project	Priority (W-3) 8 Year	Centralize the Water System to decrease the points of entry and reduce future maintenance cost. Install PFAS Removal Equipment that will also filter out other contaminants.	Locations North, West, East, and South within Town Limits	None
New Well Exploration	Priority (W-3) 5 Year	Drilling for new sources	North and West	0.079
New Pumphouse	Priority (W-3) 5 Year	Construct a new pump house to benefit wells #20 & #21	North Carroll Business Park	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

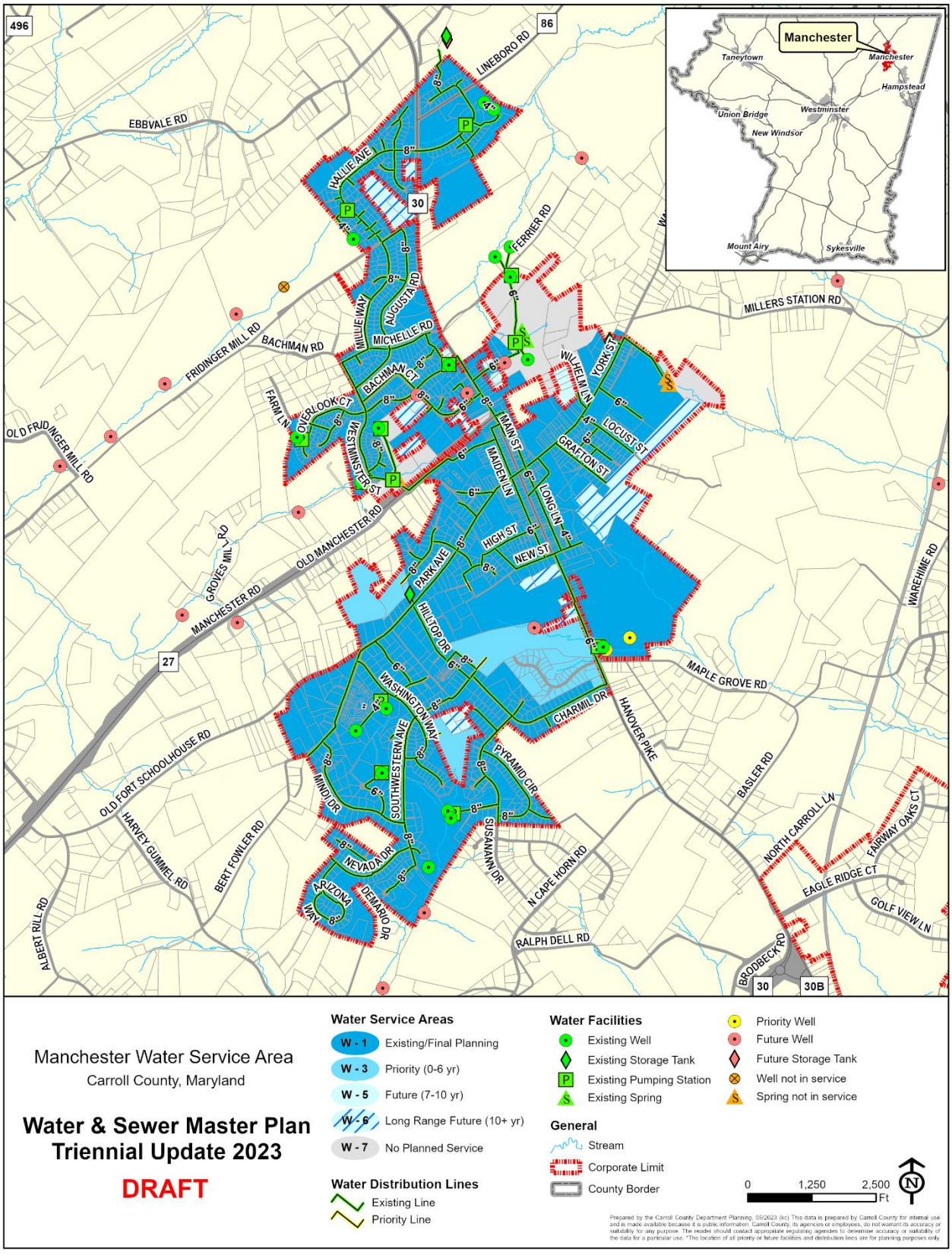
Current Conditions

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 1,792 EDUs, covers approximately 1,533 acres and is in the northeast portion of the County along MD 30. See Map 14: Manchester WSA. 2021 average daily use was 0.256 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


Manchester
Taneytown
Manchester
Hampstead
Union Bridge
Westminster
New Windsor
Mount Airy
Sykesville
496
86
30
27
30
30B
LINEBORO RD
EBBVALE RD
HALLIE AVE
FERRIER RD
MILLERS STATION RD
FRIDINGER MILL RD
BACHMAN RD
MILLIE WAY
AUGUSTA RD
MICHELLE RD
BACHMAN CT
FARM LN
OVERLOOK CT
WESTMINSTER ST
WILHELM LN
YORK ST
LOCUST ST
GRAFTON ST
MAIN ST
MAIDEN LN
LONG LN
HIGH ST
NEW ST
OLD FRIDINGER MILL RD
OLD MANCHESTER RD
GROVES MILL RD
MANCHESTER RD
PARK AVE
HILLTOP DR
WAREHIME RD
MAPLE GROVE RD
WASHINGTON WAY
CHARMIL DR
HANOVER PIKE
SOUTHWESTERN AVE
PYRAMID CIR
MINDI DR
OLD FORT SCHOOLHOUSE RD
HARVEY GUMMEL RD
BERT FOWLER RD
SUSANANN DR
BASLER RD
NORTH CARROLL LN
FAIRWAY OAKS CT
EAGLE RIDGE CT
GOLF VIEW LN
N CAPE HORN RD
NEVADA DR
ARIZONA
DEMARIO DR
WAY
ALBERT RILL RD
RALPH DELL RD
BRODBECK RD
Manchester Water Service Area
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Water & Sewer Master Plan
Triennial Update 2023
DRAFT
Water Service Areas
W - 1 Existing/Final Planning
W - 3 Priority (0-6 yr)
W - 5 Future (7-10 yr)
W - 6 Long Range Future (10+ yr)
W - 7 No Planned Service
Water Distribution Lines
Existing Line
Priority Line
Water Facilities
Existing Well
Existing Storage Tank
Existing Pumping Station
Existing Spring
Priority Well
Future Well
Future Storage Tank
Well not in service
Spring not in service
General
Stream
Corporate Limit
County Border
0 1,250 2,500 Ft
N

Table 8A: Manchester WSA Appropriations

6-Digit Watershed	Permit No.	Allocation: Average Daily Demand on Yearly Basis (gpd)	Allocation: Daily Demand for Month of Maximum Use (gpd)	Wells/Springs Included in the Permit
Middle Potomac	CL1966G112(04)	134,000	199,000	▪ Bachman Road Well (Well #4) ▪ Crossroads Well #1 (Well #8) ▪ Crossroads Well #2 (Well #9) ▪ Hallie Hill Well (Well #11)
Patapsco	CL1966G212(05)	38,000	63,000	▪ Patricia Court Well (Well #7) ▪ Manchester Farms Well D ▪ Manchester Farms Well B (Well #10) ▪ Park Ridge Well (Well #13a) ▪ Park Ridge B Well (Well #13b)
	CL1995G046(03)	69,700	116,400	
	CL2002G005(03)	6,000	10,000	
	CL2004G021(05)	9,300	11,800	
Gunpowder	CL1966G012(12)	324,000	486,000	▪ 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	0.056	0.137
Park Ridge Well 13B	0.020	0.008	0.044
Crossroads #1 Well	0.038	0.030	0.076
Crossroads #2 Well	0.044	0.012	0.087
Holland Drive Well	0.041	0.016	0.083
Manchester Farms Well B	0.056	0.039	0.113
Manchester Farms Well D	0.010	0.006	0.008
Manchester Valley Wells (3 Wells)	0.100	0.042	0.075
Patricia Court Well	0.014	0.007	0.029
Hallie Hill Well	0.037	0.021	0.074
Hallie Hill "L" Well 14a	0.024	0.012	0.057
Hallie Hill "N" Well 14b	0.039	0.023	0.068
Ferrier Road Well A	0.020	0.011	0.052
Ferrier Road Well B	0.020	0.005	0.029
Ferrier Road Well C	0.019	0.016	0.038
Park Ridge Well 13A	0.029	0.007	0.055
Walnut Street Well	0.012	0.005	0.020
Total	***0.592***	***0.316***	***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 Huppman 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	5,408	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
Aging Infrastructure Replacement	Priority (W-3)	Replace aged infrastructure to reduce leaks	Entire Town	TBD*
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 options for non-groundwater water supply.

Mount Airy Water Service Area

Current Conditions

The Mount Airy WSA serves 3,627 connections 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 based on month of maximum use is 1,386,500 gpd; permitted average daily demand based on yearly average 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 11 wells to obtain its drinking water. The Mount Airy water supply is susceptible to PFAS, nitrate contamination, VOCs (except well 8), SOCs, and radionuclides, but not susceptible to protozoans. Further, Wells #2 and #7 are susceptible to bacteria and viruses.

With increased attention to PFAS levels in drinking water systems by the EPA the Mount Airy Water System was tested at all 5 stations' points of entry to the system and on all raw water points at all 11 individual wells. Several stations/wells were found to have elevated levels of PFAS which, if EPA's recently proposed MCL holds, the Town will then need to treat several treatment plants for these forever chemicals. Quarterly testing has been implemented and a DWSRF grant application has been submitted for funding assistance.

Considering existing pipeline projects, the Town's water system is beyond 80%, but not exceeding 88% of its appropriations and is therefore, in accordance with Town Code, approaching inadequate capacity. 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 January 2023)

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(07)	255,000	347,000
Patapsco	Well #5	CL1987G076 (08)	43,000	43,300
Patapsco	Well #6	CL1987G176 (09)	149,000	180,000
Middle Potomac	Well #7	FR1976G107(03)	99,000	139,000
Patapsco	Well #8	FR1995G020(04)	150,000	210,000
Middle Potomac	Well #9	FR2001G022(03)	79,000	204,000
Patapsco	Well #10 (Flickinger)	CL2000G022 (04)	77,000	144,000
Patapsco	Well #11	CL2009G001(03)	75,000	82,500
Totals			*927,000*	*1,353,500*

Map 15

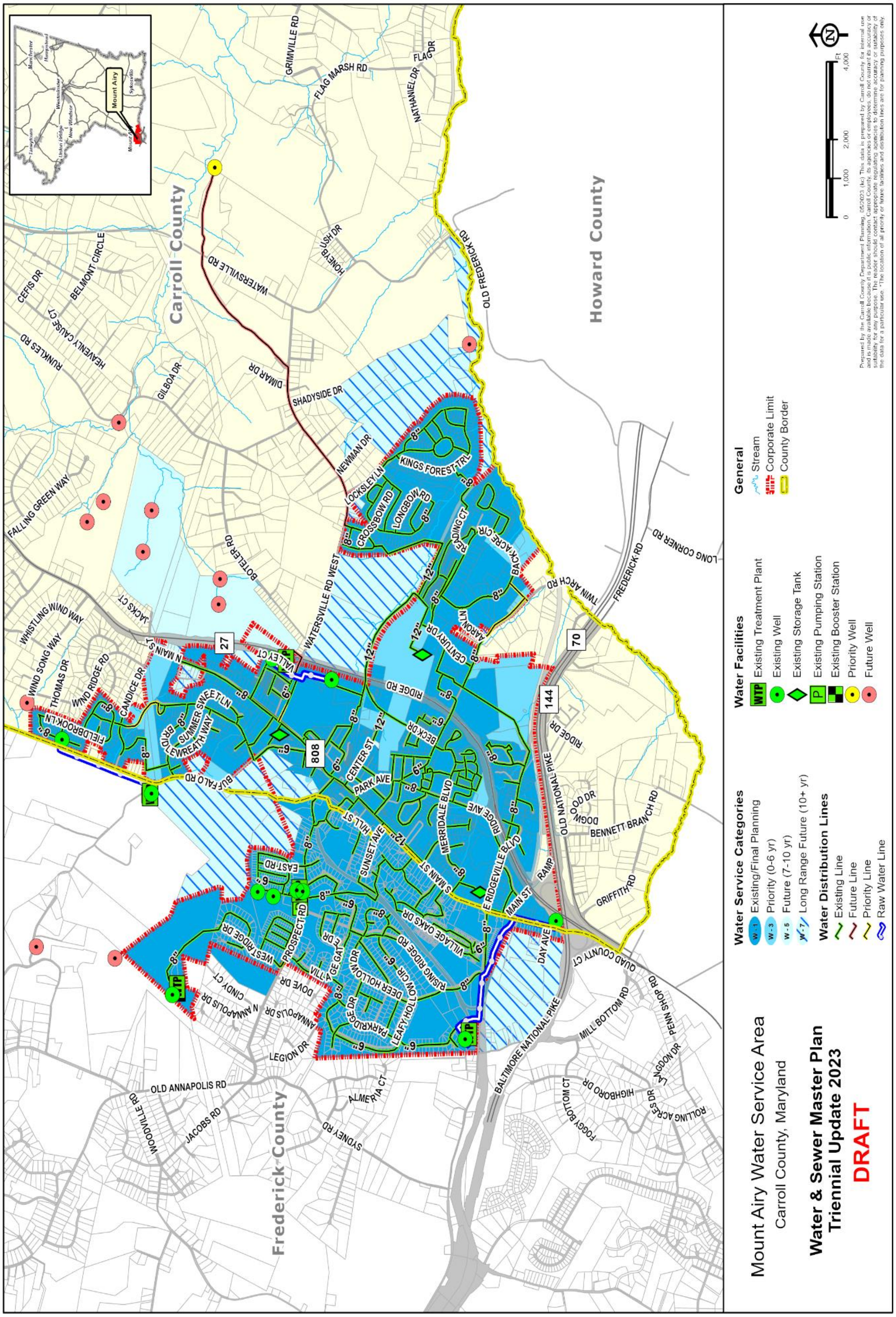

Mount Airy Water Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Triennial Update 2023
DRAFT
Water Service Categories
W-1 Existing/Final Planning
W-3 Priority (0-6 yr)
W-5 Future (7-10 yr)
W-7 Long Range Future (10+ yr)
Water Distribution Lines
Existing Line
Future Line
Priority Line
Raw Water Line
Water Facilities
Existing Treatment Plant
Existing Well
Existing Storage Tank
Existing Pumping Station
Existing Booster Station
Priority Well
Future Well
General
Stream
Corporate Limit
County Border
Carroll County
Howard County
Frederick County
Mount Airy

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	0.202	0.720
Well Fields 5 & 6	0.260	0.132	0.290
Well Fields 7 & 11	0.221	0.118	0.259
Well Fields 8 & 10	0.354	0.173	0.354
Well Field 9	0.204	0.079	0.288
Total	***1.386***	***0.704***	***1.911****

*The Town only runs 2 of the 4 wells at any one time **Average Daily Use values specific to Well Fields will be updated as information becomes available.

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 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 1,092,000 gpd. With current appropriations, the Town will need to identify an additional 165,000 gpd to meet future water demand needs. To address these needs, the Town will seek new water sources, preferably groundwater sources.

Recently, the Town worked with Carroll County and MDE for approval of appropriations to four wells on the Harrison/Leishear Properties (Wells #1, #3, #12, and #18). Based on the Town's testing, in accordance with MDE procedures, the wells have an anticipated (combined) appropriation amount of 152,000 gpd. The appropriation is pending annexation of the property into the Town's corporate boundaries. The wells are situated in the Middle Run Stream subwatershed and are adjacent to the Town's Water Station #2, which was upgraded in 2016. The Town and County's use of these wells is still to be determined.

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.

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 Mains	Priority (W-3) 5 years	Hydraulics Upgrades	Key Areas of 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 819 existing connected EDUs within the corporate limits of the municipality. The existing and planned service area is 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 well, Main Spring; Hillside Wells; and Dickerson Run. Water travels from Dennings Well through a 1 mile, 4 inch-diameter gravity waterline to Main Spring; from Main Spring through a 3-mile, 8 inch-diameter waterline to a 150,000 gallon Chlorine Contact Tank, to a booster station before entering the town distribution system. 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 plants would be 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 150,000-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 located on Rowe Rd.

The Hillside wells are also pumped into the distribution system. Tank storage consists of a 250,000-gallon finished water standpipe and a 375,000-gallon elevated pedestal water storage tank located next to the first tank. Both water tanks are located on Rowe Rd.

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 is 91,000 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 (06)	143,000	202,000
Middle Potomac	Hillside Wells (No. 1 & 2)	CL1992G049 (03)	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	0.073	0.148
Hillside Wells (Nos. 1 & 2)	0.080	0.018	0.036
Total	*0.282*	*0.091*	*0.184*

Table 10C: New Windsor WSA Storage Tank

Storage Tank	Storage Capacity (mg)
Chlorine Contact Tank	0.15
Standpipe	0.250
Standpipe	0.375
Total	*0.775*

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 all public facilities, including the water supply system is a requirement of the Planning Commission and is a prerequisite to executing public works agreements or making new connections for water service to new customers (*New Windsor Code* §*175-17*).

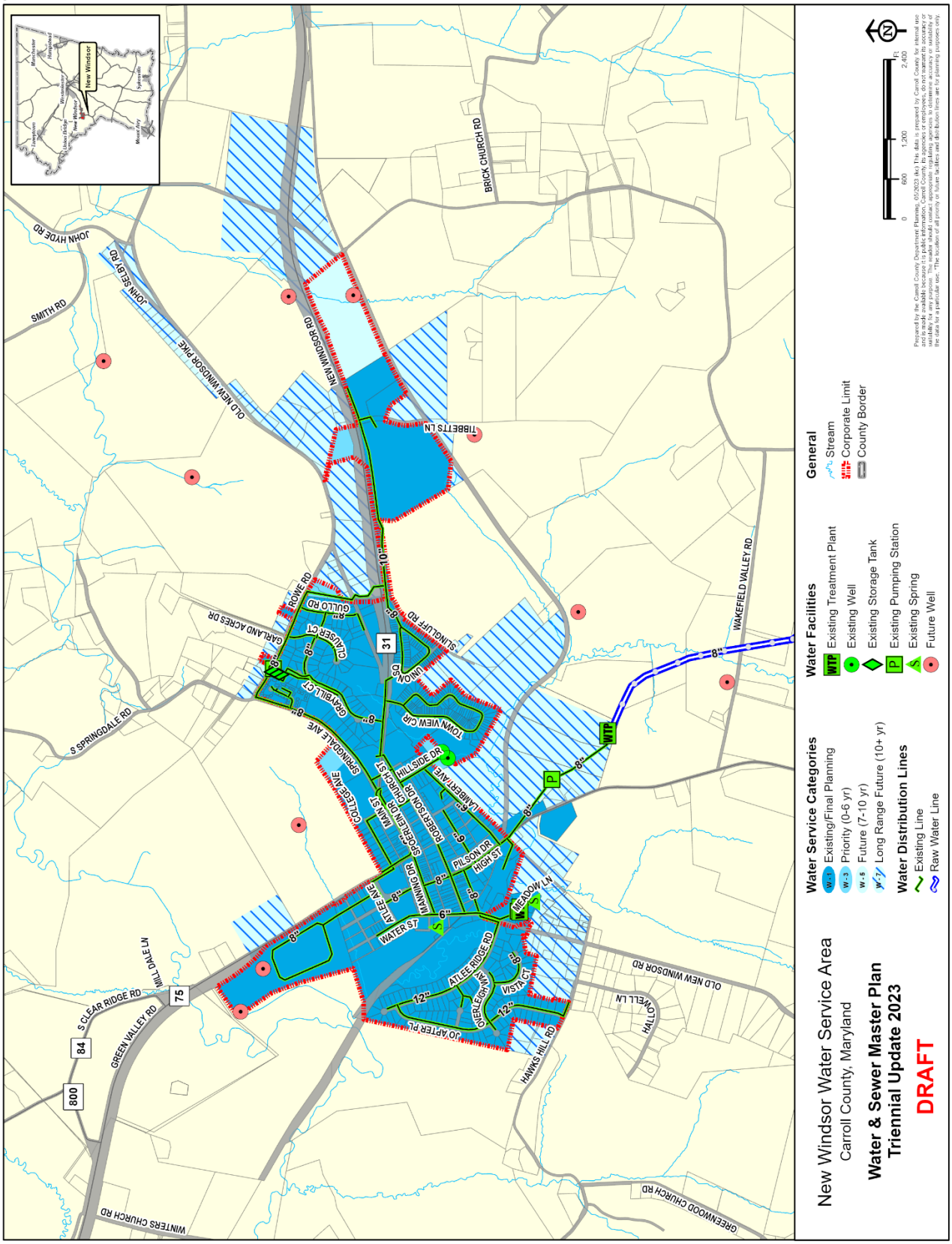
Needs Analysis

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 by providing a treatment plant. 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


New Windsor Water Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Triennial Update 2023
DRAFT
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W-3 Priority (0-6 yr)
W-5 Future (7-10 yr)
W-5+ Long Range Future (10+ yr)
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Existing Line
Raw Water Line
Water Facilities
WTP Existing Treatment Plant
Existing Well
Existing Storage Tank
P Existing Pumping Station
Existing Spring
Future Well
General
Stream
Corporate Limit
County Border
New Windsor
BRICK CHURCH RD
JOHN HYDE RD
JOHN SELBY RD
SMITH RD
OLD NEW WINDSOR PIKE
NEW WINDSOR RD
TIBBETTS LN
ROWE RD
GULLO RD
CLAUSER CT
GARLAND ACRES DR
GRAVELLY CT
SPRINGDALE AVE
COLLEGE AVE
S SPRINGDALE RD
SUNGLUFF RD
UNION CIR
TOWN VIEW CIR
HILLSIDE DR
LAMBERT AVE
ROBERTSON DR
SOCRATEIN DR
MANNING DR
MAIN ST
PILSON DR
HIGH ST
ALTLEE AVE
WATER ST
MEADOW LN
ATLEE RIDGE RD
OVERLEIGH AVE
VISTA CT
JO APTER PL
WAKEFIELD VALLEY RD
OLD NEW WINDSOR RD
HALLOWELL LN
HAWKS HILL RD
GREENWOOD CHURCH RD
WINTERS CHURCH RD
S CLEAR RIDGE RD
MILL DALE LN
GREEN VALLEY RD
75
84
800
31
8"
10"
12"
6"
WTP
P

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
Main Spring Farm Well (MSF-5)	Priority (W-3) 5 years	Well MSF-5; connect to system	Main Spring Farm	.10 MGD
Water Infrastructure	Priority (W-3) 5 years	Water System Upgrade, SCADA, valves, stations	Distribution System	0 MGD
Water Audit	Priority (W-3) 5 years	Account for water loss	Completed yearly	0 MGD
Main St. & High St.Project	Existing (W-1) Immediate	Water main replacement to improve distribution (starts 2023)	Main/High Streets	0 MGD
Roops Meadow Spring	Priority (W-3) 5 years	Develop plan for treatment to use as temporary water source in emergency	Meadow Lane	Would require 24 hr. treatment plant
Hillside Well (078-079)	Priority (W-3) Immediate	Maximize operability	Hillside Drive	.08 MGD
Additional Water Sources	Priority (W-3) Immediate	Explore, identify, acquire, develop	Various locations (include. Atlee Ridge & Snader property)	.25 MGD

Long-Term Recommendations (10+ years)

- Develop an agreement with Heidelberg Materials to use water pumped from the Lehigh New Windsor Quarry as a potential future water source per existing agreement.
- Preliminary Engineering Report for replacing the approximately 120-year old main line from Bowersox Spring to Main St. MD-31. This line is approximately 15,000 linear feet through mostly private property. This project should be an alternative to the Additional Water Sources project mentioned above in the event additional water sources cannot be acquired.
- Groundwater Wells: Drill and develop groundwater wells (based on the average MDE appropriated of existing New Windsor wells) for redundant water supply as a future Town use.
- Maintain long-term options for non-groundwater water supply, including Heidelberg Materials New Windsor Quarry, regional connections to Union Bridge water supply, and regional connection to Westminster Water Supply.
- Add redundant storage capacity at Chlorination tank.
- Update Chlorination booster station.
- Install generators at Hillside and Main Spring.

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 2022, an estimated 50 residential EDUs and the Pleasant Valley Fire Department used an average of 4,800 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.

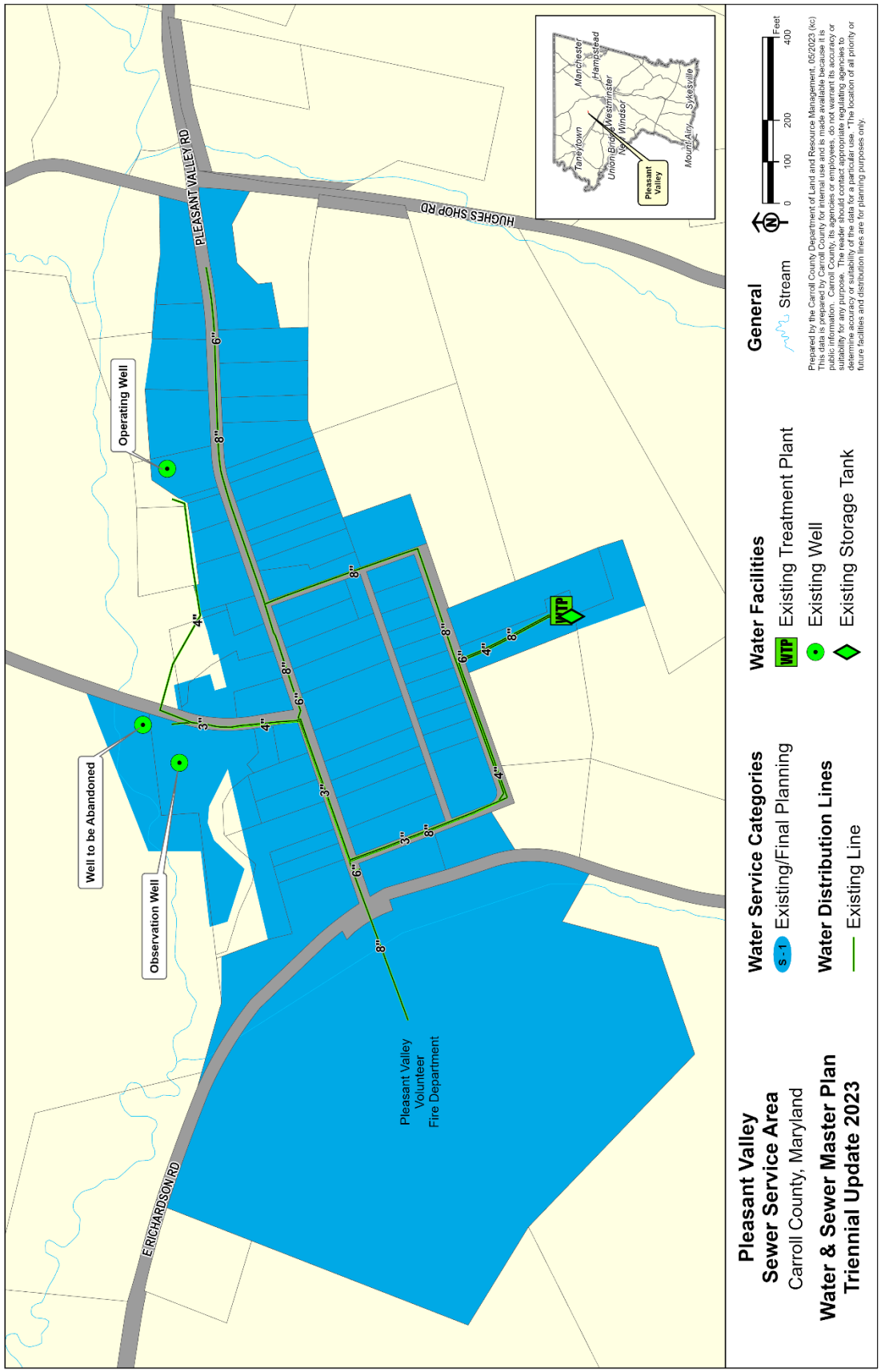
Table 11A: Pleasant Valley WSA Appropriations

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 (04)	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


PLEASANT VALLEY RD
HUGHES SHOP RD
E RICHARDSON RD
Operating Well
Well to be Abandoned
Observation Well
Pleasant Valley Volunteer Fire Department
WTP
6"
8"
4"
3"
Manchester
Hampstead
Westminster
New Windsor
Union Bridge
Taneytown
Mount Airy
Sykesville
Pleasant Valley
Pleasant Valley
Sewer Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Triennial Update 2023
Water Service Categories
S-1 Existing/Final Planning
Water Distribution Lines
Existing Line
Water Facilities
WTP Existing Treatment Plant
Existing Well
Existing Storage Tank
General
Stream
N
0
100
200
400
Feet
Prepared by the Carroll County Department of Land and Resource Management, 05/2023 (kc)
This data is prepared by Carroll County for internal use and is made available because it is public information. Carroll County, its agencies or employees, do not warrant its accuracy or suitability for any purpose. The reader should contact appropriate regulating agencies to determine accuracy or suitability of the data for a particular use. * The location of all priority or future facilities and distribution lines are for planning purposes only.

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 3,338 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 77 percent of total consumption is generated by the residential population. Permitted daily use is 0.552 mgd. Average daily use is 0.450 mgd.

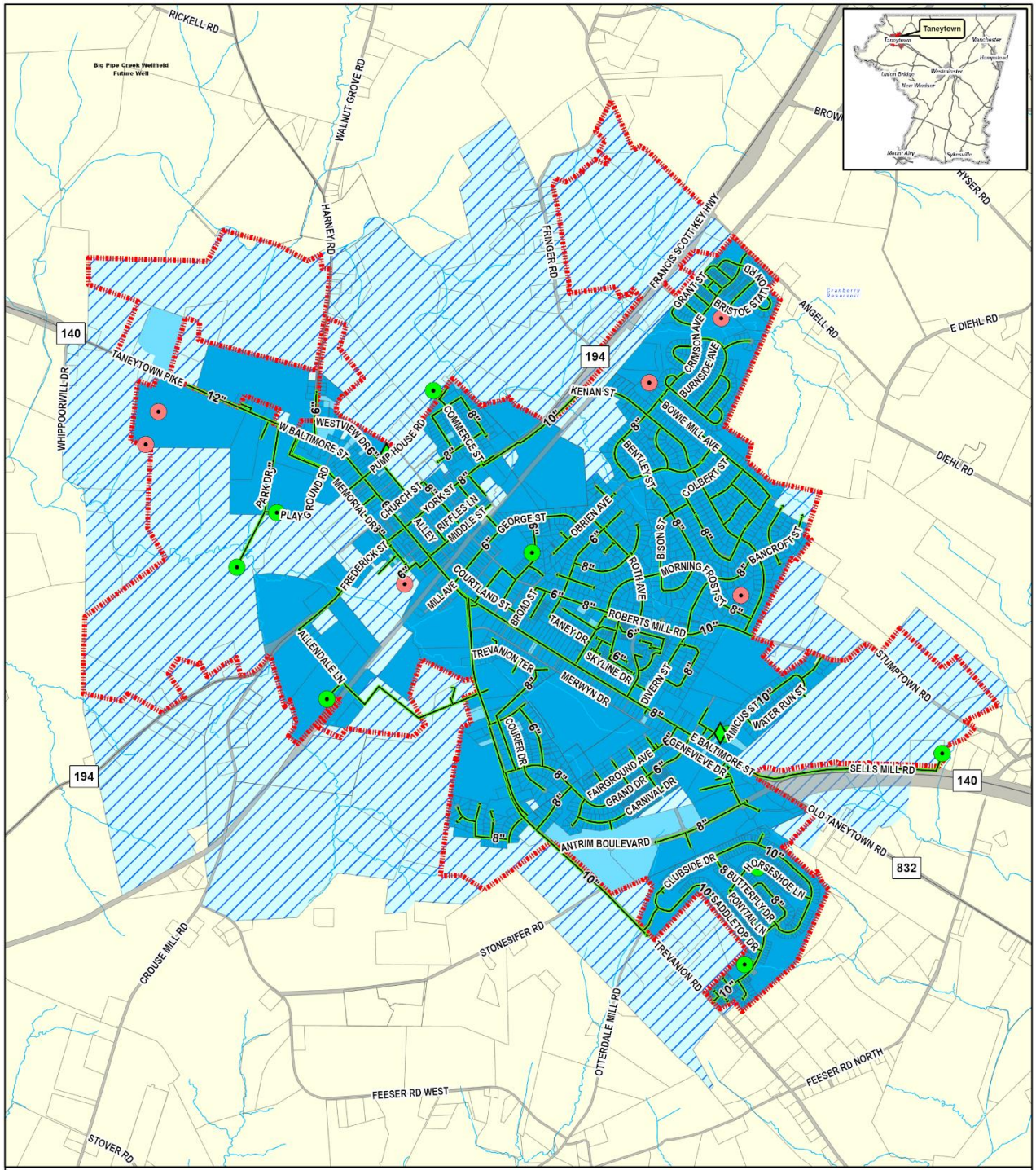
Taneytown's water supply system relies on groundwater which is supplied by eight municipal wells. Wells 8 and 9 have a permitted average day capacity of 190,000 gallons. Wells 11 and 12 have a permitted average day capacity of 118,000 gallons. Well 14 provides an additional 90,000 gallons average day 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.

The City has completed the cleaning, repair and painting of the 150,000 gallon elevated storage tank located at 7 Breakiron Street. During FY23 the water telemetry system was upgraded from Verizon phone lines to wireless point to point communications. This new telemetry system is owned and operated by the City.

The County does not support the large Long Range service area, especially as the City is unable to serve areas within the current cooperate limits.

Map 18


RICKELL RD
Big Pipe Creek Wellfield
Future Well
WALNUT GROVE RD
HARNEY RD
FRINGER RD
FRANCIS SCOTT KEY HWY
HYSER RD
ANGELL RD
E DIEHL RD
DIEHL RD
140
194
WHIPPOORWILL DR
TANEYTOWN PIKE
12"
6"
WESTVIEW DR
W BALTIMORE ST
PUMP HOUSE RD
COMMERCE ST
8"
10"
KENAN ST
GRANT ST
BRISTOE STATION RD
CRIMSON AVE
BURNSIDE AVE
BOWIE MILL AVE
BENTLEY ST
COLBERT ST
PARK DR
PLAYGROUND RD
MEMORIAL DR
CHURCH ST
YORK ST
RIFFLES LN
ALLEY
MIDDLE ST
GEORGE ST
OBRIEN AVE
BISON ST
ROTH AVE
MORNING FROST ST
BANCROFT ST
FREDERICK ST
MILL AVE
COURTLAND ST
BROAD ST
ROBERTS MILL RD
TANEY DR
SKYLINE DR
DIVERN ST
TREVANION TER
MERWYN DR
ALLENDALE LN
AMICUS ST
WATER RUN ST
STUMPTOWN RD
E BALTIMORE ST
GENEVIEVE DR
SELLS MILL RD
COURIER DR
FAIRGROUND AVE
GRAND DR
CARNIVAL DR
OLD TANEYTOWN RD
832
ANTRIM BOULEVARD
CLUBSIDE DR
HORSESHOE LN
BUTTERFLY DR
PONTAIL LN
SADDLETOP DR
TREVANION RD
CROUSE MILL RD
STONESIFER RD
OTTERDALE MILL RD
FEESER RD WEST
FEESER RD NORTH
STOVER RD
Taneytown
Taneytown
Manchester
Hampstead
Union Bridge
Westminster
New Windsor
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Water Service Areas
W - 1 Existing/Final Planning
W - 3 Priority (0-6 yr)
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Water Distribution Lines
Existing Line
Water Facilities
Existing Well
Existing Storage Tank
Future Well
General
Stream
Corporate Limit
County Border
0 600 1,200 2,400 Ft
N
Prepared by the Carroll County Department Planning, 05/2023 (kc) This data is prepared by Carroll County for internal use and is made available because it is public information. Carroll County, its agencies or employees, do not warrant its accuracy or suitability for any purpose. The reader should contact appropriate regulating agencies to determine accuracy or suitability of the data for a particular use. *The location of all priority or future facilities and distribution lines are for planning purposes only.

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 14%, based on 2020, 2021 and 2022 data, which is attributed primarily to the leaks within the city's distribution system. The City has a leak identification and repair program to address this water loss. The City has installed data loggers in key locations, that are monitored monthly, or as needed based on pumping rates. 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	Well 10*	CL2010G002 (01)	77,600	N/A
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	CL2007G003 (02)	19,100**	225,000
Total			*552,100*	*943,000*

* *Well 10 is currently not in service.*

** 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. The City is evaluating acquisition of recharge acreage which will be linked to well permit 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	250 gpm
Total	*1.358*	*0.357*	*0.713*	

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

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	Well 10*	CL2010G002 (01)	77,600	N/A
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	CL2007G003 (02)	19,100**	225,000
Total			*552,100*	*943,000*

* *Well 10 is currently not in service.*

** 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. The City is evaluating acquisition of recharge acreage which will be linked to well permit 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	250 gpm
Total	*1.358*	*0.357*	*0.713*	

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 can 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. The City is evaluating its recharge policy. Recent developments have utilized DRRAs to address potential recharge needs, and the City wishes to develop a more proactive approach to recharge acquisition,

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 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, the City is evaluating acquisition of recharge acreage which will be linked to well permit increases.

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 Trev anion Road	Antrim Blvd.	0 MGD
Water Storage Tank Rehabilitation	Priority (W-3) Immediate	Cleaning, repair, and painting of storage tank	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
New 500,000-gallon water storage tank	Priority (w-3) 5 years	Add an additional storage tank to the water distribution system to increase storage and resiliency	TBD	0 MGD

Well 8 upgrade/generator installation	Priority (W-3) Immediate	Rehab well controls and install a backup generator	7 Breakiron St.	0 MGD
Upgrade well 11 & 12 controls and install filtration	Priority (W-3) Immediate	Replace well controls for both wells and install a filtration unit to remove PFAS & PFOA for the wells	10 Park Dr.	0 MGD
Meter replacement	Priority (W-3) Immediate	Replace aging water meters and MXU's to get accurate water consumption from residents and businesses.	Water distribution system	0 MGD
Broad St. Water Main Replacement	Priority (W-3) 5 years	Replace deteriorated water main and services	Roberts Mill Road	0 MGD
Westview Drive water main replacement	Priority (W-3) 5 years	Replace deteriorated water main and services	Westview Drive	0MGD

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.
- 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.
- 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.
- Acquisition of Water Recharge land to 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 977 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 from 2018 – 2020 was 0.0897 MGD.

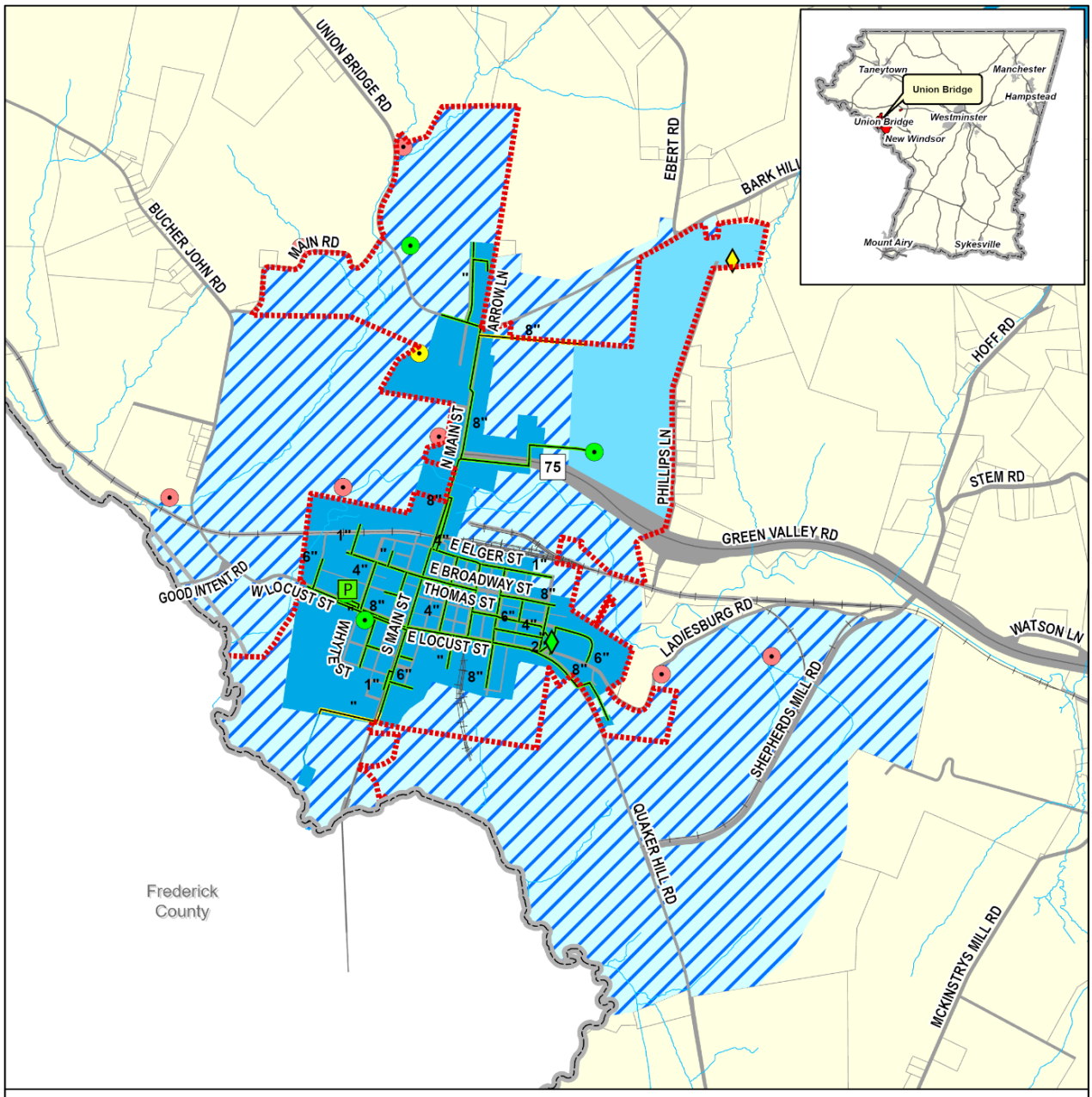
The Town is supplied by two wells used for drinking water. The Town's primary well (Well #1), located on West Locust Street, drilled in 1913 and purchased from the Union Bridge Water Company in 1963, is estimated to have a safe yield of 0.576 MGD. A second well (Well #2), which became operational in 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) was 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.

The County does not support the large Long Range service area, as the Town has unserved areas within the current cooperate limits.

Map 19



Union Bridge Water Service Area
Carroll County, Maryland

Water & Sewer Master Plan
Triennial Update 2023

DRAFT

Water Service Categories
- W - 1 Existing/Final Planning
- W - 3 Priority (0-6 yr)
- W - 5 Future (7-10 yr)
- W - 6 Long Range Future (10+ yr)

Water Facilities
- Existing Well
- Existing Storage Tank
- Existing Pumping Station
- Priority Well
- Priority Storage Tank
- Future Well

Water Distribution Lines
- Existing Line
- Priority Line

General
- Stream
- County Border
- Corporate Limit

0 1,000 2,000 Ft.

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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 (08)	166,000	200,000
Middle Potomac	Phillips Well (Well #3) (not in use)	CL1979G148 (05)	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 stank on the Northeast quadrant of the Phillips property.
- Re-line and rehabilitate Well #1 to address surface water influence.
- County recommends reduction of Long Range service Area.

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 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

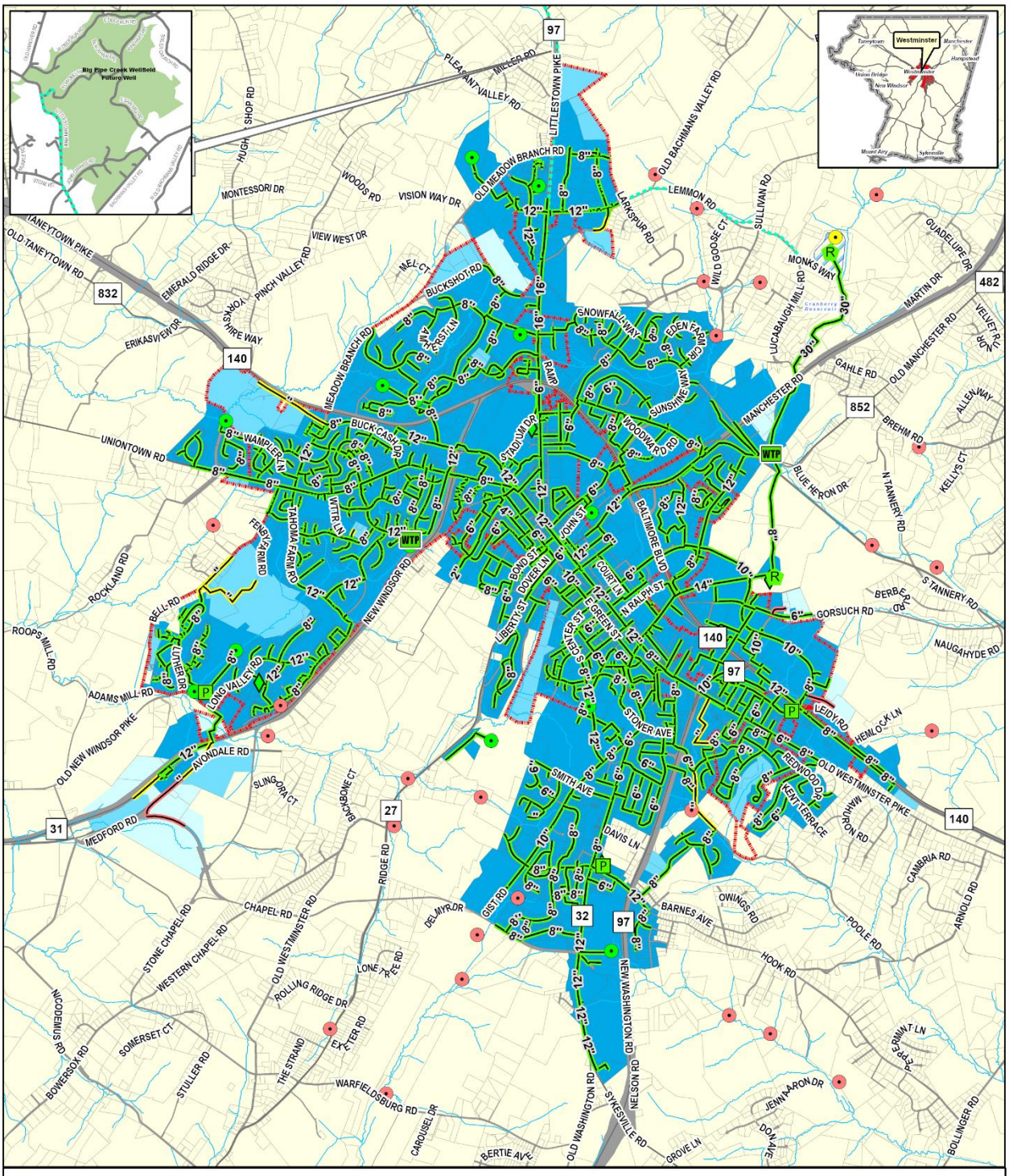
The City of Westminster first developed a Water Supply Capacity Management Plan (WSCMP) in August 2006. The results of the August 2006 WSCMP indicated that the City had an existing *Drought of Record Water Deficit*. Upon completion of the WSCMP and following meetings with the Maryland Department of the Environment (MDE), the City entered into Agreement No. 998 with the State. 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 (2018), the City has received increased permitting for existing wells in Wakefield Valley, adopted a new water allocation policy, and has brought the Gesell Well online with a renewed allocation.

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


Big Pipe Creek Wellfield
Future Well
Westminster
Taneytown
Manchester
Hampstead
Union Bridge
New Windsor
Mount Airy
Sykesville
Cranberry Reservoir
Westminster Water Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Triennial Update 2023
DRAFT
Water Service Areas
W-1 Existing/Final Planning
W-3 Priority (0-6 yr)
W-5 Future (7-10 yr)
Water Distribution Lines
Existing Line
Priority Line
Future Line
Water Facilities
Existing Well
WTP Existing Treatment Plant
Existing Storage Tank
P Existing Pumping Station
R Existing Reservoir
Priority Well
Future Well
General
Corporate Limit
County Border
Proposed Union Mills Waterline
Stream
0 600 1200 2400 Ft
N
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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 & Greenvale Mews (Well #12) *	CL2007G019(03)	165,500*	360,000
Middle Potomac	Bramble Hills*	CL2000G001(04)	3,300	5,500
TOTAL			**3,904,300***	**5,955,500**
Note: Medford Quarry (Emergency Source)		CL2002G042(03)	482,000	750,000

* Gesell Well (Well #12) information is subject to change as a result of the City's Long-Term Pump Test.
* Bramble Hills Well is a non-production well. Overall system provides emergency pressure to well if needed.

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		2.000	1.800	3.000	2.750
Wells 1 and 2 – Wakefield		0.293	0.183	0.500	0.197
Well 3 – County Maintenance		0.100	0.085	0.120	0.100
Well 4 – Air Business Center		0.086	0.072	0.094	0.170

Well 5 – Krider's Church Road		0.230	0.158	0.280	0.230
Well 6 – South Center Street		0.095	0.105	0.111	0.100
Koontz Creamery (John Street)		0.500[1]	0.255	0.750	0.500
Well 7 – Carfaro		0.233	0.130	0.303	0.300
Well 8 – Vo-Tech		0.118	0.082	0.155	0.199
Wells 9 and 10 – Koontz Property		0.095	0.080	0.130	0.125
Well 11 – Roops Mill		0.120	0.106	1.532	0.150
Well 12 – Gesell & Greenvale Mews Well*		0.165[2]	-	1.532	-
Bramble Hills[3]					
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**	**3.536**	**3.056**		

[1]The Koontz Creamery Well is used to augment a tributary of the Patapsco River during low flow periods to maintain stream flow requirements and is not considered a production well.
[2]Gesell Well (Well #12) information is subject to change because of the City's Long-Term Pump Test.
[3]Bramble Hills Well is not a production well; however, it relies on the overall City system to provide pressure in case of an emergency. The information listed in this table is unavailable for Bramble Hills compared to the other City wells because this well was not owned by the City at the time of the Water Supply Capacity Management Plan.

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 MDE, so water savings from good practices could be re-allocable.

Needs Analysis

Ground Water Supply

The City has appropriation permits for 13 water supply wells located throughout the City. In addition, the City owns and operates the Koontz Creamery well that is used to augment an unnamed tributary of the Patapsco River and Bramble Hills Well. The Bramble Hills Well relies on the overall City system to provide pressure in case of an emergency. 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 Number	Source	Annual Average Permitted Withdrawal (MGD)
1 & 2	Wakefield	0.2930
3	County Maintenance	0.1000
4	Air Business Center	0.0860
5	Krider's Church Road	0.2300
6	South Center Street	0.0950
7	Carfaro	0.2330
8	Vo-Tech	0.1190
9 & 10	Koontz Property	0.0950
11	Roops Mill	0.1200
12	Gessell	0.1375
N/A	Greenvale Mews	0.0270
N/A	Koontz Creamery (John St.)	0.5000

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 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 2018 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.
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 Surface Water Withdrawal Capacities

Location Name	Permit Number	Annual Average Permitted Withdrawal (MGD)
Cranberry Branch & West Branch	CL1957S002(10)	2.0

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 Wells Nos. 1 & 2	0.293
Cranberry System Wells Noa. 3-11	1.078
Well No. 12 Gesell and Greenvale Mews Well[1]	0.137
Cranberry System Surface Water Sources[2]	2.000
Total Sources	3.539
Koontz Creamery[3]	0.500
Medford Quarry Emergency Supply[4]	0.480

1. This information is subject to change as a result of the City's Long-Term Pump Test.
2. The Total Source Value was calculated by summing Wakefield Well no. 1 & 2, Cranberry System Wells Nos. 3-11, Gesell Well, 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

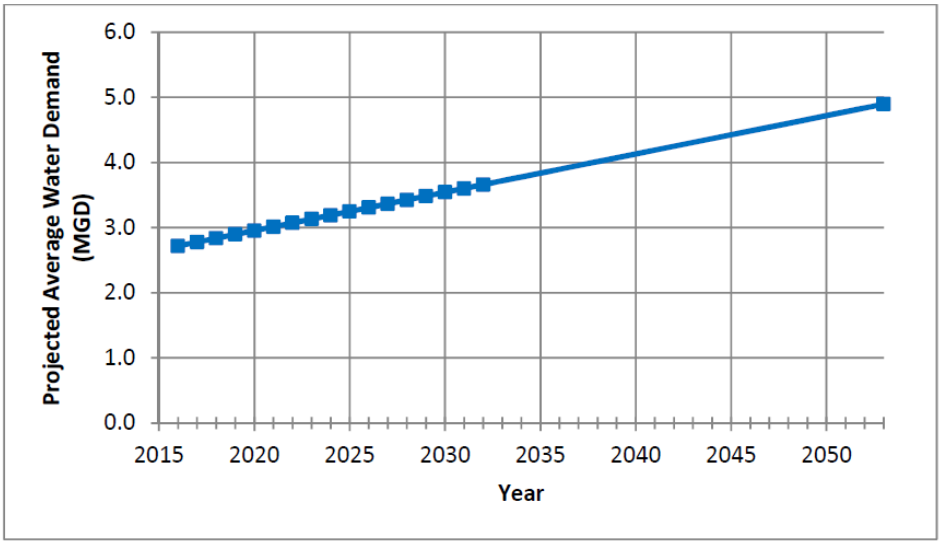
Year	New Residential Connections	New Non-Residential Connections	Overall New Connections
2013	159	-151	8
2014	134	-5	129
2015	103	-2	101
Annual Average	132	-53	79

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.

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. On March 26, 2018, the Mayor and Common Council of Westminster passed and approved Resolution No. 18-04, implementing a new water and wastewater allocation policy that supersedes all prior policies. On October 8, 2018, the Mayor and Common Council of Westminster passed and approved Resolution No. 18-08, amending the adopted water and wastewater allocation policy for 2018-2024.

The current policy promotes the allocation of water for economic development purposes, such as commercial and industrial uses and to support new multifamily residential projects. The policy provides for a limited supply of water for new single-family residences, recognizing the fact that there are approximately 600 single-family residences already allocated and in the pipeline.

On August 12, 2019, the Mayor and Common Council passed and approved Resolution No. 19-16, amending the Master Distribution Chart and policy text. These changes provided for the allocation of new categories to direct more economic development allocations to projects inside the City as opposed to those outside, and to address food-and beverage-related uses. Policy text was added to create commercial share principles, and two new columns were introduced on the Master Distribution Chart. The revision also contained new text to allow a queue to form across the policy timeframe for the annual, single-unit-residential allocations inside the City.

The fourth Policy revision added language allowing property owners that possess an assigned tentative water and/or sewer allocation to utilize the allocation at a temporary location while in the development/permit review and construction process, subject to certain conditions. The temporary location would be required to cease operations before the new location could receive its use and occupancy permit approval. This amendment also creates a new column in the Master Distribution Chart titled “Allocation Re-assignment for Temporary Location” to assist staff in tracking water and/or sewer allocations in this category.

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 Carrol 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.

- **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.

The City's pilot study to develop the basis of design for a new water reuse facility is complete. The purified water from the water reuse facility will be utilized to augment the Cranberry Run Reservoir. The City is awaiting design completion and construction permit for the water reuse facility with a capacity of up to 1.0 million gallons per day. The water reuse project shall proceed subject to the adoption of laws (if determined necessary) for the Maryland Department of the Environment to review and lawfully permit the water reuse project. The water reuse project must also meet any existing statutory and regulatory requirements.

In addition to the water reuse project, the City will also be working with a communications firm to develop a strategy to inform and educate the public regarding this new water re-use initiative.

Future Solutions Advantages and Disadvantages

Big Pipe Creek	Hydes Quarry	Purchase of Finished Water
Advantages: • 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:** • 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 Carrol 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:** • 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: • 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:** • Results of testing are not necessarily indicative of anticipated yields under summertime or drought conditions. • Further testing/monitoring recommended	**Disadvantages:** • 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 current information from the City of Westminster's Public Works Department in response to a request by Carroll County Planning for updated information in this format.

Westminster Water Service Area Priority Projects

Project Name	Planning Category	Description	Location	Added Capacity
Wells 1, 2 & 5 Upgrades	Priority (W-3) 5 Years	Planned upgrade of filtration plants built in 1997	Wakefield Valley & Krider's Church Road	0 MGD
Radio SCADA Upgrade	Priority (W-3) 5 Years	Upgrade from radio transmission to Cellular Modems	System wide	0 MGD
Main Street Water Main	Priority (W-3) 5 Years	Upgrade existing line to 12"	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 Ave. 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 Avenue 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 Rd. and Washington Rd.	0 MGD
John Street Water Main	Priority (W-3)	Design and construct 6" water main replacement	John St. between W. Main St. and Winters Alley	0 MGD
Water Reuse Facility	Priority (W-3) 5 Years	Engineer and construct water reuse facility Phase 1	Westminster Water Reclamation Plant at Cranberry	.5 MGD
Water Reuse Facility	Priority (W-3) 6 Years	Construct water reuse facility Phase II and reevaluate water allocation	Westminster Water Reclamation Plant at Cranberry	.5 MGD

Replacement (only)

Project Name	Planning Category	Description	Location	Added Capacity
Valve Bolt Replacement	Priority (W-3) Immediate	Replacement of bolts every year for the next 10 years	System wide	0 MGD
Main St. Water Main	Priority (W-3) 5 Years	Eliminate dual mains and install one new 12" main	Washington Rd. to Fair Ave.	0 MGD

Water Main Replacement	Priority (W-3) 5 Years	Install 6” main replacing current 2 ¼” line	Bayberry Court	0 MGD
Water Main Replacement	Priority (W-3) 5 Years	Replace 12” water main	Water plant to Hahn Rd.	0 MGD
Park Avenue Water Main	Priority (W-3) 5 Years	Replace two 4” waterlines with 6” water main	Park Ave. 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
MD 27 Water Main	Priority (W-3) 5 Years	Replace existing main with a new 12” main to reduce breaks	MD 27 Corridor	0 MGD
MD 140 Parallel Water Main	Future (W-5) 10 Years	Construction of parallel main to equalize pressure and to 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 entrance operations	Poole Road vicinity	0 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[2]
Projected Water Supply Demands and Planned Capacity

Service Area	Present Year						Priority Planning (0-6 Year)						Future Planning (7-10 Year)					
	Res. Pop. Ser.	GPCD	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.	GPCD	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.	GPCD	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	22,893	84	1.938	0.102	2.04	4.427	29,120	86	2.49	0.541	3.031	4.427	31,199	86	2.55	0.541	3.091	7.0
Hampstead[3 12]	5,991	44	0.266	0.071	0.337	0.630	7,337	52	0.386	0.302	0.688	0.709	7,682	54	0.417	0.323	0.740	0.884
Manchester	5,408	42	0.225	0.031	0.256	0.581	6,776	51	0.347	0.053	0.400	0.606	6,784	51	0.348	0.053	0.401	0.606
Mount Airy[4]	9,691	65	0.628	0.177	0.805	0.927	9,888	65	0.646	0.303	0.949	1.079	9,888	65	0.646	0.304	0.950	1.079
New Windsor[5]	1,441	53	0.077	0.014	0.091	0.196	1,703	55	0.094	0.055	0.149	0.376	1,703	55	0.094	0.075	0.169	0.626
Taneytown[6 7]	7,234	48	0.347	0.103	0.450	0.552	7,833	51	0.400	0.205	0.605	0.601	7,833	51	0.400	0.205	0.605	0.601
Union Bridge	936	52	0.049	0.041	0.090	0.208	1,767	74	0.131	0.048	0.179	0.250	1,767	74	0.131	0.048	0.179	0.250
Westminster[8 9 10 11]	29,308	91	2.66	0.396	3.056	4.231	32,795	92	3.013	0.758	3.771	5.231	33,022	92	3.036	0.811	3.847	5.231

[2] See Appendix 3 Method for Projecting Water Supply and Sewer Demands.

[3] 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.

[4] 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.

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

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

[7] The Priority Calculations are based on the development projects in the approval process and were provided to the County by the City.

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

[9] Westminster does not have any residential properties in the Future Planning Category.

[10] LEF Stone Chapel LLC property has a total demand of 33,420 gpd. The water map for Westminster has the Industrial zoned portion in Existing/Final Planning. The demand is split 10,500 gpd in Existing, 13,752 gpd in Priority and 9,168 gpd in Future.

[11] Westminster Water Reuse Facility Priority (0-6 Yrs), 1.00 MGD.

[12] Priority water demand is based on a 1,000 gpd average of sewer use, should a change of use occur which requires a greater demand, re-evaluation of the Towns capacity is needed to ensure the Town is able to supply this increased demand.

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 POPULATION TOT.	SER.	UNS.	GCPD	CAPACITY MILLION GAL. DAILY (MGD) DEMAND	EXISTING CAPACITY	PRIORITY PLANNING (0-6 Year) POPULATION TOT.	SER.	UNS.	GCPD	CAPACITY MILLION GAL. DAILY (MGD) DEMAND	PLANNED CAPACITY	FUTURE PLANNING (7-10 Year) POPULATION TOT.	SER.	UNS.	GCPD	CAPACITY MILLION GAL. DAILY (MGD) 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
Taylorsville 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	00123	0.0077
PUBLIC COMMUNITY																		
Totals																		

[1] Includes staff at school
[2] 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	MD 32 and Deer Park Rd.	-	Petroleum contamination	Under study
Lineboro	Lineboro Rd. (MD 86) south of Pennsylvania State line	152	Contaminated wells	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, most 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, most 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 place 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) 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

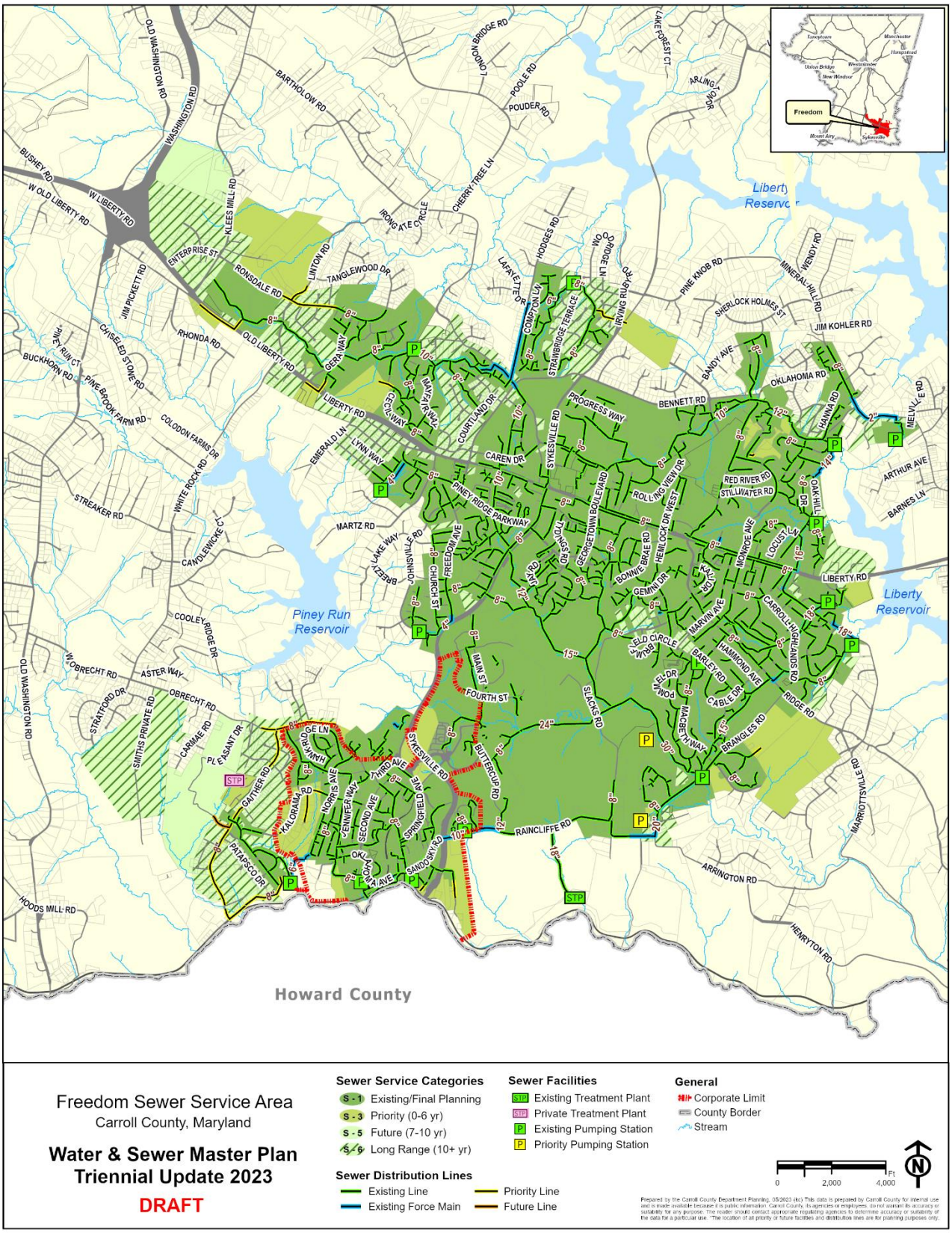
The Freedom SSA is in southeastern Carroll County and covers approximately 6,755 acres and serves 8,479 EDUs in the Freedom area, including the Town of Sykesville. The Freedom Wastewater Treatment Plant (WWTP) is located near and discharges to the South Branch of the Patapsco River off Raincliffe Road, 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 2018-2020 of approximately 2.325 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



Freedom Sewer Service Area
Carroll County, Maryland

Water & Sewer Master Plan
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Sewer Service Categories
- S-1 Existing/Final Planning
- S-3 Priority (0-6 yr)
- S-5 Future (7-10 yr)
- S-6 Long Range (10+ yr)

Sewer Facilities
- STP Existing Treatment Plant
- STP Private Treatment Plant
- P Existing Pumping Station
- P Priority Pumping Station

General
- Corporate Limit
- County Border
- Stream

Sewer Distribution Lines
- Existing Line
- Existing Force Main
- Priority Line
- Future Line

0 2,000 4,000 Ft

N

Prepared by the Carroll County Department Planning, 05/2023 (AC) This data is prepared by Carroll County for internal use and is made available because it is public information. Carroll County, its agencies or employees do not warrant its accuracy or suitability for any purpose. The reader should contact appropriate regulating agencies to determine accuracy or suitability of the data for a particular use. The location of all priority or future facilities and distribution lines are for planning purposes only.

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	2.325	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	5.040	n/a	1.454
Sykesville #2	N 1321049.53 E 618402.43	2	0.954	1.340	..244
Carroll Highlands #3	N 1336546.93 E 628512.68	3	1.261	5.394	.256
Lake Forest #4	N 1336160.08 E 631389.92	3	0.860	4.806	.299
Snowdens Run #5	N 1336740.54 E 634314.80	2	0.757	3.888	.183
Pine Hill #6	N 1337589.35 E 626974.86	2	0.216	0.295	.051
Water's Edge #20	N 1321514.27 E 627441.73	2	0.201	n/a	.020
Fairhaven (private)	N 1320315.91 E 623457.36	2	0.288	0.144	n/a
Edgewood #15	N 1321313.83 E 637927.83	2	1.728	n/a	.125
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	.021
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	.001
Raincliffe	N1323106.83 E620133.35	2	n/a	n/a	.012
Schoolhouse		2	0.961	n/a	.148
Total		***33***	***13.281***	***15.867***	***2.836***

*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)	Max Flow Last 6 Months
Sykesville (Sta #2)	.300	10	Force Main capacity designed for station	.279
Water's Edge (Sta #20)	.015	4	n/a	.025
Snowdens Run (Sta #5)	.196	14	n/a	.330
Lake Forest (Sta #4)	.585	16	n/a	.455
Carroll Highlands (Sta #3)	.375	18	n/a	.370
Pine Hill (Sta #6)	.053	6	n/a	.065
Piney Run (Sta #1)	4.425	20	Force Main capacity designed for station	1.318
Edgewood (Sta #15)	.166	10	n/a	.161
Stone Manor (Sta #17)	.066	6	n/a	.076
Woodsyde	.013	6	n/a	.009
Raincliffe	.019	4	Force Main capacity designed for station	
South Carroll Senior Center	.007	3	n/a	.001
Patapsco Valley Overlook (PVO) (Sta #16)	.0021	6	n/a	.032
Schoolhouse		10		.187
Total	***2.620***			3.308

*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 0.76 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 Long Range (+ 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	Existing (S-1)	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
I and I Identification	Existing (S-1)	Currently videoing 12,000 + feet of sewer mains to identify I & I, and repair	Various locations	0 MGD
Relief Gravity Sewer Replacement	Priority (S-3) 5 years	Replace gravity sewer lines (as Funding is Available)	Various locations	0 MGD
Freedom Sewer Line Replacement	Priority (S-3) or Future (S-5) 5-10 years	Future sewer line replacement located throughout the Freedom District.	Various locations	0 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.
- Connect small lot residential, currently on septic, to system.

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 Main Street (formerly 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 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 2020-2022 of approximately 0.477 MGD,

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, because 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 (former Black & Decker plant) 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 completed upgrades to the Hampstead WWTP to meet ENR standards to treat for nutrient loads for flows up to .900 MGD.

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."

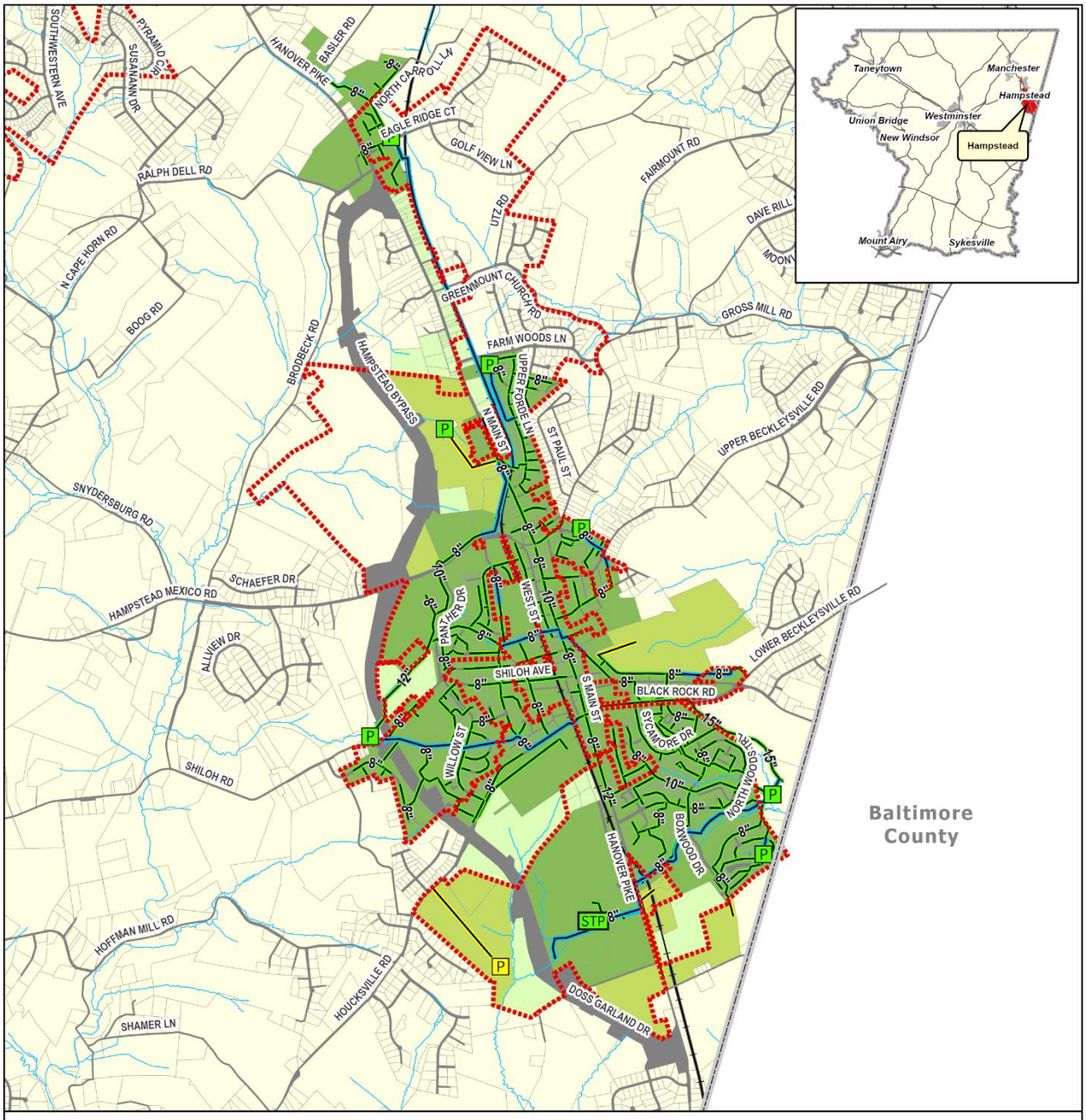
In order to evaluate the technical feasibility of expanding the capacity of the Hampstead WWTP to 1.20 mgd, a splitting of the Hampstead discharge between the Loch Raven Reservoir and Liberty Reservoir Watershed was proposed. Carroll County requested that MDE conduct a preliminary analysis of the County's 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 applied for an Alternate Effluent Limit(AEL) 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



Hampstead Sewer Service Area
Carroll County, Maryland

Water & Sewer Master Plan
Triennial Update 2023
DRAFT

Sewer Service Categories
- W - 1 Existing/Final Planning
- W - 3 Priority (0-6 yr)
- W - 5 Future (7-10 yr)

Sewer Distribution Lines
- Existing Force Main
- Existing Line
- Priority Line

Sewer Facilities
- STP Existing Treatment Plant
- P Existing Pumping Station
- P Priority Pumping Station

General
- Stream
- County Border
- Corporate Limit

0 1,500 3,000 Ft.

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	.550	Dewatered sludge hauled to McGill, Virginia for composting
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	0.196	.0073	.0142
North Carroll Farms Station #20	N 713011.99 E 1352660.68	2	1.447	.0779	.1523
North Station #8	N 710613.53 E 1352919.14	2	0.576	.0260	.0549
Small Crossings Station #9	N 709347.37 E 1354734.57	2	0.144	.0039	.0076
Shiloh Station #11	N 704552.54 E 1349785.75	3	0.576	.0769	0.2162
Roberts Field Station #14	N 701892.64 E 1358892.42	2	0.245	.0083	0.0166
JoS A Banks/South	N 703565.58 E 1358927.42	2	.3067	.0023	.0047
Total		***15***	***3.491***	***.2026***	***.4665***

*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	.4644	10	1.000
North Station #8	.1055	6	-
Small Crossings Station #9	.0165	4	-
Roberts Field #14	.0322	4	-
North Carroll Farms #20	.0613	4	-
Eagle Ridge	.0483	6	-
South Pumps	.0163		
Total	.7465		**1.000**

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

The Hampstead Sewage Treatment Plant generates approximately 930 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 McGill Virginia 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
930 wet 159 dry (17% solid)	Digested liquid sludge, 1% solids, aerobic digestion	Dewatered sludge hauled 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 ⅝-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.
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	Priority (S-3)	Pumping station, 8" collector line, force main	IDA property west of MD 30.	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
Camera & lining	Priority (S-3) Ongoing	Camera & Line problem areas in sewer mains flowing to Shiloh Pump Station	Lines to Shiloh	0 MGD
Upgrade to Shiloh Pump Station	Priority (S-3) 5 years	Upgrade to Shiloh Pump Station	Shiloh	0MGD

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.

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 1,301 acres located in the northeast corner of the county along MD 30 and serves 1,869 EDUs. Manchester WWTP capacity is 0.500 MGD. Average flow is 0.269 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.

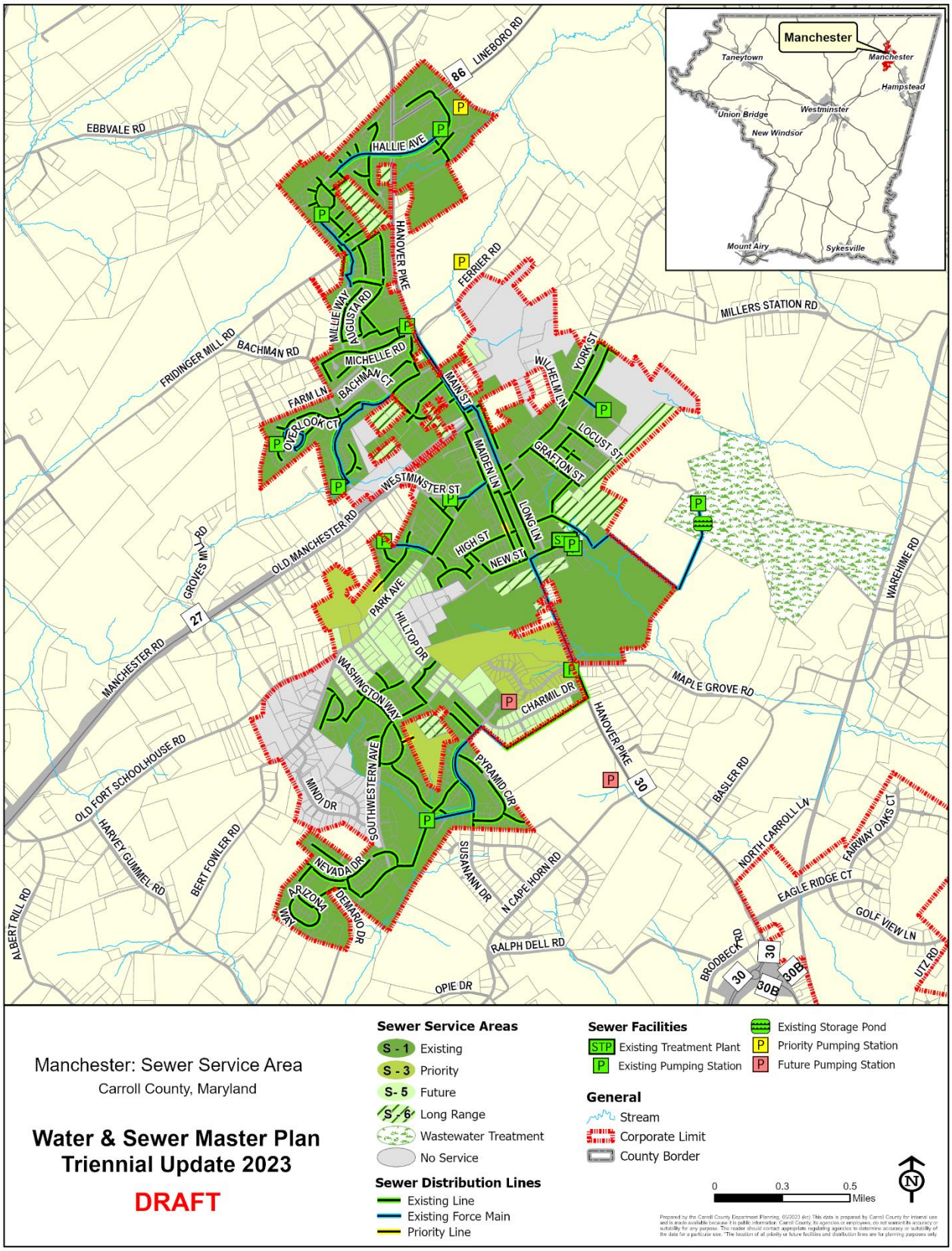
The sewage treatment plant is a package secondary treatment facility utilizing contact stabilization with anaerobic digestion of sludge. The design capacity is 0.500 MGD, with a three-year average flow from 2019-2021 of approximately 0.357 MGD, excluding estimated I&I. Effluent from the treatment plant 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	0.269/ 0.498 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



Manchester: Sewer Service Area
Carroll County, Maryland

Water & Sewer Master Plan
Triennial Update 2023

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Sewer Service Areas
- S - 1 Existing
- S - 3 Priority
- S- 5 Future
- S - 6 Long Range
- Wastewater Treatment
- No Service

Sewer Distribution Lines
- Existing Line
- Existing Force Main
- Priority Line

Sewer Facilities
- STP Existing Treatment Plant
- P Existing Pumping Station
- Existing Storage Pond
- P Priority Pumping Station
- P Future Pumping Station

General
- Stream
- Corporate Limit
- County Border

0 0.3 0.5 Miles

N

Table 19B: Manchester SSA Interceptors

Interceptor	Diameter (inches)	Average Day Flow (MGD)	Design Flow (MGD)
Main Influent line to WWTP	16	0.269	2.000
Northern Line	8	0.117	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	0.055	1.000
Crossroads Overlook #1	8	Not metered	0.700
Crossroads Overlook #2	8	Not metered	0.288
Total		***0.441***	***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 W7653.793	2	0.259	n/a No Flow Meter	0.030 (Est.)
Hallie Hills Station #2	N3940.790 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 W765398.70	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	0.522	0.498
Total		***31***	***8.407***	***1.222***	***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	0.730 (01/01/21)	14	4.200
Sprayfields	0.707 (06/01/21)	10	1.600
Hanover Pike (North Station)	n/a	10	1.800
Hanover Pike (South Station)	.055 (08/04/21)	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)	0.119 (10/21/21)	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)	0.730	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	***3.337***		***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 Modern Landfill for disposal. The average amount of dewatered sludge transported is 23 tons per month, or 454 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, 12% solids, aerobic digestion	Dewatered sludge transported to Modern 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 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 29,613 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 28 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	90	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
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	Priority (S-3) 5 years	Improvements to meet Enhanced Nutrient Removal goal	Existing WWTP	.0 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 3,627 connections. See Map 24: Mount Airy SSA. Mount Airy WWTP design capacity is 1.2 MGD. Average flows are 0.732 MGD.
The plant discharges to the South Branch of the Patapsco River. The plant was upgraded to ENR in 2011.

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 2021-2022 of approximately 0.732 MGD, including a significant amount of I&I. The Town continues to work on lowering I&I issues. In 2021 the Town surveyed the wastewater collection system to identify key areas of rain and groundwater penetrating the collection system. In 2022 the Town had 3.5 miles of Cured-in-Place-Pipe (CIPP) liners installed to seal those I&I areas.

The WWTP treatment process consists of a Biological Nutrient Removal (BNR) Five-Stage Bardenpho Process and a Severn-Trent Denitrification Filtration System to Enhanced Nutrient Removal (ENR) requirements of 3.0 mg/l Total Nitrogen and 0.3mg/l Total Phosphorus.

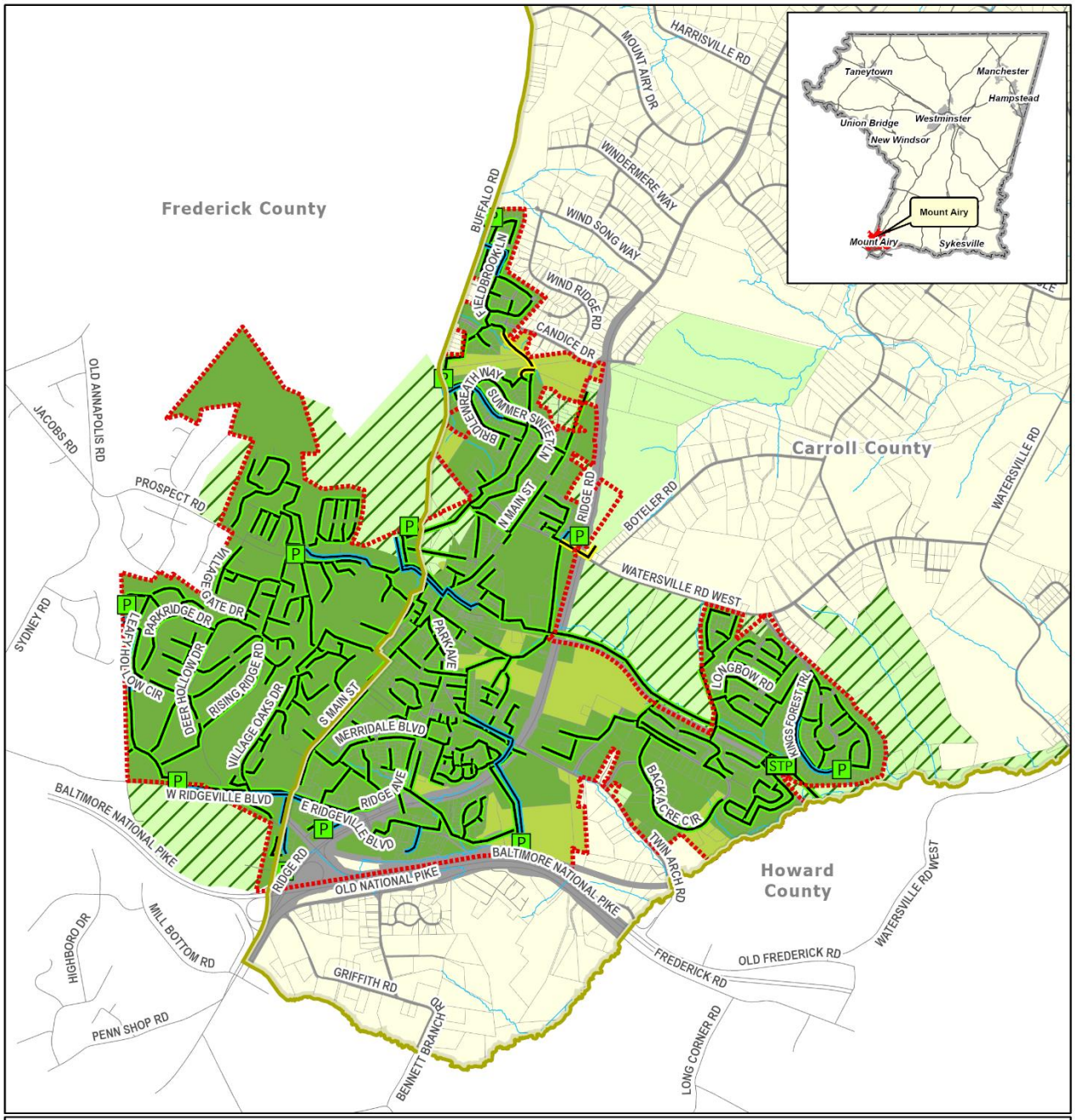
A capacity expansion evaluation was completed for the Mount Airy WWTP in September 2022 which provides alternative processes including:

1) Implementing a BioMag™ System, which is a ballasted activated sludge system that allows the MLSS to be increased substantially;
2) Implementing a membrane bioreactor (MBR) process that utilizes membranes for solids liquids separation (in lieu of clarifiers), which allows the MLSS to be increased substantially;
3) Implementing the integrated fixed film activated sludge (IFAS) process, which provides media within the reactors to increase the biomass available for treatment.

These three processes/systems listed above are considered “process intensifying” technologies as they allow increased treatment performance within a given reactor volume. Alternatives that required the addition of reactors and clarifiers were not evaluated as there is insufficient footprint available on the existing site.

The evaluation included both a 25% increase and 50% increase in capacity, to 1.5 MGD and 1.8 MGD respectively. It was found that only the MBR or IFAS systems could expand the plant capacity to 1.8 MGD whereas BioMag™ was limited to 1.5 MGD. The study also concluded that expanding to 1.8 MGD has a much greater cost effectiveness than the 1.5 MGD and is estimated between $14M and $15M total capital cost and $13M -$15M 20-year NPV (Net Present Value) O & M cost.

Map 24



Mount Airy Sewer Service Area
Carroll County, Maryland

Water & Sewer Master Plan
Triennial Update 2023
DRAFT

Sewer Service Categories
- W - 1 Existing/Final Planning
- W - 3 Priority (0-6 yr)
- W - 6 Future (7-10 yr)
- W - 7 Long Range (10+ yr)

Sewer Distribution Lines
- Existing Line
- Existing Force Main
- Priority Line

Sewer Facilities
- STP Existing Treatment Plant
- P Existing Pumping Station

General
- County Border
- Corporate Limit

0 1,250 2,500 Ft.

N

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
Station 10	N619113.35 E1277753.81	1	0.374	n/a	0.001

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 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	10	0.936
Station 2	0.003	6	0.259
Station 3	0.069	8	0.720
Station 4	0.245	6	0.576
Station 5	0.534	10	0.936
Station 6	0.012	6	0.252
Station 7	0.023	6	0.216
Station 8	0.028	8	0.288
Station 9	0.020	8	0.288
Station 10	0.002	6	0.374
Station 11	0.	4	0.173
Total	*1.537*		*4.845*

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

The Mount Airy Sewage Treatment Plant produces over 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
1319 wet tons/ 272 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's Inflow & Infiltration was greatly reduced in 2022 and the Town will continue to monitor and make 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. The total future wastewater demand for the Mount Airy WWTP, depending on proposed development uses and quantities, will more than likely exceed the existing Wastewater Treatment Plant capacity and 15-inch gravity sewer main.

Site constraints at the WWTP include a stream, floodplain, forest conservation, and a stormwater management facility which will limit expansion of the existing Bardenpho process. However, two alternative processes, MBR or IFAS, could expand the plant to 1.8 MGD design capacity utilizing the same footprint. 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. Discharge temperatures are being monitored for compliance.

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
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 Maryland Environmental Services (MES). Located in the west-central portion of the County, the New Windsor SSA covers approximately 945 acres and serves 799 actual connected 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, four public and one private pumping stations, and a wastewater treatment facility. The design capacity of the wastewater treatment facility is 0.115 MGD.

The 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 has filled in the lagoons for future ballfields/recreational areas.

The Town will investigate sludge dewatering at the WWTP as part of the Preliminary Engineering Report and possible ENR Upgrade.

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	.079	-
Total			**0.115**	**.079**	

Discharge Permit Number: 05DP0640 **NPDES Number**: MD0022586
* plant is replacing lagoon system; lagoons to be phased out

Map 25

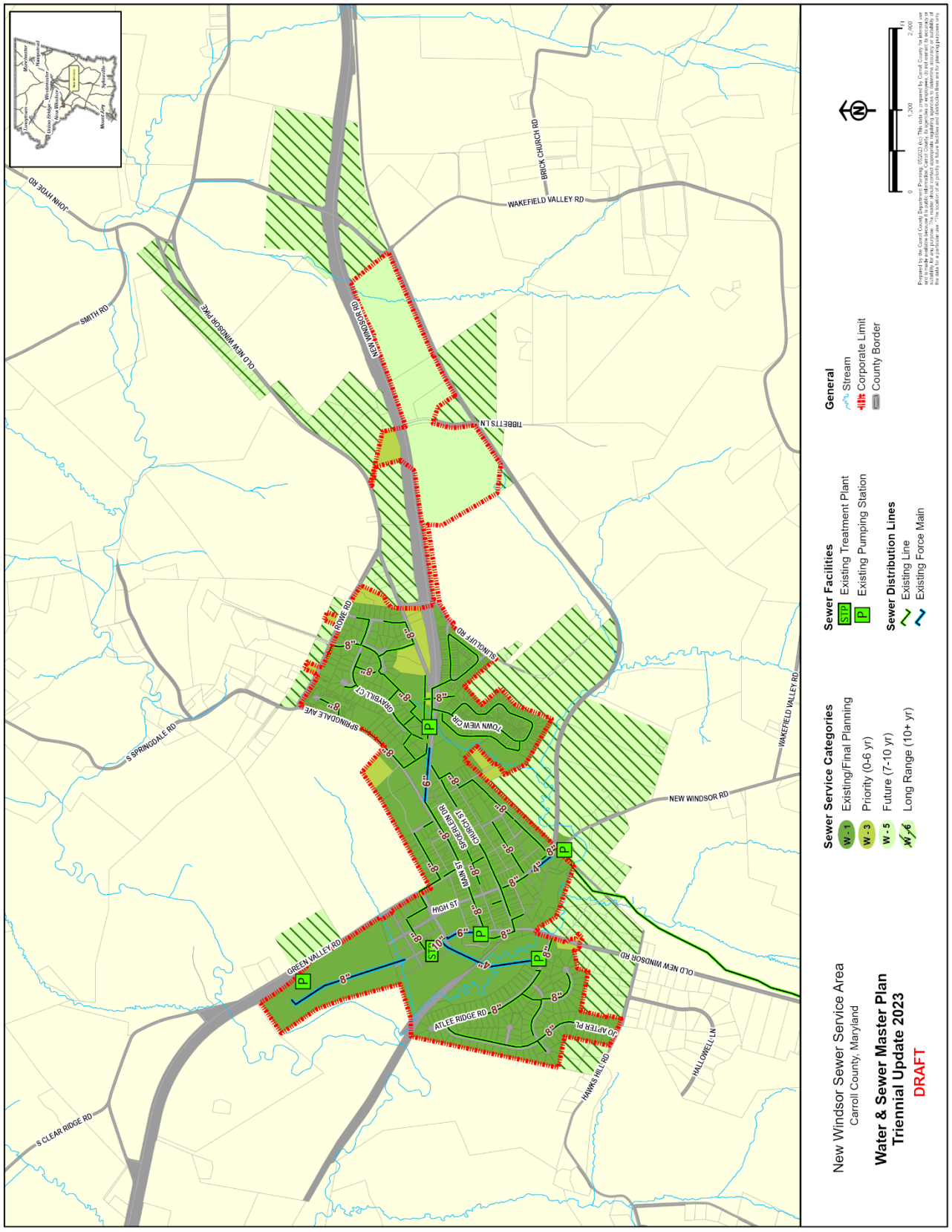

New Windsor Sewer Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Triennial Update 2023
DRAFT
Sewer Service Categories
W - 1 Existing/Final Planning
W - 3 Priority (0-6 yr)
W - 5 Future (7-10 yr)
W 6 Long Range (10+ yr)
Sewer Facilities
STP Existing Treatment Plant
P Existing Pumping Station
Sewer Distribution Lines
Existing Line
Existing Force Main
General
Stream
Corporate Limit
County Border
JOHN HYDE RD
SMITH RD
OLD NEW WINDSOR PIKE
NEW WINDSOR RD
BRICK CHURCH RD
WAKEFIELD VALLEY RD
TIBBETTS LN
ROWE RD
SLIMCLIFF RD
GRAYBILL CT
SPRINGDALE AVE
S SPRINGDALE RD
TOWN VIEW CIR
CHURCH ST
SPRUCE GLEN DR
MAIN ST
HIGH ST
GREEN VALLEY RD
ATLEE RIDGE RD
OLD NEW WINDSOR RD
NEW WINDSOR RD
WAKEFIELD VALLEY RD
HALLOWELL LN
HAWKS HILL RD
S CLEAR RIDGE RD

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	-	Converts to 59.7 GPM
Main Street	N 1281218.44 E 683323.49	2	0.230	-	Converts to 159.7 GPM
Blue Ridge	N 1284087.93 E 684060.74	2	0.456	-	Converts to 316.7 GPM
Springdale Prep School (Private)	N 1280371.56 E 686114.35	2	0.036	-	-
Atlee Ridge	N 1280737.26 E 682521.52	2	0.344	-	Converts to 238.9 GPM
Total		*10*	*1.152*		

*Coordinate locations are Maryland State Plane 1983 Datum.

Table 21C: New Windsor SSA Force Mains

Force Main	Maximum Day Pumpage 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. The Town will investigate sludge dewatering at the WWTP as part of the Preliminary Engineering Report (PER) and possible ENR Upgrade. Future sludge disposal will be dependent on sludge dewatering method recommended by PER and incorporated in future possible ENR Upgrade. See Table 21D 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
480,000 gal/year liquid sludge	-	Hauled to Westminster Septage Facility	-	To be investigated as part of PER and determined in future possible ENR Upgrade and determined at later date.	-

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 upgraded their Wastewater Treatment Plant to a Continuous Sequencing Batch Reactor Process (CSBR) system that was constructed in 2011. The existing WWTP provides BNR treatment and is under evaluation in the PER for upgrade to ENR treatment standards.

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-3) 7-10 years	Improvements to meet Enhanced Nutrient Removal goal	Existing WWTP	0 MGD
Wastewater Treatment Plant Expansion	Future (S-3) 7-10 years	Expand WWTP to reach planned capacity of .250 MGD	Existing WWTP	.115 MGD
Sewer Lining	Priority (S-3) 0-6 years	Lining the sewer pipes	Lambert/Hillside/ Maple & Church	0 MGD
Blue Ridge Pump Station	Existing (S-1)	Upgrade 30-year old pump station	Existing PS	0 MGD
Atlee Ridge Pump Station Upgrade	Priority (S-3) Immediate		Existing PS	0 MGD

Long-Term Recommendations (10+ years)

- Conduct a 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. Three year average flows from 2020 – 2022 were 0.00447 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

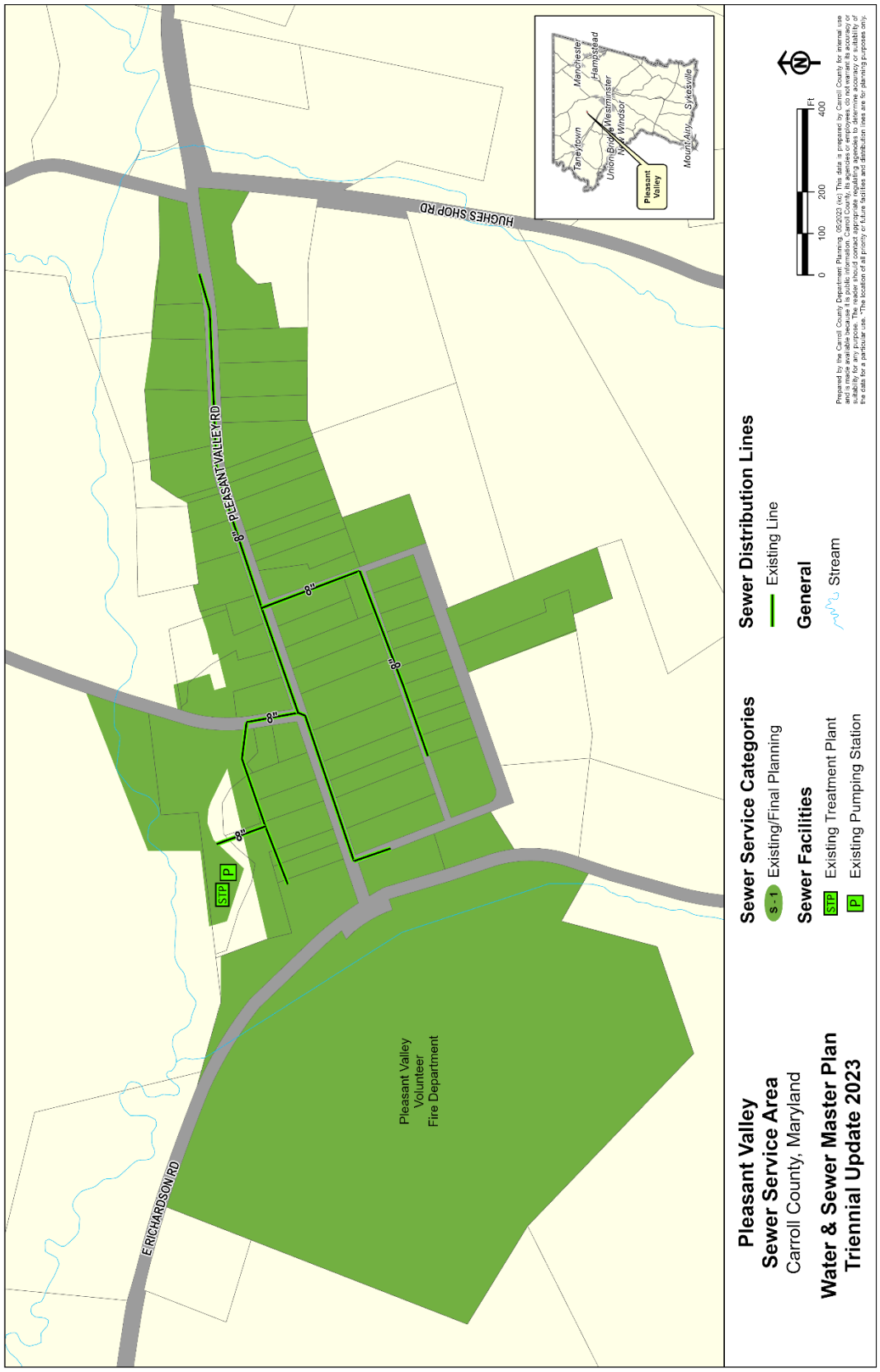
See Table 22A for Pleasant Valley SSA infrastructure.

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	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


Pleasant Valley
Sewer Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Triennial Update 2023
Sewer Service Categories
S - 1 Existing/Final Planning
Sewer Facilities
STP Existing Treatment Plant
P Existing Pumping Station
Sewer Distribution Lines
Existing Line
General
Stream
HUGHES SHOP RD
PLEASANT VALLEY RD
E RICHARDSON RD
8"
STP
P
Pleasant Valley Volunteer Fire Department
Manchester
Hampstead
Westminster
New Windsor
Union Bridge
Taneytown
Mount Airy
Sykesville
Pleasant Valley
0 100 200 400 Ft
N

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 0.831 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 2020-2022 of approximately 0.829 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.

The County does not support the large Long Range service area, especially as the City is unable to serve areas within the current cooperate limits.

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

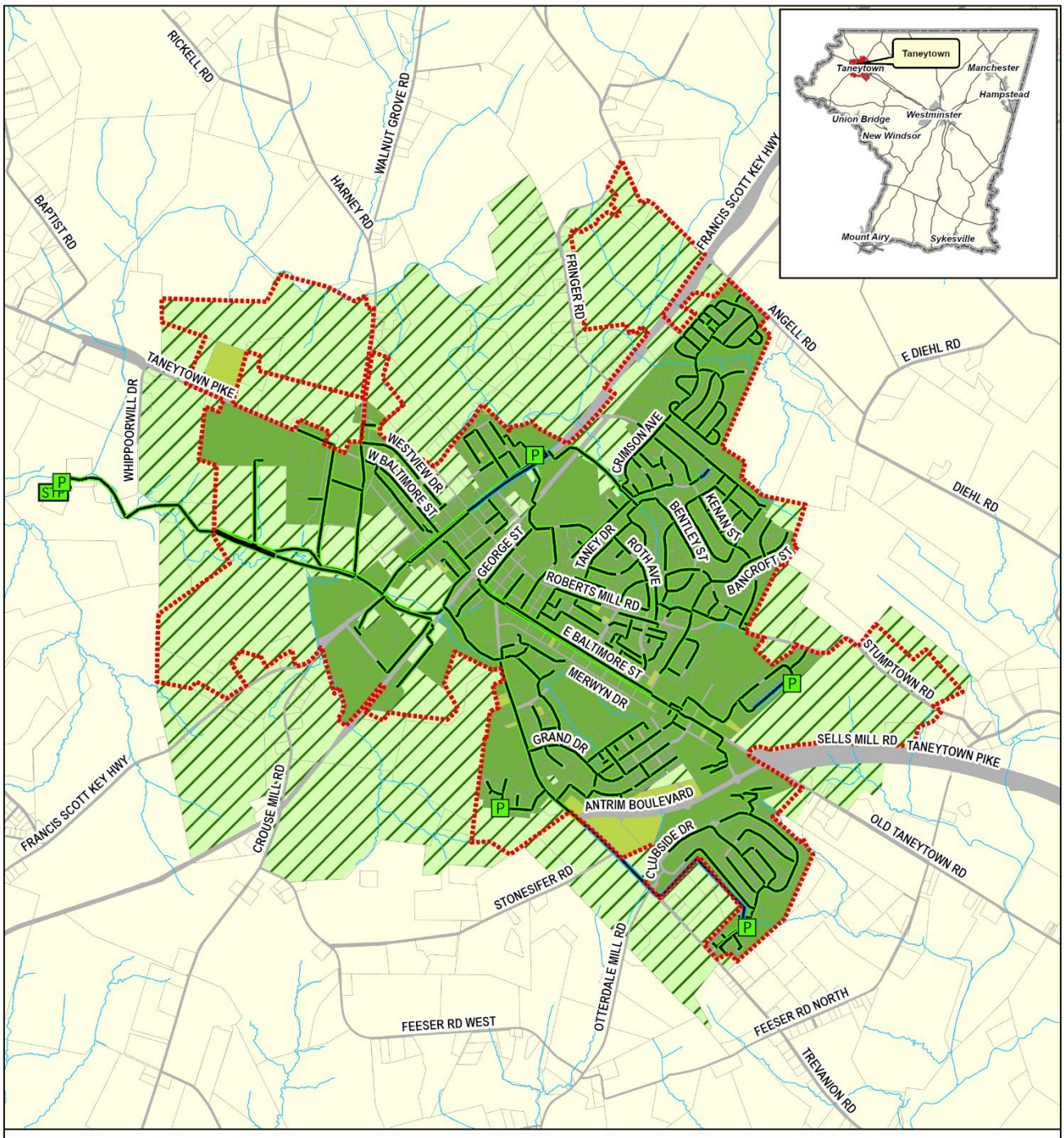
WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Average Flows (MGD)	Method of Sludge Disposal
Activated sludge/ENR	Piney Creek	1.100	0.831	Land application

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	0.831	5.000

Map 27



Taneytown Sewer Service Area
Carroll County, Maryland

Water & Sewer Master Plan
Triennial Update 2023

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Sewer Service Categories
- W - 1 Existing/Final Planning
- W - 3 Priority (0-6 yr)
- W - 6 Long Range (10+ yr)

Sewer Distribution Lines
- Existing Line
- Existing Force Main

Sewer Facilities
- STP Existing Treatment Plant
- P Existing Pumping Station

General
- County Border
- Corporate Limit

0 1,000 2,000 Ft.

N

Prepared by the Carroll County Department Planning, 05/2023 (kc) This data is prepared by Carroll County for internal use and is made available because it is public information. Carroll County, its agencies or employees, do not warrant its accuracy or suitability for any purpose. The reader should contact appropriate regulating agencies to determine accuracy or suitability of the data for a particular use. *The location of all priority or future facilities and distribution lines are for planning purposes only.

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
Meades Crossing	N ? E ?	2	0.327	0.327	0.0040
Total		11	N/A	3.34	0.2964

*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
Meades Crossing	0.009	6	0.327
Total			*3.340*

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

Sludge is disposed of by land application, which is handled by an outside contractor (Synagro), 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 465.79 wet Tons of sludge from January 1, 2022 to December 31, 2022.

Table 23E: Taneytown SSA Sludge Management

Quantity	Quality	Method of Disposal/Use	Permit #'s	Future Disposal Method
465.79 wet Tons/year	18.57% solids Belt Press Dried	Dried sludge applied to farmland	2020-STF-5816-sewage sludge utilization permit. All other Permits for land application are held by the contractor (Synagro)	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 DRRA.

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, trying to complete one- third of the system each year, to identify and then correct any problems.

In 2019 and 2020, the City replaced 516 feet of 8 to 12-inch sanitary sewer as part of the Roberts Mill Stormwater Management Facility Retrofit project. Analysis of the flow data from the downstream York Street Pump Station, the City estimates that this project resulted in approximately 52,875 gpd of I/I removed from the City's collection system. This amounts to approximately 102 gpd for each foot of sanitary sewer replaced.

The City is planning to rehabilitate approximately 4,014 feet of the downstream 12-inch Meadowbrook interceptor in early 2023 using cured-in-place-pipe technology. Using a conservative estimate of 50 percent of what was achieved through the Roberts Mill Stormwater Management Facility Retrofit sanitary sewer replacement (51 gpd of I/I per foot), the City expects to remove approximately 102,000 gpd of additional I/I in this project. There are two other projects (Roberts Mill Rd./Broad St. reconstruction and 2022 Sewer rehabilitation) that have commenced during FY23. The Roberts Mill Rd./Broad St. project will see 1,052 linear feet of 8" terracotta seer main replaced and the 2022 sewer rehabilitation project will be replacing or lining 1,475 linear feet of pipe with diameters ranging from 8" to 12".

There are two projects slated for FY24. They are the memorial park the West Baltimore

Street sewer replacement. These two projects will eliminate 4,063 linear feet of 8" and 10" terracotta sewer mains.

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 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.
Various locations throughout the City	n/a	Inflow & Infiltration into sewer system	The City is actively working to identify and remove I/I from their system, including a sewer pipe material inventory, sewer televising, and flow monitoring.

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	Roberts Mill Road, Broad Street, Fairground Avenue, Elementary School	0 MGD
Belt Filter Press Replacement	Priority (S-3) Immediate	Replace belt filter press and associated feed pump at WWTP	Existing WWTP	0 MGD
Meadowbrook Interceptor CIPP lining	Priority (S-3) Immediate	Rehab 4,014 LF of 12" terra cotta sewer pipe	Upstream of the York Street Pump Station	0 MGD
Memorial Park Expansion Sewer Replacement	Priority (S-3) Immediate	Replace 2183 LF of 8" terra cotta sewer pipe	Memorial Park Expansion Site off MD 194	0 MGD
General I/I Removal	Priority (S-3) Immediate	Rehabilitation of terra cotta pipe where I/I is identified	Throughout City	0 MGD
West Baltimore Street	Priority (S-3) Immediate	Rehabilitation of 1,880 LF of terra cotta pipe where I/I is identified	West Baltimore Street	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.
- Replace/line George St. sewer main
- Replace/line Middle St. sewer main
- County recommends reducing the Long Range service area.

Union Bridge Sewer Service Area

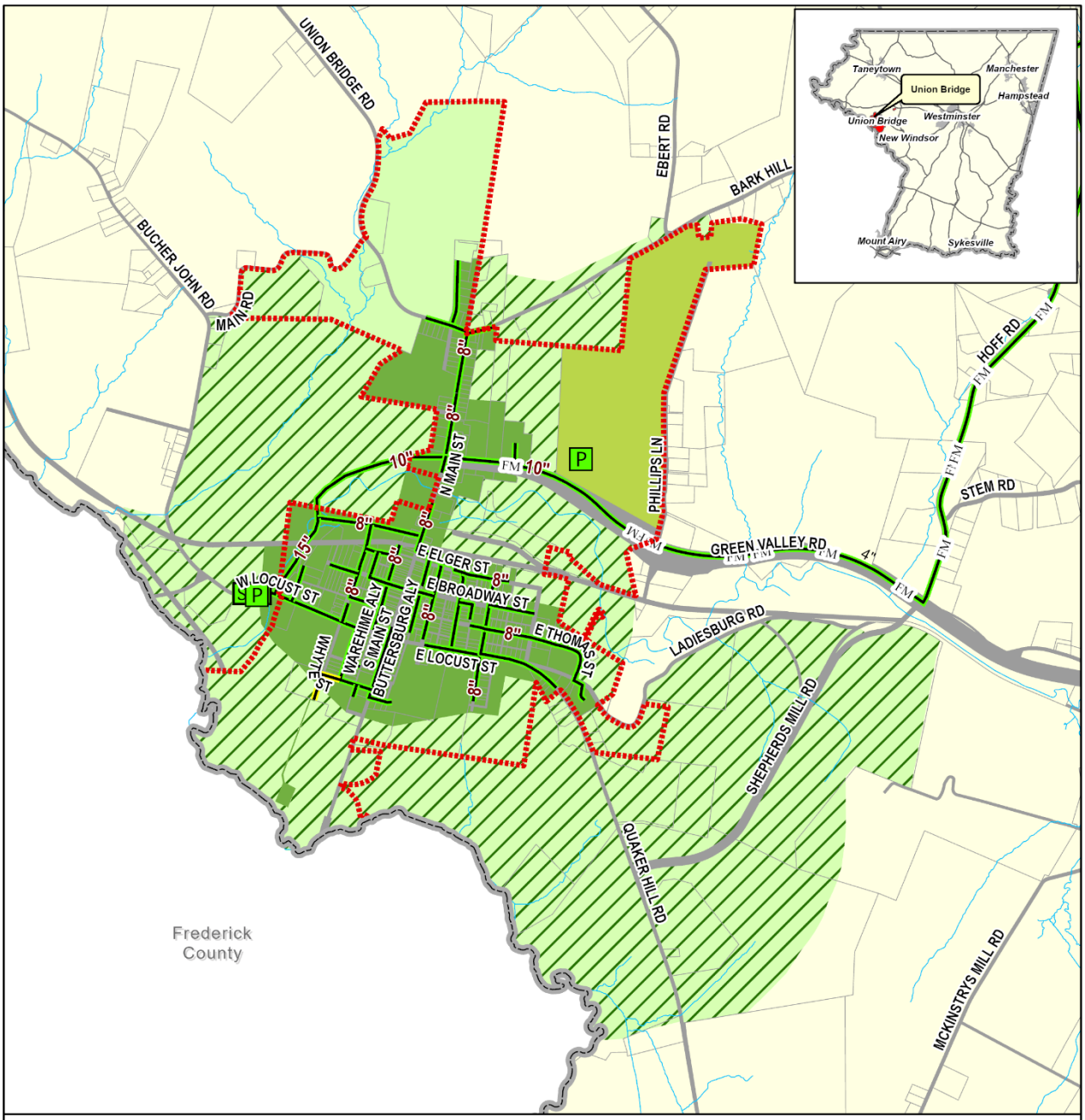
Current Conditions

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 2018-2020 of approximately 0.0897 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.

The County does not support the large Long Range service area, as the Town has unserved areas within the current cooperate limits.

Map 28



Union Bridge Sewer Service Area
Carroll County, Maryland

Water & Sewer Master Plan
Triennial Update 2023
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Sewer Service Categories
- W-1 Existing/Final Planning
- W-3 Priority (0-6 yr)
- W-5 Future (7-10 yr)
- W-6 Long Range (10+ yr)

Sewer Distribution Lines
- Existing Line
- FM Existing Force Main
- Priority Line

Sewer Facilities
- STP Existing Treatment Plant
- P Existing Pumping Station

General
- County Border
- Corporate Limit

0 1,000 2,000 Ft.

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: 00DP0774 **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.
- County recommends reducing the Long Range service Area.

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.

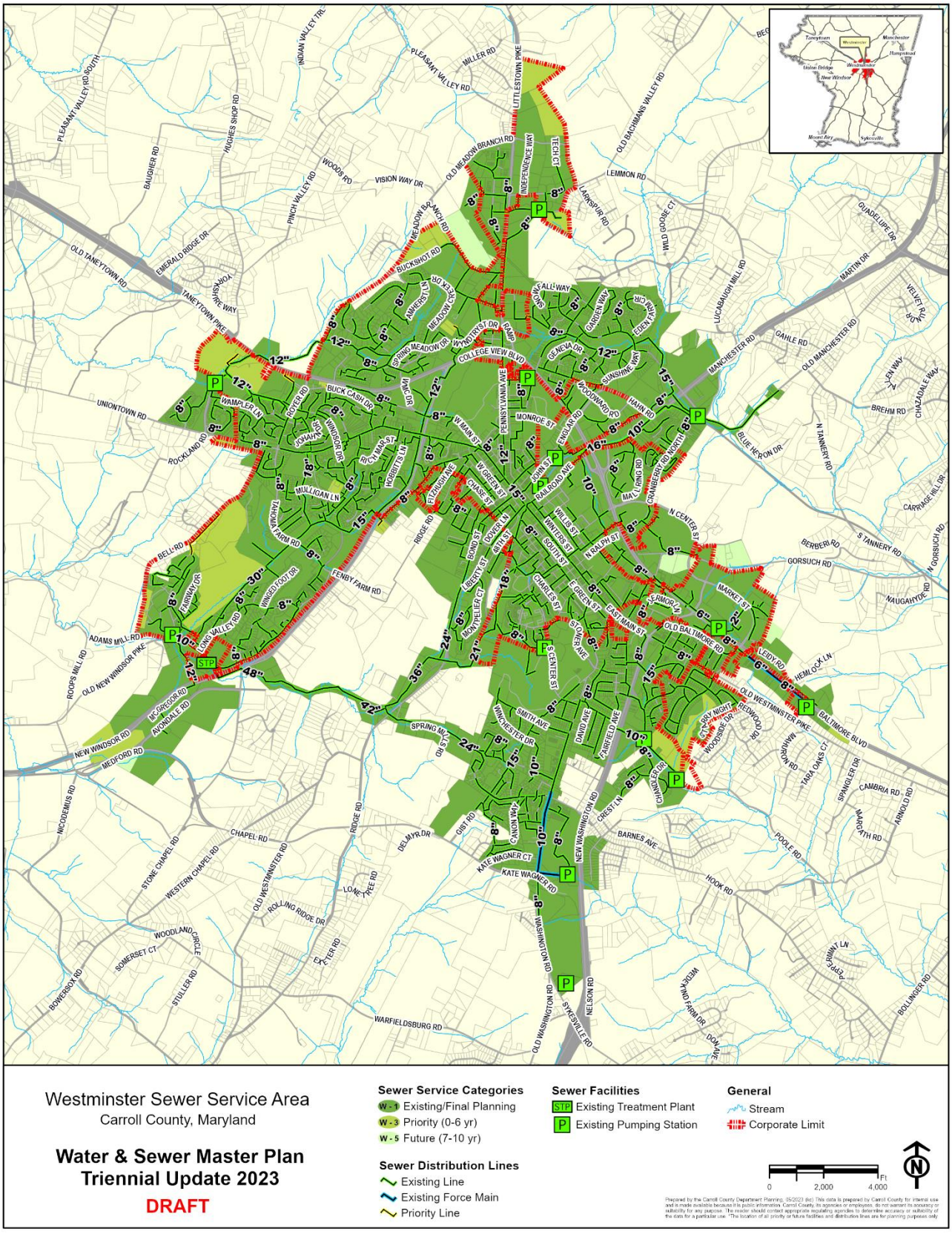
The Westminster WWTP has been operating above 80% of its design and permit capacity since at least 2005. The City has been actively working to secure sufficient available wastewater treatment capacity.

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


Westminster Sewer Service Area
Carroll County, Maryland
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Sewer Service Categories
W-1 Existing/Final Planning
W-3 Priority (0-6 yr)
W-5 Future (7-10 yr)
Sewer Distribution Lines
Existing Line
Existing Force Main
Priority Line
Sewer Facilities
STP Existing Treatment Plant
P Existing Pumping Station
General
Stream
Corporate Limit
0
2,000
4,000
FT
N

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)

*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. 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.

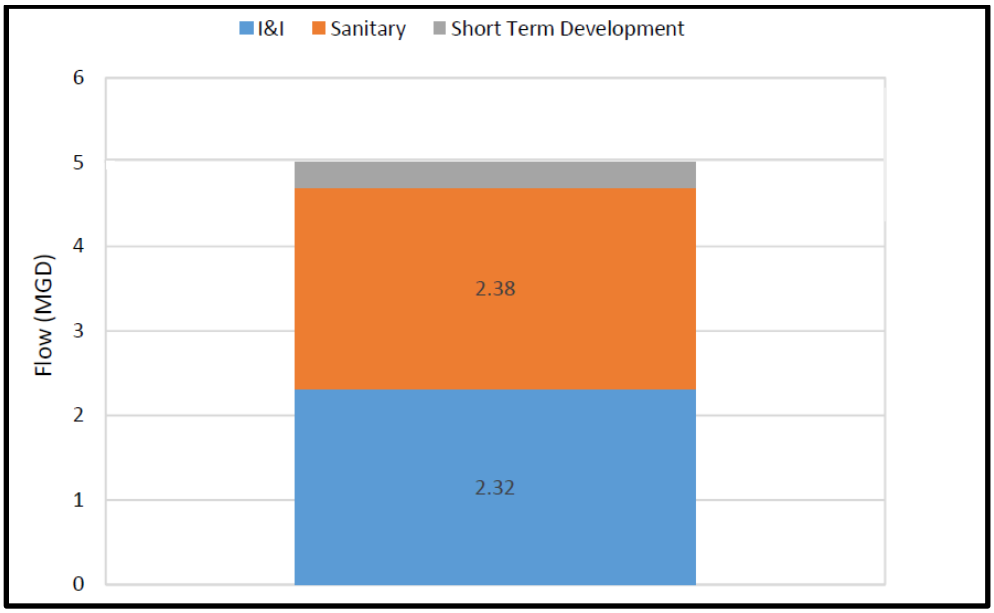
The WWTP is also being upgraded to provide ENR levels of treatment for an annual average design flow of 5.0 MGD. The construction of ENR-related improvements will take several years to complete. The 2015-2017 operating data was used in determining the available wastewater capacity compared to an annual 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
	gpd	*gpd*	*gpd*
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 initiates 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 Road 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	WWTP on MD Route 31	0 MGD
Upgrade of the Pre-Treatment Septage Facility	Priority (S-3) Immediate	Upgrade the septage facility to produce cleaner effluent	WWTP on MD Route 31	0 MGD
Clarifier #3 Drive Replacement	Priority (S-3) 5 Years	Replacement of 20-year-old equipment	WWTP on MD Route 31	0 MGD
Bulk Trailer for Biosolids	Priority (S-3) 5 years	Needed for dried sludge removal	WWTP on MD Route 31	0 MGD
WWTP Facility Improvements	Priority (S-3) Immediate	Replacement of 30-year-old equipment	WWTP on MD Route 31	0 MGD
Replacement of Clarifier 1 & 2 mechanisms	Priority (S-3) Immediate	Replacing of 30-year-old equipment	WWTP on MD Route 31	0 MGD
Generator Upgrade	Priority (S-3) 5 Years	Upgrading of generators at Stations 6, 12, 13, & 15	System wide	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 32[3]
Projected Sewerage Demands and Planned Capacity*

Service Area	Present Year						Priority Planning (0-6 Year)						Future Planning (7-10 Year)					
	Res. Pop. Ser.[1]	GPCD	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.	GPCD	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.	GPCD	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[4]	25,964	85	2.209	.116	2.325	3.500	31,209	86	2.674	0.488	2.929	3.500	29,177	87	2.740	.548	3.204	3.500
Hampstead	6,094	67	0.410	0.067	0.477	0.900	7,721	77	0.555	0.314	0.869	0.900	8,083	80	0.587	0.361	0.948	0.900
Manchester	4,046	58	0.237	0.032	0.269	0.500	4,304	79	0.343	0.053	0.396	0.595	4,548	80	0.349	0.053	0.402	0.845
Mount Airy[5]	9,654	59	0.571	0.161	0.732	1.200	9,851	60	0.589	0.287	.876	1.200	9,851	60	0.589	0.288	.877	1.200
New Windsor[6 7]	1,441	46	0.067	0.012	0.079	0.115	1,701	49	0.084	0.029	0.113	0.115	1,701	49	0.084	0.073	0.157	0.230
Taneytown[8 9]	7,234	88	0.640	0.191	0.831	1.100	8,801	81	0.714	0.272	0.989	1.182	8,801	81	0.714	0.272	0.989	1.182
Union Bridge [10]	936	47	0.044	0.090	0.134	0.200	1,792	71	0.128	0.097	0.225	0.246	2,767	81	0.224	0.097	0.321	0.315
Westminster [11]	28,839	144	4.156	0.676	4.832	5.000	33,073	138	4.584	1.08	5.614	6.5	33,474	138	4.624	1.118	5.742	6.5

[3] 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.
[4] Snowden Creek Rd infill lots (2) add 500 gpd Residential Priority; Stavlas property adds 700 gpd Other Priority
[5]The Priority calculations are based on the Mount Airy's "pipeline" allocations and were provided to the County by the Town.
[6] New Windsor's Priority and Future calculations are based on 165 gal per unit for residential demand.
[7] New Windsor will be eliminating this deficit by conducting an I&I project that will recapture more than 17,000 gpd.
[8] The Priority calculations are based on the development projects in the approval process. These calculations account for I/I reductions in the York Street Pump Station. Taneytown Crossing has a total allocation of 4,500 gpd.
[9] Mount Airy and Taneytown do not have any properties in the Future Planning Category.
[10] Union Bridge will be eliminating this deficit by conducting an I&I project that will recapture more than 10,000 gpd
[11] LEF Stone Chapel LLC Property has a total demand of 33,420 gpd. The Sewer map for Westminster has the Industrial zoned portion in Existing/FinalPlanning. The allocation is split; 24,252 gpd in Priority and 9,168 gpd in Future.

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				CAPACITY MILLION GAL. DAILY (MGD)		POPULATION				CAPACITY MILLION GAL. DAILY (MGD)		POPULATION				CAPACITY MILLION GAL. DAILY (MGD)	
	TOT.	SER.	UNS.	GCPD	DEMAND	EXISTING CAPACITY	TOT.	SER.	UNS.	GCPD	DEMAND	PLANNED CAPACITY	TOT.	SER.	UNS.	GCPD	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
Taylorsville 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 school
[2] Data pertains to peak use generally during summer months
[3] 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

Winfield Elementary - South Carroll High School Community Sewer System

Carroll County, Maryland

Water & Sewer Master Plan Triennial Update 2023

Sewer Facilities

STP Existing Treatment Plant

P Existing Pumping Station

Sewer Distribution Lines

Existing Line

Sewer Service Categories

S - 1 Existing/Final Planning

General

Stream

Existing Temporary - Respite Trailer at Salt Dome

N

0 300 600 1,200 Feet

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
Starner's 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 currently. 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 WTTP is owned by the State of Maryland and is operated by MES. The sewage collection and conveyance network are 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 WTTP 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 several 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 several 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 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 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 mg; 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 32), 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 32). 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 2020 Census data. The multipliers are as follows:

Community	Persons per Household
Freedom/Sykesville	2.88
Hampstead	2.53
Manchester	2.85
Mount Airy	2.81
New Windsor	2.47
Taneytown	2.69
Union Bridge	2.40
Westminster	2.70

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 15 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

Water Service Area

BLI Medium-Range Calculations

Based on Zoning 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 (excl. Sykesville)	1585	452	249	24	476	2786
Sykesville (Corp. Limits)	124	1				125
Freedom System (Total)	1709	453	249	24	476	2911
Hampstead	169	310	123	122	16	740
Manchester	316	171	3	8	37	535
Mt. Airy	58	12		286		356
New Windsor	93	11		39		143
Taneytown	184	26		344		554
Union Bridge	144	183		447		774
Westminster	1209	294	98		677	2278
Totals	*3882*	*1460*	*473*	*1270*	*1206*	*8291*

**Based on 2022 Residential BLI*

Sewer Service Area

BLI Medium-Range Calculations

Based on Zoning 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 (excl. Sykesville)	1162	574	251	160	639	2786
Sykesville (Corp. Limits)	99	25			1	125
Freedom System (Total)	1261	599	251	160	640	2911
Hampstead	316	263	129	7	36	751
Manchester	248	176	27	34	50	535
Mt. Airy	58	12		286		356
New Windsor	69	34		40		143
Taneytown	181	26		348		555
Union Bridge	154	183	384	53		774
Westminster	1480	345	173		281	2279
Totals	*3767*	*1638*	*964*	*928*	*1007*	*8304*

**Based on 2022 Residential BLI*

Commercial and Industrial Buildable Land Inventory Tables

Based on Zoning and 2022 Water Service Area

Freedom Area

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	181	700	126,568
Industrial	148	800	118,493
Water - Priority			
Commercial	125	700	87,569
Industrial	132	800	105,958
Water - Future			
Commercial	0	700	0
Industrial	0	800	0
Water - Long Range			
Commercial	0	700	0
Industrial	0	800	0

* Includes Town of Sykesville

Based on Zoning and 2022 Sewer Service Area

Freedom Area

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	142.74	700.00	99915.35
Industrial	122.73	800.00	98183.07
Sewer - Priority			
Commercial	149.87	700.00	104906.91
Industrial	25.29	800.00	20233.17
Sewer - Future			
Commercial	0.00	700.00	0.00
Industrial	58.66	800.00	46927.52
Sewer - Long Range			
Commercial	9.11	700.00	6374.07
Industrial	73.76	800.00	59011.24

* Includes Town of Sykesville

Based on Zoning and 2022 Water Service Area

Town of Hampstead

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	41	700	28,508
Industrial	55	800	43,826
Water - Priority			
Commercial	17	700	11,970
Industrial	184	800	147,117
Water - Future			
Commercial	4	700	2,574
Industrial	23	800	18,110
Water - Long Range			
Commercial	2	700	1,743
Industrial	27	800	21,744

Based on Zoning and 2022 Sewer Service Area

Town of Hampstead

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	41.66	700.00	29159.83
Industrial	126.66	800.00	101328.51
Sewer - Priority			
Commercial	13.34	700.00	9339.18
Industrial	133.71	800.00	106966.61
Sewer - Future			
Commercial	11.56	700.00	8094.30
Industrial	48.92	800.00	39135.26
Sewer - Long Range			
Commercial	0.00	700.00	0.00
Industrial	0.00	800.00	0.00

Based on Zoning and 2022 Water Service Area

Town of Manchester

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	29	700	20,087
Industrial	0	800	0
Water - Priority			
Commercial	2	700	1,428
Industrial	0	800	0
Water - Future			
Commercial	0	700	0
Industrial	0	800	0
Water - Long Range			
Commercial	3	700	2,210
Industrial	0	800	0

Based on Zoning and 2022 Sewer Service Area

Town of Manchester

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	28.36	700.00	19853.74
Industrial	0.00	800.00	0.00
Sewer - Priority			
Commercial	2.04	700.00	1428.41
Industrial	0.00	800.00	0.00
Sewer - Future			
Commercial	0.00	700.00	0.00
Industrial	0.00	800.00	0.00
Sewer - Long Range			
Commercial	2.52	700.00	1765.63
Industrial	0.00	800.00	0.00

Based on Zoning and 2022 Water Service Area

Town of Mt. Airy

Category	Buildable Acres*	GPD	Demand
Water - Infill			
Commercial	56	700	39,090
Industrial	23	800	18,571
Water - Priority			
Commercial	30	700	20,830
Industrial	60	800	47,960
Water - Future			
Commercial	0	700	0
Industrial	1	800	851
Water - Long Range			
Commercial	50	700	35,194
Industrial	0	800	0

Based on Zoning and 2022 Sewer Service Area

Town of Mt. Airy

Category	Buildable Acres*	GPD	Demand
Sewer - Infill			
Commercial	55.84	700.00	39089.53
Industrial	23.21	800.00	18570.25
Sewer - Priority			
Commercial	29.72	700.00	20803.11
Industrial	59.42	800.00	47536.47
Sewer - Future			
Commercial	0.00	700.00	0.00
Industrial	1.03	800.00	820.10
Sewer - Long Range			
Commercial	50.31	700.00	35216.54
Industrial	0.79	800.00	628.23

* Carroll County portion of Mt Airy

Based on Zoning and 2022 Water Service Area

Town of New Windsor

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	16	700	11,254
Industrial	32	800	25,932
Water - Priority			
Commercial	5	700	3,657
Industrial		800	0
Water - Future			
Commercial		700	0
Industrial	25	800	20,273
Water - Long Range			
Commercial		700	0
Industrial	39	800	30,869

Based on Zoning and 2022 Sewer Service Area

Town of New Windsor

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	16.07	700.00	11246.77
Industrial	2.31	800.00	1848.11
Sewer - Priority			
Commercial	5.25	700.00	3672.77
Industrial	0.00	800.00	0.00
Sewer - Future			
Commercial	0.00	700.00	0.00
Industrial	55.43	800.00	44341.22
Sewer - Long Range			
Commercial	0.00	700.00	0.00
Industrial	38.64	800.00	30913.92

Based on Zoning and 2022 Water Service Area

City of Taneytown

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	40	700	27,711
Industrial	67	800	53,413
Water - Priority			
Commercial	30	700	20,838
Industrial	0	800	209
Water - Future			
Commercial	0	700	0
Industrial	0	800	0
Water - Long Range			
Commercial	68	700	47,532
Industrial	126	800	101,092

Based on Zoning and 2022 Sewer Service Area

City of Taneytown

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	39.23	700.00	27459.28
Industrial	66.77	800.00	53414.17
Sewer - Priority			
Commercial	29.77	700.00	0.00
Industrial	0.26	800.00	0.00
Sewer - Future			
Commercial	0.00	700.00	0.00
Industrial	0.00	800.00	0.00
Sewer - Long Range			
Commercial	68.26	700.00	47783.70
Industrial	126.36	800.00	101091.72

Based on Zoning and 2022 Water Service Area

Town of Union Bridge

Category	Buildable Acres	GPD	Demand
Water - Infill			
Commercial	1	700	394
Industrial	8	800	6,733
Water - Priority			
Commercial	0	700	0
Industrial	0	800	0
Water - Future			
Commercial	0	700	0
Industrial	0	800	0
Water - Long Range			
Commercial	0	700	0
Industrial	220	800	176,054

Based on Zoning and 2022 Sewer Service Area

Town of Union Bridge

Category	Buildable Acres	GPD	Demand
Sewer - Infill			
Commercial	0.56	700.00	393.86
Industrial	6.38	800.00	5102.97
Sewer - Priority			
Commercial	0.00	700.00	0.00
Industrial	0.00	800.00	0.00
Sewer - Future			
Commercial	0.00	700.00	0.00
Industrial	0.00	800.00	0.00
Sewer - Long Range			
Commercial	0.00	700.00	0.00
Industrial	222.25	800.00	177797.08

Appendix 4: Procedure for Obtaining Water or Sewer Extension

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

CARROLL COUNTY MARYLAND

225 N. Center Street
Westminster, Maryland 21157

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	APPROVED BY: COUNTY COMMISSIONERS OF CARROLL COUNTY
Department of Public Works (Bureau of Utilities)	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 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 act 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 act 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.

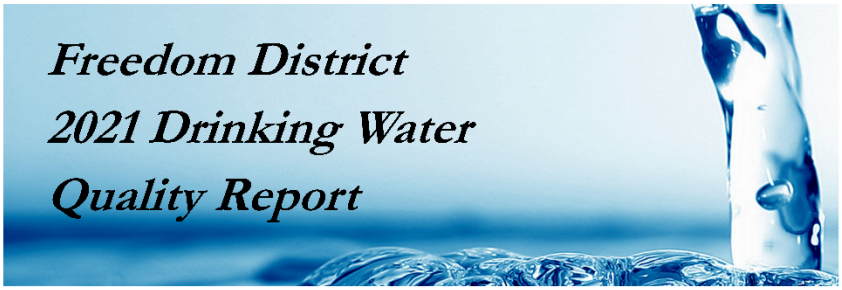
APPENDIX 6: Carroll County FY 2024 – 2029 Community Investment Plan (Utilities Enterprise)

COMMUNITY INVESTMENT PLAN FOR FISCAL YEARS 2024 TO 2029

		FY 25	FY 26	FY 27	FY 28	FY 29	Prior Allocation	Balance To Complete	Total Project Cost
UTILITIES ENTERPRISE FUND									
Booster Station Upgrade	$300,000	$3,600,000	$0	$0	$0	$0	$0	$0	$3,900,000
County Sewer Line Rehabilitation and Replacement	481,000	505,000	530,000	556,000	583,000	612,000	1,443,000	0	4,710,000
County Water Line Rehabilitation and Replacement	100,000	200,000	400,000	800,000	1,200,000	1,260,000	3,433,000	0	7,393,000
Freedom Water Treatment Plant Equipment Replacement	310,000	110,000	110,000	120,000	120,000	120,000	708,490	0	1,598,490
Freedom Water Treatment Plant Membrane Replacement	206,000	206,000	206,000	206,000	206,000	206,000	1,905,250	0	3,141,250
Hampstead WWTP Enhanced Nutrient Removal Upgrade	487,319	0	0	0	0	0	22,580,110	0	23,067,429
Patapsco Valley Pump Station Rehabilitation	0	250,000	0	0	0	0	0	0	250,000
Pump Station Equipment Replacement	50,000	75,000	100,000	125,000	150,000	175,000	781,695	0	1,456,695
Shiloh Pump Station Expansion	1,500,000	0	0	0	0	0	220,000	0	1,720,000
South Carroll High Wastewater Treatment Plant Rehab	100,000	0	0	0	0	0	658,000	0	758,000
Stone Manor Pump Station Rehab	360,000	0	0	0	0	0	302,500	0	662,500
Stream Bank Stabilization	150,000	0	0	0	0	0	99,000	0	249,000
Sykesville Pump Station Expansion	610,000	0	0	0	0	0	1,790,000	0	2,400,000
Tank Inspection and Rehabilitation	275,000	289,000	303,000	318,000	334,000	351,000	4,628,032	0	6,498,032
Water Main Valve Replacement and Rehabilitation	313,000	322,000	332,000	342,000	352,000	363,000	2,759,700	0	4,783,700
Water Meter System Upgrade	0	310,000	0	0	0	0	0	0	310,000
Water Meters	534,000	572,000	611,000	655,000	699,000	759,000	7,730,660	0	11,560,660
Water Service Line Replacement	237,000	249,000	262,000	275,000	289,000	303,000	2,599,200	0	4,214,200
UTILITIES ENTERPRISE FUND TOTAL	**$6,013,319**	**$6,688,000**	**$2,854,000**	**$3,397,000**	**$3,933,000**	**$4,149,000**	**$51,638,636**	**$0**	**$78,672,956**
SOURCES OF FUNDING:									
Transfer from General Fund	$0	$0	$0	$0	$0	$0	$658,000	$0	$658,000
Reallocated GF Transfer	100,000	0	0	0	0	0	0	0	100,000
Utilities Water Maintenance Fee	385,000	709,000	413,000	438,000	454,000	471,000	6,880,074	0	9,750,074
Utilities Sewer User Fees	1,499,482	755,000	530,000	556,000	583,000	612,000	11,359,405	0	15,894,887
Reallocated Utilities Sewer User Fees	1,907,045	0	0	0	0	0	83,095	0	1,990,140
Utilities Water User Fees	1,536,907	5,149,000	1,811,000	2,278,000	2,746,000	2,891,000	16,775,104	0	33,187,011
Reallocated Utilities Water User Fees	353,093	0	0	0	0	0	0	0	353,093
Area Connection Charges	0	0	0	0	0	0	4,032,622	0	4,032,622
Reallocated Area Connection Charges	181,793	0	0	0	0	0	0	0	181,793
Utilities Sewer Maintenance Fee	50,000	75,000	100,000	125,000	150,000	175,000	781,695	0	1,456,695
MD Department of Environment	0	0	0	0	0	0	11,068,110	0	11,068,110
Other Miscellaneous Revenue	0	0	0	0	0	0	531	0	531
UTILITIES ENTERPRISE FUND TOTAL	**$6,013,319**	**$6,688,000**	**$2,854,000**	**$3,397,000**	**$3,933,000**	**$4,149,000**	**$51,638,636**	**$0**	**$78,672,956**

APPENDIX 7: 2021 Freedom District Drinking Water Quality Report

PWSID: 006-0002



Important Information about your Drinking Water

The Bureau of Utilities is pleased to present to you the Annual Water Quality Report for 2021. This report is designed to inform you about the water quality and services we deliver to you every day. Maryland Environmental Service (MES), an Agency of the State of Maryland, provides operational support and prepared this report on behalf of Carroll County and the Freedom District water treatment plant.

The Environmental Protection Agency (EPA) regulates Public Water Systems and the contaminants found in water through the implementation of the Safe Drinking Water Act (SDWA). The SDWA sets regulations and guidelines for how public water systems operate and identifies several hundred drinking water contaminants, establishes monitoring frequencies and limitations. The Maryland Department of the Environment (MDE) is responsible for the enforcement of the SDWA and routinely complete Sanitary Surveys as part of their ongoing inspection and monitoring program. Carroll County provides safe dependable operations of the water system and is dedicated to consistently providing high quality drinking water that meets or exceeds the SDWA standards.

If you have any questions about this report or have questions concerning your water utility, please contact Andrew Watcher, Chief Carroll County Bureau of Utilities 225 North Center Street, Room 218, Westminster, MD 21157 Phone 410-386-2164

Public Meeting Information:

For the opportunity to ask more questions or participate in decisions that may affect your drinking water quality, the Carroll County Commissioners meet regularly and the weekly agenda is available at: https://www.carrollcountymd.gov/government/commissioners/board-of-carroll-county-commissioners-weekly-agenda/

Inside This Issue:

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How Water is Treated:

Raw water is pumped from Liberty Reservoir via intake lines located in the reservoir which then travels into Freedom District system #1's dissolved air flotation clarifier. A coagulant is added causing small particles and other suspended matter to attach to one another for easy removal. This clarified water enters a channel which feeds the Membrane Ultra filters before entering the clearwell. The water is then chlorinated for disinfection and fluoridated for dental protection. Caustic soda is used to raise pH making the water less aggressive to pipes and fixtures. Plant #1 also has the potential to remove various minerals and organic compounds that are present in the reservoir at various times of the year. A corrosion inhibitor, poly orthophosphate, is added just before the treated water enters the distribution system. In addition to the Freedom District surface water system #1, ground water is supplied from one well in the Boulder Gneiss Wissahickon formation. This well is called the Fairhaven system #2 and it's water is chlorinated for disinfection and fluoridated for dental protection before it enters the distribution system.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the **Safe Drinking Water Hotline (1-800-426-4791).**

Freedom District Treated Water Quality Report 2021

Definitions:

Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Mrem - Millirem roentgen equivalent in man. A measure of radiation dose.

pCi/l - Picocuries per liter. A measure of radiation.

ppb - Parts per billion or micrograms per liter.

ppm - Parts per million or milligrams per liter.

ppt - Parts per trillion or nanograms per liter.

Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.

Turbidity - Relates to a condition where suspended particles are present in the water. Turbidity measurements are a way to describe the level of "cloudiness" of the water.

Sources of Drinking Water:

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

The Maryland Department of the Environment has performed an assessment of the source water. A copy of the assessment is available by calling or writing the Bureau of Utilities, Carroll County Government, 225 North Center Street, Room 218, Westminster MD 21157, 410-386-2164

The table on the following page lists all the drinking water contaminants that were detected during the 2021 calendar year. The presence of these compounds in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in the table is from testing done January 1 – December 31, 2021.

The State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year.

Freedom District Treated Water Quality Report 2021

Contaminant	Highest Level Allowed (EPA's MCL)	Highest Level Detected	Ideal Goal (EPA's MCLG)
Regulated at the Treatment Plant (Freedom District Plant 01)	Action Level	Highest Level	Ideal Goal
Gross Beta (2017 Testing) Typical Source of Contamination: Erosion of natural deposits *EPA considers 50 pCi/L to be the level of concern for beta particles. The MCL is 4 mrem/year ** Because the beta particle results were below 50 pCi/l, no testing for individual beta particle constituents was required	50 pCi/l*	6.5 pCi/l**	0.0 pCi/l
Combined Radium (226 & 228) (2017 Testing) Typical Source of Contamination: Erosion of natural deposits	5 pCi/l	1.9 pCi/l	n/a
Gross Alpha (2017 Testing) Typical Source of Contamination: Erosion of natural deposits * Average of Results	15 pCi/l	8.6 pCi/l*	0.0 pCi/l
Uranium (2015 Testing) Typical Source of Contamination: Erosion of natural deposits	30 pCi/l	4 pCi/l	0.0 pCi/l
Nitrate Typical Source of Contamination: Runoff from fertilizer use; erosion	10 ppm	1.60 ppm Range (1.37 - 1.60 ppm)	10 ppm
Fluoride Typical Source of Contamination: Added for dental protection	4.0 ppm	0.74 ppm Range (0.58 - 0.74 ppm)	4 ppm
Barium (2021 Testing) Typical Source of Contamination: Discharge of metal refineries, erosion of natural deposits.	2000 ppb	21.0 ppb Range (0 - 21.0 ppm)	2000 ppb
Turbidity (Continuously Tested) Typical Source of Contamination: Discharge from metal refineries, erosion of natural deposits. Turbidity cannot exceed 1.0 NTU and must be less than or equal to 0.3 NTU in at least 95% of the measurements.	0.3 ntu TT	0.21 ntu Range (0.05 - 0.21)	0 ntu
Regulated in the Distribution System	Action Level	Highest Level	Ideal Goal
Chlorine (Water additive used to control microbes) * Annual rolling average	4 ppm	1.07 ppm* Range (1.01 - 1.07 ppm)	4 ppm
Total Trihalomethanes (TTHM) Typical Source of Contamination: By-product of drinking water disinfection	80 ppb	66 ppb* (Range 14.6 ppb - 107.3 ppb) *Locational Rolling Annual Average	n/a
Haloacetic Acids (HAA5) Typical Source of Contamination: By-product of drinking water disinfection	60 ppb	35 ppb* (Range 8.8 ppb - 59.7 ppb) *Locational Rolling Annual Average	n/a
Regulated in the Distribution System	Action Level	90th Percentile	Ideal Goal
Copper (2020 Testing) Typical Source of Contaminant: Corrosion of household plumbing	1300 ppb	130 ppb	1300 ppb
Lead (2020 Testing) Typical Source of Contaminant: Corrosion of household plumbing	15 ppb	0	0.0 ppb
Regulated at the Treatment Plant (Fairhaven Plant 02)*			
*** Fairhaven Plant 02 was offline during 2021, results listed are the most recently tested**			
Nitrate (2019 Testing) Typical Source of Contamination: Runoff from fertilizer use; erosion	10 ppm	1.5 ppm	10 ppm
Fluoride (2018 Testing) Typical Source of Contamination: Added for dental protection	4.0 ppm	0.738 ppm	4 ppm
Barium (2018 Testing) Typical Source of Contamination: Discharge from metal refineries, erosion of natural deposits.	2000 ppb	5.6 ppb	2000 ppb
Arsenic (2018 Testing) Typical Source of Contamination: Discharge from metal refineries, erosion of natural deposits.	10 ppb	1.1 ppb	0 ppb
Regulated in the Distribution System	**MCL**	**Positive Results**	**Ideal Goal**
Total Coliform Source: Naturally present in the environment *Highest number of positive results in any month. MCL was not exceeded in 2021. Follow-up samples at the same location and additional surrounding areas were absent. No further positive results occurred in 2021.	1	1*	0

Freedom District Treated Water Quality Report 2021

Total Organic Carbon (TOC)

The percentage of Total Organic Carbon (TOC) removal was measured each quarter and the system met all TOC removal requirements. During 2021 the minimum required TOC removal rate was between 0% to 50%. The average removal rate during 2021 was 33%.

Lead Prevention

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Freedom District is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from **the EPA Safe Drinking Water Hotline at 1-800-426-4791 or at** http://www.epa.gov/safewater/lead.

Contaminants that may be Present in Source Water

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses. Inorganic Contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming. Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems. Radioactive Contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

Water Security is Everyone's Responsibility

Water system security continues to be an enormously important issue. If you notice suspicious activities in or around local water utilities, such as persons cutting or climbing facility fencing, loitering, tampering with equipment or other similar activities, please contact your local law enforcement agency immediately by dialing 911.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain compounds in water provided by public water systems. We treat our water according to EPA's regulations. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Freedom District Treated Water Quality Report 2021

Special Points of Interest:

The water at the Freedom District is tested for over 120 different compounds. Drinking Water, including bottled water, may reasonably be expected to contain at least small amounts of some compounds. The presence of these compounds does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the **Environmental Protection Agency's (EPA's) Safe Drinking Water Act Hotline (1-800 -426-4791).**

Polyfluoroalkyl Substances

PFAS – short for per- and polyfluoroalkyl substances – refers to a large group of more than 4,000 human-made chemicals that have been used since the 1940s in a range of products, including stain- and water-resistant fabrics and carpeting, cleaning products, paints, cookware, food packaging and fire-fighting foams. These uses of PFAS have led to PFAS entering our environment, where they have been measured by several states in soil, surface water, groundwater and seafood. Some PFAS can last a long time in the environment and in the human body and can accumulate in the food chain.

Currently, there are no federal regulations (i.e. Maximum Contaminant Levels (MCLs)) for PFAS in drinking water. However, the U.S. Environmental Protection Agency (EPA) has issued a Health Advisory Level (HAL) of 70 parts per trillion (ppt) for the sum of PFOA and PFOS concentrations in drinking water. While not an enforceable regulatory standard, when followed, the EPA HAL does provide drinking water customers, even the most sensitive populations, with a margin of protection from lifetime exposure to PFOA and PFOS in drinking water. Beginning in 2020, the Maryland Department of the Environment (MDE) initiated a PFAS monitoring program. *The combined PFOA and PFAS concentration from samples taken from your water system showed no detection or 0 ppt.* MDE anticipates that EPA will establish an MCL for PFOA and PFOS in the near future. This would entail additional monitoring. Additional information about PFAS can be found on the MDE website: mde.maryland.gov"

Water Conservation

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference—try one today and soon it will become second nature

- Check for water leaks by the reading your water meter before and after a two hour period when no water is being used in your home. If the reading changes then there is probably a leak in your home.
- Take a shower! Filling up a bathtub can use up to 70 gallons of water while a shower generally uses 10 to 25 gallons. Taking shorter showers saves even more water.
- Make sure your washing machine and dishwasher are fully loaded before running.
- WaterSense labled fixtures can reduce your water use by 30 percent or more versus standard flow fixtures. Visit *www.epa.gov/watersense* for more information on water efficiency products and methods.

Source: http://www.epa.gov/watersense & http://eartheasy.com