



**AGENDA FOR THE  
WATER & SEWER COMMITTEE MEETING**

**July 28, 2021**

**7:00 p.m.**

- **Monthly Water & Sewer Operations Report**
- **Draft for Water & Sewer Demand – Water Resource Element of the Comprehensive Plan**
- Water Capacity Plan – 2020
- Sewer Capacity Plan – 2020
- **Review of County Water & Sewer Plan**  
*Included are the specific sections of the County Water & Sewer Plan related to Middletown, for a full copy of Frederick County's Water & Sewer Plan, please use the following link <https://www.frederickcountymd.gov/7979/Water-and-Sewer-Planning> and click on **Plans and Documents***

**Public Works Monthly Report**  
**July 1, 2021**

**COMPLETED WORK**

**Public Works**

Air chain's continue being replaced at EWWTP. SWM Pond fence repairs and replacements, rear stair floor coverings (August 2), Staff repairing maintaining SWM ponds for MS4 inspection. Sewer cleaning and inspection at various locations. Preparing for Booster Station project to begin in August.

**New Projects or Requests**

**Unbudgeted Expenses:**

Well 6 pump and motor replacement: -\$3250.00, Well Pump 1 motor and pump: -\$4612.00, No sludge Hauling Sept: +\$2990.00, No sludge Hauling October +2990.00, No hauling November + \$2990.00, No sludge hauling December +2990.00 Solids Meter Purchased +\$2300.00 (will be paid for in 3 months vs lab testing) Additional lab testing for MLSS at East Plant +\$2000.00, No hauling of sludge in May +2990.00 ( \$20,000.00 savings this year)

Sludge cost for FY \$ 23,200.00, 000 gal hauled, 000 gal bedded **Total hauled 240,000 gal Bedded 107,100 Gal**  
**Water Use (Average Daily for the Month, Flows stated in gallons per day)**

Permit Limits (gal) 387,000/504,000 AD/MMU 250,000 AD 250,000 AD  
 Base flow 176,000 Base flow 159,000

MONTH	WATER USE		SPRING FLOW		East WWTP		West WWTP		Rain
	past yr	present yr	past yr	present yr	past yr	present yr	past yr	present yr	
January	295,230	317,614	96,085	100,405	257,000	260,000	262,000	224,000	2.6
February	297,096	300,936	133,808	109,250	258,000	291,000	352,000	179,000	4.9
March **	298,579	297,775	140,805	144,800	225,000	281,442	214,000	208,134	2.7
April **	290,726	316,218	143,076	147,075	214,000	221,150	222,000	220,184	3.5
May	290,109	318,004	143,632	149,126	239,000	234,000	327,000	261,000	5.3
June	306,095	327,808	139,857	136,400	185,000	183,167	175,000	183,360	4.2
July	302,495	329,237	129,973	106,703	218,000	167,000	260,000	147,000	
August	301,201	300,267	113,503	80,583	159,000	178,000	158,000	168,000	
September	339,215	300,687	87,210	64,513	141,000	175,000	154,000	147,000	
October **	316,050	313,370	72,217	52,296	184,000	173,000	180,000	128,000	
November**	284,740	285,014	74,322	50,700	200,000	194,000	218,000	137,000	
December	298,071	293,083	78,176	68,898	230,000	305,000	222,000	199,000	

Avg Daily/yr 301,634 308,334 112,722 100,896 209,167 221,897 228,667 183,473  
 Avg Yr Flw 110.10 112.54 41.14 36.83 76.35 80.99 83.46 66.97

\*\*Hydrants flushed this month

April 2019 737,446. October 2019 531,958, Spring 2020 not flushed. Fall 2020 582,024 Spring 2021 704,842

**Sewer Flow**

March: East Plant flow is up 7% from Feb, West Plant flow is up 32% from Feb (all gravity), combined flow 489,576 (up 17%). April EWWTP flow down 24%from March, West WTP is up 2%, combined flow 441,334 gal down 13%. May flow up from April EWWTP up 9%, W WWTP up 22%. Permit exceedance in May for west plant quantity. Yearly average still below permit. June flow down from May -24% EWWTP and -32% WWWTP combined flow 366,527

**Planned Work**

- HVAC Replacements, UV lights
- MDE water inspection corrections and emergency plan update
- Continue Fire Hydrant ID tag and numbering system installation
- Regulatory: Grease Ordinance completion.
- Bid Sludge Hauling and Chemicals.
- Reed Bed Development cost analysis.

**Reservoir Tank Paving** will be completed July 5. Final punchlist nearly complete

### Open Projects

**I & I Walnut to Jefferson St.:** Submitted plans for permit, easement document created. Construction documents at 95% and ready to bid when the budget is available. I & I proposals due June 5, 2021. Received and being evaluated,  
**ADA sidewalk ramp reconstructions:** In progress as ADA plates are available.  
**W WWTP.** Final pond baffle is malfunctioning, Investigation needed. Needs review. Received chemical building plans for review. Provided info to Consultant for baffle replacement. No action If pursuing a new plant I would not recommend the replacement. Grant project priorities have been announced for public comment, Town is ranked 11/140. I do not have any other information at this time.

**Develop Grease Trap Ordinance and Education Program:** No Action

#### **Water System:**

**Hydraulic Model:** Received proposal from GF for the hydraulic analysis and the design of the WTP. In progress

**System:** Risk and Resilience certification made to EPA, Emergency Response Plan Certification is due Dec 31, 2021.

**Broad St Streetscape:** Kinsley Construction is the successful bidder. No details as to date of start.

**SSO and I&I:** Regulating flow daily to meet the flow discharge in our permits. Public Announcement for I & I Project and to disconnect illegally connected sump pumps (provide early notice). I & I Proposals due June 5, 2021.

**MDE /Permits:** West WWTP Discharge Permit received from MDE. East WWTP Discharge Permit (exp Dec 2021) submitted 22 months prior to expiration and then revised 14 months before expiration. We have requested an increase in discharge flow from 250,000 to 350,000. EPA / MDE inspection of East WWTP on May 18, 2021. Have received no comments as of this report but any will likely be minor.

**MDE MS4 Permit Reports:** JR Hawkins is preparing this years report due Oct 2021.

**West Wastewater Treatment Plant:** No issues

**East WWTP:** Permit renewal complete (exp Dec 2021). Monitoring plant operation and flows. Received materials for the barscreen refurbishment. Staff is replacing air chain diffuser membranes. BOD violation in May and June. The process is working perfectly but the BOD rises significantly after the clarifier. We have focused on the sampler being contaminated and have disinfected it.

**Franklin St Conceptual Sidewalk Plans:** Included in the Broad St project. No action

**Municipal Center:** no action

**Maintenance Facility:** Contract has been executed with Triad Engineering. We have received a preliminary sketch. No action.

**Washington Street:** 95% drawings provided to Board for review and presentation to residents November 2020 meeting. Resident requests need to be resolved. Updated consultant with changes. No action.

**Pedestrian Blinker signs:** Completed survey work and design for sidewalk ramp and crosswalk at Franklin and Prospect. Met with resident and Contractor has the plans to proceed. Franklin and Prospect ramp 13,000.00 estimated. No action

**2021 F550 Replacement Truck Crew Cab:** Truck received and will be returned to upfitter for minor modifications and some fluid leaks.

**East Green Street Stop Sign Parking Modification:** Will examine crosswalk location when Library Project is submitted. No action

**Greg Curry (Southern States Green St) Drainage Issue:** Work has begun on the modifications.

**Wiles Branch Stream Rehabilitation:** Survey work has begun. No action

**Linden Boulevard Culvert Replacement:** RFP meeting with Frederick Seibert completed. Proposal has been received and is being reviewed. Proposal amount of \$31,600 was accepted and awarded. No action

**Brookridge PS:** No problems.

**Booster Station Process Pipe Upgrade:** Continue to review submitted shop drawings.

### Developments

**Middletown County Park Improvements:** Contractor constructing sewer lines.

**ADMAR Annexation:** Executed price proposal and work has begun on the study phase.

**Chesterbrook IP's:** Street paved and foundation has begun on first unit.

**Middletown Municipal Hall:** No action

**Horman Property Caroline's View:** 9 Condo Units. Received revised guarantee and approved. No action.

### Future Budget Considerations

**W&S:** Comprehensive sewer plan, West WWTP ENR plant replacement. Brookridge PS Headworks, motor op and scada control for cbps valve, SCADA for West Plant flow, upsize CB pumps, regional pressure monitors.

**GF:** Personnel organization and evaluation

## **Chapter #7 – Water Resource Element**

### **Purpose**

The purpose of this plan element is to coordinate the Town of Middletown's land use and water resources planning efforts. The plan is organized around the following three components: drinking water; wastewater; and stormwater. Included within those components are discussions of the watershed resources of the Town; the quality and quantity of drinking water supplies with respect to planned growth; the treatment capacity of wastewater treatment facilities and disposal of treated effluent; a review of Frederick County's stormwater management and non-point source pollution programs; and recommendations for environmentally sound land and water management practices that contribute towards the health and sustainability of our major watershed system and our residents.

### **Specific Elements for Water & Sewer Committee Review & Comment**

#### **#1 - Water Resources Goals**

Achieving the Town's water resources goals will take a coordinated effort by its citizens, the town's government, and its businesses. Each has a role to play in protecting the Town's water resources for future generations. The overarching goals for the Town of Middletown's water resources are:

1. Maintain a safe, secure and adequate drinking water supply to accommodate the needs of the current population as well as future generations.
2. Protect and enhance the quality of the Town of Middletown's surface waters, ground water resources, and wetlands, with the goal of exceeding all environmental regulatory requirements.
3. Invest in water and sewer infrastructure that will provide ample treatment capacity for projected demand and reduce total maximum daily loading [TMDL] of pollutants to rivers and streams.
4. Promote coordinated planning with other federal, state and local agencies responsible for drinking water, wastewater, and stormwater management.
5. Engage Middletown's citizens in watershed conservation and promote a stewardship ethic.

#### **#2 - Drinking Water Policies**

1. Diversify sources of public drinking water and explore alternatives in order to meet future demand.
2. Employ demand management strategies and conservation measures (water pricing, recycling and reuse) to maximize use of existing resources.

3. Stage new real estate development projects according to the availability and adequacy of drinking water supply.
4. Include individual well construction on adjacent town limit properties within the growth boundary for future water service connection.
5. Encourage and support research and monitoring of local groundwater conditions, aquifer recharge, watersheds and streams.

### **Drinking Water Action Items**

1. Replace aging water main lines and other aging water-related infrastructure.
2. Establish a water recharge easement program to increase the land area within the town limits for recharge purposes.
3. Coordinate with Frederick County on the feasibility of interconnections with the County distribution system for emergency situations.
4. Enhance its water conservation education program for citizens and businesses in Middletown stressing summertime (peak) demand management and an overall household reduction in water use (in gpd).
5. Develop a water-resources-based GIS database for review of development plans and proposals.
6. Identify and advocate appropriate County protection measures in the Town's wellhead, springhead, and headwater areas that lie outside the town boundaries.
7. Require complete data regarding the availability and reliability of groundwater resources to assist in making land use decisions.
8. Continue coordination with the County to collect and share consistent drinking water data.

### **#3 - Wastewater Policies**

1. Stage new real estate development according to the availability and adequacy of wastewater service.
2. Consider the inclusion of adjacent properties on individual well and septic construction for future water/sewer service connection as part of the comprehensive planning process.
3. Enhance its residential, commercial and industrial water conservation measures in order to reduce inflow to the wastewater treatment facilities.
4. Reduce inflow and infiltration into the wastewater collection system.
5. Reduce point source pollution that results from wastewater disposal.

## **Wastewater Action Items**

1. Complete additional I & I work over the next 10-20 years in the Capital Improvements Program budget.
2. Develop effective disposal of sludge removal.

## **IV. COUNTY WATER AND SEWERAGE PLAN CLASSIFICATION SYSTEM**

### **A. General**

A classification system has been established for properties that will be served by publicly owned community water and sewer systems. The classification system reflects a progression toward the attainment of public water and sewer service so as to implement the County Water and Sewerage Plan, as well as County or municipal Comprehensive Plans.

The classification system is designed to show need and intent of the County, its municipalities and the private developer for establishing or extending publicly-owned community water and sewer systems.

Classifications which indicate anticipated improvements within the next six (6) years should be part of an action plan to be implemented within the constraints of funding and various required agreements and approvals. The classification system is not intended to prevent development of publicly-owned community water and/or sewerage systems or facilities prior to or later than the time periods indicated; rather it is the best estimate at the time of adoption as to when such development may be expected to occur. Every effort should be made by the County, municipalities, and developers to progress with water and sewer projects to the point that construction may occur in accordance with the Plan. However, after having achieved one level, there is no guarantee that the next level classification will be granted.

### **B. Water and Sewerage Plan Classifications**

Tracts of land where publicly-owned community water and/or sewer facilities are proposed to be extended by developers or where the County or municipalities anticipate that development may occur within 20 years may be assigned a classification with the suffix "Development" or "Dev.". A "Dev." designation means that the extension or construction of publicly-owned community systems or facilities is dependent upon developer or land owner action and funding.

The year of adoption of a piecemeal Water and Sewerage Plan amendment is noted within the water and sewer classification designations for properties in 4 and 3 categories, (e.g. 90-S-3 means the sewer priority classification of S-3 was approved by the County in 1990).

#### **NPS – No Planned Service**

A classification assigned during the Comprehensive Planning Process to land, which is not planned or projected to be served by publicly-owned community water or sewer systems within the timeframe of the County Comprehensive Plan.

#### **PS – Planned Service**

A classification assigned during the Comprehensive Planning Process to an area or property shown on the Comprehensive Plan for growth utilizing publicly-owned community water and/or sewer systems, or within a Community Growth Area to be served by public water and sewer in the County Comprehensive Plan. The PS classification generally indicates that service would be provided within the 11-20 year time frame. Properties within this classification have designations other than Agricultural/Rural or Natural Resource on the County Comprehensive Plan. This classification may also be assigned through the piecemeal application process by a staff-initiated application with regard to location of infrastructure generally or reclassification of properties to implement the Comprehensive Plan, or if the property no longer meets the requirements of its current classification.

### **S-5/W-5 – Mid-Range Plan Phase**

A classification assigned through the Comprehensive Planning Process where improvements to, or construction of, publicly-owned community sewerage or water systems are planned within the 7-10 year time period. Properties classified S-5/W-5 are not required to connect to the community system. Except as provided below, properties requesting this classification shall meet the following criteria:

- a. Have a land use plan designation other than Agricultural/Rural or Natural Resource on the County Comprehensive Plan.
- b. Have zoning other than Agricultural or Resource Conservation.
- c. If located within a municipality where the municipality provides community water and sewer, the property shall be designated in the municipal plan to be provided services in the 7-10 year time frame.
- d. Be located within a Community Growth Area as shown on the Frederick County Comprehensive Plan.
- e. Demonstrate that there is sufficient capacity planned in the systems serving the property within the 7-10 year period.

In addition, this classification may be assigned through the piecemeal application process to property:

- 1) Annexed into a municipal corporation, if the property is located within a municipal growth area and described in an adopted Municipal Growth Element (MGE); or
- 2) Granted a Planned Unit Development (PUD) or Mixed Use Development (MXD) or Open Space Recreation (OSR), or Institutional (I) floating zone classification; or
- 3) Zoned Agricultural, if all the criteria set forth in Section II (E)(8) or, if applicable, Section II (E) (7) are satisfied; or
- 4) To provide public water and/or sewer service to Public Service Facilities, if the applicable criteria in Section II (E) (8) are satisfied.



#### **S-4/W-4 – Concept Evaluation Phase**

A classification assigned through the piecemeal application process to properties designated residential, commercial, or industrial, or in general, a category other than Agricultural/Rural or Natural Resource on the County Comprehensive Plan, and where improvements to, or construction of, publicly-owned community sewerage or water systems are planned within the 4-6 year time period. Properties classified S-4/W-4 shall connect to the public system when service lines abut the property. Properties requesting this classification shall meet the following criteria:

- a. The criteria required for the S-5/W-5 classification have been complied with.
- b. The application shall include documents that show conceptually how the applicant plans extensions of water and sewer lines to serve the property, including topographic information from appropriate sources and an estimate of construction costs. Water concept submissions shall consider the County's water pressure zones to develop the concept, e.g., water booster pumping stations or pressure reducing valves. Sewerage concepts shall consider gravity service as the preferred method (see II (E) (5) (E)). All concept plans shall distinguish between County planned and developer provided facilities, and be complete and accurate as determined by the Division of Utilities and Solid Waste Management (DUSWM).
- c. Adequate capacity shall exist or be programmed within the County or a municipal CIP for the system, which will serve the site. If adequate capacity does not exist, the property owner/applicant must identify and propose needed improvements (as determined by the DUSWM) to provide adequate capacity.
- d. After an S-4/W-4 classification has been granted, an application may be submitted to the Maryland Department of the Environment for Water and/or Sewerage construction permits, as applicable.

#### **S-3/W-3 – Preliminary Design Phase**

A classification assigned through the piecemeal application process to properties where improvements to, or construction of, publicly-owned community sewer or water systems are planned to be completed and operational within 3 years. If applicant has not obtained approved water and sewer improvement plans for onsite work within three years or the Preliminary Plan/Site Plan/Phase II Plan expires, they may lose their "3" classification and revert to the "4" classification at the next amendment cycle. Properties classified S-3/W-3 shall connect to the public system when service lines abut the property. Properties requesting this classification shall meet the following criteria:

- a. Criteria required for the S-4/W-4 classification have been complied with.
- b. Applicant shall provide a study of the components of the existing water and wastewater system and identify inadequacies that may result from the development of the property. This study may be performed in conjunction with the *Adequate Public Facilities Ordinance* (APFO) studies.
- c. A preliminary subdivision plan, site plan, Phase II Plan (in the case of PUDs and MXDs or other floating zoning districts), or equivalent plan in a municipality has been approved by the Planning Commission.

- d. A discharge permit, where appropriate, has been approved by all appropriate State agencies.
- e. A hydrogeologic study, where appropriate, supports the establishment of a community water system, which will not be detrimental to adjoining wells or surface waters. The hydrogeologic study is typically required to appropriate both ground (well) or surface waters. A Water Appropriation and Use Permit, where appropriate, has been approved by all appropriate State agencies.
- f. If County funded CIP project(s) are needed to provide service, then construction funds for each project must be contained in the first or second year of the County's approved CIP.
- g. If service is to be provided by developer initiated and funded projects, the developer must have approved and signed water/sewer improvement plans and an approved cost proposal for all improvements required to bring adequate water and sewer service to the site. This "service to the site" requirement is considered "met" if adequate water and sewer lines abut the site and are located within a public right-of-way or a public water/sewer easement which abut the site.
- h. Satisfaction of Items f. and g. will create a rebuttable presumption in favor of the applicant that service will be available within 3 years.

**S-2/W-2 – Engineering Phase**

This classification is not mapped. Properties are assigned this category by County staff and shall meet the following criteria:

- a. All criteria required for the S-3/W-3 classification have been complied with.
- b. Improvement plans for water and sewer lines and preliminary design of treatment plants and other infrastructure, as appropriate, have been approved.
- c. Location of facilities, i.e. tanks, pumping stations, treatment plants have been located on the Water and Sewerage Map by prior amendment.
- d. Properties classified S-2/W-2 shall connect to the publicly owned system when service lines abut the property.

During the S-2/W-2 phase, final construction design drawings and documents are prepared, rights-of-way are determined and the necessary acquisitions are pursued, various construction related permits are applied for and obtained, a public works agreement, allocation of taps including multi-year tap agreements and improvement guarantees are approved. Final plats may then be recorded, where appropriate.<sup>1</sup>

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<sup>1</sup> See Sec. 1-16-106 of the County Code for additional requirements.

### **S-1/W-1 – Existing Service**

A classification assigned to properties where publicly-owned community sewer or water systems or private community systems are existing and are connected to and serving a structure(s) on the property. Properties are assigned this classification by County staff to reflect projects recently completed or structures connected to the public water or sewer system. The County Water and Sewerage Plan map will be revised to reflect this status at regular updates.

### **Multi-Use Water System**

A classification assigned during the piecemeal application process to a single parcel, or lot, or institution serving a number of individuals, with the capacity to provide in excess of 5,000 GPD utilizing a source of ground or surface water. The Multi-Use Water system includes the piping, pumps, tanks, or other facilities utilizing a source of ground or surface water.

Applications to amend the Water and Sewerage Plan to obtain approval to use a Multi-Use Water system on a specific property will be accepted and processed in the same manner as requests for water and sewer category changes. Properties approved to use Multi-Use Water systems will be identified in the Plan text in Chapter 3 and on the Water Plan Map.

### **Multi-Use Sewerage System**

A classification assigned during the piecemeal application process to a single parcel or lot or institution with a treatment discharge capacity in excess of 5,000 GPD. A Multi-Use Sewerage system involves the collection and discharge of sewage or industrial Wastes of a liquid nature and various devices for the storage, pumping and treatment of such wastes.

Applications to amend the Water and Sewerage Plan to obtain approval to use a Multi-Use Sewerage system on a specific property will be accepted and processed in the same manner as requests for water and sewer category changes. Properties approved to use Multi-Use Sewerage systems will be identified in the Plan text in Chapter 4 and on the Sewer Plan Map.

Applications for Multi-Use Sewerage Systems that propose to utilize a surface application and/or underground drain field system shall include, but not be limited to, the following:

1. Analysis of groundwater mounding impacts of the system.
2. Nitrogen balance analysis to show that nitrogen concentrations at a property line or at any watercourse on the property do not exceed 10 mg/l.
3. Identify a suitable replacement area for the discharge/drain field.
4. Determination of treatment system requirements and discharge methods.

The Wellhead Protection Area for Mount St. Mary's University is the watershed that contributes ground water to the supply wells. The area was modified to account for topography, ground water drainage divides including the down-gradient stagnation points, significant land features, estimating the underlying Frederick Limestone cavernous layer for Wells 3 and 6 by overlaying available geologic maps, and by using a conservative calculation of total ground water recharge during a drought. The WHPA is irregularly shaped and has an area of 624 acres. The entire campus and the small residential community of St. Anthony is included.

## WATER SECTION

### **E. TOWN OF MIDDLETOWN**

The Middletown Water System area includes the Town of Middletown and its municipal growth area. The municipality centers on an established commercial district along US 40A, has a full complement of elementary, middle, and high schools, and a regional park surrounded by low density residential uses. This system is separate from the adjoining Fountaindale/Braddock system, which is operated by the County though discussions have been held about connecting the two systems for emergency use only.

#### **1. Existing Facilities**

The Middletown Water System (MD0100018) presently has 23 municipal wells, one of which is only being used as a peaking well (well #17). These wells have yields ranging from 30-90 gallons per minute (gpm). The community also utilizes four springs with a total yield of 100-150 gpm. The total water supply has a production capacity of 0.533 million gallons per day (mgd). In 1999, the Town completed a Surface Water Treatment Rule Testing program with the cooperation of MDE, and received ground water certification of all the spring sets currently in use by the Town. This testing may be required in the future to maintain ground water certification of the Town Springs.

The Town completed construction of a 400,000 gallon water storage tank and distribution line improvements in 1997. The Town is currently designing a new water storage tank to replace the old reservoirs along Hollow Road. This project is scheduled for construction in the summer of 2019.

Middletown has been divided into three (3) pressure zones, utilizing four (4) Master PRV vaults, located at East Green Street, Summers Drive, the booster station, and North Pointe Terrace, to reduce pressure in the distribution system prior to entering lower elevations in Town. The water treatment plant was relocated to the reservoir under the 1997 project. The Town has installed iron and manganese removal systems at two (2) of three (3) water treatment facilities.

**Table 3.21 Town of Middletown Ground Water Sources**

<b>Water Source</b>	<b>Permitted Withdrawal (average GPD)</b>	<b>Permitted Maximum Withdrawal (GPD in month of maximum use)</b>	<b>Average System Demand (GPD)</b>	<b>Permit Number</b>
Wells 1—13, 15, 18, 19 and springs (Catoctin Metabasalt, Hollow Creek Watershed)	308,000	390,800		FR1974G025(07)
Wells 14, 16, 17 (Catoctin Metabasalt, Cone Branch Watershed)	53,500	80,000		FR1974G225(06)
Wells 20, 21, 22 (Catoctin Metabasalt, Catoctin Creek Watershed)	25,500	33,200		FR1974G125(01)
<b>Totals</b>	<b>387,000</b>	<b>504,000</b>	<b>299,000</b>	

Raw water is chlorinated and pH adjusted with caustic soda at the reservoir via the new water treatment plant and is conveyed to the Town through a 12 inch main to the booster pump station prior to entering the distribution system. In 2017, the system had an average daily demand of approximately 299,000 GPD. The average usage in Town has decreased consistently over the past five years due to the Town's Water Conservation Program, implemented in 2004. In 1982, approximately 40% of the mains in Town were upgraded with plastic pipe. The Town will complete the installation of new waterline on Main Street in 2019. This project replaces the old 1893 waterline with a new ductile iron pipe with all new service connections to the homes and businesses on Main Street. In 1993, the Town required developers of new developments to satisfy Frederick County Department of Public Works design criteria which required ductile iron pipe. Frederick County requires the ductile iron pipe since it is a more impervious material.

**2. Existing & Future Water Demands**

The Middletown Water System serves a population of approximately 4,688 (2018) with a current demand of 0.299 MGD. The projected 2030 population is 4,960 persons and an associated drinking water demand of 0.433 MGD. The Middletown Water System has 1,691 services connected to the system as of December 2018. The Town's water use by service categories is 77.6% Residential; 11.7% Public Facilities; 5.8% Commercial; 0.2% Places of Worship; and 4.6% Apartments. These uses are consistent for the past six (6) quarters of usage.

The Town of Middletown has its own Water Conservation Public Alert System and accompanying ordinances, which allow the Town to impose reasonable restrictions on the use of water from the municipal water system during periods of short supply, protracted drought, excessive demand or other scarcity of water.

### **3. Planned Improvements**

The Town of Middletown continues to investigate water sources to increase its water supply. The Town's primary focus over the past ten (10) years has been conservation.

The Town is currently designing a new 750,000 gallon storage tank at the existing location of the reservoir adjacent to Hollow Road. This will replace the original reservoirs with a new precast tank. In addition, the Town will be installing a new 16-inch ductile iron pipe to provide a secondary waterline from the reservoir to the Town's water booster pump station and water distribution system for redundancy.

### **4. Wellhead Protection**

The Town of Middletown has adopted a Wellhead Protection Ordinance. Hyder North America, Inc. conducted a delineation of the Wellhead Protection Area in 2001. Much of the 576 acre WHPA extends beyond the boundaries of the municipality.

## **F. TOWN OF MOUNT AIRY**

Mt. Airy is divided between two counties, Frederick and Carroll. The Mt. Airy water service area includes land in both counties, utilizing groundwater from the unconfined, fractured rock aquifer within the Ijamsville Formation and Marburg Schist. The Town of Mt. Airy owns and operates the community water system which provides water to Town residents only. Development currently located outside the Town limits uses individual wells. Information about the Mt. Airy Water system is obtained from the Carroll County Water & Sewerage Plan.

### **1. Existing Facilities**

The Town of Mt. Airy's Water System consists of eleven (11) wells in three separate watersheds (Linganore Creek, Bush Creek, and Patapsco River). The Town of Mt. Airy is located on Parris Ridge, which is a major hydro geologic boundary in this area.

The Town entered into a Consent Agreement with the Maryland Department of the Environment (MDE) in 2005 and 2007 due to drinking water permit approvals that exceeded allowable appropriation. In September of 2009, the Town's daily average water appropriation was increased from 865,000 GPD to 910,000 GPD by bringing well no. 11 on-line, plus a reappropriation of well no. 6. The June 2007 MDE consent order was satisfied in 2014 and the Town now has a permitted daily average withdrawal of 927,000 GPD from its groundwater sources.

Mt. Airy uses five (5) treatment stations to treat all well water. Liquid chlorine is added for disinfection, caustic soda (sodium hydroxide—NaOH) is used for pH regulation, with fluoride added for public dental health. Water from well #8 and #10, treated at station no. 4, employs nitrate removal via an ion exchange system.

The Town has three elevated storage tanks capable of holding 1,705,000 gallons in reserve. The water system is 100% metered.

### **Mount St. Mary's University**

Mount St. Mary's University is served by a private wastewater treatment plant located northeast of the junction of US 15 and College Lane, and consisting of 2 trains of MBR reactors. The plant was constructed in 2015 with a design capacity of 160,000 gpd. Effluent from the plant is de-chlorinated prior to being discharged into St. Mary's Run, which flows into Toms Creek. Sludge is either applied on land or hauled for further treatment and disposal to another facility. Most sewage flows by gravity to the WWTP but there are also 3 lift stations to aid in getting the wastewater to the WWTP. The treatment plant receives an average daily flow of 60,000 gpd during the academic year. The adjacent Mountain Manor rehabilitation facility was granted a waiver by MDE to connect to the university system in 2008 due to their failing septic system. The Mountain Manor flow is forced to the WWTP by one of the 3 lift stations previously mentioned.

The MDE considers the Mount St. Mary's University system as a Community system because it serves more than one lot. The County recognizes it as a "legacy" community system, but maps it as a Multi-Use system to reflect the private ownership and operation of the system.

## **SEWER SECTION**

### **3. TOWN OF MIDDLETOWN**

Middletown is located in the Middletown Valley. The municipality centers on an established commercial district along US 40A, a full K-12 complement of schools, and a regional park surrounded by low-density residential uses. The Middletown wastewater system is owned and operated by the Town of Middletown.

#### **Existing Facilities**

The wastewater system consists of two treatment plants. The West Wastewater Treatment Plant (WWTP) was constructed in 1976 and has a design capacity of 250,000 gpd. and discharges directly into Catoctin Creek. The system is a separate wastewater system, with no components combined with stormwater conveyance, treatment, or discharge. The East WWTP was constructed in 2000 with a design capacity of 350,000 gpd. and discharges into Hollow Creek, which is a tributary of Catoctin Creek. The East WWTP has a permit capacity of 250,000 gpd. The East WWTP consists of a biolac extended aeration/activated sludge aeration basin, grit removal, bar screen, aquadisk filter, cascade post aeration and reed bed for sludge disposal. The addition of the East WWTP has substantially reduced flow to the West WWTP.

Approximately 1/3 of the Town flows by gravity directly to the West WWTP. From Broad Street east, however, the system flows to the Cone Branch pumping station located on Cone Branch between Old Middletown and Holter Roads, which lifts the sewage to a manhole at Holter Road and conveys sewage to either the East WWTP or the West WWTP. Another pump station, Brookridge South, conveys all sewage from the Brookridge South subdivision to the West WWTP. Both pumping stations have more than enough capacity to serve existing and future development. The West WWTP utilizes an aerated lagoon in its treatment.

The Cone Branch pumping station was built in 1955 and renovated in 2000. The Route 40-A pumping station was abandoned in 2001 with the construction of the Glenbrook subdivision. All sanitary sewage flows by gravity to the East WWTP. The Brookridge South pumping station was built in 1992. In 2005, the Foxfield pumping station was built to convey sewage into the central drainage basin which flows into the Cone Branch pumping station.

The original collection system was constructed in 1955 and is comprised of clay pipe. Expansions to the system were completed in the 1980's and 1990's and 2000's, utilizing PVC pipe. Approximately 5,600 ft. of 6 in. pressure sewer and 1,000 ft. of 4-inch force main also exists. Transmission lines are rated 'fair' by the Town.

An extensive Inflow and Infiltration (I & I) Study was performed in 1991/1993 which resulted in an I&I reduction program which significantly reduced extraneous flows. An I&I investigation/reduction program for flows into the East treatment plant is ongoing and continues on a yearly basis.

### **Existing and Future Demand**

The Town's 2018 population is 4,688. The Town has 1,691 existing sanitary services. Average daily flow in 2017 to the West WWTP was 0.203 MGD and to the East WWTP, flow was 0.227 MGD. The available capacity for both plants at its full design capacity is approximately 164,000 GPD, which could accommodate approximately 656 Equivalent Dwelling Units (EDUs). The Town's projected population for 2030 is 4,960. The Town's Comprehensive Plan, adopted in 2010, has identified a Future Growth Area. The population projections for the Town and the Future Growth Area for year 2020 have an associated demand of 0.628 mgd and peak flow of 1.194 mgd. This includes developed subdivisions in the Future Growth Area, which are candidates for annexation, particularly if the existing private water and/or septic systems fail.

### **Planned Improvements**

- To improve the performance of the West WWTP, sludge was removed from the existing lagoon in 2012. The existing lagoon was constructed out of the floodplain, but is surrounded by floodplain. While work may be done within the confines of the existing lagoons, it will be necessary to perform hydrologic and hydraulic studies of the impact on the floodplain as a result of any future earthwork activity beyond the existing lagoons.
- The Town has identified additional I&I work on a five (5) year cycle in the Capital Improvements Program.
- The East WWTP was designed to be expanded to 700,000 gpd, which would also require construction of a new aeration tank, reed beds, and clarifier.

## **4. TOWN OF MT. AIRY**

The Town of Mt. Airy owns and operates the system, which serves both the Frederick and Carroll County sides of the town. Refer to the Carroll County Water & Sewerage Plan for more information.

### **Existing Facilities**

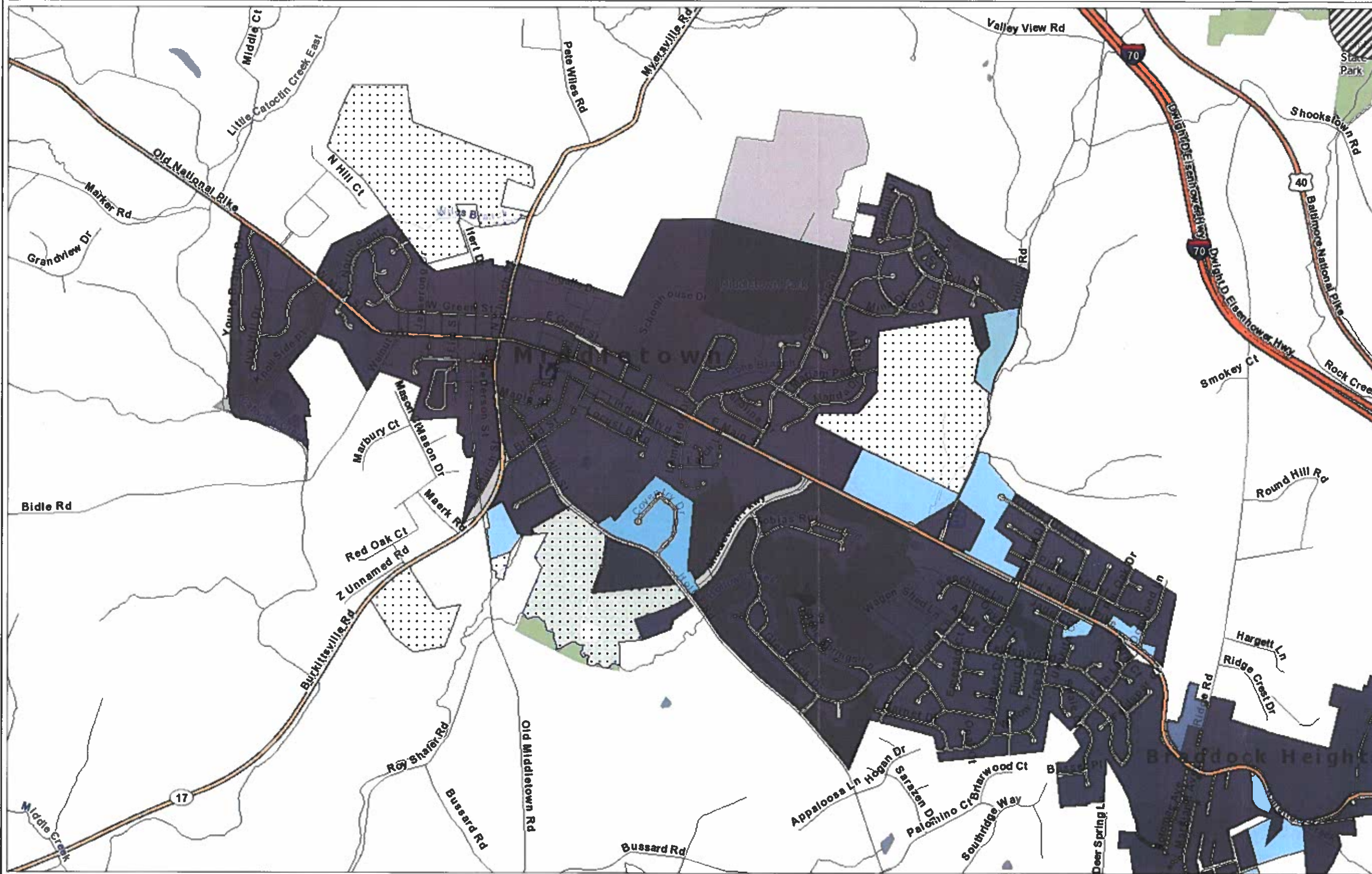
The WWTP has a design and permit capacity of 1.2 mgd and includes 11 pumping stations (4 in Frederick County), interceptor and collection lines ranging from 6 to 15 inches in diameter. The WWTP is located in Carroll county one mile east of MD 27 and south of Watersville Road and discharges into the South Branch of the Patapsco River, through Discharge Permit 00-DP-0641A and NPDES Permit MD G679535.

In 2006, the Town performed a full system Inflow and Infiltration (I&I) camera inspection of the original 1971 sewer infrastructure. The I&I in its system was estimated at 120,000 GPD in 2007. Mt. Airy is making improvements each year to reduce and correct the I&I issue and allow capacity to be used elsewhere in the sewer service area. The Town is also currently upgrading the existing treatment plant to meet Enhance Nutrient Removal (ENR) standards of 3.0 mg/l Total Nitrogen and 0.30 mg/l for total Phosphorus.

### **Existing and Future Demand**

As of 2012, sewer service was provided to 3,160 EDUs. Average treatment flow from 2015-2016 was approximately 725,000 gpd, including a significant amount of I&I. According to Carroll County, the total future wastewater demand assumes that lands within the Town's Growth Boundary builds-out according to the adopted land use plan and, if that occurs, the total future wastewater demand for the Mt. Airy WWTP would be 1,064,000 gpd.





**Frederick County Water Service Area**

- W-1
- W-3
- W-4
- W-5
- Multi-Use
- Existing Reservoir
- Planned Reservoir
- Planned Service
- No Planned Service

**Frederick City Water Service Area**

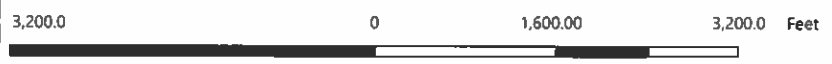
- W-1
- W-3
- W-4
- W-5
- Multi-Use
- Existing Reservoir
- Planned Reservoir
- Planned Service
- No Planned Service

**Other Landmarks:**

- Fire Stations
- Golf Courses
- Libraries
- MARC Rail Stations
- Police
- Post Office
- Schools
  - Elementary
  - High
  - Middle
  - Primary
  - Special

**Boundaries:**

- Frederick County Boundary
- Surrounding Counties
- <all other values>
- Maryland



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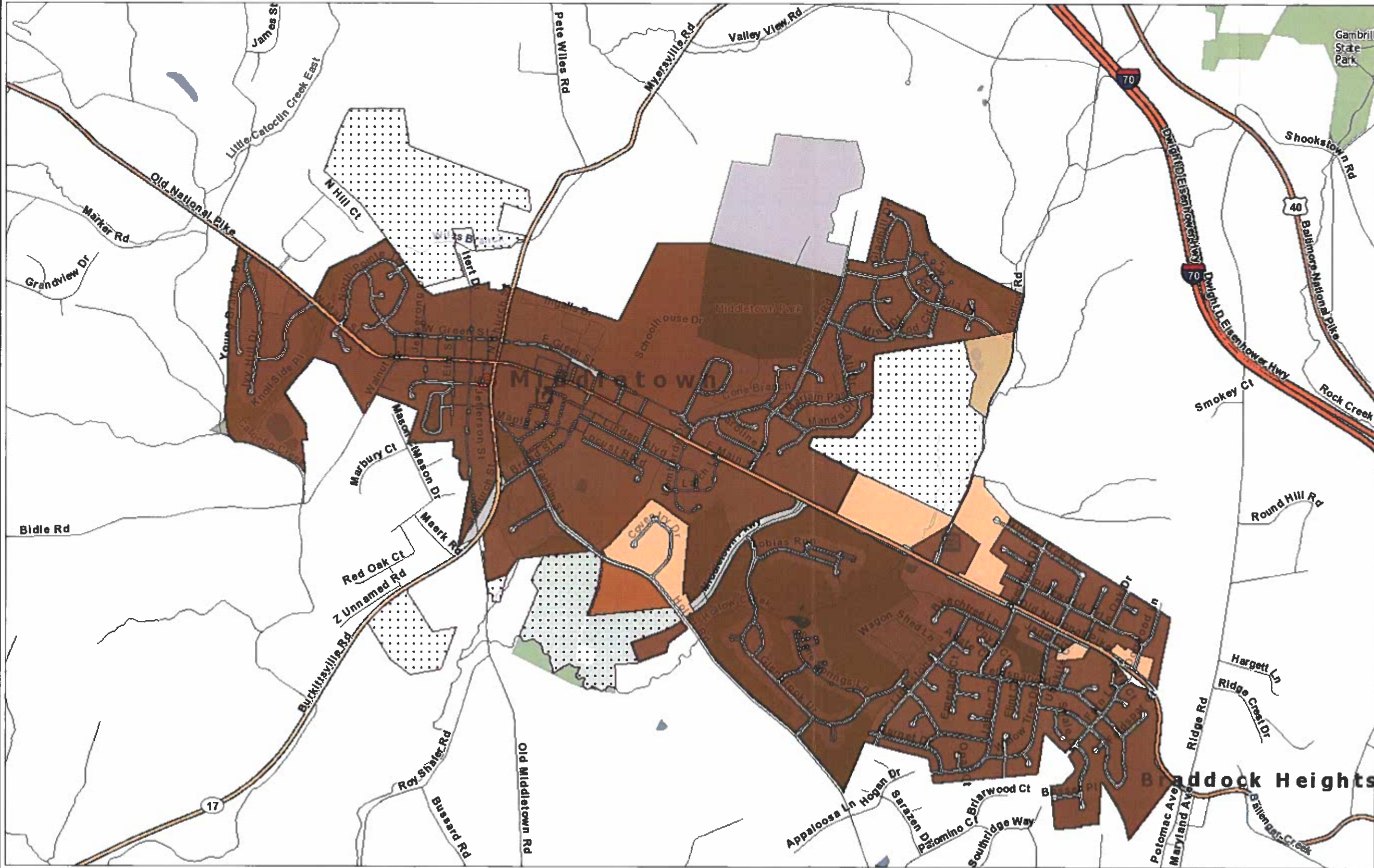
7/23/2021

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**Frederick County Sewer Service Area**

- S-1
- S-3
- S-4
- S-5
- Multi-Use
- Planned Service
- No Planned Service

**Frederick City Sewer Service Area**

- S-1
- S-3
- S-4
- S-5
- Multi-Use
- Planned Service
- No Planned Service

- Fire Stations
- Golf Courses
- Libraries
- MARC Rail Stations
- Police
- Post Office
- Schools**
  - Elementary
  - High
  - Middle
  - Primary
  - Special
- Frederick County Boundary
- Surrounding Counties**
  - <all other values>
  - Maryland



1:19,200

7/23/2021

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