BOONSBORO KEEDYSVILLE WATER ADVISORY BOARD
Wednesday August 19, 2015 6:30 PM
Keedysville Town Hall

AGENDA

Rules of procedure: Members of the Water Advisory Board, alternates and town staff or others involved with the operation of the joint water system are welcome to sit at the table during our meetings provided there is sufficient room. Discussion is open but with priority given to members of the Board. The Chair reserves the right to limit discussion to Board members at his/her discretion in accordance with the Board's Bylaws. Voting is restricted to the 5 members of the Board or alternates serving in the place of a Board member.

I. Approval of minutes from May 20, 2015 meeting

II. Rules of procedure – review of consensus from last meeting - Austin (3 min)

III. Springhouse project update – Megan (5 min)

IV. K treatment plant generator installation - Barry (5 min)

V. Review of water usage by town for FY14-15 – Austin (5 min)

VI. Boonsboro water fund CIP for FY2016 update – Megan (10 min)

VII. Water allocation and capacity discussion – Megan (30 min)

VIII. New business

IX. Public comment

NEXT SCHEDULED MEETING: November 18, 2015 6:30 PM at Boonsboro Town Hall

(Regular meetings are 3rd Wednesday of February, May, August and November)

Standard Agenda Schedule:

February

Review of current year CIP projects
Review of proposed CIP projects for coming year

May

Review of current year CIP projects
Review of proposed CIP projects for coming year

August

Update of current year CIP projects

November

True-up of prior year costs
Projected costs for current year
Review of current year CIP projects
Review of proposed CIP projects for coming year

Other items to add:

Reports from Towns on state water allocations, expected water use increases, recharge area

BOONSBORO KEEDYSVILLE WATER ADVISORY BOARD
MEETING MINUTES
Wednesday, May 20, 2015

Voting members present: Austin Abraham, Chairperson; Victoria Gudeman (K); Barry Levey (K); Terry Davis (B)

Members absent: Paul Loeber (B);

Others present: Megan Clark (B), Town Manager; Pete Shumaker (B), Utilities Superintendent; Sarah Murto Campbell (B), Recording Secretary; Eric Kitchen (B); Matt Hull (K-alternate)

The meeting convened at 6:35 PM at Boonsboro Town Hall.

I. **Approval of minutes from February 18, 2015 meeting.** On a motion by Victoria and a second by Barry, the minutes were unanimously approved with no corrections.

II. **Rules of Procedure discussion.** Austin reviewed the current rules of procedure, which are guided by the bylaws. He stated that they were created to prevent an imbalance of power, relieve tension between the parties, and facilitate collaboration. The rules of procedure currently allow the 5 voting members and 2 alternates from each Town to sit at the table, and at the Chair's request the Recording Secretary, Boonsboro's Town Manager, Utilities Superintendent and Town Engineer. Discussion is limited to the 5 voting members except as may be requested by the Chairperson or 3 members of the Board. The public and any other alternates present must sit in the audience. Time is given time at the end of the meeting for anyone to speak who has not had an opportunity to speak during the meeting. It was discussed that the public should be given a time limit to speak but that time limit should be on a case by case basis. It was said that open discussions and opinions are good for transparency but there should be a sign up sheet for public comments so order is maintained. Both towns should make sure that the meeting is posted on their websites in accordance with the Public Meetings Act of Maryland so the public is aware that they are happening. It was mentioned that Eric Kitchen should be appointed as an alternate for Boonsboro. Austin said he would redraft the rules of procedure for the next meeting.

III. **Springhouse project update.** Megan stated that the Boonsboro Municipal Utilities Commission approved Cronise Construction to do the painting which will begin on June 1st. Pete added that the concrete is nearly finished.

IV. **Boonsboro Water Fund CIP for FY2016 update.** Megan presented that last year's CIP was well within the 2015 budget. Shared costs for the new fiscal year would include turbidity meters, the Water Fund portion of utility trucks (1 for Mark and 1 for the new operator, Clint), a trailer, and a correlator. The correlator will help with leak detection and may help cut down on contractor costs in the future. The FY16 CIP also includes a new backhoe that will not be part of shared costs with Keedysville; however will be factored in to the cost of water leaks performed for Keedysville. Austin asked why there is such a large increase in expenses; this is due to salaries for the new water/sewer clerk and one-quarter of the Public Works staff. Megan also explained the new tiered rates that Boonsboro approved for water/sewer and said that having tiered rates would help with ranking for MDE funding.

V. **Keedysville Treatment Plant Generator Installation.** Barry confirmed that the generator is due for delivery next week; Antietam Electric will install it. He added that the concrete pad and electric are already completed.

VI. **Review of Role of the Water Advisory Board.** Austin explained that the 1998 agreement created the BKWAB and both towns must agree to adopt any decision that the board suggests. He also mentioned that there is a 4-part purpose to the board: the board has no authority, power, or final say so it exists just to advise the towns; it is a platform for collaboration; each town remains independent; and each town remains in control of their own systems. The Board discussed the process for the decisions to take place and briefly the history of the boards and why there is individual ownership.

VII. **Open Discussion of the Various Agreements that direct the operation and cost sharing of the Water System.** Austin volunteered to consolidate the agreements into one draft document, removing outdated items and starting to simplify the wording. Everyone agreed that it would be a good starting point to build off of when discussions resume. Austin said that he could probably do it over the next 9 months, especially over the winter, and have it ready for the February meeting. It was agreed that the agreements needed to be consolidated and simplified, the agreements need to have continuity and bearing on what's happening today and not when the agreements were originally made, reports should be tested out before making them a requirement, and allocation of resources needs to be defined. The general consensus seemed to be status quo with an easier understanding.

VIII. **New business.** It was decided that the open discussion of the agreements would resume in November or February. Also, recharge and allocation would be discussed at

the August meeting.

IX. **Public comment.** There was no comment from the public.

The next meeting date was set for Wednesday, August 19, 2015 at 6:30 PM at Keedysville Town Hall. A motion to adjourn was made by Victoria and seconded by Barry. The meeting was adjourned by the Chairperson with consensus of the Board at 9:07 pm.

Submitted by: Sarah Murto Campbell, Recording Secretary

FY 2014/2015 Quarterly Usage Report

Fiscal YR	Finished Water Pumped From Source					Monthly Usage Received Per Town				Qtrly Gallons Billed to Customers				Per Day			
														Water Pumped		Water Billed	
2014/2015	Kdysville	Well #8	Warrenfeltz	& Park Well	Total	Boonsboro	%	Keedysville	%	Boonsboro	Lost	Keedysville	Lost	B GPD	K GPD	B GPD	K GPD
Jul 14	5,785,000	2,542,000		4,666,000	12,993,000	11,074,300	0.852	1,918,700	0.148					369,143	63,957		
Aug 14	5,697,000	2,521,000		4,886,000	13,104,000	11,335,700	0.865	1,768,300	0.135					365,668	57,042		
Sep 14	5,754,000	2,175,000		5,228,000	13,157,000	11,408,200	0.867	1,748,800	0.133					368,006	58,293		
1st Qtr	17,236,000	7,238,000		14,780,000	39,254,000	33,818,200	**0.862**	5,435,800	**0.138**	22,642,082	33.0%	5,088,001	6.4%	367,589	59,085	248,814	55,912
								39,254,000		27,730,083	-11,176,118		-347,799			-118,775	-3,173
Oct 14	5,304,000	2,502,000	300,000	4,562,000	12,668,000	11,085,300	0.875	1,582,700	0.125					357,590	51,055		
Nov 14	5,502,000	2,451,000	2,560,000	3,625,000	14,138,000	12,313,500	0.871	1,824,500	0.129					410,450	60,817		
Dec 14	5,956,000	2,522,000	2,070,000	4,305,000	14,853,000	12,863,100	0.866	1,989,900	0.134					414,939	64,190		
2nd Qtr	16,762,000	7,475,000	4,930,000	12,492,000	41,659,000	36,261,900	**0.870**	5,397,100	**0.130**	20,998,252	42.1%	4,559,000	15.5%	394,151	58,664	230,750	50,099
								41,659,000		25,557,252	-15,263,648		-838,100			-163,401	-8,565
Jan 15	6,060,000	2,465,000	640,000	4,337,000	13,502,000	11,540,800	0.855	1,961,200	0.145					372,284	63,265		
Feb 15	5,512,000	2,257,000	1,960,000	3,734,000	13,463,000	11,180,900	0.830	2,282,100	0.170					399,318	81,504		
Mar 15	5,807,000	2,499,000	2,960,000	3,612,000	14,878,000	12,632,700	0.849	2,245,300	0.151					407,506	72,429		
3rd Qtr	17,379,000	7,221,000	5,560,000	11,683,000	41,843,000	35,354,400	**0.845**	6,488,600	**0.155**	22,324,799	36.9%	4,633,070	28.6%	392,827	72,096	245,327	50,913
								41,843,000		26,957,869	-13,029,601		-1,855,530			-147,499	-21,183
Apr 15	5,816,000	2,417,000	1,330,000	4,044,000	13,607,000	11,806,600	0.868	1,800,400	0.132					393,553	60,013		
May 15	5,986,000	2,542,000	2,480,000	4,191,000	15,199,000	13,039,100	0.858	2,159,900	0.142					420,616	69,674		
Jun 15	5,638,000	2,375,000	1,860,000	3,929,000	13,802,000	11,704,800	0.848	2,097,200	0.152					377,574	69,907		
4th Qtr	17,440,000	7,334,000	5,670,000	12,164,000	42,608,000	36,550,500	**0.858**	6,057,500	**0.142**	24,450,406	33.1%	4,947,040	18.3%	406,117	67,306	268,686	54,363
					0					29,397,446	-12,100,094		-1,110,460			-137,431	-12,942
Total 14/15	68,817,000	29,268,000	16,160,000	51,119,000	165,364,000	141,985,000	0.859	23,379,000	0.141	90,415,539	36.3%	19,227,111	17.8%				

TOWN OF BOONSBORO, MARYLAND
WATER FUND
FISCAL YEAR 2016 BUDGET

Proposed Water Rates July 1, 2015	IR	OR	IC	OC
Water Fixed Fee	$10	$30	$15	$30
1-18000 gallons	$5/1000 gal	$7/1000gal	$5/1000gal	$7/1000gal
18001 + gallons	$6/1000gal	$9/1000gal	$6/1000gal	$9/1000gal

	FY14	FY15	FY16
Revenues			
Water Charges-Boonsboro	365,000	465,810	545,040
Keedysville Admin. Charges	45,196	45,196	54,546
Debt Service-Alt 40 Waterline	0	18,475	20,000
Connection Fees	0	0	20,000
User Fees	65,000	130,000	130,000
Interest Income	400	400	400
Other Income	100	100	100
Hydrants - Boonsboro	11,200	11,200	11,200
Total Revenues	486,896	671,181	**$781,286**
Expenses			
Operations & Maintenance			
Salaries	107,000	131,000	180,000
Salaries-Overtime	5,000	5,000	5,000
Salaries-SP Overtime	0	4,000	5,000
Insurance - Property	4,000	4,000	4,000
Payroll Taxes	8,000	8,000	9,500
Audit Fees	6,000	6,500	5,000
Legal Fees	500	500	500
Advertising	0	500	500
Testing	1,000	1,000	1,000
Major Repair Expense	20,000	180,000	100,000
Maintenance & Repair	25,000	25,000	35,000
Uniforms	1,000	1,000	1,500
Cell Phones	1,000	1,000	2,000
Electricity	50,000	50,000	50,000
Heating	1,500	1,500	1,500
Health Insurance Expense	34,000	34,000	36,000
Workers' Comp Ins Expense	10,000	10,000	11,000
Vehicle Expense	3,000	3,000	4,000

	FY14	FY15	FY16
Vehicle Gas	5,000	5,000	6,000
Meeting Expense	1,200	1,200	1,200
Training/Certification	1,000	1,000	2,000
Miscellaneous	100	100	100
Equipment Expense	2,500	2,500	10,000
Pension Expense	8,000	8,000	9,000
Chemicals	10,000	12,000	12,000
Maintenance Supplies	2,500	5,000	5,000
Office Supplies	3,500	3,500	3,500
Postage	1,500	1,500	2,500
Telephone	3,500	3,500	3,500
Contingency Fund	28,965	10,756	55,436
Connections - Water Meters	0	0	20,000
Loan Interest	28,965	32,000	20,000
Loan Interest Alt40 Waterline	0	2,610	4,000
MDE Alt40 Waterline Loan	0	19,300	19,300
Debt Service	0	0	51,000
Capital Outlay	43,800	91,500	105,250
~~MDE Filtration Debt Serv. Loan~~	5,715	5,715	0
Total Expenses	427,215	671,181	**$781,286**

DEBT SERVICE/LOAN INTEREST SUMMARY		
	PRINCIPAL	INTEREST
SHA Main Street	11500	14206
Maple Avenue Waterline	16000	4300
CDA Infrastructure	22531	609
TOTAL DEBT SERVICE/LOAN INTEREST	50031	19115

Capital Outlay Projects	
Keedysville Turbidity Meters (4)	$15,000
Rebuild High Service Pump at Boonsboro W	$15,000
Utility Trucks (2)	$40,000
Enclosed Trailer for Waterleak Equipment	$2,500
Correlator	$9,000
Storage Building	$6,250
Backhoe	$17,500
TOTAL PROPOSED FOR FY16	**$105,250**
Estimate $130,000 based on 20 tap fees @$6500ea	

will be adequate to serve the Town's 2030 population, as well as residents of the surrounding area.

Public Safety

For a small community such as Boonsboro, the International Association of Chiefs of Police (IACP) recommends 2.2 police officers per 1,000 new residents. The Town currently has a full-time staff of four officers for a population over 3,000. The Town's police department, supplemented by the Washington County Sheriff's Office and Maryland State Police provide 24-hour police coverage. Using IACP standards, the Town will need a full-time police force of approximately 12 officers to serve the projected population of 5,339 residents.

The National Fire Protection Association (NFPA) recommends that a jurisdiction the size of Boonsboro have 10 personnel available to respond to a fire within 10 minutes.[7] Calls for service increased approximately 36 percent between 2005 and 2007.[8] To serve the Town's projected population by 2030, the VFD would need the equivalent of as many as 15 personnel, with a 9-minute response time. Boonsboro's Volunteer Fire Department has two paid positions, and relies on volunteers for the remainder of its fire response. Like all volunteer fire departments, Boonsboro VFD constantly works to attract and retain volunteers.

Water and Sewer Facilities

Public water and sewer service is available to all properties in the Town. A detailed discussion of existing water and sewer facilities, available sources of drinking water, and discharge limits from the Boonsboro Wastewater Treatment Plant is included in Chapter 4 the Water Resources Element.

With existing withdrawal permits, the Town can provide drinking water for approximately 920 new EDU, in addition to existing customers.[9] This is adequate to support projected residential growth of approximately 845 housing units. However, it may not be adequate to support accompanying non-residential development, or projected development in Keedysville, which shares the same water system as Boonsboro (see Chapter 4). An expanded groundwater appropriation permit will likely be necessary to accommodate projected development in the two towns.

In 2009, the Boonsboro Wastewater Treatment Plant (WWTP) was upgraded to Enhanced Nutrient Removal (ENR) technology. As a "minor" facility (as defined by MDE—see the Water Resources Element), the Boonsboro WWTP's nutrient discharges will be limited after upgrade. With these limitations, and without subsequent capacity expansions, the Boonsboro WWTP will be able to serve approximately 960 new EDUs, in addition to existing customers. This figure is not adequate to support projected

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[7] Source: NFPA. 2004. NFPA 1720. Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments. Quincy, MA. Table 4.3.2.

[8] Source: Oley Griffith, Chief, Boonsboro VFD, 2007.

[9] This figure takes into account water for new development in the Town of Keedysville.

development (845 new housing units, plus additional future non-residential development) through 2030. The Water Resources Element contains a detailed description of the Town's options for accommodating projected demand.

To further ensure adequate drinking water capacity, the Town is investigating various opportunities to increase the capacity of its water system. Recommendations of this Comprehensive Plan include (but are not limited to) reduction of system water loss (to serve new development without increasing actual withdrawals), acquisition of additional recharge areas, and water conservation requirements for new development. These initiatives are discussed in detail in Chapter 4, the Water Resources Element.

Stormwater Management Systems

Most new development through 2030 will occur on land annexed in 2006, particularly south and west of the Town's existing core. The land cover in these areas is predominantly agriculture and forest, meaning that residential development could adversely alter the flow characteristics of nearby streams—all of which are tributaries to Little Antietam creek.

To address stormwater issues, the Comprehensive Plan recommends that development ordinances be updated to incorporate the provisions of the Maryland Stormwater Act of 2007, notably the requirement that new development use Environmentally Sensitive Design (ESD) practices. In addition, the Future Land Use Plan in Chapter 3, and the Sensitive Areas Element (Chapter 9) direct future development away from streams, wetlands, and their buffers.

Additional detail on stormwater management can be found in Chapter 4, the Water Resources Element.

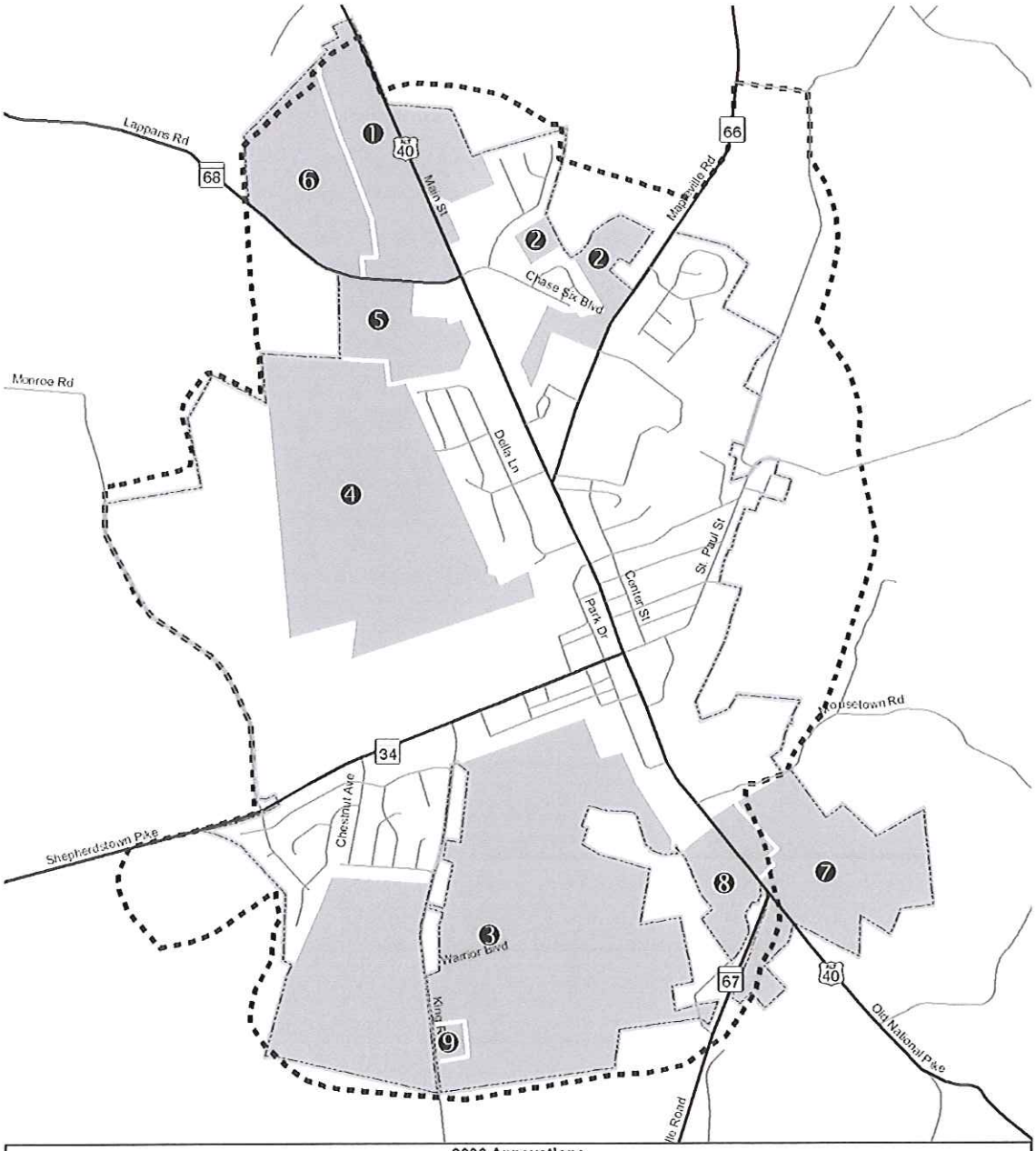
Recreation

Shafer Park is the Town's primary recreation facility. The 53-acre park contains ball fields, picnic facilities, and a community center. In addition, Greenbriar, Gathland, and Washington Monument State Parks, Devil's Backbone and Little Antietam Watershed County Parks, Mt. Briar Wetland Preserve, and the Appalachian Trail are in close proximity to the Town.

The State of Maryland recommends that jurisdictions provide 30 acres of park and open space land per 1,000 residents, of which 15 acres per 1,000 residents should be active recreation uses (parks, recreation facilities, etc). Between Shafer Park and the public school property,[10] there are approximately 106 acres of recreation land in Boonsboro.

[10] State guidelines allow jurisdictions to include 60 percent of Board of Education property in local calculations of recreational acreage.

Map 2.1: 2006 Annexations



2006 Annexations							
Annexation	*Acreage*	*Annexation*	*Acreage*	*Annexation*	*Acreage*
1	US 40 Alt Water Line Extension	94	4	TT&K, LLC	214	7	Easterday (Stiles Farm)	96
2	Fletcher's Grove (Dean, Ringley Properties)	36	5	Flook Parcel	42	8	South Main Street	32
3	King Road Associates	392	6	Lakin Tract	70	9	Shepherd Tract	6
							Total Annexed Acres	*982*

2006 Annexations

- Corporate Boundaries
- 2006 Annexations
- Town Growth Area (from 1997 Comprehensive Plan)

0 0.25 0.5 Miles

Chapter 4: Water Resources Element

The purpose of the Water Resources Element, as defined in Maryland House Bill 1141, is to establish a clear relationship between existing and proposed future development, the drinking water sources and waste water facilities that will be necessary to serve that development, and measures to limit or control the stormwater and non-point source water pollution that will be generated by new development. This chapter identifies drinking water sources and wastewater treatment facilities needed to support existing and future development described in the Municipal Growth Element (Chapter 2), as well as the non-point source impacts of that development.

Goals and Objectives

1. Maintain a safe and adequate water supply and adequate amounts of wastewater treatment capacity to serve existing development and projected growth.

2. Protect and restore water quality in nearby streams.

Interjurisdictional Cooperation

At the time of publication of the 2009 Boonsboro Comprehensive Plan, Washington County, MD was evaluating options to complete the countywide Water Resources Element requirements. The Town anticipates working closely with the County to achieve their common Water Resources goals.

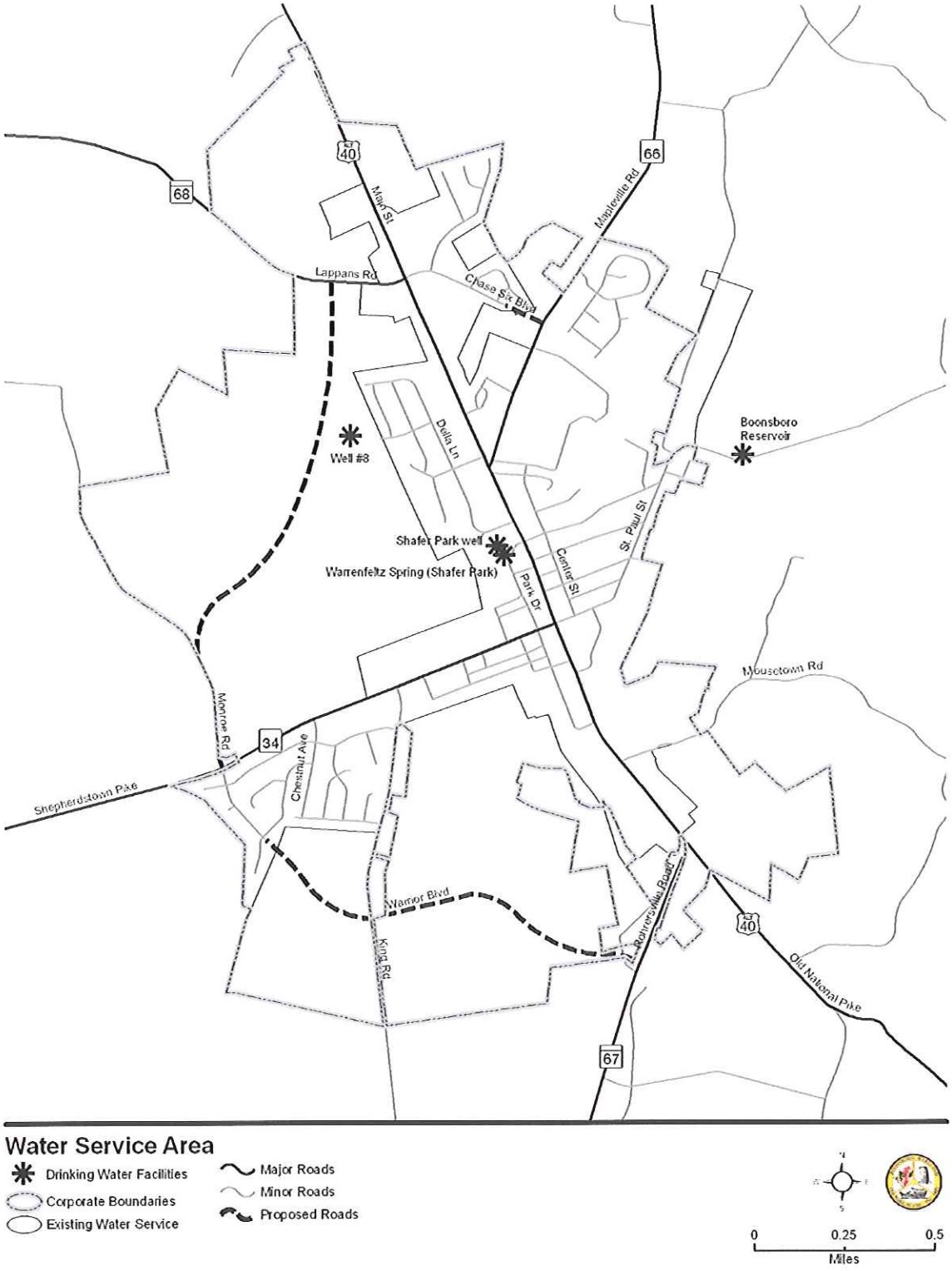
Drinking Water Analysis

All residences, businesses, and institutional uses in the Town of Boonsboro (as well as the Town of Keedysville and some unincorporated areas along Mountain Laurel Road) receive drinking water from the Boonsboro/Keedysville Regional Water System, which is managed by the Boonsboro Municipal Utilities Commission. This system's service area is shown on Map 4.1. Water for the regional water system is drawn from the following sources, all in the Tomstown aquifer:

- The Warrenfeltz spring, located in Shafer Park
- An additional well in Shafer Park
- Well #8 in the Graystone Hills subdivision
- Keedysville spring, located in the Town of Keedysville.

Water from these sources is treated via chlorination and/or filtration before being distributed to the Towns. The Boonsboro and Keedysville water distribution systems are linked via a 12-inch water line along MD 34. Excess system water is pumped to Boonsboro's 1.3 million gallon in-ground concrete reservoir on Boonsboro Mountain Road to provide for emergency, fire, and system equalization storage.

Map 4.1: Boonsboro Water Service Area and Supplies



Reservoir levels are maintained to meet system pressure and fire protection requirements for both Boonsboro and Keedysville, and systems are in place to prevent overflow.

The regional water system is an innovative approach to providing safe and reliable drinking water supplies to the two towns. The system was constructed with federal funds, with the Maryland Department of the Environment (MDE) serving as a broker between the two towns. The Town of Boonsboro, which had previously been responsible for providing Keedysville's water, received the US Environmental Protection Agency's 2006 Award for Sustainable Public Health Protection for its efforts to develop the regional system.

Water System Capacity

The maximum permitted capacity of the regional water system is approximately 683,000 gallons per day (gpd). In 2006, Boonsboro withdrew an average of approximately 235,000 gpd from its three sources, while Keedysville withdrew an average of approximately 218,000 gpd from its spring—a total system demand of 453,000 gpd.[15] Table 4.1 summarizes public water supply and demand in Boonsboro. This analysis shows that the Boonsboro/Keedysville Regional Water System falls just short of adequate permitted capacity to support projected growth through 2030. The projected deficit of approximately 65,400 gpd could lead to development restrictions if not addressed.

Table 4.1: Current and Projected Public Water Supply and Demand

	gpd	EDU[1]
System permitted capacity	683,000	2,732
Current Demand[2]	453,000	1,812
Available Capacity, 2009	230,000	920
Total Projected demand from Keedysville, 2030[3]	31,500	126
Projected residential demand for Boonsboro, 2030[4]	211,250	845
Projected non-residential demand for Boonsboro, 2030[5]	52,650	211
Total projected demand for Boonsboro, 20306	263,900	1,055
Total projected demand for Boonsboro and Keedysville, 2030	295,400	1,182
Available system capacity (deficit), 2030	(65,400)	(262)

1: One Equivalent Dwelling Unit (EDU) is 250 gpd, the estimated amount used by one household. EDU allow comparisons of residential and non-residential water and wastewater use.

2: Based on 2006 water audit. Includes demand from Keedysville and Boonsboro, as well as properties outside of Town boundaries that receive public water service.

3: Estimated based on page 1-3 of "Town of Boonsboro Water Audit" (see footnote on this page).

4: Source: Based on Comprehensive Plan population projections, see Page 2-1

5: The Town estimates that future non-residential demand would be approximately 15 percent of future residential development, based on demand prior to the 2006 annexations.

6: Totals reflect rounding error.

Additional Drinking Water Resources

In order to serve projected development, the Town will need to find additional water sources. This section summarizes the most likely potential sources of additional drinking water.

[15] CDM. 2006. Town of Boonsboro Water Audit, Water Conservation, and Best Management Practices.

Surface Water

Surface water is not currently a source of drinking water for Boonsboro and Keedysville, in large part due to the lack of significant bodies of water in the region. Little Antietam Creek flows through Keedysville, while Antietam Creek is just west of Keedysville. Neither is likely to be a major source of drinking water, and any surface water would require considerable treatment before it is safe for public consumption. However, the Municipal Utilities Commission should investigate the option of using surface water withdrawals to supplement the system's overall capacity.

Groundwater

All of Boonsboro's current drinking water comes from groundwater wells and springs. In 2007, the Town commissioned a study of groundwater resources (a summary is included in the Comprehensive Plan Appendix) to determine the maximum sustainable yield of the water-bearing formations underlying the Boonsboro/Keedysville water service area. The analysis concluded that groundwater resources could sustainably support approximately 1,255 additional EDU of development in Boonsboro and Keedysville. This is enough to serve projected demand in the service area, but the Town would need a new or expanded MDE groundwater appropriation permit to withdraw this amount of water.

To serve development beyond 2030, or if actual development outpaces projected development), Boonsboro and Keedysville would need to find significant additional water resources, most likely from groundwater. However, the Town cannot simply drill additional wells. The sustainable groundwater supply described above is based on the amount of recharge provided by the land area covered by the Boonsboro/Keedysville water service area. [16]

To expand groundwater withdrawals, Boonsboro and Keedysville would therefore need to expand their groundwater recharge areas. The Town is currently working with the Maryland Department of Natural Resources (DNR) to investigate the possibility of claiming some of the land in Greenbriar State Park as recharge area for the Town. The Town could also consider purchasing and preserving (but not necessarily annexing) nearby property—preferably with forest cover—as a municipal water recharge area.

Other Drinking Water Considerations

System Water Loss

Of the 453,000 gpd of water produced by the Boonsboro/Keedysville system, approximately 35 percent never reaches a metered faucet, hydrant, or other discharge point. This "system water loss" is a significant problem for Boonsboro, since it represents water that should be available for existing and future public consumption. MDE considers system water loss rates higher than 10 percent to be significant, and requires additional planning and monitoring to reduce water loss below 10 percent. The Town's 2006 Water Audit identified (and led to the repair of) a few small to moderate system leaks, but did not ultimately find the source of large-scale water loss.

[16] In fact, wells drilled in the Fletcher's Grove and Crestview subdivisions have not been put into production, due to the lack of sufficient recharge area.

Some of this water loss may come from unmetered water use, such as water used for fire fighting, as well as other permitted and illegal uses. The Town is also investigating the possibility that the high system water loss rates are due to inaccurate accounting (that is, a math error, rather than a leak or other engineering problem).

Regardless of the source, reducing system water loss to 10 percent or less, either through repairs or through improved water accounting, should be the Town's top priority with regard to water capacity. This water could be used to serve future development while reducing the need to find additional water sources or recharge area. The Town should also meter (but not necessarily charge for) all water use, including fire fighting flows.

Source Water Protection

Source water protection policies identify and protect the area surrounding existing drinking water sources through buffer and setback requirements, land use restrictions, and other measures. The Town currently sends water samples to EPA to monitor potential contaminant levels. However, Boonsboro has no existing source water protection policies. Developing such policies would help to ensure the safety and reliability of water supplies for the Boonsboro/Keedysville region. Chapter 9, the Sensitive Areas and Mineral Resources Element, describes potential source water protection policies.

The Town sits atop the Tomstown Formation, one of the most productive aquifers in the County.[17] While the exact nature of the specific rock structure around Boonsboro is not known, the Maryland Geological Survey states in Bulletin 24 that the local Tomstown Dolomite "is probably highly fractured and probably contains many underground solution channels" in the territory near its contact with the Antietam Formation east of Town.[18] The cracks and underground channels in the Tomstown Formation make its groundwater extremely vulnerable to pollution from septic systems, agricultural wastes, fertilizers, and treated effluent from spray irrigation. Septic systems and even treated effluent are a threat because the cracks in the limestone allow effluent to percolate rapidly, reaching the underground water before it has been cleansed by the action of the bacteria in the soil.

Water Conservation

The Town's Water Conservation Ordinance requires that all new development and major renovations use low-flow water fixtures and toilets. Additional water conservation measures—particularly retrofits of existing homes—could significantly increase the Town's ability to serve future development. The groundwater study described above found that if each existing and future customer in the Boonsboro/Keedysville could reduce water use by 20 percent (from 250 gpd per EDU to approximately 200 gpd per EDU), the Town's existing groundwater resources could support nearly 2,100 additional EDUs—more than enough to support development through 2030 and beyond.

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[17] For additional information about the geology and soils in the Boonsboro area, please see the Water Resources section of the Comprehensive Plan Appendix.

[18] Source: Maryland Geologic Society

GPD LIMITS

		Water	Sewer
Permitted Limits		602000	530000
Remaining EDU's (250 gpd)		908	488
Remaining EDU's (200 gpd)		1136	610
		Water produced	Treated Discharge
Averaged Usage		374,896	408,000
2015			
2014		381,096	455,000
2013		365,753	364,000
2012		382,466	392,000
2011		370,268	421,000

Well numer 8 and Shaffer Park Well	332000	GPD
Warrenfeltz Spring	130000	GPD
keedysville - To Boonsboro	140000	GPD (63% Boonsboro, 37% (80K gpd keedysville)
TOTAL	**602000**	

	Water(MGY)		GPD	Water Billed GPY	Water Billed GPD	Loss	water/ billed edu	water/ edu	sewer/ edu
Averaged Usage	137	136,837,000	374,896	90,560,235	248,110	34%	144	217	237
2014	139.1	139,100,000	381,096	89,974,643	246,506	35%	143	221	264
2013	133.5	133,500,000	365,753	88,163,916	241,545	34%	140	212	211
2012	139.6	139,600,000	382,466	95,862,180	262,636	31%	152	222	227
2011	135.1	135,148,000	370,268	88,240,200	241,754	35%	140	215	244

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