

EXHIBIT E



DEC 01 2017

November 21, 2017

Ms. Donna Gawrylik, Chair-Person
Municipal Authority of the Borough of Shenandoah
P.O. Box 110
Shenandoah, PA 17976-0110

Re: DEP File No. WA 54-44C
Municipal Authority of the Borough of Shenandoah
Shenandoah Borough, Schuylkill County
APS No. 605495

Dear Ms. Gawrylik:

The water allocation application filed by the Municipal Authority of the Borough of Shenandoah has been approved. Water Allocation Permit WA 54-44C grants the Municipal Authority of the Borough of Shenandoah the right to withdraw from Ringtown No. 6 (Whiskey Mill Run) 1.5 MGD Average Annual, Ringtown No. 5 (Dreshers Run) 2.0 MGD Average Annual, and Raven Run No. 2 2.05 MGD Average Annual, for a total withdrawal not to exceed 2.05 MGD Average Annual as measured below Raven Run No. 2 at the influent raw water meter to the Shenandoah Water Treatment Plant. Conservation releases of 460,000 gpd for Ringtown No. 6, 210,000 gpd for Ringtown No. 5, and 250,000 gpd for Raven Run No. 2 are required. The permit is enclosed.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in Braille or on audiotape from the Secretary to the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717-787-3483) FOR MORE INFORMATION.

If you have any questions regarding the permit conditions, you may contact Deborah S. Wilkes, Technical Services Section, at the letterhead address or 570.830.3102.

Sincerely,

A handwritten signature in black ink, appearing to read "B. T. Yagiello". The signature is fluid and cursive, with the first name "Brian" and last name "Yagiello" clearly legible.

Brian T. Yagiello
Environmental Program Manager
Safe Drinking Water Program

Enclosures

cc: Mr. Chris McCoach/Alfred Benesch & Company

November 21, 2017

Municipal Authority of the Borough of Shenandoah
Shenandoah Borough, Schuylkill County

Permit No. WA54-44C

WATER ALLOCATION PERMIT

The Pennsylvania Department of Environmental Protection (the Department), renamed by the Act of June 28, 1995, No. 18, P.L. 89, 71 P.S. §1340.101 *et. seq.*, known as the Conservation and Natural Resources Act, and continuing to exercise the powers and duties established by the Act of December 3, 1970, No. 275, P.L. 834, 71 P.S. §510-1 *et. seq.*, as amended, known as The Administrative Code, as successor to the Water and Power Resources Board, under and by virtue of the authority vested in and imposed upon it by the Act of June 24, 1939, No. 365, P.L. 842, 32 P.S. §631 *et seq.*, known as the Water Rights Act, hereby grants leave to the **Municipal Authority of the Borough of Shenandoah**, with its principal offices located in **P.O. Box 110, Shenandoah, PA 17976-0110, Schuylkill County, Pennsylvania**, to acquire and use for public water supply purposes, subject to such existing rights and uses as may now be lawful, water rights in the following designated waters of the Commonwealth:

The right to withdraw from Ringtown No. 6 (Whiskey Mill Run) 1.5 MGD Average Annual, Ringtown No. 5 (Dreshers Run) 2.0 MGD Average Annual, and Raven Run No. 2 2.05 MGD Average Annual, for a total withdrawal not to exceed 2.05 MGD Average Annual as measured below Raven Run No. 2 at the influent raw water meter to the Shenandoah Water Treatment Plant. Conservation releases of 460,000 gpd for Ringtown No. 6, 210,000 gpd for Ringtown No. 5, and 250,000 gpd for Raven Run No. 2 are required.

This permit does not give any property rights, either in real estate or material, nor any exclusive privileges, nor shall it be construed to grant or confer any right, title, easement or interest in, to or over any land belonging to the Commonwealth of Pennsylvania; neither does it authorize any injury to private property nor invasion of private rights, nor any infringement of Federal, State or Local laws or regulations; nor does it obviate the necessity of obtaining Federal assent when necessary.

This permit is issued in response to an application filed with the Department on the 29th day of January, 2007, and with the understanding that the proposed sources of water supply shall be developed as set forth in said application and in accompanying and supplemental data filed with and made a part thereof, subject, however to the provisions of the Water Rights Act, and the following conditions, regulations and restrictions.

Condition 1:

Duration of Permit: The duration of this permit shall be for a period of 25 years and shall expire on November 21, 2042. However, should the permittee for any reason whatsoever (1) fail to construct within a period of four years the works necessary for

the development of the supply of water allocated under this permit, or (2) fail to take and use within a period of four years the water or water rights for which this permit is issued, or (3) cease for any period of seven consecutive years to take and use the water hereby allocated, then this permit shall cease and be null and void; unless upon application by the permittee an extension of such period is granted by the Department of Environmental Protection's Northeast Regional Office;

Condition 2:

Measuring Device and Reporting Requirement: The permittee shall install accurate measuring and recording instruments or devices on the raw water transmission main between Ringtown No. 6 and Ringtown No. 5 reservoirs to determine the amount of water transferred. The design and layout of said measuring devices shall be submitted to and be approved by the Department of Environmental Protection's Northeast Regional Office before installation. Records of daily flow readings shall be submitted on a monthly basis to the Department's Permits Division in the Bureau of Safe Drinking Water (preferably electronically), and the original field records shall be available at all times for inspection by representatives of the Department. The required measuring devices shall be installed and readings shall begin within 1 year from the date of this permit, for all existing sources. This deadline may be extended at the Department's discretion if the permittee makes a written request to the Department of Environmental Protection's Northeast Regional Office;

Condition 3:

Conservation Release, Measuring Device and Reporting Requirement: A continuous flow of not less than 0.39 cubic feet per second per square mile from the 1.81 square miles of watershed area above the Ringtown No. 6 reservoir shall be maintained at all times immediately below Ringtown No. 6. This flow is equivalent to 460,000 gallons per day or 0.71 cubic feet per second. A continuous flow of not less than 0.38 cubic feet per second per square mile from the 0.83 square miles of watershed area above the Ringtown No. 5 reservoir shall be maintained at all times immediately below Ringtown No. 5. This flow is equivalent to 210,000 gallons per day or 0.32 cubic feet per second. A continuous flow of not less than 0.41 cubic feet per second per square mile from the 0.93 square miles of watershed area above the Raven Run No. 2 reservoir shall be maintained at all times immediately below Raven Run No. 2. This flow is equivalent to 250,000 gallons per day or 0.38 cubic feet per second. The permittee shall install accurate measuring and recording instruments or devices to determine the amount of flow in the stream channel. The design and layout of said measuring devices shall be submitted to and be approved by the Department of Environmental Protection's Northeast Regional Office before installation. Records of daily flow readings shall be submitted on a monthly basis to the Department's Permits Division in the Bureau of Safe Drinking Water (preferably electronically), and the original field records shall be available at all times for inspection by representatives of

the Department. The required measuring devices shall be installed and readings shall begin within 1 year from the date of this permit. This deadline may be extended at the Department's discretion if the permittee makes a written request to the Department of Environmental Protection's Northeast Regional Office. The passby flow/conservation release specified herein may be temporarily modified by the Department's Commonwealth Drought Coordinator or the Department's Division of Planning and Conservation under the Special Deputy Secretary for Water Resources Planning in writing during an emergency, upon written request from the permittee and satisfactory demonstration that the permittee has taken all reasonable conservation measures to avert and mitigate the emergency condition;

Condition 4:

Operations and Drought Contingency Plan: The permittee shall develop a contingency plan outlining the measures that will be taken to conserve the available supply and reduce water use during an emergency (e.g., drought, industrial waste spill, etc.). The plan shall include staged voluntary and mandatory water use restrictions and a description of parameters to trigger these actions at various stages, and the identification of available emergency sources or interconnections and when these sources would be utilized. The plan shall also indicate how water use restrictions will be enforced. The contingency plan shall be adopted by the permittee and submitted to the Department of Environmental Protection's Department's Division of Planning and Conservation under the Special Deputy Secretary for Water Resources Planning within one year of the date of this permit and updated and submitted to the Department every three years thereafter or within six months of the addition or abandonment of any source of supply;

Condition 5:

Drought Contingency Plan: The permittee shall respond to drought conditions as outlined within the Municipal Authority of the Borough of Shenandoah Drought Contingency Plan. The permittee shall impose water use restrictions upon customers in accordance with and at such time as actions which are required of customers served by the Municipal Authority of the Borough of Shenandoah;

Condition 6:

Water Conservation: The permittee shall adopt and implement a continuous water conservation program for all types of use within the area served by this permit. This program shall include, but is not limited to:

- The installation of water meters on all unmetered customer connections;
- An ongoing program for installing meters at all new customer connections;

- An ongoing program for regularly testing and repairing or replacing all meters;
- An ongoing leakage/loss control program;
- A water conservation education program;
- A program for reducing customer demand for water by requiring the installation of water-saving plumbing devices in all new accounts or promoting the adoption of water conservation ordinances;

The permittee's water conservation program shall comply with the water conservation policies of the Susquehanna River Basin Commission and the recommendations of the Department's Northeast Regional Office contained in the report on this allocation.

Condition 7:

Permit Compliance Reporting: The permittee shall submit a permit compliance report to the Department of Environmental Protection's Permits Division in the Bureau of Safe Drinking Water, on forms provided by the Department, annually, on or before the anniversary date of this permit, unless otherwise specified;

Condition 8:

Chapter 110 Requirements: The permittee shall register each source/interconnection approved under this permit and submit reports in accordance with 25 Pa. Code Chapter 110 Regulations. Registration and reporting shall be to the Department's Division of Planning and Conservation under the Special Deputy Secretary for Water Resources Planning;

Condition 9:

Prohibition on Supplying Water to Other Public Water Suppliers: The permittee shall not supply any new or additional quantity of water to any public water supply agency until that agency shall have first obtained from the Department of Environmental Protection's Northeast Regional Office a subsidiary water allocation permit for the specific purchase quantity;

Condition 10:

Reduction of Water Losses: Within one year of the date of this permit, the permittee shall initiate a study to develop a plan to reduce its unaccounted-for water loss and shall reduce such loss to a level of 20 percent or less within five years of the date of this permit. Such study shall be completed and the final results and recommendations

reported to the Department of Environmental Protection's Northeast Regional Office, with a copy to the Permits Division in the Bureau of Safe Drinking Water within two years of the date of this permit. The deadlines set forth in this condition may be extended with written approval by the Northeast Regional Office, upon good cause shown, providing that the permittee demonstrates satisfactory and good faith progress toward compliance with this condition;

Condition 11:

Revocation of Permit: Water Allocation Permit WA54-44A, issued to the Municipal Authority of the Borough of Shenandoah on **November 14, 1950** and granting 3,500,000 gallons per day from Little Catawissa Creek, Whiskey Mill Run, Dresher's Run, Raven Run No. 2, Kehly Run and W.P.A. reservoir is hereby revoked and shall be returned to the Department of Environmental Protection's Northeast Regional Office;

Condition 12:

Revocation of Permit: Water Allocation Permit WA54-44B, issued to the Municipal Authority of the Borough of Shenandoah on **November 10, 1964** and granting the right to withdraw 600,000 gallons per day from Fetter Pond is hereby revoked and shall be returned to the Department of Environmental Protection's Northeast Regional Office;

Condition 13:

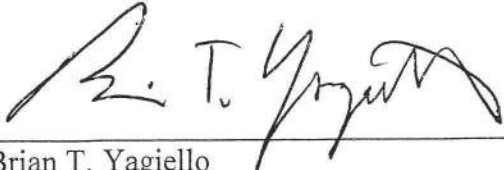
Renewal Requirement: Within 18 months, but no less than one year, prior to the expiration date specified in Condition No. 1, the permittee shall submit to the Department of Environmental Protection's Northeast Regional Office a complete and acceptable application for a new permit, if permittee desires to continue to acquire the water rights granted by this permit beyond the expiration date. Upon the Department's acceptance of such application for review, the expiration date of this permit shall be extended during the review period until issuance or denial of said new permit;

Condition 14:

Permit Modification: This permit is subject to review and possible modification of said rights, conditions, or restrictions at a later date or dates, as provided in Section 7 of the Act of June 24, 1939, P.L. 842 (No. 365).

DATE: November 21, 2017

DEPARTMENT OF ENVIRONMENTAL PROTECTION



Brian T. Yagiello
Environmental Program Manager
Safe Drinking Water Program

ATTEST:



Brian F. Busher, P.E.
Environmental Engineer Manager
Safe Drinking Water Program

WA 54-44C



REPORT ON THE APPLICATION

FOR A WATER ALLOCATION BY

Municipal Authority of the Borough of Shenandoah

SCHUYKILL COUNTY

November 21, 2017

SAFE DRINKING WATER PROGRAM

NORTHEAST REGIONAL OFFICE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

REPORT ON THE APPLICATION
FOR A WATER ALLOCATION BY
MUNICIPAL AUTHORITY OF THE
BOROUGH OF SHENANDOAH

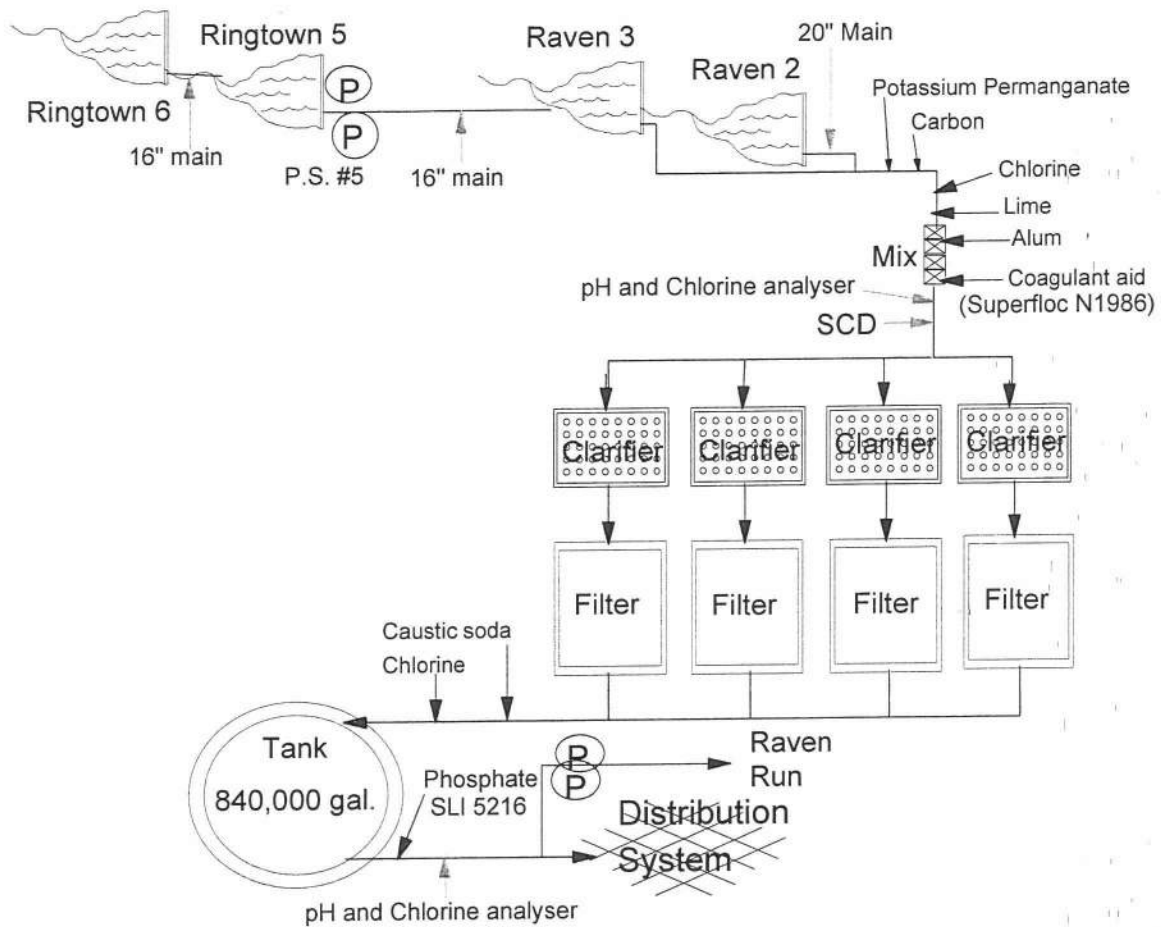
I. INTRODUCTION

On January 29, 2007, the Department of Environmental Protection (Department) received a water allocation application from the Municipal Authority of the Borough of Shenandoah (MABS), with its principal offices located in Shenandoah Borough, Schuylkill County, Pennsylvania. MABS is requesting a renewal of the current withdrawal allocation from Ringtown No. 6 (Whiskey Mill Run) 1.5 MGD Peak Day, Ringtown No. 5 (Dreshers Run) 0.5 MGD Peak Day, and Raven Run No. 2 (up to 0.05 MGD Peak Day). Raw water flows from Ringtown No. 6 by gravity through 2 miles of 16-inch pipe to Ringtown Reservoir No. 5. From here, it is pumped about 1.2 miles over Locust Mountain to Raven Run Reservoir No. 3 and Raven Run No. 2 (which are treated as one combined unit). Raw water from Raven Run No. 3 flows by gravity to Raven Run No. 2 and all flow is taken from Raven Run No. 2. The intake on Raven Run No. 3 is for emergency use and rarely utilized.

In order to more accurately reflect the cascading nature of the flows to the reservoirs, the following allocation amounts have been adjusted: from Ringtown No. 6 (Whiskey Mill Run) 1.5 MGD Average Annual, Ringtown No. 5 (Dreshers Run) 2.0 MGD Average Annual, and Raven Run No. 2 2.05 MGD Average, for a total withdrawal not to exceed 2.05 MGD Average Annual as measured below Raven Run No. 2 at the influent raw water meter to the Shenandoah Water Treatment Plant. Conservation releases of 460,000 gpd for Ringtown No. 6, 210,000 gpd for Ringtown No. 5, and 250,000 for Raven Run No. 2 will also be required by the Department in this subject water allocation renewal. Note that Kehly Run Reservoirs and Fetter Lake sources will be abandoned. A schematic of the system is shown in **figure 1** below.

Notice of the Municipal Authority of the Borough of Shenandoah (MABS) application was published in the March 17, 2007, issue of the Pennsylvania Bulletin in accordance with the Act of February 17, 1984 (P.L. 75, No. 14), 71 P.S. §510-5, Municipal Authority of the Borough of Shenandoah, provided proof of notification of this application to Shenandoah Borough, Butler Township, West Mahanoy Township and Schuylkill County.

Figure 1: Shenandoah WTP Schematic



II. ALLOCATION HISTORY

The Municipal Authority of the Borough of Shenandoah (MABS) currently has one water allocation WA54-44B. The history of MABS water allocation permit began with the chartering of Shenandoah Citizens Water and Gas Company on February 25, 1870 with the only water source being Kehly's Run for 300 mgpy. Permit WA-44A was approved August 18, 1943, for 310 million gallons per year, to Shenandoah Citizens Water and Gas Company, but was revoked with the issuance of a water allocation permit to the Municipal Authority of the Borough of Shenandoah on November 14, 1950. Permit WA-44A included the following sources and allocation limits: a) Little Catawissa Creek – 575,000 gallons per day, b) Whiskey Mill Run – 1,500,000 gallons per day, c) Dresher's Run – 500,000 gallons per day, d) Raven Run – 50,000 gallons per day, e) Kehly Run – 800,000 gallons per day, and, f) W.P.A. Reservoir – 75,000 gallons per day. All sources total 3,500,000 gallons per day. Permit WA-44B was issued on November 10, 1964 for Fetter Pond (600,000 gpd). Information submitted in the application shows that Kehly Run Reservoirs and Fetter Lake sources will be abandoned. Daily Withdrawals are from two (2) sources, Ringtown No. 6 (Whiskey Mill Run) and Ringtown No. 5 (Dresher's Run). The Average Daily Withdrawals (gpd) are estimated to be 66,164 – 393,625 and 1,027,586 – 1,803,397

gpd, respectively. Water from Ringtown Reservoir No. 6 flows by gravity through a 16-inch pipe about 2 miles east to Ringtown Reservoir No. 5. Water is pumped from Pump Station No. 5 to the Raven Run Reservoirs (Raven Run No. 2 and No. 3). Water is then gravity fed to the water treatment plant (WTP), treated and fed to the distribution system. Raven Run No. 2 and No. 3 are used as raw water storage reservoirs for water going to the WTP.

Currently, metering is only performed at the WTP. A permit condition will require a permanent meter or measuring device installation on the raw water transmission main between Ringtown No. 6 and Ringtown No. 5 reservoirs.

MABS is not expecting any future growth and is requesting the right to continue to withdraw water at the previously allotted rate totaling 2.05 MGD. 1.5 MGD will come from Ringtown Reservoir No. 6, 2.0 MGD will come from Ringtown Reservoir No. 5 (1.5 MGD from Ringtown 6 plus 0.5 MGD from Ringtown No. 5 which equals 2.0 MGD) and 2.05 MGD will come from Raven Run Reservoir No. 2 (1.5 MGD from Ringtown 6 plus 0.5 MGD from Ringtown No. 5 plus 0.05 MGD from Raven Run No. 2 which equals 2.05 MGD), for a total withdrawal not to exceed 2.05 MGD Average Annual as measured below Raven Run No. 2 at the influent raw water meter to the Shenandoah Water Treatment Plant. Conservation releases of 460,000 gpd for Ringtown No. 6, 210,000 gpd for Ringtown No. 5, and 250,000 gpd for Raven Run No. 2 will also be required by the Department in this subject water allocation renewal.

MABS did not have any formal leak detection program in place at the time of application filing (February 23, 2007) but intended to purchase new leak detection equipment and develop a formal leak detection program. MABS still does not have a formal leak protection program to date. Leaks identified in the system are repaired on an as located basis. The volume of the leak during each incident is estimated and documented. The MABS is in the process of working with the Department's Operator Outreach Program to conduct a water audit and leak detection surveys. Development of a leak detection plan and its implementation will be required as a permit condition in the subject renewal.

III. COMMENTS FROM OTHER AGENCIES

The Department requested comments on the application from the Pennsylvania Fish and Boat Commission (PFBC). No comments were received from the PFBC.

Comments were also requested from PADEP's Division of Water Use Planning, Bureau of Watershed Conservation and are on file with this application submittal.

Water Use Management, Division of Water Use Planning

See Water Allocation memo dated September 9, 2008, from Thomas L. Denslinger, P.E., Chief, Water Use Management Section, Division of Water Use Planning included with the application file.

Also see copy of email from Thomas L. Denslinger, P.E. dated August 22, 2008 included with the application file.

A meeting was held with the NERO and MABS personnel on December 18, 2008, regarding the deficiency letter from the Department dated October 31, 2008. Issues discussed in that meeting included conservation releases, gross yields, service to Butler Township, pumping from RR#3 to RR#2, updating of drought contingency plan and Act 220 registration and reporting requirements. Regarding conservation releases, the Department offered to provide a calculation method to MABS for figuring the conservation release required for all sources (YAT Modeling performed by Central Office); gross yields are based on 50 year drought yield from Bulletin 7A published by the Department. Links were to be provided to MABS from the Department; service to Butler Township is decreasing in Rappahannock section leased land. The decreased infrastructure means less service; water from RR#2 is of higher quality; RR#3 should be permitted and language explaining water draw from RR#2 and RR#3 will be included in application materials; drought contingency plan should be updated; MABS will supply information for Raven Run No. 2 that was not submitted for the 2005 reporting year. A revised water allocation application with sources adjusted to address Central Office's withdrawal amounts comments was to be submitted by the applicant. See February 6, 2009 letter and email dated April 22, 2014 from Entech Engineering, Inc. submitted as a follow-up to the meeting held on December 18, 2009 which addresses Department comments.

Additional comments and YAT modeling was provided by Central Office to NERO on September 28, 2017 and are as follows. The original is included with the application file.

The MABS is requesting the right to withdraw 1,500,000 gpd (PD) from the Ringtown No. 6 Dam, 500,000 gpd (PD) from Ringtown No. 5 Reservoir, and 50,000 gpd (PD) from Raven Run No. 2 for a total of 2,050,000 gpd. An Average Annual (AA) allocation type is recommended for reservoirs. Using the Water Use Reporting data for the period of 2005-2016, the water use ranged between 1,027,586 gpd and 1,183,7261 gpd from the Ringtown No. 6 source, and 66,164 gpd and 393,625 gpd from Ringtown No. 5. Raven Run No. 2 was not used from 2008 to 2012; using the Water Use Reporting data for the period of 2013-2016 for Raven Run No. 2 the water use ranged between 1,583,203 gpd and 1,803,397 gpd.

Individual reservoir yield analyses were conducted for Ringtown No. 5 and No. 6 reservoirs; the YAT reservoir analysis showed that a conservation release of 0.32 cfs (210,000 gpd) and 0.71 cfs (460,000 gpd) respectively, is required. In this case, the conservation release is based on the Stream Classification (CWF, 20% of ADF). To determine the net yield for Ringtown No. 5; the default 50-year drought frequency was used; the YAT computed a net yield (after the conservation release) of 0.62 MGD. This net yield value is higher than the requested quantity. The same method of computation was used to determine the net yield for Ringtown No. 6; when 50-year drought frequency was used, the YAT computed a net yield (after the conservation release) of 0.81 MGD. This net yield value is lower than the requested allocation. When a 2-year drought frequency was utilized for the analysis, the YAT computed a net yield (after the conservation release) of 1.27 MGD for Ringtown No. 6.

The same method of computation was used to determine the conservation release and net yield for Raven Run reservoirs; the calculations were based on assumption that flow from Raven Run No. 3 flows by gravity to Raven Run No. 2 and that all flow is taken from Raven Run No. 2. Therefore, the YAT analysis combines the drainage area and storage capacities for both Raven Run No. 2 and No. 3 for this analysis, with the sole taking point at Raven Run No. 2. The YAT calculated a conservation

release of 0.38 cfs (250,000 gpd) based on 20% ADF. For Raven Run No. 2 & No. 3, using a 50-year drought frequency, the YAT computed a net yield (after the conservation release) of 0.44 MGD, which is higher than the requested amount, but much lower than their actual usage for the last 3 years. A 2-year drought frequency was utilized for the analysis, and the YAT computed a net yield (after the conservation release) of 0.69 MGD.

The YAT analysis showed a net yield of 620,000 gpd, 1,270,000 gpd, 700,000 gpd for Ringtown No. 5, Ringtown No. 6, and Raven Run No. 2 & No. 3 (combined) respectively. The results are summarized below.

Source	Average Daily Usage (gpd)	Requested Amount (gpd)	YAT: Net Yield (gpd) (2-yr ¹)	YAT: Net Yield (gpd) (50-yr ¹)	YAT: Conservation Release (gpd)
Ringtown 5	66,164 - 393,625	500,000	N/A	620,000	210,000
Ringtown 6	1,027,586 - 1,183,726	1,500,000	1,270,000	810,000	460,000
Raven Run 2 & 3	1,583,203 - 1,803,397	50,000	700,000	440,000	250,000
Total	1,329,337	2,050,000	N/A	N/A	N/A

¹- Drought frequency used in YAT calculations.

The MABS is requesting the right to allocate 2,050,000 gpd from Ringtown No. 5, Ringtown No. 6, and Raven Run No. 2 & No. 3. The YAT analysis showed a maximum total net yield of 2,590,000 gpd (using 50-yr drought frequency for Ringtown No. 5, and the 2-yr drought frequency for Ringtown 6 and Raven Run). Although this is higher than their requested amount, the amount allocated for each individual source should be adjusted (for example, note that the average usage from Raven Run is much higher than the requested amount). The allocation amounts were adjusted per Central Office comment and the cascading nature of the reservoirs as noted previously.

A meeting was held by the Department with the MABS and their consultant (Alfred Benesch & Company) on November 6, 2017, to discuss the proposed draft permit provided to MABS for comment on October 16, 2017. Items discussed of note included average annual allocation amounts for sources, new conservation release requirements, measuring device installation requirements, and leak detection plan and implementation requirements. MABS and their consultant did not have any objections or comments on the proposed draft permit.

IV. WATER USE

Table 1 contains MABS past water use for the period 2005 to 2016, respectively, while Table 2 contains a breakdown of its water use. The data for all tables is from Annual Water Supply Reports for MABS.

Table 1 - Past Water Use

Year	Average Daily Use (gpd)	Peak Day Use (gpd)	Peak to Average Ratio
2005	1,158,263	1,349,000	1.16
2006	1,153,004	1,632,000	1.42
2007	1,777,632	2,003,000	1.13
2008	1,110,100	1,936,000	1.74
2009	466,800	1,859,000	3.98
2010	1,275,757	1,963,000	1.54
2011	1,201,836	1,530,000	1.27
2012	1,255,754	1,735,000	1.38
2013	1,284,419	1,920,000	1.49
2014	1,781,372	3,000,000	1.68
2015	1,803,397	2,628,000	1.46
2016	1,683,707	1,965,917	1.21
Averages:	<u>1,329,336</u>	<u>1,960,076</u>	<u>1.61</u>

Table 2 represents the water use and was taken from MABS 2016 WUDS Annual Summary Data submitted to the Department.

Table 2 - Water Use

<u>Use Category</u>	<u>Number of Connections</u>	<u>Water Use (gpd)</u>	<u>Percent of Total Use</u>
Domestic	2,736	259,600	15.42
Commercial	181	36,300	2.16
Industrial	6	67,350	4.00
Institutional	29	34,370	2.04
Bulk Sales to Other Suppliers	0	0	0
OG	0	0	0

Other	15	256,338	15.22
Leakage and Loss Unaccounted-for	-	1,029,749	61.16
	-	-	-
<u>Totals:</u>	<u>2,967</u>	<u>1,683,707</u>	<u>100%</u>

Using the Chapter 110 reported data for the period of 2005 – 2016, the total average daily use of all sources was 1,1329,337 gpd and ranged between 466,800 gpd and 1,803,397 gpd. Peak day use averaged 1,965,917 gpd and ranged between 1,349,000 gpd and 3,000,000 gpd.

Based on the MABS Water Use and Population growth figures submitted with the Water Allocation permit application and AWS report for 2016, MABS is currently serving 2,967 domestic locations. Political subdivisions served include Shenandoah Borough, West Mahanoy Township and Butler Township. According to the population projections submitted in the Annual Water Supply Report for 2016, the actual population served is approximately 9,000 people.

The last updated service map was in 2008. Updated maps should be submitted periodically through Greenport. The YAT analysis showed the MABS projected population as follows: Year 2020 - 6,017, Year 2030 – 5,847 and Year 2040 – 5,671 which are very close to the MABS’s projections. Since the application was submitted in 2007, year 2040 was obviously not included in the application submittal.

All service connections are reported to be metered.

V. WATER SUPPLY AVAILABLE

The MABS currently operates under water allocation permit WA54-44A. Permit WA54-44A was issued on November 14, 1950, for the right to withdraw raw water from the following sources: Little Catawissa Creek, Whiskey Mill Run, Dreshers Run, Raven Run, Kehly Run and W.P.A. Reservoir. The allocation history lists the quantities removed from each source. The current waters supply available comes from Ringtown No. 6 (Whiskey Mill Run) 1.5 MGD Peak Day, Ringtown No. 5 (Dreshers Run) 0.5 MGD Peak Day, and Raven Run No. 2 (up to 0.05 MGD, Peak Day) from permit WA54-44B.

Three taking points are listed in the application submittal as follows:

Ringtown No. 6 (Whisky Mill Run)	Lat 76° 16’ 50’’W/Long 40° 49’ 50’’ N
Ringtown No. 5 (Dreshers Run)	Lat 76° 14’ 47’’W/Long 40° 50’ 32’’ N
Raven Run No. 2	Lat 76° 14’ 26’’W/Long 40° 49’ 21’’ N

No interconnections are identified in the application submittal.

The MABS water allocation application included a description of the Shenandoah WTP. The system supplies water to the Borough of Shenandoah and to a portion of West Mahanoy and Butler Townships in Schuylkill County, Pennsylvania.

The current water system consists of the following components:

Four raw water reservoirs: Ringtown No. 6, Ringtown No. 5, Raven Run No. 3 and Raven Run No. 2,

Three booster pump stations: Pump Station 5, Pump Station 3 and Turkey Run Pump Station,

Four finished water storage tanks: WTP Tank, Kehly Run Tank, Cemetery Tank and Turkey Run Tank for a total storage capacity of 2,500,000 gallons.

The WTP which was constructed in July 1995. The plant consists of treatment with adsorption clarifiers and multimedia filters. Typically, the plant produces about 1.0 MGD. The plant is rated at 3.11 MGD. and;

The distribution system, totaling 35 miles of pipeline consisting of 16-inch through 4-inch ductile iron and cast-iron piping.

Water was served from two watershed areas, one from Ringtown and Raven Run reservoirs and the other from the Kehly Run Reservoirs and Fetter Lake. The Kehly Run Dams (No. 3, 4, 5 and 6) and Fetter Lake are located northeast of the Borough of Shenandoah. The Kehly Run Reservoirs and Fetter Lake have not been used since 1992 and are to be abandoned.

Wastewater is sent to the Shenandoah Sewage Treatment Plant (1.58 MGD) which is experiencing infiltration issues and does not serve the entire service area and ultimately, after treatment, to the Shenandoah Creek.

Leakage and loss reported for the previous year (2016) was at 61%. This is above the recommended 20% minimum unaccounted-for usage. MABS shall continue to review and revise, as necessary, its leak detection efforts and develop a leak detection plan to maintain its unaccounted-for waster loss at 20 percent or less. A permit condition will address this issue.

The MABS has included a water conservation plan with the water allocation permit application. The plan includes: Source Metering, Service Metering, Leak Detection and Repair, and Water Conservation Performance Standards and should be reviewed and updated periodically as necessary. MABS Drought Contingency Plan should be updated and should be submitted electronically through Greenport.

MABS does not have a formal leak protection program. Leaks identified in the system are repaired on an as located basis. The volume of the leak during each incident is estimated and documented. The MABS is in the process of working with the Department's Operator Outreach Program to conduct a water audit and leak detection surveys.

VI. DETERMINATIONS BEFORE GRANTING PERMIT

Section 7 of the Water Rights Act of June 24, 1939 outlines the duties of the Commonwealth to investigate water allocation requests, consider conflicts of interest, and to give approval. Approval of

the requested allocation shall be given where it is determined that the:

- A. Proposed new source of supply will not conflict with the water rights held by any other public water supply agency.
- B. Water and water rights proposed are reasonably necessary for the present purposes and future needs of the public water supplier making application.
- C. Taking of said water or exercise of water rights will not interfere with navigation.
- D. Taking of said water or exercise of water rights will not jeopardize public safety.
- E. Taking of said water or exercise of water rights will not cause substantial injury to the Commonwealth.

In cases of apparent conflicts of interest, the Commonwealth investigations shall consider the extent of conservation development and use of the existing sources of water to the best advantage.

The Department of Environmental Protection has reviewed the proposed allocation and considered all the issues requiring evaluation under Section 7 of the Water Rights Act. A summary of the findings and conclusions regarding these issues follows:

- A. The Department finds that there are no conflicts with the water rights of other agencies.
- B. Water and water rights proposed are reasonably necessary for the present purposes and future needs of the public water supply agency.
- C. The Department finds that granting the allocation will have no adverse effect on navigation.
- D. The Department finds that granting the allocation will have no adverse effect on public safety.
- E. The Department finds that granting the allocation will have no significant adverse effect on the environment.
- F. Municipal Authority of the Borough of Shenandoah shall abide by the approved water conservation plan under Water Allocation permit WA54-44C.
- G. Article I, Section 27 of the Pennsylvania Constitution, as adopted in 1971 states:

The people have a right to clean air, pure water, and to the preservation of the natural scenic, historic, and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all of the people.

The Amendment does not require the passage of implementing statutes or promulgation of regulations because it is self-executing and establishes rights which it is DEP's duty to protect Commonwealth v. National Gettysburg Battlefield Tower Inc., 8 Pa. Cmwlth, 231, 302A.2d886 (1973), affirmed, 454 PA., 193,311.A.2d 588 (1973). In protecting these rights, DEP is required to measure its actions concerning issuance of a permit by the three point test announced in Payne et al. v. Kassab et al., 11 Pa. Cmwlth. 14, 312A.2d86 (1973), affirmed, 14 Pa. Cmwlth, 491, 323A.2d 407 (1974), affirmed, 468 Pa. 266, 361A2d. 263 (1976). This test is:

1. Was there compliance with all applicable statutes and regulations relevant to the protection of the Commonwealth's public natural resources?
2. Does the record demonstrate a reasonable effort to reduce environmental incursion to a minimum?
3. Does the environmental harm which will result from the challenged decision or action so clearly outweigh the benefits to be derived therefrom that to proceed further would be an abuse of discretion?

The Department has made the following findings under the three point test from Payne et al. v. Kassab et al.

1. Compliance with All Applicable Statutes and Regulations

Compliance with All Applicable Statutes and Regulations has been accomplished.

2. Reasonable Effort to Reduce Environmental Incursion

Reasonable Effort to Reduce Environmental Incursion has been undertaken.

3. Environmental Harm Outweighs the Benefit

Any Environmental Harm has been mitigated. The benefits of continuous, clean, safe filtered water for the term of this permit have been accomplished.

VII. RECOMMENDATIONS

The application submitted by the MABS has been carefully reviewed and considered. It is recommended that the MABS be granted a permit for the right to withdraw from Ringtown No. 6 (Whiskey Mill Run) 1.5 MGD Average Annual, Ringtown No. 5 (Dreshers Run) 2.0 MGD Average Annual, and Raven Run No. 2 2.05 MGD Average Annual, for a total withdrawal not to exceed 2.05 MGD Average Annual as measured below Raven Run No. 2 at the influent raw water meter to the Shenandoah Water Treatment Plant. Conservation releases of 460,000 gpd for Ringtown No. 6, 210,000 gpd for Ringtown No. 5, and 250,000 for Raven Run No. 2 are required from permit WA54-

44C.

It is also recommended that the allocation permit contain the following special conditions:

Condition 1:

Duration of Permit: The duration of this permit shall be for a period of 25 years and shall expire on November 21, 2042. However, should the permittee for any reason whatsoever (1) fail to construct within a period of four years the works necessary for the development of the supply of water allocated under this permit, or (2) fail to take and use within a period of four years the water or water rights for which this permit is issued, or (3) cease for any period of seven consecutive years to take and use the water hereby allocated, then this permit shall cease and be null and void; unless upon application by the permittee an extension of such period is granted by the Department of Environmental Protection's Northeast Regional Office;

Condition 2:

Measuring Device and Reporting Requirement: The permittee shall install accurate measuring and recording instruments or devices on the raw water transmission main between Ringtown No. 6 and Ringtown No. 5 reservoirs to determine the amount of water transferred. The design and layout of said measuring devices shall be submitted to and be approved by the Department of Environmental Protection's Northeast Regional Office before installation. Records of daily flow readings shall be submitted on a monthly basis to the Department's Permits Division in the Bureau of Safe Drinking Water (preferably electronically), and the original field records shall be available at all times for inspection by representatives of the Department. The required measuring devices shall be installed and readings shall begin within 1 year from the date of this permit, for all existing sources. This deadline may be extended at the Department's discretion if the permittee makes a written request to the Department of Environmental Protection's Northeast Regional Office;

Condition 3:

Conservation Release, Measuring Device and Reporting Requirement: A continuous flow of not less than 0.39 cubic feet per second per square mile from the 1.81 square miles of watershed area above the Ringtown No. 6 reservoir shall be maintained at all times immediately below Ringtown No. 6. This flow is equivalent to 460,000 gallons per day or 0.71 cubic feet per second. A continuous flow of not less than 0.38 cubic feet per second per square mile from the 0.83 square miles of watershed area above the Ringtown No. 5 reservoir shall be maintained at all times immediately below Ringtown No. 5. This flow is equivalent to 210,000 gallons per day or 0.32 cubic feet per second. A continuous flow of not less than 0.41 cubic feet per second per square mile from the 0.93 square miles of watershed area above the Raven Run No. 2 reservoir shall be maintained at all times immediately below Raven Run No. 2. This flow is equivalent to 250,000 gallons per day or 0.38 cubic feet per second. The permittee shall install accurate measuring and recording instruments or devices to determine the amount of flow in the stream channel. The design and layout of said measuring devices shall be submitted to and be approved by the Department of Environmental Protection's Northeast Regional Office before installation. Records of daily flow readings shall be submitted on a monthly basis to the Department's Permits Division in the Bureau of Safe Drinking Water (preferably

electronically), and the original field records shall be available at all times for inspection by representatives of the Department. The required measuring devices shall be installed and readings shall begin within 1 year from the date of this permit. This deadline may be extended at the Department's discretion if the permittee makes a written request to the Department of Environmental Protection's Northeast Regional Office. The passby flow/conservation release specified herein may be temporarily modified by the Department's Commonwealth Drought Coordinator or the Department's Division of Planning and Conservation under the Special Deputy Secretary for Water Resources Planning in writing during an emergency, upon written request from the permittee and satisfactory demonstration that the permittee has taken all reasonable conservation measures to avert and mitigate the emergency condition;

Condition 4:

Operations and Drought Contingency Plan: The permittee shall develop a contingency plan outlining the measures that will be taken to conserve the available supply and reduce water use during an emergency (e.g., drought, industrial waste spill, etc.). The plan shall include staged voluntary and mandatory water use restrictions and a description of parameters to trigger these actions at various stages, and the identification of available emergency sources or interconnections and when these sources would be utilized. The plan shall also indicate how water use restrictions will be enforced. The contingency plan shall be adopted by the permittee and submitted to the Department of Environmental Protection's Department's Division of Planning and Conservation under the Special Deputy Secretary for Water Resources Planning within one year of the date of this permit and updated and submitted to the Department every three years thereafter or within six months of the addition or abandonment of any source of supply;

Condition 5:

Drought Contingency Plan: The permittee shall respond to drought conditions as outlined within the Municipal Authority of the Borough of Shenandoah Drought Contingency Plan. The permittee shall impose water use restrictions upon customers in accordance with and at such time as actions which are required of customers served by the Municipal Authority of the Borough of Shenandoah;

Condition 6:

Water Conservation: The permittee shall adopt and implement a continuous water conservation program for all types of use within the area served by this permit. This program shall include, but is not limited to:

- The installation of water meters on all unmetered customer connections;
- An ongoing program for installing meters at all new customer connections;
- An ongoing program for regularly testing and repairing or replacing all meters;
- An ongoing leakage/loss control program;

- A water conservation education program;
- A program for reducing customer demand for water by requiring the installation of water-saving plumbing devices in all new accounts or promoting the adoption of water conservation ordinances;

The permittee's water conservation program shall comply with the water conservation policies of the Susquehanna River Basin Commission and the recommendations of the Department's Northeast Regional Office contained in the report on this allocation.

Condition 7:

Permit Compliance Reporting: The permittee shall submit a permit compliance report to the Department of Environmental Protection's Permits Division in the Bureau of Safe Drinking Water, on forms provided by the Department, annually, on or before the anniversary date of this permit, unless otherwise specified;

Condition 8:

Chapter 110 Requirements: The permittee shall register each source/interconnection approved under this permit and submit reports in accordance with 25 Pa. Code Chapter 110 Regulations. Registration and reporting shall be to the Department's Division of Planning and Conservation under the Special Deputy Secretary for Water Resources Planning;

Condition 9:

Prohibition on Supplying Water to Other Public Water Suppliers: The permittee shall not supply any new or additional quantity of water to any public water supply agency until that agency shall have first obtained from the Department of Environmental Protection's Northeast Regional Office a subsidiary water allocation permit for the specific purchase quantity;

Condition 10:

Reduction of Water Losses: Within one year of the date of this permit, the permittee shall initiate a study to develop a plan to reduce its unaccounted-for water loss and shall reduce such loss to a level of 20 percent or less within five years of the date of this permit. Such study shall be completed and the final results and recommendations reported to the Department of Environmental Protection's Northeast Regional Office, with a copy to the Permits Division in the Bureau of Safe Drinking Water within two years of the date of this permit. The deadlines set forth in this condition may be extended with written approval by the Northeast Regional Office, upon good cause shown, providing that the permittee demonstrates satisfactory and good faith progress toward compliance with this condition;

Condition 11:

Revocation of Permit: Water Allocation Permit WA54-44A, issued to the Municipal Authority of the Borough of Shenandoah on **November 14, 1950** and granting 3,500,000 gallons per day from Little Catawissa Creek, Whiskey Mill Run, Dresher's Run, Raven Run No. 2, Kehly Run and W.P.A. reservoir is hereby revoked and shall be returned to the Department of Environmental Protection's Northeast Regional Office;

Condition 12:

Revocation of Permit: Water Allocation Permit WA54-44B, issued to the Municipal Authority of the Borough of Shenandoah on **November 10, 1964** and granting the right to withdraw 600,000 gallons per day from Fetter Pond is hereby revoked and shall be returned to the Department of Environmental Protection's Northeast Regional Office;

Condition 13:

Renewal Requirement: Within 18 months, but no less than one year, prior to the expiration date specified in Condition No. 1, the permittee shall submit to the Department of Environmental Protection's Northeast Regional Office a complete and acceptable application for a new permit, if permittee desires to continue to acquire the water rights granted by this permit beyond the expiration date. Upon the Department's acceptance of such application for review, the expiration date of this permit shall be extended during the review period until issuance or denial of said new permit;

Condition 14:

Permit Modification: This permit is subject to review and possible modification of said rights, conditions, or restrictions at a later date or dates, as provided in Section 7 of the Act of June 24, 1939, P.L. 842 (No. 365).

This report was prepared by:



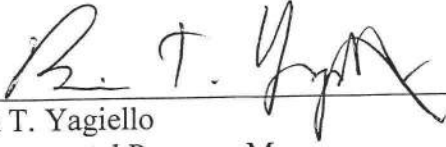
Deborah S. Wilkes
Technical Services Section
Safe Drinking Water Program

This report was reviewed and respectfully submitted by:



Brian Busher, P.E.
Environmental Engineer Manager
Safe Drinking Water Program

The foregoing recommendation is concurred in:

A handwritten signature in black ink, appearing to read "B. T. Yagiello", written over a horizontal line.

Brian T. Yagiello
Environmental Program Manager
Safe Drinking Water Program

Date: November 21, 2017