Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

May 5, 2021

Ms. Elizabeth Gibson, Town Manager
Town of Nantucket
16 Broad Street, 1st floor
Nantucket, MA 02554

Mr. Mark Willet
Wannacomet Water Company
One Milestone Road
Nantucket, MA 02554

RE: NANTUCKET – BRP/WMA
PWS ID #4197000
WMA Permit #9P2-4-23-197.01
Actions: Water Management Act Permit Renewal and Permit for Increased Water Withdrawals
Transmittal #X269025

Dear Ms. Gibson and Mr. Willet:

Please find attached the following documents:

- Findings of Fact in Support of the Permit Renewal Decision, and
- Water Management Act Permit #9P2-4-23-197.01 for the Town of Nantucket/Wannacomet Water Company, Nantucket, Massachusetts.

If you have any questions regarding this information, please contact Beth McCann via e-mail at elizabeth.mccann@mass.gov.

Very truly yours,

Duane LeVangie
Chief, Water Management Program
Bureau of Water Resources

Ecc: P. Kellogg, MassDEP SERO
K. Bentsen, MassDFW
A. Carroll, DCR-OWR
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Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)
Contact Michelle Waters-Ekanem, Diversity Director/Civil Rights: 617-292-5751
TTY# MassRelay Service 1-800-439-2370.
http://www.mass.gov/eea/agencies/massdep/service/justice/ (Version 3.30.15)

1. **English:** This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone numbers listed below.

2. **Español (Spanish):** Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.

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ប ឯ ឆ ជ MassDEP ដ

8. **Kriolu Kabuverdianu (Cape Verdean):** *Es documento é importante e deve ser traduzido imidiatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicode li d'boche.*

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10. **العربية (Arabic):** هذه الوثيقة هامة و الوثيقة ينبغي أن تترجم على الفور. اذا كنت بحاجة الى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في MassDEP على أرقام الهواتف المدرجة أدناه.

11. **한국어 (Korean):** 이 문서는 중요하고 즉시 번역해야합니다. 당신이 번역이 문서가 필요하면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다.

12. **□□□□□□□ (Armenian):** □□□ □□□□□□□□□□□□ □□□ □□□□□□□□ □ □□ □□□□ □ □□□□□□□□□□ □□□□□□□□□□. □□□ □□□ □□□□□□□□□□ □ □□□ □□□□□□□□□□□□ □□□□□□□□□□□ □□□□□ MassDEP □□□□□□□□□□□□□□□□□ □□□□□□□ □ □□□□□□□□□□□□□□□□□□□ □□□□□□□□□ □□ □□□□□□□.

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15. **Deutsch (German):** Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie dieses Dokument übersetzt benötigen, wenden Sie sich bitte Diversity Director MassDEP die in den unten aufgeführten Telefonnummern.

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Findings of Fact in Support of
Water Management Permit #9P2-4-23-197.01
Town of Nantucket/Wannacomet Water Company

The Department of Environmental Protection (MassDEP) makes the following Findings of Fact in support of the attached Water Management Permit #9P2-4-23-197.01, and includes herewith its reasons for issuing the Permit and for conditions of approval imposed, as required by M.G.L. c. 21G, § 11. The issuance of this permit is in response to the Wannacomet Water Company's (Wannacomet) water withdrawal permit renewal application submitted November 24, 2010, and water withdrawal permit application submitted February 29, 2016, for the purpose of public water supply.

MassDEP adopted revised Water Management Regulations at 310 CMR 36.00 on November 7, 2014, (described in greater detail below). Since that time, MassDEP has been working closely with each Water Management Act (WMA) permittee to fully consider all aspects of their individual situations and ensure thoughtful and implementable permits.

Wannacomet Water Company's Withdrawal Summary

Registered Sources: Wannacomet registered withdrawals of 0.61 MGD from, 2 sources, Wyers's Valley Tubular Wellfield (4197000-01G), and Wyer's Valley Gravel Packed Well (4197000-02G), through the Water Management Act program.

Original Permit, February 1, 1992**:** Wannacomet's original permit authorized withdrawals of an additional 0.62 MGD in addition to the 0.61 MGD previously registered volume, for a total authorized volume of up to 1.23 MGD through February 28, 2011.

New Permit, November 4, 2004: Wannacomet applied to increase withdrawals and was issued a new permit. The permit increased the permitted withdrawals to 1.07 MGD in addition to the 0.61 MGD previously registered volume, for a total authorized volume of up to 1.68 MGD through February 11, 2011, and added a new well, the Nantucket State Forest Well (4197000-03G). In addition, the permit introduced a performance standard for unaccounted-for-water of 15% UAW, and required that Wannacomet ensure that the Nantucket municipal bylaw restricting outdoor water use was fully implemented.

Amended Permit, May 8, 2012: The North Pasture Well (4197000-04G), was added as a new source. The authorized volume and permit conditions remained the same.

Wannacomet Water is now an Enterprise Fund of the Town of Nantucket. Wannacomet is governed by an elected three-member Board of Water Commissioners. The Board is charged with Wannacomet's administration and operation to oversee water services provided to the Town of Nantucket.

The Permit Extension Act

WMA permits issued during the first 20-year permitting cycle for the Islands Basin expired on February 28, 2011. Permittees seeking to renew their Water Management permit were required to file a renewal application on or before November 30, 2010. Wannacomet filed a timely renewal application and received a one-year Interim Permit, to February 29, 2012, to continue operations while the permit renewal review was ongoing.

Subsequently, the expiration dates for all Water Management permits were extended for four years by Chapter 240 of the Acts of 2010 as amended by Chapter 238 of the Acts of 2012, collectively known as the Permit Extension Act. In addition, in a letter of September 25, 2015, MassDEP informed Wannacomet that MassDEP would need additional time before making a determination on the application in order to ensure that all permit renewal applicants on the Islands fully understood the new Water Management Regulations (discussed below), and to give proper consideration to all permit renewal applications within the basin. Pursuant to M.G.L. c. 30A, § 13, and 310 CMR 36.18(7), Wannacomet's permit continues in force and effect until MassDEP issues a final decision on the permit renewal application.

The expiration date for all permits going forward on the Islands will be February 28, 2031, in order to restore the staggered permitting schedule set forth in the regulations.

The Water Management Act (M.G.L. c. 21G)

The Water Management Act (Act) requires MassDEP to issue permits that balance a variety of factors including without limitation:

- Impact of the withdrawal on other water sources;
- Water available within the safe yield of the water source;
- Reasonable protection of existing water uses, land values, investments and enterprises;
- Proposed use of the water and other existing or projected uses of water from the water source;
- Municipal and Massachusetts Water Resources Commission (WRC) water resource management plans;
- Reasonable conservation consistent with efficient water use;
- Reasonable protection of public drinking water supplies, water quality, wastewater treatment capacity, waste assimilation capacity, groundwater recharge areas, navigation, hydropower resources, water-based recreation, wetland habitat, fish and wildlife, agriculture, flood plains; and
- Reasonable economic development and job creation.

Water Management Regulation Revisions

In 2010 the Executive Office of Energy and Environmental Affairs (EEA) convened the Sustainable Water Management Initiative (SWMI) for the purpose of incorporating the best available science into the management of the Commonwealth's water resources. SWMI was a multi-year process that included a wide range of stakeholders and support from the Departments of Environmental Protection, Fish and Game, and Conservation and Recreation. In November 2012 the *Massachusetts Sustainable Water Management Initiative Framework Summary* (http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf) was released.

On November 7, 2014, MassDEP adopted revised Water Management Regulations at 310 CMR 36.00 that incorporate elements of the SWMI framework and the Water Conservation Standards adopted by the Massachusetts WRC. The regulations reflect a carefully developed balance to protect the health of Massachusetts' water bodies while meeting the needs of businesses and communities for water.

Without limitation, MassDEP has incorporated the following into Water Management permitting:

- Safe yield determinations for the major river basins based on a new methodology developed through SWMI (see the Safe Yield in the "Safe Yield of the Islands" section of this document);

- Water needs forecasts for public water suppliers developed by the Department of Conservation and Recreation, Office of Water Resources (DCR), using a methodology reviewed and approved by the Massachusetts WRC;
- Water supply protection measures for public water supplies including Zone II delineations for groundwater sources, and wellhead and surface water protection measures as required by Massachusetts Drinking Water Regulations (310 CMR 22.00);
- Water conservation and performance standards reviewed and approved by the WRC in July 2018 (https://www.mass.gov/files/documents/2018/09/11/ma-water-conservation-standards-2018.pdf), including for the Islands;
    - performance standard of 10% or less unaccounted-for-water;
    - seasonal limits on nonessential outdoor water use;
    - a water conservation program that includes leak detection and repair, full metering of the system and proper maintenance of the meters, periodic review of pricing, and education and outreach to residents and industrial and commercial water users; and
- Environmental protections developed through SWMI, including;
    - protection for coldwater fish resources;
    - mitigation of the impacts of increasing withdrawals.

Safe Yield of the Islands Basin

This permit is being issued under the safe yield methodology adopted by MassDEP on November 7, 2014, and described in the regulations at 310 CMR 36.13. As of the date of issuance of this permit, the safe yield for the Islands Basin is 104.4 million gallons per day (MGD), and total registered and permitted withdrawals are 7.38 MGD. The maximum withdrawals that will be authorized in this permit, and all other permits currently under review by MassDEP within the Islands Basin, will be within the safe yield and may be further conditioned as outlined in the regulations.

Findings of Fact for Permit Conditions in Wannacomet's Water Management Act Permit

The following Findings of Fact for the special conditions included in the permit generally describe the rationale and background for each special condition. This summary of permit special conditions is not intended to, and should not be construed as, modifying any of the permit special conditions. In the event of any ambiguity between this summary and the actual permit conditions, the permit language shall control.

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume reflects the total authorized (registered plus permitted) annual average withdrawal volume based on the water needs forecast prepared by DCR (letter of October 28, 2010) and modified by the Water Resources Commission's March 9, 2017.

Wannacomet's Water Needs Forecasts (MGD) Prepared in 2010	
Permit Period	**DCR Water Needs Forecast**
2016-2021	1.90
2021-2026	2.06
2026-2031	2.20 + 10% buffer of 0.22 = 2.42

The Water Resources Commission's March 9, 2017, decision that *"for communities with significant seasonal populations (Cape Cod and Islands), a 10% buffer may be added to the projected average day demand for the final five-year period of the water needs forecast"* changed the buffer built into DCR projections for Wannacomet from 5% to 10%. The change to the buffer results in a demand forecast of up to 2.20 MGD + 0.22 (10% buffer) = 2.42 MGD. **Wannacomet seeks only up to 2.31 MGD at this time**, but may submit a new permit application based on the 2.42 MGD projection at any time during the life of this permit. Per correspondence of

December 11, 2019, to MassDEP, Wannacomet will consider seeking new water needs forecasts from DCR and apply for additional water after the 2020 census.

MassDEP recognizes that future growth in water demand may not occur precisely as forecast. Therefore, this permit authorizes withdrawals of up to the maximum authorized withdrawal at any time during the life of the permit provided that Wannacomet has specific advance written approval from MassDEP and is meeting all other permit conditions. Specifically, Wannacomet may increase annual average daily withdrawals to 2.31 MGD prior to 2026 if Wannacomet is meeting:

- Unaccounted-for-water (UAW) of 10%, or all UAW functional equivalence requirements;
- Seasonal limits on nonessential outdoor water use;
- Water conservation requirements; and
- Mitigation plan requirements

as included in this permit.

Special Condition 2, Maximum Authorized Daily Withdrawal Rates reflects the MassDEP-approved Zone II maximum daily pumping rate, expressed in million gallons per day, for each of the permitted wells based on prolonged pumping tests. Withdrawals in excess of these maximum daily rates require prior approval from MassDEP. Wells 15 (05G) and 16 (06G), replacement wells for Well 1 (01G) have been added to the permit. Well 1 remains an active source, and so has remained on the permit.

Special Condition 3, Zone of Contribution Delineations notes MassDEP- approval of Wannacomet's Zone II delineations for each of the permitted wells. No further delineations are required as a condition of this permit.

Special Condition 4, Wellhead Protection requires PWS permittees to implement appropriate wellhead protection zoning and non-zoning controls in accordance with Wellhead Protection Regulations at 310 CMR 22.21(2). Wannacomet is currently in compliance with the Wellhead Protection requirements and no further action is required as a condition of this permit.

Special Condition 5, Performance Standard for Unaccounted for Water has changed from 15% UAW required annually in Wannacomet's expiring permit (May 8, 2012). The UAW required for all PWS permittees is now 10% for 2 out of every 3 years.

Permittees that cannot comply within the timeframe in the permit must meet Functional Equivalence requirements based on the AWWA/IWA Water Audits and Loss Control Programs, Manual of Water Supply Practices M36, as outlined in Attachment A.

Wannacomet's Annual Unaccounted-for-Water				
2020	2019	2018	2017	2016
10.5%	7%	8%	8%	8%

Special Condition 6, Water Conservation Requirements reflects the Water Conservation Standards for the Commonwealth of Massachusetts adopted by the MA Water Resources Commission in July 2018 (https://www.mass.gov/files/documents/2018/09/11/ma-water-conservation-standards-2018.pdf).

Special Condition 7, Seasonal Limits on Nonessential Outdoor Water Use, requires Wannacomet to implement nonessential outdoor water use restrictions from May 1 to September 30 when:

- groundwater levels fall to the monthly 25th percentile for 60 consecutive days at the assigned groundwater monitoring well; **and**
- a Mild Drought (formerly Advisory), or greater, is declared by the Massachusetts Drought Management Task Force for the Island Drought Region.

MassDEP has reviewed information provided by Wannacomet on the aquifer formation on Nantucket and Wannacomet's proposed alternative drought management plan (i.e. limiting pumping from the upper aquifer to 1 MGD, taking more water from the lower aquifer and requiring no nonessential outdoor water use restrictions of customers). MassDEP finds that Wannacoment's proposal does not meet the underlying goals of nonessential water use restrictions.

MassDEP's summer water use restrictions are intended to help make water users aware of potential environmental impacts of their nonessential water use. The restrictions included in this permit will go into effect only during relatively dry periods (when both the water level in the Nantucket observation well has fallen below the trigger level, and the Massachusetts Drought Task Force has declared a drought for the Drought Region that includes Nantucket).

Special Condition 8, Mitigation of Impacts for Withdrawals that Exceed Baseline Withdrawals, requires mitigation where feasible for withdrawals over a baseline volume. Baseline withdrawal means the volume of water withdrawn during calendar year 2005 plus 5%, or the average annual volume withdrawn from 2003 through 2005 plus 5%, whichever is greater provided that:

a) baseline cannot be less than a permittee's registered volume;
b) baseline cannot be greater than the permittee's authorized volume for 2005; and
c) if during the period from 2003 to 2005, the permittee's withdrawals from the water source were interrupted due to contamination of the source or construction of a treatment plant, the Department will use best available data to establish a baseline volume from the water source.

Baseline Withdrawal and Mitigation Calculation**:** Wannacomet's baseline is 1.50 MGD based on Wannacomet's 2005 authorized withdrawal volume. Wannacomet's water withdrawals in recent years have been above the 1.50 MGD baseline.

Wannacomet's Annual Water Withdrawals (MGD)				
2020	2019	2018	2017	2016
1.69	1.59	1.68	1.69	1.75

The summary below outlines Wannacomet's mitigation requirement. The mitigation calculation assumes that Wannacomet's future withdrawals will be discharged to local groundwater at the Nantucket Surfside Wastewater Treatment Plan and at on-site septic systems at the same rate (100%) as current water withdrawals. A "wastewater adjustment" is calculated for water withdrawn that is returned to the ground as wastewater within the same major basin. MassDEP will assume that 85% of water delivered to customers with septic systems will be returned to the ground within the same major basin as the withdrawal, thus reducing the amount of mitigation needed. After calculating the adjustment for authorized withdrawals over baseline that will be returned through local groundwater discharge, Wannacomet's total mitigation requirement will be up to 121,000 gallons per day.

Wannacomet's Mitigation Volume Calculation
Permitted amount above Baseline = 0.81 MGD • Permitted amount above Baseline: 2.31 – 1.50 = 0.81 MGD
Adjustment for Wastewater Discharge to Local Groundwater = 0.689 MGD • 100% of increased withdrawals are delivered to areas where wastewater is discharged to groundwater after treatment: 0.81 MGD x 1.0 (100%) = 0.81 MGD • 85% of water delivered to areas with local groundwater discharge returns to groundwater: 0.81 MGD x 0.85 (85%) = 0.689 MGD
Amount to be Mitigated after Adjustment for Wastewater Discharge to Local Groundwater = 0.121 MGD • Permitted amount above baseline (0.810 MGD) – adjustment for wastewater discharge to local groundwater (0.689 MGD) = 0.121 MGD or 121,000 gallons per day

Wannacomet's mitigation requirement is shown below in 5-year increments.

Wannacomet Mitigation Requirement in 5-Year Increments		
Permit Period	**Total Authorized Withdrawals**	**Mitigation Requirement** (Permitted – Baseline – Adjustment for Wastewater Discharged to Local Groundwater)
5/5/2021 to 2/28/2026	2.06	0.084 MGD = 84,000 gpd
3/1//2026 to 2/28/2031	2.31	0.121 MGD = 121,000 gpd

Mitigation measures that have been put into place since January 1, 2005, and that are still operable or effective, are eligible components of a Mitigation Plan. Additional mitigation activities may be phased in over the life of this permit provided that any volumes withdrawn over the 1.50 MGD baseline are mitigated prior to when those volumes are withdrawn.

Direct Mitigation, which will improve streamflow as a result of increased groundwater recharge, decreased stormwater runoff to streams, or surface water releases, must be considered first in mitigation planning.

Wannacomet's public sewage system infrastructure and discharge point are completely within a single watershed, therefore, infiltration/inflow removal do not provide a net volume benefit to in-basin groundwater recharge. Wannacomet has no eligible stormwater projects completed since 2005, and no surface water sources from which to make releases to improve streamflow. Therefore, Wannacomet has no direct mitigation credit at this time.

Indirect Mitigation, activities that result in environmental improvements that will help to compensate for streamflow impacts, is required when a permittee has insufficient direct mitigation credit.

Wannacomet's Indirect Mitigation Credit		
Town of Nantucket Board of Health Local Regulation 75.00	1 credit for performance standards that are equal to or exceed the Department of Agricultural Resources requirements	1 credit: 10,000 gpd
Nantucket Wetlands Bylaw, Chapter 136 and accompanying	1 credit for enforceability of the bylaw 1 credit for jurisdiction to resource areas "*whether or not they border surface waters*"	3.5 credits: 35,000 gpd

regulations	1.5 credit for performance standards tailored to specific resource areas • 25 foot setback in buffer zones • Nantucket driveway permits require on-site stormwater management • Zoning (139-13) requires environmentally sensitive design and can require clustering	
Nantucket Zoning Bylaw Chapter 139-12 B- Public Wellhead Recharge District	1 credit for jurisdiction throughout to Public Well Recharge District 2 credits for regulating all projects that render impervious more than 15% or 2,500 square feet of any lot, whichever is greater (approximately 0.50 acres)(Section (1)(q)) 1 credit for requiring infiltration in accordance with the Massachusetts Stormwater Handbook (Section (3)[a][2](b))	4 credits: 40,000 gpd
Total Credits		8.5 credits: 85,000 gpd

Special Condition 9, Requirement to Report Raw and Finished Water Volumes ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

Performance Standard for Residential Gallons Per Capita Day Water Use (RGPCD) is typically a requirement of Water Management permits for public water suppliers. However, MassDEP recognizes the difficulties inherent in calculating an accurate rate of residential per capita use in any town where the population varies seasonally, as significantly as it does in Nantucket. Therefore, MassDEP has not included this condition in this permit.

Minimization of Groundwater Withdrawal Impacts in subbasins having August net groundwater depletion of 25% or greater was incorporated into the Water Management Regulations in November 2014. Minimization is not required because there are no delineated subbasins in coastal areas, including on the Islands, and therefore no delineation of net groundwater depletion.

Coldwater Fish Resource Protection was incorporated into the Water Management Regulations in November 2014. Coldwater Fish Resource Protection is not a condition of this permit because Wannacomet's withdrawals do not impact any waters that the MA Division of Fisheries and Wildlife has identified as supporting coldwater fish at this time.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

VAL L. PATRICK
vernor

1OTHY P. MURRAY
utenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

WATER WITHDRAWAL PERMIT 9P2-4-23-197.01
Town of Nantucket/Wannacomet Water Company

This renewal of Permit 9P2-4-23-197.01 is issued pursuant to the Massachusetts Water Management Act for the sole purpose of authorizing the withdrawal of a volume of water as stated below and subject to the following special and general conditions. This permit conveys no right in or to any property beyond the right to withdraw the volume of water for which it is issued.

PERMIT NUMBER: 9P2-4-23-197.01 **RIVER BASIN**: Islands

PERMITTEE: Town of Nantucket/Wannacomet Water Company
One Milestone Road
Nantucket, MA 02554

EFFECTIVE DATE: May 5, 2021

EXPIRATION DATE: February 28, 2031

TYPE AND NUMBER OF WITHDRAWAL POINTS: Groundwater: 6 Surface Water: 0

USE: Public Water Supply

DAYS OF OPERATION: 365

AUTHORIZED WITHDRAWAL POINTS:

Table 1: Withdrawal Point Identification	
Source	**Source Code**
Wyers Valley Tubular Wellfield	4197000-01G
Milestone Road Well #15*	4197000-05G
Milestone Road Well #16*	4197000-06G
Milestone Road Well #2	4197000-02G
State Forest Well #13	4197000-03G
North Pasture Well #14	4197000-04G
*Wells #15 and #16 are replacement wells for the Wyers Valley Tubular Wellfield which is currently classified as an Active source.	

SPECIAL CONDITIONS

1. Authorized Annual Average Withdrawal Volume

This permit authorizes the Town of Nantucket, Wannacomet Water Company (Wannacomet) to withdraw water from the Islands Basin at the rate described in Table 2 below. The permitted withdrawal is in addition to the 0.61 MGD previously authorized to the Wannacomet under WMA Registration #423197.03. The permitted volume is expressed both as an average daily withdrawal rate in million gallons per day (MGD), and as a total annual withdrawal volume in million gallons per year (MGY) for each five-year period of the permit term.

The Department of Environmental Protection (MassDEP) will use the raw water withdrawal volume from all authorized withdrawal points to assess compliance with the registered and permitted withdrawal volumes.

Table 2: Authorized Withdrawals

Permit Periods	Total Raw Water Withdrawal Volumes			
	Permit		Registration + Permit	
	Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
5/5/2021 to 2/28/2026	1.45	529.25	0.61 + 1.45 = 2.06	751.90
	*Prior to making average annual withdrawals greater than 2.06 MGD Wannacomet is required to develop additional mitigation activities for review and approval by MassDEP, and incorporate the additional approved mitigation into this permit through a permit amendment (BRPWM02) (see Special Condition 8).			
3/1/2026 to 2/28/2031	1.59 + 0.11 buffer = 1.70	660.65	0.61 + 1.70 =2.31	834.15

With specific advance written approval from the Department, Wannacomet is authorized to increase annual average daily withdrawals to 2.06 MGD prior to 2026 if Wannacomet is meeting:

- Unaccounted-for-water (UAW) of 10% or less, or all UAW functional equivalence requirements in Special Condition 5;
- Water conservation requirements in Special Condition 6;
- Seasonal limits on nonessential outdoor water use in Special Condition 7;
- All required mitigation has been implemented.

2. Maximum Authorized Daily Withdrawals from Groundwater Withdrawal Points

Withdrawals from individual withdrawal points are not to exceed the approved maximum daily volumes listed in Table 3 without specific advance written approval from MassDEP. The authorized maximum daily volume is the approved rate of each source.

Table 3: Maximum Daily Withdrawal Volume

Source	PWS Source ID	Maximum Daily Rate	
Wyer's Valley Tubular Wellfield	4197000-01G	2.16 MGD*	* Wells #15 and #16 are replacement wells for the Wyers Valley Tubular Wellfield. Combined withdrawals from these wells cannot exceed 2.16 MGD.
Milestone Road Well #15*	4197000-05G	1.09 MGD	
Milestone Road Well #16*	4197000-06G	1.03 MGD	
Milestone Road Well #2	4197000-02G	1.01 MGD	
Nantucket State Forest Well #13	4197000-03G	1.44 MGD	
North Pasture Well #14	4197000-04G	1.44 MGD	

3. Zone II Delineation

MassDEP records show that Wannacomet's sources have approved Zone II delineations, therefore, no further Zone II work is required as a condition of this permit.

4. Wellhead Protection

MassDEP records indicate that the Town of Nantucket Zoning By-Law 139-12 meets the requirements of 310 CMR 22.21(2), therefore, no further wellhead protection work is required as a condition of this permit.

5. Performance Standard for Unaccounted-for-Water (UAW)

Wannacomet's performance standard for Unaccounted for Water (UAW) is 10% or less of overall water withdrawal for 2 of the most recent 3 years throughout the permit period. Wannacomet shall be in compliance with this performance standard by December 31, 2020 or, if Wannacomet does not meet the standard, shall be in compliance with the functional equivalence requirements (Appendix A).

Nothing in the permit shall prevent a permittee who meets the 10% performance standard from demonstrating compliance with the UAW performance standard by developing and implementing a water loss control program following the AWWA M36 Water Audits and Loss Control Programs. Permittees meeting the Performance Standard for Unaccounted for Water through implementation of a water loss control program based on AWWA M36 annual water audits and guidance shall continue to report UAW annually as required in the Annual Statistical Report for public water suppliers.

6. Water Conservation Requirements

At a minimum, Wannacomet shall implement the following conservation measures forthwith and shall be in compliance with these measures on or before December 31, 2020. MassDEP recognizes that Wannacomet is currently implementing a number of these requirements. Compliance with the water conservation requirements shall be reported to MassDEP upon request, unless otherwise noted below.

Nothing in the permit shall prevent Wannacomet from implementing water use restrictions that are more stringent than those set forth in this permit.

Table 4: Minimum Water Conservation Requirements
Leak Detection
1. At a minimum, conduct a full leak detection survey, or comparable remote-instrument monitoring and reporting, every three years. The first full leak detection survey shall be completed no later than 3 years from the date of the last documented leak detection survey.
2. Conduct leak detection of the entire distribution system within one year whenever the percentage of UAW increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, submit to MassDEP a report detailing the leak detection survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3. Conduct field surveys for leaks and repair programs in accordance with the AWWA Manual 36.
4. Repair reports shall be kept available for inspection by MassDEP. The permittee shall establish a schedule for repairing leaks that is at least as stringent as the following: o Leaks of 3 gallons per minute or more shall be repaired within 3 months of detection. o Leaks of less than 3 gallons per minute at hydrants and appurtenances shall be repaired as soon as possible. o Leaks of less than 3 gallons per minute shall be repaired in a timely manner, but in no event more than 6 months from detection, except that leaks in freeway, arterial or collector roadways shall be repaired when

Table 4: Minimum Water Conservation Requirements

other roadwork is being performed on the roadway.
- Leaks shall be repaired in accordance with the permittee's priority schedule including leaks up to the property line, curb stop or service meter, as applicable.
- Permittee shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.

The following exceptions may be considered:
- Repair of leakage detected during winter months can be delayed until weather conditions become favorable for conducting repairs;* and
- Leaks in freeway, arterial or collector roadways may be coordinated with other scheduled projects being performed on the roadway**.

*Reference: MWRA regulations 360 CMR 12.09
**Mass Highway or local regulations may regulate the timing of tearing up pavement to repair leaks.

5. Ensure placement of sufficient funds in the annual water budget to conduct water audits and leak detection and repair leaks as necessary.

Metering

1. Calibrate all source, treatment and finished water meters at least annually and report date of calibration on the ASR.
2. One hundred percent (100%) metering of the system is required.
3. All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards.
   AWWA References: AWWA Manual M22 – Sizing Water Service Lines and Meters, AWWA Manual M6 – Water Meters, or as amended
4. The permittee shall have an ongoing program to inspect individual service meters to ensure that all service meters accurately measure the volume of water used by its customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering and sealing meters where possible, to identify and correct illegal connections.
5. Ensure sufficient funds in the annual budget to calibrate, repair, or replace meters as necessary.

Pricing

1. Establish a water revenue structure that includes the full cost of operating the water supply system. Full cost pricing recovers all costs as applicable, including:
   - pumping and distribution equipment cost, repair and maintenance;
   - water treatment;
   - electricity;
   - capital investment, including planning, design and construction;
   - land purchase and protection;
   - debt service;
   - administrative costs including systems management, billing, accounting, customer service, service studies, rate analyses and long-range planning;
   - conservation program including audits, leak detection equipment, service and repair, meter replacement program, automated meter reading installation and maintenance, conservation devices, rebate program, public education program;
   - regulatory compliance; and
   - staff salaries, benefits training and professional development.

   AWWA References: AWWA Manual 1- Principals of Water Rates, Fees and Charges, AWWA Manual 29- Fundamentals of Water Utility Financing

Table 4: Minimum Water Conservation Requirements
2. Evaluate rates at a minimum every three to five years and adjust rates as needed.
3. Permittee shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period, are prohibited by M.G.L. Chapter 40 Section 39L.
4. Implement quarterly or more frequent meter reading and billing.
Residential and Public Sector Conservation
1. Permittee shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.
2. Meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.
3. Permittee reports that water saving devices (faucet aerators, low flow shower heads and low flow toilets) have been installed in the Airport buildings, all public schools, the town building, the public safety facility and public restrooms. Renovation/replacement of the Wannacomet Building. Permittee shall continue to ensure that water savings devices are installed in all municipal buildings as they are renovated, and shall ensure water conserving fixtures and landscaping practices are incorporated into the design of new municipal capital projects.
Industrial and Commercial Water Conservation
1. Permittee reports that 85% of all water distributed is for residential use, 13% of all water distributed is for commercial use, and the permittee has no industrial water users. Permittee shall ensure water conservation practices, including the installation of WaterSense compliant low flow plumbing fixtures where applicable, and low water use landscaping, in all development proposals.
Lawn and Landscape
1. Permittee has adopted a local bylaw (Chapter 114) that restricts outdoor water use and authorizes enforcement of limits on nonessential outdoor water use based on MassDEP's model bylaw. MassDEP notes that Nantucket's bylaw was adopted in 1999. Since 1999, MassDEP's guidance on outdoor restrictions has been updated, and the restrictions in this permit are not completely aligned with Nantucket's bylaw. Please submit confirmation that Nantucket's by-law allows implementation of the restrictions in this permit within 3 months of permit issuance, or submit a plan to adopt such authority within one year of permit issuance. MassDEP's "DEP Model Outdoor Water Use Bylaw/Ordinance" was updated in May 2018 to help municipalities and water districts implement seasonal water conservation requirements in WMA permits. The Model Bylaw also includes options for regulating private wells and in-ground irrigation systems. See http://www.mass.gov/eea/agencies/massdep/water/regulations/model-water-use-restriction-bylaw-ordinance.html
Public Education and Outreach
1. Develop and implement an education plan, including elements in the following list, as applicable: o Billing that helps customers track, compare, and make sense of their use. o Target outreach to customers who may have a leak or who are using significantly more water than similar customers. o Offer indoor low-flow retrofit/rebate programs. o Provide information on "water-wise landscaping" and efficient irrigation and lawn care practices on-line and through model landscapes, workshops, local garden clubs, retailers, and environmental organizations. o Partner with local schools to develop age-appropriate curricula on the local water system and water conservation. o Use social media, online tools, public service announcements, and local events to promote water conservation and alerts. o Develop multilingual materials as needed. o Partner with garden clubs, farmers' markets, environmental organizations, energy utilities, and others on campaigns promoting wise water use. References and additional information available through the USEPA Water Sense Program

Table 4: Minimum Water Conservation Requirements
http://www.www.epa.gov/watersense
2. Upon request of MassDEP, permittee shall report on its public education and outreach efforts, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.

7. Seasonal Limits on Nonessential Outdoor Water Use

Wannacomet shall limit nonessential outdoor water use through mandatory restrictions from May 1st through September 30th as outlined in Table 5 below. To the extent feasible, all summer outdoor water use should take place before 9 a.m. and after 5 p.m. when evaporation and evapotranspiration rates are lower.

Wannacomet shall be responsible for tracking groundwater levels and drought advisories and recording and reporting when restrictions are implemented if groundwater level triggered restrictions are implemented. See Table 5 for *Instructions for Accessing U.S. Geologic Survey Groundwater Level and Massachusetts Drought Advisory Website Information.* Wannacomet shall also document compliance with the summer limits on nonessential outdoor water use annually in its Annual Statistical Report (ASR).

Table 5: Seasonal Limits on Nonessential Outdoor Water Use

Groundwater Level Triggered Restrictions from May 1st through September 30th

Nonessential outdoor water use is restricted to two (2) days per week before 9 a.m. and after 5 p.m. whenever:

a) Groundwater levels at USGS Monitoring Well 411555070021901(NBW-228) in Nantucket, MA, decline to or below the groundwater trigger for 60 consecutive days. The monthly trigger levels are listed below and are the period of record monthly 25th percentile depth to water level values, as determined and published by the USGS. Restrictions could start on May 1, so monitoring of NBW 228 begins on March 1 of each year.

Trigger Values for Outdoor Water Use Restrictions (feet below land surface)

March	April	May	June	July	Aug	Sept
29.5	25.5	25.4	25.0	24.9	25.3	25.3

and;

b) A Mild Drought (formerly Advisory) or higher is declared by the Massachusetts Drought Management Task Force for the Massachusetts Drought Region that includes Nantucket.

Once implemented, the restrictions shall remain in place until the daily value of the groundwater levels at the assigned USGS monitoring well have recovered to less than the trigger for 30 consecutive days (when the water table elevation has risen above the trigger level).

Instructions for Accessing U.S. Geologic Survey Groundwater Level and Massachusetts Drought Website Information

Groundwater level information is available at the USGS National Water Information System (NWIS): Web Interface. The USGS NWIS default shows Massachusetts groundwater levels in real time, i.e., the most recent, usually hourly, water level measured and recorded at each USGS monitoring well.

Seasonal Limits on Nonessential Outdoor Water Use are implemented when the daily mean depth to water level exceeds the designated trigger for 60 consecutive days (*i.e.*, when the depth to water becomes larger than the trigger value as the water table elevation declines). The daily water level is compared to the trigger for that month. To determine if restrictions must be implemented on May 1 it is necessary to monitor the daily water level in March and April.

Mean daily groundwater level readings are available at the USGS NWIS Web Interface at:
http://waterdata.usgs.gov/ma/nwis/current/?type=gw&group_key=county_cd

- Scroll down to 411555070021901 MA-NBW-228, Nantucket, MA
- Click on the station number.
- On the pull-down menu "Available data for this site" choose "Daily data".
- Under "Available Parameters " click on "WaterLevel, BelowLSD (Mean)".
- Under "Output Format" click on "Table" and enter the number of days of records (the default is 7 days; entering 60 will give you 60 days of data) and hit "GO".
- The table provides the "Daily Mean Depth to water level, feet below land surface" for the most recent number of days chosen.

Compare each day's value to its month's trigger value (25th percentile) in your permit. Outdoor water use restrictions must be implemented when the daily depth to water level is at or below the trigger for 60 consecutive days.

Drought information is available at the Massachusetts Department of Conservation and Recreation (DCR) Drought Status Website at:
http://www.mass.gov/eea/agencies/dcr/water-res-protection/water-data-tracking/drought-status.html

Under "Drought Status Reports", click on "drought map" on the right-hand side of the page. The color coded map displays the seven drought regions in Massachusetts. Restrictions are implemented when a Mild Drought, Significant Drought, Critical Drought, or Emergency Drought is announced through the DCR website.

Restricted Nonessential Outdoor Water Uses

Nonessential outdoor water uses that are subject to mandatory restrictions include:

- irrigation of lawns via automatic irrigation systems or sprinklers;
- filling swimming pools;
- washing vehicles, except in a commercial car wash or as necessary for operator safety; and
- washing exterior building surfaces, parking lots, driveways or sidewalks, except as necessary to apply surface treatments such as paint, preservatives, stucco, pavement or cement.

The following uses may be allowed when mandatory restrictions are in place:

- irrigation to establish a new lawn and new plantings during the months of May and September;
- irrigation of public parks and recreational fields before 9 a.m. and after 5 p.m.;
- irrigation of gardens, flowers and ornamental plants by means of a hand-held hose or drip irrigation system; and
- irrigation of lawns by means of a hand-held hose.

Water uses NOT subject to mandatory restrictions are those required:

- for health or safety reasons;
- by regulation;
- for the production of food and fiber;
- for the maintenance of livestock; or
- to meet the core functions of a business (for example, irrigation by golf courses as necessary to maintain tees, greens, and minimal fairway watering, or irrigation by plant nurseries as necessary to maintain stock).

Public Notice of Water Use Restrictions

Wannacomet shall notify its customers of the restrictions and the consequences of failing to adhere to the restrictions.

- For groundwater level-triggered restrictions, when the daily depth to water level at the assigned USGS monitoring well declines to or below the trigger for 60 consecutive days, customers shall be notified as soon as possible, but within three days of implementing the restrictions.

Notice to customers shall include the following:

- A detailed description of the restrictions and penalties for violating the restrictions;
- The need to limit water use, especially nonessential outdoor water use, to ensure a sustainable drinking water supply and to protect natural resources; and
- Ways individual homeowners can limit water use, especially nonessential outdoor water use.

Notice that restrictions have been put in place shall be filed each year with MassDEP within 14 days of the restriction's effective date by completing and submitting to MassDEP the **Notification of Water Use Restrictions** form, which can be found at http://www.mass.gov/eea/agencies/massdep/water/watersheds/municipal-water-use-restrictions.html

Notice to customers and MassDEP need not be provided if Wannacomet has already implemented water use restrictions that conform to the applicable restrictions and those restrictions are still in force.

Nothing in the permit shall prevent Wannacomet from implementing water use restrictions that are more stringent than those set forth in this permit.

8. Mitigation of Impacts for Withdrawals that Exceed Baseline Withdrawals

Wannacomet is required to mitigate up to 0.121 MGD (121,000 gpd) for its permitted withdrawals over its 1.50 MGD baseline withdrawal rate. The mitigation requirement is partially met through the following indirect mitigation measures. Prior to making average annual daily withdrawals greater than 2.06 MGD Wannacomet is required to develop additional mitigation for review and approval by MassDEP, and incorporate the additional approved mitigation into this permit through a permit amendment (BRPWM02).

Table 6: Wannacomet's Indirect Mitigation Credit

Town of Nantucket Board of Health Local Regulation 75.00	1 credit for performance standards that are equal to or exceed the Department of Agricultural Resources requirements	1 credit: 10,000 gpd
Nantucket Wetlands Bylaw, Chapter 136 and accompanying regulations	1 credit for enforceability of the bylaw 1 credit for jurisdiction to resource areas "*whether or not they border surface waters"* 1.5 credit for performance standards tailored to specific resource areas • 25 foot setback in buffer zones • Nantucket driveway permits require on-site stormwater management • Zoning (139-13) requires environmentally sensitive design and can require clustering	3.5 credits: 35,000 gpd
Nantucket Zoning Bylaw Chapter 139-12 B- Public Wellhead Recharge District	1 credit for jurisdiction throughout to Public Well Recharge District 2 credits for regulating all projects that render impervious more than 15% or 2,500 square feet of any lot, whichever is greater (approximately 0.50 acres)(Section (1)(q)) 1 credit for requiring infiltration in accordance with the Massachusetts Stormwater Handbook (Section (3)[a][2](b))	4 credits: 40,000 gpd
Total Credits		8.5 credits: 85,000 gpd

Wannacomet shall notify MassDEP should there be any changes to the status of the mitigation measures.

9. **Requirement to Report Raw and Finished Water Volumes**
Wannacomet shall report annually on its ASR the raw water volumes and finished water volumes for the entire water system. Monthly raw water volumes for individual water withdrawal points shall be reported annually in the ASR.

GENERAL CONDITIONS (applicable to all permittees)

1. **Duty to Comply** The permittee shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.

2. **Operation and Maintenance** The permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw up to the authorized volume so as not to impair the purposes and interests of the Act.

3. **Entry and Inspections** The permittee or the permittee's agent shall allow personnel or authorized agents or employees of the Department at reasonable times to enter and examine any property or inspect and copy any records for the purpose of determining compliance with this permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.

4. **Water Emergency** Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by the Department pursuant to M.G.L. c. 21G, s. 15-17, M.G.L. c. 111, s. 160, or any other enabling authority.

5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until the Department approves such transfer in writing, pursuant to a transfer application on forms provided by the Department requesting such approval and received by the Department at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.33.

6. **Duty to Report** The permittee shall submit annually, on the electronic Annual Statistical Report (eASR) accessed through the Department's eDEP website, a statement of the withdrawal. Such report must be submitted annually by the date identified on eDEP each year, unless the permittee has explicit permission from the MassDEP Drinking Water program for an extension of time.

7. **Duty to Maintain Records** The permittee shall be responsible for maintaining withdrawal records in sufficient detail to assess compliance with the conditions of this permit.

8. **Metering** All withdrawal points included within the permit shall be metered. Meters are to be calibrated annually.

9. **Amendment, Suspension or Termination** The Department may amend, suspend or terminate the permit in accordance with M.G.L. c. 21G and 310 CMR 36.29.

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of the Department. Any person aggrieved by this decision and any person who has been allowed pursuant to 310 CMR 1.01(7) to intervene in the adjudicatory proceeding that resulted in this decision may request an adjudicatory hearing. Any such request must be made in writing, by certified mail or hand delivered, and received by the Department within twenty-one (21) days of the date of receipt of this permit. No request for an appeal of this permit shall be validly filed unless a copy of the request is sent by certified mail, or delivered by hand to the local water resources management official in the city or town in which the withdrawal point is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to the Department.

CONTENTS OF HEARING REQUEST

The request for a hearing shall state specifically, clearly and concisely the facts which are the grounds for the appeal, the relief sought, and any additional information required by 310 CMR 1.01(6)(b) or other applicable law or regulation. For any person appealing this decision who is not the applicant, the request must include sufficient written facts to demonstrate status as a person aggrieved and documentation to demonstrate previous participation where required.

FILING FEE AND ADDRESS

The hearing request, together with a valid check, payable to the Commonwealth of Massachusetts in the amount of $100 must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The request shall be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

EXEMPTIONS

The filing fee is not required if the appellant is a city or town (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

WAIVER

The Department may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of the Department that the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request, an affidavit setting forth the facts which support the claim of undue hardship.

Duane LeVangie
Chief, Water Management Program
Bureau of Water Resources

May 5, 2021
Date

Appendix A – Functional Equivalence with the 10% Unaccounted for Water (UAW) Performance Standard

Water Loss Control Program: MassDEP will consider PWS permittees who cannot meet the 10% UAW performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going Water Loss Control Program in place that ensures best practices for controlling water loss.

Developing a Municipal Water Loss Control Program: A permittee who fails to document compliance with the 10% UAW performance standard for 2 out of the 3 years during the permit period, shall develop a Municipal Water Loss Control Program in accordance with the *AWWA M36 Water Audits and Loss Control Program*. Within 5 full calendar years of failing to meet the standard, the permittee shall:

1. Conduct an annual "top down" water audit, calculate the data validity level/score using AWWA Water Loss Control Committee's Free Water Audit Software, and submit the AWWA WLCC Free Water Audit Software Reporting Worksheet and data validity score annually as an attachment to the Annual Statistical Report (ASR).
    - If a PWS's data validity level/score is less than Level III (51-70), steps recommended through the audit(s) shall be taken to improve the reliability of the data prior to developing a component analysis and long-term program to reduce real and apparent water losses.
        i. Data with a validity score of 50 or less are considered too weak to be used to develop a component analysis or for infrastructure planning and maintenance.
        ii. Developing data with an acceptably strong validity score can be a multi-year process.
2. When the data validity score meets the Level III (51-70) requirement, conduct a component analysis to identify causes of real and apparent water loss and develop a program to control losses based on the results of the component analysis.
3. Submit the Municipal Water Loss Control Program that includes an M36 component analysis and implementation schedule, and identifies implementation funding to the Department.
4. Upon request of the Department, the permittee shall report on its implementation of the water loss control program.
5. Continued implementation of the Program will be required in order for the permittee to be considered functionally equivalent with the 10% UAW performance standard and in compliance with their permit.

A PWS permittee may choose to discontinue the Municipal Water Loss Control Program implementation if UAW, as reported on the ASR and approved by the Department, is below 10% for four consecutive years, and the water audit data validity scores are at least Level III (51-70) for the same four years.

NOTE FOR SMALL SYSTEMS: For small systems with less than 3,000 service connections or a service connection density of less than 16 connections per mile of pipeline, the Unavoidable Annual Real Loss (UARL) calculation and the Infrastructure Leak Index (ILI) developed as the final steps of the top down water audit may not result in valid performance indicators, and may not be comparable to the UARL and ILI calculations for larger systems.

However, these small systems can benefit from developing reliable data and conducting an annual top down water audit. Small systems can rely on the real losses (gallons per mile of main per day) performance indicator developed in the water audit as a measure of real water loss when developing a water loss control program. The M36 Manual discusses the audit process for small systems, and includes a chapter to guide

small systems in understanding the results of their audits and in developing a water loss control program (*Manual of Water Supply Practices – M36, Fourth Edition, Chapter 9: Considerations for Small Systems*, pp. 293-305).

MassDEP Water Loss Control Program: If the permittee is required to develop a Water Loss Control Program in order to be to functionally equivalent with the 10% Unaccounted for Water Performance Standard, and the permittee has not developed a Municipal Water Loss Control Program that includes a component analysis and identifies implementation funding after 5 full calendar years of failing to meet the standard, the permittee will be required to implement the MassDEP UAW Water Loss Control Program measures outlined below:

- Complete an annual water audit and leak detection survey, as described in the AWWA M36 Manual, for the entire system.
  - Within one year, repair 75% (by water volume) of all leaks detected in the survey that are under the control of the public water system;
  - Thereafter, repair leaks as necessary to reduce permittee's UAW to 10% or the minimum level possible.
- Meter inspection and, as appropriate, repair, replace and calibrate water meters:
  - Large Meters (2" or greater) – within one year
  - Medium Meters (1" or greater and less than 2") – within 2 years
  - Small Meters (less than 1") - within three years
  - Thereafter, calibrate and or replace all meters according to type and specification.
- Bill at least quarterly within three years.
- Review the permittee's water pricing structure and ensure revenues are sufficient to pay the full cost of operating the system.

Hardship: A permittee may present an analysis of the cost-effectiveness of implementing certain conservation measures included in the MassDEP Water Loss Control Program and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits.

A permittee's hardship analysis shall:

- Document economic hardship and present an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship;
- Present reasons why specific measures are not cost-effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard; and
- Propose specific conservation measures that would result in equal or greater system-wide water savings or equal or greater environmental benefits than the conservation measures included in the MassDEP UAW Water Loss Control Program.

MassDEP will review a permittee's detailed, written analysis to determine whether unique circumstances make specific water loss control measures less cost-effective than alternatives, or infeasible for the permittee.