



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Gary Moran
Acting Commissioner

February 6, 2023

Groton Select Board
Groton Town Hall
173 Main Street
Groton, MA 01450

RE: Groton – BRP/WMA
Groton Water Department
PWS ID #2115000
Final Water Management Act Permit
Amendment
Permit #9P-2-13-115.01

Dear Board Members,

Attached please find:

- Final Findings of Fact in support of the amendment of Permit #9P-2-13-115.01, and
- Final amended WMA Permit #9P-2-13-115.01 for the Groton Water Department in the Merrimack River Basin.

The signature on this cover letter indicates formal issuance of the attached documents. If you have any questions regarding this information, please contact Jen D'Urso via e-mail at jen.durso@mass.gov.

Sincerely,

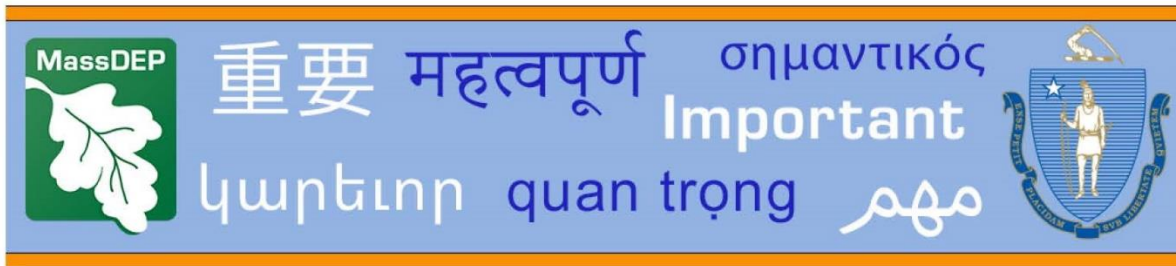
Duane LeVangie
Chief, Water Management Act Program
Bureau of Resource Protection

Ecc: Tom Orcutt, Groton Water Department
Mark Haddad, Groton Town Manager
David Roman, CEI Engineers
Jennifer Pederson, Massachusetts Water Works Association
Julia Blatt, Massachusetts Rivers Alliance
Sarah Bower, Massachusetts Rivers Alliance

Anne Carroll, Department of Conservation and Recreation-Office of Water Resources
Vanessa Curran, Department of Conservation and Recreation-Office of Water Resources
Todd Richards, Department of Fisheries and Wildlife
Rebecca Quiñones, Department of Fisheries and Wildlife
Misty-Anne Marold, Department of Fisheries and Wildlife
Bob Bostwick, MassDEP
Marielle Stone, MassDEP

mass.gov.sharepoint.com: DEPBWR\DWP Archive\CERO\Groton-2115000-Final WMA Permit Amendment-9P21311501-2-6-2023

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Communication for Non-English-Speaking Parties

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 number listed below.

Español Spanish

Este documento es importante y debe ser traducido de inmediato. Si necesita este documento traducido, comuníquese con la Directora de Diversidad de MassDEP al número de teléfono que aparece más abajo.

Português Portuguese

Este é um documento importante e deve ser traduzido imediatamente. Se precisar de uma tradução deste documento, entre em contato com o Diretor de Diversidade da MassDEP nos números de telefone listados abaixo.

繁體中文 Chinese Traditional

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼聯絡 MassDEP 多元化負責人。

简体中文 Chinese Simplified

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與 MassDEP 的多元化主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradwi l imedyatman. Si ou bezwen dokiman sa a tradwi, tanpri kontakte Direktè Divèsite MassDEP la nan nimewo telefòn endike anba.

Việt Vietnamese

Tài liệu này rất quan trọng và cần được dịch ngay lập tức. Nếu quý vị cần dịch tài liệu này, xin liên lạc với Giám đốc Đa dạng của MassDEP theo các số điện thoại ghi dưới đây.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះគឺសំខាន់ហើយត្រូវបានបកប្រែភ្លាមៗ។ ប្រសិនបើអ្នកត្រូវការឱ្យគេបកប្រែឯកសារនេះ:

សូមទាក់ទងមកនាយកផ្នែកពិពិធកម្មរបស់ MassDEP តាមលេខទូរស័ព្ទខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Kel dokumentu li é inportáti y debe ser traduzidu imidiatamenti. Se bu meste di kel dokumentu traduzidu, pur favor kontakta Diretor di Diversidádi di MassDEP na numeru abaxu indikadu.

Contact **Glynis L. Bugg, Acting Diversity Director/Civil Rights 857-262-0606**

Massachusetts Department of Environmental Protection

One Winter Street, Boston MA 02108

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>

(Version revised 7.22.2022) 310 CMR 1.03(5)(a)

Русский Russian

Это важный документ, и он должен быть безотлагательно переведен. Если вам нужен перевод данного документа, пожалуйста, свяжитесь с директором по вопросам многообразия (Diversity Director) компании MassDEP по указанному ниже телефону.

العربية Arabic

هذه الوثيقة مهمة ويجب ترجمتها على الفور. إذا كنت بحاجة إلى هذه الوثيقة مترجمة، يرجى الاتصال بمدير التنوع PMassDE على أرقام الهواتف المدرجة أدناه.

한국어 Korean

이 문서는 중요하고 즉시 번역해야 합니다. 이 문서의 번역이 필요하시다면, 아래의 전화 번호로 MassDEP의 다양성 담당 이사에 문의하시기 바랍니다.

հայերէն Armenian

Այս փաստաթուղթը կարևոր է և պետք է անմիջապես թարգմանվի:
Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանել, դիմեք MassDEP-ի բազմազանության տնօրենին ստորև նշված հեռախոսահամարով:

فارسی Farsi Persian

این سند مهم است و باید فوراً ترجمه شود.
اگر به ترجمه این سند نیاز دارید، لطفاً با مدیر بخش تنوع نژادی MassDEP به شماره تلفن ذکر شده در زیر تماس بگیرید.

Français French

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, veuillez communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Sofern Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an den Diversity Director MassDEP unter der unten aufgeführten Telefonnummer.

Ελληνική Greek

Το παρόν έγγραφο είναι σημαντικό και θα πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του παρόντος εγγράφου, παρακαλούμε επικοινωνήστε με τον Διευθυντή Διαφορετικότητας του MassDEP στους αριθμούς τηλεφώνου που αναγράφονται παρακάτω.

Italiano Italian

Comunicazione per parti che non parlano inglese. Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, potete contattare il Direttore di Diversità di MassDEP al numero di telefono elencato di seguito.

Język Polski Polish

Dokument ten jest ważny i powinien zostać natychmiast przetłumaczony. Jeśli potrzebujesz przetłumaczonej wersji dokumentu, prosimy o kontakt z dyrektorem ds. różnorodności MassDEP pod jednym z numerów telefonu wymienionych poniżej.

हिन्दी Hindi

यह दस्तावेज़ महत्वपूर्ण है और इसका तुरंत अनुवाद किया जाना चाहिए. यदि आपको इस दस्तावेज़ का अनुवाद करने की आवश्यकता है, तो कृपया नीचे सूचीबद्ध टेलीफोन नंबरों पर मासडेपस डाइवर्सिटी के निदेशक से संपर्क करें.

Contact Glynis L. Bugg, Acting Diversity Director/Civil Rights 857-262-0606

Massachusetts Department of Environmental Protection

One Winter Street, Boston MA 02108

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(Version revised 7.22.2022) 310 CMR 1.03(5)(a)



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Findings of Fact in Support of Permit Amendment Water Management Permit #9P-2-13-115.01 Groton Water Department

The Department of Environmental Protection (the Department or MassDEP) makes the following Findings of Fact in support of the attached amended Water Management Permit #9P-2-13-115.01, and includes herewith its reasons for issuing the amended Permit and for conditions of approval imposed, as required by M.G.L. c. 21G, § 11. The issuance of this amended Permit is in response to a water withdrawal amendment application by the Groton Water Department, (Groton) for the purpose of public water supply.

The Permit Extensions

WMA permits issued during the first 20-year permitting cycle for the Merrimack Basin were scheduled to expire on November 30, 2014. 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. All permittees seeking to renew their Water Management permit in the Merrimack River Basin were required to file a renewal application on or before November 30, 2017. Groton filed a timely renewal application and pursuant to M.G.L. c. 30A, § 13, and 310 CMR 36.18(7) the permit continues in force until the date the Department issues a final renewed permit. The Department expects to conduct the permit renewal application reviews for the Merrimack Basin in 2024.

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

The Water Management Act (Act) requires the Department 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, the Department 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, the Department 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 Merrimack River Basin 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/massachusetts-water-conservation-standards>), including without limitation;
 - performance standard of 65 residential gallons per capita day or less;
 - performance standard of 10% or less unaccounted-for-water;
 - seasonal limits on nonessential outdoor water use; and
 - 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.

Safe Yield in the Merrimack River Basin

This amended permit is being issued under the safe yield methodology adopted by the Department 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 Merrimack River Basin is 900.4 million gallons per day (MGD), and total registered and permitted withdrawals are 80.11 MGD. The maximum withdrawals that will be authorized in this permit, and all other permits currently under review by the Department within the Merrimack River Basin, will be within the safe yield and may be further conditioned as outlined in the regulations.

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

With the issuance of this permit amendment, Groton will have three (3) permitted sources in the Merrimack River Basin. Groton's initial Merrimack River Basin Water Management Act permit was issued in August 1995 to add Whitney Well #1 as a source and to increase their total authorized withdrawal volume by up to 0.33 MGD. That permit was amended in December 2001 to add Whitney Well #2 as a source, and was amended again in May of 2009 to add Shattuck Wells #1 and #2 as additional withdrawal locations without any increase in their system-wide authorized withdrawal volume. Groton also holds a registration (2-13-115.01) in the Merrimack River Basin for 0.217 million gallons per day (MGD) which when combined with their permitted volume (0.33 MGD) authorizes a total annual average daily withdrawal volume of 0.547 MGD. This volume will not change in the amended permit, the purpose of which is to add one permitted source, Whitney Well #3.

There will be several modifications to Groton's registered and permitted sources as a result of this permit amendment. The documented historical capacity of the Shattuck Road Well (01G, registered source) at the time the Interbasin Transfer Act was enacted was 0.324 MGD. This volume was later allocated to Shattuck Wells #1 (OCG) and #2 (ODG)(permitted sources). Neither of these sources are currently in use. Both the Shattuck Road Well and the Shattuck Wells #1 and #2 will be removed as registered or permitted sources. That 0.324 MGD will now be re-allocated to Whitney Well #3, which will be the maximum authorized daily limit from that well. In addition, the permitted Annual Average Daily Volume limit (0.33 MGD) has not changed with this amendment thus providing no increase in the potential for additional Interbasin Transfer. Future increases in the permitted volume will trigger a review by Water Resources Commission staff at the Department of Conservation and Recreation (DCR).

The Water Management Regulations revised and promulgated in November 2014 require WMA permits to address protection of Coldwater Fishery Resources (CFR), implement outdoor water use restrictions, minimization of the impact of pumping, mitigation of pumping above the baseline rates, and potential changes in Biological Category (BC)¹ and Groundwater Withdrawal Categories (GWC)². In this amended permit, MassDEP has addressed the protection of Coldwater Fishery Resources (CFR), and the implementation of outdoor water use restrictions. The remaining changes will be addressed as part of Groton's permit renewal in the Merrimack Basin now scheduled for 2024.

The following Findings of Fact for the special conditions included in the amended permit generally describe the rationale and background for each special condition in the amended permit. 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

Table 1 summarizes Groton's WMA Authorizations:

TABLE 1: Groton Department of Public Works WMA Authorizations	
WMA Authorization	Volume Authorized
WMA Permit #9P-2-13-155.01	0.330 MGD (120.45 MGY)
WMA Registration #2-13-115.01	0.217 MGD (79.205 MGY)
Total WMA Authorization	0.547 MGD (199.66 MGY)

¹ The Water Management Regulations, 310 CMR 36.14(1)(a), establish a biological category (BC) for each subbasin based on the simulated 2000 to 2004 existing condition of aquatic habitat using fluvial fish community characteristics as the surrogate indicator variable. Each biological category represents the percent alteration within the range of these fluvial fish community characteristics as a function of the following subbasin parameters: 1. Impervious cover; 2. Cumulative groundwater withdrawal as a portion of the unimpacted August median flow; 3. Stream channel slope; and 4. Percent wetland within the stream buffer area. The percent alteration for each BC is as follows: BC 1, 0% to 5%; BC 2, > 5% to 15%; BC 3 >15% to 35%; BC 4, > 35% to 65%; BC 5, >65%.

² The Water Management Regulations 310 CMR 36.14(1)(b), establishes a groundwater withdrawal category (GWC) based on the ratio of 2000 to 2004 groundwater withdrawal volume to the unimpacted median monthly flow for August and represents conditions during the late summer bioperiod (July thru September). Each GWC represents the range of this ratio that would result in the BC of the same number under conditions of low (15%) impervious cover. The GWC for each withdrawal ratio for the late summer bioperiod is as follows: GWC 1, 0% to 3%; GWC 2, >3% to 10%; GWC 3, >10% to 25%; GWC 4, >25% to 55%; and GWC 5, >55%.

Groton may withdraw an annual average daily volume of 0.547 MGD from the Merrimack River Basin. In 2021, Groton's average daily withdrawal from the Merrimack River Basin was 0.43 MGD. If Groton needs to withdraw more than 0.547 MGD from their own sources, it will require Groton obtaining a new permit.

The use of Whitney Well #3 is contingent on the following conditions being met:

1. The Shattuck Road Well (2115000-01G), will be removed from Groton's registration statement. Groton will need to request this change in writing to MassDEP's WMA Program within 30 days of the issuance of the final permit. Groton will also need approval, within 30 days of the issuance of the final permit, from MassDEP's Drinking Water Program, to change the Shattuck Road Well -01G from "Emergency Status" to "Inactive Status".
2. The 0.324 MGD historically allocated to the Shattuck Road Well will now be re-allocated to Whitney Well #3, which will be the maximum authorized daily limit from that well.

Special Condition 2, Maximum Daily Withdrawals from Groundwater Withdrawal Points, reflects the MassDEP-approved Zone II maximum daily pumping rate for each of Groton's permitted sources. Withdrawals in excess of these maximum daily rates require approval from the Department.

Special Condition 3, Zone II Delineation requirements have been met and no further delineations are required as a condition of this permit.

Special Condition 4, Wellhead Protection requirements for all Groton's wells have been met and are up to date as of the issuance of this permit.

Special Condition 5, Residential Gallons per Capita Day (RGPCD) has changed from the prior permit. Groton's old permit required compliance with an RGPCD standard of 80 by December 31, 2011. This new amended permit will require compliance with the RGPCD standard of 65 by December 31, 2023. Groton has met this performance standard in recent years.

Special Condition 6, Performance Standard for Unaccounted for Water (UAW) has changed from the prior permit. Groton's old permit required compliance with an UAW standard of 15% by December 31, 2011. This new amended permit requires compliance with a UAW performance standard of 10% for two out of three of the most recent calendar years by December 31, 2023. Groton has also met this performance standard in recent years as well.

Special Condition 7, Seasonal Limits on Nonessential Outdoor Water Use, has been added to Groton's permit. Streamflow-triggered restrictions will be determined by flows measured at USGS streamflow gage 01099500 – Concord River Below R Meadow Brook at Lowell, MA. The options outlined in Special Condition 7 are based on whether reported RGPCD for the previous year was in compliance with the RGPCD Performance Standard (see Special Condition 5, Performance Standard for RGPCD). Because Groton's Merrimack subbasins are more than 25% August Net Groundwater Depleted, a more restrictive limit is used.

Each year Groton may choose one of two options for implementing nonessential outdoor watering restrictions.

- **Calendar triggered restrictions** are in place from May 1st through September 30th. Many public water suppliers find this option easier to implement and enforce than the streamflow triggered approach.
- **Streamflow triggered restrictions** are implemented at those times when streamflow falls below designated flow triggers measured at an assigned, web-based, real-time U.S. Geologic Survey (USGS)

stream gage from May 1st through September 30th. At a minimum, restrictions commence when streamflow falls below the trigger for three consecutive days. Once implemented, the restrictions remain in place until streamflow at the assigned USGS local stream gage meets or exceeds the trigger streamflow for seven consecutive days.

- If Groton selects the streamflow trigger approach, it has been assigned USGS stream gage 01099500 – Concord River Below R Meadow Brook at Lowell, MA. The local gage streamflow triggers at this site are **427** cubic feet per second (cfs) for May and June, and **156** cfs for July, August and September. Should the reliability of flow measurement at this gage be so impaired as to question its accuracy, Groton may request MassDEP’s review and approval to transfer to another gage to trigger restrictions. MassDEP reserves the right to require use of a different gage.
- **The 7-Day Low Flow Trigger**, at which restrictions increase, is incorporated into both Calendar and Streamflow Triggered restrictions in order to provide additional protection to streamflows when flows are very low. The 7-day low flow trigger is based on the median value of the annual 7-day low flows for the period of record. The 7 day low-flow trigger for the Concord River Below R Meadow Brook at Lowell gage is **71** cfs.

Groton may choose to implement limits on nonessential outdoor water use that are stricter than those required by the permit.

Special Condition 8, General Water Conservation Requirements, have been modified from the prior permit, and incorporates the Water Conservation Standards for the Commonwealth of Massachusetts adopted by the Water Resources Commission in July 2018 (<https://www.mass.gov/massachusetts-water-conservation-standards>).

Special Condition 9, Reporting Requirements, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

Special Condition 10, General Permit Requirements, contains conditions that pertain to all permittees.

Public Comment

The draft amended Permit was posted in the Massachusetts Environmental Monitor for public comment from December 7, 2022 to January 7, 2023. One set of comments was submitted by the Department of Conservation and Recreation, and requested the following changes:

- Correct any appearances of “Inter-Basin” or “Inter-basin” to all appear as “Interbasin”.
- On pg. 3 of the Findings of Fact: “Future increases in the permitted volume will trigger a review by Interbasin Transfer Act staff at the Department of Conservation and Recreation (DCR).” Change to “...will trigger a review by Water Resources Commission staff at the Department of Conservation and Recreation (DCR).”
- The Shattuck replacement wells are referred to in two different ways. In one place they are referred to as “Shattuck Road Well #1 and #2” and in another, “Shattuck Wells -OCG and -ODG”. These should be consistent.
- The table header for Table 2 in the Draft permit is “Table 2: Merrimack River Authorized Withdrawal Rates”. Suggest to add “Basin” between River and Authorized.

These changes have been made to the final permit.



Department of Environmental Protection

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
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Rebecca L. Tepper
Secretary

Gary Moran
Acting Commissioner

WATER WITHDRAWAL PERMIT AMENDMENT Permit #9P-2-13-115.01 Town of Groton

This amendment of Permit #9P-2-13-115.01 is approved pursuant to the Massachusetts Water Management Act (WMA) 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 amended permit conveys no right in or to any property.

PERMIT NUMBER: #9P-2-13-115.01 **RIVER BASIN:** Merrimack River

PERMITTEE: Town of Groton
Groton Town Hall
173 Main Street
Groton, MA 01450

EFFECTIVE DATE: January 25, 2023

EXPIRATION DATE: November 30, 2018¹

TYPE AND NUMBER OF WITHDRAWAL POINTS: Groundwater: 3 Surface Water: 0

USE: Public Water Supply **DAYS OF OPERATION:** 365

AUTHORIZED WITHDRAWAL POINTS:

Table 1: Authorized Withdrawal Points

Well Name	PWS Source ID Code
Whitney Well #1	2115000-03G
Whitney Well #2	2115000-04G
Whitney Well #3	*

*PWS source code will be assigned by DEP Drinking Water Program when the well goes on-line.

¹ The original expiration date for this permit was November 30, 2014. In 2010 this permit was extended for 2 years, to November 30, 2016, by Section 173 of Chapter 240 of the Acts of 2010, the Permit Extension Act. In 2012 the Permit Extension Act was amended by Chapter 238 of the Acts of 2012 and this permit was extended an additional 2 years to November 30, 2018. Pursuant to M.G.L. c. 30A, § 13, and 310 CMR 36.18(7), the amended permit will continue in force and effect until MassDEP issues a decision on Groton's renewal application.

1. Maximum Authorized Annual Average Withdrawal

This permit authorizes the Town of Groton to withdraw water from the Merrimack River Basin at the rate described below in Table 2. The permitted volumes are expressed both as an average daily withdrawal rate (million gallons per day or MGD), and as a total annual withdrawal volume (million gallons per year or MGY) for each permit period outlined. 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 rates.

Table 2: Merrimack River Basin Authorized Withdrawal Rates

Permit Periods	Total Raw Water Withdrawal Volumes		Total Raw Water Withdrawal Volumes		Total Raw Water Withdrawal Volumes	
	Permit		Registration		Permit + Registration	
	Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
2/6/2023 to 11/30/2018 ¹	0.33	120.45	0.217	79.205	0.547	199.655

2. Maximum Daily Withdrawals from Groundwater Withdrawal Points

Withdrawals from permitted groundwater sources are not to exceed the approved maximum daily rates listed in Table 3 below without advance written approval from the Department.

Table 3: Maximum Daily Withdrawal Rates from Authorized Groundwater Withdrawal Points

Well Name	PWS Source ID Code	Maximum Daily Rate (MGD) for Wells
Whitney Well #1	2115000-03G	Combined not to exceed 0.576
Whitney Well #2	2115000-04G	
Whitney Well #3	*	0.324**

*PWS source codes will be assigned by DEP Drinking Water Program when the wells go on-line.

**Whitney Well #3's use is contingent on Groton requesting the following from MassDEP within 30 days of the issuance of this permit:

- The removal of the Shattuck Road Well (2115000-01G) from Groton's registration statement; and
- The Shattuck Road Well be changed from "Emergency Status" to "Inactive Status".

3. Zone II Delineation

All of Groton's Zone II delineation requirements have been met and no further delineations are required as a condition of this permit.

4. Wellhead Protection

Wellhead Protection requirements for all Groton's wells have been met and are up to date as of the issuance of this permit.

5. Performance Standard for Residential Gallons Per Capita Day Water Use

Groton's Performance Standard for Residential Gallons Per Capita Day (RGPCD) is 65 gallons. Groton shall be in compliance with the Performance Standard by December 31, 2023. Groton shall report its RGPCD water use annually in its Annual Statistical Report (ASR). See Appendix A for additional information on the requirements if the Performance Standard for RGPCD is not met.

6. Performance Standard for Unaccounted for Water

Groton's Performance Standard for Unaccounted for Water (UAW) is 10% of overall water withdrawal for two out of the three most recent years. Groton shall be in compliance with the Performance Standard by December 31, 2023. Groton shall report its UAW annually in its Annual Statistical Report (ASR). See Appendix B for additional information on requirements if the Performance Standard for UAW is not met.

7. Seasonal Limits on Nonessential Outdoor Water Use

Groton shall limit nonessential outdoor water use through mandatory restrictions from May 1st through September 30th as outlined in Table 4 below.

Groton shall be responsible for tracking streamflow gages and drought advisories and recording and reporting when restrictions are implemented if triggered restrictions are implemented. See Table 5: *Instructions for Accessing U.S. Geologic Survey Groundwater Level and Massachusetts Drought Advisory Website Information*. Groton shall also document compliance with the seasonal limits on nonessential outdoor water use annually in its Annual Statistical Report (ASR), and indicate whether it anticipates implementing calendar triggered restrictions or USGS monitoring well triggered restrictions during the next year.

Restricted Nonessential Outdoor Water Uses

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

- irrigation of lawns via sprinklers or automatic irrigation systems;
- filling swimming pools;
- washing of 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, before 9 am and after 5 pm, 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 by means of automatic sprinklers outside the hours of 9 am to 5 pm;
- irrigation of gardens, flowers and ornamental plants by means of a hand-held hose or drip irrigation systems; 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 limited fairway watering, or irrigation by plant nurseries as necessary to maintain stock).

Public Notice of Seasonal Nonessential Outdoor Water Use Restrictions

Groton shall notify its customers of the restrictions, including a detailed description of the restrictions and penalties for violating the restrictions. Notice that restrictions have been put in place shall be filed each year with the Department within 14 days of the restriction's effective date. Filing shall be in writing on the form "Notification of Water Use Restrictions" available on MassDEP website.

**Table 4: Seasonal Limits on Nonessential Outdoor Water Use
May 1 to September 30**

Restrictions if Groton has met the 65 RGPCD Standard for the preceding year RGPCD \leq 65 as reported in the ASR and accepted by MassDEP	
Calendar Triggered Restrictions	<p>Nonessential outdoor water use is restricted to:</p> <ul style="list-style-type: none"> a. two (2) days per week before 9 am and after 5 pm; and b. one (1) day per week before 9 am and after 5 pm <p>when USGS stream gage 01099500 – Concord River Below R Meadow Brook at Lowell, MA falls below 7-day the low-flow statistic of 71 cfs for three (3) consecutive days.</p> <p>Once streamflow triggered restrictions are implemented, they shall remain in place until streamflow at the gage meets or exceeds 71 cfs for seven (7) consecutive days.</p>
Streamflow Triggered Restrictions	<p>Nonessential outdoor water use is restricted to:</p> <ul style="list-style-type: none"> a. two (2) days per week before 9 am and after 5 pm when USGS stream gage 01099500 – Concord River Below R Meadow Brook at Lowell, MA falls below: <ul style="list-style-type: none"> • May 1 – June 30: 427 cfs for three (3) consecutive days • July 1 – September 30: 156 cfs for three (3) consecutive days b. one (1) day per week before 9 am and after 5 pm when USGS stream gage 01099500 – Concord River Below R Meadow Brook at Lowell, MA falls below the 7-day low-flow statistic 71 cfs for three (3) consecutive days. <p>Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.</p>
Restrictions if Groton has not met the 65 RGPCD standard for the preceding year RGPCD $>$ 65 as reported in the ASR and accepted by MassDEP	
Calendar Triggered Restrictions	<p>Nonessential outdoor water use is restricted to one (1) day per week before 9 am and 5 pm.</p>
Streamflow Triggered Restrictions	<p>Nonessential outdoor water use is restricted to one (1) day per week before 9 am and after 5 pm when USGS gage 01099500 – Concord River Below R Meadow Brook at Lowell, MA falls below:</p> <ul style="list-style-type: none"> • May 1 – June 30: 427 cfs for three (3) consecutive days • July 1 – September 30: 156 cfs for three (3) consecutive days <p>Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.</p>
Instructions for Accessing Streamflow and Drought Advisory Website Information	
<p>Streamflow information is available at the USGS National Water Information System (NWIS): Web Interface. The USGS NWIS default shows Massachusetts streamflows in real time, i.e., the most recent, usually quarterly hourly, reading made at each USGS stream gage.</p> <p>Seasonal Limits on Nonessential Outdoor Water Use are implemented when the mean daily streamflow falls below the designated trigger. The mean daily flow is not calculated until after midnight each day when the USGS computes the hourly data into a mean daily streamflow. As</p>	

a result, Groton must use the mean daily streamflow from the preceding day when tracking streamflows.

Mean daily streamflow gage readings are available at the USGS NWIS Web Interface at <http://waterdata.usgs.gov/ma/nwis/current/?type=flow>.

- Scroll down to #01099500 – Concord River Below R Meadow Brook at Lowell, MA.
- Click on the gage number.
- Under “Concord River Below R Meadow Brook at Lowell, MA” click “Legacy real-time page.”
- Scroll down to “Provisional Data Subject to Revision – Available data for this site” and click on the drop-down menu.
- Click on “Time-series: Daily data” and hit GO.
- Scroll down to the “Available Parameters” box. Within the box, be sure “Discharge (mean)” is checked, then, under “Output Format” click “Table” and hit GO.
- Compare the cubic feet per second (cfs) measurement shown on the table to the cfs shown under Streamflow Triggered Restrictions above.

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

8. Water Conservation Requirements

At a minimum, Groton shall implement the following conservation measures outlined in Table 5. The Department recognizes that Groton is currently implementing a number of these requirements. Compliance with the water conservation requirements shall be reported to the Department upon request, unless otherwise noted below.

Table 5: Minimum Water Conservation Requirements	
System Water Audits and Leak Detection	
1.	At a minimum, conduct a full leak detection survey every three years. The first full leak detection survey shall be completed no later than 3 years from the date of last documented leak detection survey.
2.	Perform a leak detection survey of those sections of the distribution system that have not been surveyed within the last year whenever the percentage of unaccounted for water 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, Permittee shall 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.	Permittee shall have repair reports available for inspection by MassDEP. Permittee shall establish a schedule for repairing leaks that is at least as stringent as the following: <ul style="list-style-type: none">• Leaks of 15 gallons per minute or more shall be repaired as soon as possible but not later than one month after leak detection.*• Leaks of less than 15 gallons per minute, but greater than 5 gallons per minute, shall be repaired as soon as possible but not later than two months after leak detection.*• Leaks of 5 gallons per minute or less shall be repaired as soon as possible but not later than six months after leak detection, except that hydrant leaks of one gallon or less per minute shall be repaired as soon as possible.*• Leaks shall be repaired in accordance with the priority schedule including leaks up to the property line, curb stop or service meter, as applicable.

Table 5: Minimum Water Conservation Requirements	
<ul style="list-style-type: none"> Have water use regulations in place that require property owners to expeditiously repair leaks on their property. <p>The following exceptions can be considered:</p> <ul style="list-style-type: none"> 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.** <p>*Reference: MWRA regulations 360 CMR 12.09</p> <p>**Mass Highway or local regulations may regulate the timing of tearing up pavement on roads to repair leaks.</p>	
Metering	
1.	Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.
2.	Ensure that the system is 100% metered, including all water use at municipal facilities (schools, school athletic fields, etc.).
3.	<p>All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards.</p> <p>AWWA References: AWWA Manual M22 – Sizing Water Service Lines and Meters AWWA Manual M6 – Water Meters, or as amended</p>
4.	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 your customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections.
5.	Ensure placement of sufficient funds in the annual water budget to calibrate, repair, or replace meters as necessary.
Pricing	
1.	<p>Implement a water revenue structure that includes the full cost of operating the water supply system in compliance with state and federal requirements by the next 5-year review. Evaluate revenues every three to five years and adjust rates as needed. Full cost pricing factors all costs – operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) – into the revenue structure.</p> <p>AWWA References for Additional Information on Pricing: AWWA Manual 1- Principals of Water Rates, Fees and Charges</p>
2.	AWWA Manual 29- Fundamentals of Water Utility Financing
3.	Permittee reports using an increasing block rate structure and shall continue to do so.
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.	Municipal buildings

Table 5: Minimum Water Conservation Requirements	
<ul style="list-style-type: none"> All municipally owned public buildings in Groton's service area have been retrofitted with water saving devices (faucet aerators, low flow shower heads and low flow toilets) since 2006. 	
Industrial and Commercial Water Conservation	
1.	Permittee shall review the use records for its industrial, commercial and institutional water users and develop an inventory of the largest water users. Permittee shall develop and implement an outreach program designed to inform and (where appropriate) work with its largest industrial, commercial and institutional water users on ways to reduce their water use. Such outreach plans can include, but are not limited to: information on water audits, meter sizing, water reuse, low-flow plumbing fixtures, mandatory outdoor water use restrictions, suggestions for contacting trade associations for process specific information on water use reductions, and information on contacting the Executive Office of Environmental Affairs Office of Technical Assistance for Toxics Use Reduction (OTA) which offers a range of assistance and information to help facilities improve water use efficiency and reduce wastewater discharge. OTA can be contacted at (617) 626-1060 or at www.mass.gov/envir/ota .
2.	Upon request by MassDEP, Permittee shall report on industrial, commercial and institutional water conservation including the results of its review of water use records for industrial, commercial and institutional water users, the inventory of the largest water users, copies of any outreach materials distributed to industrial, commercial and institutional water users, and to the extent practical, a summary of water use reductions or savings that have resulted. Upon receipt of this report, MassDEP will take whatever action it deems appropriate to promote the interests of the Water Management Act, including without limitation requiring Permittee to take additional actions to reduce industrial, commercial and institutional water use.
Lawn and Landscape	
1.	Since 2002, Permittee's water use restriction bylaw (Restricted Water Uses, Ch. 91 Section 5-9 of Groton's General Bylaws) provides authority to implement and enforce water use restrictions required by the Special Condition, "Seasonal Limits on Nonessential Outdoor Water Use".
Public Education and Outreach	
1.	<p>Develop and implement a Water Conservation Education Plan. Permittee's Water Conservation Education Plan shall be designed to educate Permittee's water customers of ways to conserve water. Without limitation, Permittee's plan may include the following actions:</p> <ul style="list-style-type: none"> Annual work sheets, included in water bills or under separate cover, to enable customers to track water use and conservation efforts and estimate the dollar savings; Public space advertising/media stories on successes (and failures); Conservation information centers perhaps run jointly with electric or gas company; Speakers for community organizations; Partner with garden clubs, or other private and non-profit organizations, to promote efficient water use; Provide information on water-wise landscaping, gardening, efficient irrigation and lawn care practice; Public service announcements; radio/T.V./audio-visual presentations; Joint advertising with hardware stores to promote conservation devices; Water conservation workshops for the general public Use of civic and professional organization resources; Special events such as Conservation Fairs; Develop materials that are targeted to schools with media that appeals to children, including materials on water resource projects and field trips; and

Table 5: Minimum Water Conservation Requirements	
<ul style="list-style-type: none">• Make multilingual materials available as needed.○ References and additional information available through the USEPA Water Sense Program at http://www.epa.gov/watersense.	
1.	Upon request of MassDEP, Permittee shall report on its public education and outreach effort, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.

9. Reporting Requirements

Groton shall report annually as required by completing the electronic Annual Statistical Report (eASR) for public water suppliers, and shall provide other reporting as specified in the Special Conditions above.

10. General Permit Conditions (applicable to all Permittees)

- 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.
- 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.
- Entry and Inspections** The Permittee or the Permittee's agent shall allow personnel or authorized agents or employees of MassDEP to enter and examine any property, inspect and monitor the withdrawal, and inspect and copy any relevant 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.
- Water Emergency** Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by MassDEP pursuant to M.G.L. c. 21G, §§ 15-17, M.G.L. c. 111, § 160, or any other enabling authority.
- Transfer of Permits** This permit shall not be transferred in whole or in part unless and until MassDEP approves such transfer in writing, pursuant to a transfer application on forms provided by MassDEP requesting such approval and received by MassDEP 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 36.40.
- Duty to Report** The Permittee shall submit annually, on a form provided by MassDEP, a certified statement of the withdrawal. Such report is to be received by MassDEP by the date specified by MassDEP. Such report must be mailed or hand delivered to the address specified on the report form.
- Duty to Maintain Records** The Permittee shall be responsible for maintaining withdrawal records as specified by this permit.
- Metering** Withdrawal points shall be metered. Meters shall be calibrated annually. Meter shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.
- Amendment, Suspension or Termination** The Department may amend, suspend or terminate this permit in accordance with M.G.L. c. 21G or 310 CMR 36.29.

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of MassDEP. Any person aggrieved by this decision may request an adjudicatory hearing. Any such request must be made in writing, by certified mail and received by MassDEP 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 community 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 MassDEP.

CONTENTS OF HEARING REQUEST

310 CMR 1.01(6)(b) requires the request to include a clear and concise statement of the facts which are the grounds for the request and the relief sought. In addition, the request must include a statement of the reasons why the decision of MassDEP is not consistent with applicable rules and regulations, and for any person appealing this decision who is not the applicant, a clear and concise statement of how that person is aggrieved by the issuance of his permit.

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 municipality (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

WAIVER

MassDEP may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of MassDEP 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 Act Program
Bureau of Water Resources

February 6, 2023

Date

Appendix A – Functional Equivalence with the 65 Residential Gallons Per Capita Day Performance Standard

MassDEP will consider PWS permittees who cannot meet the 65 RGPCD performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going program in place that ensures “best practices” for controlling residential water use as described below.

If the permittee fails to document compliance with the RGPCD performance standard in its 2018 Annual Statistical Report (ASR), or in any ASR thereafter, then the permittee must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall include, at a minimum:

1. A description of the actions taken during the prior calendar year to meet the performance standard;
2. An analysis of the cause of the failure to meet the performance standard;
3. A description of the actions that will be taken to meet the performance standard which must include, at a minimum, at least one of the following:
 - a) a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
 - b) a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets), or
 - c) the adoption and enforcement of an ordinance, by-law or regulation to require the installation of moisture sensors or similar climate related control technology on all automatic irrigation systems; and may include, without limitation, the following:
 - d) the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
 - e) a program that provides rebates or other incentives for the installation of moisture sensors or similar climate related control technology on automatic irrigation systems;
 - f) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction include water saving devices and low water use appliances;
 - g) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction minimize lawn area and/or irrigated lawn area, maximize the use of drought resistant landscaping, and maximize the use of top soil with a high water retention rate;
 - h) the implementation of a program to encourage the use of cisterns or rain barrels for outside watering;
 - i) the implementation of monthly or quarterly billing.
4. A schedule for implementation; and
5. An analysis of how the planned actions will address the specific circumstances that resulted in the failure to meet the performance standard.

If the permittee is already implementing one or more of these programs, it must include in its RGPCD plan the continued implementation of such program(s), as well as implementation of at least one additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

RGPCD plans may be amended to revise the actions that will be taken to meet the performance standard. Amended RGPCD plans must include the information set forth above.

If a RGPCD plan is required, the permittee must:

1. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD plan annually at the time it files its ASR, and
2. continue to implement the RGPCD plan until it complies with the performance standard and such compliance is documented in the permittee’s ASR for the calendar year in which the standard is met.

Appendix B – Functional Equivalence with the 10% Unaccounted for Water Performance Standard

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 program in place that ensures “best practices” for controlling water loss. The water loss control program will be based on annual water audits and guidance as described in the AWWA/IWA *Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs* (AWWA M36).

If, as of December 31, 2019, the permittee fails to document compliance with the Unaccounted for Water performance standard (UAW of 10% or less for 2 of the 3 most recent years throughout the permit period), then the permittee shall develop and implement a water loss control program following the *AWWA M36 Water Audits and Loss Control Programs* within 5 full calendar years.

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 with its 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 long-term program to reduce real and apparent water losses.
 - 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.
 - 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, the permittee shall 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. The Permittee shall submit the component analysis and water loss control program with a proposed implementation schedule to the Department.
3. Continued implementation will be a condition of the permit in place of meeting the 10% UAW performance standard.
4. Upon request of the Department, the permittee shall report on its implementation of the water loss control program.

A PWS permittee may choose to discontinue the water loss program implementation if UAW, as reported on the ASR and approved by MassDEP, 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 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 UAW Water Loss Control Measures: Permittees who do not have MassDEP approved Water Loss Control Programs in place by 6th calendar year after 2019 will be required to implement the MassDEP UAW Water Loss Control Measures outlined below:

- An annual water audit and leak detection survey, as described in the AWWA M36 Manual, of 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.
- Water pricing structure 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 UAW Water Loss Control Measures and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits. Suppliers will be able to present:

- Reasons why specific measures are not cost effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard;
- Alternative 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 Functional Equivalence Plan; and
- When applicable, an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship.