



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

December 16, 2021

Mr. John Curran
Town Manager
Town of Billerica
365 Boston Road
Billerica, MA 01821

RE: Billerica – BRP/WMA
Town of Billerica
PWS ID #3031000
Water Management Act Permit
Permit #9P-3-14-031.01

Dear Mr. Curran,

Attached please find:

- Findings of Fact in support of the renewal of Permit #9P314031.01, and
- WMA Permit #9P314031.01 for the Town of Billerica.

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 at (617) 654-6591 or via e-mail at jen.durso@mass.gov.

Sincerely,

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

Y:\DWP Archive\NERO\Billerica-3031000-WMA Permit 9P3142031.01 12-16-2021

Ecc: Abdul Alkhatib, Billerica
John McGovern, Billerica
Billerica Board of Selectmen
Anne Carrol, DCR OWR
Marilyn McCrory, DCR OWR
Kevin Brander, MassDEP
Jen Pederson, MWWA
Julia Blatt, MA Rivers Alliance

Sarah Bower, MA Rivers Alliance

Nancy Bryant, Executive Director, SuAsCo Watershed Comm. Council

Alison Field Juma, OARS

Ken Carlson, Woodard & Curran

Paul Hogan, Woodard & Curran

Lauren Frank, Woodard & Curran

Rob Little, Woodard & Curran

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.



3 Português (Portuguese):

Este documento é importante e deve ser traduzida imediatamente. Se você precisa deste documento traduzido, por favor, entre em contato com Diretor de Diversidade da MassDEP para os números de telefone listados abaixo.



4(a) 中國（傳統）(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與 MassDEP 的多樣性總監聯繫。



4(b) 中国（简体中文）(Chinese (Simplified)):

本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与 MassDEP 的多样性总监联系。



5 Ayisyen (franse kreyòl) (Haitian) (French Creole):

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.



6 Việt (Vietnamese):

Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đa dạng tại các số điện thoại được liệt kê dưới đây.



7 ប្រទេសកម្ពុជា (Kmer (Cambodian)):

ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាមៗ ប្រសិនបើអ្នកត្រូវបានបកប្រែ ឯកសារនេះសូមទំនាក់ទំនងឆ្នោតជាមួយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយ ខាងក្រោម។



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.



9 Русский язык (Russian):

Этот документ является важным и должно быть переведено сразу. Если вам нужен этот документ переведенный, пожалуйста, свяжитесь с директором разнообразия MassDEP по адресу телефонных номеров, указанных ниже.



10 العربية (Arabic):

هذه الوثيقة الهامة وينبغي أن تترجم على الفور. إذا كنت بحاجة إلى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في PMassDE على أرقام الهواتف المدرجة أدناه.



11 한국어 (Korean):

이 문서는 중요하고 즉시 번역해야 합니다. 당신이 번역이 문서가 필요하면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다.



12 հայերեն (Armenian):

Այս փաստաթուղթը շատ կարևոր է եւ պետք է թարգմանել անմիջապես. Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանվել դիմել MassDEP բազմազանությունը տնօրեն է հեռախոսահամարների թվարկված են ստորև.



13 فارسی (Farsi (Persian):

این سند مهم است و باید فوراً ترجمه شده است. اگر شما نیاز به این سند ترجمه شده، لطفاً با ما تماس تنوع مدیر PMassDE در شماره تلفن های ذکر شده در زیر.



14 Français (French):

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



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.



16 Ελληνική (Greek):

Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως. Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήστε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.



17 Italiano (Italian):

Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.



18 Język Polski (Polish):

Dokument ten jest ważny i powinien być natychmiast przetłumaczony. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.



19 हिन्दी (Hindi):

यह दस्तावेज़ महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.



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

Findings of Fact in Support of Final Permit Issuance Water Management Permit #9P3142301.01 Town of Billerica

The Department of Environmental Protection (the Department) makes the following Findings of Fact in support of the attached Water Management Permit #9P3142301.01, 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 a water withdrawal permit renewal application by the Town of Billerica, (Billerica or the Town) for the purpose of public water supply.

Billerica operates one (1) surface water source in the Concord River Basin that is registered and permitted with the Water Management Act Program. Billerica holds a registration statement for an average annual daily withdrawal volume of 4.41 million gallons per day (MGD) for its Concord River withdrawal point. Billerica was issued a Water Management Act permit in July 1992 in order to increase its total authorized withdrawal volume. Billerica was authorized through their permit and registration to withdraw up to 5.34 MGD through August 2011. That permit was then extended for 2 years to August 2013, 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 the permit was extended an additional 2 years to August 2015. Pursuant to M.G.L. c. 30A, Section 13, and 310 CMR 26.18(7), the permit continued in force until the date the Department issues a final renewed permit.

On August 5, 2015, Billerica applied to MassDEP for a permit renewal in the Concord River Basin. On February 25, 2020, Billerica was issued a Permit Renewal Order to Complete (OTC) outlining specific information that was required to renew Billerica's permit. Billerica responded with a draft on August 6th, 2020, and September 10th, 2020, and in final form on November 19, 2020.

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

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 Concord River Basin section of this document). For more information on the Safe Yield methodology, go to the November 28, 2012 SWMI Framework Summary and Appendices;
- 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 ([Details on the 2018 Massachusetts Water Conservation Standards | Mass.gov](#)); 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;
- 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 without limitation;
 - protection for coldwater fish resources;
 - minimization of withdrawal impacts in areas stressed by groundwater use;
 - mitigation of the impacts of increasing withdrawals.

Safe Yield in the Concord River Basin

This 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 Concord River Basin is 87.5 million gallons per day (MGD), and total registered and permitted withdrawals are 36.79 MGD. The maximum withdrawals that will be authorized in this permit, and all other permits currently under review by the Department within the Concord River Basin, will be within the safe yield and may be further conditioned as outlined in the regulations.

Findings of Fact for Permit Conditions in Billerica'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 in the Final 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

The Department of Conservation and Recreation's Office of Water Resources (DCR) developed draft Water Needs Forecasts (WNF) for Billerica in the Concord River Basin in June 2015. A number of concerns were raised during the development of Billerica's WNF including questions about Billerica's reported raw and finished water volumes and Billerica's long-term needs. After several exchanges of information, it was agreed the DRAFT WNF approved would be used in permitting with the potential for that volume to be increased through a Water Management Permit Amendment (BRPWM02) application and a new WNF from DCR for volumes up to their existing allocation of 5.34 MGD. DCR projected a range of values for Billerica that identified potential demands from 4.36 MGD to 4.75 MGD thru 2031. DEP's practice has been to allocate annual withdrawal rates based on the 65/10 DCR projections, which are outlined in Table 1 below.

TABLE 1: Summary of Town of Billerica's WMA Authorizations	
WMA Authorization	Raw Volume Authorized
WMA Permit #9P314031.01	0.34 MGD (124.1 MGY)
WMA Registration #31403101	4.41 MGD (1,609.65 MGY)
Total WMA Authorization thru 2031	4.75 MGD (1,733.75 MGY)

In 2019, Billerica's average daily raw withdrawal from the Concord River Basin was 4.53 MGD, and in 2020, it was 4.41 MGD. While this is close to the total WMA authorization thru 2026, Billerica will need to improve its data keeping and reduce its unaccounted-for-water before requesting additional withdrawal volume. If water needs are expected to exceed the maximum authorized in this permit and Billerica is meeting all of its permit conditions, Billerica may apply for up to 5.34 MGD at any time by submitting a Water Management Act Permit Amendment Application (BRPWM02) and obtaining a new WNF from DCR. Note that should Billerica need more than 5.34 MGD they will also need to file and obtain a new Water Management Permit (BRPWM03).

Special Condition 2, Maximum Daily Withdrawals from Withdrawal Points, reflects the maximum daily withdrawal rate for the Concord River withdrawal point based on the treatment plant's capacity.

Special Condition 3, Residential Gallons per Capita Day (RGPCD) has not changed from the prior permit. This performance standard requires Billerica to meet 65 RGPCD. From 2016 to 2020, Billerica met the RGPCD requirement every year. Billerica's average RGPCD from 2016 to 2020 was 60.

Special Condition 4, Performance Standard for Unaccounted for Water (UAW) has not changed from the prior permit. The UAW required for all PWS permittees is 10%. In the renewed permit, Billerica will be required to meet the 10% standard for 2 out of every 3 years. Based on previous non-compliance with this Performance Standard, Billerica shall complete Step 1 of developing a Municipal Water Loss Control Program as part of their functional equivalence requirements (Appendix B) by March 31, 2022. Billerica will be required to continue to follow the Functional Equivalence requirements until Billerica is in compliance for two out of three years.

Table 2: Billerica's DEP Approved UAW %

2020	2019	2018	2017	2016
28%	20%	15%	17%	22%

Special Condition 5, Seasonal Limits on Nonessential Outdoor Water Use, includes revisions to your existing outdoor water use restriction requirement. The streamflow-triggered restrictions will continue to be determined by flows measured at USGS streamflow gage, #01099500, Concord River below River 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 3, Performance Standard for RGPCD).

Each year Billerica 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 Billerica selects the streamflow trigger approach, it has been assigned USGS stream gage #01099500 –Concord River below 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, Billerica 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 Meadow Brook gage is **71** cfs.

Billerica may choose to implement limits on nonessential outdoor water use that are stricter than those required by the permit. This permit condition does not confer enforcement authority to the permittee.

Special Condition 6, General Water Conservation Requirements, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the WRC in July 2018. ([Details on the 2018 Massachusetts Water Conservation Standards | Mass.gov](#)).

Special Condition 7, Reporting Requirements, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported. In addition, for each year that Billerica reports on its Annual Statistical Report (ASR) that its finished water is greater than its raw water, Billerica’s ASR shall include for MassDEP’s review and approval an AWWA M36 Water Audit, conducted for that year.

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

Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins, requires permittees with permitted groundwater sources in subbasins with net groundwater depletion of 25% or more during August to minimize their withdrawal impacts on those subbasins, to the greatest extent feasible,

through optimization of groundwater source use, surface water releases to improve streamflows, outdoor water use restrictions and water conservation programs that go beyond standard Water Management permit requirements. Billerica does not have any groundwater sources; therefore, this condition does not apply.

Coldwater Fishery Resource (CFR) Protection requires permittees with withdrawals that may impact the streamflow of a CFR (identified on subbasin maps) to evaluate reducing impacts to CFRs through feasible optimization. Billerica does not have any sources that may impact CFRs at this time; therefore, this condition does not apply.

Mitigation of Impacts for Withdrawals that Exceed Baseline¹, requires mitigation of the impacts of withdrawals above the permittee's baseline by direct and/or indirect mitigation activities. Billerica's Baseline in the Concord River Basin (5.34 MGD) is based on the 2005 authorized volume + 5%. Billerica's total authorized withdrawal in this permit is not above their baseline; therefore, no mitigation is required at this time.

Response to Comments

Comments on the Draft permit were received from the Massachusetts River Alliance in a letter dated September 10, 2021. Below is a summary of changes to the final permit and of MassDEP's response to those comments.

Comment: We support Condition 1 of the Draft Permit holding Billerica to the Water Needs Forecast total authorized allocation through 2031 of 4.75 million gallons per day (MGD) in their renewed Permit, but we are concerned that the maximum allocation is still inadequate at protecting streamflow in the Concord River. At the very least, MassDEP should remain vigilant at keeping Billerica's total allocation at 4.75 MGD.

Response: Special Conditions 3, 4, 5, and 6 of Billerica's draft permit imposes conservation measures on both Billerica and its water users. These conditions include performance standards for Residential Gallons per Capital Day (RGPCD) and Unaccounted for Water (UAW), as well as Outdoor Water Use Restrictions and General Conservation requirements. MassDEP believes that these conservation and demand management conditions will help to control demands and require efficient water use. Any volume higher than 4.75 MGD will require the filing a permit amendment application and additional public notice.

Comment: MassDEP should determine the percentage of flow in the Concord River under lower flow conditions at which it would be detrimental to the river's ecosystem for Billerica to continue maximum water withdrawals. We request MassDEP add a condition in the Final Permit that requires Billerica to slow or stop pumping and utilize an alternative water supply when the river falls below the flow percentage threshold.

¹ Baseline is the volume of water withdrawn in 2005 plus 5%, or the average volume withdrawn from 2003 to 2005 plus 5%, which is greater. Baseline cannot be less than the registered volume, and cannot be more than the authorized volume during the 2003-2005 period. For suppliers with authorizations in multiple major basins, baseline is computed for each basin and for the entire system.

Response: Under the new Outdoor Water Use Restrictions included in this permit, Billerica's Outdoor Water Use will be limited to one day per week outside the hours of 9 am – 5 pm when USGS stream gage 01108000 – Concord River at Meadow Brook, at Lowell MA falls below **71 cfs** for three (3) consecutive days. This is the 7-Day Low Flow Trigger, and is being 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. MassDEP believes these new restrictions will be sufficient in reducing Billerica's withdrawals during low flow episodes.

Comment: We recommend MassDEP require Billerica conduct a study of seasonal water use to determine the main causes of the relatively high ratios and take actions to reduce summertime use. Billerica should restrict nonessential water use from 7 days per week to 2 days per week through their Water Conservation Bylaw and implement the streamflow triggered restrictions, as the Town's surface water withdrawals directly alter streamflow in the river.

Response: Billerica's Outdoor Water Use will be limited to one day per week outside the hours of 9 am – 5 pm when USGS stream gage 01108000 – Concord River at Meadow Brook, at Lowell MA falls below **71 cfs** for three (3) consecutive days. Please see above. In the past, Billerica has not been required by their WMA permit to limit outdoor water use. MassDEP believes these new restrictions will contribute to reductions in Billerica's summertime water use.

Comment: The Final Permit should also require Billerica to include residential customers in their detailed consumer list and water conservation outreach/education efforts, as 77% of the Town's total water use is residential.

Response: This is already required. Please see Special Condition 6, Table 5, #3.

Comment: Billerica does not have a Drought Management Plan that follows AWWA planning guidance; development of such plan should be included as a requirement in the Final Permit within one year of permit issuance.

Response: In the past, Billerica has not been required by their WMA permit to limit outdoor water use. MassDEP believes these new restrictions will contribute to reductions in Billerica's summertime water use and will reevaluate this requirement at Billerica's next permit review. The option to develop a Drought Management Plan, as well as the option to implement restrictions based on a MassDEP-approved drought management plan, was added to Billerica's permit.

Comment: Billerica should undertake and ensure that all new development or redevelopment is water neutral by maximizing water use efficiency, paying for conservation measures and fixtures elsewhere in Town and paying into a water bank that the Town can use to improve water conservation through outreach, rebates, and infrastructure improvements where there are no other options.

Response: Billerica's revised permit requires them to meet the standards set forth in the Federal Energy Policy Act, 1992, the Massachusetts Plumbing Code, and must ensure water conservation practices are considered in all development proposals, particularly low flow devices and water-wise landscaping practices.

Comment: While we support MassDEP's requirement for Billerica to complete Step 1 of the Municipal Water Loss Control Program by December 2021, a prompt timeline to complete the remaining steps of the Program sooner than the 5-year maximum should be required given that there has been no improvement in Billerica's UAW in recent years. As well, MassDEP should require Billerica to submit standardized top-down water audits annually and conduct a leak detection survey each year (instead of every two years) to improve preventable water loss until the Town meets the UAW standard.

Response: Billerica is required to develop and implement a water loss control program following the *AWWA M36 Water Audits and Loss Control Programs* within 5 full calendar years of failing to meet the UAW standard. Special Condition 4 requires that Billerica complete a top-down water audit by March 31, 2022 which is the first step in a water loss control plan. If the data validity score is less than Level III (51-70), then steps must be taken to improve the reliability of data prior to developing a component analysis and long-term program to reduce real and apparent water losses. Developing data with an acceptable validity score can be a multi-year process, therefore a 5-year implementation schedule is the standard. Continued implementation of the Program is required in order for the permittee to be considered functionally equivalent with the 10% UAW performance standard and in compliance with their permit, therefore, an audit is required each year a permittee is not meeting the performance standard. Conducting a leak detection every three years is the industry standard, and is what is being applied in this permit. Billerica is required to conduct a leak detection survey of the entire distribution system within one year whenever the percentage of UAW increases by 5% or more.



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

WATER WITHDRAWAL PERMIT RENEWAL

Permit #9P314031.01

Town of Billerica

This renewal of Permit #9P314031.01 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 permit conveys no right in or to any property.

PERMIT NUMBER: 9P-3-14-031.01 **RIVER BASIN:** Concord

PERMITTEE: Town of Billerica
365 Boston Road
Billerica, MA 01821

EFFECTIVE DATE: December 16, 2021

EXPIRATION DATE: August 31, 2031

TYPE AND NUMBER OF WITHDRAWAL POINTS: Groundwater: 0 Surface Water: 1

USE: Public Water Supply

DAYS OF OPERATION: 365

AUTHORIZED WITHDRAWAL POINTS:

Table 1: Withdrawal Point Identification	
Source Code	Source
3031000-01S	Concord River

1. Maximum Authorized Annual Average Withdrawal

This permit authorizes the Town of Billerica to withdraw water from the Concord River Basin at the rate described in Table 2 below. 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: Town of Billerica Authorized Withdrawal Rates

Permit Periods	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)
12/16/2021 to 8/31/2026*	0.07	25.55	4.41	1,609.65	4.48	1,635.20
8/31/2026 to 8/31/2031*	0.11	40.15	4.41	1,609.65	4.52	1,649.80
2031 plus 5% buffer	0.34	124.10	4.41	1,609.65	4.75	1,733.75

*Upon submitting a request and receiving an advanced written approval from MassDEP, Billerica may be authorized to increase annual average daily withdrawals to the next permit period or the maximum authorized (4.75 MGD) prior to 2026 if Billerica is meeting:

- Residential Gallons Per Capita Day (RGPCD) of 65 or less, or all RGPCD functional equivalence requirements in Special Condition 3;
- Unaccounted-for-water (UAW) of 10% or less, or all UAW functional equivalence requirements in Special Condition 4;
- Seasonal limits on nonessential outdoor water use in Special Condition 5; and
- Water conservation requirements in Special Condition 6.

** Billerica may apply for up to 5.34 MGD at any time by submitting a Water Management Act Permit Amendment Application (BRPWM02) and obtaining a new WNF from DCR. Note that should Billerica need more than 5.34 MGD they will also need to file for new Water Management Permit (BRPWM03).

2. Maximum Daily Withdrawals from Withdrawal Points

Withdrawals from permitted 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 Withdrawal Points**

Source	Maximum Daily Rate
Concord River, 3031000-01S	14.0 MGD

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

The Town of Billerica's performance standard for residential gallons per capita day (RGPCD) is 65 gallons or less. Billerica shall continue to maintain compliance with this performance standard. If Billerica does not meet the standard, Billerica shall be in compliance with the functional equivalence requirements (Appendix A). Billerica shall report its RGPCD water use annually in its Annual Statistical Report (ASR).

4. Performance Standard for Unaccounted for Water

The Town of Billerica's Performance Standard for Unaccounted for Water (UAW) is 10% or less of overall water withdrawal for 2 of the most recent years 3 throughout the permit period. Based on previous non-compliance with this Performance Standard, Billerica shall be in compliance with Step 1 steps of developing a Municipal Water Loss Control Program as part of their functional equivalence requirements (Appendix B) by December 31, 2021.

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.

5. Seasonal Limits on Nonessential Outdoor Water Use

Billerica shall limit nonessential outdoor water use through mandatory restrictions from May 1st through September 30th as outlined in Table 4 below. Billerica shall start implementing the seasonal limits on nonessential outdoor water use on May 1, 2022.

Billerica shall be responsible for tracking steamflow gages and recording and reporting when restrictions are implemented if triggered restrictions are implemented. See Table 3 *Instructions for Accessing U.S. Geologic Survey Groundwater Level and Massachusetts Drought Advisory Website Information*. Billerica 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

Billerica 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**

For Permittees meeting 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 allowed:</p> <ul style="list-style-type: none"> a) Seven (7) 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 01108000 – Concord River at Meadow Brook, at Lowell MA falls below 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 allowed:</p> <ul style="list-style-type: none"> a) Seven (7) days per week before 9 am and after 5 pm <p>when USGS stream gage 01108000 – Concord River at Meadow Brook, 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 <ul style="list-style-type: none"> b) one (1) day per week before 9 am and after 5 pm <p>when USGS stream gage 01108000 – Concord River at Meadow Brook, Lowell, MA falls below 71 cfs for three (3) consecutive days.</p> <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>
For Permittees NOT meeting 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 allowed:</p> <ul style="list-style-type: none"> c) Two (2) days per week before 9 am and after 5 pm; and d) one (1) day per week before 9 am and after 5 pm <p>when USGS stream gage 01108000 – Concord River at Meadow Brook, at Lowell MA falls below 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 allowed two (2) day per week before 9 am and after 5 pm when USGS stream gage 01108000 – Concord River at Meadow Brook, 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>Nonessential outdoor water use is allowed one (1) day per week before 9 am and after 5 pm when USGS stream gage 01108000 – Concord River at Meadow Brook, Lowell, MA falls below:</p> <ul style="list-style-type: none"> • 71 cfs for three (3) consecutive days.

	Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.
--	---

Billerica may also opt to implement restrictions based on a MassDEP-approved drought management plan that includes environmental considerations. **Nothing in the permit shall prevent Permittee from implementing water use restrictions that are more stringent than those set forth in this permit.**

6. Water Conservation Requirements

At a minimum, Billerica shall implement the following conservation measures in Table 5. Compliance with the water conservation requirements shall be reported to the Department upon request, unless otherwise noted below.

Table 5: Minimum Water Conservation Requirements	
Leak Detection	
1.	At a minimum, conduct a full leak detection survey every three years.
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 the Department a report detailing the 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 <u>AWWA Manual 36</u> .
4.	<p>Billerica shall have repair reports available for inspection by the Department. Billerica shall establish a schedule for repairing leaks that is at least as stringent as the following:</p> <ul style="list-style-type: none"> ○ Leaks of 3 gallons per minute or more shall be repaired within 3 months of detection. ○ Leaks of less than 3 gallons per minute at hydrants and appurtenances shall be repaired as soon as possible. ○ 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 other roadwork is being performed on the roadway. <p>Leaks shall be repaired in accordance with Billerica's priority schedule including leaks up to the property line, curb stop or service meter, as applicable. Billerica shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.</p>
Metering	
1.	Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.

Table 5: Minimum Water Conservation Requirements	
2.	Billerica reports its system is 100% metered. All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards as set forth in <u>AWWA Manual M6 – Water Meters</u> .
3.	Billerica 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 to identify and correct illegal connections. The plan shall continue to include placement of sufficient funds in the annual budget to calibrate, repair, or replace meters as necessary.
Pricing	
1.	Billerica shall maintain a water pricing structure that includes the full cost of operating the water supply system. Billerica shall evaluate rates at a minimum every three to five years and adjust costs as needed. Full cost pricing factors all costs - operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) - into prices.
2.	Billerica shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period, are not allowed by M.G.L. Chapter 40 Section 39L.
3.	Billing frequency shall be at least quarterly within two years of permit issuance. Quarterly billing shall also include information allowing customers to compare water usage during similar periods during the prior year.
Residential and Public Sector Conservation	
1.	Billerica 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.	Billerica has reported that all municipally owned public buildings have been retrofitted with water saving devices (faucet aerators, low flow shower heads and low flow toilets). Town of Billerica shall continue to work with the Town of Billerica 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 incorporating into the design of new municipal capital projects.
Industrial and Commercial Water Conservation	
1.	Town of Billerica shall ensure water conservation practices are considered in all development proposals, particularly low flow devices and water-wise landscaping practices.
Public Education and Outreach	
1.	By three months from permit issuance date, Billerica shall provide to MassDEP details on Billerica's rebate program, including: <ul style="list-style-type: none"> • Eligibility;

Table 5: Minimum Water Conservation Requirements

- Current and future funding;
 - Number and type of rebates awarded; and
 - Plans to continue and expand this effort.
2. Three months from the permit issuance date, Billerica shall provide to MassDEP a list of its Billerica's largest commercial, business, industrial, municipal, and institutional customers for review and approval. Within 6 months of this approval, Billerica is required to develop an outreach program to promote conservation and demand management efforts to Billerica's largest customers.
3. Billerica shall also continue its existing water conservation and education efforts designed to educate the Town's water customers on ways to conserve water. Without limitation, Billerica's plan may include the following actions:
- Include in bill stuffers and/or bills, a work sheet 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;
 - Public service announcements; radio/T.V./audio-visual presentations;
 - Joint advertising with hardware stores to promote conservation devices;
 - 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
 - Provide multilingual materials as needed.

7. Reporting Requirements

Billerica 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. In addition, for each year that Billerica reports on its Annual Statistical Report (ASR) that its finished water is greater than its raw water, Billerica shall complete and submit to MassDEP for its approval with its ASR an AWWA M36 Water Audit for that reporting year.

General Permit 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 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.

4. 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.

5. 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 36.37.

6. 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.

7. Duty to Maintain Records The Permittee shall be responsible for maintaining withdrawal records as specified by this permit.

8. 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.

9. 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

12/16/2021

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 (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 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.