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

October 29, 2021

Steven Souza, Superintendent
Buzzards Bay Water District
15 Wallace Avenue
Buzzards Bay, MA 02532

RE: Buzzards Bay Water District
PWS ID#: 4036001
Water Management Permit #9P-4-24-036.01
Actions: Water Management Act Permit Renewal and Permit for Increased Water Withdrawals

Dear Mr. Souza:

Please find attached the following:

- Findings of Fact in Support of the Permit Renewal Decision, and
- Water Management Act Permit #9P-4-24-036.01 for the Buzzards Bay Water District in the Town of Bourne, Massachusetts.

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

Very truly yours,

Duane LeVangie
Water Management Program Chief
Bureau of Water Resources

Y:\DWPWMA\Permit Renewals\Buzzards Bayt\Bourne-4036001- WMA Permit 9P424036.01-10-29-2021
Y:\DWP Archive\SERO\2021\ Bourne-4036001- WMA Permit 9P424036.01- 10-29-2021

Ecc: P. Kellogg, MassDEP SERO
J. McLaughin, MassDEP, SERO
A. Carroll, DCR-OWR
E. Graham, DCR-OWR
K. Bentsen, MassDFW
K. Berger, kberger@resilientce.com
J. Blatt, Mass Rivers Alliance
J. Pederson, MWWA
S. Bower, Mass Rivers Alliance

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.

4a. **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。

4b. **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):** ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាម។ ប្រសិនបើអ្នកត្រូវបានបកប្រែឯកសារនេះសូមទំនាក់ទំនងឆ្មោតជានាយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយខាងក្រោម។

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):** тот 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. اذا كنت بحاجة الى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في PMassDEعلى أرقام الهواتف المدرجة أدناه.

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

12. **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 فورا ترجمه شده است.اگر شما نیاز به این سند ترجمه شده، لطفا 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 przetłumaczone. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.

19. **हिन्दी (Hindi): यह दस्तावेज 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.**

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

Findings of Fact in Support of
Water Management Permit #9P-4-24-036.01
Buzzards Bay Water District

The Department of Environmental Protection (MassDEP) makes the following Findings of Fact in support of the attached Water Management Permit #9P-4-24-036.01, and includes herewith its reasons for issuing the permit and for conditions of approval imposed, as required by M.G.L. c. 21G, § 11. This permit is issued in response to the Buzzards Bay Water District's (BBWD) Water Management Act (WMA) permit application of October 7, 2020, for increased water withdrawal from the Buzzards Bay Basin in order to meet increased projected water demands, and BBWD's 20-year permit renewal application submitted to MassDEP on May 29, 2015.

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

Buzzards Bay Water District's Withdrawal Summary

Registration #4-24-036.06**:** The District has registered withdrawals of 0.37 million gallons per day (MGD) from two sources, Pumping Stations #1 and #2 (4036001-01G and 02G).

Original Permit (#9P-4-24-036.01) issuance, July 28, 1992: The District's original permit authorized increased withdrawals of up to 0.16 MGD through May 31, 2011, from Pumping Stations #3 and #4 (4036001-03G and 04G), for a total allocation of 0.53 MGD.

Permit review, June 24, 2003: The modified permit was issued at the conclusion of a five-year review of the permit. The permit included maximum daily withdrawal rates for Pumping Stations #3 (0.86 MGD) and #4 (0.58 MGD) based on the Zone II delineation for the two wells which was completed by MassDEP in January 1994.

Special Condition 4: Wetlands Monitoring, required of the wetlands adjacent to Pumping Stations #3 and #4. Monitoring was to continue through the 2003 season, after which MassDEP would review the data and determine whether to continue, revise, or discontinue the monitoring. The data was subsequently reviewed, and in a letter of June 15, 2004, MassDEP concurred that the data did not indicate a significant change in vegetation, and that groundwater elevation data did not indicate any abnormal patterns. Therefore, MassDEP discontinued the monitoring requirement.

Permit review, January 3, 2008: The modified permit was issued at the conclusion of a five-year review of the permit. Modifications to the permit were to:

- formally remove Special Condition 4: Wetlands Monitoring, requiring monitoring of the wetlands adjacent to Pumping Stations #3 and #4;
- add Performance Standards for Residential Gallons Per Capita Day Water Use (RGPCD) of 80 gallons per day or less, and for Unaccounted-for-Water of 15% or less; and
- include expanded water conservation requirements based on the Water Resources Commission's 2006 Water Conservation Standards for the Commonwealth of Massachusetts.

Amended Permit #9P-4-24-036.01, June 29, 2018: The amended permit added the newly constructed Pumping Station #5 as an authorized withdrawal point. All other conditions in the permit were unchanged from the January 3, 2008 permit.

The Permit Extension Act

WMA permits issued during the first 20-year permitting cycle for the Buzzards Bay Basin were due to expire on May 31, 2011. 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. The expiration date for BBWD's permit was extended to May 31, 2015.

BBWD filed a timely renewal application for their Water Management permit on May 29, 2015. Subsequently, in a letter of March 28, 2016, MassDEP informed BBWD that MassDEP would need additional time before making a determination on the application in order to ensure that all permit renewal applicants in the Buzzards Bay Basin fully understood the new Water Management Regulations (discussed below), and to give proper consideration to all permit renewal applications within the basin. Pursuant to M.G.L. c. 30A, § 13, and 310 CMR 36.18(7), BBWD's permit, including the 2018 permit amendment, continues in force and effect until MassDEP issues a final decision on the BBWD permit renewal application.

The expiration date for all permits going forward in the Buzzards Bay Basin will be May 31, 2031, in order to restore the staggered permitting schedule set forth in the regulations.

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

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

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

Water Management Regulation Revisions

In 2010 the Executive Office of Energy and Environmental Affairs (EEA) convened the Sustainable Water Management Initiative (SWMI) for the purpose of incorporating the best available science into the management

of the Commonwealth's water resources. SWMI was a multi-year process that included a wide range of stakeholders and support from the Departments of Environmental Protection, Fish and Game, and Conservation and Recreation. In November 2012 the *Massachusetts Sustainable Water Management Initiative Framework Summary* (http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf) was released.

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

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

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

Safe Yield of the Buzzards Bay Basin

This permit is being issued under the safe yield methodology adopted by MassDEP on November 7, 2014, and described in the regulations at 310 CMR 36.13. As of the date of issuance of this permit, the safe yield for the Buzzards Bay Basin is 148.4 million gallons per day (MGD), and total registered and permitted withdrawals are 83.64 MGD. The maximum withdrawals that will be authorized in this permit, and all other permits currently under review by MassDEP within the Buzzards Bay Basin, will be within the safe yield and may be further conditioned as outlined in the regulations.

Findings of Fact for Permit Conditions in Buzzards Bay Water District's Water Management Act Permit

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

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume reflects the total authorized (registered plus permitted) annual average withdrawal volume based on the water needs forecast prepared by DCR (letter of April 13, 2021).

BBWD's Water Needs Forecasts (MGD) Prepared in 2021	
Permit Period	**DCR Water Needs Forecast assuming 65 RGPCD and 10% UAW**
2021	0.69
2021-2026	0.78
2026-2031	0.82 + 10% buffer of 0.08 = 0.90

BBWD seeks only up to 0.79 MGD at this time, but may submit a new permit application based on the 0.90 MGD projection at any time during the life of this permit.

MassDEP recognizes that future growth in water demand may not occur precisely as forecast. Therefore, this permit authorizes withdrawals of up to the maximum authorized withdrawal at any time during the life of the permit provided that BBWD has specific advance written approval from MassDEP and is meeting all other permit conditions. Specifically, BBWD may increase annual average daily withdrawals to 0.79 MGD prior to 2026 if BBWD is meeting:

- Residential Gallons per Capita Day (RGPCD) of 65 or less; or all RGPCD functional equivalence requirements;
- Unaccounted-for-water (UAW) of 10% or less, or all UAW functional equivalence requirements;
- Seasonal limits on nonessential outdoor water use;
- Water conservation requirements; and
- Mitigation plan requirements

as included in this permit.

Special Condition 2, Maximum Authorized Daily Withdrawals from Groundwater Withdrawal Points, reflects the MassDEP-approved Zone II maximum daily pumping rate, expressed in million gallons per day (mgd), for each of the District's permitted wells based on prolonged pumping tests.

Withdrawals in excess of these maximum daily rates require prior approval from the Department.

Special Condition 3, Zone II Delineations, requires DEP-approved Zone II delineations for all permitted PWS groundwater sources. MassDEP records show that BBWD has approved Zone ii delinations for all permitted wells. No further Zone II delineation work is required as a condition of this permit at this time.

Special Condition 4, Wellhead Protection, requires PWS permittees to implement appropriate wellhead protection zoning and non-zoning controls in accordance with Wellhead Protection Regulations at 310 CMR 22.21(2). MassDEP records show that BBWD is currently in compliance with the wellhead protection regulations for all permitted wells.

Special Condition 5, Performance Standard for Residential Gallons Per Capita Day Water (RGPCD) and **Special Condition 6, Performance Standard for Unaccounted for Water (UAW)** have been revised in accordance with the *Water Conservation Standards for the Commonwealth of Massachusetts* adopted by the MA Water Resources Commission in July 2018 and can be found at https://www.mass.gov/files/documents/2018/09/11/ma-water-conservation-standards-2018.pdf.

The **Residential Gallons Per Capita Day** performance standard required of all PWS permittees is now 65 RGPCD rather than the 80 RGPCD required in BBWD's 2018 permit. Permittees that cannot meet the performance standard within two calendar years of first having it as a condition of their permit must meet Functional Equivalence requirements outlined in Appendix A.

BBWD's RGPCD reported on the Annual Report Form for the last five years has met the performance standard.

BBWD's Residential Gallons Per Capita Day				
2020	**2019**	**2018**	**2017**	**2016**
51	43	47	45	52

The **Unaccounted for Water** performance standard required for all PWS permittees is 10% for 2 out of every 3 years rather than the 15% UAW required in BBWD's 2018 permit. Permittees that cannot comply within the timeframe in the permit must meet Functional Equivalence requirements based on the AWWA/IWA Water Audits and Loss Control Programs, Manual of Water Supply Practices M36, as outlined in Attachment B.

BBWD's UAW has risen steadily in recent years. Since 2018 when UAW began to rise, BBWD has taken aggressive steps to find and repair leaks at Well #5 and throughout the distribution system, and to ensure that all water used at the Massachusetts Maritime Academy, including water used for fire training, is fully metered. BBWD's program to reduce UAW is documented in the Response to Permit Application Order to Complete, April 20, 2021. In 2020 UAW was below the 10% performance standard.

BBWD's Unaccounted-for-Water				
2020	**2019**	**2018**	**2017**	**2016**
10%	17%	12%	9%	8%

Special Condition 7, Water Conservation Requirements reflects the updated Water Conservation Standards for the Commonwealth of Massachusetts adopted by the MA Water Resources Commission in July 2018 (https://www.mass.gov/files/documents/2018/09/11/ma-water-conservation-standards-2018.pdf) adopted after BBWD's June 2018 permit was issued.

Special Condition 8, Seasonal Limits on Nonessential Outdoor Water Use, requires BBWD to implement nonessential outdoor water use restrictions from May 1 to September 30 when:

- groundwater levels fall to the monthly 25th percentile for 60 consecutive days at the assigned groundwater monitoring well; and
- Level 1 – Mild Drought or greater is declared by the Massachusetts Drought Management Task Force for the Cape Cod Drought Region (Note that the Cape Cod Drought Region includes the portions of Sandwich and Bourne to the east of the Cape Cod Canal (https://www.mass.gov/doc/maps-of-ma-drought-regions-with-lists-of-cities-and-towns/download).

Nothing in this permit prevents BBWD from implementing additional water use restrictions.

Special Condition 9, Mitigation of Impacts for Withdrawals that Exceed Baseline Withdrawals, requires mitigation where feasible, for withdrawals over a baseline volume. Baseline withdrawal means the volume of water withdrawn during calendar year 2005 plus 5%, or the average annual volume withdrawn from 2003 through 2005 plus 5%, whichever is greater provided that:

a) baseline cannot be less than a permittee's registered volume;
b) baseline cannot be greater than the permittee's authorized volume for 2005; and

c) if during the period from 2003 to 2005, the permittee's withdrawals from the water source were interrupted due to contamination of the source or construction of a treatment plant, the Department will use best available data to establish a baseline volume from the water source.

Baseline Withdrawal and Mitigation Calculation**:** BBWD's baseline is 0.51 MGD based on withdrawal volume authorized through 2006 in BBWD's permit issued on July 28, 1992. BBWD's water withdrawals in recent years have been at or just below the 0.51 MGD baseline.

BBWD's Annual Water Withdrawals (MGD)				
2020	2019	2018	2017	2016
0.51	0.51	0.50	0.46	0.50

The summary below outlines BBWD's mitigation requirement. The mitigation calculation assumes per BBWD's letter of May 21, 2021, that:

- 125,000 gallons per day (0.125 MGD) of BBWD's new future withdrawals (approximately 48% of new future withdrawals) will be discharged to the Town of Bourne's new Waste Water Treatment Plant (WWTP) which will discharge its treated effluent to the groundwater;
- Approximately 3% of BBWD's increased water withdrawals will go to the Massachusetts Maritime Academy for new cadet housing with a sewer connection to the Wareham WWTP which discharges treated effluent to surface water; and
- The remainder of BBWD new future withdrawals (approximately 49%) will be discharged to on-site septic systems.

Therefore, 97% of BBWD's withdrawals above the 0.51 MGD baseline will be discharged to local groundwater.

A "wastewater adjustment" is calculated for water withdrawn that is returned to the ground as wastewater within the same major basin. MassDEP will assume that 85% of water delivered to customers with septic systems, or discharged to a treatment plant with a local groundwater discharge will be returned to the ground within the same major basin as the withdrawal, thus reducing the amount of mitigation needed. After calculating the adjustment for authorized withdrawals over baseline that will be returned through local groundwater discharge, BBWD's total mitigation requirement will be up to 50,000 gallons per day.

BBWD's Mitigation Volume Calculation
Permitted amount above Baseline = 0.28 MGD • Permitted amount above baseline: 0.79 – 0.51 = 0.28 MGD
Adjustment for Wastewater Discharge to Local Groundwater = 0.21 MGD • 97% of withdrawals over baseline are delivered to areas where wastewater is discharged to groundwater after treatment: 0.28 MGD x 0.97 (97%) = 0.27 MGD • 85% of water delivered to areas with local groundwater discharge returns to groundwater: 0.27 MGD x 0.85 (85%) = 0.23 MGD
Amount to be Mitigated after Adjustment for Wastewater Discharge to Local Groundwater = 0.23 MGD • Permitted amount above baseline (0.28 MGD) – adjustment for wastewater discharge to local groundwater (0.23 MGD) = 0.05 MGD or 50,000 gallons per day

Mitigation planning consists of two types of mitigation activities:

- Direct Mitigation, which will improve streamflow as a result of increased groundwater recharge, decreased stormwater runoff to streams, or surface water releases, must be considered first in mitigation planning, and
- Indirect Mitigation, activities that result in environmental improvements that will help to compensate for streamflow impacts, is required when a permittee has insufficient direct mitigation credit.

Mitigation measures that have been put into place since January 1, 2005, and that are still operable or effective, are eligible components of a Mitigation Plan. Additional mitigation activities may be phased in over the life of this permit provided that any volumes withdrawn over the 0.51 MGD baseline are mitigated prior to when those volumes are withdrawn.

Per 310 CMR 36.22(8)(b), if demonstrated water needs exceed the baseline prior to issuance of the permit, an applicant may request additional time during the first 5 years of a permit to implement the mitigation plans. The BBWD's letter of May 21, 2021, to D. LeVangie and E. McCann, provides the following list of mitigation activities to be incorporated into the Mitigation Plan and states that "the mitigation plan will…require about 1 year to complete since many tasks involve working with the Town and the two other Water Districts."

"The following tasks will be considered when developing the mitigation plan:

1. Verification of District customer water demands associated with wastewater discharge type (a) septic systems, (b) Town Wastewater Treatment Plant (WWTP), Wareham WWTP or (d) Massachusetts Maritime Academy (MMA WWTP. This task will be completed to verify the portion of water withdrawals that is recharged to groundwater. These values were estimated as described in our letter dated May 21, 2021. The mitigation plan will include a summary of the accounts and water use for three consecutive years and wastewater disposal location
2. Identification of property purchased for source water or natural resource protection by the District of the Town since 2005. This task will involve participation of the town and developing a plan for how to apply credit for open space to the District versus the Bourne Water District or the North Sagamore Water District
3. Identification of Infiltration and Inflow removal completed since 2005. This task will involve participation of the Town and MMA.
4. Identification of stormwater recharge associated with work completed by the Town or MMA that incorporated permeable pavement or other stormwater infiltration processes since 2005. This task will involve participation of the Town and MMA.
5. Review of the Town's Wetlands Bylaw for applicable credit.
6. Identification of the Town's MS4 implementation. This task will involve participation of the Town.
7. Communication with the Town with regards to the possibility to implement a Stormwater Bylaw, Private-Well Bylaw, Fertilizer Bylaw or Septic System Maintenance Program. This task will involve participation of the Town." (letter of May 21, 2021, from Steven Souza, Superintendent, Buzzards Bay Water District to MassDEP Water Management Program)

Special Condition 10, Requirement to Report Raw and Finished Water Volumes ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

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

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

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
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
9P-4-24-036.01
Buzzards Bay Water District

This renewal of Permit 9P-4-24-036.01 is issued pursuant to the Massachusetts Water Management Act for the sole purpose of authorizing the withdrawal of a volume of water as stated below and subject to the following special and general conditions. This permit conveys no right in or to any property beyond the right to withdraw the volume of water for which it is issued.

PERMIT NUMBER: 9P-4-24-036.01 **BASIN:** Buzzards Bay

PERMITTEE: Buzzards Bay Water District
15 Wallace Avenue
Buzzards Bay, MA 02532

EFFECTIVE DATE: October 29, 2021

EXPIRATION DATE: May 31, 2031

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

Source Name	PWS Source ID	Location
Well #3	4036001-03G	Bournedale Rd., Bourne, MA
Well #4	4036001-04G	Bournedale Rd., Bourne, MA
Well #5	4036001-05G	Bournedale Rd., Bourne, MA

SPECIAL CONDITIONS

1. **Authorized Annual Average Withdrawal Volume**
   This permit authorizes the Buzzards Bay Water District (BBWD) to withdraw water from the Buzzards Bay Basin at the rate described in Table 2 below. The permitted withdrawal rate is in addition to the 0.37 million gallons per day (MGD) previously authorized for the BBWD in WMA Registration #424036.06. The permitted volume is 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.

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

Table 2: Authorized Withdrawals

Permit Periods	Total Raw Water Withdrawal Volumes			
	Permit		Registration + Permit	
	Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
10/29 2021 – 5/31/2026*	0.41	149.65	0.37 + 0.41 = 0.78	284.70
6/1/2016 – 5/31/2031	0.42	153.30	0.37 + 0.42 = 0.79	288.35

*Note that authorized withdrawals over a daily annual average over 0.51 MGD after December 31, 2022, are contingent upon development and implementation of a Mitigation Plan as outlined on Special Condition 9.

2. **Maximum Daily Withdrawals from Groundwater Points**
   Withdrawals from individual withdrawal points are not to exceed the approved maximum daily volumes listed in Table 3 without specific advance written approval from MassDEP. The authorized maximum daily volume is the approved rate of each source. In no event shall the combined withdrawals from the individual withdrawal points exceed the withdrawal volumes authorized above in Special Condition 1.

Table 3: Maximum Daily Withdrawal Rates

Well Name	PWS Source ID Code	Maximum Daily Rate (MGD)
Well #3	4036001-03G	0.86
Well #4	4036001-04G	0.58
Well #5	4036001-05G	1.18

2. **Zone II Delineations**
   MassDEP records show that Wells #3, #4 and #5 have MassDEP-approved Zone II delineations. Therefore, no further Zone II work is required as a condition of this permit.

3. **Wellhead Protection**
   MassDEP records indicate that BBWD has adopted land use controls and water supply protection measures meeting the requirements of the Wellhead Protection Regulations at 310 CMR 22.21(2) for all wells included in this permit. No further wellhead protection work is required as a condition of this permit.

4. **Performance Standard for Residential Gallons Per Capita Day Water Use**
   The statewide performance standard for Residential Gallons Per Capita Day (RGPCD) is 65 gallons. BBWD shall document compliance with this RGPCD water use performance standard annually in its Annual Statistical Report (ASR).

BBWD shall report its RGPCD and the calculation used to derive that figure as part of its ASR including, without limitation, the source of the data used to establish the service population and the year in which this data was developed. See Appendix A for additional information on the requirements if the Performance Standard for RGPCD is not met.

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

BBWD's Performance Standard for Unaccounted for Water (UAW) is 10% or less of overall water withdrawal for 2 of the most recent 3 years throughout the permit period. BBWD shall be in compliance with this performance standard by December 31, 2023 or, if BBWD does not meet the standard, shall be in compliance with the functional equivalence requirements (Appendix B).

Nothing in the permit shall prevent a permittee who meets the 10% performance standard from demonstrating compliance with the UAW performance standard by developing and implementing a water loss control program following the AWWA M36 Water Audits and Loss Control Programs.

Permittees meeting the Performance Standard for Unaccounted for Water through implementation of a water loss control program based on AWWA M36 annual water audits and guidance shall continue to report UAW annually as required in the Annual Statistical Report for public water suppliers.

6. Water Conservation Requirements

At a minimum, BBWD shall implement the following conservation measures forthwith. Compliance with the water conservation requirements shall be reported to MassDEP upon request or at the time of permit renewal unless otherwise noted below.

Table 4: Minimum Water Conservation Requirements

Leak Detection

1. At a minimum, conduct a full leak detection survey, or comparable remote-instrument monitoring and reporting, every three years. The first full leak detection survey shall be completed no later than 3 years from the date of the last documented leak detection survey.
2. Conduct leak detection of the entire distribution system within one year whenever the percentage of UAW increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, submit to MassDEP a report detailing the leak detection survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3. Conduct field surveys for leaks and repair programs in accordance with the AWWA Manual 36.
4. Repair reports shall be kept available for inspection by MassDEP. The permittee shall establish a schedule for repairing leaks that is at least as stringent as the following:
    - 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.
    - Leaks shall be repaired in accordance with the permittee's priority schedule including leaks up to the property line, curb stop or service meter, as applicable.
    - Permittee shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.

    The following exceptions may be considered:
    - Repair of leakage detected during winter months can be delayed until weather conditions become

Table 4: Minimum Water Conservation Requirements

favorable for conducting repairs;* and
- Leaks in freeway, arterial or collector roadways may be coordinated with other scheduled projects being performed on the roadway**.

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

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

Metering

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

Pricing

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

   AWWA References: AWWA Manual 1- Principals of Water Rates, Fees and Charges, AWWA Manual 29- Fundamentals of Water Utility Financing
2. Evaluate rates at a minimum every three to five years and adjust rates as needed.
3. Permittee shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period, are prohibited by M.G.L. Chapter 40 Section 39L.
4. Implement quarterly or more frequent meter reading and billing.

Residential and Public Sector Conservation

1. Permittee shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.

Table 4: Minimum Water Conservation Requirements

2. Meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.

3. The Town of Bourne is in the final stages of releasing a Request for Qualifications regarding the towns desire to engage an Energy Services Company (ESCO) that would perform various energy and other conservation upgrades to various town and school buildings. One of the focus areas, in addition to energy savings, will be in the area of water conservation and where necessary the upgrade and replacement of toilets and other fixtures to low flow or water conserving devices. (letter of March 11, 2021, from A. Schiavi, Town Administrator to S. Souza, Superintendent of the Buzzards Bay Water District)

   Permittee shall continue to monitor and report on Town's progress as requested by MassDEP.

Institutional and Commercial Water Conservation

1. Permittee reports that 77% of all water distributed is for residential use, 10% of all water distributed for institutional use to the Mass Maritime Academy, and the remainder is for commercial and other water uses.
   - Permittee shall work with the Town of Bourne to ensure water conservation practices, including the installation of WaterSense compliant low flow plumbing fixtures where applicable, and low water use landscaping, in all development proposals.
   - Mass Maritime Academy reports that it has implemented several conservation protocols:
     1. Installation of athletic turf
        1. Main athletic fields
        2. Baseball field
        3. Infield of the softball field
     2. Rainwater diversion to retention ponds
     3. Landscape improvements with native and drought resistant plantings
     4. Improved irrigation system for Parade Field and ancillary turf perimeters
        1. New loam installed
        2. Managed irrigation schedule
     5. All new buildings and renovations require use of low flow faucets, toilets and devices
        1. Dorm rooms and bathrooms
        2. Locker rooms (shower and toilet facilities)
        3. Academic building restrooms
     6. High efficiency washing machines (4 laundry rooms on campus)
     7. Improved dish washing machine in dining hall
     8. Installation of bottle fill stations in dorms and gymnasium; plans to change-out existing water fountains

     All new or renovation projects require the use of low flow and water conservation measures be included in design. Low flow devices, improved technology and campus procedures are reviewed to ensure the best possible conservation measures are implemented.
   - Permittee shall work with the Mass maritime Academy to ensure ongoing water conservation practices.

Lawn and Landscape

1. Permittee shall implement Special Condition 8. Seasonal Limits on Nonessential Outdoor Water Use.

Public Education and Outreach

1. Develop and implement an education plan, including elements in the following list, as applicable:
   - Billing that helps customers track, compare, and make sense of their use.
   - Target outreach to customers who may have a leak or who are using significantly more water than similar customers.
   - Offer indoor low-flow retrofit/rebate programs.
   - Provide information on "water-wise landscaping" and efficient irrigation and lawn care practices on-line and through model landscapes, workshops, local garden clubs, retailers, and environmental organizations.

Table 4: Minimum Water Conservation Requirements

- Partner with local schools to develop age-appropriate curricula on the local water system and water conservation.
- Use social media, online tools, public service announcements, and local events to promote water conservation and alerts.
- Develop multilingual materials as needed.
- Partner with garden clubs, farmers' markets, environmental organizations, energy utilities, and others on campaigns promoting wise water use.

References and additional information available through the USEPA Water Sense Program
http://www.www.epa.gov/watersense

7. Seasonal Limits on Nonessential Outdoor Water Use

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

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

Table 5: Seasonal Limits on Nonessential Outdoor Water Use from May 1st through September 30th

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

a) Groundwater levels at USGS Monitoring Well 415453070434901 (MA-PWW 22) in Plymouth, MA, decline to or below the groundwater trigger for 60 consecutive days. The monthly trigger levels are listed below and are the period of record monthly 25th percentile depth to water level values, as determined and published by the USGS. Restrictions could start on May 1, so monitoring of MA-PWW 22 begins on March 1 of each year.

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

March	April	May	June	July	Aug	Sept
24.5	24.1	24.1	24.0	24.5	25	25.3

And

b) Level 1 – Mild Drought or higher is declared by the Massachusetts Drought Management Task Force for the Cape Cod Drought Region.

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

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

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

Seasonal Limits on Nonessential Outdoor Water Use are implemented when the daily mean depth to water level exceeds the designated trigger for 60 consecutive days (*i.e.*, when the depth to water becomes larger than the trigger

value as the water table elevation declines). The daily water level is compared to the trigger for that month. To determine if restrictions must be implemented on May 1 it is necessary to monitor the daily water level in March and April.

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

- Scroll down to 415453070434901 (MA-PWW 22) in Plymouth, MA
- Click on the station number.
- On the pull-down menu "Available data for this site" choose "Daily data".
- Under "Available Parameters " click on "WaterLevel, Below LSD (Mean)".
- Under "Output Format" click on "Table" and enter the number of days of records (the default is 7 days; entering 60 will give you 60 days of data) and hit "GO".
- The table provides the "Daily Mean Depth to water level, feet below land surface" for the most recent number of days chosen.

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

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

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

Restricted Nonessential Outdoor Water Uses

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

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

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

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

Water uses NOT subject to mandatory restrictions are those required:

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

Public Notice of Water Use Restrictions

BBWD shall notify its customers of the restrictions and the consequences of failing to adhere to the restrictions as soon as possible, and not more than three days after implementing the restrictions. Notice to customers shall include the following:

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

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

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

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

8. **Mitigation of Impacts for Withdrawals that Exceed Baseline Withdrawals**
On or before December 31, 2022, BBWD shall submit WM02: Water Management Permit Amendment application and a Mitigation Plan and Implementation Timetable for mitigation activities required to offset BBWD's increasing withdrawals above the baseline of 0.51 MGD.

Mitigation activities may be phased in over the life of this permit provided that, after January 1, 2023, any volumes withdrawn over the 0.51 MGD baseline are mitigated prior to when those volumes are withdrawn.

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

GENERAL CONDITIONS (applicable to all permittees)

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

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

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

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

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

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

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

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

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

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of MassDEP. Any person aggrieved by this decision and any person who has been allowed pursuant to 310 CMR 1.01(7) to intervene in the adjudicatory proceeding that resulted in this decision may request an adjudicatory hearing. Any such request must be made in writing, by certified mail or hand delivered, and received by 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 city or town in which the withdrawal point is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to MassDEP.

CONTENTS OF HEARING REQUEST

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

FILING FEE AND ADDRESS

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

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

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

EXEMPTIONS

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

WAIVER

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

Duane LeVangie
Chief, Water Management Program
Bureau of Water Resources

October 29, 2021
Date

Appendix A – Functional Equivalence: 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 2023 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: 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 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 in its 2023 Annual Statistical Report (ASR), or in any ASR thereafter), 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 of failing to meet the standard as follows:

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, 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. Within 5 full calendar years of failing to meet the standard, submit the component analysis and water loss control program with a proposed implementation schedule to the Department.
4. Continued implementation will be a condition of the permit in place of meeting the 10% UAW performance standard.
5. 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 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 UAW Water Loss Control Measures: If the permittee is required to develop a Functional Equivalence Plan for the 10% Unaccounted for Water Performance Standard, and does not have a MassDEP-approved Water Loss Control Program in place within 5 full calendar years of failing to meet the standard, the permittee 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.

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 Measures.

MassDEP will review a permittee's detailed, written analysis to determine whether unique circumstances make specific Best Management Practices (BMPs) less cost-effective than alternatives, or infeasible for the permittee.