Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Central Regional Office • 8 New Bond Street, Worcester MA 01606 • 508-792-7650

Charles D. Baker
Governor

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Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

August 26, 2021

Gregory Johnson, Town Administrator
Town of Maynard
195 Main Street
Maynard, MA 01754

Re: PWS Town: Maynard
PWS Name: Maynard DPW - Water Division
PWS ID #: 2174000
WMA Permit #: 9P4-2-14-174.01
Applications: WM02 WMA Amendment and WMA 20 Year Permit Renewal
MassDEP WM02 Transmittal: X282469
Action: Final Permit

Dear Mr. Johnson:

Please find the attached documents:

- Findings of Fact in Support of the Amended and Renewed Permit #9P4-2-14-174.01; and
- Final Water Management Act Permit #9P4-2-14-174.01 (Concord Basin) for the Town of Maynard.

If you have any questions regarding this permit, please contact Susan Connors via e-mail at Susan.Connors@mass.gov or me at Marielle.Stone@mass.gov.

Sincerely,

Marielle Stone

Marielle Stone
Deputy Regional Director
Bureau of Water Resources

Ecc: Justin Demarco, Maynard DPW
Garry McCarthy, Stantec
Dave Harwood, GeoInsight
Jen Pederson, MWWA
Alison Field-Juma, OARS
Julia Blatt, Massachusetts Rivers Alliance
Sarah Bower, Massachusetts Rivers Alliance
David Paulson, Mass Division of Fisheries and Wildlife

Duane LeVangie,
MassDEP-WMA-Boston

Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108 • Phone: 617-292-5751
Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)

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ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាម។ ប្រសិនបើអ្នកត្រូវបានបកប្រែឯកសារនេះសូមទំនាក់ទំនងឆ្មោតជានាយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយខាងក្រោម។

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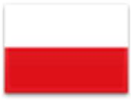

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यह दस्तावेज महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.

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Findings of Fact in Support of
Final Water Management Permit #9P4-2-14-174.01
Town of Maynard

The Massachusetts Department of Environmental Protection (MassDEP) makes the following Findings of Fact in support of the attached Final Water Management Permit #9P4-2-14-174.01 and includes herewith its reasons for issuing the final permit and for conditions of approval imposed, as required by M.G.L. c. 21G, § 11. The issuance of this permit is in response to the Water Management Act (WMA) permit renewal and amendment applications by the Town of Maynard. The amendment application is to add a new withdrawal point – Wellfield 4A.

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 permittee to fully consider all aspects of their individual situations and ensure thoughtful and implementable permits.

Town of Maynard's Water Withdrawal History

The Town of Maynard (Maynard) holds a WMA registration statement (2-14-174.01) for an average annual daily withdrawal volume of 1.09 million gallons per day (MGD) which includes four wells (Maynard Wells 1, 1A, 3, and 4) and a reservoir (White Pond). The registered wells are further limited to approved maximum daily withdrawal rates assigned by MassDEP's Drinking Water Program. Wells 1, 1A and 3 (2174000-01G, -02G and -03G) have a combined maximum daily withdrawal rate of 0.87 MGD. Well 4 (-04G) has a maximum daily withdrawal rate of 0.38 MGD.

Maynard was issued a Water Management Act Permit in May 2000 to add Rock Wells 2, 3, and 5 (2174000-05G, -06G, and -07G) as bedrock sources with no additional system-wide authorized volume. In 2020 Maynard submitted a WMA Permit Amendment application to add a new Wellfield 4A as an authorized withdrawal point. Maynard has reported total annual withdrawals below their registered volume. In October 2020, Maynard's Water Supply Protection District Map was updated to include the Zone II for the new wellfield.

WMA Permit Extensions
Maynard's WMA Permit was initially set to expire on August 31, 2011. Prior to that date, the Permit Extension Act, Section 173 of Chapter 240 of the Acts of 2010, as amended by Sections 74 and 75 of Chapter 238 of the Acts of 2012, extended all existing permits by four years. Therefore, WMA permits for withdrawals in the Concord River basin were extended to August 31, 2015.

On April 8, 2015, MassDEP informed Maynard that MassDEP would need additional time before making a determination on the application in order to ensure that all permit renewal applicants in the Concord River 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), Maynard's permit continued in force and effect until MassDEP issues a final decision on the permit renewal application.

On August 28, 2015, Maynard submitted to MassDEP a WMA permit renewal application for their withdrawal in the Concord River Basin. MassDEP published notice of the permit renewal application in the Environmental Monitor on December 9, 2015. No comments were received regarding Maynard. On August 19, 2020, MassDEP issued Maynard an Order to Complete (OTC) and Notice of Noncompliance (NON) for both the renewal and amendment applications outlining specific information that was required to complete MassDEP's review of the applications. Responses were received from Maynard on October 14, 2020 and December 23, 2020.

The expiration date for all WMA permits going forward in the Concord River Basin will be August 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 Water Resources Commission (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 Concord Basin section of this document or 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 standards reviewed and approved by the WRC in July 2006 and revised in July 2018 (https://www.mass.gov/doc/massachusetts-water-conservation-standards-2)/ 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 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 calculation for the Concord River Basin is 87.50 million gallons per day (MGD), and total registered and permitted withdrawals are 36.79 MGD. This permit does not allocate any additional withdrawals and as such will not change the volumes authorized in the Concord River Basin. This renewed permit and all other permits currently being renewed in the Concord River Basin, will be within the safe yield of the Concord River Basin and may be further conditioned by the regulations.

Findings of Fact for Permit Conditions in Maynard's Water Management Act Permit
The Findings of Fact for the special conditions included in the permit generally describe the rationale and background for each special condition in the 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 Volume, reflects the registered withdrawal volume of 1.09 MGD. No additional withdrawal volume is authorized by this permit.

Special Condition 2, Maximum Authorized Daily Withdrawals from each Withdrawal Points, specifies the maximum daily withdrawal rates by source, according to the approved rates established by MassDEP's Drinking Water Program. The Wellfield 4A project is subject to regulation by the Natural Heritage and Endangered Species Program (NHESP), File No 18-39732. On October 5, 2020 NHESP issued an Interim Approval for operation of a new public water supply well between 2021 and 2026 in order to collect additional information for Division review under 321 CMR 10.18.

Special Condition 3, Groundwater Supply Protection, includes the requirement for compliance with the Drinking Water Regulations at 310 CMR 22.21(2), Wellhead Protection Zoning and Nonzoning Controls. MassDEP issued a letter dated May 4, 2018 stating that Maynard has documented compliance with the required land use controls for the Zone II areas located within the Town of Maynard. Additionally, Maynard's Water Supply Protection District map was amended in 2021 to include the Zone II for Wellfield 4A. Maynard's Zone II areas extend into the towns of Acton, Stow and Sudbury. Until each community passes Ground Water Supply Protection requirements that satisfy the Regulations, MassDEP's Best Effort Requirement must be repeated for WMA water withdrawal permit reviews or amendments, new source approvals, monitoring waiver applications, Zone II re-delineations, and Sanitary Survey stipulations.

Special Condition 4, Performance Standards for Residential Gallons Per Capita Day Water Use and **Special Condition 5, Performance Standard for Unaccounted for Water** are part of 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 RGPCD performance standard required of all Public Water System (PWS) permittees is 65 gallons per person per day. Permittees that cannot meet the performance standard within the timeframe in the permit must meet Functional Equivalence requirements outlined in Appendix A.

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

Below is a table of Maynard's RGPCD and UAW values as approved by MassDEP from 2015 through 2020. Maynard has not met the UAW performance standard and the Permit requires that Maynard begin to implement the requirements in Appendix B of this Permit. MassDEP offers a grant program for WMA Registrants and Permittees to receive a free American Water Works Association (AWWA) M36 "Top-Down" Audit from a private consulting firm. Information on the grant is available at https://www.mass.gov/info-details/water-management-act-grant-programs-for-public-water-suppliers#m36-water-audit-opportunity-.

Maynard	2020	2019	2018	2017	2016	2015
RGPCD	54	49	50	53	51	56
UAW	17%	16%	14%	16%	17%	14%

Special Condition 6, Seasonal Limits on Nonessential Outdoor Water Use specifies the restrictions on nonessential outdoor water use from May through September and has changed since the existing permit issued in 2009. The options outlined in Special Condition 6 are based on whether the approved RGPCD for the previous year was in compliance with the RGPCD Performance Standard (see Special Condition 4, Performance Standard for RGPCD).

In addition, outdoor water use by suppliers, like Maynard, with wells in August net groundwater depleted subbasins[1] is limited to one or two days per week to minimize withdrawals from depleted subbasins.

Each year Maynard must 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 Maynard selects the streamflow trigger approach, it has been assigned USGS stream gage #01097000 Assabet River at Maynard, MA. The local gage streamflow triggers at this site are 119 cubic feet per second (cfs) for May and June, and 42 cfs for July, August and September. Should the reliability of flow measurement at this gage be so impaired as to question its accuracy, Maynard 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.

[1] Subbasins used for WMA permitting are the 1,395 subbasins delineated by the U.S. Geological Survey in *Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover, and Water Quality for Massachusetts Stream Basins* (Weiskel *et al.*, 2010, USGS SIR 2009-5272).

- **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 Assabet River at Maynard Gage is 18 cfs.

Maynard 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. The Town of Maynard By-Laws effective October 3, 2020 provide enforcement authority and establishes penalties for violations of a Declaration of a State of Water Supply Conservation. However, the levels of restrictions in the By-Law do not reflect the amended permit requirements. Specifically, the levels include odd/even and a complete ban on outdoor water use and does not include one day or two days per week restrictions. A requirement to update Maynard's authority is included in Special Condition 6.

Special Condition 7, Requirement to Report Raw and Finished Water Volumes, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

Special Condition 8, Water Conservation Requirements, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the Water Resources Commission in July 2018 (https://www.mass.gov/doc/massachusetts-water-conservation-standards-2).

Special Condition 9, Minimization of Groundwater Withdrawal impacts in Stressed Subbasins, requires permittees with permitted groundwater sources in subbasins with net groundwater depletion (August NGD) of 25% or more during August to minimize their withdrawal impacts on those subbasins to the greatest extent feasible, through optimization of source use, surface water releases to improve streamflows, outdoor water use restrictions and water conservation programs that go beyond standard Water Management permit requirements.

Maynard's new source (Wellfield 4A) is located in subbasin 12033 which has an August NGD of 77.4%. Maynard submitted a Minimization Plan as part of the applications which has been incorporated as a condition of this permit.

Maynard's surface water supply (White Pond) is located in the towns of Hudson and Stow. White Pond does not have a dam or spillway and therefore Maynard cannot make releases to improve streamflow. Maynard does not own any other surface water control structures in the Town of Maynard.

Maynard's new source (Wellfield 4A) along with four registered only sources are located in subbasin 12033 with an August NGD of 77.4%. Maynard's bedrock well sources are located in subbasin 12065 (August NGD 11.2%) and White Pond is in subbasin 12075 (August NGD of 28.0%.). This permit does not require that Maynard shift additional pumping away from subbasin 12033 because Maynard submitted information that their ability to shift demand is constrained by source capacity and water quality issues. The sources in subbasin 12065 are bedrock wells which have difficulty meeting their original design capacity and their surface

water source in subbasin 12075 is inactive. The limits on nonessential outdoor water use set forth in Special Condition 6 are restrictions developed to minimize withdrawals in August net groundwater depleted subbasins.

Based on MassDEP's records and information submitted by Maynard, MassDEP finds that minimization requirements will be met as follows:

- Maynard evaluates the rate structure every year.
- Maynard uses a 3-tier increasing block water rate as a tool to encourage water conservation.
- Maynard regulates the proper use of irrigation systems. Maynard's Water Rules and Regulations require that irrigation systems be equipped with a moisture sensor tied directly into a timing device so that irrigation is automatically prevented in response to rainfall and equipped with an automatic timing device so the system can be programmed to limit operation to prescribe restrictions on nonessential outdoor water use.
- Maynard has completed a water meter replacement upgrade with an automated, remote meter reading system.
- Maynard has regulations in place to protect the operation of fire hydrants and ensure their proper use.

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

Mitigation of Impacts for Withdrawals that Exceed Baseline, was incorporated into the Water Management Regulations in November 2014, and 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.

The calculated baseline volume for Maynard is 397.85 million gallons per year (MGY) or 1.09 MGD which is the WMA registered volume. Mitigation is not a condition of the permit because the permit does not authorize any additional volume over the registered volume.

Response to Comments

Comments on the Draft permit were received from OARS, Inc. in a letter dated July 8, 2021 to MassDEP. Below is a summary of changes to the final permit and of MassDEP's and Maynard's response to comments.

- Maynard's UAW percentage for 2020 has been updated to 17% in the Findings of Fact to reflect MassDEP's review of the supporting documentation. One major main break was

not accepted as Confidently Estimated Municipal Use due to the fact that it was too long in duration and considered a leak.

- OARS Comment: *We recommend that MassDEP require Maynard to implement a water loss control plan within two years of the issuance of their permit renewal*.

  Response: Maynard 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 5 requires that Maynard complete a top-down water audit by June 30, 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.

- OARS Comment: *Optimization opportunities need to be evaluated further and considered to adequately improve groundwater levels in subbasin 12033. We recommend that MassDEP requires Maynard to evaluate the option to pump the 4th bedrock well and shift pumping away from subbasin 12033, especially during summer when groundwater and streamflow are lowest.*

  Response: MassDEP reviewed Maynard's source optimization response (discussed previously) along with Maynard's conservation efforts and determined that the activities outlined in Special Condition 9 (which exceed conservation activities required in Special Condition 8) meet the minimization requirements for Maynard's applications.

  MassDEP's Guidelines and Policies for Public Water Systems state that "Due to the complex nature of bedrock fracture systems and the generally difficult task of determining the recharge area to a well constructed in bedrock, MassDEP requires that all viable unconsolidated aquifer deposits be considered prior to proposing development of a bedrock public supply well." Long term capacity in large bedrock wells is unstable as evidenced in 2018 in Maynard when its largest producing bedrock well experienced a partial collapse which almost resulted in a water emergency. Additionally, the location of Wellfield 4A was reviewed extensively by the Natural Heritage and Endangered Species Program and the wellfield operation will be monitored for five years by NHESP for habitat impact.

- OARS Comment: *If Maynard follows this recommended plan of reactivating the White Pond water supply, the ecological, flow and water quality impacts that could result need to be studied and evaluated in detail, particularly possible impacts on Lake Boon in Stow and Hudson.*

  Response: The comments are noted for future reference. These applications do not include a reactivation of White Pond.

- OARS Comment: *This plan should include stormwater recharge near the sources of water withdrawal impacts and mechanisms to ensure that all new development is water*

neutral by maximizing the efficiency of water use and paying into a mitigation fund or "water bank" if necessary, as recommended in the Report.

Response: MassDEP agrees that long term sustainability and climate resiliency are issues for all water suppliers. The comments are appropriate for projects subject for review through the Massachusetts Environmental Policy Act office and encourages Maynard to review local bylaws and regulations to promote aquifer recharge.

- OARS Comment: *MassDEP should require an Education and Outreach Plan be developed within one year of the issuance of the Final Permit to implement methods listed in the draft Permit for Public Education and Outreach. Please clarify that the permittee is required to implement the ten suggested actions shown in Table 5.*

  Response: MassDEP modified Special Condition 8 to specify that the water conservation and education plan be developed and implemented within one year of the date of the permit and to require a report on their efforts.

- OARS Comment: *A clear system of enforcement for irrigation systems should be utilized. If none exists, there needs to be a reporting or inspection system with enforcement follow-up. These irrigation systems must also comply with the restricted nonessential outdoor water uses listed in the draft Permit (p. 5).*

  Response: Maynard is required to update their By-Laws and/or Water Rules and Regulations to provide authority to implement and enforce water use restrictions. All customers of Maynard are required to comply with restrictions on nonessential outdoor water use.

Maynard provided the following response to recommendations from the 2014 Weston and Sampson report listed in the comment letter.

- The town should conduct leak detection annually until UAW declines significantly, begin to monitor billing discrepancies to identify leaks, and create a two-year schedule for retrofitting remaining municipal buildings.
  We conduct yearly town wide leak detection in the spring/summer, and have for the past 8 years. Our UAW from 2019 to 2020 was reduced by 3.5% to 12.5%, and we continue to evaluate our system, and conduct improvements to reach the UAW performance standard of 10%. Our quarterly usage / billing reads are monitored for discrepancies verse average usage spikes.

- Institute a more robust outreach and education program.
  Our current residential performance standard is 54 gallons per capita per day. Maynard's use is well below conservation performance standard recommendation of 65 gallons per capita per day. Maynard DPW continues to review outreach / education processes utilized throughout the industry by other public drinking water suppliers to continue to enhance effective means of conservation education for our utility.

- Adjust block rate volumes and pricing annually as needed; conduct system audits every five years.
  Over the past three years the DPW has conducted a thorough yearly financial evaluation and yearly incremental recommendation of our user fees in conjunction with our capital improvement plans. Our fees are based on a 4 block tiered use system format that enhances and rewards water conservation. Our fee structure has been a proven industry standard to promote water conservation through reduced fees for less use. Our 54 gallons per capita per day use statistics are the result of this financial model.

  Maynard DPW in conjunction with our consultant firm Stantec are preparing to apply for DEP water system audit grant in September.

  MassDEP notes that annual water rate review is required as a minimization measure.

- For development and redevelopment, require WaterSense (or better) fixtures and washing machines
  Through by-Law and building code. The town of Maynard is a proactive sustainable community. The town has adopted stretch energy code, and continues to explore sustainable conservation initiatives in all manner and form.

- Prohibit connection of any new irrigation systems to the public water supply, consider extending seasonal water limits to private well users and adopt a system to register and regulate existing or new irrigation systems.
  The town of Maynard is a very low irrigation use community, this is based on the design and build of the historic mill town with 80% of the residential dwellings built on parcels less than a ¼ acre in an urban element. Our current practice which has been in effect for over ten years, is to implement mandatory non-essential outdoor water use between May-November between 9am – 5pm, seven days a week.

  The Town of Maynard supplies public water supply to 98% of all dwellings, there are very few private wells registered with the local board of health.

  Maynard's adopted water rules and regulations require water sensors on all irrigations systems, and our operational protocols for service staff is to document many aspects of our residential connections, from service pipe material (Lead), backflow devices, meter and radio type/age, irrigation system including rain sensor, leaks etc. This is implemented whenever there is a service request.

- Create a town water guidance document or master plan, including sections on drought management and water demand.
  Maynard DPW currently has an extensive information packet related to this request at the following https://www.townofmaynard-ma.gov/dpw/water-restriction/ with several resources, and redirect links to drought management conditions.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Central Regional Office • 8 New Bond Street, Worcester MA 01606 • 508-792-7650

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

WATER WITHDRAWAL PERMIT
MGL C 21G

This permit is issued pursuant to the Massachusetts Water Management Act (the Act) for the sole purpose of authorizing the withdrawal of a volume of water as stated herein 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: 9P4-2-14-174.01 **RIVER BASIN:** Concord

PERMITTEE: Town of Maynard

EFFECTIVE DATE: August 26, 2021

EXPIRATION DATE: August 31, 2031

NUMBER OF WITHDRAWAL POINTS: 4
Groundwater: 4 Surface Water: 0

USE: Public Water Supply

DAYS OF OPERATION: 365

LOCATION(S):

Table 1: Withdrawal Point Identification

Source Name	PWS Source ID Code
Rock Well #2	2174000-05G
Rock Well #3	2174000-06G
Rock Well #5	2174000-07G
Wellfield #4A	To Be Assigned

SPECIAL PERMIT CONDITIONS

1. Maximum Authorized Annual Average Withdrawal Volume

This permit does not authorize any additional withdrawal volume over the Town of Maynard's registration statement (#2-14-174.01) of 1.09 million gallons per day (MGD) or 397.85 Million Gallons per year (MGY). The Department of Environmental Protection (MassDEP) bases the authorized withdrawal volume on the raw water withdrawn from the authorized withdrawal points and will use the raw water amount to assess compliance with the registered withdrawal volumes.

2. Maximum Authorized Daily Withdrawals from each Withdrawal Point

Withdrawals from individual withdrawal points are not to exceed the approved maximum daily volumes listed below in Table 2 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 2: Maximum Authorized Daily Withdrawal Volumes

Source Name	PWS Source ID Code	Approved Rate
Rock Well #2	2174000-05G	322 gpm (0.465 MGD)
Rock Well #3	2174000-06G	199 gpm (0.287 MGD)
Rock Well #5	2174000-07G	263 gpm (0.379 MGD)
Wellfield #4A*	To Be Assigned	240 gpm (0.346 MGD)

*Maynard shall operate Wellfield #4A in accordance with the Interim Approval issued October 5, 2020 by the Natural Heritage and Endangered Species Program (NHESP), File Number 18-39732 and any NHESP subsequent decisions.

3. Ground Water Supply Protection

MassDEP records indicate that Maynard's permitted ground water sources meet MassDEP's ground water supply protection requirements of the Drinking Water Regulations at 310 CMR 22.21(2), including a floor drain regulation, for the Zone II areas within Maynard's municipal boundary. Maynard's Zone II areas extend into the towns of Acton, Stow, and Sudbury.

The Best Effort Requirement will need to be repeated, at MassDEP's direction, for WMA water withdrawal permit reviews or amendments, new source approvals, monitoring waiver applications, Zone II re-delineations, and Sanitary Survey stipulations; until those communities adopt the appropriate controls and include Maynard's Zone II areas in their protection districts.

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

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

5. Performance Standard for Unaccounted for Water

Maynard'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. Maynard does not meet the standard based on data through 2020. Maynard shall implement the Functional Equivalence Requirements based on the AWWA/IWA Water Audits and Loss Control Programs, Manual of Water Supply Practices M36, as outlined in Appendix B. **By June 30, 2022 submit to MassDEP the results of an annual "top down" water audit.**

Maynard is required to report its UAW annually in its Annual Statistical Report (ASR) so as to document compliance with this performance standard. Maynard's ASR shall include the calculation used to derive that figure including, without limitation, the source of data used, the methodology for calculating UAW and any assumptions used in making the calculation. Nothing in the Permit shall prevent a permittee who meets the 10% performance standard from developing and implementing a water loss control program following the AWWA M36 Water Audits and Loss Control Programs. Permittees implementing 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. Seasonal Limits on Nonessential Outdoor Water Use

Maynard shall limit nonessential outdoor water use through mandatory restrictions from May 1st through September 30th annually as outlined below beginning calendar year 2022. 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.

For calendar year 2021, Maynard shall continue to implement restrictions as has been done in the past. By June 1, 2022 Maynard shall review and update the By-Laws and/or Maynard's Water Rules and Regulations to provide authority to implement water use restrictions as described in this permit. MassDEP has developed the "DEP Model Outdoor Water Use Bylaw/Ordinance" to help municipalities and water districts implement seasonal water conservation requirements. The Model Bylaw also includes options for regulating private wells and in-ground irrigation systems. See https://www.mass.gov/service-details/model-water-use-restriction-bylawordinance-update.

Continued on next page.

Table 3: Seasonal Limits on Nonessential Outdoor Water Use

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	Nonessential outdoor water use is allowed: a) **Two (2) days per week** before 9 am and after 5 pm; **and** b) **one (1) day per week** before 9 am and after 5 pm when USGS stream gage 01097000 Assabet River at Maynard, MA falls below **18 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.
Streamflow Triggered Restrictions	Nonessential outdoor water use is allowed: a) **Two (2) days per week** before 9 am and after 5 pm when USGS stream gage 01097000 Assabet River at Maynard, MA falls below: • May 1 – June 30: **119 cfs** for three (3) consecutive days • July 1 – September 30: **42 cfs** for three (3) consecutive day**s** b) **one (1) day per week** before 9 am and after 5 pm when USGS stream gage 01097000 Assabet River at Maynard, MA falls below **18 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.
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	Nonessential outdoor water use is allowed **one (1) day per week** before 9 am and after 5pm;
Streamflow Triggered Restrictions	Nonessential outdoor water use is allowed **one (1) day per week** before 9 am and after 5 pm when USGS stream gage 01097000 Assabet River at Maynard, MA falls below: • May 1 – June 30: **119 cfs** for three (3) consecutive days • July 1 – September 30: **42 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.

Table 4: Instructions for Accessing Streamflow Website Information
If Maynard chooses Streamflow Triggered Restrictions, Maynard shall be responsible for tracking streamflows and drought advisories and recording and reporting to MassDEP when restrictions are implemented.
Streamflow information is available at the USGS National Water Information System (NWIS): Web Interface. The USGS NWIS default shows Massachusetts streamflows in real time, i.e., the most recent, usually quarterly hourly, reading made at each USGS stream gage. Seasonal Limits on Nonessential Outdoor Water Use are implemented when the mean daily streamflow falls below the designated trigger for 3 consecutive days. The mean daily flow is not calculated until after midnight each day when the USGS computes the hourly data into a mean daily streamflow. As a result, permittees must use the mean daily streamflow from the preceding day when tracking streamflows. **Mean daily streamflow gage** readings are available at the USGS NWIS Web Interface at http://waterdata.usgs.gov/ma/nwis/current/?type=flow. • Scroll down to 01097000 Assabet River at Maynard, MA. • Click on the gage number. • Scroll down to "Provisional Date Subject to Revision – Available data for this site" and click on the drop-down menu. • Click on "Time-series: Daily data" and hit GO. • Scroll down to the "Available Parameters" box. Within the box, be sure "00060 Discharge (Mean)" is checked, then, under "Output Format" click "Table" and hit GO. • Scroll down to "Daily Mean Discharge, cubic feet per second" table and find the current date on the table. • Compare the cubic feet per second (cfs) measurement shown on the table to the cfs shown under Streamflow Triggered Restrictions above.

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).

Notice of Seasonal Nonessential Outdoor Water Use Restrictions

Maynard shall notify its customers of the restrictions, including a detailed description of the restrictions and penalties for violating the restrictions, by April 15th each year.

Notice that mandatory restrictions have been put in place shall be filed with MassDEP within 14 days of the restriction's effective date. Filing shall be in writing on the form "Notification of Water Use Restrictions" available on the MassDEP website.

Maynard shall document compliance with the Seasonal Nonessential Outdoor Water Use Restrictions annually in its Annual Statistical Report (ASR).

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

7. Requirement to Report Raw and Finished Water Volumes

Maynard shall report annually on its ASR the raw water volumes and finished water volumes for the entire water system and the raw water volumes for individual water withdrawal points.

8. Water Conservation Requirements

At a minimum, Maynard shall implement the following conservation measures forthwith. Compliance with the water conservation requirements shall be reported to MassDEP upon request, unless otherwise noted below.

Table 5: Minimum Water Conservation Requirements
System Water Audits and Leak Detection
1. At a minimum, conduct a full leak detection survey every three years. A full leak detection survey should be completed by December 31, 2023.
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 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.

System Water Audits and Leak Detection continued

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 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.

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. 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 AWWA Manual M6 – Water Meters.
3. Maynard 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. Establish a water pricing 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;

Pricing continued
• 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.
2. Evaluate water rates in accordance with Special Condition 9 and adjust costs 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. Continue to implement quarterly water billing and implement more frequent meter reading and billing as soon as practicable.
Residential and Public Sector Conservation
1. Meet all standards set forth in the Federal Energy Policy Act, 1992, and the Massachusetts Plumbing Code.
2. Meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.
3. Municipal buildings • Maynard reported that water saving devices have not been installed in Green Meadow School and the fire station. Maynard reported that the replacement of the school is expected within three years and the fire station is expected within 1.5 years. Maynard shall continue to ensure that water savings devices are installed in all municipal buildings as they are renovated and shall ensure water conserving fixtures and landscaping practices are incorporating into the design of new municipal capital projects.
Industrial and Commercial Water Conservation
1. Maynard shall ensure implementation of water conservation practices, including the installation of WaterSense compliant low flow plumbing fixtures where applicable, and low water use landscaping in all development proposals.
Public Education and Outreach
1. Within one year of the date of this permit, develop and implement a water conservation and education plan designed to educate water customers on ways to conserve water. Without limitation, the 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;

Public Education and Outreach continued
• 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.
2. Within one year of the date of this permit, Maynard shall provide a report on the water conservation and public education plan it developed over the prior year and identify a summary of activities completed during the past year and those planned for the for the future to promote water conservation.

9. Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins

Maynard shall minimize the impacts of its groundwater withdrawals from its permitted source in Subbasin 12033, as follows:

- Maynard shall continue to evaluate their water rate structure annually.
- Maynard shall continue to enforce the Water Rules and Regulations with regards to the requirements for moisture sensor and timing device installations on irrigation systems.
- Maynard shall continue to use an automated meter reading system.
- Maynard has regulations in place to protect the operation of fire hydrants and ensure their proper use. Maynard shall continue to enforce these regulations.

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 MassDEP 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 MassDEP 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 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 36.33.
6. **Duty to Report:** The permittee shall submit annually, on the electronic Annual Statistical Report (eASR) accessed through MassDEP'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:** MassDEP 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.

Marielle Stone — August 26, 2021

Marielle Stone, Deputy Regional Director
Bureau of Water Resources
Central Regional Office

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 any Annual Statistical Report (ASR), 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

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 UAW performance standard (UAW of 10% or less for 2 of the 3 most recent years throughout the permit period), then the permittee shall develop and implement a water loss control program following the *AWWA M36 Water Audits and Loss Control Programs* within 5 full calendar years 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 MassDEP.
4. Continued implementation will be a condition of the permit in place of meeting the 10% UAW performance standard.
5. Upon request of MassDEP, the permittee shall report on its implementation of the water loss control program.

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

NOTE FOR SMALL SYSTEMS: For small systems with less than 3,000 service connections or a service connection density of less than 16 connections per mile of pipeline, the Unavoidable Annual Real Loss (UARL) calculation and the Infrastructure Leak Index (ILI) developed as the 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 the permittee 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.