



September 23, 2022

Mr. James F. McKay
Director of Public Works
Town of Millis
900 Main Street
Millis, MA 02054

**SUBJECT: Proposal for Water Management Act Permit Support Services
Millis, Massachusetts**

Dear Mr. McKay:

Kleinfelder is pleased to present this proposal to provide Water Management Act (WMA) Permit Support Services for the Town of Millis (the Town). It is understood that the Massachusetts Department of Environmental protection (MassDEP) is currently undergoing its 5-year review process of the Town's WMA Permit, after which a Modified Permit is expected to be finalized. Kleinfelder will support the efforts of the Town to comply with MassDEP requirements and adequately convey the Town's current and future water withdrawal needs for the Modified Permit.

In the Fee Estimate, a breakdown of anticipated hours of effort is provided. Kleinfelder will work with the Town to continue coordination and negotiation efforts as needed beyond the scope of services on a time and materials basis per the attached fee schedule to best serve the Town's desired outcomes.

BACKGROUND AND PROJECT UNDERSTANDING

On Tuesday, September 6th, 2022, MassDEP provided the Town with its initial 5-year review of the MWA Permit consistent with 310 CMR 36.31. MassDEP plans to amend the permit in accordance with 310 CMR 36.29 to make it consistent with the 2014 changes to the WMA Regulations. The Town is required to submit a response to a total of eleven (11) questions posed by MassDEP in an Order to Complete (OTC, provided in Attachment A) within 90 days, or before December 5th, 2022 to continue withdrawing water from the Charles River Basin. As the MassDEP's WMA Review for the Charles Basin had been long delayed from its last published schedule, the Town did not anticipate this effort in the FY23 budget. Therefore, Kleinfelder has already requested and received an extension from MassDEP until February 19, 2023, which would provide 90 days following approval of a contract for these services in mid to late November.

As part of its initial review, MassDEP identified that The Town's withdrawal limit is higher than its recent average daily demand volume over the past five years and has proposed to issue a Modified Permit with an interim allocation which would lower the Town's maximum authorized annual average withdrawal volume for all sources from 0.99 Million Gallons per Day (MGD) to 0.84 MGD. This would remain in effect until the Department of Conservation and Recreation (DCR) issues a Water Needs Forecast (WNF) for the Town. After the release of a WNF, if the forecast supports it, the Town would be eligible to apply for a permit Amendment to increase the withdrawal volume. However, the DCR will not prepare a WNF when the Town's unaccounted-for water (UAW) is above 10%, which it has been in recent years. The Town must document its reasons for exceeding the unaccounted for water standard, and prepare a

UAW Compliance Plan. In addition, due to the Net Groundwater Depletion (NGD) of the Charles River Basin, the Town is required to prepare a Minimization Plan and Water Conservation Questionnaire to submit alongside the Town's response to questions posed by MassDEP.

During 2016, in anticipation of the MassDEP WMA Permit review, Kleinfelder prepared an initial Minimization Plan for Millis. An update to this document can form the basis for the required submittal. A new UAW Compliance Plan will need to be prepared.

SCOPE OF SERVICES

Kleinfelder will assist with preparing a response to the MassDEP initial review questions and creating an updated Minimization Plan, an Unaccounted for Water Compliance Plan, and assist the Town with the Water Conservation Questionnaire and bylaw review to meet requirements of the Water Management Regulation 310 CMR 36.22. Additionally, Kleinfelder will facilitate stakeholder meetings and negotiations between MassDEP and Millis to address the Town's current and future water withdrawal needs.

Much of the work associated with preparation of the Minimization plan has already been completed per the Minimization & Mitigation Implementation Analysis prepared by Kleinfelder and provided to the Town in March of 2016. This report will be adapted to reflect existing conditions and changes since 2016, including additional conservation requirements outlined in the Massachusetts Water Resource Commission's Water Conservation Standards (July 2018). The report will also include additional analyses specifically requested by MassDEP in the OTC.

Task 1 – Data Review and Order to Complete Response

- A. Kleinfelder will review data to address questions in the OTC and prepare a Minimization Plan consistent with MassDEP Water Management Act Permit Guidance. Data to be requested and incorporated includes the following:
 - Additional developments that have been planned since 2016
 - Minimization efforts already implemented in the Town since 2016 including stormwater recharge, leak detection, source optimization, and water restrictions
 - Updates to the Town's land use, demographics, and water resources infrastructure since 2016
 - Daily well pumping data for the years 2016-2022
 - Annual Statistical Reports (ARs) for the years 2016-2021
 - Communications between the Town and the Department of Conservation and Recreation (DCR) regarding a WNF
 - Communications between the Town and Sherborn regarding land use controls in the Town's well Zone II areas
 - Records of water sharing between the Town and surrounding communities
 - Compliance Plans for Unaccounted for Water (UAW) and UAW reduction methods currently employed, including applicable laws and ordinances for enforcement
- B. Kleinfelder will also complete the following requirements outlined in the MassDEP OTC as follows:
 - UAW Compliance Plan
 - Updated Minimization Plan

- Enhanced Water Conservation Planning: Review and update recommendations from the 2016 Minimization Plan relating to conservation. Assist the Town with preparing the required Water Conservation Questionnaire and review and provide comment on the Town's water conservation bylaw to meet anticipated Permit requirements.

Task 1 Deliverables:

- *OTC Response Letter*
- *Updated Minimization Plan*
- *UAW Compliance Plan*
- *Water Conservation Plan and Bylaw edits*

Task 2 – Meetings and Negotiation Support, and Presentations

Kleinfelder will support the Town in meetings and negotiations to meet the Town's current and future water withdrawal needs, including the following:

- Two Presentations to the Select Board on project status
- Six (6) coordination calls with the Town to collect data and discuss project progress
- Four (4) coordination calls with the Town and MassDEP to present and discuss project findings and negotiate review results

All coordination calls are assumed to be virtual and one (1) hour in duration. Kleinfelder will coordinate and attend additional calls and meetings as needed to support the Town, if requested, which will be billed on a time and materials basis and approved in writing.

Task 2 Deliverables: Meeting agendas and meeting notes.

SCHEDULE

Assuming a notice to proceed before late November, Kleinfelder expects to provide Task 1 deliverables to the City by February 3rd, 2023, and final versions within one (1) week of receiving comments. Please note that Kleinfelder's analysis, and therefore this schedule, is dependent upon Kleinfelder receiving information and review comments from others in a timely manner. This schedule assumes the Town will be able to provide review comments within one week, or five business days, from receipt of draft materials.

COMPENSATION

Compensation for Tasks 1 and 2 is not expected to exceed Fifty-Six Thousand Eight Hundred Sixty-Four Dollars (\$56,864). Task 1 will be billed on a percent complete basis and Task 2 will be billed on a time and materials basis at billing rates equivalent to direct salary times 3.15 multiplier. The effort in Tasks 1 and 2 represents 293 hours of labor. Table 1 provides a breakdown of hours and cost by task.

Table 1. Detailed Fee Breakdown – WMA Permit Support Services

	Task	Labor Hours	Total
Task 1	Data Review and OTC Response	220	\$42,714
Task 2	Meetings and Presentations	73	\$14,150
	Total Fee	293	\$56,864

LIMITATIONS

Our work will be performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions and recommendations will be based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, or opinion provided.

Thank you for this opportunity to work with you on this important project. If you have any questions, please don't hesitate to contact me at 617-498-4778 or at KRyan@Kleinfelder.com. We look forward to getting started on the project.

Respectfully yours,

KLEINFELDER



Kirsten Ryan
Senior Project Manager

Enclosures: Attachment A - Order to Complete

cc: Mr. Michael Guzinski, Town Administrator

Attachment A – Order to Complete



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

Bethany A. Card
Secretary

Martin Suuberg
Commissioner

September 6, 2022

James McKay, Director
Department of Public Works
Town of Millis
900 Main Street
Millis MA 02054

RE: Millis- BWR\WMA
WMA Permit #: 9P4-2-20-187.03
Program: Water Management Act
Action: Permit Review Order to Complete

Dear Mr. McKay:

The Massachusetts Department of Environmental Protection (MassDEP or the Department) has completed its initial 5-year review of the Water Management Act (WMA) Permit for the Town of Millis (the Town or Millis). Consistent with 310 CMR 36.31, the Department is conducting this review to evaluate Millis's compliance with the conditions in its current permit. The Department also plans to amend the permit in accordance with 310 CMR 36.29 to make it consistent with the 2014 changes to the Water Management Act Regulations. MassDEP has determined that additional information is necessary to complete this review. WMA permit reviews are not complete until all required elements are addressed to the satisfaction of MassDEP. **MassDEP requires that the Town submit a response to these questions within ninety (90) days of the date of this letter.**

MassDEP may, at its option, allow more time to submit the required information, if a written request for additional time is submitted before the deadline. If you fail to submit the additional information within the timeframe set forth above, the Department may issue orders or suspend or terminate the Town's permit. Nothing contained in this Order to Complete should be interpreted to preclude MassDEP from requiring additional information that is determined necessary to evaluate the Town's compliance with its permit or otherwise complete this 5-year review.

Following completion of the review of the Town's response to this Order to Complete, MassDEP will issue a draft modified permit to Millis for review and then release the draft permit for a 30-day public comment period. Conditions of the modified WMA permit will be based on the Town's response and will be consistent with the Massachusetts *Water Conservation Standards* approved by the Water Resources Commission in 2018.

**MILLIS WATER MANAGEMENT PERMIT 9P4-2-20-187.03
5-YEAR REVIEW ORDER TO COMPLETE**

Millis's Withdrawal History

Millis is registered for an annual average daily withdrawal volume of 0.63 million gallons per day (MGD) from Wells 1, 2, 3 and 4 in the Charles River Basin. On November 30, 1989, MassDEP issued a Water Management Act Permit 9P-3-20-187.01 (the 1989 WMA Permit) to Millis authorizing the Town to increase its authorized withdrawals from its registered sources. On August 31, 1999, the Department issued a new WMA Permit #9P4-3-20-187.03 (the 1999 WMA Permit)¹ that authorized the Town to use two additional groundwater sources Wells # 5 and #6 and increased the Town's permitted withdrawals from all its groundwater sources in the Charles River Basin. Millis's permit was renewed in 2010 and, it is this permit that is the subject of this permit compliance review.

EXISTING PERMIT CONDITIONS

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volumes The 2010 WMA Permit provides that from March 1, 2014 through February 28, 2029, Millis is authorized to withdraw from its permitted groundwater sources in the Charles River Basin an annual average daily volume of 0.36 MGD. This permitted volume is in addition to the 0.63 MGD that the Town is authorized to withdraw from its registered sources, Wells 1, 2, 3, and 4. Thus, the 2010 WMA Permit gives Millis a total authorized annual average daily volume of 0.99 MGD. As shown in Table 1 below, Millis has withdrawn from its Charles River Basin sources an annual average daily volume substantially less than its total authorized annual average daily volume.

Table 1: Annual Average Daily (AAD) Withdrawal Volumes

Year	AAD (MGD)
2021	0.64
2020	0.64
2019	0.57
2018	0.62
2017	0.65

The Water Management Regulations revised and promulgated in November 2014 require WMA permits to address mitigation of withdrawals above the baseline rates. The Water Management Regulations, 310 CMR 36.03, define baseline to mean 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:

1. baseline cannot be less than a permittee's registered volume;
2. baseline cannot be greater than the permittee's authorized volume for 2005; and

¹ The permit number changed from #9P-3-20-187.01 to #9P4-2-20-187.03 because of the additional allocated withdrawal volumes approved in the new permit.

3. 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.

Millis's baseline annual average daily volume is its 2005 withdrawal volume plus a buffer of 5% or 0.84 MGD. Permittees whose authorized volumes are above baseline must prepare a mitigation plan.²

As shown in Table 1 above, Millis's annual average daily volume in recent years has been substantially below its baseline³. Moreover, the Department of Conservation and Recreation (DCR) has not issued a Water Needs Forecast (WNF) for Millis. In these circumstances, MassDEP has determined that it would be appropriate to issue a Modified WMA Permit that limits the Town's total authorized annual average daily withdrawal volume to its baseline of 0.84 MGD, unless and until DCR issues a final WNF.

The 0.21 MGD proposed limit on the Town's withdrawals in the Charles River Basin that may be set forth in the Modified Permit will be an interim allocation.⁴ As an interim allocation, this 0.21 MGD limit will remain in effect unless and until DCR issues a new WNF. If, after DCR issues a final WNF, the Town seeks to increase its total authorized volume to an amount that is consistent with that forecast and that does not exceed the total volume authorized by Millis's 2010 WMA Permit and registration: 0.99 MGD, Millis may apply for a WMA Permit Amendment authorizing such an increase.

The Modified WMA Permit containing this interim allocation will remain in effect until June 5, 2034, unless MassDEP issues a permit amendment before that date. The renewed permit issued on February 26, 2010, had an expiration date of February 28, 2029. In 2010, the permit was extended for two years by Section 173 of Chapter 240 of the Acts of 2010, the Permit Extension Act. In 2012, the Permit Extension Act was amended by chapter 238 of the Acts of 2012, and the permit was again extended an additional two years to February 28, 2033. That date was further extended by 462 days due to COVID-19 Order No. 42, "Order Resuming State Permitting Deadlines and Continuing to Extend the Validity of Certain State Permits," issued on July 2, 2020. The expiration date for all permits going forward in the Charles River Basin will be June 5, 2034.

Q1: As stated above, MassDEP has determined that given Millis's recent water use and the lack of a WNF from DCR, it is appropriate to issue a Modified WMA Permit that limits the Town's annual average daily withdrawal volume to 0.84 MGD, the Town's baseline. Please outline whether Millis is comfortable proceeding with an allocation equal to its baseline of

² See mitigation section of this Order to Complete. In that section, MassDEP explains what the Town would be required to do if its total authorized volume exceeded its baseline.

³ See mitigation section of this Order to Complete. In that section, MassDEP explains the impacts of withdrawals above baseline.

⁴ MassDEP has further determined that this interim allocation would not adversely impact the safe yield of the Charles River Basin. Total authorized withdrawals from the Charles River Basin are currently 44.12 MGD, below the safe yield of 65.2 MGD.

0.84 MGD or would prefer to pursue a new WNF and a higher withdrawal limit as part of this review process?

Q2: Please describe what steps Millis has taken to address the reasons (unaccounted-for water) DCR was unable to develop a final WNF from DCR in 2010. (Note, Special Condition 6. - See Question 5 below.)

Special Condition 2, Maximum Authorized Daily Withdrawal Volumes from each withdrawal point. In recent years, Millis has not exceeded the maximum authorized withdrawal volume for any of its permitted sources.

Special Condition 3, Groundwater Supply Protection, Special Condition 3 of the 2010 WMA Permit requires Millis to exercise best efforts to encourage Medfield, Norfolk, and Sherborn to adopt land use controls that meet the requirements of 310 CMR 22.21(2) to protect the portion of the Zone IIs of its wells that extends into those communities. MassDEP records indicates that Sherborn has not yet adopted such land use controls.

Q3: Please describe and document the actions that Millis has taken and intends to take to encourage Sherborn to adopt land use controls that meet the requirements of 310 CMR 22.21(2).

Special Condition 4, Stream Flow Restrictions. Special Condition 4 of the 2010 WMA Permit requires Millis to cease use of Wells #5 and #6 when stream flow in the Charles River falls to 0.21 cubic feet per second per square mile (13.80 cubic feet per second) at the United States Geological Survey (USGS) gage located on the Charles River in Medway (#01103280). Special Condition 4 of the 2010 Permit contains an exception for periods when Millis is selling water to Franklin and both Franklin and Millis have imposed the required seasonal restrictions on nonessential outdoor water use.

Q4: The Department intends to maintain this stream flow restriction in the Modified WMA Permit but eliminate the exception for periods when Millis is selling water to Franklin or any other upstream community and both Franklin or the other upstream community and Millis have imposed the required seasonal restrictions on nonessential outdoor water use. The Department is not aware of any period in which Millis sold water to Franklin or any other upstream community or of any plans for Millis to do so in the future. Does Millis have any objections to the proposed elimination of the exception for periods when Millis is selling water to Franklin or other upstream communities?

Table 2: RGPCD and UAW

Year	RGPCD	UAW
2017	59	7.4
2018	48	15.9
2019	46	12.3
2020	55	8.9
2021	51	6.8

Special Condition 5, Performance Standard for Residential Gallons Per Capita Day Water Use (RGPCD) Special Condition 5 of the 2010 WMA Permit requires Millis to meet the

performance standard of 65 residential gallons per capita day (RGPCD). Millis has been in compliance with this performance standard.

Special Condition 6, Performance Standard for Unaccounted for Water (UAW). Special Condition 6 of the 2010 WMA Permit requires Millis to meet the 10% performance standard for UAW. The 2010 WMA Permit requires Millis to submit a compliance plan for any year it does not meet the 10% UAW performance standard. Millis exceeded the 10% UAW performance standard in 2018 and 2019. The Modified WMA Permit will require Millis to meet the 10% performance standard for UAW two out of every three years.

Q5: The Department has no record of having received compliance plans for 2018 and 2019. Please submit any required plans. If plans were not completed, please explain why Millis failed to meet the UAW performance standard in 2018 and 2019 and what Millis has done to reduce its UAW.

Special Condition 7, Seasonal Limits on Nonessential Outdoor Water Use Special Condition 7 of the 2010 WMA Permit requires Millis to impose seasonal limits on nonessential outdoor water use. The Modified WMA Permit will update that special condition. The limitations on seasonal nonessential outdoor water use in the Modified WMA Permit will be based on:

- The August net groundwater depletion (NGD)⁵ where the permittee's groundwater sources are located;
- The permittee's compliance with the RGPCD performance standard during the preceding year;
- The permittee's choice to implement restrictions either continuously throughout the irrigation season, or only when streamflow falls below trigger levels at an assigned USGS local stream gage; and
- The Modified WMA Permit will replace the drought triggered restriction with a 7-day Low Flow value that triggers more stringent restrictions on non-essential water use.

Each year, Millis may choose one of two options for implementing nonessential outdoor watering restrictions:

1. Calendar triggered restrictions: Restrictions shall be implemented from May 1st through September 30th. Many public water suppliers will find this option easier to implement and enforce than the streamflow triggered approach.

2. Streamflow triggered restrictions: Restrictions shall be 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 shall commence when streamflow falls below the trigger for three consecutive days. Once implemented, the restrictions shall remain in place until streamflow at the assigned USGS local stream gage meets or

⁵ The Water Management Regulations, 310 CMR 36.03, define August net groundwater depletion to mean the unimpeded median flow for August minus 2000-2004 groundwater withdrawals plus 2000-2004 groundwater returns described by U.S. Geological Survey in *Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover and Water Quality for Massachusetts Stream Basins*.

exceeds the trigger streamflow for seven consecutive days. The streamflow triggers are based on flow levels that are protective of habitat for fish spawning during the spring and for fish rearing and growth during the summer.

If Millis selects the streamflow approach, it has been assigned the USGS local stream gage of #01103280-Charles River at Medway, MA. The local gage streamflow triggers at this site are 59 cubic feet per second (cfs) for May and June and 20 cfs for July, August and September. Should the reliability of flow measures at the Charles River gage be so impaired as to question its accuracy, Millis may request MassDEP's review and approval to transfer to another gage to trigger restrictions. MassDEP reserves the right to require use of a different gage.

The 7-Day Low-flow Trigger, at which restrictions increase is incorporated into both Calendar and Streamflow Triggered restrictions in order to provide additional protection to streamflows when flows are very low. The 7-day low flow trigger is based on the median value of the annual 7-day low flows for the period of record. The 7-day low flow trigger for the Charles River at Medway, MA gage is 8.1 cfs.

TABLE 3: Restrictions for Permittees meeting the 65 RGPCD Standard for the preceding year RGPCD \leq 65 as reported in the ASR and accepted by MassDEP
<p><u>Calendar triggered restrictions</u></p> <p>May 1 through September 30</p> <p>Nonessential outdoor water use is restricted to:</p> <ol style="list-style-type: none"> two (2) days per week before 9 am and after 5 pm; and one (1) day per week before 9 am and after 5 pm when USGS stream gage 01103280 – Charles River at Medway, MA falls below 7-day the low-flow statistic 8.1 cfs for three (3) consecutive days. <p>Once streamflow triggered restrictions are implemented, they shall remain in place until streamflow at the gage meets or exceeds 8.1 cfs for seven (7) consecutive days.</p>
<p><u>Streamflow triggered restrictions</u></p> <p>Nonessential outdoor water use is restricted to:</p> <ol style="list-style-type: none"> two (2) days per week before 9 am and after 5 pm when USGS stream gage 01103280 – Charles River at Medway, MA falls below: <ul style="list-style-type: none"> May 1 – June 30: 59 cfs for three (3) consecutive days July 1 – September 30: 20 cfs for three (3) consecutive days one (1) day per week before 9 am and after 5 pm when USGS stream gage 01103280 – Charles River at Medway, MA falls below the 7-day low-flow statistic 8.1 cfs for three (3) consecutive days. <p>Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.</p>
Restrictions for Permittees NOT meeting the 65 RGPCD standard for the preceding year RGPCD $>$ 65 as reported in the ASR and accepted by MassDEP
<p><u>Calendar triggered restrictions</u></p> <p>May 1 through September 30</p> <p>Nonessential outdoor water use is restricted to one (1) day per week before 9 am and after 5 pm.</p>
<p><u>Streamflow triggered restrictions</u></p> <p>Nonessential outdoor water use is restricted to one (1) day per week before 9 am and after 5 pm when USGS stream gage 01103280 – Charles River at Medway, MA falls below:</p> <ul style="list-style-type: none"> May 1 – June 30: 59 cfs for three (3) consecutive days July 1 – September 30: 20 cfs for three (3) consecutive days <p>Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.</p>

Please note that Millis's Modified WMA Permit will also include a requirement to develop and adopt or update as necessary a water use restriction bylaw, ordinance or regulation that authorizes enforcement of the seasonal limits on nonessential outdoor water use required in the permit. MassDEP has developed a Model Outdoor Water Use Bylaw/ Ordinance to help municipalities implement seasonal water conservation requirements. The Model Bylaw also includes options for regulating private wells and in-ground irrigation systems. See <http://www.mass.gov/eea/agencies/massdep/water/regulations/model-water-use-restriction-bylaw-ordinance.html>

Q6: What actions has Millis taken to implement restrictions on outside water use as required by the Town's 2010 WMA Permit?

Q7: Does Millis currently have a bylaw or ordinance that authorizes enforcement of the seasonal limits on outdoor water use? If Millis does have such a bylaw or ordinance, please provide either a copy or a link to the bylaw or ordinance on the Town of Millis's website.

Special Condition 8, Requirement to Report Raw and Finished Water Volumes Special Condition 8 of the 2010 WMA Permit requires Millis to report annually on its annual statistical report (ASR) the raw water volumes and finished water volumes for the entire water system and the raw water volumes for individual water withdrawal points. Millis is in compliance with these requirements.

Special Condition 9, Water Conservation Requirements. Special Condition 9 of the 2010 WMA Permit sets out the water conservation requirements the Town is required to meet. These requirements include metering, leak detection and repair, and requirements pertaining to pricing, billing, enforcement of the plumbing code, plumbing in public buildings, education and outdoor water use. The Modified WMA Permit will revise the water conservation requirements to reflect the standards outlined in the Massachusetts Water Resources Commission's *Water Conservation Standards (revised in July 2018)*.

Q8: Please complete the Water Conservation Questionnaire for Public Water Suppliers available at <https://www.mass.gov/files/documents/2016/08/om/water-conservation-questionnaire.pdf> The document is a pdf, and so must be printed and filled out by hand. The completed *Questionnaire* may be submitted as either a paper copy or a pdf. Please include any additional information not specifically requested in the Questionnaire that will enable MassDEP to better assess Millis's implementation of the permit conservation requirements outlined above.

Special Condition 10, Water Withdrawals that Exceed Baseline Withdrawal Volumes. Special Condition 10 of the 2010 WMA Permit establishes a baseline withdrawal volume for Millis of 0.80 MGD. Special Condition 10 provides that if Millis exceeds that baseline it must perform an offset feasibility study and if it exceeds the baseline again it must implement the results of that study. In recent years, Millis has not exceeded the baseline.

As stated earlier, the 2014 WMA Regulations establish a new definition of baseline and new mitigation requirements for permittees whose total authorized volume exceeds baseline. See Section of this Order to Complete discussing Special Condition 1. See also the Mitigation Section of this Order to Complete. The existing Special Condition 10 will not appear in the Modified WMA Permit. If MassDEP were to issue a Modified WMA Permit that gave Millis a total authorized volume of more than its baseline as defined in the 2014 WMA Regulations, Special Condition 10 would be replaced by a new condition that would require the Town to prepare a mitigation plan.

NEW PERMIT CONDITIONS

COLDWATER FISHERY RESOURCE, MINIMIZATION AND MITIGATION

The Water Management Regulations revised and promulgated in November 2014 require WMA permits to address protection of Coldwater Fishery Resources (CFR), minimization of the impact of pumping, mitigation of pumping above the baseline rates, and potential changes in Biological

Category (BC)⁶ and Groundwater Withdrawal Categories (GWC)⁷. Below is an outline of these requirements as they apply to Millis.

Table 4 summarizes the Groundwater Withdrawal Category (GWC), Biological Category (BC), August Net Groundwater Depletion (NGD) and Coldwater Fishery Resource (CFR) characteristics of the subbasins where Millis's groundwater sources are located.

Table 4– Summary of Subbasins Containing Millis's Groundwater Sources

Major Basin	Subbasin	GWC	BC	NGD	CFR present	Category Change Possible ⁸	Millis's Groundwater Sources
Charles	21123	4	5	29.5%	No	No	01G, 02G, 04G
Charles	21133	5	5	46.1%	No	No	03G, 05G, 06G

Coldwater Fishery Resource (CFR) Protection

Permittees with withdrawals that impact streamflow at a CFR (identified on basin maps⁹) must evaluate reducing impacts to CFRs through feasible optimization. The Town has no sources that affect streams identified as a coldwater fishery resource at this time. The Modified WMA Permit for the Town's Charles River Basin sources will not require Millis to evaluate strategies for reducing CFR impacts.

⁶ The Water Management Regulations, 310 CMR 36.14(1)(a), establish a biological category (BC) for each subbasin based on the simulated 2000 to 2004 existing condition of aquatic habitat using fluvial fish community characteristics as the surrogate indicator variable. Each biological category represents the percent alteration within the range of these fluvial fish community characteristics as a function of the following subbasin parameters: 1. Impervious cover; 2. Cumulative groundwater withdrawal as a portion of the unimpacted August median flow; 3. Stream channel slope; and 4. Percent wetland within the stream buffer area. The percent alteration for each BC is as follows: BC 1, 0% to 5%; BC 2, > 5% to 15%; BC 3 >15% to 35%; BC 4, > 35% to 65%; BC 5, >65%.

⁷ The Water Management Regulations 310 CMR 36.14(1)(b), establish a groundwater withdrawal category (GWC) based on the ratio of 2000 to 2004 groundwater withdrawal volume to the unimpacted median monthly flow for August and represents conditions during the late summer bioperiod (July thru September). Each GWC represents the range of this ratio that would result in the BC of the same number under conditions of low (15%) impervious cover. The GWC for each withdrawal ratio for the late summer bioperiod is as follows: GWC 1, 0% to 3%; GWC 2, >3% to 10%; GWC 3, >10% to 25%; GWC 4, >25% to 55%; and GWC 5, >55%.

⁸ As shown in Table 4, Millis's sources are in two subbasins: Subbasin 21123, GWC 4, and BC 5; and Subbasin 21133 GWC 5 and BC 5. Millis's withdrawals above baseline cannot change the GWC or BC of Subbasin 21133 since they are already at the highest category value 5. The question remains whether an increase above Millis's baseline could change the GWC of Subbasin 21123 from 4 to 5. The 2010 WMA Permit gave Millis a total authorized annual average daily withdrawal volume of 0.99 MGD, 0.15 MGD above the Town's baseline. As stated earlier, MassDEP may issue a Modified Permit that provides Millis with the same total authorized volume above baseline provided the Town obtains a DCR WNF that is consistent with such a permit. If, however, MassDEP were to such a permit, Millis's total authorized volume above baseline, 0.15 MGD, would not be sufficient to change the GWC of Subbasin 21123 from 4 to 5.

⁹ 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).

Minimization

Permittees with groundwater sources in subbasins having an August Net Groundwater Depletion (NGD) of 25% or greater are required to develop a plan to minimize the impacts of their withdrawals. Subbasin 21122 where Wells #1, #2, and #4 are located has an August NGD of 29.5%. Subbasin 21133 where Wells #3, #5, and #6 are located has an August NGD of August 46.1%. As a result, Millis's Modified WMA Permit will require the Town to develop and implement a minimization plan.

The Minimization Plan shall include:

1. a Desktop Optimization analysis of shifting withdrawals to other available sources outside the August net groundwater depleted subbasin(s) including interconnections;
 2. an evaluation of options for water releases and returns to minimize streamflow impacts; and
 3. an evaluation of implementing conservation measure that go beyond the standard WMA permit requirements to minimize the withdrawals and discharges needed meet demand.
- MassDEP review shows that Millis has an interconnection with Medway. MassDEP has determined that all the subbasins in which Medway's Charles River Basin groundwater sources are located are in subbasins that are GWC 4 or 5. Four of Medway's six sources are in Subbasin 21162, a subbasin with an August NGD of 42.9%. As a result, MassDEP has determined that shifting Millis's withdrawal to Medway is not an environmentally beneficial option that must be evaluated as part of Millis's Minimization Plan.
 - MassDEP review shows that Millis has no surface water supply impoundments. MassDEP has therefore determined that surface water releases do not need to be addressed as part of Millis's Minimization Plan.
 - Millis's Modified WMA Permit will include Nonessential Outdoor Water Use Restrictions that meet the requirements for the Minimization Plan (see restrictions included above). Millis's Modified WMA Permit will also include additional cost-effective conservation measures that go beyond the standard WMA conservation requirements.

Q10: Please provide a Minimization Plan that addresses the feasibility of implementing additional reasonable conservation measures outlined in the *Minimization Planning for WMA Permitting for Public Water Suppliers* attached to this Order to Complete.

Please note that conservation measures that have already been put into place by Millis are potentially eligible components of a Minimization Plan and should be included in the written plan along with the date of implementation.

Mitigation

As stated earlier, Millis's baseline is 0.84 MGD. Permittees whose authorized volumes are above baseline must prepare a mitigation plan. If MassDEP were to issue a Modified WMA Permit that gave Millis a total authorized volume of more than 0.84 MGD, the Town would have to prepare a mitigation plan

The Water Management Regulations set out the requirements for preparing a mitigation plan. The Water Management Regulations, 310 CMR 36.22(6)(a), require that **direct mitigation options** be evaluated before indirect mitigation activities. Direct mitigation activities include surface water releases, sewer system inflow/infiltration (I/I) improvement, stormwater recharge, and the retirement of existing allocation volumes.

Indirect Mitigation: If direct mitigation volumes are less than the amount to be mitigated (the volume above baseline after adjustment for groundwater returns), then indirect mitigation activities will be evaluated to make up the difference. The Department has attached additional guidance on mitigation planning that identifies potential indirect mitigation credit activities.¹⁰

Permittees with withdrawals over baseline that will cause a change to the BC or GWC of a downstream subbasin may be required to provide additional feasible indirect mitigation. Subbasin 21109, which is downstream from Millis's wells, would change from a GWC 4 to a GWC 5 if upstream pumping were to increase by 0.040 MGD or more. This means that if Millis's withdrawals from its Charles River Basin sources were to increase by 0.040 MGD or more over its baseline volume (0.84 MGD baseline + 0.040 MGD available before downstream impact = 0.88 MGD), the Town would be required to provide up to twice the standard indirect mitigation for additional withdrawals over its baseline of 0.84 MGD.

Calculating Millis's Mitigation Volume Table 5 calculates Millis's required mitigation volume if MassDEP were to issue a Modified WMA Permit that gave Millis a total authorized annual average daily volume of up to 0.99 MGD, 0.15 MGD above its baseline volume, the same volume set forth in the 2010 WMA Permit and current registration. Table 5 calculates that amount adjusted by the volume of wastewater that is returned via groundwater or 0.102825 MGD (102,825 gallons per day (gpd)).

Table 5 Millis's Mitigation Volume Calculation

¹⁰ In preparing a mitigation plan, permittees are required to evaluate the impact of their withdrawals on the subbasins in which their sources are located. Permittees are also required to evaluate the impact of their withdrawals on downstream basins.

Permittees whose requested withdrawals above baseline could change the biological category (BC) or groundwater withdrawal category (GWC) of a subbasin in which a source is located are classified as Tier 3. Permittees classified as Tier 3 are required to perform an alternatives analysis as part of the mitigation plan.

If MassDEP were to issue a Modified WMA Permit that allowed Millis to withdraw an authorized annual average daily volume under its permit and registration of 0.99 MGD, the volume authorized by the Town's 2010 WMA Permit, Millis's total authorized withdrawal volume would not change the GWC or BC of either Subbasin 21123 or Subbasin 21133, the two subbasins in which Millis's groundwater sources are located. Based on the impacts to subbasins where its sources are located, MassDEP would not require Millis to perform an alternatives analysis as part of its mitigation plan.

Permittees, whose withdrawals above baseline are more than 5% of unimpacted August median flow in the subbasins where they withdraw, and that contribute to a change in the BC or the GWC of a downstream subbasin, may be required to demonstrate that there is no feasible alternative source that is less environmentally harmful. Even if MassDEP were to issue a Modified WMA Permit that allowed Millis to withdraw an annual average daily volume of 0.99 MGD under its permit and registration, the Town's withdrawal above its baseline volume would not be more than 5% of the unimpacted August median flow. Based on impacts to downstream subbasins, MassDEP would not require Millis to perform an alternatives analysis as part of its mitigation plan.

If MassDEP were to issue a Modified Permit that Allowed Millis to Withdraw a Total Annual Average Daily Volume of 0.99 MGD (0.15 MGD above Baseline)
Potential Authorized Volume above Baseline = 0.15 MGD
<ul style="list-style-type: none"> Authorized Volume above Baseline: $0.99 - 0.84 = 0.15$ MGD
Adjustment for Wastewater Discharge to Local Groundwater = 0.05 MGD
<ul style="list-style-type: none"> 37% of increased withdrawals are delivered to areas with on-site septic systems: $0.15 \text{ MGD} \times 0.37 (37\%) = 0.0555 \text{ MGD}$ 85% of water delivered to areas with on-site septic systems returns to groundwater: $0.0555 \text{ MGD} \times 0.85 (85\%) = 0.047175 \text{ MGD}$
Amount to be Mitigated after Adjustment for Wastewater Discharge to Local Groundwater = 0.102825 MGD
<ul style="list-style-type: none"> Authorized volume above Baseline (0.15 MGD) – adjustment for wastewater discharge to local groundwater (0.047125 MGD) = 0.102825 MGD or 102,825 gpd. Millis may meet this requirement through 102,825 gpd of direct mitigation. If Millis were not able to rely on direct mitigation for the entire 102,825 gpd, it would have to rely on indirect mitigation. In that event, Millis should assume that it would be required to perform twice the standard indirect mitigation.

Alternatively, if MassDEP issued a WMA Permit that limited the Town's total authorized volume to 0.88 MGD or less, the Town would avoid causing adverse downstream impacts and the resulting requirement to do twice the standard indirect mitigation for any withdrawals above its 0.84 MGD baseline. As stated earlier, Millis's recent withdrawals from its Charles River Basin sources have been substantially below 0.88 MGD. Table 6 calculates Millis's required mitigation volumes if MassDEP were to issue a Modified WMA Permit that limited the Town's authorized volume under its permit and registration to 0.88 MGD volume, adjusted by the volume of wastewater that is returned via groundwater, or 0.02742 MGD (27,420 gallons per day).

Table 6 Millis's Mitigation Volume Calculation if MassDEP issued a Modified WMA Permit that Limited the Town's Total Authorized Withdrawal to an Annual Average Daily Volume of 0.88 MGD
Potential Authorized amount above Baseline = 0.04 MGD
<ul style="list-style-type: none"> Authorized Volume above Baseline: $0.88 \text{ MGD} - 0.84 \text{ MGD} = 0.04 \text{ MGD}$
Adjustment for Wastewater Discharge to Local Groundwater = 0.01258 MGD
<ul style="list-style-type: none"> 37% of increased withdrawals are delivered to areas with on-site septic systems: $0.04 \text{ MGD} \times 0.37 (37\%) = 0.0148 \text{ MGD}$ 85% of water delivered to areas with on-site septic systems returns to groundwater: $0.0148 \text{ MGD} \times 0.85 (85\%) = 0.01258 \text{ MGD}$
Amount to be Mitigated after Adjustment for Wastewater Discharge to Local Groundwater = 0.02742 MGD
<ul style="list-style-type: none"> Authorized Volume Above Baseline (0.04 MGD) – adjustment for wastewater discharge to local groundwater (0.01258 MGD) = 0.02742 MGD or 27,420 gpd. Millis can meet this requirement by providing 27,420 gpd of direct mitigation. If Millis is unable to provide 27,420 gpd through direct mitigation, it may rely on the standard amount of indirect mitigation.

Preparing a Mitigation Plan If MassDEP were to issue a Modified WMA Permit that gave Millis a total authorized annual average daily withdrawal volume that exceeds the Town's

baseline volume, 0.84 MGD, the Town would have to prepare a mitigation plan. In preparing a mitigation plan, the Town would have to consider the following:

- If Millis wanted to eliminate adverse impacts on downstream subbasins and avoid having to do twice as much indirect mitigation, it would have to limit its withdrawals from its Charles River Basin sources, to 0.88 MGD.
- 102,825 gpd represents the Charles River Basin mitigation volume as adjusted for wastewater returned that must be mitigated if Millis is authorized under its permit and registration to withdraw 0.99 MGD from its Charles River Basin sources, the volume authorized by the 2010 WMA Permit and current registration.
- 27,420 gpd represents the Charles River Basin mitigation volume as adjusted for wastewater returned that must be mitigated if Millis is authorized to withdraw 0.88 MGD from its Charles River Basin permitted sources.
- The implementation of the Mitigation Plan may be phased over the life of the permit provided that commensurate mitigation is in place prior to withdrawing additional volumes above the Town's baseline of 0.84 MGD.
- Mitigation activities that have occurred since January 1, 2005 may be credited. Additional mitigation activities may be phased in over the life of the permit provided that any volumes withdrawn over baseline are mitigated prior to when those increases occur. MassDEP may make reasonable allowances during the first five years of the permit, for permittees whose withdrawals are already above baseline at the time the permit is issued.
- Mitigation planning is a new concept in Water Management permitting. Before beginning mitigation planning, MassDEP strongly urges all applicants to meet with WMA program staff to discuss options available to each permittee. Contact Madelyn Morris madelyn.morris@mass.gov or Duane LeVangie at 617-292-5706 to arrange a mitigation planning consultation meeting.
- Mitigation planning will not be required if withdrawals in this permit are limited to 0.84 MGD, the Town's baseline volume.

Q11: Please submit a Mitigation Plan if Millis seeks a total authorized annual average volume that exceeds its baseline volume of 0.84 MGD.

As noted, MassDEP looks forward to working with you and is available to discuss the permit modification process upon your request. Please feel free to contact me at (617) 292-5706 should you have any questions.

Sincerely,



Duane LeVangie, Chief
Water Management Program
Bureau of Water Resources

Attachments: Minimization Planning for WMA Permitting for Public Water Suppliers (October 2018)
Mitigation Planning for Public Water Suppliers (October 2018).

ecc: Anne Carrol, DCR OWR

Marielle Stone, MassDEP CERO

Jen Pederson, MWWA

Julia Blatt and Sarah Bower, Mass Rivers Alliance

Julie Wood and Heather Miller, Charles River Watershed Association

Sharepoint:\DWP Archive\CERO\Millis-2187000-WMA Review OTC-9-6-2022

Minimization Planning for WMA Permitting for Public Water Suppliers

October 2018

The Order to Complete/Request for Additional Information that the Department prepares after review of each permit application may include additional instructions or information, specific to the application, to be used in developing the Minimization Plan and Implementation Timetable.

Applicants with groundwater sources in subbasins with an August net groundwater depletion of 25%

or greater, as identified in the MassDEP WMA permitting tool and map (both are available at: <http://www.mass.gov/eea/agencies/massdep/water/watersheds/sustainable-water-management-initiative-swmi.html>), are required to develop and implement a plan to minimize impacts. All components of the minimization plan must be approved by MassDEP.

The plan includes:

4. a Desktop Optimization analysis of shifting withdrawals to other available sources outside the August net groundwater depleted subbasin(s);
5. an evaluation of options for water releases and returns to minimize streamflow impacts; and
6. an evaluation of implementing conservation measure that go beyond the standard WMA permit requirements to minimize the withdrawals and discharges needed to meet demand.

Each of these three requirements is discussed in greater detail below. The plan also considers cost, available technology, anticipated environmental improvement, and the applicant's authority to implement the actions identified in the plan.

If an applicant wishes to propose alternative measures to minimize the impact of its withdrawals, MassDEP will consider those measures on a case-by-case basis.

1. Desktop Optimization

Desktop Optimization is a screening process to help evaluate the feasibility of operational changes aimed at minimizing impacts to streamflow from groundwater withdrawals. In addition to environmental concerns, a Desktop Optimization analysis should consider existing system constraints including, but not limited to, infrastructure, pressure, water quality, operations, costs, regulatory matters, and societal needs.

The applicant uses this process to assess whether the impact of the withdrawals on streamflow in the subbasin can be decreased without significantly altering the applicant's ability to meet demands, by:

- a) modifying well withdrawal operations (e.g. shifting withdrawals to wells in less impacted subbasins or modifying the timing of withdrawals within an impacted subbasin to minimize the effect on streamflow); or
- b) using potential alternative sources, such as water from an adjacent system (interconnection), where availability exists.¹¹

¹¹ Applicants should be aware of the requirements and exemptions under the Interbasin Transfer Act when reviewing potential alternative sources. If any alternative sources are located outside of the major basin in which the

What constitutes an optimized water supply system is a decision that will be made by MassDEP in consultation with the water supplier following full review of all relevant factors. The resulting minimization plan will include the locations and withdrawal schedules of sources that will be used to meet system demand while minimizing ecological impacts of withdrawals.

The Source Optimization Table (below) provides questions to assess which sources/subbasins may be less impacted by pumping during in the low flow period (summer/fall).

Instructions: For questions 1 and 3 through 5, use the MassDEP WMA Permitting Tool (<http://www.mass.gov/eea/agencies/massdep/water/watersheds/sustainable-water-management-initiative-swmi.html>) to look up each subbasin in which you have groundwater sources and record answers. Questions 2 and 6 can be answered through knowledge of the community's water supply system.

Source Optimization – for use in Minimization Planning	
Optimization Parameter	Guidance
1) Is there a Coldwater Fish Resource (CFR) present?	Withdrawals with no known impact or least impact to a CFR are preferred.
2) Are other sensitive resources present such as priority habitat of rare species or vernal pools?*	Withdrawals with no known impact or least impact to sensitive resources are preferred.
3) What is the estimated August affected streamflow in million gallons per day (mg.) in each subbasin containing your groundwater sources? Are there surface water withdrawals in or upstream of each subbasin?	Withdrawals in areas with larger drainage areas and higher August flows are generally preferred. Note: Surface water withdrawals and discharges are not reflected in August values reported in the WMA Permitting Tool. The impact of upstream surface water withdrawals and discharges on streamflow will be identified and reviewed on a case-by-case basis.
4) Does the increase over baseline cause a change in the Biological Category (BC) or Groundwater Withdrawal Category (GWC)?	Withdrawals that do not result in a subbasin changing BC or GWC are preferred.
5) What is the August net groundwater depletion percentage in each subbasin containing your groundwater sources?	Withdrawals in subbasins with lower net groundwater depletion or a groundwater surplus (low or negative percentages) are preferred, as long as there is no change in BC or GWC.
6) Is there an available surface water supply with a release plan approved by MassDEP?	Shifting pumping from groundwater to surface water sources with approved release plans during low-flow periods is generally preferred. Surface water sources without release plans will be reviewed on a case-by-case basis.
* The MADFW Natural Heritage & Endangered Species Program map of Priority Habitats of Rare Species can be found at https://docs.digital.mass.gov/dataset/massgis-data-nhesp-priority-habitats-rare-species . The local Conservation Commission may also have information on habitat and vernal pools.	

An optimization review should include, but is not limited to, the parameters outlined above.

Those who wish to go beyond the simple desktop optimization method outlined above can apply

water will be used by customers or disposed of through a wastewater treatment facility, review under the Interbasin Transfer Act may be required.

more sophisticated modeling tools. These modeling tools may include: MODFLOW, MODOPTIM, and the Web-Based STRMDEPL08.

2. Water Releases and Returns

Applicants are to evaluate releases from surface water supply impoundments and measures that could return water to the subbasin or basin to improve the timing, magnitude, and duration of downstream flows to more closely mimic natural conditions.

Releases: If an applicant has surface water supply impoundments located in or upstream of the subbasin(s) in which their wells are located, and these impoundments have the capacity for releases, the applicant determines if releases can be made to improve the timing, magnitude and duration of downstream flows without compromising water supply capacity.

An evaluation of a water supply impoundment includes:

- a) the affect that releases will have on the firm yield of a water supply impoundment;
- b) how any identified change to firm yield will affect the applicant's ability to meet the projected 20-year demands used to prepare the permit application;
- c) any affect to the applicant's ability to meet anticipated peak seasonal or peak day demands; and
- d) whether there are other sources within the current PWS-system with capacity that could be used to meet projected demand.

If the assessment determines that releases are feasible, the applicant will develop and implement a release plan subject to MassDEP approval.

Returns: Applicants evaluate whether there are feasible opportunities to return water to the basin or subbasin. Returns include stormwater recharge, infiltration/inflow (I/I) improvements, and wastewater discharges that would result in improvements to the quantity and timing of streamflow. Potential returns are evaluated in the following order: to the same subbasin, to the same major basin, and finally to another major basin.

3. Additional Conservation Measures

Nonessential Outdoor Watering Restrictions: PWS applicants with an RGPCD below 65 for the previous year must either limit watering to no more than 2 days per week, and one day per week at the 7-day low-flow trigger or propose an equivalent action.

PWS applicants with an RGPCD above 65 for the previous year must either limit watering to no more than 1 day per week or propose an equivalent action.

Additional Conservation: Applicants evaluate the cost-effectiveness of conservation measures, consistent with public health and safety, that go beyond standard WMA water conservation requirements, and develop a plan to implement feasible measures. In particular, applicants should focus on measures that will be most effective in reducing August net groundwater depletion. The Example Conservation Measures table (below) lists conservation activities, drawn largely from the recommendations section of the Massachusetts Water Conservation Standards, to help applicants identify additional reasonable conservation measures. These recommendations, along with the NEWWA Toolbox (<http://www.newwa.org/MembershipResources/UtilityResources.aspx#96523-bmps-and-advisories>), are suggested as references for developing a Minimization Plan.

Example Conservation Measures
Additional Measures to Reduce Demand
Implement a rebate program for residential customers for high-efficiency WaterSense-labeled products (toilets, lavatory faucets, showerheads, and irrigation controllers) and Energy Star-labeled clothes washers. *
Offer incentives for those seeking municipal approvals to install high-efficiency WaterSense-labeled products and Energy Star-labeled appliances in new construction and renovations. Document numbers of products installed in annual report.*
Evaluate rate structure every two years and increase rates for the highest rate block.
Use an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation.*
Increase billing frequency to at least quarterly.
On water bills, provide customers with water consumption information in gallons and show consumption history.
Enact a local by-law require private well users to abide by nonessential outdoor water use restrictions.
Additional Measures to Reduce Water Losses
Conduct comprehensive water audit of water system every five years.*
Develop and implement a meter replacement program to ensure that all nonresidential water use is properly accounted for.
Establish penalties and fines for stealing water.
Install an automated, remote meter reading system.
Install an automated, remote leak detection system.
Additional Measures to Reduce Nonessential Outdoor Watering
Include some or all of the following provisions in an outdoor water use bylaw or ordinance to ensure proper installation and efficient operation of automatic sprinkler systems: <ul style="list-style-type: none"> • require registration of automatic irrigation systems; • minimize installation of high water use landscape areas; • restrict land clearing and lawn size in new developments and require a minimum 6-inch depth of topsoil on all cleared areas to help retain moisture; and, • prohibit topsoil stripping.
Provide incentives to improve efficiency of automatic irrigation systems.
On municipal properties with automatic irrigation systems, install WaterSense-labeled weather-based controllers.
Identify highest water users. Target with monthly mailing about their use from May 1 through Sept. 30. Provide information comparing their use with most efficient customers.
Extend seasonal limits on nonessential outdoor water use to private well users.
Provide incentives for customers to infiltrate rainwater; infiltrate rainwater on municipal properties.
Provide incentives for customers to enhance soil health; enhance soil health on municipal properties.
*Items marked by an asterix are also included in Functionally Equivalence Planning for permittees that cannot meet the Performance Standards requirements (65 RGPCD and 10% UAW) in their WMA permit.

Mitigation Planning for WMA Permitting for Public Water Systems October 2018

The Order to Complete/Request for Additional Information that the Department prepares after review of each permit application may include additional instructions or information, specific to the applicant, to be used in developing the mitigation plan and implementation timetable.

Direct and Indirect Mitigation

1. **Direct Mitigation** – Direct mitigation will improve streamflow as a result of increased groundwater recharge, decreased stormwater runoff to streams, or surface water releases. The credit is based on a volumetrically calculated rate of water returned within the basin.
2. **Indirect Mitigation** – Indirect mitigation activities are environmental improvements that will help to compensate for streamflow impacts resulting from withdrawals, such as habitat and water quality improvements, and water supply protection.

Direct Mitigation Activities – The following actions can be considered for direct mitigation credit. MassDEP has developed detailed guidance and certification procedure for each of these direct mitigation activities. **For guidance and details on calculating the credit for direct mitigation activities, please contact your Water Management Act permit application reviewer.**

1) Surface Water Release

A permittee may have control over an impoundment that could be used to supplement downstream flow through controlled releases. Such opportunities will be informed by factors such as a reservoir's firm yield; ecological, infrastructure, and recreation considerations for the impoundment; structural limitations of the dam; and potential to improve the timing, magnitude, and duration of downstream flows to more closely mimic natural flow conditions and improve habitat or fish passage, without compromising other in-lake uses.

2) Stormwater Recharge

Direct mitigation credit can be awarded where areas of directly connected impervious surfaces are disconnected, so that stormwater has an opportunity to infiltrate into the soil and recharge the underlying aquifer. Directly connected impervious surfaces are those that drain to a stormwater collection system and discharge directly to a waterway. Direct stormwater recharge requires the use of stormwater BMPs to infiltrate stormwater runoff to the subsurface.

3) Infiltration and Inflow Removal

Infiltration, in the context of wastewater collection system maintenance, is groundwater that enters collection systems through sources such as defective pipes, pipe joints, and manhole walls.

Inflow, in the context of wastewater collection system maintenance, is water that enters the collection system through direct sources such as: catch basins, manhole covers, cross connections with storm drains, sump pumps, foundation drains, and downspouts.

Direct Mitigation Credit - Surface water or groundwater that is returned through eligible direct mitigation activities will receive:

- 100% credit for returns in the same major basin;

- 50% credit for returns outside of the major basin where the withdrawal is located; and
- 75% credit for returns in a subbasin outside the major basin and with greater August net groundwater depletion than the subbasin where the withdrawal is located.

Note: August net groundwater depletion for all subbasins is identified in MassDEP's WMA Permitting Tool and on the Interactive GIS Map available at <http://www.mass.gov/eea/agencies/massdep/water/watersheds/sustainable-water-management-initiative-swmi.html>.

Indirect Mitigation

Indirect mitigation activities are undertaken to offset the impacts of a withdrawal but are generally not amenable to volumetric calculation. Indirect mitigation requirements will be developed on a case-by-case basis in consultation with permittees. The table below outlines types of indirect mitigation that permittees may consider in their mitigation plan.

MassDEP has developed detailed guidance and certification procedure for each of these indirect mitigation activities. **For guidance and details on calculating the credit for direct mitigation activities, please contact your Water Management Act permit application reviewer.**

Indirect Mitigation Project Types	
Category	Indirect Mitigation Activity
Habitat Improvement*	Remove a dam or other flow barrier*
	Culvert replacement to meet stream crossing standards*
	Stream restoration (riparian planting and daylighting)*
	Install and maintain fish passage*
	Establish or contribute to an aquatic habitat restoration fund
Land Acquisition	Acquire property in for source water protection*
	Acquire property for other natural resource protection*
Wastewater	I/I removal program
Stormwater	Stormwater Bylaw
	Stormwater Utility
	MS4 Implementation
Bylaws (non-stormwater)	Private Well Bylaw
	Wetlands Bylaw
Water Quality Improvements	Septic System Maintenance Program
	Fertilizer By-Law
	Other Water Quality Improvements on a case by case basis in consultation with MassDEP
<p>*Note: Certain federal environmental improvement grants, and the projects funded in whole or in part by those grants, cannot be used to fulfill mitigation requirements. Accruing mitigation credit for projects funded with such restricted funds could result in the permittee being required to return federal grant funds. Permit applicants should be sure to check for restrictions on projects funded using federal environmental improvement grants, particularly dam removal, culvert replacement, fish passage and stream restoration projects, before including the project in a Mitigation Plan.</p>	

Mitigation Plan Implementation Timeline

The implementation timeline for a Mitigation Plan may be phased over the life of the permit provided that any water withdrawn over baseline is mitigated before those volumes are withdrawn. The permittee may delay implementation of the mitigation plan if withdrawals remain below baseline.

MassDEP will make reasonable allowances, as necessary, for the first few years of the permit for suppliers whose withdrawals are above baseline at the time a permit is issued or renewed.