



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIVMELL
Commissioner

November 9, 2011

Mr. Glenn Smith
Georgetown Water Department
One Moulton Street
Georgetown, MA 01833

Permittee: Georgetown Water Department
PWS ID # 3105000
WMA Permit #9P-3-16-105.01
Action: 5-Year Review Permit Modification

Dear Mr. Smith:

Please find the attached documents:

- Permit Modification #9P-3-16-105.01 for the Town of Georgetown in the Parker River Basin.
- Findings of Fact in support of the Permit Modification Decision.

The signature on this cover letter indicates formal issuance of the attached document. If you have any questions and would like to meet to discuss the permit, please contact Elizabeth McCann of my staff at (617) 292-5901.

Sincerely,

Ann Lowery, Deputy Assistant Commissioner
Bureau of Resource Protection

Cc: Tom Mahin, MassDEP, DWP Chief, NERO
Georgetown Board of Selectmen, One Library Street, Georgetown, MA 01833
Parker River Clean Water Assoc., PO Box 798, Byfield, MA 01922
MWWA, via email

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Findings of Fact in Support of 5-Year Permit Modification Georgetown Water Department Water Management Permit # 9P-3-16-105.01

The Massachusetts Department of Environmental Protection (MassDEP) has completed its 5-year review of the Georgetown Water Department's (Georgetown's) Water Management Permit Act Permit in the Parker River Basin. This review is conducted as a compliance review to ensure that the terms of the permit and the goals of the Water Management Program are being met.

To further those goals of promoting adequate protection for public water supplies and appropriate water use in the Commonwealth, MassDEP was given authority to modify permits at any time when it determines that such action is necessary for the promotion of the purposes of the Water Management Act (the Act), and so provided in regulation at 310 CMR 36.29(2). MassDEP consulted with its Advisory Committee, created by the Act to represent the views of the water users and other interested parties, to determine what modifications were appropriate in the 5-year review. The Advisory Committee recommended that MassDEP modify permits as necessary to include performance standards and conservation requirements that meet the minimum standards established by the Massachusetts Water Resources Commission, and summer nonessential outdoor water use restrictions designed to protect aquatic resources in the Parker River Basin.

After reviewing the information that you have provided in response to MassDEP's Order to Complete, dated June 27, 2011, and comments submitted by the Parker River Clean Water Association on September 23, 2011, MassDEP hereby modifies Water Management Act permit #9P-3-16-105.01 in accordance with the Act. MassDEP makes the following Findings of Fact in support of the attached permit modification, and includes herewith its reasons for approving the permit and for the conditions of approval imposed, as required by M.G.L. c21G, s.11, and the regulations at 310 CMR 36.00.

Georgetown Withdrawal History

Georgetown holds Water Management Registration #3-16-105.01 for an average daily withdrawal volume of 0.43 mgd and Water Management Act Permit #9P-3-16-105.01 for an additional average daily withdrawal of 0.32 mgd, for total authorized withdrawals of up to 0.75 mgd.

Withdrawals since the 2002 permit review have been:

	2010	2009	2008	2007	2006	2005	2004	2003	2002
Reported withdrawals (mgd)	0.68	0.60	0.74	0.78	0.66	0.64	0.58	0.60	0.55

Water use peaked in 2007 at 0.78 mgd, slightly above the authorized withdrawal volume. Georgetown has since taken steps to bring withdrawal within the authorized volume and has brought withdrawals down to 0.68 mgd in 2010. Steps taken have included:

- Raising water rates in the summer of 2008 and tightening up the volumes in each block to penalize high end water users;
- Improving overall water quality and thus reducing the water needed for system flushing;
- Appointing a Water Conservation Committee and hiring a water conservation coordinator;
- Developing a rebate program to replace high water use appliances, and a give-away program for faucet aerators;
- Working with the schools and a local hospital on fixture replacement.

In addition to these steps taken by the Georgetown Water Department, Nunan's Greenhouses has developed a water reuse system for their greenhouse needs and have developed alternate sources for much of their irrigation.

The Water Management Act

Permit Factors

Section 7 of the Act requires that MassDEP issue permits that balance a variety of factors including:

- Reasonable protection of existing water uses, land values, investments and enterprises;
- 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.

Safe Yield Permit Factor

Among the minimum permit factors Section 7 requires is a determination by MassDEP that permitted water withdrawals are within the safe yield of the water source from which they are made. Section 2 of the Act defines "safe yield" as: "the maximum dependable withdrawal that can be made continuously from a water source including ground or surface water during a period of years in which the probable driest period or period of greatest water deficiency is likely to occur; provided however, that such dependability is relative and is a function of storage and drought probability".

For the purposes of the Water Management Program, MassDEP considers a water source to be any one of Massachusetts' 27 major river basins. A map of the 27 major river basins has been developed by the Department of Conservation and Recreation and can be viewed at: <http://www.mass.gov/dcr/waterSupply/intbasin/basins.jpg>

On December 14, 2009, MassDEP, with the assistance and concurrence of a group of stakeholders, identified a methodology for determining an Interim Safe Yield while a final Long-Term Safe Yield is developed. The Interim Safe Yield methodology is described at:

<http://www.mass.gov/dep/water/resources/watercon.htm#managemt>.

This permit is being issued under the Interim Safe Yield methodology adopted by MassDEP on December 14, 2009. Under G.L.c.21G, s.11 MassDEP cannot issue permits when the combined existing, permitted and proposed withdrawal volumes exceed the safe yield of the water source. MassDEP is using its best efforts to develop the final Long-Term Safe Yield for the Parker River Basin. If MassDEP determines that the Long-Term Safe Yield is less than the Interim Safe Yield calculated for this basin, the volumes authorized in all Water Management permits in this basin shall be reviewed and the permitted volumes adjusted accordingly. Permit review in accordance with the Long-Term Safe Yield shall be no later than the permit renewal in 2017.

Please note that the original renewal date for this permit was 2015. Under the Permit Extension Act, which was created by Section 173 of Chapter 240 of the Acts of 2010 to promote job growth and long-term economic recovery, expiration dates for WMA permits were extended by two years. Therefore, WMA permits for withdrawals in the Parker River Basin expire on February 28, 2017, rather than February 28, 2015.

Access to water volumes authorized beyond Period Four of this permit is contingent upon all permitted withdrawals in the basin being within the Long-Term Safe Yield, and on MassDEP completing a permit renewal review, permit modification or a permit amendment incorporating the Long-Term Safe Yield determination.

Findings of Fact for the Performance Standards in Water Management Permits

MassDEP has determined that there is documented evidence that water withdrawals and an increase in development and impervious area, combined with the out-of-basin export of wastewater, substantially contribute to low flow in the Commonwealth. These low flows impact the ability of rivers and tributaries to adequately serve all of the competing uses described in the Act. To better achieve the balance of competing water uses mandated by the Act, the MassDEP refers to the Water Conservation Standards adopted by the Water Resources Commission. Specific performance standards are applied to new Water Management permits and to existing permits at the time they are amended, during 5-year permit review, or permit renewal.

Consistent with Section 3 of the Act, the performance standards of 65 residential gallons per capita day or less and 10% or less of unaccounted for water, summer limits on withdrawals, and efforts to offset the impacts of increasing withdrawal volumes are based on the Massachusetts *Water Conservation Standards* approved by the Water Resources Commission in July 2006. These standards can be found at:

http://www.mass.gov/Eoeea/docs/eea/water/water_conservation_standards.pdf

MassDEP believes these standards are reasonable based on studies and data developed throughout the country, the 1996 AWWA Leak Detection and Water Accountability Committee report on water accountability (*AWWA Journal*; July 1996; pp. 108-111), and the fact that the average values in 2009 for Massachusetts were 58 RGPCD, and 14.5% UAW. While these performance standards represent the minimum standards required for compliance with the permit, MassDEP believes that through the implementation of all the terms and conditions of Water Management permits, municipalities can meet the performance standards for RGPCD and UAW.

MassDEP will consider any permittee that has been unable to meet the 65 RGPCD or 10% UAW performance standard within 5 years of receiving its permit to be achieving functionally equivalent compliance with the performance standards, if they:

- are complying with the Water Conservation requirements included in the permit,
- have implemented the required limits on nonessential outdoor water use, and
- are making demonstrable efforts to finance, implement and enforce a MassDEP-approved compliance plan.

Because permittees' circumstances vary, a permittee may present an analysis of the cost effectiveness of implementing certain conservation measures required by MassDEP and offer alternative measures. The analysis must explicitly consider environmental impacts and must produce environmental benefits. MassDEP will allow Permittees to:

- 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 Functional Equivalence Plan(s) (See Appendix A & B).

MassDEP will review permittees' detailed, written cost effectiveness analysis to determine whether unique circumstances make specific Best Management Practices (BMPs) less cost-effective than alternatives, or not feasible for a particular PWS when developing the compliance plan.

Findings of Fact for Georgetown's Special Permit Conditions

In issuing permits, MassDEP looks primarily at site-specific impacts and other issues specific to the system, such as impacts to nearby streams, wetlands, or other water users, justification of long-term demand projections and the capacity of permitted withdrawal points. The conditions are intended to ensure the efficient use of water and to mitigate the potential impact of withdrawals.

The summary of permit conditions, as part of MassDEP's findings of fact, is not intended to, and should not be construed as, modifying any of the Permit conditions. In the event of any ambiguity between the summary and the actual permit conditions, the Permit language shall be controlling.

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume, reflects the authorized withdrawal volumes for Georgetown's system-wide withdrawals in the Parker River Basin. These values have not been changed from your previous permit.

Special Condition 2, Maximum Authorized Daily Withdrawal Volume, reflects the maximum daily withdrawal rates by source, according to MassDEP approved Zone II rates.

Special Condition 3, Zone of Contribution (Zone II or Zone III) Delineations, requirement has been met thus no further delineations are required as a condition of this permit.

Special Condition 4, Wetlands Monitoring, based on review of the wetlands monitoring reports submitted by the Georgetown Water Department, MassDEP determined that no further monitoring was required as of the May 31, 2002 Water Withdrawal Permit Modification.

Special Condition 5, Wellhead Protection, the wellhead protection requirements in 310 CMR 22.21(2) have been met for all permitted wells' Zone IIs within Georgetown. However, much of Georgetown's Zone II is in the neighboring town of Boxford, and Georgetown must meet the Best Effort Requirement to ensure that water supply protection measures are in place around Georgetown's Zone II areas that are located in Boxford.

Georgetown has made written request that the Town of Boxford adopt local protection controls that meet the wellhead protection regulations at 310 CMR 22.21(2). MassDEP is currently reviewing Georgetown's Best Effort documents to ensure they meet the requirements. For additional information, please contact Katherine Hamilton at (617) 556-1070.

Special Condition 6, Performance Standard for Residential Gallons Per Capita Day Water Use

Special Condition 7, Performance Standard for Unaccounted for Water

Georgetown's modified permit will require compliance with the Performance Standards by December 31, 2013. If the standards are not met by 2013, Georgetown will be required to develop a DEP-approved Compliance Plan to meet the standards by December 31, 2016.

Georgetown's 2010 Annual Statistical Report (ASR) shows a RGPCD of 67 and UAW of 6%. Because 2010 was an exceptionally dry summer and because the town is installing Radio Readers on water meters, the Town anticipates meeting the standards as required.

Special Condition 8, Seasonal Limits on Nonessential Outdoor Water Use are based upon Georgetown's Residential Gallons per Capita Day (RGPCD) for the preceding year, and will be implemented according to either: 1) calendar triggered restrictions; or 2) streamflow triggered 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 exceeds the trigger streamflow for seven consecutive days.

The basis for streamflow triggers is derived from Aquatic Base Flow (ABF) values calculated by the Sustainable Yield Estimator (SYE)¹ for simulated natural flow applied to the assigned local USGS stream gage. The two-tiered trigger values are based on flow levels that are protective of aquatic habitat for fish spawning during the spring bioperiod, designated with the June ABF; and protective flows for fish rearing and growth during the summer bioperiod, designated with the August ABF trigger. Protective flow levels are derived from index gage flow data which represent the least altered stream flows in Massachusetts, and are further described in the Department of Conservation and Recreation (DCR)² and USGS Index Reports³.

If Georgetown selects the streamflow approach, it has been assigned the USGS local stream gage of #01101000 – Parker River at Byfield, MA. The June ABF estimated using SYE is 0.92 cfsm and the August ABF value is 0.29 cfsm. These cfsm units translate to your local gage streamflow triggers as 20 cubic feet per second (cfs) for May and June, and 6 cfs for July, August and September.

Should the reliability of flow measurement at the Parker River at Byfield gage be so impaired as to question its accuracy, Georgetown 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.

3. **Drought triggered restrictions** are incorporated into the seasonal limits on outdoor water use as outlined in Special Condition 8. Times of low streamflow and drought do not always coincide, but both low streamflow and drought conditions can have adverse effects on water supplies, natural resources and aquatic life. Please note that many communities impose drought-based outdoor water use restrictions before the Massachusetts Drought Management Task Force declares a Drought Advisory because drought conditions can begin to impact local water supplies before a regional advisory is declared.

Nothing in this permit is intended to prevent communities from implementing water use restrictions that are more restrictive than those set forth in this permit.

¹ Archfield, S.A., Vogel, R.M., Steeves, P.A., Brandt, S.L., Weiskel, P.K., and Garabedian, S.P., 2010, The Massachusetts Sustainable-Yield Estimator: A decision-support tool to assess water availability at ungaged stream locations in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2009-5227, 41 p. plus CD-ROM. See <http://pubs.usgs.gov/sir/2009/5227/>

² Massachusetts Department of Conservation and Recreation (DCR), 2008 Index Streamflows for Massachusetts, May 2008, Prepared by Office of Water Resources for the Massachusetts Water Resources Commission, 45 p., plus CD-ROM.

³ Armstrong, D.S., Parker, G.W., and Richards, T.A., 2008, Characteristics and classification of least altered streamflows in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2007-5291, 113 p., plus CD-ROM.

Special Condition 9, Water Withdrawals that Exceed Baseline Withdrawal Volumes, baseline is either the withdrawal volume reported on the Annual Statistical Report (ASR) for 2005, the average withdrawal volume reported on the ASRs from 2003 to 2005, or the registered volume, whichever is highest and in compliance. Georgetown's baseline is 0.64 mgd, the withdrawal volume for 2005, based on reported volumes shown below:

Registered Volume	2003-05 Ave Vol	2005 Volume
0.43	0.61	0.64

Water use above the 0.64 MGD Annual Average Daily Baseline will require offsets if feasible.

Special Condition 10, Water Conservation Requirements, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the Water Resources Commission in July 2006.

Special Condition 11, Requirement to Report Raw and Finished Water Volumes, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

Comment Received

Comment on the Georgetown Draft 5-Year Permit Modification was submitted by the Parker River Clean Water Association on September 23, 2011. In response to comment MassDEP notes that:

- Georgetown's permit will continue to be based on demand projections prepared by the DCR Office of Water Resources and will require an offset feasibility and implementation study if withdrawals exceed a baseline of 0.64 mgd. MassDEP uses the DCR OWM demand projections to ensure suppliers are authorized for withdrawals adequate to meet the health, safety and economic needs of the community. Permits require offset conditions if withdrawals exceed an historic baseline to ensure adequate protection of local environmental resources.
- Should Georgetown's use rise above baseline, development of alternative sources, higher ascending block rates, radio metering and enhanced conservation programs are Best Management Practices that should be evaluated in the offset feasibility study. Special Condition 9 now includes them.
- Georgetown's permit has not required summer water use restrictions before now. This amended permit will require outdoor water use restrictions and promote use reductions during dry summer months. Water Management streamflow triggers, based on Aquatic Base Flows for the spring and summer, have been developed for USGS gauges throughout Massachusetts. Using USGS gauges and a uniformly developed set of triggers ensures
 - permits are based on the most consistent and reliable real time monitoring,
 - suppliers can easily access and use the data, and
 - all permittees in an area have the same triggers, thus avoiding public relations problems if two contiguous towns have restrictions triggered at different times.
- The total maximum daily withdrawal limit of 3.38 mgd is based on the maximum approved pumping rate for Georgetown's wells and is intended to provide adequate capacity to protect health and welfare in an emergency. Total average annual withdrawals must be at or below 0.75 mgd.



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WATER WITHDRAWAL PERMIT MGL c 21G

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

PERMIT NUMBER: 9P-3-16-105.01

RIVER BASIN: Parker Basin

PERMITTEE: Georgetown Water Department
One Moulton Street
Georgetown, MA 01833

EFFECTIVE DATE: August 14, 1996

MODIFICATION DATE: November 9, 2011

EXPIRATION DATE: February 28, 2017

An additional two years have been added under the Permit Extension Act, Section 173 of Chapter 240 of the Acts of 2010.

NUMBER OF WITHDRAWAL POINTS: 4

Groundwater: 4 Surface water: 0

USE: Public Water Supply

DAYS OF OPERATION: 365

LOCATION:

Table 1: Withdrawal Point Identification

Source Name	PWS Source ID Code
Tubular Wellfield	3105000-01G
William Marshall Well	3105000 -03G
Commissioner's Well	3105000-04G
Ronald Marshall Well (Duffy's Landing)	3105000-05G

SPECIAL CONDITIONS

1. Maximum Authorized Annual Average Withdrawal Volume

This permit authorizes the withdrawal of water from the Parker River Basin at rates described in Table 2 below. The volume reflected by this rate is in addition to the 0.43 million gallons per day (MGD) previously registered to the permittee through Water Management Act Registration #3-16-105.01. The permitted volume is expressed both as an annual average daily withdrawal rate (MGD), and as a total annual withdrawal volume (million gallons per year or MGY) for each five-year period of the permit term.

MassDEP bases withdrawal volumes on the raw water from the authorized withdrawal points, and will use the raw water amount to assess compliance with the registered and permitted withdrawal volumes.

Table 2: Maximum Authorized Annual Withdrawal Volumes

5-Year Periods		Total Raw Water Withdrawal Volumes			
		Permit		Permit + Registration	
		Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
Period One Years 2-5	8/14/1996 to 2/29/2000	0.27	98.55	0.70	255.5
Period Two Years 6-10	3/1/2000 to 2/28/2005	0.30	109.50	0.73	266.45
Period Three Years 11-15	3/1/2005 to 2/28/2010	0.32	116.80	0.75	273.75
Period Four** Years 16-22	3/1/2010 to 2/28/2017*	0.32	116.80	0.75	273.75

* An additional two years have been added under the Permit Extension Act, Section 173 of Chapter 240 of the Acts of 2010.

** This permit is being issued under the Interim Safe Yield methodology adopted by MassDEP on December 14, 2009. Under G.L.c.21G, s.11 MassDEP cannot issue permits when the combined existing, permitted and proposed withdrawal volumes exceed the safe yield of the water source. If MassDEP determines that the Long-Term Safe Yield is less than the Interim Safe Yield calculated for this basin, the volumes authorized in all Water Management permits in this basin shall be reviewed and the permitted volumes adjusted accordingly. Permit review in accordance with the Long-Term Safe Yield shall be no later than the 20-year permit renewal in 2017.

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 without specific advance written approval from MassDEP. The authorized maximum daily volume is the approved rate of each source. In no event shall the combined withdrawals from the individual withdrawal points exceed the withdrawal volumes authorized above in Special Condition 1.

Table 3: Maximum Daily Withdrawal Volumes

Source Name	PWS Source ID Code	Maximum Daily Rate (MGD)
Tubular Wellfield	3105000-01G	0.29
William Marshall Well	3105000 -03G	1.00
Commissioner's Well	3105000-04G	0.58
Ronald Marshall Well (Duffy's Landing)	3105000-05G	1.51

3. Zone II Delineations

MassDEP records show that the Tubular Wellfield (01G), William Marshall Well (03G), Commissioner's Well (04G) and Ronald Marshall Well (05G) have DEP-approved Zone II delineations. Therefore, no further Zone II work is required as a condition of this permit.

4. Wetlands Monitoring

After reviewing the annual wetlands monitoring reports submitted for the Tubular Wellfield (01G), William Marshall Well (03G), Commissioner's Well (04G) and Ronald Marshall Well (05G), MassDEP has determined that no additional monitoring is required at this site.

5. Wellhead Protection

MassDEP records indicate that the Georgetown is in compliance with the wellhead protection requirements defined in MA Drinking Water Regulations, 310 CMR 22.21(2) for the Tubular Wellfield (01G), William Marshall Well (03G), Commissioner's Well (04G) and Ronald Marshall Well (05G).

A portion of Georgetown's Zone II is in the neighboring town of Boxford. Therefore, Georgetown must meet the "Best Effort Requirement" to ensure that water supply protection measures are in place around Zone II areas in Boxford. By December 31, 2013, Georgetown shall request in writing that the Town of Boxford adopt local protection controls that meet the wellhead protection regulations at 310 CMR 22.21(2).

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

Georgetown's performance standard for Residential Gallons Per Capita Day (RGPCD) is 65 gallons. Georgetown shall be in compliance with the performance standard by December 31, 2013. Georgetown shall report RGPCD water use annually in its Annual Statistical Report (ASR) to document compliance with this performance standard. The ASR shall include the calculation used to derive that figure including, without limitation, the source of the data used to establish the service population and the year in which this data was developed.

See Appendix A for information on the requirements if the performance standard for RGPCD is not met.

7. Performance Standard for Unaccounted for Water⁴

Georgetown's performance standard for Unaccounted for Water (UAW) is 10% of overall water withdrawal. Georgetown shall be in compliance with the performance standard by December 31, 2013. Georgetown shall report UAW annually in its ASR so as to document compliance with this performance standard. The ASR

⁴ Unaccounted for Water –

- UAW is defined as the residual resulting from the total amount of water supplied to a distribution system as measured by master meters, minus the sum of all amounts of water measured by consumption meters in the distribution system, and minus confidently estimated and documented amounts used for certain necessary purposes.
- UAW shall include, without limitation: unavoidable leakage, recoverable leakage, meter inaccuracies (unless they fall under the category of source meter calibration which allows for adjustment per results of source meter calibration); errors in estimation of stopped meters, unauthorized hydrant openings, illegal connections, stand pipe overflows, data processing errors; and undocumented fire fighting uses. Water needed for water main flushing and the use of water in construction or meter calibration shall be metered or estimated as appropriate. Volumes flushed to waste shall be reported on the ASR.
- Uses that can be confidently estimated and documented in writing include: storage tank overflow and drainage; water main flushing and flow testing; fire fighting; bleeding or blow-offs; sewer and stormwater system flushing; and cleaning and street cleaning. Any adjustments made as a result of the properly documented source meter calibration shall be provided as required by the ASR.
- Any adjustment in the calculation of UAW made as a result of confidently estimated uses shall be fully documented as required in the 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.

See Appendix B for information on requirements if the performance standard for UAW is not met.

8. **Seasonal Limits on Nonessential Outdoor Water Use**

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

Georgetown shall be responsible for tracking streamflows and drought advisories and recording when restrictions are implemented if streamflow triggered restrictions are implemented. See Accessing Streamflow and Drought Advisory Website Information in Table 4 for instructions. Georgetown shall document compliance with the summer limits on nonessential outdoor water use annually in its ASR, and indicate whether it anticipates implementing calendar triggered restrictions or streamflow triggered restrictions during the next year.

Nothing in this permit shall prevent Georgetown from implementing water use restrictions that are more restrictive than those set forth in this permit.

Water Uses Restrictions

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

- irrigation of lawns and landscaping via sprinklers or automatic irrigation systems;
- washing of vehicles, except in a commercial car wash or as necessary for operator safety; and
- washing of 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 by means of automatic sprinklers outside the hours of 9 am to 5 pm; and
- watering lawns, gardens, flowers and ornamental plants by means of a hand-held hose.

Water uses NOT subject to mandatory restrictions are those required:

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

Table 4 Seasonal Limits on Nonessential Outdoor Water Use

Permittees meeting the 65 RGPCD standard for the preceding year (as reported in the ASR and accepted by MassDEP) must implement either:

1. **Calendar Triggered Restrictions from May 1st through September 30th**
No nonessential outdoor water use from 9 am - 5 pm

2. Streamflow Triggered Restrictions from May 1st through September 30th

No nonessential outdoor water use from 9 am - 5 pm whenever:

- a) Streamflow at the assigned USGS local stream gage, 01101000 Parker River at Byfield, falls below the following designated flow triggers for three (3) consecutive days:
- May 1st through June 30th: 20 cfs (based on minimum flows that are protective of habitat for fish spawning during the spring bioperiod), and
 - July 1st through September 30th: 6 cfs (based on minimum flows that are protective of habitat for fish rearing and growth during the summer bioperiod).

Once implemented, the restrictions shall remain in place until streamflow at the assigned USGS local stream gage meets or exceeds the trigger streamflow for seven (7) consecutive days; or

- b) A Drought Advisory or higher is declared by the Massachusetts Drought Management Task Force.

Permittees NOT meeting the 65 RGPCD standard for the preceding year (as reported in the ASR and accepted by MassDEP) must implement either:

1. Calendar Triggered Restrictions from May 1st through September 30th

- a) Nonessential outdoor water use is allowed TWO DAYS per week before 9 am and after 5 pm; and
b) Nonessential outdoor water use is allowed ONE DAY per week before 9 am and after 5 pm whenever a Drought Advisory or higher is declared by the Massachusetts Drought Management Task Force.

2. Streamflow Triggered Restrictions from May 1st through September 30th

Nonessential outdoor water use is allowed ONE DAY per week before 9 am and after 5 pm whenever:

- a) Streamflow at the assigned USGS local stream gage, 01101000 Parker River at Byfield, falls below the following designated flow triggers for three (3) consecutive days:
- May 1st through June 30th: 20 cfs (based on minimum flows that are protective of habitat for fish spawning during the spring bioperiod), and
 - July 1st through September 30th: 6 cfs (based on minimum flows that are protective of habitat for fish rearing and growth during the summer bioperiod).

Once implemented, the restrictions shall remain in place until streamflow at the assigned USGS local stream gage meets or exceeds the trigger streamflow for seven (7) consecutive days; or

- b) A Drought Advisory or higher is declared by the Massachusetts Drought Management Task Force.

Instructions for Accessing Streamflow and Drought Advisory Website Information

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. 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 gage #01101000 Parker River at Byfield,
- 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 "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.

Drought Advisory information is available at the Massachusetts Department of Conservation and Recreation (DCR) Drought Status Website at <http://www.mass.gov/dcr/waterSupply/rainfall/drought.htm>.

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

Public Notice of Water Use Restrictions

Georgetown shall notify its customers of the restrictions and the consequences of failing to adhere to the restrictions.

- For calendar-triggered restrictions, customers shall be notified by April 15th each year.
- For streamflow-triggered restrictions, when streamflow at the assigned USGS local stream gage falls below a streamflow trigger for three consecutive days, customers shall be notified as soon as possible, but within three days of implementing the restrictions.

Notice to customers shall include the following:

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

Notice that restrictions have been put in place shall be filed each year with MassDEP within 14 days of the restriction's effective date. Filing shall be in writing on the Water Use Restrictions Form at <http://www.mass.gov/dep/water/approvals/wmgforms.htm#conserve>.

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

9. Water Withdrawals that Exceed Baseline Withdrawal Volumes

Georgetown's baseline withdrawal volume (Baseline) is 0.64 mgd, or 233.6 mgy. Georgetown shall perform an Offset Feasibility Study (Study) the first time its water withdrawals for a calendar year exceed its Baseline. The Study shall include a written evaluation of the costs and benefits of adopting and implementing each of the following Best Management Practices (BMPs) in the Study.

Offset Feasibility Study - Best Management Practices to be evaluated

System Management

Evaluate the practical and economic feasibility of:

- Other water sources that are less hydrologically connected to the Parker River
- Higher ascending block rates to promote conservation,
- Expedient completion of the radio meter reading system,
- Continuing or reinstating the enhanced water conservation program

Development Guidelines

- Low Impact Development, Conservation Development and Smart Growth bylaws or regulations in addition to those implemented through the November 2001 Best Development Practices Guidebook
- Land clearing/development bylaws (loam, native vegetation site clearing limitation, lawn size limitations) in addition to those in the November 2001 Best Development Practices Guidebook

<p>Water Bank</p> <ul style="list-style-type: none"> • Traditional water and/or sewer bank • Institute "hook-up" fee for all new development with revenues to be dedicated to water conservation programs such as rebate programs for homeowners (efficient appliances)
<p>Stormwater Management and Recharge</p> <ul style="list-style-type: none"> • Stormwater Utility/dedicated stormwater fees used to build and maintain stormwater infiltration facilities • By-law implementing MA stormwater recharge standards townwide beyond the wetland areas required in the MA Stormwater Policy • By-law requiring stormwater recharge above the rates required in the MA Stormwater Policy
<p>Infiltration and Inflow</p> <ul style="list-style-type: none"> • Enhanced I/I program going forward for the next 5 years
<p>Local Infiltration of Waste Water</p>

The first time its water withdrawals for a calendar year exceed its Baseline, Georgetown shall:

- submit a Study Scope of Work to MassDEP for approval within 60 days of the filing of an ASR indicating that a Study is required,
- submit a Study Scope of Work to MassDEP for approval within 6 months of MassDEP's approval of the Study Scope of Work, submit the completed Study to MassDEP for approval;

MassDEP's approval of the Study Scope of Work and the completed Study will be presumed if MassDEP does not issue a written approval or denial of such submission within 60 days of the date submitted to MassDEP for approval.

If Georgetown's water withdrawals exceed its Baseline in a subsequent year, then Georgetown shall:

- Implement the results of the Study;
- Document such implementation annually at the time it files its ASR; and
- Continue to implement the results of the Study as long as withdrawals exceed Baseline.

10. Water Conservation Requirements

At a minimum, Georgetown shall implement the following conservation measures forthwith and shall be in compliance with these measures on or before February 28, 2017. MassDEP recognizes that Georgetown is currently implementing a number of these requirements.

Compliance with the water conservation requirements shall be reported to MassDEP upon request or prior to the February 28, 2017, permit renewal, unless otherwise noted below.

Table 5: Minimum Water Conservation Requirements	
System Water Audits and Leak Detection	
1.	At a minimum, conduct a full leak detection survey every three years. The first full leak detection survey shall be completed no later than November 2010. Georgetown reports full leak detection every two years.
2.	Perform a leak detection survey of those sections of the distribution system that have not been surveyed within the last year within one year whenever the percentage of unaccounted for water increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, the permittee shall submit to the MassDEP for its review a report detailing the leak detection survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3.	Conduct field surveys for leaks and repair programs in accordance with the <u>AWWA Manual 36</u> .
4.	The Permittee shall have repair reports available for inspection by MassDEP. Establish a priority schedule for repairing leaks that is at least as stringent as the following: <ul style="list-style-type: none"> • Leaks of 15 gallons per minute or more shall be repaired as soon as possible but not later than one month after leak detection.*

Table 5: Minimum Water Conservation Requirements	
<ul style="list-style-type: none"> • Leaks of less than 15 gallons per minute, but greater than 5 gallons per minute, shall be repaired as soon as possible but not later than two months after leak detection.* • Leaks of 5 gallons per minute or less shall be repaired as soon as possible but not later than six months after leak detection, except that hydrant leaks of one gallon or less per minute shall be repaired as soon as possible.* • Leaks shall be repaired in accordance with the priority schedule including leaks up to the property line, curb stop or service meter, as applicable. • Have water use regulations in place that require property owners to expeditiously repair leaks on their property. <p>The following exceptions can be considered:</p> <ul style="list-style-type: none"> • Repair of leakage detected during winter months can be delayed until weather conditions become favorable for conducting repairs;* and • Leaks in freeway, arterial or collector roadways may be coordinated with other scheduled projects being performed on the roadway.** <p>*Reference: MWRA regulations 360 CMR 12.09 **Mass Highway or local regulations may regulate the timing of tearing up pavement on roads to repair leaks.</p>	
Metering	
<ol style="list-style-type: none"> 1. Calibrate all source and finished water meters at least annually and report date of calibration on the ASR. 2. Georgetown reports its system is 100% metered. All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards as set forth in <u>AWWA Manual M6 – Water Meters</u>. 3. The permittee shall have an ongoing program to inspect individual service meters to ensure that all service meters accurately measure the volume of water used by your customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections. The plan shall continue to include placement of sufficient funds in the annual water budget to calibrate, repair, or replace meters as necessary. 	
Pricing	
<ol style="list-style-type: none"> 1. Establish a water revenue structure that includes the full cost of operating the water supply system. Evaluate revenues every three to five years and adjust rates as needed. Full cost pricing factors all costs - operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) - into the revenue structure. Georgetown reports a structure that fully funds operations, exclusive of capital costs and water conservation program. Water conservation has been partially funded through a grant. 2. The permittee shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period, are not allowed by M.G.L. Chapter 40 Section 39L. 	
Residential and Public Sector Conservation	
<ol style="list-style-type: none"> 1. The permittee shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code. 2. Meter or estimate water used by contractors using fire hydrants for pipe flushing and construction. 3. Municipal buildings <ul style="list-style-type: none"> • On or before February 28, 2017, ensure that all municipally owned public buildings in the service area are retrofitted. Georgetown reports that all public buildings have 1.6 gpf toilets, and public buildings are partially retrofitted with faucet aerators. Note municipally owned public buildings that may be scheduled for rehab or demolition after the February 28, 2017 deadline for completing the retrofits, may with MassDEP's approval, be exempted from this condition based on the schedule of work. 	
Industrial and Commercial Water Conservation	
<ol style="list-style-type: none"> 1. Review the use records for industrial, commercial and institutional water users and develop an inventory of the largest water users. Develop and implement an outreach program designed to inform and (where appropriate) work with its largest industrial, commercial and institutional water users on ways to reduce their water use by the permit renewal (2017). Georgetown reports working with the schools, Bald Pate Hospital and Nunan's Greenhouses, their largest 	

Table 5: Minimum Water Conservation Requirements	
water users, to reduce water use. The schools are being retrofitted as part of the Municipal Buildings program. Bald Pate Hospital has purchased a HE washer for the facility. Nunan's has installed irrigation recycling in the greenhouses and has "developed alternate sources for much of their outdoor irrigation.	
2.	Upon request by MassDEP, the permittee shall report on industrial, commercial and institutional water conservation including, to the extent practical, a summary of water use reductions or savings that have resulted. Upon receipt of this report, MassDEP will take whatever action it deems appropriate to promote the interests of the Water Management Act, including without limitation requiring the permittee to take additional actions to reduce industrial, commercial and institutional water use.
Public Education and Outreach	
1.	Develop and implement a Water Conservation Education Plan. Without limitation, the plan may include the following actions: <ul style="list-style-type: none">• Annual work sheets, included in water bills or under separate cover, to enable customers to track water use and conservation efforts and estimate the dollar savings;• Public space advertising/media stories on successes (and failures);• Conservation information centers perhaps run jointly with electric or gas company;• Speakers for community organizations;• Partner with garden clubs, or other private and non-profit organizations, to promote efficient water use;• Provide information on water-wise landscaping, gardening, efficient irrigation and lawn care practice;• Public service announcements; radio/T.V./audio-visual presentations;• Joint advertising with hardware stores to promote conservation devices;• Water conservation workshops for the general public;• 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• Make multilingual materials available as needed. <p style="text-align: center;"><u>References and additional information available through the USEPA Water Sense Program</u> http://www.epa.gov/watersense</p>
2.	Upon request of MassDEP, the permittee shall report on its public education and outreach effort, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.

11. Requirement to Report Raw and Finished Water Volumes

Georgetown 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.

GENERAL PERMIT CONDITIONS (applicable to all Permittees)

1. **Duty to Comply** The permittee shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.
2. **Operation and Maintenance** The permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw water so as not to impair the purposes and interests of the Act.
3. **Entry and Inspections** The permittee or the permittee's agent shall allow personnel or authorized agents or employees of MassDEP to enter and examine any property 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 MGL c 21G ss 15-17, MGL c 150 ss 111, or any other enabling authority.
5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until MassDEP approves such transfer in writing, pursuant to a transfer application on forms provided by MassDEP requesting such approval and received by MassDEP at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.37.
6. **Duty to Report** The permittee shall complete and submit annually, on a form provided by MassDEP, all of the information required by said form including, without limitation, a certified statement of the withdrawal. Such report shall be received by MassDEP by the date specified on the form each year. Such report must be mailed or hand delivered to:

Department of Environmental Protection
Drinking Water Program
Water Management Program
One Winter Street, 5th Floor
Boston, MA 02108

7. **Duty to Maintain Records** The permittee shall maintain withdrawal records and other information in sufficient detail to demonstrate compliance with this permit.
8. **Metering** All withdrawal points included within the permit shall be metered within one year of the date of issuance of the permit. Meters shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of MassDEP. Any person aggrieved by this decision may request an adjudicatory hearing under the provisions of MGL c 30A. Any such request must be made in writing, by certified mail and received by MassDEP within twenty-one (21) days of the date of receipt of this permit. No request for an appeal of this permit shall be validly filed unless a copy of the request is sent by certified mail or delivered by hand to the local water resources management official in the city or town in which the withdrawal point(s) is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to MassDEP.

CONTENTS OF HEARING REQUEST

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

FILING FEE AND ADDRESS

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

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

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

EXEMPTIONS

The filing fee is not required if the appellant is a 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.

Appendix A – Residential Gallons Per Capita Day

I. Compliance Plan Requirement

If the permittee fails to achieve and document compliance with the RGPCD performance standard in its Annual Statistical Report (ASR), then the permittee shall file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall:

- a. meet the requirements set forth below in Section II;
- b. include measures to be implemented to meet the performance standard; and
- c. include the schedule for implementing such measures.

The filing of a RGPCD Plan shall not constitute a return to compliance, nor shall it affect MassDEP's authority to take action in response to the permittee's failure to meet the performance standard.

If a RGPCD Plan is required, the permittee must:

- a. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD Plan annually at the time it files its ASR; and
- b. 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.

II. Contents of a RGPCD Plan

A permittee that does not meet the 65 RGPCD performance standard within 2 years (for Georgetown, December 31, 2013), has the choice to file a RGPCD Plan containing measures that the permittee believes will be sufficient to bring the system into compliance with the performance standard (Individual RGPCD Plan) or may adopt the MassDEP RGPCD Functional Equivalence Plan that includes mandated Best Management Practices (BMPs).

A permittee that has been unable to meet the 65 RGPCD performance standard within 5 years (for Georgetown, December 31, 2016) must implement the MassDEP RGPCD Functional Equivalence Plan to be considered functionally equivalent with the performance standard.

At a minimum, all RGPCD Plans must include a detailed:

- a. description of the actions taken during the prior calendar year to meet the performance standard;
- b. analysis of the cause of the failure to meet the performance standard;
- c. description and schedule of the actions that will be taken to meet the performance standard; and
- d. analysis of how the actions described in c. will address the specific circumstances that resulted in the failure to meet the performance standard.

RGPCD Plans may be amended to revise the actions that will be taken to meet the performance standard.

Individual RGPCD Plan

Individual RGPCD Plan will document a plan to adopt and implement measures tailored to the specific needs of the water supply system that the permittee believes will be sufficient to bring the system into compliance with the performance standard within three years.

At a minimum, all Individual RGPCD Plans for failure to meet the RGPCD performance standard must include implementation of at least one of the following residential conservation programs:

- 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, bylaw or regulation to require the installation of soil moisture sensors or similar climate related control technology on all automatic irrigation systems.

If the permittee is already implementing one or more of these programs, it must include in its Individual 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.

Without limitation, the Individual RGPCD Plan for failure to meet the RGPCD performance standard may include any of the actions set forth in the MassDEP RGPCD Functional Equivalence Plan below.

MassDEP RGPCD Functional Equivalence Plan

In order to be considered functionally equivalent with the RGPCD performance standard, the permittee must be in compliance with the Special Condition on Seasonal Limits of Nonessential Outdoor Water Use, and must adopt and implement the MassDEP RGPCD Functional Equivalence Plan that requires all the following residential conservation programs:

- 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);
- c. the adoption and enforcement of an ordinance, bylaw or regulation to require the installation of soil moisture sensors or similar climate related control technology on all automatic irrigation systems;
- d. the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
- e. the adoption and enforcement of an ordinance, bylaw or regulation to require that all new construction include water saving devices and low water use appliances; and
- f. the implementation of monthly or quarterly billing.

Hardship

A permittee may present an analysis of the cost effectiveness of implementing certain conservation measures included in the MassDEP RGPCD Functional Equivalence Plan and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits.

Suppliers will be able to present:

- a. Reasons why specific measures are not cost effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard;
- b. Alternative specific conservation measures that would result in equal or greater system-wide water savings or equal or greater environmental benefits than the conservation measures included in the MassDEP RGPCD Functional Equivalence Plan; and
- c. When applicable, an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship.

Appendix B – Unaccounted for Water

I. Compliance Plan Requirement

If the permittee fails to achieve and document compliance with the 10% UAW performance standard in its Annual Statistical Report (ASR), then the permittee must file with that ASR an Unaccounted-for-Water Compliance Plan (UAW plan) which shall:

- a. meet the requirements set forth below in Section II;
- b. include measures to be implemented to meet the performance standard; and
- c. include the schedule for implementing such measures.

The filing of a UAW plan shall not constitute a return to compliance, nor shall it affect MassDEP's authority to take action in response to the permittee's failure to meet the performance standard.

If a UAW plan is required, the permittee must:

- a. submit information and supporting documentation sufficient to demonstrate compliance with its UAW plan annually at the time it files its ASR; and
- b. continue to implement the UAW 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.

II. Contents of an UAW Compliance Plan

A permittee that does not meet the 10% UAW performance standard within 2 years (for Georgetown, December 31, 2013), has the choice to file a UAW Plan containing measures that the permittee believes will be sufficient to bring the system into compliance with the performance standard (Individual UAW Plan) or may adopt the MassDEP UAW Functional Equivalence Plan that includes mandated Best Management Practices (BMPs).

A permittee that has been unable to meet the 10% UAW performance standard within 5 years (for Georgetown, December 31, 2016) must implement the MassDEP UAW Functional Equivalence Plan to be considered functionally equivalent with the performance standard.

At a minimum, all UAW plans must include a detailed:

- a. description of the actions taken during the prior calendar year to meet the applicable performance standard;
- b. analysis of the cause of the failure to meet the performance standard;
- c. description and schedule of the actions that will be taken to meet the performance standard; and
- d. analysis of how the actions described in c. will address the specific circumstances that resulted in the failure to meet the performance standard.

UAW plans may be amended to revise the actions that will be taken to meet the performance standard.

Individual UAW Compliance Plan

Individual UAW Plan will document a plan to adopt and implement measures tailored to the specific needs of the water supply system that the permittee believes will be sufficient to bring the system into compliance with the performance standard within three years. Individual UAW compliance plans may include any of the actions set forth in the MassDEP UAW Functional Equivalence Plan compliance plan below.

MassDEP UAW Functional Equivalence Plan

In order to be considered functionally equivalent with the UAW performance standard, the permittee must adopt and implement the MassDEP UAW Functional Equivalence Plan that, at a minimum, requires all the following measures:

- a. within one year of filing the MassDEP UAW Functional Equivalence Plan, complete a water audit and leak detection survey of the entire system and submit completed audit and survey to MassDEP;

- within one year of completing the audit and leak detection survey, conduct sufficient repairs to reduce by 75% (by water volume) all leaks detected in the survey;
within one year of completing such repairs, conduct additional repairs of leaks detected in the survey as may be necessary to reduce permittee's UAW to 10% or the minimum level possible;
- b. if UAW remains above 10%, repeat the steps outlined in paragraph a.;
 - c. implementation of a program that ensures the inspection and evaluation of all water meters and, as appropriate, the repair, replacement and calibration of water meters in accordance with the following schedule:
 - Large Meters (2" or greater) - within one year of filing the MassDEP UAW Functional Equivalence Plan
 - Medium Meters (1" or greater and less than 2") - within two years of filing the MassDEP UAW Functional Equivalence Plan
 - Small Meters (less than 1") - within three years of filing the MassDEP UAW Functional Equivalence Plan;
 - d. implementation of monthly or quarterly billing within three years of filing the MassDEP UAW Functional Equivalence Plan; and
 - e. within one year of filing the MassDEP UAW Functional Equivalence Plan, implementation of a water pricing structure that achieves sufficient revenues to pay the full cost of operating the system including, without limitation, the costs of repairs under paragraph a., the costs of meter repairs, replacements and calibrations under paragraph c., the costs of employees and equipment, and ongoing maintenance and capital costs.

Hardship

A permittee may present an analysis of the cost effectiveness of implementing certain conservation measures included in the MassDEP UAW Functional Equivalence Plan and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits. Suppliers will be able to present:

- a. Reasons why specific measures are not cost effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard;
- b. Alternative specific conservation measures that would result in equal or greater system-wide water savings or equal or greater environmental benefits than the conservation measures included in the MassDEP UAW Functional Equivalence Plan; and
- c. When applicable, an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship.