

Water Management Act 20-Year Permit Renewal Schedule

Watershed Number	Watershed Name	Renewal Application Filing Date	Permit Renewal Effective Date	20-Year Permit Term
12	Blackstone River Basin	Nov. 1-30, 2008	Feb. 28, 2009	2009-2029
20	Charles River Basin			
14	Concord River Basin	May 1- 31, 2011	Aug. 31, 2011	2011-2031
7	Millers River Basin	Nov. 1-30, 2012	Feb. 28, 2013	2013-2033
8	Chicopee River Basin	Feb. 1-28, 2013	May 31, 2013	2013-2033
9	Quinebaug River Basin	May 1- 31, 2013	Aug. 31, 2013	2013-2033
11	Nashua River Basin	Nov. 1-30, 2013	Feb. 28, 2014	2014 -2034
10	French River Basin	Feb. 1-28, 2014	May 31, 2014	2014 -2034
13	Merrimack River Basin	Aug. 1-31, 2014	Nov. 30, 2014	2014 -2034

Permit and Registration Compliance Milestones*

20-Year Permit	ASR Year	Performance Standard Requirements
Period One 2009-2014	2009	Exceed 80/15 requires Compliance Plan (Registration)
	2011(2 years)	Exceed 65/10 requires Compliance Plan (Permit)
	2012	Exceed 65/10 requires Compliance Plan (Registration)
Period Two 2014-2019	2014(5 Years)	Meet 65/10 <u>OR</u> meet DEP Model Conservation Plan** (Permit)
	2017	Meet 65/10 <u>OR</u> meet DEP Model Conservation Plan*(Registration)
Period Three 2019-2024	2019 to 2024	Meet 65/10 <u>OR</u> meet DEP Model Conservation Plan
Period Four 2024-2029	2024 to 2029	Meet 65/10 <u>OR</u> meet DEP Model Conservation Plan

* Permit milestones are based on a permit expiring in 2009.

** DEP Model Conservation Plan for RGPCD: Denotes specific measures for metering, limits on nonessential outdoor water use; public education; and pricing.

** DEP Model Conservation Plan for UAW: Denotes specific measures for system water audits and leak detection, leak repair, metering and pricing.

Annual Statistical Report: Water Management Act Section

- Unaccounted-for-Water (UAW)
 - Difference between the amount of water entering the distribution system minus metered volumes delivered and documented confidently estimated volumes
- Residential Gallons per Capita Day (RGPCD)
 - Average amount of water a resident uses per day calculated over the calendar year

Unaccounted for Water

- Compare volume of finished water entering distribution system (after treatment) to metered and documented confidently estimated volume of water leaving the system
- Formula:
 - volume of finished water (Table D1)
 - volume of metered use (Table G7)
 - volume of confidently estimated municipal use (Table G11)
 - = unaccounted for water

Volume of Finished Water Entering Distribution System

- It is the annual total of the “Net finished water that entered your distribution system” on Table D1 of the ASR
- DO include water purchased
- Do NOT included water sold to other systems
- Do NOT included water lost to treatment processes

Get Finished Water Volume into Distribution System from Table D1

Month	(1) Amount of finished water from own sources	(2) Amount of finished purchased from other systems	(3) Amount of finished water sold to other systems	Net finished water that entered your distribution system (1) + (2) - (3) = Net
Units (check one)	<input type="checkbox"/> : Gallons (GAL) or <input type="checkbox"/> Million Gallons (MG)	<input type="checkbox"/> : GAL or <input type="checkbox"/> MG	<input type="checkbox"/> : GAL or <input type="checkbox"/> MG	<input type="checkbox"/> : GAL or <input type="checkbox"/> MG
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
TOTAL				*
Maximum Daily Finished Water Consumption: (volume) <input type="checkbox"/> GAL or <input type="checkbox"/> MG				*(Enter in Table G11)
				Date (mm/dd/yyyy)

Get Metered Use from Table G7

Table G7 – Total Metered Water Volumes by Service Category (All PWSs to complete)

Report ALL water metered through service connections in Table G7. Include water not billed for (e.g. schools, municipal playing fields, treatment plant purposes) and metered water volumes measured through temporary meters, whether for municipal or private use. See ASR Instructions for details and examples.

Service Category	No. of Service Connections	Total Volume (mgy)	Category Description
Residential			Water provided to residences in your distribution system, including for-profit apartments, condos, and seasonal homes. All water used for lawn watering at residential buildings belongs in this category.
Residential Institutions			Water served to institutions with residential population such as colleges. It is optional to account residential institutions' volumes separately (may be included in Residential above - see ASR Instructions).
Commercial/ Business			Water served to businesses and other commercial entities. Metered water used for construction.
Agricultural			Water used mainly to grow food, raise animals, or run a garden center.
Industrial			Water used mainly for industrial purposes.
Municipal, Institutional, Non-profits			Water used for municipal purposes, including schools, playing fields, municipal buildings, treatment plants, water main construction; non-profits such as churches; non-residential institutions such as private schools and hospitals.
Other			Water used for purposes not included in above categories.
TOTALS			Total no. of metered service connections and volume.

Confidently Estimated Municipal Use (CEMU)

- Non-metered water used for municipal or other purposes (e.g. unmetered but billed contractor use)
- Records must be kept to document estimated volume of CEMU
- All CEMU documentation must be attached to ASR to receive credit
- Excel spreadsheets available on MassDEP website for tracking CEMU volumes

CEMU Use Documentation

- Provide logs of dates, locations, durations, flow rates and total volumes used for
 - Hydrant/water main flushing
 - Flow Testing
 - Bleeders/Blow Offs
 - Tank Overflow & Drainage
 - Sewer and storm water system flushing
 - Major water main breaks
 - Fire fighting and training
- Street Cleaning:
 - Provide tank volumes, number of fills, total volume used

CEMU Use Documentation Cont.

- Source Meter Calibration Adjustments
 - Provide calibration logs documenting calibration calculation
 - If adjustments made to source water volumes, pro-rate adjustments over time:

Example: Calibration in December 2006 shows that a source meter is under-reading by 12%. It has been 12 months since the last calibration, therefore adjust Jan 2006

11 - 10% Feb 11 - 9%

Example CEMU Reporting Problems

Parks/Irrigation - 400 units @ 300,000 gal/year = 120MG/year

Filled Tankers – 9,000 per fill. 25 trucks/day. 200 days/year = 45 MG/year

Main Breaks – 2/14/06 ██████████ = 4.6 MG more than avg. for seasonal day
27 other main breaks @ 300,000 gal/per = 12.7 (MG)

Fire Protection – 683 fires. Avg. 3 pumper trucks per. 1250 gpm ea. = 225,000 gph.
5 hour avg. per fire = 768 (MG)

Fire Training – 52 hours @ 2,100 g.p.m. = 6.6 (MG)

Hydrant Main Flush/Flow Tests – 44 total @ 5 min/flush(1100gpm) = .242(MG)

Street Cleaning - .6(MG) from DPW(same as last year)

Example CEMU Reporting Problems

Service Accounts:

Residential	8,132
Commercial	470
Institutional	123
Irrigation	1,354
Public	105
Fire Supply	390
Total	10,574

Estimated Non-Metered Use:

Unavoidable Pipe Leakage - AWWA C600-93 section 4.1.6	3,250,006 gal
Fire Fighting - AWWA estimated 1% for unmetered use	20,100,000 gal
Meter Under-Registration - average meter accuracy calculated at 94.2% based on accuracy testing of all meters removed from service	100,206,368 gal
Main Flushing - system volume x 1.5	4,007,807 gal
Street Cleaning - 160 days x 4 sweepers x 3 fills per day = 1,920 fills 1,920 fills x 235 gallons = 451,200 gal	451,200 gal

CEMU Uses Cont.

- Major water main breaks are accepted as CEMU (significant water flowing out at surface that require immediate repair)
- Leak detection volume is NOT included in CEMU
- Non-emergency long-term leaks NOT included in CEMU
- 1% use for fire fighting/training accepted

Table G12 UAW Example

- Subtract metered use and CEMU from total finished water volume entering distribution system:

Table G12 Unaccounted for Water

	Million Gallons/Year (MGY)	% of Total Water Available for Distribution
Total Finished Water Available for Distribution (Total Net Finished Water from Table D1)	400	100%
Total Metered Use (System Total Metered Use from Table G7)	- 360	- 90 %
Total Confidently Estimated Municipal Use (Total from Table G11)	- 8	- 2 %
Unaccounted for Water (UAW)	= 32	= 8 %

RGPCD

- Uses 2 types of data:
 1. The residential population served by your PWS system that used that volume of water
 2. The total volume of water (MGY) used by the residential population for the reporting year

Residential Volume from Table G7

Table G7 – Total Metered Water Volumes by Service Category (All PWSs to complete)

Report ALL water metered through service connections in Table G7. Include water not billed for (e.g. schools, municipal playing fields, treatment plant purposes) and metered water volumes measured through temporary meters, whether for municipal or private use. See ASR Instructions for details and examples.

Service Category	No. of Service Connections	Total Volume (mgd)	Category Description
Residential		Required	Water provided to residences in your distribution system, including for-profit apartments, condos, and seasonal homes. All water used for lawn watering at residential buildings belongs in this category.
Residential Institutions		Optional	Water served to institutions with residential population such as colleges. It is optional to account residential institutions' volumes separately (may be included in Residential above - see ASR Instructions).
Commercial/ Business			Water served to businesses and other commercial entities. Metered water used for construction.
Agricultural			Water used mainly to grow food, raise animals, or run a garden center.
Industrial			Water used mainly for industrial purposes.
Municipal, Institutional, Non-profits			Water used for municipal purposes, including schools, playing fields, municipal buildings, treatment plants, water main construction; non-profits such as churches; non-residential institutions such as private schools and hospitals.
Other			Water used for purposes not included in above categories.
TOTALS			Total no. of metered service connections and volume.

Determining Population Served

- Factors affecting determination of population:
 - Is 100% of the residential population served?
 - If only part of the community is served, how to calculate population served?:
 - Accurate counting from census data, local data, etc.
OR
 - Estimate based on counting households
 - Residential Institutions: count or don't count?
 - Seasonal Population: pro-rate

IF 100% of Community is served by PWS, then:

- Use the most recent census available
- Last Federal census was in 2000 and may not be reliable, depending on your community
- Local census may be more current and accurate; consult with town/city clerk's office

Population from Census Data

- Example Table G8:

Table G8 Residential Population Served, Option 1: Accurate Count from Census Data	
Community(ies) served by PWS is (are) :	<input type="checkbox"/> Fully Served <input type="checkbox"/> Partially Served <input type="checkbox"/> Combination (if PWS serves multiple communities)
Population Served:	23,525 Enter this value into Table G10 below
Census Type (Federal or Local):	Local
Census year:	2005
For <u>partially served</u> communities and/or those with a <u>high seasonal fluctuation</u> , briefly describe how the value for population served was ascertained (attach calculations to the ASR):	

IF Partially Served Community:

2 Options:

1. Count population served and use Table G8:
 - Subtract population not served (private wells or other system) from entire population or work with city/town clerk to determine population served by your PWS

OR

2. Use Table G9: estimate from households
 - Multiply households served by average household size (U.S. Census)

Using Table G9

- For partially served communities if population cannot be accurately determined
- Multiply number of households per service connection to obtain total number of households served by your system
- Multiply number of households served by U.S. Census *Average Household Size* (not average family size) for the community

Table G9 Example 1

Table G9 Residential Population Served, Option 2- Estimate from Number of Households

Type of Residential Service Connection (single-family, two-family, etc.)	Total number of service connections to each Type		Number of households per service connection (1 for single family, 2 for two-family, etc.)		Number of households for each Type
Single- Family:	1500	x	1	=	1500
Two-Family:		x	2	=	
Three Family:		x	3	=	
		x		=	
		x		=	
		x		=	
		x		=	
Sum up last column to obtain total number of households served:					1500
Enter the Average <u>Household</u> Size from U.S. Census website:					x 3.85
Multiply above two numbers to obtain the Estimated Residential Population Served:					= 5,775*

* Enter this value (plus the value for other communities if you serve more than one) into Table G10

This community has 1,500 residential service connections (meters), and serves 1500 households. Population served is the # of households times avg. household size.

Table G9 Example 2

Table G9 Residential Population Served, Option 2- Estimate from Number of Households

Type of Residential Service Connection (single-family, two-family, etc.)	Total number of service connections to each Type		Number of households per service connection (1 for single family, 2 for two-family, etc.)		Number of households for each Type
Single- Family:	2000	x	1	=	2000
Two-Family:	25	x	2	=	50
Three Family:	10	x	3	=	30
	2	x	10	=	20
	1	x	50	=	50
	2	x	75	=	150
		x		=	
Sum up last column to obtain total number of households served:					2300
Enter the Average <u>Household</u> Size from U.S. Census website:					x 2.90
Multiply above two numbers to obtain the Estimated Residential Population Served:					= 6,670*

* Enter this value (plus the value for other communities if you serve more than one) into Table G10

This community has 2,040 residential service connections (meters), but serves 2,300 households. Population served is the # of households times avg. household size.

Using Average Household Size for Table G9

- Get *Average Household Size* from the U.S. Census website

http://factfinder.census.gov/home/saff/main.html?_lang=en

- Under “Get a **Fact Sheet** for your community...” enter your city/town and state (MA)
- Use “*Average Household Size*” under the “**Number**” column, NOT average family size



Your source for population, housing, economic, and geographic data

American FactFinder will be unavailable from 10am Saturday, January 19th until 10am Sunday, January 20th for scheduled maintenance. All times are Eastern Standard Time. We apologize for any inconvenience.

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Get a Fact Sheet for your community...

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Getting Detailed Data

Decennial Census - taken every 10 years to collect information about the people and housing of the United States [learn more](#) | [get data](#)

See the [Count Question Resolution Program](#) for information on Census 2000 count corrections.

American Community Survey - an ongoing survey that provides data about your community every year [learn more](#) | [get data](#)

Puerto Rico Community Survey - the equivalent of the American Community Survey for Puerto Rico [learn more](#) | [get data](#) | [en español](#)

Population Estimates Program - population numbers between censuses [learn more](#) | [get data](#)

Economic Census - profiles the U.S. economy every 5 years [learn more](#) | [get data](#)

Annual Economic Surveys - data from the Annual Survey of Manufactures, County Business Patterns and Nonemployer Statistics [learn more](#) | [get data](#)

Special Interest



La Encuesta sobre la Comunidad de Puerto Rico y Censo 2000 Puerto Rico [en español](#)

[American Indian and Alaska Native data and links](#)

Population Data

Population Finder

Use the [Population Finder](#) to view population trends for your community.

U.S. Population Clock



19:05 GMT (EST+5) Jan 14, 2008

303,234,359

[more population clocks >](#)

What's New



2007 Population Estimates for the U.S. and states are now available in American FactFinder. [more >](#)

2006 Puerto Rico Community Survey data are now available for Puerto Rico in Spanish from the [Data Sets page](#).

2006 Annual Survey of Manufactures data are now available as [Data Sets](#) in American FactFinder.

2006 American Community Survey (ACS) Race, Ethnic, and Ancestry data complete the release of the 2006 American Community Survey (ACS). Click the Fact Sheet, People, and Housing links on the left menu.

Updates to American FactFinder released August 28, 2007. [more >](#)

110th Congressional District Summary Files (Sample and 100-Percent) Data from the Census 2000 Summary Files 1 and 3

Address Search...

Enter a [street address](#) to find Census 2000 data


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http://factfinder.census.gov/servlet/SAFFacts?_event=Search&geo_id=&_geoContext=&_street=

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2000 2006 data [not available](#) for this geography

View a Fact Sheet for a **race, ethnic, or ancestry group**

Census 2000 Demographic Profile Highlights: [Reference Map](#)

General Characteristics - [show more >>](#)

	Number	Percent	U.S.		
Total population	58,969			map	brief
Male	27,984	47.5	49.1%	map	brief
Female	30,985	52.5	50.9%	map	brief
Median age (years)	35.5	(X)	35.3	map	brief
Under 5 years	4,338	7.4	6.8%	map	
18 years and over	43,817	74.3	74.3%		
65 years and over	7,547	12.8	12.4%	map	brief
One race	57,781	98.0	97.6%		
White	52,878	89.7	75.1%	map	brief
Black or African American	1,419	2.4	12.3%	map	brief
American Indian and Alaska Native	129	0.2	0.9%	map	brief
Asian	801	1.4	3.6%	map	brief
Native Hawaiian and Other Pacific Islander	18	0.0	0.1%	map	brief
Some other race	2,536	4.3	5.5%	map	
Two or more races	1,188	2.0	2.4%	map	brief
Hispanic or Latino (of any race)	5,174	8.8	12.5%	map	brief
Household population	57,572	97.6	97.2%	map	brief
Group quarters population	1,397	2.4	2.8%	map	
Average household size	2.51	(X)	2.59	map	brief
Average family size	3.11	(X)	3.14	map	
Total housing units	23,737			map	
Occupied housing units	22,976	96.8	91.0%		brief
Owner-occupied housing units	13,823	60.2	66.2%	map	
Renter-occupied housing units	9,153	39.8	33.8%	map	brief
Vacant housing units	761	3.2	9.0%	map	

Social Characteristics - [show more >>](#)

	Number	Percent	U.S.		
Population 25 years and over	39,354				
High school graduate or higher	32,912	83.6	80.4%	map	brief
Bachelor's degree or higher	9,204	23.4	24.4%	map	
Civilian veterans (civilian population 18 years and over)	5,677	12.9	12.7%	map	brief
Disability status (population 5 years and over)	11,278	20.9	19.3%	map	brief

Average household size for Haverhill, MA is 2.51 people

Calculating RGPCD

Table G10 Examples

City like Boston:

Table G10 RGPCD Step 2 – Calculate RGPCD (All PWSs to complete)

Total Residential Use (MGY) (from Table G7)*	/ 365	/ Total Residential Population Served	X 1,000,000 =	RGPCD
10,950	/ 365	/ 500,000	X 1,000,000 =	60

Suburban Town:

Table G10 RGPCD Step 2 – Calculate RGPCD (All PWSs to complete)

Total Residential Use (MGY) (from Table G7)*	/ 365	/ Total Residential Population Served	X 1,000,000 =	RGPCD
547.5	/ 365	/ 20,000	X 1,000,000 =	75

MassDEP ASR Review

- ASRs due February 28
- Jan-April: MassDEP reviews every ASR for UAW and RGPCD: calculation errors, data agreement, population, CEMU documentation
- April/May: MassDEP sends a letter to each PWS summarizing reasons for any adjustments to UAW and RGPCD
- PWSs may provide additional data or explanation for UAW and RGPCD values

Reported and DEP-Adjusted RGPCD and UAW Values

MassDEP - Accepted Performance Standard Values				
Residential Gallons per Capita Day (RGPCD) & Unaccounted for Water (UAW)				
2007 Public Water Supply Annual Statistical Report				
ID = Insufficient Data to compute value				
NS = Not submitted (ASR not submitted, or WMA Section (Section G) of ASR not submitted)				
NA = Not applicable to this system				
PWSID	PWS Name	Town/City	MassDEP- Accepted RGPCD (gal/person/day)	MassDEP- Accepted Unaccounted for Water (%)
WESTERN REGION				
1004000	ADAMS FIRE DISTRICT	Adams	59	37
1005000	AGAWAM WATER DEPT	Agawam	74	21
1008000	AMHERST DPW WATER DIVISION	Amherst	93	13
1015000	ATHOL WATER DEPARTMENT	Athol	63	23
1024000	BELCHERTOWN WATER DISTRICT	Belchertown	73	25
1029000	BERNARDSTON FIRE & WATER DISTRICT	Bernardston	55	48
1058000	CHESHIRE WATER DEPARTMENT	Cheshire	ID	ID
1061000	CHICOPEE WATER DEPT (MWRA)	Chicopee	66	5
1070000	DALTON FIRE DISTRICT	Dalton	ID	ID
1074000	DEERFIELD FIRE DISTRICT	Deerfield	59	5
1074001	SOUTH DEERFIELD WATER DISTRICT	Deerfield	74	ID

<http://www.mass.gov/dep/water/resources/rgpcd06.htm>

Questions, Clarifications and Adjustments

- Feel free to call or email with questions and regarding UAW or RGPCD
- Richard Friend (617) 654-6522
- richard.friend@state.ma.us

MassDEP

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Attn: Water Management Act Program