



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WESTERN REGIONAL OFFICE

436 Dwight Street • Springfield, Massachusetts 01103 • (413) 784-1100

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

ARLEEN O'DONNELL
Commissioner

William Pachalis, Superintendent
East Northfield Water Company
206 Main Street
Northfield, MA 01360

February 1, 2007

Re: Northfield - WMA
East Northfield Water Company
WMA Permit# 9P2-1-06-217.02
5 Year Review and Permit Modification

Dear Mr. Pachalis:

Please find the attached documents:

- Findings of Fact in Support of the Modified Permit Decision; and
- Draft Water Management Act Permit 9P2-1-06-217.02 issued to the East Northfield Water Company.

The Department anticipates issuing the final permit on March 15, 2007. Please review the draft permit. If you have any questions regarding the draft permit and would like to meet and discuss them prior to final issuance, please contact Jim Bumgardner at (413) 755-2270.

Sincerely,

Deirdre Cabral, Section Chief
Drinking Water Program
Bureau of Resource Protection

Cc: Duane LeVangie, WMA Manager, Boston, Jim Bumgardner, DEP WERO
Northfield Board of Selectmen, Town Hall - 69 Main Street - Northfield, MA 01360

File Locations: *Y:\DWP Archive\WERO\Northfield-East Northfield Water Company-WMA- Permit 9P2-1-06-217.02-2007-2-1
W:\brp\ws\WMA\Permits\5 Year Permit Review\East Northfield\ENorthfield07ModPermit.doc*

Communication for Non-English Speaking Parties (310 CMR 1.03(5)(a))

English

This document is important and should be translated immediately.

Spanish

Este documento es importante y se debe traducir inmediatamente.

Portuguese

Este original é importante e deve ser traduzido imediatamente.

Italian

Questo documento è importante e dovrebbe essere tradotto immediatamente.

Greek

Αυτό το έγγραφο είναι σημαντικό και πρέπει να μεταφραστεί αμέσως.

French

Ce document est important et devrait être traduit immédiatement.

Chinese (traditional)

這個文件重要和應該立刻被翻譯。
这个文件重要和应该立刻被翻译。



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**DRAFT Findings of Fact in Support of the Permit Decision
Water Management Permit 9P2-1-06-217.02**

The Massachusetts Department of Environmental Protection (the Department) has completed its 5 year review of the East Northfield Water Company (ENWC) Water Management Act permit.

The Water Management Act

The Act requires that the Department 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.

To better achieve the balance of competing water uses mandated by the Act, the Department has adopted the "Water Management Policy For Permit and Permit Amendment Applications and 5-Year Review, Effective Date: April 2, 2004" and the "Guidance Document for Water Management Act Permitting Policy, Effective Date: January 17, 2006". The Policy, WMA Policy BRP/ DWM/DW/P04-1, and Guidance, Guidance BRP/DWM/DW/G05-01, can be found on the Department's web site at <http://www.mass.gov/dep/water/laws/policies.htm#wmgt>. The Policy and Guidance identify specific performance standards and conditions to be applied to new Water Management permits and to existing permits at the time they are amended, during 5-year permit review, or permit renewal. The Department has applied these performance standards and conditions in ENWC's permit.

In determining the performance standards in Water Management permits, the Department relies primarily upon the stressed basin determinations contained in the Water Resources Commission's (WRC) Stressed Basins Report approved December 13, 2001, and upon future revisions to these stressed basin determinations by the WRC. The Department also conducts reviews of other available research and reports by the United States Geological Survey, the Department's Watershed Water Quality Assessment Reports and any other pertinent reports available for specific river basins.

ENWC's sources are located in the Connecticut River Basin, which is identified as a low stress basin by the WRC's Stressed Basins Report. The map of stressed basins can be reviewed at the following link: <http://www.mass.gov/dep/water/laws/policies.htm#wmgt> under "Water Management Policies", Flow

Stress Map. The Policy and Guidance establish the following performance standards for all permittees that withdraw water from low stress river basins:

1. Residential gallons per capita day water use (RGPCD) of 80 gallons or less;
2. Unaccounted for water (UAW) of 15% or less;

While these performance standards represent the minimum standards required for compliance with the Permit, the Department believes that they are reasonable standards for effective water conservation and that through the implementation of all the terms and conditions of Water Management permits, permittees can exceed the performance standards for RGPCD and UAW.

The Guidance, as revised on January 17, 2006, provides implementation and enforcement guidelines for permitting. It establishes:

- timeliness for compliance with the performance standards;
- procedures and requirements for permittees that fail to document compliance with the performance standards within those timelines.

Finding of Fact for the Performance Standards in ENWC's Water Management Permit

As required by MGL c 21G, s 11 and 310 CMR 36.00, the Department makes the following Findings of Fact in support of the Permit, and includes herewith its reasons for approving the Permit and for imposing the conditions of approval.

The Department is imposing performance standards in this permit of 80 gallons per person per day and 15% unaccounted for water, due to its location in a basin characterized as "low stress" by the WRC.

ENWC's Water Withdrawal History

ENWC is permitted for an average annual daily withdrawal volume of 0.14 million gallons per day (mgd). The following table lists the ENWC historic water use for the past few years:

Year	Average Water Use (mgd)
2005	0.07
2003	0.08
2002	0.08
2001	0.1
2000	0.09
1999	0.1
1998	0.09

Finding of Fact for Special Permit Conditions

In issuing permits, the Department 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.

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume: This condition reflects the permitted withdrawal volume of 0.14 mgd through November 30, 2013. No increase in authorized withdrawal volume is included over the permit duration because WRC demand projections do not show water demand increasing for the Town of Northfield.

Special Condition 2, Maximum Authorized Daily Withdrawals from each Withdrawal Point: This condition reflects the approved safe yield of the Grandin Reservoir. The maximum annual approved rate is 0.2 MGD.

Special Condition 3, Water Supply Protection: This condition verifies that ENWC has satisfied the Water Supply Protection actions required by WMA and the Safe Drinking Water Act.

Special Condition 4, Performance Standard for Residential Gallons Per Capita Day Water Use: The Department established a standard of 80 gallons per person per day because Grandin Reservoir is located in a low stressed basin. As reported in the 2005 Annual Statistical Report, the RGPCD for ENWC was 53.2 gallons per person per day.

Special Condition 5, Performance Standard for Unaccounted for Water: The 2005 Annual Statistical Report reports the same total metered volume in the distribution system as total volume withdrawn, plus 0.7% for a major water main break. The reported UAW for ENWC was -0.7%. Clearly this is not possible. The Department requires ENWC to estimate UAW by totaling the metered volume from all metered sources and comparing it to the total volume metered at the withdrawal point.

Special Condition 6, Water Conservation Requirements: This condition incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the Water Resources Commission in July 2006.

Special Condition 7, Requirement to Report Raw and Finished Water Volumes: This condition ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported. ENWC routinely reports raw water volumes from its source in its ASRs.

The summary of permit conditions above as part of the Department'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.



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

PERMIT NUMBER: 9P2-1-06-217.02 **RIVER BASIN:** Connecticut River

PERMITTEE: East Northfield Water Company
 206 Main Street
 Northfield, MA 01360

ISSUANCE DATE: April 16, 1999

MODIFICATION DATES: June 1, 2003, January 30, 2007

EXPIRATION DATE: November 30, 2013

NUMBER OF WITHDRAWAL POINTS:

Groundwater: 0
 Surface Water: 1

USE: Public Water Supply

DAYS OF OPERATION: 365

LOCATION(S): **Table 1: Withdrawal Point Identification**

Withdrawal Point Name	PWS Source ID Code
Grandin Reservoir	1217001-01S

SPECIAL PERMIT CONDITIONS

1. Maximum Authorized Annual Average Withdrawal Volume

This permit authorizes the East Northfield Water Company (ENWC) to withdraw water from the Connecticut River Basin at the rate described below in Table 2. ENWC does not have a Water Management Act Registration for its withdrawal. The permitted volume is expressed both as an annual average daily withdrawal rate (million gallons per day or mgd), and as a total annual withdrawal volume (million gallons per year or mgy) for each five-year period of the permit term.

The Department of Environmental Protection (the Department) bases these withdrawal volumes on the raw water withdrawn 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 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 Two Years 6-10	4/30/1999 to 11/30/2003	0.14	51.10	0.14	51.10
Period Three Years 11-15	12/1/2003 to 11/30/2008	0.14	51.10	0.14	51.10
Period Four Years 16-20	12/1/2008 to 11/30/2013	0.14	51.10	0.14	51.10

2. Maximum Authorized Withdrawals from each Withdrawal Point

Based on the Safe Yield developed by Tighe and Bond Engineers, April 23, 2003, the Safe Yield of Grandin Reservoir is 0.2 MGD. The calculated Safe Yield is greater than the authorized annual average withdrawal volume. In no event shall the withdrawal from Grandin Reservoir exceed the withdrawal volume authorized above in Special Condition 1.

Table 3: Maximum Annual Withdrawal Volumes

Withdrawal Point Name	PWS Source ID Code	Maximum Annual Rate (MGD)
Grandin Reservoir	1217001-01S	0.2

3. Water Supply Source Protection

Surface Water Protection

Department records indicate ENWC has a MassDEP-approved surface water supply protection plan and has implemented all required zoning and non-zoning controls in accordance with the requirements of 310 CMR 22.20C.

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

The Department establishes a performance standard for residential gallons per capita day (RGPCD) at 80 gallons per person per day for ENWC. ENWC shall be in compliance with the performance standard by December 31, 2009. ENWC shall report its RGPCD water use annually in its Annual Statistical Report (ASR) and document compliance with this performance standard in its ASR for 2009 and each year thereafter.

ENWC shall report its RGPCD and the calculation used to derive that figure as part of its ASR including, without limitation, the source of the data used to establish the service population and the year in which this data was developed.

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

5. Performance Standard for Unaccounted for Water

The Department establishes a performance standard for unaccounted for water (UAW) at 15% of the ENWC annual water withdrawal. ENWC shall be in compliance with the performance standard by December 31, 2009. ENWC shall report its UAW annually in its Annual Statistical Report (ASR) and document compliance with this performance standard in its ASR for 2009 and each year thereafter.

ENWC shall report its UAW and the calculation used to derive that figure as part of its ASR.

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

6. Water Conservation Requirements

At a minimum, ENWC shall implement the following conservation measures forthwith and shall be in compliance with these measures on or before February 28, 2012. The Department recognizes that ENWC is currently implementing a number of these requirements. Compliance with the water conservation requirements shall be reported to the Department upon request or by February 28, 2012, the date of the next Review/Renewal of the permit, 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 January 30, 2010.
2.	Perform a leak detection survey of the entire distribution system 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, ENWC shall submit to the Department 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.	ENWC shall have repair reports available for inspection by the Department. ENWC shall establish a schedule for repairing leaks that is at least as stringent as the following: <ul style="list-style-type: none">- Leaks of 3 gallons per minute or more shall be repaired within 3 months of detection.- Leaks of less than 3 gallons per minute at hydrants and appurtenances shall be repaired as soon

Table 5: Minimum Water Conservation Requirements
<p>as possible.</p> <ul style="list-style-type: none"> - Leaks of less than 3 gallons per minute shall be repaired in a timely manner, but in no event more than 6 months from detection, except that leaks in freeway, arterial or collector roadways shall be repaired when other roadwork is being performed on the roadway. <p>Leaks shall be repaired in accordance with ENWC's priority schedule including leaks up to the property line, curb stop or service meter, as applicable. ENWC shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.</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. ENWC 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>, by January 30, 2012. 3. ENWC 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 ENWC's annual water budget to calibrate, repair, or replace meters as necessary.
Pricing
<ol style="list-style-type: none"> 1. Establish a water pricing structure that includes the full cost of operating the water supply system by January 30, 2012. Evaluate rates every three to five years and adjust costs as needed. Full cost pricing factors all costs - operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) - into prices. 2. ENWC 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. ENWC 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"> • By January 1, 2008, ENWC shall submit to the Department a status report detailing which municipally owned public buildings in the ENWC service area have been retrofitted with water saving devices (faucet aerators, low flow shower heads and low flow toilets) and which of those buildings have yet to be retrofitted, along with a schedule to complete the retrofitting by January 1, 2012. • On or before January 1, 2012, ENWC shall demonstrate to the Department's satisfaction that a "Best Effort" was made by the ENWC to persuade the Town to make those retrofits. <p>Note municipally owned public buildings that may be scheduled for rehab or demolition after the January 1, 2012 deadline for completing the retrofits, may with the Department's approval, be exempted from this condition based on the schedule of work. Status report required above should identify those buildings and schedule for repairs/demolition.</p>
Industrial and Commercial Water Conservation
<ol style="list-style-type: none"> 1. ENWC shall review the use records for its industrial, commercial and institutional water users and develop an inventory of the largest water users. ENWC shall 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 January 30, 2012. Such outreach plans can include, but are not limited to: information on water audits, meter sizing, water reuse, low-flow plumbing fixtures, mandatory outdoor water use restrictions, suggestions for contacting trade associations for process specific information on water use reductions, and information on contacting the Executive Office of Environmental Affairs Office of Technical Assistance for Toxics Use Reduction (OTA) which offers a range of assistance and information to help facilities improve water

Table 5: Minimum Water Conservation Requirements	
	use efficiency and reduce wastewater discharge. OTA can be contacted at (617) 626-1060 or at www.mass.gov/envir/ota .
2.	Upon request by the Department, ENWC shall report on industrial, commercial and institutional water conservation including the results of its review of water use records for industrial, commercial and institutional water users, the inventory of the largest water users, copies of any outreach materials distributed to industrial, commercial and institutional water users, and to the extent practical, a summary of water use reductions or savings that have resulted. Upon receipt of this report, the Department will take whatever action it deems appropriate to promote the interests of the Water Management Act, including without limitation requiring ENWC 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. ENWC's Water Conservation Education Plan shall be designed to educate ENWC's water customers of ways to conserve water. Without limitation, ENWC's plan may include the following actions: <ul style="list-style-type: none">• Include in bill stuffers and/or bills, a work sheet to enable customers to track water use and conservation efforts and estimate the dollar savings;• Public space advertising/media stories on successes (and failures);• Conservation information centers perhaps run jointly with electric or gas company;• Speakers for community organizations;• Public service announcements; radio/T.V./audio-visual presentations;• Joint advertising with hardware stores to promote conservation devices;• Use of civic and professional organization resources;• Special events such as Conservation Fairs;• Develop materials that are targeted to schools with media that appeals to children, including materials on water resource projects and field trips; and• Make multilingual materials available as needed.
2.	Upon request of the Department, ENWC 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.

7. Requirement to Report Raw and Finished Water Volumes

ENWC does not currently have a filtration treatment system. Should treatment be added to the system ENWC shall report raw water volumes for each water withdrawal point and finished water for each filtration treatment system annually on its ASR.

GENERAL PERMIT CONDITIONS (applicable to all permittees)

No withdrawal in excess of 100,000 gallons per day over the registered volume (if any) shall be made following the expiration of this permit, unless before that date the Department has received a renewal permit application pursuant to 310 CMR 36.00.

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 the Department 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 the Department 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 the Department approves such transfer in writing, pursuant to a transfer application on forms provided by the Department requesting such approval and received by the Department at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.37.
6. **Duty to Report** The permittee shall complete and submit annually, on a form provided by the Department, all of the information required by said form including, without limitation, a certified statement of the withdrawal. Such report shall be received by the Department 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
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 the Department. 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 the Department 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 the Department.

CONTENTS OF HEARING REQUEST

The regulations at 310 CMR 1.01(6)(b) require 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 the Department 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

The Department may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of the Department 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 ENWC fails to document compliance with the RGPCD performance standard in its 2009 ASR, or in any ASR thereafter, then ENWC must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall:

- a. meet the requirement 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 the Department's authority to take action in response to ENWC's failure to meet the performance standard.

If a RGPCD Plan is required, ENWC 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 ENWC's ASR for the calendar year in which the standard is met.

II. Contents of a Residential Gallons Per Capita Day Compliance Plan

At a minimum, all RGPCD Compliance 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. Amended RGPCD Plans must include the information set forth in paragraph above.

At a minimum, all RGPCD Plans submitted in response to a 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 moisture sensors or similar climate related control technology on all automatic irrigation systems.

If ENWC is already implementing one or more of these programs, it must include in its RGPCD Plan the continued implementation of such program(s), as well as implementation of at least one additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

Without limitation, RGPCD Plans submitted in response to a failure to meet the RGPCD performance standard may include the following actions in addition to those outlined in the paragraph above:

- a. the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
- b. a program that provides rebates or other incentives for the installation of moisture sensors or similar climate related control technology on automatic irrigation systems;
- c. 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;
- d. the adoption and enforcement of an ordinance, bylaw or regulation to require that all new construction minimize lawn area and/or irrigated lawn area, maximize the use of drought resistant landscaping, and maximize the use of top soil with a high water retention rate;
- e. the implementation of a program to encourage the use of cisterns or rain barrels for outside watering; and
- f. the implementation of monthly or quarterly billing.

Appendix B – 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 systems, and minus confidently estimated and documented amounts used for certain necessary purposes.

Examples of UAW include, but are not limited to: leakage, meter inaccuracies (unless they fall under the category of adjustment per results of source meter calibration described in the ASR), errors in estimation of stopped meters, unauthorized hydrant openings, illegal connections, data processing errors, and undocumented fire fighting uses.

Examples of 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. Generally, leakage is considered to be UAW, however, individual water main breaks can be discounted on a case-by-case basis. Any adjustment in the calculation of UAW made as a result of confidently estimated uses shall be documented as required in the ASR.

I. Compliance Plan Requirement

If ENWC fails to document compliance with the UAW performance standard in its 2009 ASR, or in any ASR thereafter, then ENWC 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 the Department's authority to take action in response to ENWC's failure to meet the performance standard.

If a UAW Plan is required, ENWC 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 ENWC's ASR for the calendar year in which the standard is met.

II. Contents of an Unaccounted for Water Compliance Plan

ENWC has the choice to file a UAW Plan with measures tailored to the specific needs of its water supply system (Individualized UAW Plan) or a UAW Plan that includes Best Management Practices (BMP UAW Plan).

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. Amended UAW Plans must include the information set forth in the paragraph above.

Individualized UAW Compliance Plan

Without limitation, Individualized UAW Compliance Plans submitted in response to a failure to meet the UAW performance standard may include any of the actions set forth in the BMP UAW Compliance Plan below.

BMP UAW Compliance Plan

At a minimum, all BMP UAW Plans submitted in response to a failure to meet the UAW performance standard must include all of the following actions:

- a. within one year of filing the UAW Plan, complete a water audit and leak detection survey of the entire system and submit completed audit and survey to the Department; 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; and within one year of completing such repairs, conduct additional repairs of leaks detected in the survey as may be necessary to reduce ENWC's UAW to 10% or less;
- b. 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 BMP UAW Plan
 - Medium Meters (1" or greater and less than 2") - within two years of filing the BMP UAW Plan
 - Small Meters (less than 1") - by January 30, 2012;
- c. implementation of monthly or quarterly billing by January 30, 2012; and
- d. within one year of filing the UAW 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 b., the costs of employees and equipment, and ongoing maintenance and capital costs.