



COMMONWEALTH OF MASSACHUSETTS
 EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 Metropolitan Boston - Northeast Regional Office

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EDWARD P. KUNCE
 Acting Commissioner

MODIFIED WATER WITHDRAWAL PERMIT
MGL c 21G

This Modified Permit is issued pursuant to the Massachusetts Water Management Act (the "Act") for the sole purpose of modifying the terms and conditions governing the withdrawal of a volume of water authorized herein. This Modified 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-3-17-258.01 **RIVER BASIN:** Ipswich

PERMITTEE: Salem and Beverly Water Supply Board
 50 Arlington Avenue
 Beverly, MA 01915-1035

ORIGINAL ISSUANCE DATE: February 15, 1991

MODIFICATION DATE: May 19, 2003

EXPIRATION DATE: August 31, 2009

NUMBER OF WITHDRAWAL POINTS: 4 surface water sources

USE: Public Water Supply

DAYS OF OPERATION: 365

LOCATION(S):

<u>Source</u>	<u>Source Code</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Location</u>
Wenham Lake	3258000-01S			50 Arlington Street, Beverly
Putnamville Reservoir	3258000-03S			320 Locust Street, Danvers
Longham Reservoir	3258000-02S			Dodge Street, Beverly
Ipswich River Canal	3258000-04S			Cherry St., Wenham

This information is available in alternate format. Call April McCabe, ADA Coordinator at 1-617-556-1171.

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SPECIAL CONDITIONS

1. Maximum Authorized Annual Average Withdrawal Volume

This Modified Permit authorizes the withdrawal of water for the purpose of serving the businesses, schools, municipal facilities, institutions and residences in the cities of Salem and Beverly and a portion of the Town of Wenham, on average over a calendar year, at the rate described below. The volume reflected by this rate is in addition to the 10.17 million gallons per day (MGD) previously registered to the permittee through the Water Management Act Program.

The permitted volume is expressed in millions of gallons, both as an average daily withdrawal rate per year and as a total annual withdrawal volume for each Period of this Modified Permit.

Compliance with authorized system-wide withdrawal volumes will be determined based upon total raw water volumes pumped from Wenham Lake (01S) as reported in your Annual Statistical Report.

These volumes are conditionally approved, pending determination of the firm yield of the public water supply operated by the Salem and Beverly Water Board (the "Board").

Withdrawals are authorized as follows:

		<u>Daily Average (MGD)</u>	<u>Total Annual (MGY)</u>
Period One			
Years 2-5	2/15/1991 to 8/31/1994	1.14	416.10
Period Two			
Years 6-10	9/1/1994 to 8/31/1999	1.14 *	416.10
Period Three			
Years 11-13	9/1/1999 to 5/18/2003	1.70	620.50
Period Four			
Years 13-20	5/19/2003 to 8/31/2009	1.14*	416.10

* To date, actual water withdrawals have been significantly below allocated numbers. In addition, there is insufficient water available at this time in the Ipswich River Basin to support increased withdrawals. For these reasons, the Department has held the Board's permitted withdrawal volumes to the volume originally allocated for Period One.

If, for any year beginning with calendar year 2004, the Board exceeds its total authorized withdrawal volume of 11.31 MGD on an average annual daily basis, on or before March 1st of the following year, the cities of Salem and Beverly shall each submit to the Department for its review and approval a plan and schedule for implementing a water bank. Thereafter, Salem and Beverly shall each implement the water bank in accordance with the plan and schedule as approved by the Department.

At a minimum, the water bank shall provide for conserving at least two gallons of water for every additional gallon of water. The water bank requirement applies, even if the Board exceeds its total authorized volume on an average annual daily basis by an amount that is less than the threshold

volume. If the Board exceeds its total authorized volume on an average annual daily basis by more than the threshold amount, the Board will be in violation of the Water-Management Act and this Modified Permit.

2. Ipswich Streamflow Diversion Thresholds

Withdrawals from individual withdrawal points are not to exceed the approved volumes listed below without specific advance written approval from the Department.

Ipswich River- Withdrawals from the Ipswich River Canal may only be made under the following streamflow conditions as measured at the United States Geological Survey (USGS) streamflow gauge #01102000 in Ipswich:

Period	Streamflow Diversion Thresholds	Flow Volume (USGS Ipswich Gauge Station 01102000)
6/1 – 10/30	>3.048 cfs ^m *	> 381 cfs *
11/1 – 2/28	>1.0 cfs ^m *	> 125 cfs *
3/1 – 5/31	>1.0 cfs ^m *	> 125 cfs *

cfs^m = cubic feet per second per square mile
cfs = cubic feet per second

The above values represent interim streamflow diversion thresholds. The Department’s initial review has indicated that the Board can meet existing demands in accordance with all the terms and conditions of this Modified Permit including the interim streamflow diversion thresholds set forth above. These interim streamflow diversion thresholds shall remain in effect, only until the Department gathers sufficient information to establish additional interim streamflow diversion thresholds and/or final streamflow diversion thresholds. Additional information relevant to the determination of streamflow diversion thresholds includes without limitation supplemental modeling by the USGS and a further evaluation by the Board of potential optimization strategies.

On or before November 16, 2003, the Board shall submit to the Department a plan that outlines the historic operating ranges of its reservoirs during the months of March thru May, and identifies how the reservoir elevations affect the amount of water that the Board diverts from the Ipswich River.

On or before December 31, 2004, the Board shall submit to the Department for its review and approval a report that continues the work done in the Response to the Order to Complete to determine whether there are additional actions the Board can take to optimize its ability to use its existing sources. In conducting this evaluation, the report should further evaluate, among other things, operational changes, the installation of variable speed pumps, development of a reservoir, increasing the hydraulic capacity from Longham Reservoir into Wenham Lake Reservoir, and increasing the storage capacity of its existing reservoirs. The report shall propose a plan and schedule for implementing actions to optimize the use of its existing sources.

In its Response to the Order to Complete, the Board concluded that it could not meet consumer demand, if it were required to operate under the streamflow thresholds proposed by the Ipswich River Fisheries Restoration Task Group (the “Fisheries Group”), even if the cities of Salem and Beverly met the Ipswich River Basin Performance Standards and even if the Board optimized its existing sources. The only capital improvement that changed this conclusion was construction of a reservoir in Topsfield. The Board should identify other options for addressing the deficit,

compare those options with the construction of the proposed reservoir, and develop a recommended plan and schedule. In developing this plan and schedule, the Department encourages the Board to work with other Ipswich River Basin permittees.

3. Firm Yield

The Department will review the additional USGS modeling before determining the firm yield. Depending on the results of this review, the Department reserves the right to modify the interim streamflow thresholds set forth in Special Condition #2 and establish additional interim streamflow diversion thresholds and/or final streamflow diversion thresholds. The Department further reserves the right to require the Board to submit additional information relevant to the determination of the firm yield of the system. The Board shall supply the information requested. The Department also reserves the right to modify the terms and conditions of this Modified Permit to promote the purposes of the Water Management Act.

4. Surface Water Protection Requirement

On or before May 16, 2005, the Board shall comply with 310 CMR 22.20C(1)(d)4 by developing a DEP approved surface water protection plan.

On or before May 16, 2005, Beverly and Wenham shall implement zoning and non-zoning controls that meet the requirements of 310 CMR 22.20C(2) to protect the portion of the Zone A that lies within its municipal boundaries.

On or before May 16, 2005, the Board shall document to the Department that it has used best efforts to get the Towns of Hamilton, Danvers, and Topsfield to implement zoning and nonzoning controls that meet the requirements of 310 CMR 22.20C(2) to protect the portions of the Zone A that lie within their municipal boundaries.

5. Streamflow Triggers and Outside Water Use Restrictions

Beginning on June 1, 2003, the Board shall implement the Required Actions identified in the following table, when streamflow falls below the levels identified for three consecutive days as measured at the USGS Stream gauge noted.

Period	Streamflow Trigger (3 consecutive days below threshold)	Flow Volume (USGS Ipswich Gauge Station #01102000) *	Required Action
May 1 st – September 30 th	< 0.56 cfsm	< 70 cfs	Public Notice for Voluntary Water Restrictions
May 1 st – September 30 th	<0.42 cfsm	<52.5 cfs	Implementation of Mandatory Water Restrictions

cfsm = cubic feet per second per square mile
cfs = cubic feet per second

* The streamflow thresholds set forth above are the daily mean streamflows recorded at the applicable USGS gauge. Should the reliability of flow measurements at the Ipswich Gauge Station be so impaired as to question its accuracy, the Modified Permit holder may request for the Department's review and approval, that the trigger mechanism be transferred to the USGS South Middleton Gauge #01101500. The implementation of restrictions will be triggered by the same cfsm values that translate to a flow of 24.9 cfs for voluntary restrictions, and 18.7 cfs for mandatory restrictions. Should the Department become aware of

concerns about the reliability of either gauge, it may, upon immediate notification to the Modified Permit holder, transfer the measurement point to an alternate gauge. The Department reserves the right to modify the above table to use a different gauge.

Required Actions, voluntary or mandatory, require the filing of a public notice that shall appear at a minimum in a local newspaper within 5 business days of the date that the required action is triggered. A copy of each notice as published shall be forwarded to the Department within 10 business days of publication. Each notice shall at a minimum include:

1. the streamflow value triggering the required notification;
2. the need to limit water use, especially nonessential outside water use, to protect streamflows for aquatic life and to ensure a sustainable drinking water supply;
3. ways individual homeowners can limit water use, especially nonessential outside water use; and
4. in the case of mandatory restrictions, the details of what those restrictions are and the penalties for violating those restrictions.

At a minimum, the mandatory restrictions shall limit nonessential outside water use to hand held hoses only and include hourly restrictions on nonessential outside water use. At a minimum, hourly restrictions shall avoid water use during the hours 9 a.m.-5 p.m. when evapotranspiration rates are typically the highest. Notwithstanding the foregoing, irrigation of public parks and recreational fields by means of automatic sprinklers equipped with moisture sensors or similar control technology may be permitted outside of the hours 9 a.m. to 5 p.m. For purposes of this Modified Permit, the term nonessential outside water use is defined to include those uses that do not have health or safety impacts, are not required by regulation, and are not needed to meet the core functions of a business or other organization. Mandatory restrictions shall be enforceable thru the assessment of penalties or the imposition of fines.

The mandatory restrictions required herein shall remain in effect, until streamflow exceeds for seven consecutive days the limits set forth in the table above.

In order to evaluate the effectiveness of the restrictions on nonessential outside water use, the Department requires that the Board submit along with the Annual Statistical Report a report documenting all actions taken by the Board and the cities of Salem and Beverly to implement and enforce the restrictions on nonessential outside water use, including without limitation the dates the restrictions on nonessential outside water use were in place, the streamflow threshold that triggered the restrictions, the restrictions imposed, and all actions by the Board, Salem and/or Beverly to enforce the restrictions including the names and addresses of those against whom action was taken and any fines or penalties imposed.

6. Ipswich River Basin Performance Standards

Beginning calendar year 2004, the cities of Salem and Beverly shall each meet the following performance standards (the "Ipswich River Basin Performance Standards").

Performance Standard for Unaccounted for Water

Unaccounted for water shall not exceed 10% of overall water use.

The Annual Statistical Report for the Board and for the cities of Salem and Beverly shall each provide a detailed assessment of the volume of unaccounted for water. Unaccounted for water is defined by the Massachusetts Water Resources Commission as the difference between water pumped or purchased and water that is metered or confidently estimated. Unaccounted for water shall include water that cannot be accounted due to meter problems, unauthorized hydrant openings, unavoidable leakage, recoverable leakage, illegal connections, stand pipe overflows and fire protection.

The need for water main flushing and the use of water in construction or meter calibration shall be metered or estimated as appropriate in determining actual demand. Volumes flushed to waste shall be reported on the Annual Statistical Report.

Performance Standard for Residential Per Capita Water Use

Residential Per Capita Water Use shall not exceed 65 gallons per day.

The cities of Salem and Beverly shall each report the residential gallons per capita per day (rgpcd) and the calculation used to derive that figure as part of the Annual Statistical Report. The rgpcd is the total volume of residential water use in gallons divided by the population served. The source of the data used to establish the service population and the year in which the data was developed shall be provided. If Salem and/or Beverly fail to meet the performance standard for keeping residential per capita water use at or below 65 gallons per day, the Department may require the implementation of restrictions on nonessential outside water use that are more stringent than the restrictions set forth in Special Condition # 5.

Performance Standard for Seasonal Water Use

Total water use in Salem between May 1st and September 30th shall not exceed the seasonal cap of 922.59 million gallons. Consistent with this cap, water use in Salem shall be kept at or below an average daily volume of 6.03 MGD from May 1st thru September 30th.

Total water use in Beverly between May 1st and September 30th shall not exceed the seasonal cap of 823.14 million gallons. Consistent with this cap, water use in Beverly shall be kept at or below an average daily volume of 5.38 MGD from May 1st thru September 30th.

If the seasonal cap for Salem and/or Beverly is exceeded, the Department may require the implementation of restrictions on nonessential outside water use that are more stringent than those set forth in Special Condition #5.

7. Enhanced Water Conservation Plan

If, in any year beginning with calendar year 2004, Salem and/or Beverly fail to comply with the Performance Standard for Residential Per Capita Water Use and/or Seasonal Water Use, the noncomplying city shall develop an enhanced water conservation plan for the following year. For any year in which an enhanced water conservation plan is required, a report documenting all actions taken to implement that plan shall be submitted along with the Annual Statistical Report.

The enhanced water conservation plan may include without limitation the items listed below:

- Adoption and enforcement of an ordinance or other regulation to require moisture sensors or similar control technology on automatic sprinklers;
- Adoption and enforcement of an ordinance or other regulation to limit the amount of land clearing for the creation of lawns;
- Irrigation of recreational fields and public parks in accordance with the Water Resource Commission's May 2002 Guide to Lawn and Landscape Water Conservation;
- Encouragement of the use of cisterns or rain barrels for outside watering thru the use of a rebate or at cost program;
- Enhanced public education outreach; and/or
- Purchase and/or development of out-of-basin sources.

At a minimum, the enhanced water conservation plan shall meet the requirements set forth below.

- If Salem and/or Beverly fail to comply with the performance standard for keeping residential per capita water use at or below 65 gallons per day, the enhanced water conservation plan shall include the implementation in the noncomplying city of a program to make water saving devices such as faucet aerators, low flow shower heads and toilet displacement bottles/dams available to customers at cost and to provide rebates or other incentives for low flow appliances (washing machines, dishwashers, and toilets) and the installation of moisture sensors or similar control technology on irrigation systems.
- Any enhanced water conservation plan required by this Modified Plan shall include (1) submission of a report that evaluates the effectiveness of an increasing block rate or a seasonal rate as a tool for encouraging water conservation, (2) implementation of any changes to the current rate structure that will encourage water conservation and (3) notification to the Department of the changes along with the reasons for the changes.

8. Control of Unaccounted for Water

At a minimum, the Board, Salem and Beverly shall take the actions listed below to meet the performance standard for keeping unaccounted for water at or below 10%.

Metering

Salem (1996) and Beverly (2000-2001) report that each city replaced all residential meters and that each city has an existing program for the replacement of the meters serving its large customers (customers with meters greater than 2 inches). Salem and Beverly shall continue to implement its existing meter replacement program. The Board, Salem and Beverly shall submit along with the Annual Statistical Report a report documenting all actions taken to implement the meter replacement program and to ensure that all service meters accurately (within 2%) measure the volume of water used.

The City of Beverly shall complete the installation of meters in all public buildings. On or before December 31, 2003, the City of Beverly shall submit a report documenting that all public buildings have been metered and the date the meter was installed.

The Board, Salem and Beverly shall calibrate all master meters at least annually.

Leak Detection

At a minimum, Salem and Beverly shall each conduct a full leak detection survey every three years. Salem and Beverly shall also conduct a full leak detection survey in any calendar year that the unaccounted for water as reported on the Annual Statistical Report for the prior calendar year exceeds 10% or increases by 5% (for example, from 3% to 9%) or more over the unaccounted for water reported on the Annual Statistical Report for the previous calendar year. On or before December 31 of any calendar year in which a leak detection survey takes place, a report shall be submitted to the Department detailing the leak detection survey, any leaks uncovered as a result of the survey or otherwise and the estimated water savings as a result of the repair. On or before December 31, 2003, the City of Salem shall submit a report on the leak detection survey scheduled for calendar year 2003.

Leak Repair

Salem and Beverly shall have repair reports available upon request for inspection by the Department.

Leaks are to be fixed as soon as possible, including leaks in any water pipes up to the service meters. In no event shall any leak remain unrepaired for more than seven days after detection.

Water Audit

If, in any year beginning calendar year 2004, the difference between the quantity of the raw water entering the Board's treatment plant and the quantity of the finished water entering the distribution system from the treatment plant exceeds 5%, the Board shall submit to the Department for its review and approval a scope of work and schedule for conducting a water audit of the treatment plant by December 31st of the following year. The scope of work shall call for the Board to evaluate operations at the treatment plant and recommend actions that can save water during the treatment process and propose a schedule for implementing those actions. Thereafter, the Board shall complete the water audit in accordance with the scope of work and schedule approved by the Department and submit to the Department for its review and approval a report documenting the results of the water audit including a plan and schedule for reducing the volume of water lost during the treatment process. The Board shall implement the actions recommended in the water audit report approved by the Department in accordance with the schedule approved by the Department.

9. Reporting Requirements

Beginning June 1, 2003, the Board shall submit monthly the volumes withdrawn daily from the Ipswich River Diversion Canal (3258000-04S) and the mean daily streamflow for that day.

The Board shall also report both the raw and finished water volumes for the entire water system. For individual water sources in the system, raw water volumes must also be reported.

10. Commercial, Industrial, and Institutional Conservation Program

Salem and Beverly shall each implement a program to reduce water use by its ten largest industrial, institutional and commercial customers. On or before March 1, 2005, each city shall report on the effectiveness of this program. Upon receipt of this program, the Department will take whatever action it deems appropriate to promote the interests of the Water Management Act including without limitation requiring additional actions to reduce commercial, institutional, and industrial water use.

11. Operation and Maintenance of the Canal

On or before July 16, 2003, the Board shall submit to the Department for its review and approval a plan for maintaining the area surrounding the canal by removing vegetation, mowing, dredging, cutting trees or otherwise altering the wetlands. Thereafter, the Board shall implement the maintenance plan as approved by the Department.

12. General Conservation Requirements

Pricing

Salem and Beverly shall each ensure that water supply system operations are fully funded by water supply system revenues. The pricing system should at least reflect the full cost of supplying water, including but not limited to:

- Administrative costs;
- Staff salaries, benefits, insurance and pension costs;
- Distribution system operation, maintenance and repair, including leak detection and repair costs and metering costs;
- Pumping costs and utilities;
- Treatment costs;
- Capital replacement costs, capital depreciation and debt service;
- Costs incurred by the public water system for water conservation programs and public education programs;
- Watershed purchase and/or protection costs and land acquisition; and
- Emergency planning.

Plumbing

Each city shall enforce the March 1, 1989 plumbing code for new construction and building rehabilitation requiring installation of water saving devices and low flow toilets.

On or before December 31, 2003, Salem and Beverly shall submit a report that identifies all public buildings, previous actions to retrofit public buildings with water saving devices, and a schedule for completing by January 1, 2005 the retrofit of any buildings not equipped with water saving devices.

On or before January 1, 2005, Salem and Beverly shall each complete the retrofit of its public buildings with water saving devices, including but not limited to faucet aerators, low flow

shower heads, toilet displacement bottles/dams, low flow toilets, and automatic shut off faucets. and submit a report documenting that it has completed the retrofit of all public buildings.

Education

Each city shall continue its current public education efforts that include: distribution of information on water conservation, lawn care and gardening, and staff available upon request to communities groups. Each city's public education program shall continue to emphasize:

- all the costs of providing water;
- that investments in efficiency and conservation will provide consumers with long-term savings;
- how water use fluctuates throughout the year; and
- the environmental benefits of conserving water

Bill stuffers with water conservation tips or water saving messages shall, at a minimum, be included annually with customer's water bills, or as a separate mailing. Copies of this information shall be made available to the Department upon request.

GENERAL CONDITIONS

- Duty to Comply** The permittee shall comply at all times with the terms and conditions of this Modified Permit, the Act and all applicable State and Federal statutes and regulations.
- Operation and Maintenance** The permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw up to the authorized volume so as not to impair the purposes and interests of the Act.
- 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 Modified Permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.
- Water Emergency** Withdrawal volumes authorized by this Modified 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.
- Transfer of Permits** This Modified 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.
- Duty to Report** The permittee shall submit annually, on a form provided by the Department (the Annual Statistical Report), a certified statement of the withdrawal, such report to be received by the Department by February 28th of each year. Such report must be mailed or hand delivered to:

Department of Environmental Protection
Water Management Program
One Winter Street, 6th Floor
Boston, MA 02108

7. **Duty to Maintain Records** The permittee shall be responsible for maintaining monthly withdrawal records.
8. **Metering** All withdrawal points included within this Modified Permit shall be metered. Meters shall be calibrated annually.

APPEAL RIGHTS AND TIME LIMITS

This permit modification is a decision of the Department. Any person aggrieved by this decision may request an adjudicatory hearing under the provisions of M.G.L.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 Modified Permit shall be validly filed unless a copy of the request is sent by certified mail, or delivered by hand to the local water resources management official in the city or town in which the withdrawal point is located; and for any person appealing this decision, who is not the permit holder, unless such person notifies the permit holder 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

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. For any person appealing this decision who is not the permit holder, the request shall include a clear and concise statement of how that person is aggrieved by the issuance of this Modified 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 that support the claim of undue hardship.

NO WITHDRAWAL AUTHORIZED HEREIN SHALL EXCEED THE SAFE YIELD OF THE BASIN AS DETERMINED BY THE DEPARTMENT.

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.