

September 18, 2009

Mr. David A. DeLorenzo, Deputy Director  
MADEP Division of Municipal Services  
One Winter Street – 6<sup>th</sup> Floor  
Boston, MA 02108

Re: SRF Project Evaluation Form – **Harvard Town Center Sewer Low-Pressure Sewer Project  
and Wastewater Treatment Facility Upgrade**

Dear Mr. DeLorenzo:

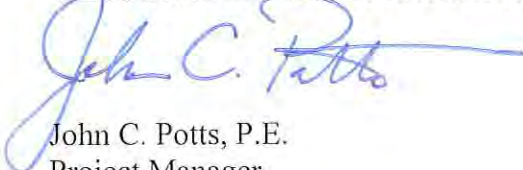
On behalf of the Town of Harvard, Weston & Sampson Engineers, Inc., in conjunction with Norfolk-Ram Group, LLC, hereby submits a Project Evaluation Form (PEF) for the Harvard Town Center Low-Pressure Sewer Project and Wastewater Treatment Facility Upgrades. The Town is respectfully requesting financial assistance through the Clean Water State Revolving Loan Fund Program (CWSRF) and to be included on the forthcoming Intended Use Plan (IUP).

Enclosed, please find one paper copy and one CD with a PDF file of the completed PEF application with supporting documentation for your review.

If you have any questions or require additional information, please contact me at (978) 532-1900.

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.



John C. Potts, P.E.  
Project Manager

Enclosures

cc: Timothy Bragan, Harvard Town Administrator  
Wayne Perry, Norfolk-Ram Group, LLC  
Paul Anderson, DEP-CERO

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**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL  
PROTECTION**

**CLEAN WATER STATE REVOLVING FUND (CWSRF)  
CALENDAR YEAR 2010 PROJECT EVALUATION FORMS**

**TOWN OF HARVARD, MASSACHUSETTS**

**PROJECT NO.**

**DESCRIPTION**

<b>01.</b>	<b>HARVARD TOWN CENTER LOW-PRESSURE SEWER PROJECT &amp; WASTEWATER TREATMENT FACILITY UPGRADES</b>
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*PREPARED BY:*

*WESTON & SAMPSON ENGINEERS, INC.*

*AND*

*NORFOLK-RAM GROUP, LLC*

*SEPTEMBER 18, 2009*



**Massachusetts Department of Environmental Protection  
Bureau of Resource Protection  
Division of Municipal Services  
Clean Water State Revolving Fund (CWSRF)  
2010 Project Evaluation Form**

Town of Harvard

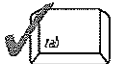
LGU

01 and 02

Project No. (from Item 4 of Part I)

**Part I - Proponent and Project Identification and Certification**

**Important:**  
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**1. Local Governmental Unit (LGU)**

Town of Harvard

City, Town, or District Name

Timothy Bragan

Authorized Representative: Name

046001174

Federal Employer Identification Number

Town Administrator

Title

Mailing Address:

13 Ayer Road

Street Address

Harvard

City

Massachusetts

State

01451

Zip Code

(978) 456-4100

Telephone

(978) 456-4107

Fax

tbragan@harvard.ma.us

E-mail address

**2. LGU Contact Person (If different from Item 1)**

Name

Title

Mailing Address:

Street Address

City

State

Zip Code

Telephone

Fax

E-mail address

**3. Engineer or Consulting Firm**

Weston & Sampson Engineers, Inc.

Firm/Agency

042601194

Federal Employer Identification Number

John C. Potts, P.E.

Contact Person

Mailing Address:

5 Centennial Drive

Street Address

Peabody

City

Massachusetts

State

01960

Zip Code

(978) 532-1900, ext. 2433

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E-mail address



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection  
Division of Municipal Services  
Clean Water State Revolving Fund (CWSRF)  
**2010 Project Evaluation Form**

Town of Harvard  
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**Part I - Proponent and Project Identification and Certification (cont.)**

4. Project Identification

Identify the project(s) for which you are seeking financial assistance. IMPORTANT: If more than one project, number the projects sequentially, and attach separate Part II and Part III forms for each project. Use Part IIA for Construction projects; Part IIB for Planning projects.

No.	(P)lanning or (C)onstruction	Name/brief description of project (If a planning project indicate type – Comprehensive Wastewater Management Plan, Project Evaluation Report, Stormwater Management Plan, etc.)	River Basin(s)
01	C	Town Center Low-Pressure Sewer Project	Nashua River
02	C	Harvard WWTF Upgrades	Nashua River
03			
04			

5. Is proposed project or a portion of the project a recommendation of an approved Source Water Assessment and Protection (SWAP) report? ☒ Yes ☐ No

**6. Certification**

To the best of my knowledge and belief the information provided on this form and the accompanying forms and attachments is true, correct, and complete; and I am authorized to file this form on behalf of the below-named LGU.

Town of Harvard  
Local Governmental Unit

Timothy Bragan

Typed Name

Signature

Town Administrator

Title

Date



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection  
Division of Municipal Services  
Clean Water State Revolving Fund (CWSRF)  
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**Part II A - Project Schedule and Costs for Construction Projects**

1. Funding Authorization

Has local funding been authorized?

☒ Yes ☐ No

(If yes, attach copy of appropriate document.)

May 2009

\$2,000,000 (see Appendix B)

If yes, date of authorization

Amount authorized

If no, planned date for authorization

2. Project Schedule (Indicate projected dates in mm/dd/yy format.)

(For steps already accomplished, follow the date with the letter "A" to indicate an actual date.)

	Start	Finish
Planning (If planning has been completed, provide title and date of report.)	08/09	09/09
Design (Preparation of project plans and specifications.)	11/01/09	02/01/10
Permitting and Environmental Review	01/01/10	02/01/10
Construction/Implementation	05/01/10	05/31/11
Loan Application Submittal date: 04/15/10		

3. Project Costs (State estimated costs in \$1000s)

		Total Cost	Eligible Cost
<i>Attach an explanation of the basis of the cost estimate and reference the source of data. DMS recommends use of ENR Index of 8795.</i>	Construction		
	Contract No. 01	\$1,107	\$1,107
	Contract No. 02	\$405	\$405
	Contract No.		
	Total Construction:	\$1,512	\$1,512
	Construction Contingency:	\$151	\$151
<i>If the project includes costs for police traffic details, provide an explanation and detailed breakdown of the estimate.</i>	Construction Services:	\$337	\$337
	Police Traffic Detail:		
	Total:	\$2,000	\$2,000



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**Part II A - Project Schedule and Costs for Construction Projects (cont.)**

4. Other Assistance

Are you seeking, or have you been awarded, a loan and/or grant from another program for this project or a portion thereof? ☐ Yes ☒ No

Loan/Grant Program	Type of Assistance	Amount Requested	Amount Received
Federal	_____	_____	_____
State	_____	_____	_____
Regional	_____	_____	_____
Private	_____	_____	_____
Other	_____	_____	_____

**Part II B - Project Schedule And Costs For Planning Projects**

1. Funding Authorization

Has local funding been authorized? (If yes, attach copy of appropriate document.)

☐ Yes ☐ No

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Project Schedule (Indicate projected dates in mm/dd/yy format.)

(For steps already accomplished, follow the date with the letter "A" to indicate an actual date.)

	Start	Finish
Selection of consultant ("finish" date = date Engineering contract executed)	_____	_____
Preparation of Scope of Work ("finish" date = date Scope submitted to DEP)	_____	_____
Planning ("finish" date = date draft CWMP, PER, etc. submitted to DEP)	_____	_____
Loan Application Submittal date:	_____	_____

3. Project Costs (State Estimated Eligible Cost In \$1000s)

Total Eligible Cost: \_\_\_\_\_

4. Other Assistance

Are you seeking, or have you been awarded, a loan and/or grant from another program for this project or a portion thereof? ☐ Yes ☐ No



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**Part II B - Project Schedule And Costs For Planning Projects (cont.)**

Loan/Grant Program	Type of Assistance	Amount Requested	Amount Received
Federal	_____	_____	_____
State	_____	_____	_____
Regional	_____	_____	_____
Private	_____	_____	_____
Other	_____	_____	_____

NOTE: The Department understands that the purpose of undertaking a planning project is to try to identify the nature and extent of the water quality and public health problems, then to recommend solutions. At the planning stage, it may be unlikely that you have a good understanding of the situation. Consequently, not all of the criteria listed within the Project Evaluation Form may apply to your planning project. Please address all that apply and include a copy of relevant sections of any reports that you may have completed.

**Part III - Project Narrative Checklist**

**A. Project Summary – Description, Objectives, and Planning Basis**

Refer to the Instructions and Guidance. Use the checklist to confirm that the project narrative has adequately described the project and its benefits. (Check)

Project objectives; documentation of public health and water quality issues to be addressed. ☒

Scope of project, key facilities or tasks; environmental and public health benefits. ☒

Identification of project area, site plan/project map. ☒

Planning basis of project; copy of pertinent pages of approved planning document. ☒

Basis of cost estimate; engineer's estimate for construction projects ☒

**B. Public Health Criteria**

Item No.	Pts	1. What is the cause of the environmental/ public health problem project will address?	(Check)	Page Number in Narrative	Attachment ID & Page No.
1	3	Contaminated stormwater	<input type="checkbox"/>	_____	_____
2	4	Illicit connection to stormwater system	<input type="checkbox"/>	_____	_____
3	5	Combined Sewer Overflows >20/year	<input type="checkbox"/>	_____	_____
	4	11 – 20/year	<input type="checkbox"/>	_____	_____
	3	1 – 10/year	<input type="checkbox"/>	_____	_____



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**Part III - Project Narrative Checklist (cont.)**

Item No.	Pts	1. What is the cause of the environmental or public health problem project will address?	(Check)	Page Number in Narrative	Attachment ID & Page No.
4	2 or 5	Widespread septic system failure	<input checked="" type="checkbox"/>	1 to 4	B
5	5	Raw sewage back-up from municipal system	<input type="checkbox"/>		
6	5	Sanitary Sewer Overflow > 3/year	<input type="checkbox"/>		
	4	3/year	<input type="checkbox"/>		
	3	1 - 2/year	<input type="checkbox"/>		
7	1	Water pollution related odor problem	<input type="checkbox"/>		
8	2	Landfill leachate (if exceeds MCL)	<input type="checkbox"/>		
9	2	POTW malfunction, i.e. inadequate disinfection	<input type="checkbox"/>		
10	1-3	Other	<input type="checkbox"/>		
<b>II. What is the nature of the resource affected? (Check)</b>					
11	5	Public drinking water supply	<input checked="" type="checkbox"/>	1 to 4	A and B
		Is alternate supply available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (No +1)		1 to 4	B
12	5	Private drinking water supply	<input checked="" type="checkbox"/>	1 to 4	B
		Is alternate supply available? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> (No +1)			
13	4	Private homes	<input checked="" type="checkbox"/>	1 to 4	B
14	4	Public streets or parklands	<input type="checkbox"/>		
15	3	Swimming beaches	<input checked="" type="checkbox"/>	1 to 4	B
16	2	Boating areas	<input checked="" type="checkbox"/>	1 to 4	B
17	1	Sensitive population affected	<input type="checkbox"/>		
18	3	Population affected >10,000	<input type="checkbox"/>		
	2	25 - 9,999	<input checked="" type="checkbox"/>	2	B
	1	1 - 24	<input type="checkbox"/>		
19	1-3	Other	<input type="checkbox"/>		





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Project No. (from Item 4 of Part I)

**Part III - Project Narrative Checklist (cont.)**

**C. Environmental Criteria**

Item No.	Pts	I. What is the nature of the environmental problem encountered?	(Check)	Page Number in Narrative	Attachment ID & Page No.
20	3	NPDES limits exceeded	<input type="checkbox"/>		
21	3	Aquatic toxicity	<input type="checkbox"/>		
22	2	Nutrients	<input checked="" type="checkbox"/>	5	B
23	2	Dissolved oxygen	<input type="checkbox"/>		
24	1	Temperature	<input type="checkbox"/>		
25	2	Bacteria	<input checked="" type="checkbox"/>	5	B
26	2	Turbidity	<input type="checkbox"/>		
27	1	Noxious aquatic plants	<input type="checkbox"/>		
28	1	Aesthetics	<input type="checkbox"/>		
29	1-3	Other	<input type="checkbox"/>		

Item No.	Pts	II. What environmental resource(s) is affected?	(Check)	Page Number in Narrative	Attachment ID & Page No.
30	3	Public water supply – Surface Zone A	<input type="checkbox"/>		
31	3	Public water supply – Groundwater Zone I	<input type="checkbox"/>		
32	2	Outstanding Resource Water (ORW)	<input type="checkbox"/>		
33	2	Area of Critical Environmental Concern (ACEC)	<input type="checkbox"/>		
34	2	Public water supply – Surface Zone B	<input type="checkbox"/>		
35	2	Public water supply – Groundwater Zone II	<input type="checkbox"/>		
36	2	Commercial fishery	<input type="checkbox"/>		
37	2	Endangered species habitat	<input type="checkbox"/>		



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Project No. (from Item 4 of Part I)

**Part III - Project Narrative Checklist (cont.)**

**C. Environmental Criteria (cont.)**

Item No.	Pts	II. What environmental resource(s) is affected? (cont.)	(Check)	Page Number in Narrative	Attachment ID & Page No.
38	2	Sole source aquifer	<input type="checkbox"/>	_____	_____
39	2	Ocean Sanctuary	<input type="checkbox"/>	_____	_____
40	1	Recreational fishery / shellfish area	<input type="checkbox"/>	_____	_____
41	1	Federally designated river (scenic, historic, etc.)	<input type="checkbox"/>	_____	_____
42	1-3	Other _____	<input type="checkbox"/>	_____	_____

**D. Project Effectiveness**

Item No.	Pts	I. How and to what extent will the project eliminate or mitigate the problem?	(Check)	Page Number in Narrative	Attachment ID & Page No.
		Reduces violations of water quality standards	<input checked="" type="checkbox"/>	1 to 4, 6	B
		Restores designated uses	<input checked="" type="checkbox"/>	1 to 4, 6	B
		Reduces potential adverse impacts to sensitive resources	<input checked="" type="checkbox"/>	1 to 4, 6	B
		Protects designated uses	<input checked="" type="checkbox"/>	1 to 4, 6	B
		Reduces or eliminates public health problems/nuisances	<input checked="" type="checkbox"/>	1 to 4, 6	B
		Protects public health resources from contamination	<input checked="" type="checkbox"/>	1 to 4, 6	B
		Other _____	<input type="checkbox"/>	_____	_____
43	30	Project substantially eliminates or mitigates problem	<input checked="" type="checkbox"/>	1 to 4, 6	B
	15	Project moderately mitigates problem	<input type="checkbox"/>	_____	_____
	0	Project minimally mitigates problem	<input type="checkbox"/>	_____	_____



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Project No. (from Item 4 of Part I)

**Part III - Project Narrative Checklist (cont.)**

**E. Program and Implementation Criteria**

Item No.	Pts	I. Consistency with EOE/DEP Watershed Management Plans or priorities	(Check)	Page Number in Narrative	Attachment ID & Page No.
44		Implements a recommendation within: (cont.)			
	35	- a CWMP/EIR (if necessary) that has completed review through MEPA.	<input type="checkbox"/>		
	30	- a TMDL (case specific) or CEP.	<input type="checkbox"/>		
	25	- a TMDL (case specific), PER, SSES, Stormwater Management Plan, or CWMP/EIR (if necessary) if DEP has indicated support and few if any serious issues need to be addressed.	<input checked="" type="checkbox"/>	7	B
	20	- a Water Quality Assessment Report, Diagnostic/ Feasibility Study or EOE/ Watershed Management Plan that specifically identifies the project.	<input type="checkbox"/>		
	15	- a Local Planning Study or CWMP/EIR (if necessary) if greater than 15 years old or if recently submitted DEP but comments have not yet been made.	<input checked="" type="checkbox"/>	7	B
45		II. Compliance and Enforcement			
	10	Project achieves compliance with enforcement order.	<input type="checkbox"/>		
	8	Maintains permit compliance level.	<input checked="" type="checkbox"/>	7	B
	6	Achieves voluntary compliance (violation w/no order).	<input checked="" type="checkbox"/>	7	B
46		III. Multi-community, regional or basin solution			
	8	Project substantially addresses regional problem.	<input type="checkbox"/>		
	6	Project includes significant I/I reduction or stormwater recharge.	<input type="checkbox"/>		
	4	Project moderately addresses regional problem.	<input type="checkbox"/>		
	2	Project includes significant I/I or stormwater recharge.	<input type="checkbox"/>		
47		IV. Innovative/Alternative Technology			
	2	Project utilizes DEP-approved I/A technology.	<input type="checkbox"/>		



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**Part III - Project Narrative Checklist (cont.)**

**E. Program and Implementation Criteria**

Item No.	Pts	(Check)	Page Number in Narrative	Attachment ID & Page No.
48	2	<b>V. Pricing System under MGL c. 40, s.39J</b>		
		Certification attached	<input type="checkbox"/>	8 B

49. What is the score from the Commonwealth Capital Application for your community? Please provide the score (and a copy of the submitted application).

Anticipated score = 51 (see Appendix C for a copy of Harvard's Commonwealth Capital Application)

**F. Energy**

Item No.	Pts	<b>I. How and to what extent will the project include an energy efficiency or renewable energy resource?</b>	(Check)	Page Number in Narrative	Attachment ID & Page No.
50	2	Project includes recommendation within an energy audit.	<input type="checkbox"/>		
51	10	Project provides substantial energy efficiency.	<input type="checkbox"/>		
	5	Project provides moderate energy efficiency.	<input checked="" type="checkbox"/>	8	B
	2	Project provides nominal energy efficiency.	<input type="checkbox"/>		
52	10	Project provides substantial renewable energy.	<input type="checkbox"/>		
	5	Project provides moderate renewable energy.	<input type="checkbox"/>		
	2	Project provides nominal renewable energy.	<input type="checkbox"/>		

Applicants can submit their completed Commonwealth Capital Application to: Massachusetts Office for Commonwealth Development, Attn: Commonwealth Capital, 100 Cambridge St., Boston, MA 02114

**G. Threshold Criteria**

Item	An affirmative answer to either question below will disqualify the project from review.	(Yes/No)
53	Indicate whether and to what extent the capacity to be provided by the project duplicates existing treatment or disposal capacity already available at an economic cost within the relevant region	No
54	Identify and describe the extent of any potential negative impacts to water quality, water quantity, or to the public health directly attributable to the project, and assess whether and to what extent any such negative impacts outweigh the project's environmental and/or public health benefits.	No

**2010 PROJECT EVALUATION FORM  
TOWN OF HARVARD**

Harvard Town Center Low-Pressure Sewer Project & Wastewater Treatment Facility Upgrades

**PART III – PROJECT NARRATIVE**

**A. PROJECT SUMMARY**

**I. Project Objectives:**

One of the objectives of this project is to reduce the threat of groundwater pollution and pollution of the town's public water supply and private wells due to aged and failing on-lot septic systems and increase the existing septic capacity of the properties in the Harvard Town Center. The Town Beach located off of Pond Road in Harvard is also at risk of contamination due to failing septic systems. Threats posed by sanitary waste disposal include septic system failures, poor system maintenance and hazardous material/waste disposal from those systems. Untreated contaminants can make their way into groundwater or find more direct pathways into subsurface water system components. Contaminants associated with septic systems include any chemicals placed into the septic systems as well as nutrients (nitrogen/phosphorous) and microbes such as E.coli. Nutrients associated with septic systems are common culprits in the degradation of groundwater and surface water quality. In 2001, the Massachusetts Department of Environmental Protection (DEP) completed a Source Water Assessment and Protection (SWAP) report that identified the need for drinking water protection.

Presently, only the Bromfield School, the Harvard Elementary School and the Town Library discharge to an existing wastewater treatment facility (WWTF). All other properties rely on on-site septic systems for their sanitary waste disposal. Many of these existing septic systems are failing or have failed a Title 5 inspection and are under orders by the Harvard Board of Health to connect to a public sewer, if one were to become available. Over 40% of the properties in the Town Center are served by septic systems installed prior to the 1978 Title 5 code. An additional 14% of the properties in the Town Center are served by septic systems that were installed after 1978 but before the 1995 Title 5 code changes. Documentation of the failed septic systems is included herein as part of Appendix B.

As presented in the *Comprehensive Source Protection Plan – Pond Road and Bolton Road Wells – Harvard, Massachusetts*, dated June 2006 (rev. July 2006) and prepared for the town, existing septic systems were identified as a potential source of contamination with a threat ranking of “**Moderate-High**.” This report also recommended that the town continue to explore options to improve the efficiency of the existing WWTF and provide sewer service in the Town Center.

In addition to reducing the threat of groundwater contamination and contamination of the town's public water supply, by increasing the Town Center's septic capacity with a new municipal low-pressure sewer system, the town will be able to:

- Reduce limitations on the use and/or expansion of the Center's municipal buildings and institutions to the goals and requirements of the town.
- Eliminate the need for unsightly “mounded” on-site septic systems to meet current Title 5 wastewater regulations for municipal, institutional, or residential properties.

**2010 PROJECT EVALUATION FORM  
TOWN OF HARVARD**

**Harvard Town Center Low-Pressure Sewer Project & Wastewater Treatment Facility Upgrades**

**PART III – PROJECT NARRATIVE**

- Reduce the town's limitations on its ability to attract new businesses to the Town Center.

An additional objective of this project will be to improve the efficiency of the existing WWTF. As previously mentioned, two schools and the library are connected to the existing WWTF. The WWTF was designed and approved by the DEP in 2001 for a design flow of 23,000 gallons per day (gpd). Actual average daily wastewater flows, however, are in the range of approximately 5,000 gpd with a peak average daily flow of approximately 6,500 gpd. Low flows and seasonally fluctuating flows currently cause the WWTF to operate in an inefficient and costly manner. Problems include clogging of the media filter and reduction in the denitrification process. These factors result in high nitrogen concentrations in the effluent. This project includes upgrades to the existing WWTF to address these issues. Also, with the addition of wastewater flows from the Town Center properties to the WWTF and the proposed WWTF upgrades, operation of the WWTF will improve.

**II. Project Area:**

The Town of Harvard is located in Worcester County. It is situated approximately 32 miles west of Boston and 22 miles northeast of Worcester. It has a geographic area of approximately 27 square miles and population of 5,741 people. The town is bordered by Ayer, Bolton, Boxboro, Lancaster, Littleton, Shirley, and Stow. Routes 2 and 495 run through the town, and the Nashua River forms its western boundary.

The following streets comprise the proposed sewer service area for the Town Center sewer project: Ayer Road, Cross Street, Elm Street, Fairbanks Street, Littleton Road, Massachusetts Avenue, Old Boston Turnpike, Old Littleton Road, Pond Road, and Still River Road. Appendix A includes a figure that identifies the proposed project area and the proposed new low-pressure sewer system.

The scope of the proposed low-pressure sewer project includes approximately 8,000 linear feet (lf) of new 1 ½-, 2- and 3-inch polyvinyl chloride (PVC) low-pressure sewers and appurtenances.

The following table presents a summary of the streets and approximate linear footage of the proposed low-pressure sewer system.

**2010 PROJECT EVALUATION FORM  
TOWN OF HARVARD**

Harvard Town Center Low-Pressure Sewer Project & Wastewater Treatment Facility Upgrades

**PART III – PROJECT NARRATIVE**

<b>STREET</b>	<b>LENGTH (LF)</b>
Ayer Road	450
Cross Street	500
Elm Street	600
Fairbanks Street	2,000
Littleton Road	300
Massachusetts Avenue	700
Old Boston Turnpike	700
Old Littleton Road	400
Pond Road	850
Still River Road	1,200
Cross-country to Public Library	300
<b>TOTAL</b>	<b>8,000</b>

The environmental benefit anticipated from the implementation of this project would be the potential mitigation of the threats of pollution and the reduction of nutrient loading of the groundwater and the threats of pollution of the town's public water supply.

As shown on the figure in Appendix A, the majority (i.e – greater than 50%) of the lots in the proposed service area are developed and have been in existence prior to July 1, 1995. Projected wastewater flows from the proposed service area are based on existing water use records.

Since the majority of the properties in the proposed service area are already developed and since the recommended sewer service option is low-pressure sewers, urban sprawl should not be an issue as a result of this project.

**III. Project Development and Planning:**

The project was developed from the report titled, *Project Engineering Report for the Harvard Town Center Sewer Project*, dated September 2009, and prepared by Norfolk Ram Group, LLC and Weston & Sampson Engineers, Inc. A copy of the report is included herein as Appendix B.

The project was also developed based on recommendations included in the *Comprehensive Source Protection Plan – Pond Road and Bolton Road Wells – Harvard, Massachusetts*, dated June 2006 (rev. July 2006) and the *Harvard Town Center Action Plan*, dated March 2005.

**2010 PROJECT EVALUATION FORM  
TOWN OF HARVARD**

Harvard Town Center Low-Pressure Sewer Project & Wastewater Treatment Facility Upgrades

**PART III – PROJECT NARRATIVE**

**B. PUBLIC HEALTH CRITERIA**

**I. Cause of Public Health Problem**

Failing septic systems in the Harvard Town Center present the threat of contamination of the groundwater, the town's public water supply, private wells, and the Town Beach. The DEP completed a SWAP report in 2001 that identified the need for drinking water protection in Massachusetts communities, including Harvard.

The Town Beach located off of Pond Road in Harvard is also at risk of contamination due to failing septic systems.

Refer to Appendix B for a summary of the failed and failing septic systems in the Harvard Town Center.

**II. Resources Affected**

Approximately 82 properties including numerous municipal facilities (Town Hall, Fire Department, Harvard Public Library, and The Hildreth House), two public schools (Harvard Elementary School and the Bromfield School) and local businesses in the Town Center that are either connected to the public water supply or are connected to private wells.

The Town Beach located off of Pond Road in Harvard is also at risk of contamination due to failing septic systems. The Town Beach is a designated swimming and recreational boating area that is maintained and monitored by the town.

All of these properties including the Town Beach will be protected from the threat of contamination by the provision of a municipal low-pressure sewer system.



**2010 PROJECT EVALUATION FORM  
TOWN OF HARVARD**

Harvard Town Center Low-Pressure Sewer Project & Wastewater Treatment Facility Upgrades

**PART III – PROJECT NARRATIVE**

**C. ENVIRONMENTAL CRITERIA**

**I. Nature of Problem**

There are potential adverse impacts to the public and private drinking water supplies and to the water quality of the Town Beach. Untreated contaminants from failed and/or failing septic systems can make their way into groundwater or find more direct pathways into subsurface water system components. Contaminants associated with septic systems include any chemicals placed into the septic systems as well as nutrients (nitrogen/phosphorous) and microbes such as E.coli. Nutrients associated with septic systems are common culprits in the degradation of groundwater and surface water quality. Appendix B of this submittal contains documentation of the failed and failing septic systems in the Town Center.

Low flows and seasonally fluctuating flows at the existing WWTF also currently cause the WWTF to operate in an inefficient and costly manner. Problems include clogging of the media filter and reduction in the denitrification process. These factors result in high nitrogen concentrations in the effluent discharge to the groundwater. The DEP has issued Notices of Noncompliance to the town based on their reviews of the monthly WWTF operating reports. Allowable permit effluent limits, as included in their existing groundwater discharge permit, were exceeded. The possible cause of this problem was a clogged media in the anoxic unit at the WWTF. Refer to Appendix B of this submittal for more detailed documentation on this issue.

**II. Environmental Resources Affected**

Existing wells on Pond Road are under the threat of contamination from failed and failing septic systems. The DEP has assigned an Interim Wellhead Protection Area (IWPA) for these wells. A copy of the IWPA are included on a figure in Appendix A.

**2010 PROJECT EVALUATION FORM  
TOWN OF HARVARD**

Harvard Town Center Low-Pressure Sewer Project & Wastewater Treatment Facility Upgrades

**PART III – PROJECT NARRATIVE**

**D. PROJECT EFFECTIVENESS**

**I. Extent to which Project will Mitigate Problem**

Water quality standards will improve greatly with the addition of a new municipal low-pressure sewer system and the elimination of failed and failing septic systems. Adverse impacts to the Town Beach will also be mitigated by the elimination of the failed and failing septic systems.

The proposed new wastewater flows to the existing WWTF from the Town Center properties in addition to the proposed upgrades at the WWTF, will improve the operation of the WWTF and mitigate violations of their existing groundwater discharge permit.

**II. Extent to which Project will Protect Designated Resources**

In addition to reducing the threat of groundwater contamination and contamination of the town's public water supply, by increasing the Town Center's septic capacity with a new municipal low-pressure sewer system, the town will be able to reduce limitations on the use and/or expansion of the Center's municipal buildings and institutions to the goals and requirements of the town. A new municipal low-pressure sewer system will also reduce the town's limitations on its ability to attract new businesses to the Town Center. Presently, there are limitations on the use of town-owned properties such as Town Hall and the Hildreth House due to the lack of septic capacity for these properties.

**III. Extent to which Project will Reduce/Eliminate Health Problems**

The project will eliminate failed and failing septic systems in the Harvard Town Center and reduce the chance of groundwater contamination and in turn reduce the chance of contamination of the public water supply and private wells.

**IV. Extent to which Project will Protect Public Health Resource**

Public and private drinking water supplies will be protected as a result of this project.

**2010 PROJECT EVALUATION FORM  
TOWN OF HARVARD**

Harvard Town Center Low-Pressure Sewer Project & Wastewater Treatment Facility Upgrades

**PART III – PROJECT NARRATIVE**

**E. PROGRAM AND IMPLEMENTATION CRITERIA**

**I. Consistency with EOE/DEP Watershed Management Plans or Priorities**

In 2001, the DEP completed a Source Water Assessment and Protection (SWAP) report that identified the need for drinking water protection in Massachusetts communities including Harvard.

As a result of the SWAP, the *Comprehensive Source Protection Plan – Pond Road and Bolton Road Wells – Harvard, Massachusetts*, dated June 2006 (rev. July 2006) was prepared for the town. As presented in this report, existing septic systems were identified as a potential source of contamination with a threat ranking of “**Moderate-High**.” This report also recommended that the town continue to explore options to improve the efficiency of the existing WWTF and provide sewer service in the Town Center.

In March 2005, the *Harvard Town Center Action Plan* was prepared for the town. This report also identified the need for a municipal sewer system as a solution to the Town Center’s limited septic capacity and to address the issue of failing septic systems.

Based on the recommendations of these two reports, Norfolk-Ram Group, LLC and Weston & Sampson, Engineers, Inc. has completed the *Project Engineering Report (PER) for the Harvard Town Center Sewer Project*. This includes the recommendation of providing a low-pressure sewer system for the Town Center and upgrades to the existing WWTF. A complete copy of this report is included herein as Appendix B.

**II. Compliance and Enforcement**

Upgrades to the existing WWTF will help the town meet the requirements of the WWTF’s existing groundwater discharge permit. The proposed work at the WWTF is a voluntary compliance upgrade to improve the operation and effluent discharge of the WWTF. The town is not currently under a DEP Administrative Consent Order to improve the operation of the WWTF.

**III. Multi-Community Approach to Identified Problem**

Not applicable.

**IV. Innovative/Alternative Technology**

Not applicable.

**2010 PROJECT EVALUATION FORM  
TOWN OF HARVARD**

Harvard Town Center Low-Pressure Sewer Project & Wastewater Treatment Facility Upgrades

**PART III – PROJECT NARRATIVE**

**E. PROGRAM AND IMPLEMENTATION CRITERIA (cont'd)**

**V. Sewer Service Pricing System**

The town is in the process of creating a sewer service pricing system. The PER, attached herein as Appendix B, includes a discussion on the proposed sewer service pricing system.

**F. ENERGY**

**I. Extent to which Project will Provide Energy Efficiency**

As presented in the *Project Engineering Report (PER) for the Harvard Town Center Sewer Project*, included herein as Appendix B, upgrades to the pump stations at the schools and upgrades at the existing WWTF will include replacing the existing pumps with new energy efficient pumps that will reduce the energy consumption.

**G. THRESHOLD CRITERIA**

**I. Duplication of Existing Treatment or Disposal Capacity**

This project is needed and does not duplicate existing treatment or disposal capacity already available in Harvard.

**II. Potential Negative Impacts to Water Quality, Quantity, or Public Health**

Construction for this project requiring excavation will be subject to all local, state, and federal permitting requirements. Therefore, any concern for potential negative impacts to water quality, quantity or to the public health as a result of this project is temporary in nature and is considered insignificant.

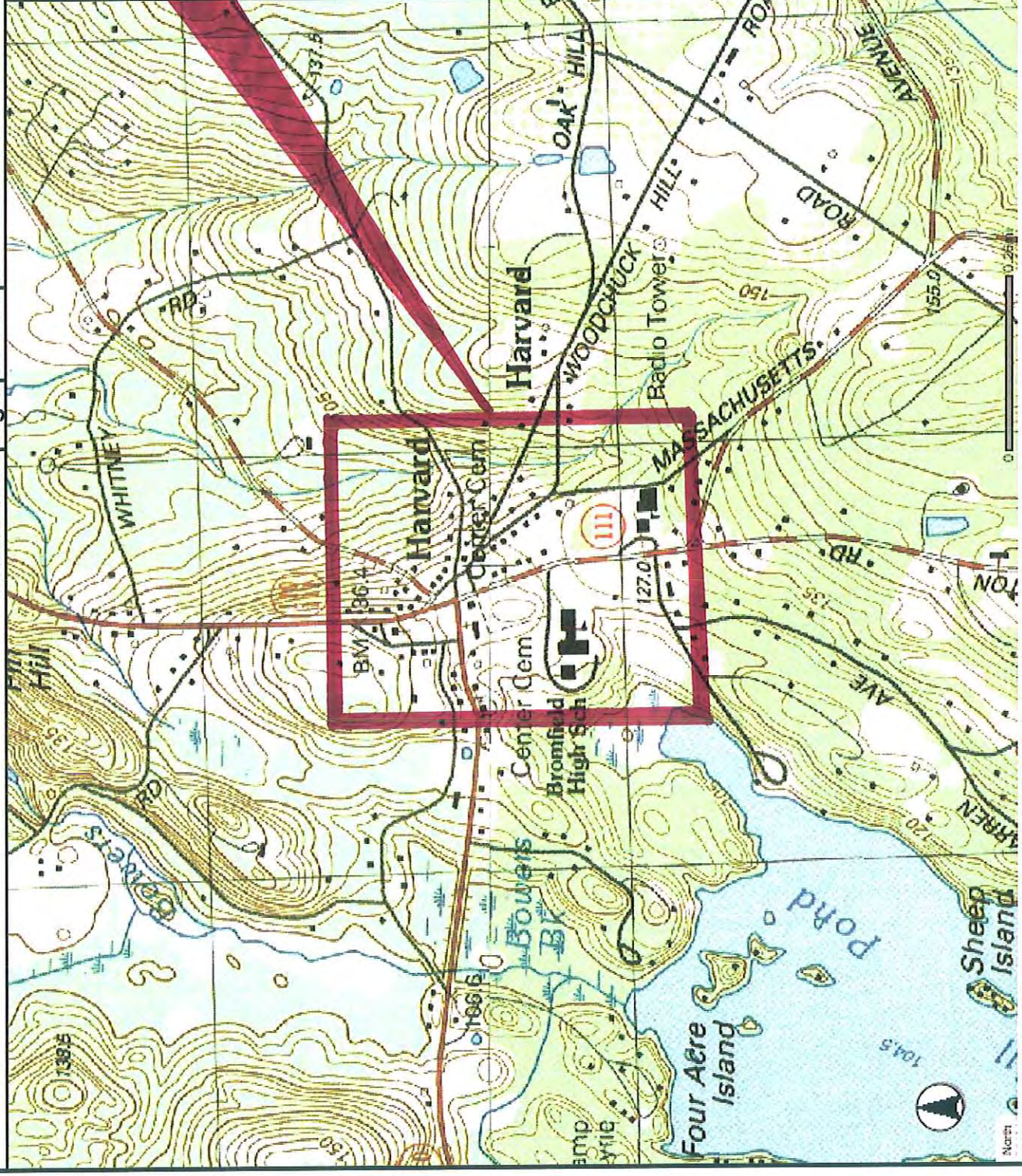
# APPENDIX A

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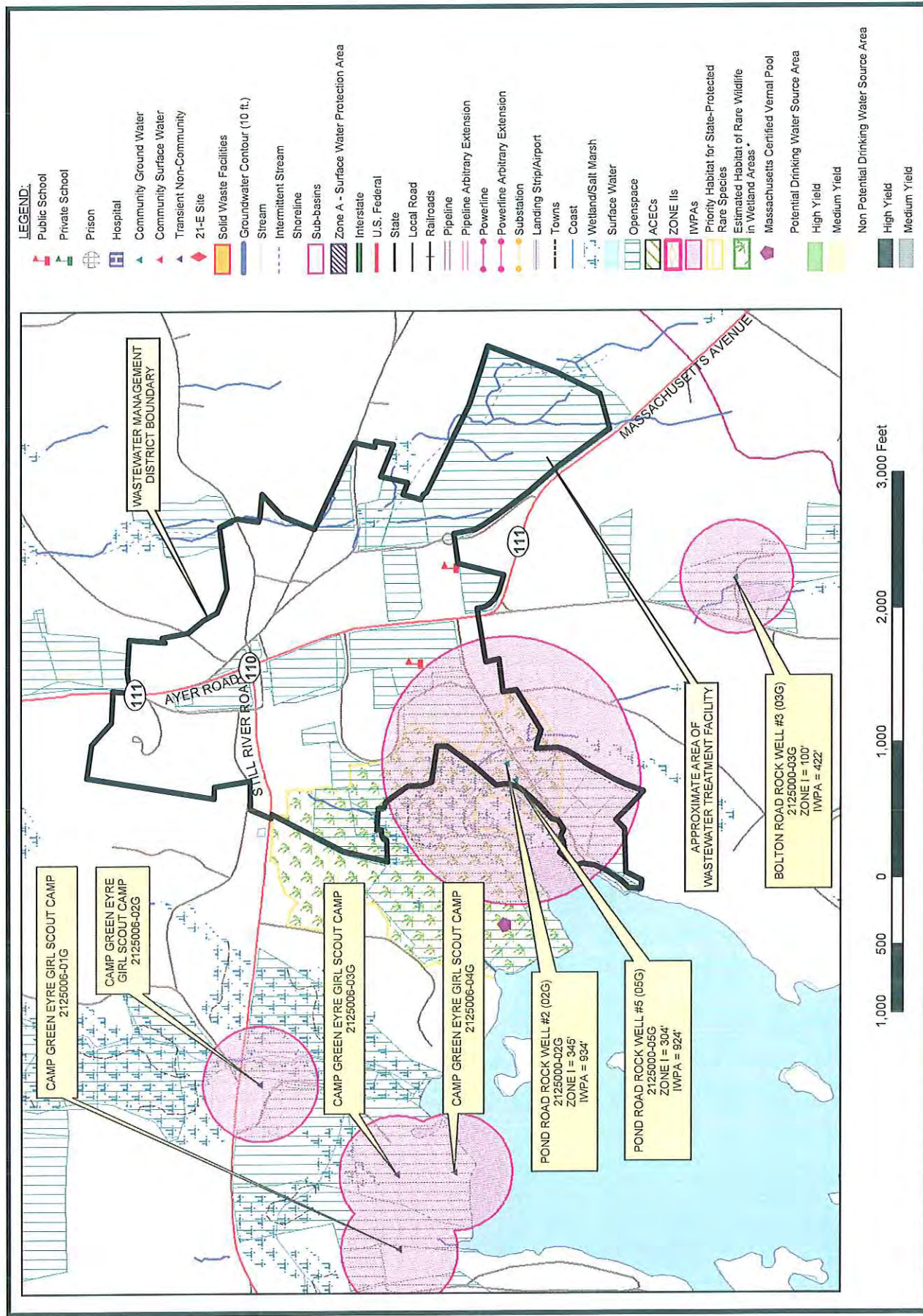
## PROJECT MAPPING



# MassGIS Topographic Map













## APPENDIX B

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### PROJECT ENGINEERING REPORT (PER)

Project Engineering Report  
For  
The Harvard Town Center Sewer Project

September 18, 2009

Prepared for:

Town of Harvard  
Board of Selectmen  
13 Ayer Road  
Harvard, MA 01451

Prepared by:

Norfolk Ram Group, LLC  
One Roberts Road  
Plymouth, MA 02360

And

Weston & Sampson Engineers, Inc.  
Five Centennial Drive  
Peabody, MA 01960

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### Appendices

- A. Commonwealth Capital Application for Fiscal Year 2010
- B. Documentation of Regulatory Compliance Relative to Existing Septic Systems
- C. Documentation of Regulatory Compliance Relative to GW Discharge Permit #1-723
- D. Documentation on the Lotus-ActiveCell Denitrification System
- E. House Bill No. 1130 and Town Meeting Articles 24 and 25

## **1. Project Background**

Harvard Town Center is home to historic houses, community churches, town government, public schools, small businesses, and recreational fields. The Center's vitality continues to be threatened by further losses of activity primarily due to limited reuse potential of existing municipal and private buildings due to septic constraints. The proposed Project, which would reduce this problem, involves design and construction of a low pressure sewer collection system within the Town Center and an upgrade to the existing Harvard school system's wastewater treatment facility (WWTF). The new system will utilize the surplus capacity of the existing WWTF which operates under the groundwater discharge permit #1-723.

For years the Town Center has struggled with wastewater disposal issues. Several studies, relative to the Town Center, have been previously completed. The most comprehensive was the *Harvard Town Center Action Plan*<sup>1</sup> dated March 2005. The most recent was the *Comprehensive Source Protection Plan* (CSPP)<sup>2</sup> prepared by the Mass Rural Water Associates and revised in July 2006.

The *Harvard Town Center Action Plan* (*Action Plan*) was developed with "the primary goal of maintaining the Center's historic vitality and reinforcing its role as the town's central community gathering place for all of Harvard's citizens – whether for municipal, civic, church, education, or recreational purposes". Fundamental to the achievement of this primary goal is "the need to increase the Center's septic capacity to accommodate both current needs and the needs of the future".

The CSPP was developed to aid in the protection of the Town's Public Water Supply (PWS). The CSPP identified nine potential sources of contamination and ranked sanitary waste as a "moderate-high" threat to the Town's PWS. This Plan also recommended that the Town "improve [wastewater treatment facility] efficiency and provide sewer service in the Village and source protection areas", which are defined as the recharge areas that supply water to the PWS system. A portion of the Town Center is located within the source protection areas.

The *Action Plan* reported that the Town Center's natural overall septic capacity is limited due to prevailing poor-to-moderate soils conditions, small lot sizes, and existing Title 5<sup>3</sup> compliance regulations. Septic capacity limitations pose substantial risks of negative consequences for the Center in the future, including (1) limitations on the possible reuse or expansion of municipal buildings and institutions, (2) unsightly "mounded" onsite septic systems to meet Title 5 wastewater regulations, and (3) limitations on the possibility of attracting new desired businesses to the Center (*Action Plan*). The status of the existing septic systems within the Town Center is summarized in Section 1.A.

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<sup>1</sup> *Harvard Town Center Action Plan / Public Realm Plan & Wastewater Study*, Bluestone Planning Group and Daylor Consulting Group, Inc., March 2005

<sup>2</sup> *Comprehensive Source Protection Plan, Pond Road and Bolton Road Wells, Harvard, Massachusetts*, PWS ID No. 2125000, Mass Rural Water Association, dated June 2006 and revised July 2006

<sup>3</sup> State Environmental Code, Title 5 (310 CMR 15.000): Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage

The existing Town-owned WWTF receives flow from the Bromfield School, the Harvard Public Library, and the Harvard Elementary School (HES). Presently wastewater flow is significantly less than the permitted 23,000 gallons per day (gpd). The WWTF was designed and approved by the Massachusetts Department of Environmental Protection (DEP) in 2001 for a design wastewater flow of 23,000 gpd using the standard DEP allowances<sup>4</sup>. However, the WWTF has actual flows ranging from 0 gpd to 9,990± gpd and averages 5,000± gpd with an average daily peak of 6,500± gpd.<sup>5</sup> The following table summarizes data from January 2009 through June 2009.

**Table 1. Approximate Average Daily Flows at the Existing WWTF**

Month	Approximate Average Daily Flow (gpd)
January	4,100
February	4,200
March	5,800 <sup>(1)</sup>
April	3,800
May	4,800
June	4,400
July	1,700
August	2,000
September	5,300
October	5,500
November	3,300
December	3,900

(1) – March average flows include a three-day period in March 2007 where the meter read flows of approximately 37,900 gpd.

These low and seasonally fluctuating flows cause the WWTF to operate in an inefficient and costly manner. The history of the facility's performance is described in Section 1.B. The excess capacity of the existing WWTF allows for the prospect of adding new wastewater flows to serve the Town Center needs. The feasibility of this proposed Project, including the implementation of a limited sewer collection system in the Town Center and the projected flows associated with the new system, has been evaluated and are described in this Report.

To make the proposed Project financially feasible, the Town would like to obtain a funding source with the lowest interest rate, and therefore the Town is seeking assistance from the Clean Water State Revolving Fund (SRF) Loan program. Based on the SRF Loan application requirements, the Town is submitting this Project Engineering Report (PER) and associated Project Evaluation Form (PEF). In addition, the Town has completed a Commonwealth Capital Application for fiscal year 2010. A copy of this application is included in the Appendix.

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<sup>4</sup> Standard DEP allowances used include 20 gpd per capita for the high school and 8 gpd per capita for the elementary school.

<sup>5</sup> Flows are estimates from January 2009 through June 2009, reported by the WWTF operator.

### **1.A. Existing Septic Systems**

The Town Center Sewer Action Group (TCSAG), a sub-committee of the Harvard Board of Selectmen, has evaluated the septic needs of properties in the Town Center and has developed a list of properties to be connected to the proposed sewer system, which will become the Harvard Wastewater Management District. A total of seventy-nine new sewer connections are proposed in addition to the existing three connections, as listed in the attached table, Table 1. The proposed District includes eight municipal properties, five commercial properties, four churches, forty-six single-family homes, and nineteen multi-family homes for a total of eighty-two connections.

The following tables, Tables 2 through 4, summarize the data available relative to the properties proposed to be connected to the proposed sewer. Of the seventy-nine new connections, seventy-eight of those properties are currently served by an onsite septic system. The Verizon building at 4 Littleton Road currently does not have water or a septic system.

Of the seventy-eight new connections currently served by an onsite septic system, **thirty-seven (equivalent to 47%) have at least one known significant Title 5 compliance issue (i.e., an issue preventing an onsite sewage disposal system to be in full compliance with the State Title 5 Code).** These known non-compliance issues include variances, easements for constructing the septic system, deed restrictions, restrictive covenants, and failed inspections. Twenty-four of the remaining properties are served by a system installed prior to the 1978 Title 5 Code. **Therefore, sixty-one of the seventy-eight new sewer connections currently served by an onsite septic system (equivalent to 78%) have at least one known significant non-compliance issue and/or are served by a system that is older than 31 years.**

**Table 3. Summary of Septic System Age**

<u>Septic System Age</u>	<u>Number of Systems</u>
Pre-1978	30 (38.5%)
1978-1994	14 (17.9%)
1995-present	24 (30.8%)
<u>Unknown</u>	<u>10 (12.8%)</u>
Total	78

**Table 4. Summary of Septic System Type**

<u>Septic System Type</u>	<u>Number of Systems</u>
Cesspool	7 (9.0%)
Leach Pit(s)	7 (9.0%)
Leach Field/Trench	39 (50.0%)
Alternative <sup>6</sup> System	8 (10.3%)
<u>Unknown</u>	<u>17 (21.8%)</u>
Total	78

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<sup>6</sup> An alternative system is an onsite sewage disposal system that is approved by the local Board of Health and/or the Massachusetts Department of Environmental Protection for remedial, pilot, provisional, or general use pursuant to 310 CMR 15.280 through 15.289 of the Title 5 Code. Such systems include MicroFast, Bioclere, and Presby systems.

Table 2. Summary of Properties within the Proposed Wastewater Management District^

	Address	Owner	Property Type	Current Water Flows (gpd)	Title 5 Wastewater Flows (gpd)	Design Flow^^ (gpd)	Lot Size (ac)	Water Source	Septic System Age**	Septic System Type	Septic Issues	Comments	Assessors Lot #
1	14 Mass. Ave.	Town of Harvard	School	1,302	15,160	1,302	27.50	T	2002	WWTF / L		Bromfield School	22A/17
2	24 Mass. Ave.	Town of Harvard	Municipal	420	1,050	420	6.80	T	2002	WWTF / L		New Library	22B/40
3	27 Mass. Ave.	Town of Harvard	School	2,215	4,640	2,215	6.50	T	2002	WWTF / L		Elementary School	22B/42
4	39 Mass. Ave	Town of Harvard	School	30	273	273	1.90	T	1914	U		School Offices, 2,814 sf	22B/43
5	13 Ayer Road	Town of Harvard	Municipal	314	785	314	4.40	T	1986	L		Town Hall - designed for max 18 employees.	17D/59
6	11 Elm Street	Town of Harvard	Municipal	135	542	135	1.61	T	1976	L		Firehouse & Outbldg - designed for max 20 people or 300 gpd.	17C/35
7	15 Elm Street	Town of Harvard	Municipal	156	390	156	5.66	T	U	U		Hildreth House	17C/36
8	7 Fairbank St.	Town of Harvard	Municipal	163	409	163	0.17	T	1983	P	V	Old Library - Permit notes variances required from 310CMR 15.03 (7) for minimum square footage. Use restricted to 80 gpd.	17D/22
9	7 Mass. Ave.	Peter Warren *	Commercial	27	170	170	0.11	T	1971	C			17D/59
10	9 Mass. Ave.	Peter Warren *	Commercial	20	323	323	0.11	T	1971	C			17D/60
11	5 Pond Road	Mahogany Run Realty Trust	Commercial	95	388	388	0.45	P	U	U		within IWPA, 3 condo offices	22B/1033
12	1 Still River Rd.	Adam Horowitz *	Commercial	1,000	764	1,000	0.10	T	1971	L	E	Easement for system on Town-owned land. Easement <u>mandates sewer connection</u> when public sewer becomes available.	17D/2
13	4 Littleton Road	Verizon ^^	Commercial	-	-	-	0.08	-	-	-		no water in bldg; no septic system	17D/19
14	9 Ayer Road	Unitarian Church	Church	80	450	80	0.14	T	U	C	V	Location unknown, but suspected to be on Town-owned land.	17D/4
15	7 Elm Street	Unitarian Church - Fellowship Hall	Church	51	300	51	0.14	T	U	C	V	2009 Presby system approval for remedial use with condition that <u>mandates sewer connection</u> when available.	17C/33
16	5 Still River Rd.	Congregational Church	Church	139	480	139	0.38	T	1978	L	E	Easement for system on Town-owned land. Easement <u>mandates sewer connection</u> when public sewer becomes available.	17D/3
17	17 Still River Rd.	St. Theresa's Catholic Church *	Church	206	495	206	1.02	T	U	U		Shared system for Church and Rectory, both on lot. Investigations indicate possible area for leaching at rear of site. No on-site testing was done, except that significant wetlands were flagged between existing bldgs and potential leaching area. Church sits on pile of rubble and fill.	17C/2/1
18	8 Ayer Road	Steve/Marjorie Darby *	Single Family Home	306	550	306	0.43	T	1974	P		2 Pits	17D/11
19	12 Ayer Road	Edward Grant *	Single Family Home	111	440	111	0.18	T	1960's	P			17D/10
20	14 Ayer Road	Amy Bernhardt *	Single Family Home	117	440	117	0.28	T	1999	L	V	Variance for reduced depth to groundwater. Request for 5 bdrm permit was denied. Massive retaining wall required.	17D/9
21	16 Ayer Road	Edward Dillard *	Single Family Home	118	440	118	0.18	T	U	C		2 Cesspools	17D/8
22	18-2 Ayer Road	David Craig *	Multi-family	27	330	150	0.31	T	U	U			17D/7
23	18-1 Ayer Road	David Craig *	Multi-family	27	440	200	0.31	T	U	U			17D/7
24	4 Cross Street	Lois Gilmore *	Single Family Home	1	110	50	1.85	T	1980	U	Failed	Failed T5 inspection Oct 2006. For sale for 10 years as 1 bdrm home.	17D/32
25	1 Elm Street	Jared Wollaston *	Single Family Home	108	660	108	0.60	T	1966	L			17C/37
26	3 Elm Street	Billy Salter *	Single Family Home	155	440	155	1.68	T	1996	L	V	Variances to 310CMR 15.405(1) reduced setback to structure and reduced disposal area. Local BOH waivers for reduced setback to structure, reduced depth to groudwater, number of passing percs, and reserve/primary trench layout.	17C/31
27	5 Elm Street	Deborah Sauve/Scott Hayward	Single Family Home	280	440	280	0.55	T	1998	L			17C/32
28	9 Elm Street	Mark L'Ecuyer *	Single Family Home	116	440	116	0.27	T	1970's	L			17C/34
29	1 Fairbank St.	Michele Page *	Single Family Home	90	330	90	0.15	T	2004	L	C & E	Grant of T5 Covenant & Easement for shared septic system with 3 Fairbank St and 3 Littleton Rd	17D/12
30	3-1 Fairbank St.	Pat Hatch *	Multi-family	70	440	70	0.16	T	2004	L	C & E	separate bldg, Grant of T5 Covenant & Easement for shared septic system with 1 Fairbank St and 3 Littleton Rd	17D/13
31	3-2 Fairbank St.	Pat Hatch *	Multi-family	70	110	70	0.16	T	2004	L	C & E	separate bldg, Grant of T5 Covenant & Easement for shared septic system with 1 Fairbank St and 3 Littleton Rd	17D/13
32	5 Fairbank St.	John Martin *	Single Family Home	200	660	200	0.52	T	1960's	L			17D/21
33	11-1 Fairbank St.	Harvard Conservation Trust	Multi-family	86	220	86	0.27	T	1946	L	Failed	4-apartment bldg, 2 bdrms/apt	17D/33
34	11-2 Fairbank St.	Harvard Conservation Trust	Multi-family	86	220	86	0.27	T	1946	L	Failed	4-apartment bldg, 2 bdrms/apt	17D/33
35	11-3 Fairbank St.	Harvard Conservation Trust	Multi-family	86	220	86	0.27	T	1946	L	Failed	4-apartment bldg, 2 bdrms/apt	17D/33
36	11-4 Fairbank St.	Harvard Conservation Trust	Multi-family	86	220	86	0.27	T	1946	L	Failed	4-apartment bldg, 2 bdrms/apt	17D/33
37	13 Fairbank St.	Ken Harrod *	Single Family Home	67	440	67	0.38	T	1978	L			17D/34
38	14 Fairbank St.	Malte Lukas *	Single Family Home	192	440	192	0.82	T	1996	L	V	Variance under 310 CMR 15.405 for separation to groundwater. Retaining wall required.	17D/57

Table 2. Summary of Properties within the Proposed Wastewater Management District^

	Address	Owner	Property Type	Current Water Flows (gpd)	Title 5 Wastewater Flows (gpd)	Design Flow^^ (gpd)	Lot Size (ac)	Water Source	Septic System Age**	Septic System Type	Septic Issues	Comments	Assessors Lot #
39	16 Fairbank St.	James Sloan *	Single Family Home	2	330	150	0.15	T	1995	L	V & RC	1999 Restrictive Covenant for 3 bedrooms max until sewer connection; however, previously a 4-bdrm home. DEP approved variances 310 CMR 15.03(07) slope and setbacks, 15.02(13) volume reduction, 15.02(17) construction in fill, and 15.14(2) depth to groundwater.	17D/56
40	18 Fairbank St.	Malcolm Carley *	Single Family Home	105	330	105	0.43	T	1975	L	RC	Conditional pass in 1996 with D-boxes repair. 1997 Restrictive Covenant for 3 bdrms max; however, previously a 4-bdrm home.	17D/55
41	20 Fairbank St.	Blanche Foss *	Single Family Home	20	440	200	0.28	T	1970's	U			17D/54
42	22 Fairbank St.	Jane Jakuc *	Single Family Home	301	440	301	0.32	T	1967	L			17D/53
43	23 Fairbank St.	David Connolly *	Single Family Home	102	440	102	0.87	T	1960	C			17D/49
44	24 Fairbank St.	Joe Bongiardina *	Single Family Home	130	440	130	0.75	T	1981	P			17D/52
45	25 Fairbank St.	Robert Swain *	Single Family Home	108	440	108	0.54	T	2004	A	V	Micro Fast System approved for remedial use with DEP Condition 10 which <b>mandates sewer connection</b> within 60 days of sewer becoming available. Variances required for perc testing, tank/well offset, easement for leach field on abutting 12 Oak Hill Rd, depth to groundwater, reduced leaching size. DEP limits flow to 440 gpd.	17D/50
46	28 Fairbank St.	Dan Magrath *	Single Family Home	278	440	278	1.65	T	1965	L			17D/51
47	2 Littleton Road	Al and Elaine Jasins	Single Family Home	178	550	178	0.68	T	2005	L	V & RC	Two multifamily buildings (2 & 6 Littleton Rd). Restricted to 11 bedrooms max. Variance requests for groundwater offset, limited percs, and shared system.	17D/20
48	3 Littleton Road	Mr. Borg	Multi-family	59	220	59	1.70	T	2004	L	C & E	2 bdrm condo, Grant of T5 Covenant & Easement for shared system with 1 & 3 Fairbank St	17D/15/3B
49	3A Littleton Road	Robert Hazel *	Multi-family	59	220	59	1.70	T	2004	L	C & E	2 bdrm condo, Grant of T5 Covenant & Easement for shared system with 1 & 3 Fairbank St	17D/15/3A
50	3C Littleton Road	Lisa Silagyi *	Multi-family	59	220	59	1.70	T	2004	L	C & E	2 bdrm condo, Grant of T5 Covenant & Easement for shared system with 1 & 3 Fairbank St	17D/15/3C
51	3D Littleton Road	Elizabeth Dimon *	Multi-family	59	330	59	1.70	T	2004	L	C & E	3 bdrm condo, Grant of T5 Covenant & Easement for shared system with 1 & 3 Fairbank St	17D/15/3D
52	5 Littleton Road	Daniel Sullivan *	Multi-family	85	330	85	0.31	T	2003?	A	V & DR & RC	2003 Permit for MicroFAST system that was approved for remedial use with DEP Condition 10 which <b>mandates sewer connection</b> within 60 days of sewer becoming available. 2-family. 2005 Variance from 310 CMR 15.212(a) depth to groundwater. 2007 Deed Restriction limits to 4 bdrms. 2008 Restrictive Covenant limits to 3 bdrms.	17D/16
53	5 Littleton Road	Daniel Sullivan *	Multi-family	85	110	85	0.31	T	2003?	A	V & DR & RC	2003 Permit for MicroFAST system that was approved for remedial use with DEP Condition 10 which <b>mandates sewer connection</b> within 60 days of sewer becoming available. 2-family. 2005 Variance from 310 CMR 15.212(a) depth to groundwater. 2007 Deed Restriction limits to 4 bdrms. 2008 Restrictive Covenant limits to 3 bdrms.	17D/16
54	6 Littleton Road	Al Jasins *	Single Family Home	162	660	162	0.68	T	2005	L	V & RC	Two multifamily buildings (2 & 6 Littleton Rd), deed restricted to 11 bedrooms. Variance requests for groundwater offset, limited percs, and shared system.	17D/20
55	11 Lovers Lane	Stanley Jaksina *	Single Family Home	63	220	63	0.14	T	1970	U			17C/40
56	13 Lovers Lane	Anne Mullany*	Single Family Home	71	220	71	0.22	T	1982	P		Permit states lot is "very restricted for sewage disp" and "designed for two bedrooms only".	17C/41
57	15 Lovers Lane	Patrick Connolly *	Single Family Home	135	330	135	0.87	T	1960	C			17C/42
58	11 Mass. Ave.	Larry Yahia *	Single Family Home	282	440	282	0.60	T	2001	L	V	Variances for depth to groundwater and setbacks.	17D/61
59	13 Mass. Ave.	Anne Tenero *	Single Family Home	109	440	109	0.26	T	1998	A	V	Bioclere System. Variances for setback to private well and distance from toe of slope to lot line. DEP approved variances with stipulation: within 30 days of sewer becoming available, <b>must connect to sewer</b> and abandon Bioclere system.	17D/62
60	15 Mass. Ave.	Daniel West *	Single Family Home	135	330	135	0.66	P	1970's	U			17D/63
61	21 Mass. Ave.	Alfred Wilder *	Single Family Home	370	440	370	2.09	T	1993	L	V	Variance required for percs.	22B/41
62	1 Oak Hill Rd.	Duane Barber *	Single Family Home	57	440	57	0.26	T	1986	P		4 Pits	17D/35
63	3 Oak Hill Rd.	Mark Vilian *	Single Family Home	127	440	127	0.36	T	1983	L			17D/36
64	5 Oak Hill Rd.	Janet Beaty *	Single Family Home	128	330	128	0.26	T	1964	L			17D/37
65	7 Oak Hill Rd.	Carlene Phillips *	Single Family Home	424	660	424	0.42	T	1975	U			17D/38



Table 2. Summary of Properties within the Proposed Wastewater Management District^

	Address	Owner	Property Type	Current Water Flows (gpd)	Title 5 Wastewater Flows (gpd)	Design Flow^^ (gpd)	Lot Size (ac)	Water Source	Septic System Age**	Septic System Type	Septic Issues	Comments	Assessors Lot #
66	12 Oak Hill Rd.	Chris Squire *	Single Family Home	135	330	135	0.58	P	2002	A	V & E	MicroFast System approved for remedial use with DEP Condition 10 which <b>mandates sewer connection</b> within 60 days of sewer becoming available. Variances for perc testing, tank/well offset, depth to groundwater, easement for leaching area on abutting lot, reduced leaching area size. DEP limits flow to 330gpd.	17D/47
67	12 Old Boston Tpke	Schnier, Christopher C & Ames	Single Family Home	135	440	135	1.50	P	<u>1989</u>	L		1989 emergency repair system designed for 4 bdrms.	22B/9/1
68	14 Old Boston Tpke	Rothkop, Douglas M & Holly M	Single Family Home	135	660	135	1.23	P	U	U		2 family house, 6 bdrms total	22B/8
69	5 Old Littleton Rd.	James McClellan *	Single Family Home	238	550	238	0.20	T	<u>1978</u>	P		2 Pits	17D/23
70	7 Old Littleton Rd.	Robert Hubert *	Multi-family	2	220	100	6.06	T	<b>1961</b>	L		separate building, 2 bdrms	17D/24/1/1
71	7 Old Littleton Rd.	Robert Hubert *	Multi-family	252	440	252	6.06	T	<b>1961</b>	L		separate building, 4 bdrms	17D/24/1/1
72	13 Old Littleton Rd.	David Butterfield *	Single Family Home	66	550	66	0.41	T	<b>1977</b>	U			17D/25
73	9 Pond Road	Douglas Wiles *	Single Family Home	107	440	107	0.97	T	1996	L	V	within IWPA. Variances for setback to private well and depth to groundwater.	22B/34
74	15 Pond Road	William Kilpi *	Single Family Home	1	330	150	1.00	T	<b>1955</b>	U		within IWPA	22A/4
75	19 Pond Road	Margaret Grogan *	Single Family Home	128	330	128	1.30	T	<b>1958</b>	U		within IWPA	22A/5
76	7 Still River Rd.	Eric O'Brien *	Multi-family	113	550	113	2.36	T	2007	A	V & RC	3-family house. Presby System approved for remedial use. DEP's Condition 5 <b>mandates sewer connection</b> within 60 days of feasibility to connect. Variance for depth to groundwater. 2004 Restrictive Covenant limits to 10 bdrms.	17C/1/1
77	7-1 Still River Rd.	Eric O'Brien *	Multi-family	113	220	113	2.36	T	2007	A	V & RC	3-family house. Presby System approved for remedial use. DEP's Condition 5 <b>mandates sewer connection</b> within 60 days of feasibility to connect. Variance for depth to groundwater. 2004 Restrictive Covenant limits to 10 bdrms.	17C/1/1
78	7-2 Still River Rd.	Eric O'Brien *	Multi-family	113	220	113	2.36	T	2007	A	V & RC	3-family house. Presby System approved for remedial use. DEP's Condition 5 <b>mandates sewer connection</b> within 60 days of feasibility to connect. Variance for depth to groundwater. 2004 Restrictive Covenant limits to 10 bdrms.	17C/1/1
79	14 Still River Rd.	Joe Gaffney *	Single Family Home	22	440	200	0.29	T	<b>1966</b>	L			17C/38
80	15 Still River Rd.	St. Theresa *	Single Family Home	258	330	258	2.79	T	U	U			17C/2
81	16 Still River Rd.	Lawrence Sweeney*	Single Family Home	159	330	159	0.13	T	<u>1989</u>	L	V	Clay barrier for breakout protection on three sides of system. Refusal at 52".	17C/39
82	21 Still River Rd.	Jay Fagan *	Single Family Home	179	440	179	2.00	P	<u>1994</u>	L	V	Variances to 310 CMR 15.02 (17) and 15.03(7) for 15' gravel limit around trenches in lieu of 25' and impervious clay barrier in lieu of down hill grading.	17C/3/1
	Subtotals:	Existing Connections		3,937	20,850	3,937							
		Proposed New Connections, Municipal		799	2,398	1,042							
		Proposed New Connections, Commercial		1,142	1,645	1,881							
		Proposed New Connections, Church		476	1,725	476							
		Proposed New Connections, Residential		8,242	25,080	9,340							
		<b>Proposed New Connections</b>		<b>10,659</b>	<b>30,849</b>	<b>12,739</b>							
	Total Proposed Connections to WWTF			14,596	51,699	16,676							

^ Compiled by the Town Center Sewer Action Committee (TCSAC), a sub-committee of the Town of Harvard Board of Selectmen and updated in August 2009 by Harvard Selectman Tim Clark.

^^ Design flows are based on current water use data with the following exceptions: If no current water use data is available or data is atypical for its use, an estimate of 50 gpd per bedroom is used for residential properties and the Title 5 wastewater flow is used for commercial properties.

^^^ Verizon building and property does not contain a bathroom, water lines, or septic system.

\* Owner has been validated by TCSAC.

\*\* Septic System Age: **bold year** = pre-1978, underlined year = 1978-1994

Legend: T=Town Water, P=Private Water, U=Unknown, P=Leach Pit(s), C=Cesspool, L=Leach Field/Trench(es), A=Alternative System, WWTF=wastewater treatment facility, V=Variance(s), E=Easement, C=Title 5 Covenant, RC=Restrictive Convenant, DR=Deed Restriction, Failed=currently in failure per Title 5 Inspection

**Thirty-nine percent (39%) of the proposed new sewer connections are currently served by an onsite septic system installed prior to the 1978 Title 5 Code.** An additional 18% are currently served by an onsite septic system installed after 1978 and prior to the 1995 Title V Code, and an additional 13% are served by a septic system on an unknown age. Assuming that the systems of unknown age were installed prior to 1978, **approximately 51% of the proposed new sewer connections are currently served by an onsite system that is older than 31 years.**

**Eleven of the proposed sewer connections are required to connect to public sewer** when sewer becomes available, as conditioned by DEP. Refer to Table 2 and the Appendix for more information.

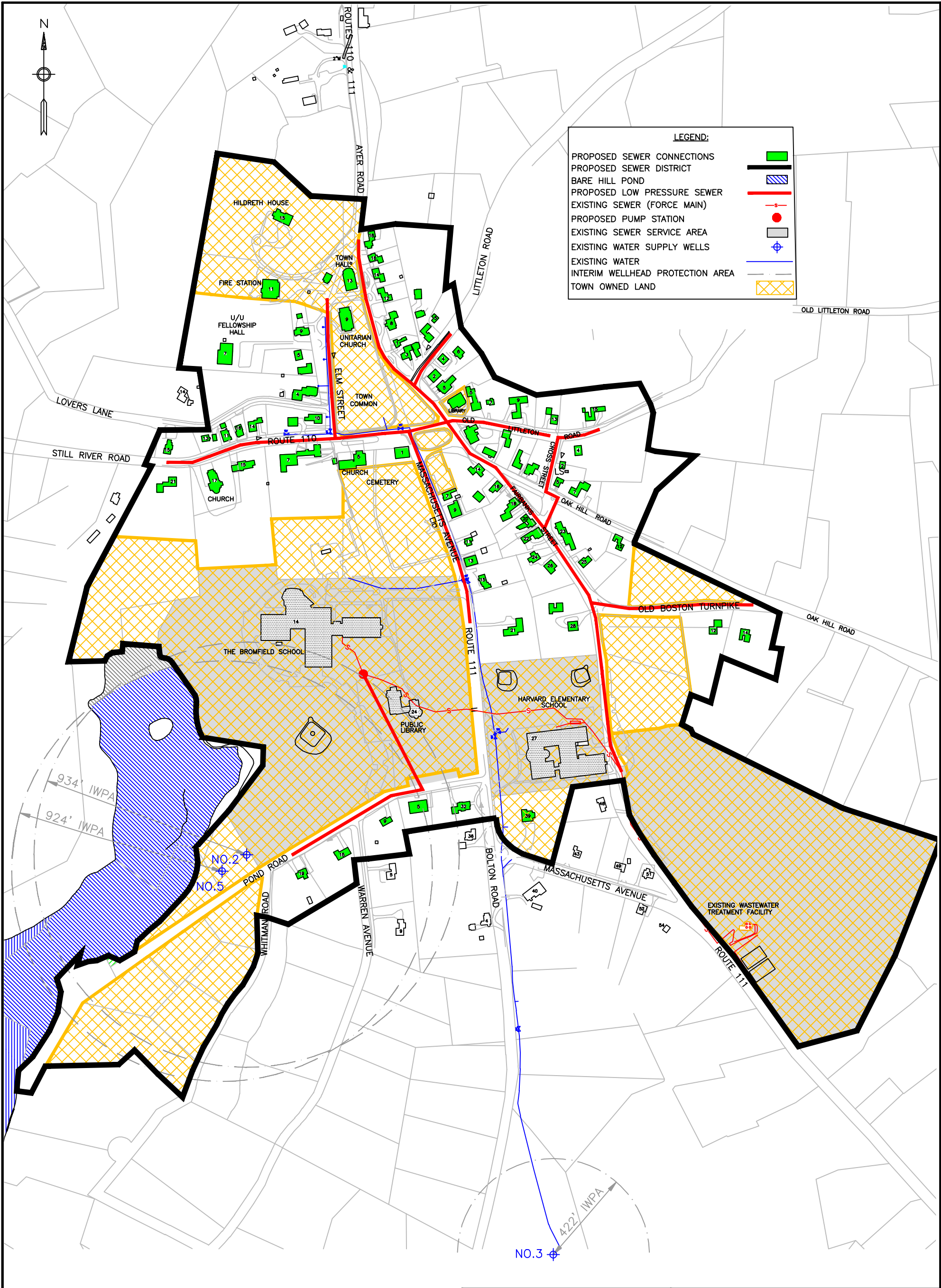
Six of the proposed sewer connection properties have a private onsite drinking water well; five of which are residential properties. One of these properties is served by an onsite septic system of unknown age and type. One is served by an onsite septic system of unknown type installed in the 1970's. One is a 2-family house of 6 bedrooms served by an onsite septic system installed in 1989 as an emergency repair. One is served by an onsite septic system with a leaching trench or field installed in 1994 that required two variances. The fifth residential property is served by an onsite alternative septic system installed in 2002 that required a variance and an easement for construction and was approved by DEP with the condition mandating sewer connection when sewer becomes available. The sixth property is a commercial property with a building of three condominium offices served by an onsite septic system of unknown type and unknown age. Refer to Table 2 and Appendix for more information.

Four of the proposed sewer connection properties are located within the interim wellhead protection area (IWPA) of the active Town-owned public water supply wells and are located on Pond Road, as shown on Figure 1. Two of these properties are residential properties with onsite septic systems that were constructed in the 1950s. One property is a residential property with an onsite septic system that was constructed in 1996 with two variances. The fourth property is a commercial property with a building of three condominium offices served by an onsite septic system of unknown type and unknown age.


### **1.B. Existing Wastewater Treatment Facility**

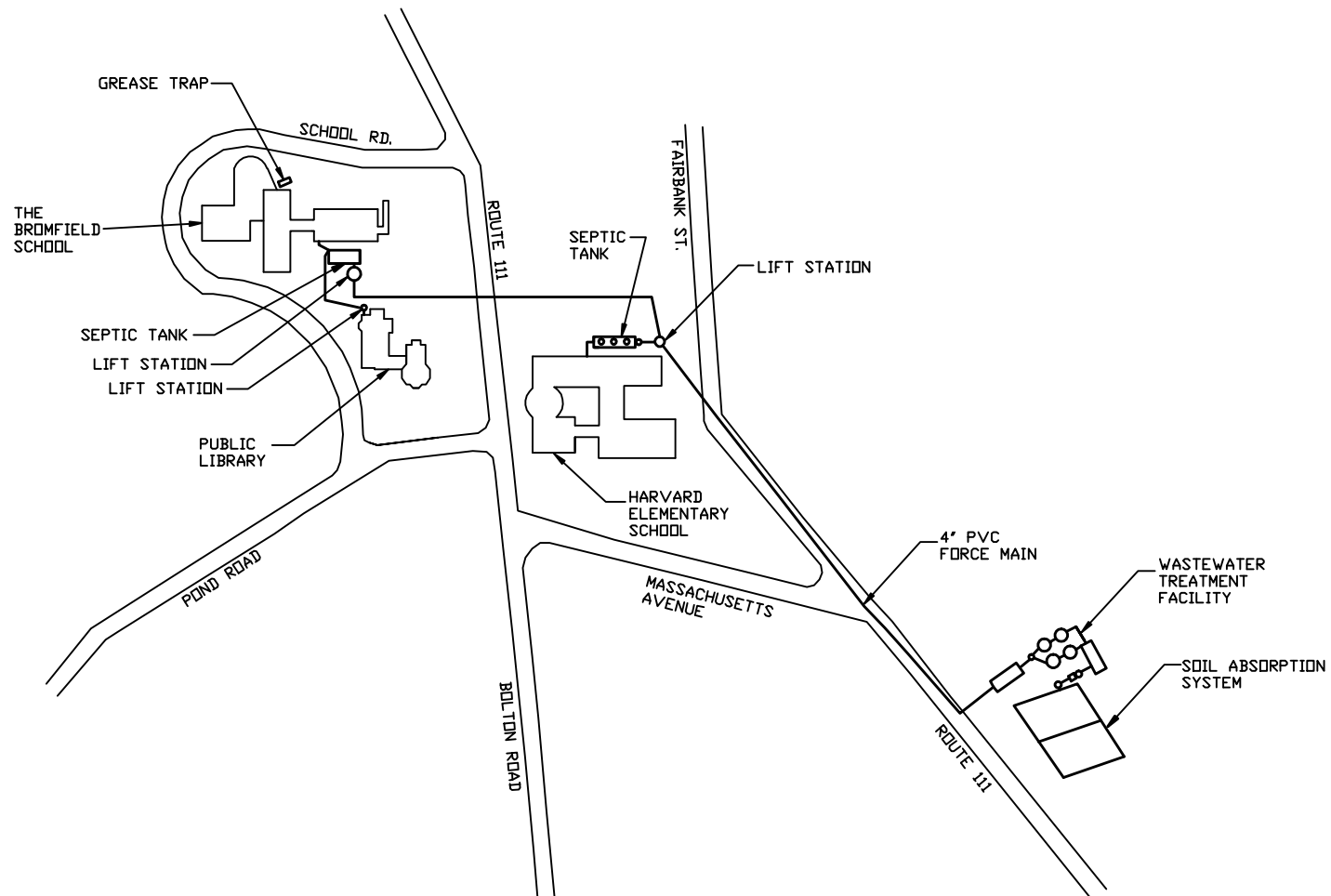
#### **1) General**


The existing wastewater treatment and disposal facilities serving the Bromfield School, Harvard Elementary School, and Public Library are located along the east side of Massachusetts Avenue in Harvard, MA. The treatment system is composed of two main treatment components, primary treatment and a secondary treatment. The primary treatment is accomplished with primary sedimentation tanks located at each school and an equalization tank located at the WWTF. The secondary treatment is comprised of Bioclere<sup>®</sup> trickling filter, for nitrification followed by a denitrification anoxic tank and then a re-aeration zone and finally a polishing sand filter. The effluent from the sand filter is discharged to the groundwater via a subsurface soil absorption system. Figure 2 shows the general layout of the existing wastewater system.



0 200 400 800 1200 1600  
FEET  
SCALE 1" = 400'

			<b>APPLICANT: TOWN OF HARVARD</b> 13 AYER ROAD HARVARD, MA 01451		
			<b>PROPOSED SEWER SERVICE PLAN</b> <b>TOWN CENTER</b> <b>HARVARD MA, 01451</b>		
9.18.09	K.M.K.	PROJECT ENGINEERING REPORT			
3.30.09	J.P.D.	TOWN COMMENTS			
Date	Ch'ck	Revisions			
Designed by: J.P.D.		Scale: 1" = 400'		 <b>NORFOLK-RAM</b> ENGINEERING SOLUTIONS FOR THE ENVIRONMENT IN ASSOCIATION WITH <i>Weston &amp; Sampson.</i>	FIGURE 1  1285.001.01
Drawn by: J.P.D.					
Checked by: W.C.P.		Date: 11/19/2008			
Approved by: W.C.P.					



<b>CLIENT:</b> TOWN OF HARVARD 13 AYER ROAD HARVARD, MA 01451	
<b>GENERAL LAYOUT OF EXISTING SEWER SYSTEM GW DISCHARGE PERMIT #1-723 HARVARD, MA 01451</b>	
 <b>NORFOLK RAM GROUP, LLC</b> ENGINEERING THE ENVIRONMENT ONE ROBERTS ROAD PLYMOUTH, MA 02360 508-747-7900	<b>FIGURE</b> 2
	1285.002.01

09/18/09	K.M.K.	PROJECT ENGINEERING REPORT
Date	Ch'ck	Revisions
Designed by:	W.C.P.	
Drawn by:	K.M.K.	
Checked by:	W.C.P.	
Approved by:	W.C.P.	

Scale: NOT TO SCALE  
Date: 09/18/2009

## 2) Existing Collection System

Raw wastewater from the Bromfield School flows from the school to a pretreatment tank and then to a pumping station located onsite near the School. Raw wastewater from the Public Library is also discharged via a separate pumping system to this Bromfield School pumping station. The primary treatment effluent is then pumped across Bolton Road to a pumping station at the HES. Raw wastewater from the HES is discharged to a pretreatment tank onsite near the school, and then discharged by gravity to the HES pumping station where it is combined with the effluent from the Bromfield School and Public Library. Wastewater is then pumped from the HES property south along Fairbanks Street and Massachusetts Avenue to an 11,000-gallon equalization tank at the WWTF site.

A 4,500-gallon grease trap pre-treats the kitchen flows at the Bromfield School prior to discharge to the sewer collection system. No grease trap is present at the HES, because there is no food preparation at this school.

## 3) Existing Treatment System

Primary treatment effluent is received at an 11,000-gallon flow equalization tank, located at the WWTF. This tank attenuates and stores peak flows allowing a constant rate of influent loading to be directed to the treatment facility. Wastewater is pumped from this equalization tank via a distribution box to two equally-sized Bioclere treatment trains, each consists of two 30/32 Bioclere units (trickling filters). The Bioclere units nitrify the wastewater and remove solids produced in the nitrifying process. The Bioclere system recycles the solids to the equalization tank and a baffled sludge holding tank via backwash return and waste solids return lines. Wastewater then flows from the Bioclere system to an 11,000-gallon post-equalization tank, which in turn feeds a 7,000-gallon anoxic tank.

The 7,000-gallon, baffled anoxic tank consists of a submerged anoxic reactor and post aeration. This treatment unit provides a suitable environment to initiate biological denitrification<sup>7</sup>. As a pump on the post-equalization tank transfers Bioclere effluent to the anoxic zone, a peristaltic pump delivers organic carbon into the influent tee of the anoxic tank. This acts as the external carbon source to initiate the denitrification reaction. The anoxic tank contains eight 6-foot tall PVC media block shells filled with polyethylene media on which the bacteria adhere and reduce nitrate in the waste stream. Two submersible sewage pumps circulate water through the media blocks, ensuring contact of the carbon source, nitrate and bacteria. Operation of the two circulation pumps, the chemical feed pump, and the sludge pump are automatic and fully adjustable by the system operator. Solids are pumped to the sludge holding tank. After processing in the anoxic filter, effluent flows through a 1,000-gallon post aeration tank (within the 7,000-gallon tank) for oxidation of remaining soluble carbon. Effluent flows to the DynaSand filter for final polishing and then to a dosing/pumping chamber and then to a valve chamber equipped with flow meters.

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<sup>7</sup> The volume of anoxic tank provides a hydraulic retention time greater than 4.5 hours, based on the design flow of 23,000 gpd and a sewage feed over approximately 18 hours.

During recent years of the WWTF operations, the anoxic tank has experienced many operational problems. The majority and most severe issues are caused by the clogging of the plastic media. The biological growth on the media does not slough off, as it was designed to, and therefore results in the media becoming clogged with heavy organic growth. When this happens, the following occurs: (1) the media tends to float to the surface of the tank and in the past has broken the metal straps holding them in place, and (2) the denitrification process in the treatment unit is severely reduced. These two factors result in high nitrogen concentrations in the effluent. To address this issue, the Town has had to pump down the tank, clean the media, replace the media holding straps, and then re-install the media. This work has resulted in limited duration of good denitrification of the effluent.

The final effluent is then discharged to the ground via a soil absorption system. The soil absorption system consists of two equally-sized pressure-dosed fields, each 54-feet wide by 100-feet long, providing a total leaching area of approximately 9,600 square feet.

As stated earlier, the existing WWTF receives flows that are significantly less than the design and permitted flows. This condition has contributed to the facility operating in an inefficient manner. The following table summarizes the regulatory compliance relative to the groundwater discharge permit associated with the WWTF.

**Table 5. History of Regulatory Compliance Relative to GW Discharge Permit #1-723\***

Date	Action	Description
March 26, 2002	Groundwater Discharge Permit Issued	Permit #1-723 issued for discharge of 23,000 gpd of treated effluent to the groundwater.
July 20, 2004	Administrative Consent Order (ACOP-CE-04-1G013)	
June 6, 2005	Deficiency Notice	
September 2, 2005	Compliance Inspection	DEP approves the Anoxic Filter subject to (1) connection of the alarm to an autodialer, (2) completion of Conditions from July 2005 including submittal of an O&M Manual and supplemental sampling, (3) extension of the access ladder within the DynaSand filter, and (4) re-grading, loaming, and seeding around the subsurface tanks.
May 11, 2006	Return to Compliance	DEP states that "no further action regarding the Consent Order [ACOP-CE-04-1G013] is warranted".
Spring 2007	Noncompliance Issue	Operational problems that resulted in non-compliance with the nitrogen effluent limits
April 3, 2007	Compliance Inspection	DEP required Town to (1) identify and correct the cause of the upset in the anoxic filter (loose media), (2) investigate possible I/I at schools, (3) extend the access ladder within the DynaSand filter, and (4) further evaluate process units to examine the unit's ability to handle additional flows and pollutant loadings.
May 21, 2007	Technical Deficiency Notice for Permit Renewal Application	DEP (1) notes that the leaching area is located within an IWPA and (2) requires submittal of a proposed schedule and plan for proposed upgrades to the anoxic filter for DEP's approval.

September 6, 2007	Anoxic Filter Inspection	DEP recommends that “the anoxic filter design be modified to correct for the defective fasteners securing the submerged media” and that “the wastewater pass through the system in the media be modified to improve scouring and removal of excessive biomass from media surfaces”.
March 6, 2008	Review of Permit Renewal	DEP states that the disposal area does not lie within the IWPA of the active public water supply wells. DEP asks for (1) Town’s acceptance of permit conditions, or (2) a detailed description of any issues or problems, and (3) the Town’s proposed resolution of the emergency well IWPA.
January 29, 2009	Notice of Noncompliance	WWTF exceeded permit limits for Biochemical Oxygen Demand (BOD) for the last three months of 2008 (may be due to clogged media in the anoxic unit). DEP required (1) submittal of an evaluation on the cause(s) of the BOD exceedances and schedule of recommended actions to bring the facility into compliance and (2) submittal of a proposed plan to address reoccurring problems with clogged anoxic media.
June 4, 2009	Change in Wellhead Protection for Town Well #3	DEP assigned a Zone I radius of 100 feet and an IWPA of 422 feet for the emergency Town well; the wastewater disposal facilities do not lie within this IWPA.

\*Refer to the DEP letters included in the Appendix for details.

The additional flow from the potential Town Center demand would help to alleviate reoccurring problems at the WWTF by increasing the wastewater temperature and carbon levels, while increasing the volume of the incoming wastewater and equalizing daily flow rates. The alternatives for upgrading the existing WWTF and the proposed plan are described Section 2B.

## **2. Alternatives to the Project**

### **2.A. Collection System**

Based on the Town’s concerns and the excess capacity at the treatment facility, we have explored various options to provide offsite wastewater solutions for the Town Center. In order to determine the most cost effective alternative for the proposed wastewater collection system, we reviewed the following alternatives:

1. No action.
2. Conventional gravity sewers with municipal pump stations
3. Low-pressure sewer system
4. Combination of gravity sewers and low-pressure sewers
5. Vacuum sewer system

It should be noted that the option of vacuum sewer systems was eliminated from consideration due to poor or unreliable performance of vacuum systems in other Massachusetts communities. In addition, the relatively small size of the proposed collection system does not lend itself to both vacuum and pumping systems.

The following paragraphs present a brief description of the various wastewater technologies investigated for the purpose of this Report.

### ***Conventional Gravity Sewers***

Conventional wastewater collection systems consist of gravity street sewers, building connections, manholes, interceptor sewers, pump stations, force mains, and other appurtenances. Gravity sewer pipes are typically a minimum of eight inches in diameter, are installed at a sufficient slope to provide a minimum velocity of two feet per second (fps), and are typically installed six to ten vertical feet (vf) below street level. The minimum velocity is intended to prevent the deposition of solids in the sewer which can lead to unnecessary obstructions causing back-ups and odors. Since the wastewater is conveyed by gravity, operation and maintenance (O&M) costs are low compared to other technologies. When the ground surface is relatively flat and sewer lines are long, however, pipe trench depths become excessive and pump stations become necessary or more cost effective. As trench depths become excessive, dewatering costs increase and the costs for ledge excavation also increase with the added trench width required for increased depth of excavation.

### ***Grinder Pumps and Low Pressure Sewers***

Grinder pumps and low pressure sewers are commonly utilized to reduce the capital construction cost of installing conventional gravity sewers in areas with high groundwater levels, shallow bedrock, and /or hilly terrain. The components of this system consist of a grinder pump unit at each building, pressurized small diameter sewer mains in the street, and service connections that connect each grinder pump unit to the pressure main. Grinder pump units are generally located adjacent to each building and connected by gravity to the building's waste piping. The grinder pump uses cutter blades to macerate or chop the solids into a fine slurry which is pumped through the pressure mains. The pressure mains ultimately discharge to a conventional collection system or directly to a treatment facility. Pressure sewers are typically one and one half inches to four inches in diameter. Velocities of greater than 2 fps must be achieved at regular intervals.

Pressure sewers must be equipped with additional features not required in conventional collection systems. Air relief valves should be provided at high points in the low-pressure sewer system to release any air trapped in the pressure lines. Cleanout manholes should be installed at low points in the low-pressure sewer system as well as at various intervals along the system to provide access to the sewer to remove debris or unclog the lines. Check valves and gate valves are required at each grinder pump unit to prevent backflows and to isolate systems for periodic maintenance.

Since the low pressure sewer system is not dependent on gravity to convey the wastewater, the small diameter pipes can be installed in shallow trenches with a minimum depth of cover of five feet to provide frost protection. Also, since the system is pressurized, the pipe can be installed to follow existing ground surface contours, thereby minimizing excavation costs.

Infiltration of groundwater is also less with the low-pressure system than for a gravity sewer system.



### ***Vacuum Sewers***

Vacuum sewers use differential air pressure to create flow. Each home is provided with a vacuum unit, which is equipped with a valve that seals the line leading to the main so that the required vacuum levels can be kept in the main. When a given amount of wastewater accumulates behind the valve, the valve is programmed to open and the wastewater is drawn into a central station. From there, the wastewater is typically pumped into the transmission system for transport to the treatment facilities.

Vacuum pumps are necessary to produce the vacuum necessary for liquid transport. The optimum operating range in vacuum sewers is 16-20 inches Hg, but the pumps should have the capability of providing up to 25 inches Hg. Redundancy is necessary with each pump capable of providing 100 percent of the required airflow.

Manholes for change of direction or for inspection or connection of branch lines are not necessary for a vacuum sewer system. High flow rates in the system keep it free of blockages or sedimentation.

### **Cost-effectiveness Analysis of Options**

The following paragraphs present a summary of the specific options investigated for off-site wastewater disposal in order to identify the most cost-effective solution to the Town's needs and concerns. As previously discussed, the option of vacuum sewer systems was eliminated from consideration.

#### ***Option 1 – No action***

Under this option, “no action” would be taken to address the concerns raised in the *Harvard Town Center Action Plan*. The same limitations and potential risks to the Town Center, as previously presented, would still exist. Homeowners with failing or non-Title 5 compliant onsite wastewater disposal systems would be faced with the cost of updating their systems to be in compliance with current Title 5 regulations. Costs for such upgrades could range from \$35,000 to \$45,000. As presented above in the Section 1.A. of this Report, many of the existing septic systems in the Town Center are failing or have failed a Title 5 inspection, or have a septic system not in full compliance with Title 5 regulations. Only the homeowners with failing or non-compliant systems that plan to sell their house now or in the future would be required to upgrade their onsite septic system. Properties with failing systems would still present the risk of groundwater contamination under this option of “no action.”

#### ***Option 2 – Conventional gravity sewers with pump stations***

Option 2 would provide conventional gravity sewers with neighborhood pump stations for the Town Center. Based on the existing topography of this area, it would be necessary to construct small submersible pump stations on Littleton Road, Old Littleton Road, Old Boston Turnpike and Pond Road. A larger pump station would be necessary on Fairbanks Street to convey the wastewater flows to the existing wastewater treatment facility. All of the wastewater from the Town Center would ultimately flow to this pump station on Fairbanks Street.

Issues with a conventional gravity sewer system under this option include:

- Excavations between 8- and 12-feet for typical gravity sewer installation.
- Excavations between 12- and 22-feet for length of approximately 900 linear feet (lf) in Still River Road in order to eliminate the need for an additional neighborhood pump station. Recent subsurface explorations indicate the presence of ledge at a depth of approximately 3- to 7-vertical feet (vf) below the surface in Still River Road. Trench-width payment limits would increase from 5-feet to 7-feet as a result of these depths.
- Cross-country sewer from Massachusetts Avenue to Fairbanks Street adjacent to the HES. Cross-country sewer could be installed within the limits of the existing sewer easement on the HES property.
- Additional gravity sewer in Massachusetts Avenue to convey wastewater flow from Pond Road to the cross-country sewer adjacent to the HES.
- Possibility of inflow/infiltration (I/I) being introduced to the gravity system over time. Extraneous flows would reduce the hydraulic capacity of the Town's treatment system.
- Operation and maintenance (O&M) costs associated with four new pump stations.

The following table presents estimated collection system project cost for Option 2.

**Table 6. Option 2 – Estimated Collection System Project Cost**

Description	Quantity	Unit Price <sup>(1)</sup>	Amount
8-inch PVC gravity sewer, per linear foot (lf)	9,800 lf <sup>(2)</sup>	\$60/lf	\$588,000
8- x 6-inch wye branches, each	81 each	\$250 each	\$20,250
6-inch PVC building connections, per lf	2,025 lf	\$40/lf	\$81,000
4-inch PVC force main, per lf	2,700 lf	\$35/lf	\$94,500
Forcemain cleanout manholes, each	4 each	\$4,000 each	\$16,000
Rock excavation and disposal, per cubic yard (cy)	6,000 cy	\$60/cy	\$360,000
Sewer manhole base with standard f&c, each	52 each	\$2,500 each	\$130,000
Sewer manhole walls and cones, per vertical foot (vf)	520 v.f.	\$100/vf	\$52,000
2 ½-inch binder course trench pavement, per lf	9,800 lf	\$15/lf	\$147,000
1 ½-inch top course trench pavement, per lf	9,800 lf	\$14/lf	\$137,200
Small submersible pump stations, each	4	\$250,000 each	\$1,000,000
Large submersible pump station, each	1	\$350,000 each	\$350,000
<b>Construction Total</b>			<b>\$2,975,950</b>
<b>Construction Contingency (15%)</b>			<b>\$446,393</b>
<b>APPROXIMATE CONSTRUCTION COST</b>			<b>\$3,422,343</b>
<b>Permitting, Design, and Construction Services <sup>(3)</sup></b>			<b>\$684,469</b>
<b>GRAND TOTAL</b>			<b>\$4,106,812</b>

**Notes:**

(1) Unit prices were estimated based on the January 2009 bid results from the Chelmsford, MA Cambridge Street/Park Road Sewer Project.

(2) In order to provide gravity sewer to the Town Center, Option 2 will require additional pipe in Massachusetts Avenue and in an easement from Massachusetts Avenue to Fairbanks Street (adjacent to the HES).

(3) Permitting, design and construction services estimated at 20% of the construction cost.

### ***Option 3 – Low-pressure sewers***

Option 3 would provide low-pressure sewers for the Town Center. The majority of the low-pressure sewer system (LPSS) for the Town Center would connect directly to the existing pump station at the HES which discharges to the existing wastewater treatment facility. As a result, a new pump station would be installed to replace the existing pump station at the HES. The LPSS from Pond Road would discharge to the existing pump station at the Bromfield School. Again, a new pump station would also be installed at the Bromfield School to replace the existing pump station. Both of the new pump stations at the two schools would discharge to the existing force mains from the schools. These force mains ultimately discharge to the existing treatment facility.

Issues with an LPSS under this option include:

- Excavations between 5- and 6-feet for typical LPSS installation.
- All properties in the Town Center would require individual on-lot grinder pump units to convey wastewater flows from their property to the LPSS. To reduce Town costs for the project, the purchase of the grinder pump and the installation of on-lot pressure sewers from the grinder pump units to the pressure sewer connection at the property line would be the responsibility of the individual property owners.

The following table presents estimated collection system project cost for Option 3.

**Table 7. Option 3 – Estimated Collection System Project Cost**

<b>Description</b>	<b>Quantity</b>	<b>Unit Price <sup>(1)</sup></b>	<b>Amount</b>
2-inch low-pressure sewer, per lf	8,000 lf	\$40/lf	\$320,000
Tee branches for low-pressure sewer, each	81 each	\$300 each	\$24,300
1 ½-inch pressure sewer building connections, per lf	2,025 lf	\$35/lf	\$70,875
Terminal/in-line flushing manholes, each	16 each	\$4,000 each	\$64,000
Rock excavation and disposal, per cy	3,300 cy	\$60/cy	\$198,000
2 ½-inch binder course (trench width), per lf	8,000 lf	\$15/lf	\$120,000
1 ½-inch top course (trench width), per lf	8,000 lf	\$14/lf	\$112,000
Small submersible pump stations, each	2	\$75,000 each	\$150,000
<b>Construction Total</b>			<b>\$1,059,175</b>
<b>Construction Contingency (15%)</b>			<b>\$158,876</b>
<b>APPROXIMATE CONSTRUCTION COST</b>			<b>\$1,218,051</b>
<b>Permitting, Design, and Construction Services <sup>(2)</sup></b>			<b>\$243,610</b>
<b>GRAND TOTAL</b>			<b>\$1,461,661</b>

**Notes:**

(1) Unit prices were estimated based on the January 2009 bid results from the Chelmsford, MA Cambridge Street/Park Road Sewer Project.

(2) Permitting, design and construction services estimated at 20% of the construction cost.

***Option 4 – Combination of gravity sewers with pump station and low-pressure sewers***

Option 4 would provide a combination of gravity sewers and low-pressure sewers for the Town Center. Instead of neighborhood pump stations, as presented under Option 2, an LPSS would be installed for a portion of Still River Road and all of Pond Road, Littleton Road, Old Littleton Road, Old Boston Turnpike and Cross Street. A large pump station would be installed on Fairbanks Street that would receive all of the wastewater flow from the Town Center. This pump station would then convey the flow to the existing wastewater treatment facility.

Issues with a combined gravity/pressure sewer system under this option include:

- Excavations between 8- and 12-feet for typical gravity sewer installation and excavations between 5- and 6-feet for typical LPSS installation.
- Cross-country sewer from Massachusetts Avenue to Fairbanks Street adjacent to the HES. Cross-country sewer could be installed within the limits of the existing sewer easement on the HES property.
- Additional gravity sewer in Massachusetts Avenue to convey wastewater flow from Pond Road to the cross-country sewer adjacent to the HES.
- Possibility of inflow/infiltration (I/I) being introduced to the gravity system over time. Extraneous flows would reduce the available capacity of the treatment system.
- Operation and maintenance (O&M) costs associated with the one new pump station.
- All properties on Pond Road, Littleton Road, Old Littleton Road, Old Boston Turnpike and Cross Street and a portion of Still River Road would require individual on-lot grinder pump units to convey wastewater flows from their property to the proposed LPSS. To reduce Town costs for the project, the purchase of the grinder pump and the installation of on-lot pressure sewers from the grinder pump units to the pressure sewer connection at the property line would be the responsibility of the individual property owners.

The following table presents estimated collection system project cost for Option 4.

**Table 8. Option 4 – Estimated Collection System Project Cost**

Description	Quantity	Unit Price <sup>(1)</sup>	Amount
8-inch PVC gravity sewer, per lf	6,300 lf	\$60/lf	\$378,000
2-inch low-pressure sewer, per lf	3,500 lf	\$40/lf	\$140,000
8- x 6-inch wye branches, each	57 each	\$250 each	\$14,250
Tee branches for low-pressure sewer, each	24 each	\$300 each	\$7,200
6-inch PVC building connections, per lf	1,425 lf	\$40/lf	\$57,000
1 ½-inch pressure sewer building connections, per lf	600 lf	\$35/lf	\$21,000
4-inch PVC force main, per lf	760 lf	\$35/lf	\$26,600
Forcemain cleanout manholes, each	1 each	\$4,000 each	\$4,000
Terminal/in-line flushing manholes, each	10 each	\$4,000 each	\$40,000
Rock excavation and disposal, per cy	4,000 cy	\$60/cy	\$240,000
Sewer manhole base with standard f&c, each	30 each	\$2,500 each	\$75,000
Sewer manhole walls and cones, per vf	300 vf	\$100/vf	\$30,000
2 ½-inch binder course (trench width), per lf	9,800 lf	\$15/lf	\$147,000
1 ½-inch top course (trench width), per lf	9,800 lf	\$14/lf	\$137,200
Large submersible pump station, each	1	\$350,000 each	\$350,000
<b>TOTAL</b>			<b>\$1,667,250</b>
<b>Construction Contingency (15%)</b>			<b>\$250,088</b>
<b>APPROXIMATE CONSTRUCTION COST</b>			<b>\$1,917,338</b>
<b>Permitting, Design, and Construction Services <sup>(2)</sup></b>			<b>\$383,468</b>
<b>GRAND TOTAL</b>			<b>\$2,300,806</b>

**Notes:**

(1) Unit prices were estimated based on the January 2009 bid results from the Chelmsford, MA Cambridge Street/Park Road Sewer Project.

(2) Permitting, design and construction services estimated at 20% of the construction cost.

## Conclusions and Recommendations

In order to address the existing septic capacity of the Town Center, the Town must take some action to provide a viable and cost-effective solution to their current wastewater needs. Therefore, various options were explored to determine the most cost-effective solution. Each option investigated has its own advantages and disadvantages.

Advantages of a conventional gravity sewer system include:

- Elimination of the need for individual on-lot wastewater disposal systems and components (i.e. – septic systems, cess pools, and grinder pump units).
- No additional costs to the individual homeowners to operate and maintain the grinder pump unit required for an LPSS.
- No restrictions to the homeowner for use of plumbing system during power outages.

Disadvantages of a conventional gravity sewer system include:

- Deeper excavations to ensure gravity flow.
- Need for neighborhood pump stations when topography does not allow for gravity flow.

- Additional costs associated with the O&M of the pump stations.
- If ledge is present, higher costs for ledge removal due to the deeper trenches.
- Conventional gravity sewers are more susceptible to infiltration and inflow.

Advantages of an LPSS include:

- Shallower trenches than conventional gravity systems.
- If ledge is present, lower costs for ledge removal due to the shallower trenches.
- Pressure sewer can be installed in accordance with the existing topography.
- LPSS are not susceptible to I/I.

Disadvantages of an LPSS include:

- Need for individual on-lot grinder pump units.
- Additional costs to the homeowners for the O&M of the grinder pump units.
- Restricted use during power outages.

The following table presents the estimated projected total project cost associated with each option.

**Table 9. Estimated Total Project Cost Summary of Options Investigated**

<b>Option</b>	<b>Approximate Cost <sup>(2)</sup></b>
1 – No Action <sup>(1)</sup>	\$2,940,000
2 – Conventional Gravity Sewers and Pump Stations	\$4,106,812
3 – Low-pressure Sewer System (LPSS)	\$1,461,661 <sup>(3)</sup>
4 – Combination of Gravity Sewer and LPSS	\$2,300,806 <sup>(3)</sup>

**Notes:**

- (1) Assumes the replacement of septic systems for all 84 properties at a replacement cost of \$35,000 per property.
- (2) Costs presented herein do not include the cost to upgrade the existing treatment facility.
- (3) Costs for Option 3 and Option 4 assume that individual on-lot grinder pump units will be purchased and installed by the property owners.

It should be noted that the above estimated costs for all options include an estimated cost for the removal and disposal of ledge based on a recently completed subsurface exploration program. Knowing the impact that ledge removal can have on the overall cost of a project, soil borings were completed in representative areas of the Town Center to assist in the generation of the estimated quantity and estimated cost of ledge removal. Based on the results of the program, ledge was encountered on Ayer Road, Fairbanks Street, Still River Road, and Elm Street.

Based on the information presented herein, Option 3 is the most cost-effective solution for the wastewater needs of the Town Center. It should be noted that the estimated cost for Option 3 does not include the cost of the grinder pump units or the cost of the on-lot pressure sewer service connections from the grinder pump units to the pressure sewer connections at the property line. In some cases, in particular for Town-owned properties such as Hildreth House, Fellowship Hall, Fire Station, etc., such service connections could require extensive lengths of pipe to connect the property to the low-pressure mainline.

## **2.B. Treatment System**

The following alternatives were considered:

- A. No action.
- B. Remove and replace the entire WWTF with a different treatment system.
- C. Construct a new WWTF for the Town Center demands, while the existing WWTF remains as is.
- D. Modify the existing WWTF by (a) relocating the existing pretreatment septic tanks from the school properties to the WWTF site, (b) providing increased flow equalization to control peak (high and low) flow periods, (c) providing an enhanced nitrification system, (d) upgrading the denitrification treatment, and (e) increasing wastewater temperature discharged to the denitrification treatment zone within the WWTF.

The Town Center Sewer Action Group (TCSAG) evaluated each of the alternatives based on (1) cost, (2) ability to meet the future needs of the Harvard Town Center, (3) ability to result in a WWTF that will maintain consistent operational compliance with the current groundwater discharge permit, and (4) minimizing operation and maintenance costs for the WWTF. Based on these evaluation parameters the TCSAG elected to pursue alternative D, to modify the denitrification process of the existing WWTF. This alternative satisfies the Town's desire to protect the Town Center area while at the same time minimizing costs so as to keep the proposed Project affordable to the residents of the Town and to the members of the proposed Wastewater Management District.

## **3. Proposed Project Plan**

### **3.A. Evaluation of Projected System Flows**

#### **1. Analysis of Periods of High Flows**

Typically, the facility receives an average daily flow of 6,500± gpd. However, during short periods of time in the spring of 2007 and 2009, the WWTF experienced abnormally high influent flow rates. During these two periods of time, the influent flows increased to approximately 9,900± gpd. It is presumed that the excess flow is either infiltration or inflow or some combination of both. Infiltration is due to leaks in sewer pipes such as cracks in a pipe or leaky pipe joints. Inflow is due to direct discharge of non-wastewater, either groundwater or stormwater, into the collection system.

In an effort to evaluate the abnormally high flows, the WWTF operator monitored the pump run meters at the pump stations located at the Bromfield School and the HES. Because the flow metering did not instantaneously increase and then immediately drop off near the end of wet weather periods, it has been determined that the extraneous flow is the result of inflow into the collection system, rather than infiltration.

Based on the fact that the pump run times increased rapidly (spiked) only at the HES pump station, it has been determined that the inflow source is at or near the HES pumping station. The HES building has been examined by Town officials and there is no obviously visible illicit connection to the existing collection system at the school.

However, since this pumping station is older than 15 years and was in operation prior to the construction of the present WWTF, the pumps are in need of repair/replacement, as determined by Weston & Sampson CMR.<sup>8</sup> The entire pumping station will be replaced as part of the proposed Project. In an effort to eliminate the extreme flows, at the time of the installation of the new HES pumping station, all pipes into the existing station will be replaced and only pipes with known points of origin will be connected to the new pumping station. It is believed that this procedure will ensure that the extraneous flow currently entering the collection system will be eliminated.

## 2. Projected Future Flows

The projected future flows are based on existing water use and actual system flows and have been evaluated by the TCSAG, as shown on Table 1. Based on discussions with DEP representatives in the Central Regional Office, it is anticipated that the wastewater flows for the proposed Project, including new sewer connections, should not exceed eighty-five percent (85%) of the permitted flow (23,000 gpd), equivalent to 19,550 gpd. Allocating 6,500 gpd for the existing connections (i.e., the Bromfield School, the Public Library, and the HES), approximately 13,050 gpd will be available for the proposed sewer connections in the Town Center.

The projected wastewater flow for the new sewer connections is 12,740± gpd, as estimated by the TCSAG and shown on Table 1. These new flows and the allocated flow for existing connections are below the 85% of the permitted 23,000 gpd.

### **3.B. Collection System**

As outlined in Section 2.A. of this Report, the Harvard Town Center could be served by a low pressure sewer system that serves not only existing municipal properties, but also the residential and commercial properties that have varying needs for off-site wastewater treatment and disposal. It should be noted that the Town Center Sewer Action Group (TCSAG) also conducted an evaluation providing sewer service to municipal buildings in the project area. These would include the Town Hall/Ambulance Building, Fire House, Hildreth House, and the Old Library. The length of pipe required to serve this limited number of buildings was eliminated from consideration due to the high cost per building served and since other properties with similar needs would be “fronted” by the Town (public) sewer and not be allowed to connect to the system.

Since much of the pipeline needed to serve the proposed “District” area would be installed to serve just the four municipal properties, and since much of the treatment plant upgrade would be required to serve existing Town properties, it was decided to extend public sewers as shown on attached Figure 1. Specific properties being served by the system were determined by the TCSAG based on discussions with property owners and based on information on existing onsite systems available from the Board of Health. The exact extent of the sewer service area was refined by the TCSAG to include only those properties that will require sewer service in the near or immediate future.

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<sup>8</sup> Letter Report prepared for Town of Harvard by Weston & Sampson C.M.R., Inc., September 21, 2007



### **3.C. Treatment System**

#### **1. Evaluation of Treatment System Performance**

A review of the WWTF's historical treatment records revealed that the denitrification process in the WWTF is the main aspect responsible for the facility not meeting its required discharge limits. Therefore, an evaluation of denitrification treatment modifications was undertaken. Based on discussions with the WWTF operator and the facility's inability to consistently meet its discharge limits for nitrate and total nitrogen, it was decided to pursue a multifaceted approach to keep the plant operating in compliance. A schematic diagram of the existing WWTF is provided in Figure 3.

#### **2. Evaluate Options for Required Treatment Facilities**

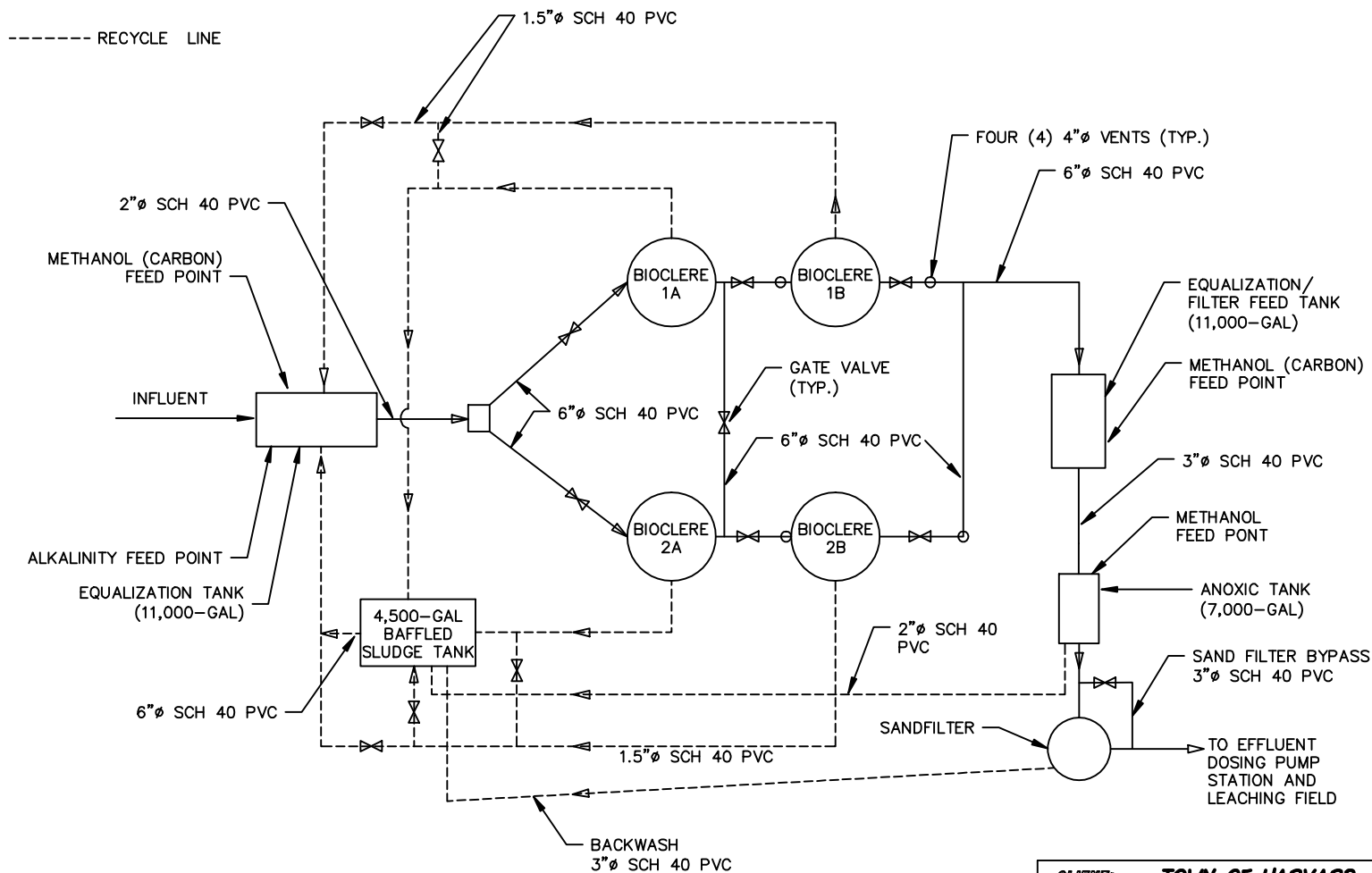
Based on review of the existing WWTF monthly operational reports and discussions with the present operator, Weston & Sampson Services, certain areas of the existing WWTF's operations need to be addressed. These areas and the proposed modifications are detailed below and shown in Figure 4, Proposed Treatment Process Schematic.

##### **a. Operation of Existing Septic Tanks**

Relocate the primary treatment from the present locations adjacent to each of the schools to a new single 12,000-gallon treatment tank located at the WWTF. The existing tanks at the schools will be abandoned in place. This will allow for recycling of primary activated sludge to the waste stream. This will also increase the carbon component in the wastewater entering the denitrification treatment unit. As a result, the facility's ability to denitrify the wastewater will improve.

##### **b. Equalization Facilities**

Increased flow equalization is necessary to allow the operator the ability to better control peak and low flow periods. Presently and to a slightly lesser degree in the future, the majority of the facility's flow will be generated during normal school and business hours. This schedule is approximately from 7am until 5pm, 5 days per week. Although the addition of "residential" flow will help this situation, the facility will still need more flow equalization capabilities. Based on present flow records and the proposed new design flow of 18,400 gpd, it is recommended that the facility flow equalization be increased to 1.2 times the design flow. This means that an additional 11,000 gallons of equalization capacity should be provided at the WWTF. Therefore, the proposed plan includes the installation of a new 11,000-gallon equalization tank in series with the existing 11,000-gallon equalization tank.



NOTE: ALL FOUR BIOCLERE UNITS ARE MODEL 30/32.

09/18/09	K.M.K.	PROJECT	ENGINEERING REPORT	
Date	Ch'ck		Revisions	
Designed by:	W.C.P.			
Drawn by:	K.M.K.			
Checked by:	W.C.P.			
Approved by:	W.C.P.			

Scale: NOT TO SCALE

Date: 09/18/2009

CLIENT: **TOWN OF HARVARD**  
13 AYER ROAD  
HARVARD, MA 01451

**EXISTING TREATMENT PROCESS SCHEMATIC**  
**GW DISCHARGE PERMIT #1-723**  
**HARVARD, MA 01451**

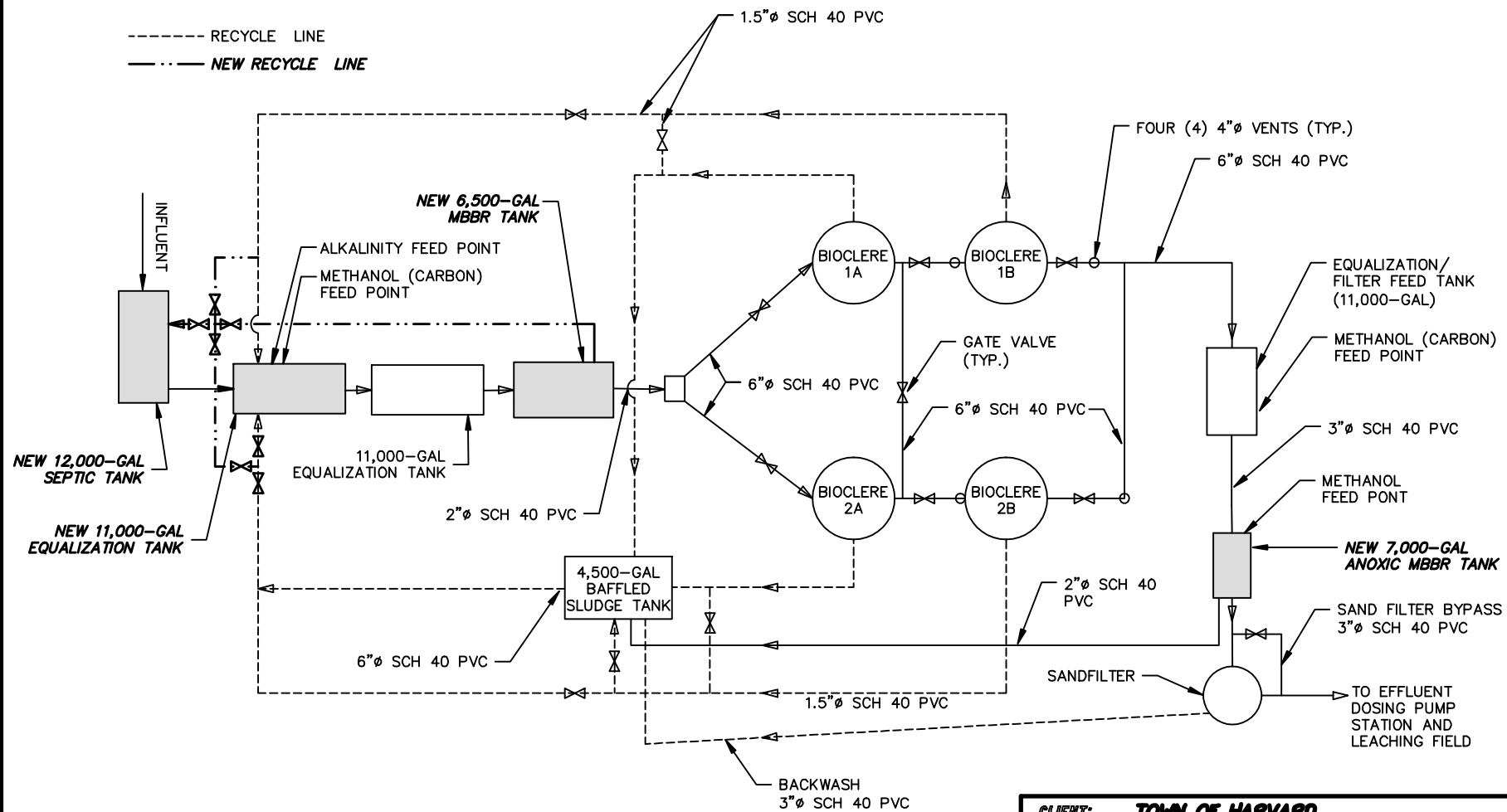


**NORFOLK RAM GROUP, LLC**  
**ENGINEERING THE ENVIRONMENT**

ONE ROBERTS ROAD  
PLYMOUTH, MA 02360  
508-747-7900

FIGURE  
3

1285.002.01



NOTE: ALL FOUR BIOCLERE UNITS ARE MODEL 30/32.

09/18/09	K.M.K.	PROJECT	ENGINEERING REPORT	
Date	Ch'ck		Revisions	
Designed by:	W.C.P.	Scale:	NOT TO SCALE	
Drawn by:	K.M.K.	Date:	09/18/2009	
Checked by:	W.C.P.			
Approved by:	W.C.P.			

<b>CLIENT:</b> <b>TOWN OF HARVARD</b> 13 AYER ROAD HARVARD, MA 01451	
<b>PROPOSED TREATMENT PROCESS SCHEMATIC</b> <b>GW DISCHARGE PERMIT #1-723</b> <b>HARVARD, MA 01451</b>	
<b>NORFOLK RAM GROUP, LLC</b> <b>ENGINEERING THE ENVIRONMENT</b> ONE ROBERTS ROAD PLYMOUTH, MA 02360 508-747-7900	<b>FIGURE</b> 4 1285.002.01

### c. Enhanced Nitrification System

Nitrification of the wastewater is presently accomplished within the Bioclere treatment units. Based on discussions with the facility operator, it was determined that, due to two main factors (i.e., high nitrogen loads and cold influent water temperatures), the existing nitrification system should be enhanced. This enhanced system will consist of a 6,500-gallon concrete tank filled with 6.5 cubic meters of Lotus-ActiveCell HDPE media. This HDPE media has a very high surface to volume ratio ( $402 \text{ m}^2 \text{ per m}^3$ ) which allows for a high concentration of microorganisms to grow on the media. This tank and media create a moving bed bioreactor system (MBBR). This tank will be installed directly after the pre-equalization tank and just prior to the Bioclere treatment units. Refer to the Appendix for the manufacturer's information on Lotus-ActiveCell media.

The proposed tank volume will provide approximately 6.5 hours of detention time at a design flow rate of 23,000 gpd. This tank will also be equipped with a PVC coarse bubble aeration system installed on the bottom of the tank. The aeration system will provide complete mixing of the wastewater and HDPE media. The tank outlet will be equipped with a 6-inch diameter, 24-inch long, stainless steel screen which will retain the media in the tank. The screen will have slot openings of approximately 3/8-inch and the screen surface will constantly be scoured by the biomass carriers. This tank will have a side water depth of 9.5 feet and an overall depth of 10 feet. The 9.5-foot side water depth will result in an approximate 7 percent oxygen transfer efficiency within the tank. Based on the depth and volume requirements, the overall tank dimensions will be 7' x 7' x 10' deep.

Based on the design parameters for this facility (an influent BOD<sub>5</sub> concentration of 250 mg/l, an influent TKN concentration of 60 mg/l, an oxygen requirement of 1.1 pounds per pound of BOD<sub>5</sub> to be removed, and 4.6 pounds per pound of ammonia to be removed), a total of 80 pounds of oxygen per day will be needed to pre-treat this wastewater. This results in the aeration system requiring a blower having a capacity of 50 standard cubic feet per minute (scfm). This new blower and backup blower will be installed in new concrete block room to be added to the existing control building. The new concrete block room will be approximately 8 feet by 10 feet in size.

### d. Denitrification Systems

Remove the existing media blocks within the existing anoxic tank and replace with a Lotus-ActiveCell treatment system utilizing Hydroxyl's ActiveCell Biofilm Carrier media. This system will consist of installing approximately 5 cubic meters of neutrally buoyant fluidized plastic media within the tank, installing a large diameter paddle mixer within the tank to provide complete mixing of the media, and installing a stainless steel screen at the effluent end of the tank to maintain the new media with the treatment tank. Based on an ultimate design flow of 18,400 gpd, the volume of the existing anoxic tank (7,000 gallons) will allow for proper detention time for denitrification of the wastewater. The effluent of the active cell treatment tank will be pumped to the existing post-equalization tank and then continue on to the existing

treatment and disposal facilities. Refer to the Appendix for the manufacturer's information on Lotus-ActiveCell media.

e. Wastewater Temperature Control

One of the operational issues at the WWTF that has hindered the facility's denitrification process is the temperature of the incoming wastewater. Denitrification will either cease or be strongly inhibited when the wastewater reaches a temperature of 50° Fahrenheit. The present wastewater generated at the schools includes little hot water. This is due to the majority of flow being from toilet and sinks. There is very little hot water from dishwashing and shower use at the two schools. This coupled with the fact that the flow from each school is first discharged to onsite septic tanks where it remains for 24-36 hours and then is pumped long distances (3,300± feet) to the WWTF results in the influent wastewater temperature at the WWTF being low. This is even more exacerbated in winter when the ground ambient temperatures are at 40-50° F. Eliminating the two existing primary treatment tanks and combining the primary treatment system into one system located next to the WWTF, will help reduce this loss in temperature in the influent.

f. Recycle Lines

In an effort to provide more flexibility to the operator, three new recycle pipelines will be installed at the WWTF. The first two pipelines will allow for the operator to discharge activated sludge from Bioclere Units 1B and 2B back to the head of the first equalization tank or the head of the new septic tank. The third new recycle line will allow the operator to recycle flow from the effluent end of the second pre-equalization tank back to either the influent of the first pre-equalization tank or the head of the new septic tank. During low flow conditions (school not in session), the operator will be able to recycle flow back to the head of the entire WWTF to allow for more detention and pre-treatment time to enhance the nitrification process.

The estimated costs for the proposed modifications to the existing WWTF are summarized below.

**Table 10. Estimated Costs for Proposed Treatment Modifications**

<b>Description</b>	<b>Amount</b>
Install new 12,000-gal septic tank	\$55,000
Install new 11,000-gal equalization tank	\$80,000
install new MBBR (6,500-gal tank with Lotus-ActiveCell HDPE media)	\$85,000
construct new concrete block addition to existing building	\$25,000
install blowers for MBBR system	\$40,000
remove existing media blocks	\$16,000
install new media, paddle mixer and screen in existing anoxic tank	\$40,000
install three new recycle lines	\$16,000
site work	\$30,000
<b>Construction Total</b>	<b>\$387,000</b>
<b>Construction Contingency (15%)</b>	<b>\$58,050</b>
<b>APPROXIMATE CONSTRUCTION COST</b>	<b>\$445,050</b>
<b>Permitting, Design, and Construction Services</b>	<b>\$89,010</b>
<b>GRAND TOTAL</b>	<b>\$534,060</b>

### 3. Effluent Disposal

Numerous sites were investigated for the disposal of treated effluent from the existing WWTF.<sup>9</sup> It was determined that there are limited areas of suitable soils within the Town Center, and many of the suitable sites are on private property. The existing disposal area located on the east side of Massachusetts Avenue was selected for best overall suitability; that is, the ability to handle the estimated 23,000 gpd demand and the economic benefit of proximity to the schools.

The projected wastewater flows will not exceed the permitted 23,000 gpd, and therefore, the existing disposal site and leaching system are adequate. No further study of potential disposal sites for treated effluent is necessary.

### **3.D. Environmental Impacts and Mitigation**

#### a. Groundwater and Existing Municipal Water Supply Wells

Most of the Town residents and businesses rely on the groundwater for their drinking water supply, and the proposed Project will help protect the groundwater by removing many of the failing or failed onsite septic systems and by treating wastewater at the treatment facility prior to groundwater discharge. Two active public water supply wells are located nearby off

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<sup>9</sup> *Wastewater Treatment and Disposal Alternatives for the Bromfield School, Town of Harvard*, Stearns & Wheler, LLC, January 2000

Pond Road (PWS #212500-02G and #2125000-05G), and one emergency public well is located off Bolton Road (PWS #2125000-03G), as shown on the attached Figure 5.

DEP confirmed in a letter dated March 6, 2008 that the wastewater treatment disposal area does not lie within the interim wellhead protection area (IWPA) of either of the two active public water supply wells. DEP later confirmed in a letter dated June 4, 2009 that the emergency well located off Bolton Road was reassigned a minimum Zone I radius of 100 feet and an IWPA of 422 feet. And therefore, the wastewater treatment disposal area does not lie within the influence of any public drinking water supply. Copies of these DEP letters are included in the Appendix.

b. Other Resource Areas

An estimated priority habitat area of rare species and wildlife is delineated along Pond Road nearby the proposed sewer main, as shown on the Natural Heritage and Endangered Species Program 2008 maps. However, since work is proposed within the right-of-way only, the proposed Project will not negatively impact any endangered species or wildlife. Furthermore, the proposed Project does not affect any outstanding resource waters or areas of critical environmental concerns, as defined by the DEP.

### **3.E. Estimated Capital Construction, O&M, and System Users and Non-Users Costs**

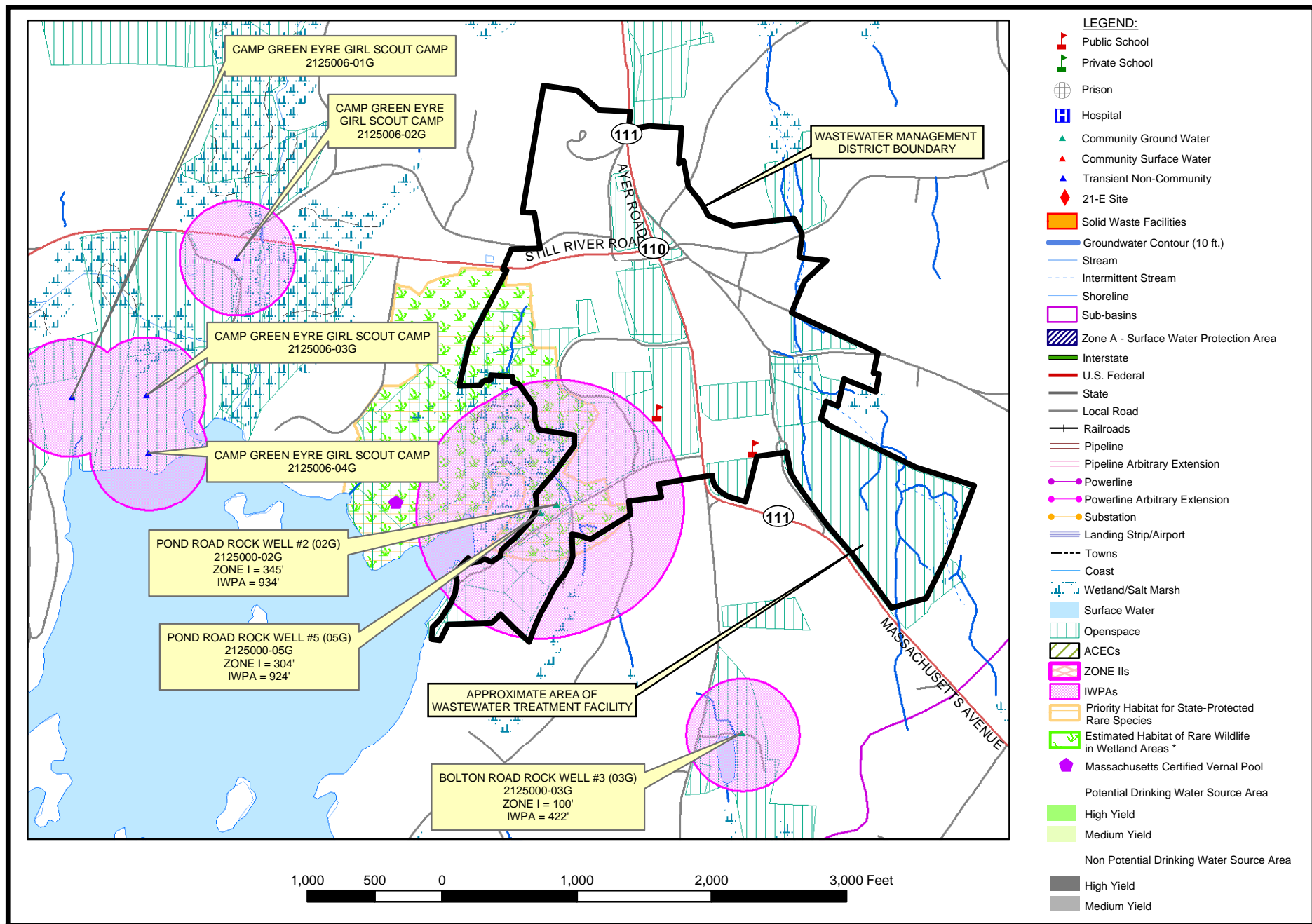
The minimum work required for the existing WWTF to return to compliance with the Groundwater Discharge Permit, which includes the modifications described above in Section 3.C. and shown in Figure 4, is estimated to cost approximately \$534,000. The proposed Project, which includes these modifications to the WWTF and construction of the limited low pressure sewer service system shown in Figure 1, is estimated to cost approximately \$2,000,000.

The Town has reviewed and estimated costs of providing public sewer to the following four municipal properties: Town Hall/Ambulance Building, Firehouse, Hildreth House, and the Old Library. This alternative was reviewed to alleviate the septic system issues at these properties as outlined in Table 2. Due to the location of these properties in relation to the existing WWTF and the significant length of sewer required to service these properties, the estimated cost for servicing only these municipal properties is approximately \$1,560,000.

It has been determined that due to the small incremental cost difference, approximately \$440,000, and increased overall benefit to the Town, the Town is seeking financial aid to implement the proposed Project. This proposed Project includes the modifications to the existing WWTF and construction of the limited low pressure sewer service system shown in Figure 1.

### **Capital Cost Allocations**

Perhaps the most challenging aspect of any municipal sewer project is determining a fair and reasonable cost allocation strategy. While most communities that construct limited public sewer system extensions assess a portion of those costs to “fronted” properties through betterment assessments, the range of such costs is substantial. The current trend is to assess between 50% and 100% of the project costs to sewer betterments, with the remainder assessed to the entire community through property taxes.





Initially, the Town Center Sewer Action Group (TCSAG) considered a 75:25 split of the project costs with the larger portion paid by betterments. After much discussion with Town officials and staff, it was decided that a 62:38% cost allocation was more reasonable and workable. That determination was made, in part, after considering the decrease in the Town's share of the operation and maintenance costs, due to non-municipal use of the sewer system going forward. The resulting betterment assessment cost was also an important factor. It has been estimated that the Town's share of the annual operation and maintenance costs will eventually be less than 40 percent. Based on cost models prepared by the TCSAG, the municipal and non-municipal contributions to the annual cost of operation will be equivalent in year 14 of the system's operation. System operation and maintenance costs will also increase due to added system flows as more properties connect to the sewer system. Energy and chemical costs will increase proportionately with increased flow. Sludge pumping and disposal costs will increase as well, with the added wastewater flow and increased solids contributions from the Bromfield School, Elementary School and library.

### **Operation and Maintenance Costs**

The current annual operation and maintenance costs for the treatment facility are estimated at \$85,000 per year. Those total costs will increase initially with the addition of new equalization tanks, new denitrification filter, and increased pre-aeration facilities. The costs to pump the wastewater at the Bromfield School/Library and at the Harvard Elementary School should also increase due to the replacement of existing pumping systems. These latter minor increases will be offset somewhat by the savings in septage pumping costs at those facilities.

While the initial operation and maintenance cost for the Sewer District is estimated at approximately \$98,000, periodic costs to address existing denitrification filter clogging should not be required.

### **Project Financing**

As stated previously, the Town will assess a significant portion of the capital cost of the project through sewer betterments, with a portion of the costs paid through property taxes.

Another crucial element of the Project's financing is the need for a low interest loan to pay back the cost of the municipal borrowing over time. The Town should consider the advantages and disadvantages of borrowing over a minimum of 20 years and a maximum of 30 years. While municipal bond rates are currently fairly low (as compared with recent years) the TCSAG will actively pursue State Revolving Fund (SRF) low interest loans for the project. As of late, these loans have been offered at 2 percent interest, up to 30 years. The SRF loan is much preferred over conventional municipal bond market by Town Officials.

The annual principal and interest cost for a \$2,000,000 note over 20 years would be approximately \$120,000. The borrowing costs would be fairly consistent over the 20 year period, whereas the cost paid to the Town in the form of sewer betterments would be based on a constant principal payment with interest on the remaining principal. The Town should establish an interest rate to be paid by bettered property owners. Based on discussions with the TCSAG, they prefer to keep all of their options open. As such, draft legislation for the Harvard Wastewater Management District allows the interest rate to be set between 2% (assuming SRF

loan financing) and 5%. The following table summarizes the estimated first and tenth year betterment payout cost for a \$17,000 betterment assessment paid over 20 years at the listed interest rate:

<u>Interest Rate</u>	<u>First Year</u>	<u>Tenth Year</u>
2%	\$1,190	\$1,020
3%	\$1,360	\$1,105
4%	\$1,530	\$1,190
5%	\$1,700	\$1,275

Whichever rate the Town selects, it is important that the Town establishes as Enterprise Fund for the Management District. With an Enterprise Fund, most of the concern for sewered properties paying their Betterment Assessment “Up Front” is eliminated. Interest paid on the betterment assessment and interest earnings on the betterments that are paid up front could be used to offset annual costs to administer the betterment process or to reduce outstanding bonded indebtedness.

For purposes of this Report, and for estimated annual user costs, a \$17,000 betterment assessment apportioned over 20 years at 4% interest will be used.

### **Connection Fees**

In addition to a betterment assessment, the Town may elect to assess a connection fee to offset a portion of the capital cost and to pay for the cost of inspecting the pipeline and grinder pump installation on private property. The Town Center Sewer Action Group (TCSAG) has initially set these fees at a cost of \$1,000 per connection.

### **User Charges**

The Town is currently responsible for the total operation and maintenance costs for the collection and treatment system. Going forward, as connections are made to the sewer system, additional users will share in the costs to operate the sewer system. Rather than penalize the property owners who connect to the sewer system with high annual costs (since many properties that can use the system will not be connected and share in the annual cost), the Town will set a rate for system use as if all the users had been connected. In this way, future connections to the system will be subsidized by the Town. Over time, as more connections are made, the Town’s costs will be reduced proportionately.

Assuming a total connected flow of 23,000 gpd and assuming that the current average flow of 5,000 gpd will continue to be paid by the Town for the three municipal properties connected to the sewer, the “new” connections will be assessed for \$98,000 less \$21,300 (i.e., the Town’s portion calculated as  $5,000/23,000 \times \$98,000$ ) or \$76,700. Based on an estimated 79 possible new connections, the annual user charge would be approximately \$970 per year. While somewhat high, this does not account for properties that may have more than one dwelling unit or use more than the “average” daily flow for a “typical” residential user.

The Town could consider using interest charges on sewer betterment assessments, interest earnings on paid sewer betterment assessments, or a portion of the revenue from sewer connection fees to reduce the annual user charges somewhat.

## Estimated Total User Costs

The following table summarizes the costs to be paid by a typical residential property owner connected to the Town Center Sewer System.

**Table 11. Estimated Typical System User Costs**

<u>Item</u>	<u>Estimated One-Time Cost</u>	<u>Estimated Average Annual Cost</u>
Sewer Betterment	\$17,000	\$1,200 <sup>(1)</sup>
Sewer Connection Fee	\$1,000	
Sewer User Charge		\$970 <sup>(2)</sup>
Property Tax Increase		\$15
Sewer Connection	\$6,000 <sup>(3)</sup>	

(1) 20 year betterment apportioned at 4% interest

(2) This cost is only a preliminary estimate and will be refined once the Town appoints the Town Center Sewer Policy Committee. This Committee will be responsible for establishing policies associated with the sewer system's use, operation, and maintenance.

(3) Cost for typical connection including the cost to purchase and install a grinder pump.

## Estimated Non-User Costs

As stated previously, all taxpayers in Harvard currently pay for the operation and maintenance of the Bromfield School/Elementary School Treatment Facility through their property taxes. Based on cost estimates prepared on behalf of the TCSAG, the annual tax impact on a typical residential property will be \$15.00 per year. As more users connect to the sewer system, and the Town's share of the operation and maintenance costs are reduced, the annual tax rate impact will be also reduced. The Town has projected that when 80 percent of the sewered properties are connected to the sewer system, the impact of the project on property taxes will be zero.

### **3.F. Institutional, Financial, Legal and Management Arrangements**

On May 2, 2009, Harvard Town Meeting approved an Article to petition the state legislature to establish the Harvard Wastewater Management District Commission. That draft legislation has been filed with the State as House Bill No. 1130. The Town Meeting Article and House Bill are included in the Appendix.

The Harvard Wastewater Management District Commission will be a three person appointed municipal board with the authority to design, build and operate the Town Center Sewer System. It is anticipated that the legislation, which mirrors similar legislation for similar small municipal utilities, will be formed prior to the start of system construction. The enabling legislation also includes several provisions that would typically require Town Meeting approvals and some that would require "special acts" (or session acts) with legislature approvals separately. Some of these include:

- Acceptance of Sections 16A and 16B of Chapter 83 of the Massachusetts General Laws
- Acceptance of Sections 13B of Chapter 80 of the Massachusetts General Laws
- Provisions for limiting future development allowed to connect to the sewer system

- Additional flexibility in the interest rate allowed to be charged for sewer betterment assessments
- To adopt the provisions of Section 53F1/2 of Chapter 44 of the General laws to establish a Sewer Enterprise Fund














### **3.G. Public Participation Program**

A public hearing on the proposed Project was held at the annual Town Meeting on May 2nd, 2009. At this meeting, the alternatives considered and their environmental impacts were discussed. Articles 24 and 25 were passed. Article 24 authorized the acceptance of the Wastewater Management District Act, and Article 25 appropriates \$2,000,000 for the purpose of financing the planning and construction of a sewer system to serve the Harvard Wastewater Management Service Area. These Town Articles are included in the Appendix.

### **3.H. Estimated Project Schedule**

The attached implementation schedule, Table 12, reflects the estimated timeline for final design, permitting and construction of the proposed project. It is likely that two construction contracts will be required; one for the sewer installation and one for the treatment plant improvements. Based on the attached schedule, tie-ins to the new low pressure sewer system should be possible by November 1, 2010.

**Table 12. Proposed Estimated Implementation Schedule**

Task / Milestone	2009				2010												2011				
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1 Preliminary Engineer Report (PER)/ DEP Project Evaluation Form (PEF)																					
1.1 Submit to PER/PEF to DEP for Approval for SRF Funding	 (9-18-2009)																				
2 DEP Review of PER/PEF																					
* <i>DEP Issues Intended Use Plan (IUP) for SRF Funding</i>																					
3 Solicitation of Engineering Design Services																					
4 Design of Low-pressure Sewer System																					
5 Bidding Assistance																					
5.1 Bid Period (minimum 5 weeks)																					
5.2 Bid Opening																					
5.3 Bid Review/Evaluation - Recommendation to Award																					
* <i>Issue Notice to Proceed to Low Bidder</i>																					
6 Construction of Project (Final Paving in May 2011)																					
* <i>System Approved for Use - November 1, 2010</i>																					

# APPENDIX A

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## Original Application

Municipality: HARVARD Address: 13 Ayer Road Harvard MA 01451 Date: 9/2/2009 10:05:00 PM

Name/Title: Liz Allard Land Use Boards Clerk Email: lallard@harvard.ma.us Phone: 978 456 4106

Municipal applicants will need to provide evidence of having met or made a binding commitment to the following criteria. Note: If electronic files were submitted to document compliance with the criteria last fiscal year (FY 09) these files should be referenced but need not be resubmitted with an FY10 application.

PLAN FOR & PROMOTE LIVABLE COMMUNITIES & PLAN REGIONALLY (19)		Existing	Commit
1	<b>Current Master Plan OR</b>	(6) ●	(0) ○
	Supporting File: 125 - Table of Contents.pdf. Supporting File: 125 - Cover-Front Section.pdf. Supporting File: 125 - MP Executive Summary.pdf. The update of Harvard's third Master Plan was completed in 2002. Key to the plan was the 10 year implementation plan of community based initiatives outlined in Chapter 5 of the plan. Seven years since into the plan Harvard has achieved many of the primary goals outlined that recommended specific zoning changes, neighbor plans to be completed or studies to be performed. Several projects have progressed beyond the planning stage and are in different phases of implementation.		
	<b>Executive Order 418 Community Development Plan; OR</b>	(4) ○	(0) ○
	<b>Current housing plan AND current DCS-approved Open Space and Recreation Plan; OR</b>	(3) ○	(0) ○
	<b>Current housing plan OR current DCS-approved Open Space and Recreation Plan</b>	(2) ○	(0) ○
1a	<b>Commitment to complete a Master, 418, Housing, or Open Space &amp; Recreation Plan by Dec. 31, 2010</b>	(0) ○	(2) ○
1b	<b>Funding or regulatory actions implementing 2 specific Plan recommendations since July 1, 2007</b>	(3) ○	(1) ○
2	<b>Water resource plan: Source Water Protection, Water Conservation, Comprehensive Wastewater, or Integrated Water Resource Management</b>	(3) ●	(1) ○
	Supporting File: 125 - Source Protection Plan Contents and Summary.pdf. A Comprehensive Source Water Protection Plan was prepared for the Town of Harvard Water Department by the Mass Rural Water Association and was completed in July 2006. Harvard has a limited public water supply which services approximately 100 connections located in the town center. Three churches, private residences, a handful of retail/service businesses, the public schools and almost all municipal buildings are located here. The wells that provide drinking water are located within the Bare Hill Pond Watershed which is the largest open body of water within Harvard and is a significant environmental and recreational resource for the town. Full text of the Source protection plan is available in PDF form.		
3	<b>Execution of a compact or MOU, provision of funding, or regulatory change to attain a regional or intergovernmental goal since July 1, 2007</b>	(3) ○	(1) ○
4	<b>Adoption of the Community Preservation Act</b>	(4) ●	(2) ○
	The Town meeting voted to adopt the Community Preservation Act at a Special Town Meeting of the Town of Harvard on 2-26-2001. by Art. 2. Officials were appointed to the nine member Community Preservation Committee and have continued to be elected or appointed since that time.		
ZONE FOR & PERMIT CONCENTRATED DEVELOPMENT AND MIXED USE (26)		Existing	Commit
5	<b>Zoning for mixed-use in an applicable location</b>	(4) ●	(2) ○
	Supporting File: 125 - Map 2-B Zoning.pdf. The town of Harvard established a commercial "C" district flanking portions of Ayer Road as it runs north from Route 2 back in 1986 (Sections 125-12 thru 14 & 23). In response to the Master Plan recommendations, Small, Medium and Large Scale commercial uses were modified and zoning changes were adopted by the town March 27, 2004. The Ayer Road Village Special Permit defined in Section 125-52 of the protective bylaws allows and encourages mixed used development including multi-family residential housing, provides incentives for open space conservation/historic preservation and encourages property owners to redevelop existing parcels with shared access and shared parking with well planned sites rather than subdividing them into multiple parcels with multiple driveway cuts.		
5a	<b>If mixed-use zoning is a DHCD approved 40R District or for Transit Oriented Development (TOD)</b>	(2) ○	(1) ○
5b	<b>Building permit issued for a mixed-use development since July 1, 2007</b>	(2) ○	(0) ○
	Note: A Building Permit has not yet been issued for the first Ayer Road Village –Special Permit which was approved for Wheeler Realty Trust in 2008. The project is on hold subject to financing and tax credit approvals as of August 2009.		
6	<b>Zoning for accessory dwelling units (ADU)</b>	(3) ●	(1) ○
	A provision in the protective bylaws allowed "in-law apartments" in existing single family homes as far back as 1982 and was revised in 1986. The bylaws were substantially revised by the town meeting action on March 25, 2006 creating Section 125-18 "Accessory Apartment Use". This allowed the creation of accessory apartments by Special Permit within a formerly established primary residence, outbuilding or accessory structure without any restriction as to the relationship of the occupant to the owner of the property.		
6a	<b>Occupancy permit issued for at least one accessory dwelling unit since July 1, 2007</b>	(2) ○	(0) ○
	Note: According to Building Commissioner Gabe Vallente several permits have been granted by the ZBA but none have been granted a CO as of August 2009		
7	<b>Zoning allowing by-right multi-family dwellings (not age restricted)</b>	(3) ○	(1) ○
7a	<b>If zoning allows by-right multi-family dwellings of 4 or more units (not age restricted)</b>	(3) ○	(1) ○
8	<b>Zoning for clustered development / Open Space Residential Development (OSRD)</b>	(3) ●	(1) ○
	One of the first items implemented from the 2002 Master Plan, a cluster bylaw titled "Open Space and Conservation – Planned Residential Development (OSC-PRD)" was developed by the Planning Board and adopted by the town meeting on March 29, 2003 (See Harvard Protective Bylaws Section 125-35). As an alternative to subdivision approval, this special permit process allows single family, multifamily (not to exceed 6 units per building) dwellings integrated into a rural setting of agricultural, open space or passive recreation areas. Flexible siting criteria for lot sizes and setbacks makes this a flexible alternative to standard subdivision plans. A minimum of 50% of the OSC-PRD parcel must be permanently protected common open space, of which: no more than 25% can be wetlands; no area can exceed a finished grade of 33%; no more than 300 feet from the nearest building; must be compact and contiguous and not less than a dimension of 50 ft; and must be open to the sky and pervious.		
8a	<b>If cluster is mandated, by-right, or includes a density bonus</b>	(2) ●	(1) ○
	A development density bonus up to a maximum of 25% is available to projects that use the OSC-PRD process that : propose significant increases in open space; provide permanent protection for agricultural land or historic structures or other unique features on the site; deed restricted housing units for affordable or elderly housing; limit multifamily units to 2 bedroom units; make significant on site environmental improvements or improvements that benefit other off-site public facilities.		



Municipal applicants will need to provide evidence of having met or made a binding commitment to the following criteria. Note: If electronic files were submitted to document compliance with the criteria last fiscal year (FY 09) these files should be referenced but need not be resubmitted with an FY10 application.

	One Cluster Subdivision was approved prior to July 2007 (see #33 for bonus point request)		
EXPAND HOUSING OPPORTUNITIES (21)		Existing	Commit
9	Zoning requiring the inclusion of affordable units (IZ)	(3) <input type="radio"/>	(1) <input type="radio"/>
9a	Building permits issued for affordable units under an inclusionary bylaw/ordinance since July 1, 2007	(2) <input type="radio"/>	(0) <input type="radio"/>
10	Increased housing stock by 50-99% or more of state goal	(3) <input type="radio"/>	(0) <input type="radio"/>
	100% or more of state goal	(4) <input type="radio"/>	(0) <input type="radio"/>
11	66 % or more of new units produced using a listed smart growth technique	(4) <input type="radio"/>	(0) <input type="radio"/>
12	Attainment of Housing Production certification (.5% of housing units) <u>OR</u>	(4) <input type="radio"/>	(0) <input type="radio"/>
	Attainment of a Chapter 40B threshold	(5) <input type="radio"/>	(0) <input type="radio"/>
13	Production of housing units on municipal land or with municipal funding since July 1, 2007	(3) <input type="radio"/>	(0) <input type="radio"/>
MAKE EFFICIENT DECISIONS & INCREASE JOB AND BUSINESS OPPORTUNITIES (11)		Existing	Commit
14	Redevelopment Strategy: (a) inventory, (b) remediation, revitalization, <u>or</u> reuse strategy, or (c) site planning	(4) <input type="radio"/>	(2) <input type="radio"/>
15	Approved 43D Priority Development Site or provision of a (a) financial, <u>or</u> (b) regulatory redevelopment incentive	(4) <input type="radio"/>	(2) <input type="radio"/>
16	Adoption of permitting best practices	(3) <input type="radio"/>	(1) <input type="radio"/>
PROTECT LAND AND ECOSYSTEMS (21)		Existing	Commit
17	15-25% of town area protected [by a Chapter 184-type restriction or Article 97] <u>OR</u>	(4) <input type="radio"/>	(0) <input type="radio"/>
	25% or more of town area protected	(5) <input checked="" type="radio"/>	(0) <input type="radio"/>
According to the MassGIS Data layer updated July 14, 2009 Harvard 26.42% of its land area defined as Protected Open Space			
18	Land protected via a restriction or fee acquisition alone or with a land trust since July 1, 2007	(4) <input checked="" type="radio"/>	(0) <input type="radio"/>
Harvard's most recent gift of land was an assemblage of 3 parcels of approximately 40 acres in total of partial woodland, pasture and open field by the Dunlap family (Harvard Assessors map 19, parcels, 14, 69 & 70). A permanent conservation restriction (Worcester Registry of deeds Book 41900, Page 304) was negotiated between the owner, the Harvard Conservation Commission and the non-profit Harvard Conservation Trust. Acceptance of the conservation restriction was made by the Conservation Commission, Board of Selectmen and the Harvard Conservation Trust during the month of May in 2007, with final approval of the conservation restriction made by Ian Bowles, Secretary of Energy and Environmental Affairs on August 31, 2007.			
19	Existence of an agricultural commission	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>
An Agricultural Advisory Commission was created by an act of the Annual Town Meeting of the Town of Harvard on 3-27-2006 by Art. 22.			
20	Adoption of a Right-to-Farm bylaw/ordinance	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>
A "Right to Farm Bylaw" was adopted by the Annual Town Meeting of the Town of Harvard on 3-27-2006 by Art. 23.			
21	Stewardship plan for a municipal forest	(3) <input type="radio"/>	(1) <input type="radio"/>
22	Transfer of Development Rights (TDR) or other zoning for agricultural, forestry, or natural resource conservation	(3) <input type="radio"/>	(1) <input type="radio"/>
USE NATURAL RESOURCES WISELY (8)		Existing	Commit
23	Adoption of a bylaw, ordinance, or regulation that encourages the use of Low Impact Development (LID) to address stormwater	(4) <input type="radio"/>	(2) <input type="radio"/>
24	Implementation of the 2006 Massachusetts Water Conservation Standards	(4) <input type="radio"/>	(2) <input type="radio"/>
PROMOTE CLEAN ENERGY (9)		Existing	Commit
25	Implementation of energy efficiency measures	(3) <input type="radio"/>	(1) <input checked="" type="radio"/>
We request one commitment point for our application filed on August 14, 2009 for The commonwealth's Green Communities Grant Program. Harvard established an Energy Advisory committee who is in the middle of a comprehensive municipal building energy audit and has provided guidance to department heads regarding the implementation of energy efficiency improvements to lighting and HVAC systems for our public school buildings over the past year.			
26	Production or purchase of renewable energy	(3) <input type="radio"/>	(1) <input type="radio"/>
27	Clean energy regulations and incentives	(3) <input type="radio"/>	(1) <input type="radio"/>
PROVIDE TRANSPORTATION CHOICE (9)		Existing	Commit
28	Regulations requiring or actions to facilitate bicycling and walking since July 1, 2007	(3) <input type="radio"/>	(1) <input checked="" type="radio"/>
We request one commitment point for the pursuit of a comprehensive town center pedestrian pathway and non-vehicular circulation plan in conjunction with the pursuit of making Harvard a "Safe Routes to School" community. A backbone plan for non-vehicular connections called the Harvard Recreation Trail Plan is outlined in item #33 for which funding has been received and construction underway for a critical North/South connector that lies outside of the town center. This plan will be developed jointly by the Board of Selectmen, Historic Commission and the Parks and Recreation Commission.			
29	Regulation requiring or completion of a context sensitive transportation project since July 1, 2007	(3) <input type="radio"/>	(1) <input type="radio"/>
30	Regulations requiring or implementation of innovative transportation measures since July 1, 2007	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>



Original Application

Municipality: HARVARD Address: 13 Ayer Road Harvard MA 01451 Date: 9/2/2009 10:05:00 PM

Name/Title: Liz Allard Land Use Boards Clerk Email: lallard@harvard.ma.us Phone: 978 456 4106

Municipal applicants will need to provide evidence of having met or made a binding commitment to the following criteria. Note: If electronic files were submitted to document compliance with the criteria last fiscal year (FY 09) these files should be referenced but need not be resubmitted with an FY10 application.

We request three points for the following actions that have been completed by the Town of Harvard: 1) "Ayer Road Functional Design Report" Prepared by CDM May 2008, evaluated the Ayer Road Corridor through the commercial district and developed a pedestrian/bicycle friendly access management plan while promoting sustainable redevelopment of the commercial District into improved "Village Center" in concert with the Master Plan objectives identified in 2002. 2) Zoning was approved in 2004 that encourages shared site access and shared parking facilities in the commercial "C" district using the Ayer Road Village Special Permit (See Protective Bylaws Section 125-52) to reduce impervious areas by requiring compliance with DEP Best management practices for stormwater management.			
ADVANCE EQUITY (6)		Existing	Commit
31	Actions that promote fair housing since July 1, 2007	(3) <input type="radio"/>	(1) <input type="radio"/>
32	Actions that promote environmental equity since July 1, 2007	(3) <input type="radio"/>	(1) <input type="radio"/>
PROMOTE SUSTAINABLE DEVELOPMENT VIA OTHER ACTIONS (10)		Existing	Commit
33	Existence of or commitment to additional local measures or actions 2, 4, 6, 8, OR 10	(10) <input type="radio"/>	(0) <input type="radio"/>
	See explanation above	(8) <input type="radio"/>	(0) <input type="radio"/>
	See explanation above	(6) <input checked="" type="radio"/>	(0) <input type="radio"/>
Request 2 pts for fulfillment of 2002 Master Plan Objectives prior to 2007: (Initiative 1: Creation of Coordinating Committee) (Initiative 2: Conservation Cluster Bylaw) (Initiative 6 : Update of Open Space Plan), (Initiative 15A&B: Ayer Road Special Permit District ARV-SP Bylaw) (Initiative 15 E: Ayer Road Corridor Study) (Initiative 16 B&C: Town Center Public Action Plan and Wastewater Feasibility Study) (Initiative 20 B: Open Space, Pedestrian and Bicycle access plan – See Recreation Trail Plan below) Request 2pts. for permitting Harvard's first OSC-PRD Open Space Conservation Planned Residential Development aka "Cluster Development", approved by the Planning Board in 2004. It is located on Blanchard Road, developed by the Deer Run Realty Trust and has 20.92 acres of protected open space and a total of five dwelling units: four new and one existing dwelling. Request 2 pts. For the ongoing development of a Recreation Trail System – \$10,000 in CPC Funding was approved in March 2005 to compete a recreation trail study to provide a backbone for non- vehicular transportation that would connect the center of Harvard to outlying recreation resources. Key easements from private property owners have been secured and permission from Mass Highway to improve and relocate an existing snowmobile trail has been obtained. \$10,000 was received through an earmark from the legislature for Design Services in 2007 for the trail. A grant from DCR in 2008 for \$41,700 was awarded for construction of sections of the trail ( additional matching funds of \$7500 from CPA fund and \$5100 in direct labor were committed in 2007). This Trail linkage will reconnect the northern half of Harvard that was severed by the construction of Route 2 and allow bicycles, pedestrians and snowmobiles to avoid using Route 111 – Ayer Road, and connect to outlying neighborhoods, neighboring Devens and the commercial district to existing trail networks and recreation areas in Harvard.			
	See explanation above	(4) <input type="radio"/>	(0) <input type="radio"/>
	See explanation above	(2) <input type="radio"/>	(0) <input type="radio"/>
BONUS - 1 POINT FOR EVERY FISCAL YEAR COMMITMENT IMPLEMENTED: 0			
No previous year's commitments found			
TOTAL: EXISTING, COMMIT AND BONUS POINTS (MAXIMUM )			
Total Requested Score: 51			

## APPENDIX B

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9A - APPLICATION FOR LOCAL UPGRADE APPROVAL

*Commonwealth of Massachusetts*

*HARVARD, Massachusetts*

Application for Local Upgrade Approval

Title 5, 310 CMR 15.000

DEP approved form required by 310 CMR 15.403(1)

To be submitted to Local Approving Authority/Board of Health: For the upgrade of a failed or non-conforming system with a design flow of <10,000 gpd, where full compliance, as defined in 310 CMR 15.404(1), is not feasible.

To be submitted to DEP: For the upgrade of a failed or non-conforming system with a design flow of 10,000 up to 15,000 gpd and/or for upgrade of state or federal facility, where full compliance, as defined in 310 CMR 15.404(1), is not feasible.

**NOTE:** Local upgrade approval shall not be granted for an upgrade proposal that includes the addition of new design flow to a cesspool or privy or the addition of new design flow above the existing approved capacity of a system constructed in accordance with either the 1978 Code or 310 CMR 15/000.

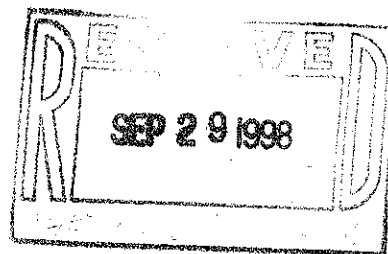
1) Facility/System Owner:

Name: David Brown

Address: 14 Ayer Rd., Harvard

Phone #: 978-456-6819

Address of facility: 14 Ayer Rd. Harvard



2) Applicant (if different from above)

Name:

Address: SAME

Phone #:

3) Type of Facility:

☒ Residential ☐ Commercial ☐ School ☐ Institutional

(Specify) Single family Home

4/23/99  
\* Denied for 5 bedrooms; system is designed per plan dated 7/10/98, revised 2/17/99, as 4 bedrooms.  
Harvard Board of Health.

4) Type of Existing System:

☐ privy ☐ cesspool(s) ☒ conventional system  
☐ other(describe) septic tank with leach area

Type of soil absorption system (trenches, chambers, pits, etc.) exact type unknown

5) Design Flow Based on 310 CMR 15.203:

a) Design flow of existing system ? gpd  
Approved: ☐ yes Approval date: ?  
☐ no Why: \_\_\_\_\_

b) Design flow of proposed upgraded system 550 gpd Why 5 bedrooms

c) Design flow of facility 550 gpd

6) Proposed upgrade of existing system is:

a) ☒ Voluntary  
☐ required by order, letter, etc. (attach copy)  
☐ Required following inspection required by 31 CMR 15.301  
(provide date inspection form was submitted to the approving authority)  
\_\_\_\_\_(date)

b) Describe the proposed upgrade to the system:

Installation of new tank, p-box, and leach field

c) Which of the following are applicable to the proposed upgrade?

☐ Reduction of setback(s) (list setbacks to be reduced with proposed setback distances)

☐ Percolation rate of 30-60 minutes per inch (state actual perc rate)

☐ Up to 25% reduction in subsurface disposal area design requirements (state required & proposed size)

☐ Relocation of water supply well (identify well, describe relocation)

☒ Reduction of required separation between bottom of SAS & high groundwater (specify proposed reduction & perc rate) 10 min / Inch

Other requirements of 310 CMR 15.000 that cannot be met (specify sections of the code)

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System upgrades that cannot be performed in accordance with 31 CMR 15.404 & 15.405, or in full compliance with the requirements of 310 CMR 15.000, require a variance pursuant to 310 CMR 15.410-15.417.

- 7) If the proposed upgrade involves a reduction in the required separation between the bottom of the soil absorption system and the high groundwater elevation, an Approved Soil Evaluator must determine the high ground water elevation pursuant to 310 CMR 15.405(1)(I)(1). The evaluator must be a member or agent of the local approving authority:

Distance from soil absorption system to high groundwater 3 feet

As determined by:

Evaluator's name: Robert Aulton

Evaluator's Signature: \_\_\_\_\_

Date of evaluation: June 11, 1998

8) Notice to Abutters:

No application for upgrade approval in which the setback from property lines or a private water supply well is reduced shall be complete until the applicant has notified all abutters whose property or well is affected by certified at least ten days before the Board of Health meeting at which the upgrade approval will be on the agenda. Such notice shall include the date, time and place where the upgrade approval will be discussed.

If the department is the approving authority, then such notice to abutters must be completed prior to the date of submission of the application to the department.

The notices to abutters shall include a copy of the completed application form and shall reference the standards set forth in 310 CMR 15.402 through 15.405.

List of affected abutters:

Abutter Name \_\_\_\_\_ Date notified \_\_\_\_\_  
Address \_\_\_\_\_

Abutter Name \_\_\_\_\_ Date notified \_\_\_\_\_  
Address \_\_\_\_\_

Abutter Name \_\_\_\_\_ Date notified \_\_\_\_\_  
Address \_\_\_\_\_

Abutter Name \_\_\_\_\_ Date notified \_\_\_\_\_  
Address \_\_\_\_\_

9) Explain why full compliance, as defined in 310 CMR 15.404(1), is not feasible  
(each section must be completed):

a) An upgraded system in full compliance with 310 CMR 15.000 is not feasible:

Site is very small and sloping. site uses  
large retaining walls which would have to be  
even larger

b) An alternative system approved pursuant to 310 CMR 15.283-15.288 is not feasible.

Cost is prohibitive

c) A shared system is not feasible.

No abutting property has any suitable  
land

d) Connection to a sewer is not feasible.

There is no sewer in the area.

10) An application for a disposal system construction permit, including all required  
attachments (e.g. plans & specifications, site evaluation forms), must accompany  
this application. Is the DSCP application attached?

☒ yes

☐ no

11) Certification

"I, the facility owner, certify under penalty of law that this document and all attachments, to the best of my knowledge and belief, are true, accurate, and complete. I am aware that there may be significant consequences for submitting false information, including, but not limited to, penalties or fine and/or imprisonment for knowing violations."

Ben C Osgood agent 9/28/98  
Facility Owner's Signature Date

Benjamin C Osgood Jr  
Print Name

Benjamin C Osgood Jr 9/28/98  
Name of Preparer Date

978-686-1768 33 Walker Rd Suite 23 N. Andover  
Telephone No. & Address of Preparer

NOTE: Title 5, 310 CMR 15.403(4) requires the system owner or operator to submit to the Department a copy of the local upgrade approval upon issuance by the Board of Health and prior to commencement of construction.

# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 772-3338

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

☐ To install a new Sewage Disposal system  
☒ Local Upgrade Approval

ISSUED FOR THE Harvard BOARD OF HEALTH

OWNER (David Brown) Coats Douglas St.  
(NOT TRANSFERABLE - FORMAL PERMIT TRANSFER MUST BE REQUESTED UPON CHANGE OF OWNERSHIP)

LOCATION OF LOT OR INSTALLATION 14 Ayer Road LOT NO. \_\_\_\_\_

DATE PERMIT ISSUED February 15, 1999 LOT SIZE 0.231 acres

SOIL DESCRIPTION 0-34" top & subsoil, 34-62" loamy sand, 62-116" loamy sand, ESHWT 34"

PERC. RATE 10 min/inch

ENGINEERING OR SPECIAL PREPARATION: ☒ System to be installed according to engineered plan No. 223  
by New England Engineering Services, Inc. Revised 1/15/99  
Local Upgrade approval - 3 ft. GW offset

SYSTEM DESIGNED FOR: Existing four bedrooms maximum WATER SUPPLY: ☒ Town ☐ Well

PRIMARY INSTALLATION 1500 gallon septic tank

SECONDARY INSTALLATION Three - 49' L x 3' W x 1' aff. depth trenches

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT: IV  
[Signature] BOARD OF HEALTH [Signature] BOARD OF HEALTH [Signature] BOARD OF HEALTH

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system; and if I am the contractor installing this system, I further agree to correct any fault caused by defective material or workmanship appearing in this system within one year from date of occupancy.

SIGNED Paula Brown ☒ Owner ☐ Contractor ☐ Licensed Installer

### CERTIFICATE OF COMPLIANCE

#### INSPECTIONS REQUIRED:

- ☒ XXXX
- ☒ Bed and trench excavation, before fill / stone by eng./NABH
- ☒ Fill in place by eng./NABH
- ☒ Completed system prior to backfill
- ☒ Final fill and grading by eng./NABH
- ☒ Engineer certification in writing of completed system
- ☒ As built plan ☒ By Design Engineer ☒ By Installer 10/2
- ☐ Water supply (if well) 10/29
- ☐ Recorded deed easements
- ☒ Certification of Rat. Wall by Eng.
- ☒ Eng. to stk SDS
- ☒ Inspection completed

Installer Orlando  
Date: \_\_\_\_\_ By: [Signature]  
Date: 9/99 By: [Signature]  
Date: 9/99 By: [Signature]  
Date: 10/99 By: [Signature]  
Date: 10/2/99 By: [Signature]  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: 5/16/02 By: [Signature]  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: 10/2/99 By: [Signature]

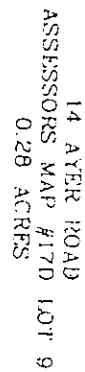
A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THIS CERTIFICATE IS COMPLETED.

### IMPORTANT NOTES

1. THE ISSUANCE OF THIS CERTIFICATE SHALL NOT BE CONSTRUED A GUARANTEE THAT THE SYSTEM WILL FUNCTION PROPERLY.
2. INSTALLATION OR REPAIR MUST BE PERFORMED BY NASHOBA LICENSED INSTALLER.
3. FAILURE BY INSTALLER TO CONFORM TO ALL REQUIREMENTS OF THIS PERMIT MAY LEAD TO SUSPENSION OR REVOCATION OF INSTALLER'S PERMIT.
4. THE OWNER SHOULD BE AWARE OF WETLANDS PROTECTION REQUIREMENTS OF THE LOCAL CONSERVATION COMMISSION.
5. THE SYSTEM IS NOT DESIGNED FOR GARBAGE DISPOSAL.
6. THE SYSTEM IS DESIGNED FOR USE STATED ABOVE.
7. \_\_\_\_\_
8. LEACH SYSTEMS MUST BE KEPT 100 FEET FROM ALL WELLS.
9. PROPER MAINTENANCE OF A SYSTEM REQUIRES ANNUAL PUMPING.
10. COLIFORM BACTERIA TEST REQUIRED, COMPLETE POTABILITY TEST RECOMMENDED.

Page 12





Page 10A

# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 772-3338

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

- ☐ To install a new Sewage Disposal system  
☒ To repair existing Sewage Disposal system ~~his system is used under the~~  
~~Emergency Section X X 05 X X 310 X X F X X X Environmental Code X Title X~~

Local upgrade  
Approval

ISSUED FOR THE Harvard BOARD OF HEALTH

OWNER William Salter & Kathryn Hewett

(NOT TRANSFERABLE - FORMAL PERMIT TRANSFER MUST BE REQUESTED UPON CHANGE OF OWNERSHIP)

LOCATION OF LOT OR INSTALLATION 3 Elm Street

LOT NO. \_\_\_\_\_

DATE PERMIT ISSUED October 8, 1998

LOT SIZE 1.68 acres

SOIL DESCRIPTION 0-36" fill, 36"-46" Bb FSL, 46-112" C LS EHGW @ 49"

PERC. RATE 15 min/inch

ENGINEERING OR SPECIAL PREPARATION: ☒ System to be installed according to engineered plan No. 1898

by Joseph R. Henry & Assoc., Inc.

Title 5 upgrade & Harvard BOH variances as noted on plan

SYSTEM DESIGNED FOR: Six bedroom  
(2 family w/ 400 s.f. office)

WATER SUPPLY: ☒ Town  
☐ Well

PRIMARY INSTALLATION Two 1500 gallon septic tanks

SECONDARY INSTALLATION Five 50'L x 2'W x 1'eff. depth trenches (560 GPD)

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT: \_\_\_\_\_

Richard A. Kault  
BOARD OF HEALTH

James A. Bence  
BOARD OF HEALTH

J. Theodore Spence  
BOARD OF HEALTH

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system; and if I am the contractor installing this system, I further agree to correct any fault caused by defective material or workmanship appearing in this system within one year from date of occupancy.

SIGNED B. D. R. AS AGENT FOR ☒ Owner ☐ Contractor ☐ Licensed Installer

### CERTIFICATE OF COMPLIANCE

#### INSPECTIONS REQUIRED:

- ☒ Bed and trench excavation, before fill / stone by eng./NABH  
☒ Fill in place by eng./NABH  
☒ Completed system prior to backfill  
☒ Final fill and grading by eng./NABH  
☒ Engineer certification in writing of completed system  
☒ As built plan ☒ By Design Engineer ☒ By Installer  
☐ Water supply (if well) \*  
☐ Recorded deed easements  
☒ Eng. to stake SDS loc.  
☐ \_\_\_\_\_  
☒ Inspection completed

Installer \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_  
Date: \_\_\_\_\_ By: \_\_\_\_\_

A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THIS CERTIFICATE IS COMPLETED.

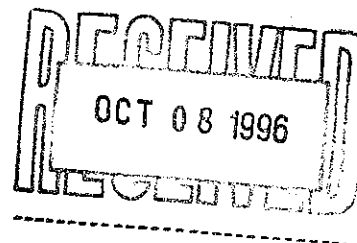
### IMPORTANT NOTES

1. THE ISSUANCE OF THIS CERTIFICATE SHALL NOT BE CONSTRUED A GUARANTEE THAT THE SYSTEM WILL FUNCTION PROPERLY.
2. INSTALLATION OR REPAIR MUST BE PERFORMED BY NASHOBA LICENSED INSTALLER.
3. FAILURE BY INSTALLER TO CONFORM TO ALL REQUIREMENTS OF THIS PERMIT MAY LEAD TO SUSPENSION OR REVOCATION OF INSTALLER'S PERMIT.
4. THE OWNER SHOULD BE AWARE OF WETLANDS PROTECTION REQUIREMENTS OF THE LOCAL CONSERVATION COMMISSION.
5. THE SYSTEM IS NOT DESIGNED FOR GARBAGE DISPOSAL.
6. THE SYSTEM IS DESIGNED FOR USE STATED ABOVE.
7. PERMIT IS VOID TWO YEARS AFTER DATE OF ISSUE.
8. LEACH SYSTEMS MUST BE KEPT 100 FEET FROM ALL WELLS.
9. PROPER MAINTENANCE OF A SYSTEM REQUIRES ANNUAL PUMPING.
- \*10. COLIFORM BACTERIA TEST REQUIRED, COMPLETE POTABILITY TEST RECOMMENDED.

SHALL BE PUMPED NO LESS  
THAN ONCE EVERY TWO YEARS

October 8, 1996

Harvard Board of Health  
13 Ayer Road  
Harvard, MA 01451



Re: Local Upgrade Approval Request  
Local B.O.H. Regulation Waiver Request  
SSDS for William Salter & Kathryn Hewett  
3 Elm Street, Harvard, MA 01451  
JRH&A Project No. 1898

Dear Board Members,

On behalf of our clients, William Salter and Kathryn Hewett, this office respectfully requests the Board to consider the following:

Local Upgrade Approval - Under 310 CMR 15.405(1)

- (b.) - Reduction of system location setback from a cellar wall. (20 feet required, 10 feet proposed)
- (d.) - A 19% reduction in the required subsurface disposal area design requirements. (1233 S.F. required, 1000 S.F. proposed)

Harvard B.O.H. Regulation Waivers:

Article V.

Section 7. - Reduction of the offset of the sewage disposal works to a dwelling. (20 feet required, 14 feet proposed - Primary, 10 feet proposed - Reserve, 17 feet proposed Septic Tank)

Section 8. - Reduction of the offset to seasonal high groundwater. (5 feet required, 4 feet proposed)

Regulation dated April 4, 1984

- (1.) - Waiver of the requirement for four passing percolation tests
- (3.) - Waiver of the requirement of a 10 foot minimum offset between primary and reserve leaching areas. It is proposed to locate the reserve trenches between the primary trenches.

It is our opinion that the degree of human health and environmental protection mandated by Title 5 will be achieved, and that strict adherence to 310 CMR 15.00 would constitute manifest injustice.

On behalf of our client, we thank the Board and its agents for their consideration and timely response to this matter.

Sincerely,

JOSEPH R. HENRY & ASSOCIATES, INC.

By:

Bruce Ringwall  
Director of Land Planning  
cc: William Salter & Kathryn Hewett

# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 772-3318

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

TO BE FILLED OUT BY THE BOARD OF HEALTH  
FOR THE SEWAGE DISPOSAL SYSTEM

RECEIVED  
MAY 21 1995

BY THE FAIRFAX BOARD OF HEALTH

GORDON MEMORIAL LIBRARY

(NOT TRANSFERABLE)

LOCATION OF LOT OR INSTALLATION ON THE COMMON

LOT NO.

DATE PERMIT ISSUED March 3, 1993

LOT SITE

6 - 2 ft. top and subsoil; 2 - 12 ft. gravel till mix;  
no groundwater on 12/3/82

PERM. DATE N/A

PERMIT NO. N-5734  
C. A. Perkins Co., Inc., dated January 1993

Existing Library

1000 gallon septic tank; STD Pump Sump Basin  
(to be vented at backhole)

One (1) 6 ft. x 11 ft. leach pit

**\*INSTALLER MUST NOTIFY NASHOBA & ENGINEER PRIOR TO START OF CONSTRUCTION.**

ISSUED BY HEALTH

*[Handwritten signatures]*

### CERTIFICATE OF COMPLIANCE

REVISIONS REQUIRED

Revisions:

1. Add

2. Add

3. Add

4. Add

5. Add

6. Add

7. Add

8. Add

9. Add

10. Add

11. Add

12. Add

13. Add

14. Add

15. Add

16. Add

17. Add

18. Add

19. Add

20. Add

### IMPORTANT NOTES

THE BOARD OF HEALTH CERTIFICATE SHALL NOT BE CONSIDERED A GUARANTEE THAT THE SYSTEM WILL FUNCTION PROPERLY.

CONSTRUCTION SHALL BE COMPLETED BY THE DATE SPECIFIED IN THE PERMIT.

IF THE SYSTEM IS NOT COMPLETED BY THE DATE SPECIFIED IN THE PERMIT, THE PERMIT MAY BE REVOKED.

THE BOARD OF HEALTH SHALL NOT BE RESPONSIBLE FOR THE DESIGN OR THE LOCAL CONDITIONS.

THE SYSTEM SHALL BE DESIGNED FOR AVERAGE LOCAL CONDITIONS.

THE SYSTEM SHALL BE DESIGNED FOR AVERAGE LOCAL CONDITIONS.

THE SYSTEM SHALL BE DESIGNED FOR AVERAGE LOCAL CONDITIONS.

THE SYSTEM SHALL BE DESIGNED FOR AVERAGE LOCAL CONDITIONS.

\*\* VARIANCES REVIEWED AND APPROVED BY THE BOARD OF HEALTH \*\*

# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 772-3338

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

- ☐ To install a new Sewage Disposal system  
☒ To repair existing Sewage Disposal system  
~~Emergency Section 11.00 of 910 CMR 14.00 Environmental Code, this~~

LOCAL UPGRADE  
APPROVAL

ISSUED FOR THE Harvard BOARD OF HEALTH

OWNER Malte & Marcia Lukas

(NOT TRANSFERABLE - FORMAL PERMIT TRANSFER MUST BE REQUESTED UPON CHANGE OF OWNERSHIP)

Assessors Map 17D,

LOCATION OF LOT OR INSTALLATION 14 Fairbank Street

LOT NO. Parcel G7

DATE PERMIT ISSUED May 21, 1996

LOT SIZE 0.82 acres

SOIL DESCRIPTION 0-30" top & subsoil, 30"-100" loamy sand, ESHWT @ 26"

PERC. RATE 20 min/inch

ENGINEERING OR SPECIAL PREPARATION: ☒ System to be installed according to engineered plan No. 1887  
by J.R. Henry & Assoc.

Local upgrade approval required for a 3 ft. groundwater offset.

SYSTEM DESIGNED FOR: Existing four (4) bedroom (maximum)

WATER SUPPLY: ☐ Town  
☒ Well

PRIMARY INSTALLATION 1500 gallon septic tank & 1500 gallon pump chamber

SECONDARY INSTALLATION Three - 47' L x 2' W x 2' eff. depth trenches w/vent & retaining wall as designed

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT: g.v.

BOARD OF HEALTH

BOARD OF HEALTH

BOARD OF HEALTH

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system; and if I am the contractor installing this system, I further agree to correct any fault caused by defective material or workmanship appearing to this system within one year from date of occupancy.

SIGNED B. D. Gill AS AGENT FOR ☒ Owner ☐ Contractor ☐ Licensed Installer

### CERTIFICATE OF COMPLIANCE

#### INSPECTIONS REQUIRED:

- ☒ ~~XXXX~~ Excavation and trench excavation, before fill / stone by eng./NABH  
☒ Fill in place by eng./NABH  
☒ Completed system prior to backfill  
☒ Final fill and grading by eng./NABH  
☒ Engineer certification in writing of completed system  
☒ As built plan ☒ By Design Engineer ☒ By Installer  
☐ Water supply (if well) \* 8/2  
☐ Recorded deed easements  
☒ Eng. Cert. for retaining wall  
☒ Eng. to stk system  
☒ Inspection completed

Installer Tom Bergen

Date: <u>5/24/96</u>	By: <u>JHG</u>
Date: <u>6/28/96</u>	By: <u>WAK</u>
Date: <u>7/3/96</u>	By: <u>WPK</u>
Date: <u>8/9/96</u>	By: <u>WPK</u>
Date: <u>8/2/96</u>	By: <u>WPK</u>
Date: <u>10/7/96</u>	By: <u>WPK</u>
Date: _____	By: _____
Date: _____	By: _____
Date: <u>8/2/96</u>	By: <u>WPK</u>
Date: _____	By: _____
Date: <u>10/7/96</u>	By: <u>WPK</u>

A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THIS CERTIFICATE IS COMPLETED.

### IMPORTANT NOTES

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8. LEACH SYSTEMS MUST BE KEPT 100 FEET FROM ALL WELLS.
9. PROPER MAINTENANCE OF A SYSTEM REQUIRES ANNUAL PUMPING.
10. COLIFORM BACTERIA TEST REQUIRED, COMPLETE POTABILITY TEST RECOMMENDED.



Commonwealth of Massachusetts

# Title 5 Official Inspection Form

Subsurface Sewage Disposal System Form - Not for Voluntary Assessments

Owner information is required for every page.

14 FAIRBANKS ST

Property Address

MALTE LUKAS

Owner's Name

HARVARD

City/Town

Ma  
State

01451  
Zip Code

10-1-08

Date of Inspection

offset approved for  
groundwater @ 26" / designed for  
36" offset  
in 1996

Inspection results must be submitted on this form. Inspection forms may not be altered in any way. Please see completeness checklist at the end of the form.

Refining wall etc.

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



## A. General Information

### 1. Inspector:

Wendy Rimbach SI #4466

Name of Inspector

Bluewater

Company Name

1 Richards Way

Company Address

Lunenburg

City/Town

Ma  
State

01462  
Zip Code

978-833-1350

Telephone Number

SI4466

License Number

☒ leaching trenches

number, length:

3 47'  
TRENCHES

☐ leaching fields

number, dimensions:

☐ overflow cesspool

number:

☐ innovative/alternative system

Type/name of technology:

Comments (note condition of soil, signs of hydraulic failure, level of ponding, damp soil, condition of vegetation, etc.):

Vegetation normal, no signs of hydraulic failure, no ponding, damp soil or breakout.

**Cesspools** (cesspool must be pumped as part of inspection) (locate on site plan):

Number and configuration

Depth -- top of liquid to inlet invert



**Title 5 Official Inspection Form**

Subsurface Sewage Disposal System Form - Not for Voluntary Assessments

14 FAIRBANKS ST

Property Address

MALTE LUKAS

Owner's Name

HARVARD

City/Town

Ma

State

01451

Zip Code

10-1-08

Date of Inspection

Inspection results must be submitted on this form. Inspection forms may not be altered in any way. Please see completeness checklist at the end of the form.

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

**A. General Information**

## 1. Inspector:

Wendy Rimbach SI #4466

Name of Inspector

Bluewater

Company Name

1 Richards Way

Company Address

Lunenburg

City/Town

Ma

State

01462

Zip Code

978-833-1350

Telephone Number

SI4466

License Number

**D. System Information (cont.)****Site Exam:**

- ☐ Check Slope
- ☐ Surface water
- ☒ Check cellar
- ☐ Shallow wells

Estimated depth to high ground water:

26" ESHWT

feet

Please indicate all methods used to determine the high ground water elevation:

- ☒ Obtained from system design plans on record

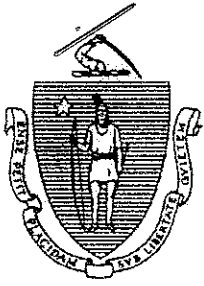
If checked, date of design plan reviewed:

5/21/96 PERMIT ATTACHED

Date

- ☐ Observed site (abutting property/observation hole within 150 feet of SAS)
- ☐ Checked with local Board of Health - explain:

Lukas, 14 Fairbank St. - Pass



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

**TITLE 5**  
**OFFICIAL INSPECTION FORM -NOT FOR VOLUNTARY ASSESSMENTS**  
**SUBSURFACE SEW AGE DISPOSAL SYSTEM FORM**  
**PART A**  
**CERTIFICATION**

Property Address: 14 Fairbank St. Harvard

Owner's Name: Malte Lukas

Owner's Address: P.O. box 535 Harvard

Date of Inspection: 9/28/05

Name of Inspector: (please print) **Bernard A. Tessier**

Company Name **American Rooter & Septic Service**

Mailing Address: p.o. box 1491 Leominster, MA 01453

Telephone Number: 1-800-689-7867

**CERTIFICATION STATEMENT**

I certify that I have personally inspected the sewage disposal system at this address and that the information reported below is true, accurate and complete as of the time of the inspection. The inspection was performed based on my training and experience in the proper function and maintenance of on site sewage disposal systems. I am a DEP approved system inspector pursuant to Section 15.340 of Title 5 (310 CMR 15.000). The system:

- ☒ X Passes  
☐ Conditionally Passes  
☐ Needs Further Evaluation by the Local Approving Authority  
☐ Fails

Inspector's Signature: B. Tessier

Date: 9/28/05

The system inspector shall submit a copy of this inspection report to the Approving Authority (Board of Health or DEP) within 30 days of completing this inspection. If the system is a shared system or has a design flow of 10,000 gpd or greater, the inspector and the system owner shall submit the report to the appropriate regional office of the DEP. The original should be sent to the system owner and copies sent to the buyer, if applicable, and the approving authority.

Notes and Comments

OWNERS COPY (1) ☐

BOH COPY (2) ☒

\*\*\*\*This report only describes conditions at the time of inspection and under the conditions of use at that time. This inspection does not address how the system will perform in the future under the same or different conditions of use.



July 24, 1996

Nashoba Associated Boards of Health  
30 Central Avenue  
Ayer, MA 01432

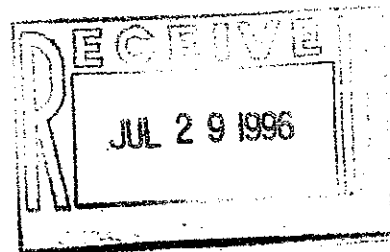
Re: Certification of Sewage Disposal System Construction

Project No.: 1887  
Location: 14 Fairbank Street, Harvard, MA

Plan Reference: JRH&A #1887

Client: Malte & Marcia Lukas

Contractor: J. T. Gould, Bergin Assoc.

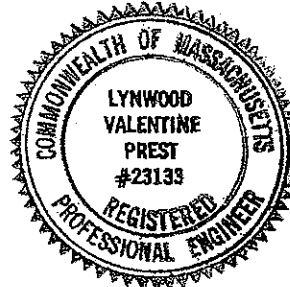


This letter is to certify that, based on the visual observations listed below, to the best of my knowledge, information and belief, the subject sewage disposal system has been constructed within acceptable construction tolerances of the system shown on the referenced plan, Title 5 and the Harvard Board of Health Regulations. Said system, as designed, was installed at a 3 ft. groundwater offset as outlined on above referenced plan.

For: JOSEPH R. HENRY & ASSOCIATES, INC.

A handwritten signature in cursive script that reads "Lynwood V. Prest".

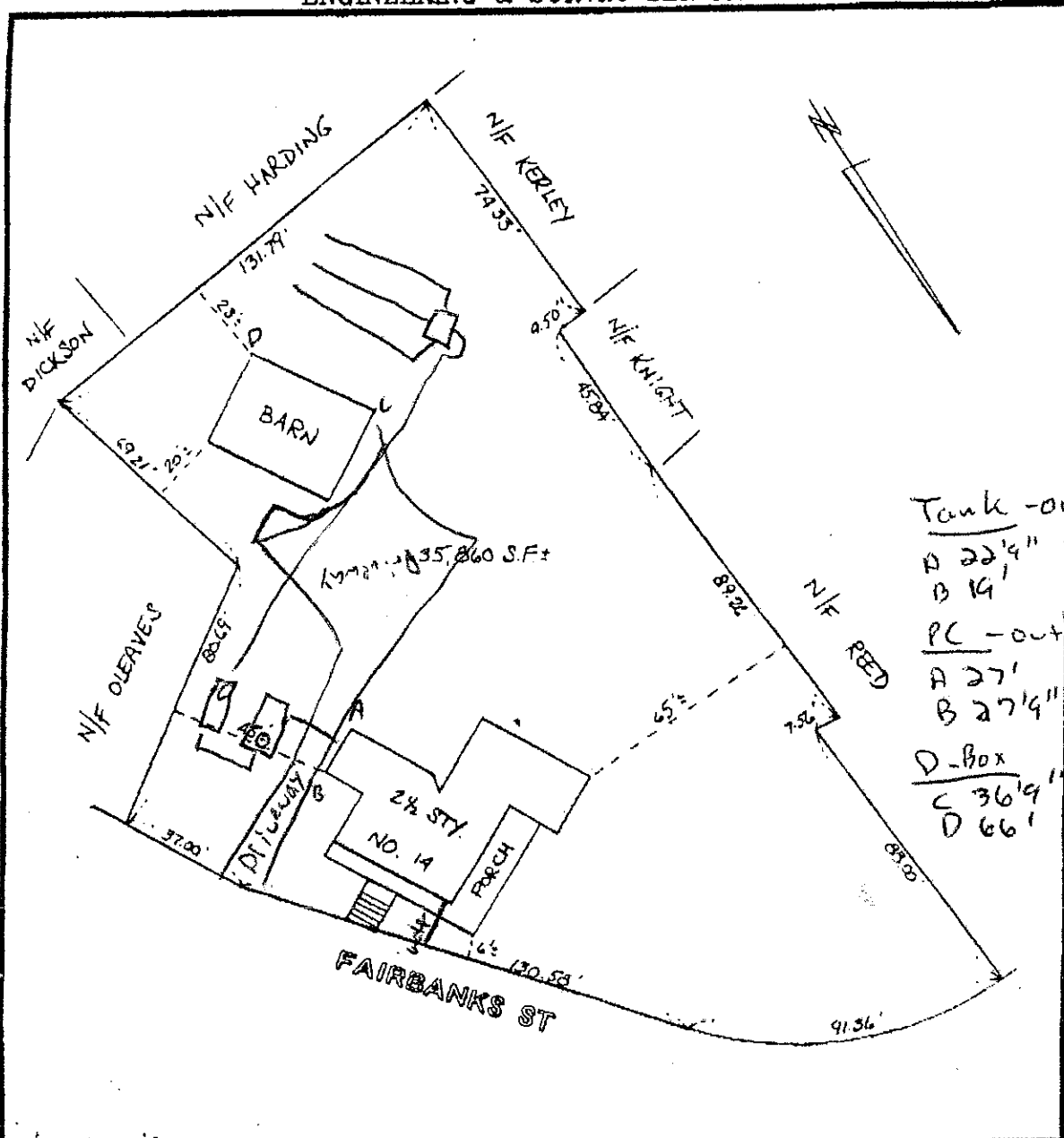
Lynwood Valentine Prest, P.E.  
(Reg. No. 23133)



Inspections: As-built septic tank & pump chamber 4/22/96  
Stake SDS & Retaining Wall SDS - 6/7/96  
Inspect Footing Reinforcement 6/13/96  
Inspect Wall Reinforcement 6/14/96  
As-Built System & Retaining Wall 7/3/96  
Final grades - 7/16/96  
Pump inspection - 7/24/96

cc: Malte & Marcia Lukas  
J. T. Gould, Bergin Assoc.  
Enc.

# S & W LANDTECH ENGINEERING & SURVEY SERVICES



Tank - outlet  
 A 22' 1/4"  
 B 14'  
 PC - outlet  
 A 27'  
 B 27' 1/4"  
 D-Box  
 C 36' 1/4"  
 D 66'

**THIS IS A MORTGAGE LOAN INSPECTION FOR FINANCIAL PURPOSES ONLY.**

REVISED:



*Armand E. Provost Jr.*  
 ARMAND E. PROVOST JR.

P.O. BOX 5358  
 BRADFORD, MA. 01835  
 PHONE (508) 352-9980  
 FAX (508) 352-9961

LOCATION: HARVARD MASS  
 CITY/TOWN STATE  
 DATE: 12-9-93 SCALE: 1 INCH = 30 FEET.  
 DEED AND PLAN REFERENCE: WORCESTER REGISTRY OF DEEDS.  
 DEED BOOK 9924 PAGE 349 PL BK 185 PLAN 130  
 CERTIFICATE OF TITLE NUMBER: \_\_\_\_\_ PLAN No. \_\_\_\_\_  
 CERTIFICATION IS HEREBY MADE TO: THE LENDERS, FIRST AMERICAN TITLE  
MARTE & MARCIA J. LUKAS

That the existing structures as shown are situated on the lot designated in compliance with the applicable Zoning By-Laws for setback, area and frontage requirements of the municipality when constructed, except where otherwise noted.

Certification is hereby made that the structures shown on this plan is NOT located within a Special Flood Hazard Area as delineated on the Flood Insurance Rate Map for:

COMMUNITY No. 250308 PANEL No. 00043 DATE 6-15-83

This plan was prepared to conform to the regulations of the Commonwealth of Massachusetts 250 CMR 8.05

Existing monumentation, assessor's and record data used for compilation of this plan.

Job Number 931012

14 Fair Bank

## DESIGN CRITERIA

### DESIGN CRITERIA

1. Flow: 4 Bedrooms at 110 G.P.D.P.D. = 440 G.P.D.
2. Septic tank required: Flow x 2.0 = 880 GAL.  
or minimum size = 1500 GAL.
3. Leaching area required:
  - A. percolation rate : 20 MIN./IN.
  - B. Effluent rate: 0.93 GPD/SF
  - C. Side wall provided: 564 SF
  - D. Bottom area provided: 282 S.F.
  - E. Capacity (S.W. + B.A. X Rate) = 448 G.P.D. \*
  - F. Total area provided: 846 S.F.
  - G. Minimum area required: 800 -S.F. (by town)

\* Per Title 5

REQUIRED VARIANCE: UNDER 310 CMR 15.405 - LOCAL VGRADE APPROVAL  
15.405(D)(6) - REDUCTION OF THE REQUIRED 4 FOOT SEPARATION BETWEEN THE BOTTOM  
THE SOIL ABSORPTION SYSTEM AND THE HIGH GROUNDWATER ELEVATION TO THE  
ALLOWED MINIMUM 3' SEPARATION.

All known water supply within 200' of prop. sds are shown

PLAN REF PLAN OF LAND FOR HAROLD'S POLLARD ET AL BY CHARLES A. PERKINS CO., INC.  
DATED AUGUST 1952 PLAN NO 2557 SCALE: 1" = 20'  
RECORDED AT NORD PLAN BK 185 PLAN 130

SUMMARY OF  
**OBSERVATION TEST HOLE DATA**  
SEE SOIL EVALUATION FOR COMPLETE SOIL LOGS

DEEP OBSERVATION HOLE LOGS FOR THE SITE SHOWN HEREIN

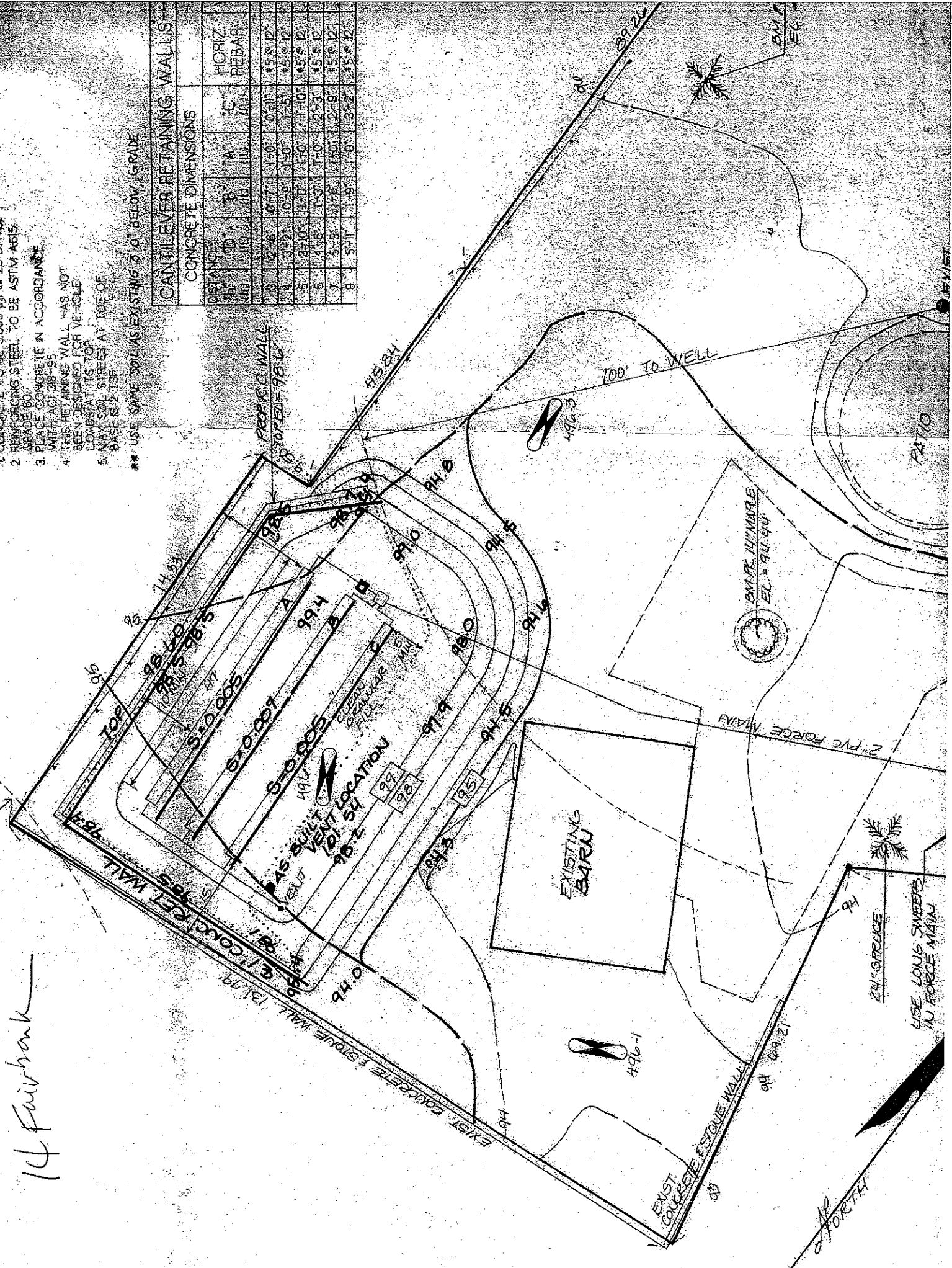
DEPTH IS  
CRITICAL

GENERAL NOTES

1. CONCRETE TO BE 3000 PSI IN 28 DAYS.
2. REINFORCING STEEL TO BE ASTM A615.
3. PLACE CONCRETE IN ACCORDANCE WITH AGC 318-95.
4. THIS RETAINING WALL HAS NOT BEEN DESIGNED FOR VEHICLE LOADS AT ITS TOP.
5. MAX. SOIL STRESS AT TOE OF BASE IS 2 TSF.

\*\*\* USE SAME SOIL AS EXISTING 3' 0" BELOW GRADE

CANTILEVER RETAINING WALLS					
CONCRETE DIMENSIONS					
DISTANCE FROM TOE	D IN	B IN	H IN	C IN	HORIZ. REBAR
1	2'-6"	6'-7"	1'-0"	0'-11"	15 # 12
2	3'-2"	0'-5"	1'-0"	1'-5"	15 # 12
3	2'-10"	1'-0"	1'-0"	1'-10"	15 # 12
4	4'-6"	1'-3"	1'-0"	2'-3"	15 # 12
5	5'-3"	1'-6"	1'-0"	2'-9"	15 # 12
6	5'-11"	1'-9"	1'-0"	3'-2"	15 # 12



14 Fairbank

10  
2 NORTH

# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 772-3338

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

- ☐ To install a new Sewage Disposal system  
☒ To repair existing Sewage Disposal system this permit is issued under the  
Emergency Section 11.05 of 310 CMR 11.00 Environmental Code, Title 1

ISSUED FOR THE Harvard BOARD OF HEALTH

OWNER James Sloan

(NOT TRANSFERABLE - FORMAL PERMIT TRANSFER MUST BE REQUESTED UPON CHANGE OF OWNERSHIP) Assessors Map 17,

LOCATION OF LOT OR INSTALLATION 16 Fairbanks LOT NO. Parcel 56

DATE PERMIT ISSUED March 27, 1995

LOT SIZE 0.15 ac

SOIL DESCRIPTION 0-2½' top & subsoil, 2½'-9' loamy sand, mottling @ 42", no ref.

PERC. RATE 16 min/inch

ENGINEERING OR SPECIAL PREPARATION: ☒ System to be installed according to engineered plan No. L-2907

by David E. Ross Dated 12/94

DEP, Title 5 variances approved March 23, 1995, with conditions.

Septic tank to be pumped annually. Use Limited to three bedrooms until Town Sewage  
available.

SYSTEM DESIGNED FOR: Existing four bedrooms

WATER SUPPLY: ☒ Town  
☐ Well

PRIMARY INSTALLATION 2000 gallon septic tank, 1500 gallon pump chamber

SECONDARY INSTALLATION Four - 31' L x 2' W x 1½' eff. depth trenches with clay barrier  
as designed

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT: W

[Signature]  
BOARD OF HEALTH

[Signature]  
BOARD OF HEALTH

[Signature]  
BOARD OF HEALTH

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases  
of installing the septic system; and if I am the contractor installing this system, I further agree to correct any fault caused by defective  
material or workmanship appearing in this system within one year from date of occupancy.

SIGNED \_\_\_\_\_ ☐ Owner ☐ Contractor ☐ Licensed Installer

### CERTIFICATE OF COMPLIANCE

#### INSPECTIONS REQUIRED:

☒ ~~Excavate~~ trench excavation, before fill / stone by eng./NABH

☒ Fill in place by eng./NABH

☒ Completed system prior to backfill

☒ Final fill and grading by eng./NABH on Eng. as-built plan

☒ Engineer certification in writing of completed system

☒ As built plan ☒ By Design Engineer ☒ By Installer

☐ Water supply (if well) \*

☒ Recorded deed ~~documents~~

☒ Destruction of Well \_\_\_\_\_

☒ Eng. to stk SDS & lot lines \_\_\_\_\_

☒ Inspection completed

Installer \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THIS CERTIFICATE IS COMPLETED.

### IMPORTANT NOTES

1. THE ISSUANCE OF THIS CERTIFICATE SHALL NOT BE CONSTRUED A GUARANTEE THAT THE SYSTEM WILL FUNCTION PROPERLY.
2. INSTALLATION OR REPAIR MUST BE PERFORMED BY NASHOBA LICENSED INSTALLER.
3. FAILURE BY INSTALLER TO CONFORM TO ALL REQUIREMENTS OF THIS PERMIT MAY LEAD TO SUSPENSION OR REVOCATION OF INSTALLER'S PERMIT.
4. THE OWNER SHOULD BE AWARE OF WETLANDS PROTECTION REQUIREMENTS OF THE LOCAL CONSERVATION COMMISSION.
5. THE SYSTEM IS NOT DESIGNED FOR GARBAGE DISPOSAL.
6. THE SYSTEM IS DESIGNED FOR USE STATED ABOVE.
7. PERMIT IS VOID TWO YEARS AFTER DATE OF ISSUE.
8. LEACH SYSTEMS MUST BE KEPT 100 FEET FROM ALL WELLS.
9. PROPER MAINTENANCE OF A SYSTEM REQUIRES ANNUAL PUMPING.
- \*10. COLIFORM BACTERIA TEST REQUIRED, COMPLETE POTABILITY TEST RECOMMENDED.

OWNER



Commonwealth of Massachusetts  
Executive Office of Environmental Affairs

**Department of  
Environmental Protection**  
Central Regional Office

William F. Weld  
Governor

Trudy Coxe  
Secretary, EOE

Thomas B. Powers  
Acting Commissioner

March 23, 1995

Mr. & Mrs. James Sloan  
16 Fairbanks Street  
P.O. Box 124  
Harvard, MA 01451

RE: HARVARD - DWPC - 87726  
310 CMR 15.00, Title 5  
Distance Offset  
Repair - 16 Fairbanks Street

Dear Mr. Sloan:

This office has reviewed the plans received on February 23, 1995 submitted on your behalf by David E. Ross Associates, Inc. for the property located at 16 Fairbanks Street, Harvard, Massachusetts requiring a variance to 310 CMR 15.00, Title 5.

The proposed on-site subsurface sewage disposal system is designed to dispose of the waste from an existing four (4) bedroom residence with an estimated design flow of 440 gallons per day. The proposed subsurface sewage disposal facility consists of a 2000 gallon septic tank followed by a 1500 gallon pump chamber, distribution box and 4 leaching trenches - 1.5 feet deep by 2 feet wide by 31 feet long, designed for 333 gallons per day.

The requested variance to 310 CMR 15.20, Title 5:

310 CMR 15.03 (07) Distance

	<u>Code</u>	<u>Variance</u>
Slope Requirement	30 feet	5 feet*
Leaching facility to property line	10 feet	2 feet*
Leaching facility to cellar wall	20 feet	5 feet*
Septic tank to property line	20 feet	2 feet*
Leaching facility to subdrain	25 feet	5 feet*

310 CMR 15.02 (13) Volume of

Sanitary Sewers 440 GPD 333 GPD

310 CMR 15.02 (17) Construction in Fill 25 feet various\*

310 CMR 15.14 (2) Groundwater 4 feet 3 feet

\*Impervious barrier to be of material with an hydraulic conductivity of less than  $1 \times 10^{-7}$  cm/sec.

RE: HARVARD - DWPC - 87726  
310 CMR 15.00, Title 5  
Distance Offset  
Repair - 16 Fairbanks Street  
page 2

In the opinion of the Department the requirements for granting of a variance as specified in 310 CMR 15.20 have been satisfied subject to the conditions listed below. The enforcement of the provision of the Code from which a variance is being sought would do manifest injustice and the applicant has proved to the Department's satisfaction that the same degree of environmental protection required under Title 5 can be achieved without strict application of the subject provision.

In accordance with Title 5 Regulation 310 CMR 15.20 Variance, this office hereby **approves** the request with the following stipulations:

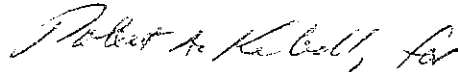
1. The owner shall obtain a disposal works construction permit from the Harvard Board of Health prior to construction.
2. This system has not been designed for a garbage grinder. A garbage grinder is not permitted.
3. Should the system fail, the owner shall be required to remove all of the contaminated soil and replace it with clean soil. The soil must be disposed of in an area approved by the Board of Health.
4. If this happens and a suitable area meeting Title 5 requirements cannot be found, a tight tank system may have be installed.
5. Bedrooms shall be limited to three in number until such time as the residence is connected to Town Sewer.
6. The septic tank shall be pumped annually.
7. The above variances and stipulations shall be recorded in the deed of property and a copy showing the book and page number be sent to this office. Attached is a copy of the wording to be used.



RE: HARVARD - DWPC - 87726  
310 CMR 15.00, Title 5  
Distance Offset  
Repair - 16 Fairbanks Street  
page 3

Should you have any comments or need assistance, please feel free to call Leo Lessard of the Division of Water Pollution Control at (508) 792-7650 x3724.

Very truly yours,



James R. Fuller  
Regional Engineer  
Bureau of Resource Protection

LL/caz:Fairbks.125

cc: DWPC - Boston  
Dana Samuelson - FC - CERO

Board of Health  
Town Hall  
Harvard, MA 01451

Nashoba Associated Boards of Health  
30 Central Ave.  
Ayer, MA 01432

David E. Ross Associates  
17 West Main Street  
P.O. Box 361  
Ayer, MA 01432

BOOK 21978 PAGE 203

164810

## RESTRICTIVE COVENANT

In consideration of the approval by the Board of Health of the Town of Harvard ("Board") of a permit for final septic system certification, of a septic system, located at 16 Fairbanks Street, Harvard, Worcester County, Massachusetts ("Premises").

MIMMU MARJA ANNIKKI HARTIALA-SLOAN AND JAMES R. SLOAN, husband and wife, ("Owners"), their successors and assigns, hereby covenant and agree with the Board as follows:

1. The undersigned Owners are the owners in fee simple of the Premises affected by this restrictive covenant. See deed dated December 14, 1973, recorded with the Worcester Registry of Deeds Book 5411, Page 495.
2. This covenant shall be binding upon the executors, administrators, devisees, heirs, successors, and assigns of the Owners and shall constitute a covenant running with the land.
3. The Owners agree to register this covenant with the Worcester District Registry of Deeds.
4. The Owners covenant with the Board that so long as the present septic system services the Premises, the Premises will have no more than three (3) bedrooms.
5. This covenant is for the benefit of the Board as relates to Title 5 of the Massachusetts Environmental Code, as most recently amended.
6. Upon written authorization of the Board, this covenant may be released at any time in the future.

IN WITNESS WHEREOF, the Owners have executed this Restrictive Covenant under seal as of the 15 day of October, 1999

APPROVED BY:

Board of Health

Date:

*[Signature]*  
10/15/99

MIMMU MARJA ANNIKKI HARTIALA-SLOAN

JAMES R. SLOAN

COMMONWEALTH OF MASSACHUSETTS

Worcester, ss

October 15, 1999

Then personally appeared the above named MIMMU MARJA ANNIKKI HARTIALA-SLOAN and JAMES R. SLOAN and acknowledged the foregoing instrument to be their free act and deed, before me.

*[Signature]*

Notary Public

My Commission expires:

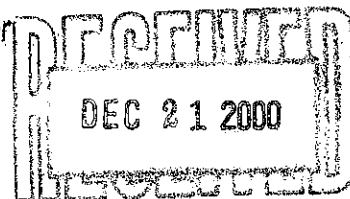
MAY E. GOFF  
Notary Public

My Commission Expires August 7, 2003

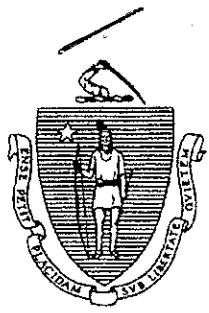
Return to: Mimmu and James Sloan  
16 Fairbanks, Street,  
P.O. Box 124  
Harvard, Massachusetts, 01451

RECORDED 9 AM OCT 26 1999

ATTEST: WORC. Anthony J. Vigliotti, Register



Property Location: 16 Fairbanks St. Harvard, MA 01451



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

Variances approved  
March 23, 1995

\* Deed restriction 3 Brm.

*Harvard Boh  
Copy*

TITLE 5

OFFICIAL INSPECTION FORM - NOT FOR VOLUNTARY ASSESSMENTS  
SUBSURFACE SEWAGE DISPOSAL SYSTEM FORM

PART A  
CERTIFICATION

Property Address: 16 Fairbanks St. Harvard

Owner's Name: James Sloan

Owner's Address: 16 Fairbanks St. Harvard

Date of Inspection: 9/04/07

Name of Inspector: (please print) **Bernard A. Tessier**  
Company Name **American Rooter & Septic Service**  
Mailing Address: **p.o. box 1491 Leominster, MA 01453**

Telephone Number: 1-800-689-7867

**CERTIFICATION STATEMENT**

I certify that I have personally inspected the sewage disposal system at this address and that the information reported below is true, accurate and complete as of the time of the inspection. The inspection was performed based on my training and experience in the proper function and maintenance of on site sewage disposal systems. I am a DEP approved system inspector pursuant to Section 15.340 of Title 5 (310 CMR 15.000). The system:

- ☒ Passes  
☐ Conditionally Passes  
☐ Needs Further Evaluation by the Local Approving Authority  
☐ Fails

Inspector's Signature: *B. Tessier*

Date: 9/04/07

The system inspector shall submit a copy of this inspection report to the Approving Authority (Board of Health or DEP) within 30 days of completing this inspection. If the system is a shared system or has a design flow of 10,000 gpd or greater, the inspector and the system owner shall submit the report to the appropriate regional office of the DEP. The original should be sent to the system owner and copies sent to the buyer, if applicable, and the approving authority.

Notes and Comments

OWNERS COPY (1) [ ]  
NASHOBA BOH (2) [ ]

\*\*\*\*This report only describes conditions at the time of inspection and under the conditions of use at that time. This inspection does not address how the system will perform in the future under the same or different conditions of use.

**OFFICIAL INSPECTION FORM - NOT FOR VOLUNTARY ASSESSMENTS**  
**SUBSURFACE SEW AGE DISPOSAL SYSTEM INSPECTION FORM**  
**PART C**  
**SYSTEM INFORMATION (continued)**

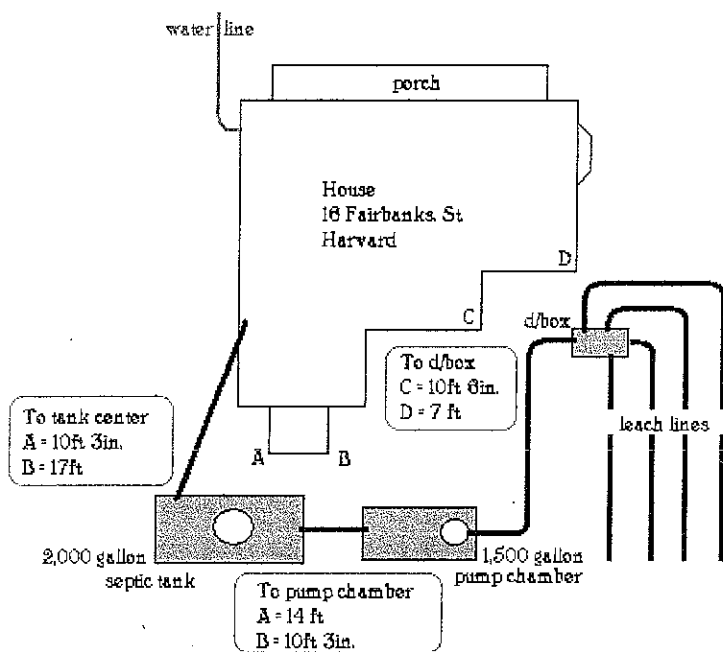
Property Address: 16 Fairbanks St. Harvard

Owner: James Sloan

Date of Inspection: 9/04/07

**SKETCH OF SEW AGE DISPOSAL SYSTEM**

Provide a sketch of the sewage disposal system including ties to at least two permanent reference landmarks or benchmarks. Locate all wells within 100 feet. Locate where public water supply enters the building.



**OFFICIAL INSPECTION FORM - NOT FOR VOLUNTARY ASSESSMENTS**  
**SUBSURFACE SEWAGE DISPOSAL SYSTEM INSPECTION FORM**  
**PART C**  
**SYSTEM INFORMATION (continued)**

Property Address: 16 Fairbanks St. Harvard

Owner: James Sloan

Date of Inspection: 9/04/07

**SITE EXAM**

Slope

Surface water

Check cellar

Shallow wells

Estimated depth to ground water : 42 inches

Please indicate (check) all methods used to determine the high ground water elevation:

☐ Obtained from system design plans on record -If checked, date of design plan reviewed: \_\_\_\_\_

☐ Observed site (abutting property/observation hole within 150 feet of SAS)

☒ Checked with local Board of Health-explain: see attached BOH permit dated March 27, 1995

☐ Checked with local excavators, installers- (attach documentation)

☐ Accessed USGS database-explain: \_\_\_\_\_

You **must** describe how you established the **high ground water elevation**:

Dickson, 18 Fairbanks

(- system repaired  
deed restriction)

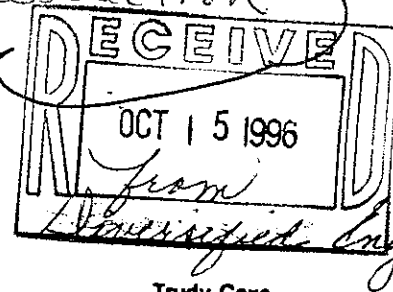


Commonwealth of Massachusetts  
Executive Office of Environmental Affairs

## Department of Environmental Protection

William F. Weld  
Governor

Argeo Paul Cellucci  
Lt. Governor



Trudy Cox  
Secretary  
David B. Struhs  
Commissioner

### SUBSURFACE SEWAGE DISPOSAL SYSTEM INSPECTION FORM PART A CERTIFICATION

Property Address: 18 Fairbanks St., Harvard

Date of Inspection: 9/24/96

Name of Inspector: Peter G. Parent

Company Name, Address and Telephone Number:

Diversified Civil Engineering

359 Littleton Road, Westford, MA 01886

508-692-0939

Address of Owner: 8 Wentworth Street  
(If different) Exeter, NH 03833

#### CERTIFICATION STATEMENT

I certify that I have personally inspected the sewage disposal system at this address and that the information reported below is true, accurate and complete as of the time of inspection. The inspection was performed based on my training and experience in the proper function and maintenance of on-site sewage disposal systems. The system:

- ☐ Passes  
☒ Conditionally Passes  
☐ Needs Further Evaluation By the Local Approving Authority  
☐ Fails

Inspector's Signature:

Date: 9/24/96

The System Inspector shall submit a copy of this inspection report to the Approving Authority within thirty (30) days of completing this inspection. If the system is a shared system or has a design flow of 10,000 gpd or greater, the inspector and the system owner shall submit the report to the appropriate regional office of the Department of Environmental Protection.

The original should be sent to the system owner and copies sent to the buyer, if applicable and the approving authority.

#### INSPECTION SUMMARY:

Check A, B, C, or D:

##### A) SYSTEM PASSES:

☐ I have not found any information which indicates that the system violates any of the failure criteria as defined in 310 CMR 15.303. Any failure criteria not evaluated are indicated below.

##### B) SYSTEM CONDITIONALLY PASSES:

☒ One or more system components need to be replaced or repaired. The system, upon completion of the replacement or repair, passes inspection.

Indicate yes, no, or not determined (Y, N, or ND). Describe basis of determination in all instances. If "not determined", explain why not)

☐ The septic tank is metal, cracked, structurally unsound, shows substantial infiltration or exfiltration, or tank failure is imminent. The system will pass inspection if the existing septic tank is replaced with a conforming septic tank as approved by the Board of Health.

(revised 11/03/95)

**SUBSURFACE SEWAGE DISPOSAL SYSTEM INSPECTION FORM**  
**PART A**  
**CERTIFICATION (continued)**

Property Address: 18 Fairbanks Street  
Owner: Walter Dickson  
Date of Inspection: 9/24/96

**B) SYSTEM CONDITIONALLY PASSES (continued)**

- X \* Sewage backup or breakout or high static water level observed in the distribution box is due to broken or obstructed pipe(s) or due to a broken, settled or uneven distribution box. The system will pass inspection if (with approval of the Board of Health):
- |  |                                     |
|--|-------------------------------------|
| _____ broken pipe(s) are replaced              | * D-boxes are cracked and leaking - |
| _____ obstruction is removed                   | must be replaced.                   |
| _____ distribution box is levelled or replaced |                                     |
- \_\_\_\_\_ The system required pumping more than four times a year due to broken or obstructed pipe(s). The system will pass inspection if (with approval of the Board of Health):
- |                                   |
|-----------------------------------|
| _____ broken pipe(s) are replaced |
| _____ obstruction is removed      |

**C) FURTHER EVALUATION IS REQUIRED BY THE BOARD OF HEALTH:**

\_\_\_\_\_ Conditions exist which require further evaluation by the Board of Health in order to determine if the system is failing to protect the public health, safety and the environment.

**1) SYSTEM WILL PASS UNLESS BOARD OF HEALTH DETERMINES THAT THE SYSTEM IS NOT FUNCTIONING IN A MANNER WHICH WILL PROTECT THE PUBLIC HEALTH AND SAFETY AND THE ENVIRONMENT:**

- \_\_\_\_\_ Cesspool or privy is within 50 feet of a surface water
- \_\_\_\_\_ Cesspool or privy is within 50 feet of a bordering vegetated wetland or a salt marsh.

**2) SYSTEM WILL FAIL UNLESS THE BOARD OF HEALTH (AND PUBLIC WATER SUPPLIER, IF APPROPRIATE) DETERMINES THAT THE SYSTEM IS FUNCTIONING IN A MANNER THAT PROTECT THE PUBLIC HEALTH AND SAFETY AND THE ENVIRONMENT:**

- \_\_\_\_\_ The system has a septic tank and soil absorption system and is within 100 feet to a surface water supply or tributary to a surface water supply.
- \_\_\_\_\_ The system has a septic tank and soil absorption system and is within a Zone I of a public water supply well.
- \_\_\_\_\_ The system has a septic tank and soil absorption system and is within 50 feet of a private water supply well.
- \_\_\_\_\_ The system has a septic tank and soil absorption system and is less than 100 feet but 50 feet or more from a private water supply well, unless a well water analysis for coliform bacteria and volatile organic compounds indicates that the well is free from pollution from that facility and the presence of ammonia nitrogen and nitrate nitrogen is equal to or less than 5 ppm.

**3) OTHER**



SUBSURFACE SEWAGE DISPOSAL SYSTEM INSPECTION FORM  
PART C  
SYSTEM INFORMATION

Property Address: 18 Fairbanks Street  
Owner: Walter Dickson  
Date of Inspection: 9/24/96

FLOW CONDITIONS

RESIDENTIAL:

Design flow: 440 gallons

Number of bedrooms: 4

Number of current residents: 4

Garbage grinder (yes or no): \*\*

Laundry connected to system (yes or no): \*\*

Seasonal use (yes or no): no

Water meter readings, if available: \_\_\_\_\_

**\*\*No entry permitted. No laundry and no  
garbage grinders as per realtor.**

Last date of occupancy: current

COMMERCIAL/INDUSTRIAL: N/A

Type of establishment: \_\_\_\_\_

Design flow: \_\_\_\_\_ gallons/day

Grease trap present: (yes or no) \_\_\_\_\_

Industrial Waste Holding Tank present: (yes or no) \_\_\_\_\_

Non-sanitary waste discharged to the Title 5 system: (yes or no) \_\_\_\_\_

Water meter readings, if available: \_\_\_\_\_

Last date of occupancy: \_\_\_\_\_

OTHER: (Describe) \_\_\_\_\_

Last date of occupancy: \_\_\_\_\_

GENERAL INFORMATION

PUMPING RECORDS and source of information:

July, 1996, as per owner

System pumped as part of inspection: (yes) or no) yes

If yes, volume pumped: 1000 gallons

Reason for pumping: Check condition of septic tank

TYPE OF SYSTEM

X Septic tank/distribution box/soil absorption system

\_\_\_\_\_ Single cesspool

\_\_\_\_\_ Overflow cesspool

\_\_\_\_\_ Privy

\_\_\_\_\_ Shared system (yes or no) (if yes, attach previous inspection records, if any)

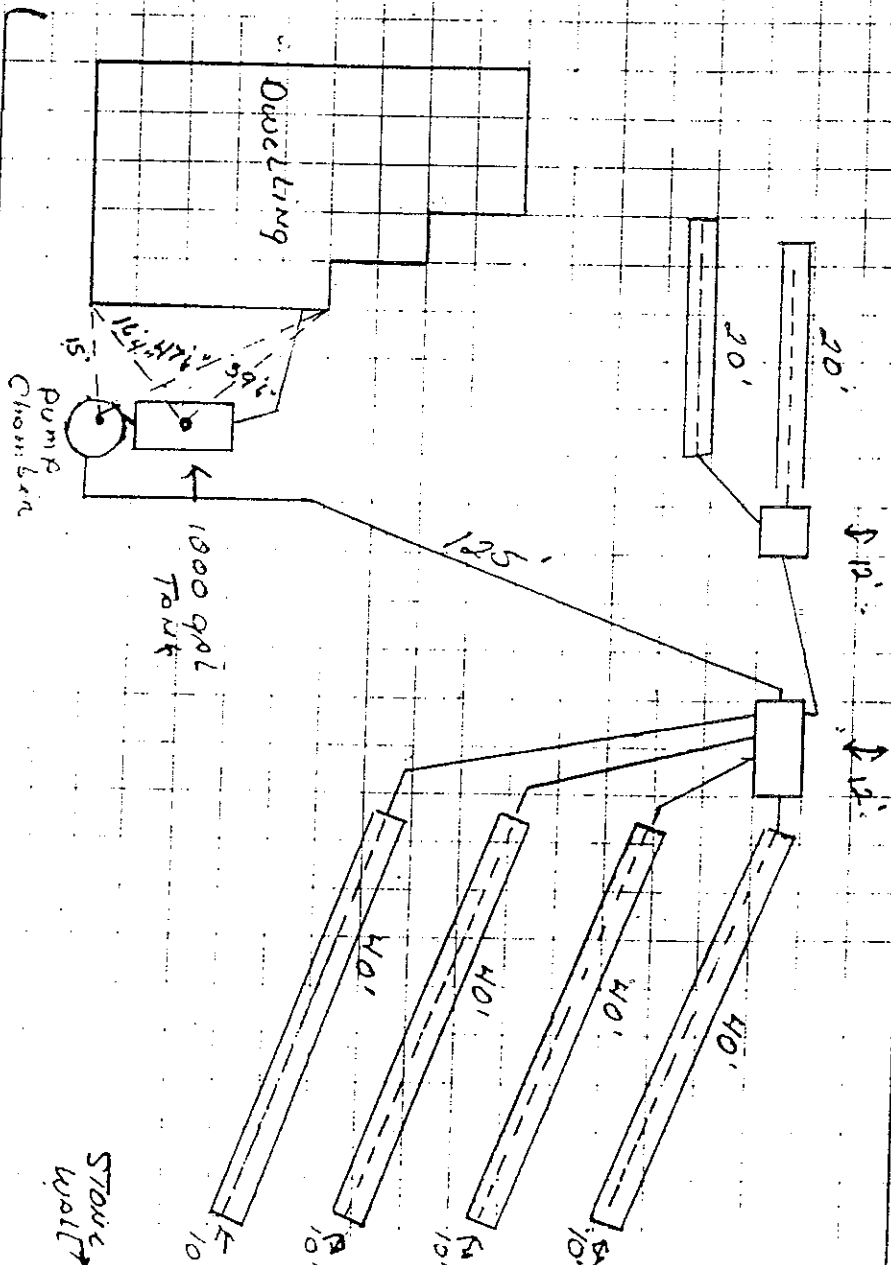
\_\_\_\_\_ Other (explain) \_\_\_\_\_

APPROXIMATE AGE of all components, date installed (if known) and source of information: 21 yrs. old as per permit.

Sewage odors detected when arriving at the site: (yes or no) no

DRIVE WAY

LOT LINE



FAIRBANK ST.

Corrected plan

W. Sam Dickson

Fairbank St.

Hydrex, Mass.

RePair, system.

5-11-75

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01901 772-1316

**INFORMATION FOR DISTRIBUTION USE ONLY**  
 For use only by the Department of Defense. Do not use for any other purpose.  
 Except as otherwise indicated, this information is not to be distributed outside the Department of Defense.

100-443887-100

1. The first step is to identify the problem. This involves understanding the current situation, identifying the problem, and determining the scope of the problem.

LOCATION OF OTHER METAL ALLOY: 18 Fairbanks Street

DATE REVISSED November 1, 1990

Figure 1. The effect of the number of iterations on the accuracy of the proposed algorithm. The accuracy of the proposed algorithm increases with the number of iterations. The accuracy of the proposed algorithm is 0.95 when the number of iterations is 1000.

[illegible]

1. The first step in the process of identifying a problem is to recognize that a problem exists. This involves gathering information about the situation and identifying the specific issue that needs to be addressed. Once the problem is identified, the next step is to define the problem clearly and concisely. This involves stating the problem in a way that is specific and measurable, and identifying the goals that need to be achieved to solve the problem. The third step is to generate potential solutions. This involves brainstorming ideas and considering different approaches to solving the problem. The fourth step is to evaluate the potential solutions. This involves comparing the different solutions and determining which one is the most effective and feasible. The final step is to implement the chosen solution. This involves putting the solution into action and monitoring the results to ensure that the problem is solved.

PERMIT TO SPECIAL DISTRIBUTION FOR ONLY

**EXISTING 1 BEDROOM MARINA**

[illegible][illegible]

**Background:** Existing leaching facility

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

[illegible]

● 2010年10月10日，中国首座自行设计、自行建造、自行运营的跨海大桥——杭州湾跨海大桥，在通车10周年之际，迎来了它的“生日”。这座全长36公里，双向八车道的跨海大桥，自1992年开工建设以来，一直承担着杭州湾跨海交通的重任。大桥的建成，不仅极大地缩短了杭州湾两岸的通行时间，也为杭州湾地区的经济发展和交通建设做出了重要贡献。

[illegible][illegible]

✓ in 1 pencil box in

[illegible]

□ = 1000, □ = 100, □ = 10, □ = 1

## References

[illegible]

Time	Date	Time
Teacher		Mr.
Teacher		Mrs.
Teacher	1/19/6	A K
Teacher		Mr.
Teacher		Mrs.
Teacher	1/22/67	K S
Teacher		Mr.
Teacher	8/20/7	A K
Teacher		Mr.
Teacher		Mrs.
Teacher	4/23/67	K R
Teacher		Mr.

[illegible]

A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THE CERTIFICATE IS COMPLETED

## 重要事項

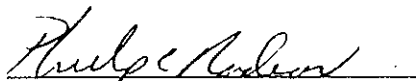
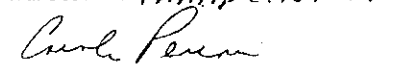
1. THE ISSUANCE OF THIS CERTIFICATE SHALL NOT BE CONSIDERED A GUARANTEE THAT THE SYSTEM WILL FUNCTION PROPERLY.
2. INSTALLATION OR REPAIR MUST BE PERFORMED BY A MAJOR LICENSED INSTALLER.
3. FAILURE TO INSTALL AND OBEY ALL REQUIREMENTS OF THE PERMIT MAY LEAD TO SUSPENSION OR REVOCATION OF AUSTIN PERMIT.
4. THE OWNER SHALL TAKE CARE OF ANY LAND PROTECTION REQUIREMENTS OF THE LOCAL JURISDICTION CONCERNING THE SYSTEM.
5. THE SYSTEM IS NOT DESIGNED FOR WARRANTY PURPOSES.
6. THE SYSTEM IS DESIGNED FOR USE STATED ABOVE.
7. PERMIT IS VALID TWO YEARS AFTER DATE OF ISSUE.
8. LEACH SYSTEMS MUST BE MORE 100 FEET FROM ALL WELLS.
9. PROPER MAINTENANCE OF A SYSTEM REQUIRES ANNUAL PUMPING.
10. TO CONFIRM BACTERIA TEST REQUIRED, COMPLETE POTABILITY TEST RECOMMENDED.

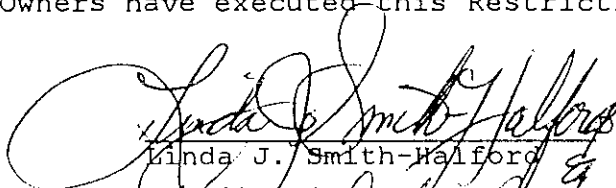

RESTRICTIVE COVENANT

In consideration of the approval by the Board of Health of the Town of Harvard ("Board") of a Permit for a preexisting building at 18 Fairbanks Street, Harvard, Worcester County, Massachusetts shown as plan no. 2356 drawn by Charles A. Perkins, Co., Inc., Surveyors dated September 1974. Linda J. Smith-Halford and Walter F. Dickson, Jr. ("Owners"), their successors and assigns, hereby covenant and agree with the board, as follow:

1. The undersigned Owners are the owners in fee simple of the Premises affected by this restrictive covenant.
2. This covenant shall be binding upon the executors, administrators, devisees, heirs, successors, and assignees of the Owners and shall constitute a covenant running with the land.
3. The Owners agree to register this covenant with the Worcester District Registry of Deeds, Land Court Division.
4. The Owners covenant with the Board that so long as the present septic system serves the Premises, the Premises will have no more than three (3) bedrooms.
5. This covenant is for the benefit of the Board and relates to Title 5 of the Massachusetts Environmental Code, as most recently amended.
6. Upon written authorization of the Board, this covenant may be released at any time in the future.

IN WITNESS WHEREOF, the Owners have executed this Restrictive Covenant under seal.

  
Witness Phillip C. Nadeau  
  
Witness

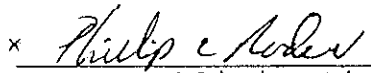
 Date: 2/28/97  
Linda J. Smith-Halford  
 Date: 3/8/97  
Walter F. Dickson, Jr.

STATE OF MICHIGAN

COUNTY OF BERRIEN

FEB 28, 1997

Personally appeared the above named Linda J. Smith-Halford f/k/a Linda Jo Smith, know to me or proven to be the person described in the above referenced instrument who acknowledged that she signed the same as her free act and deed for the purpose contained therein.

\*  Phillip C. Nadeau  
Notary Public/Justice of the Peace  
My Commission Expires 5/10/1999

COMMONWEALTH OF MASSACHUSETTS

Worcester, ss Harvard

March 8, 1997

Personally appeared the above named Walter F. Dickson, Jr. acknowledged the foregoing instrument to be his free act and deed known to me or proven to be the person described in the above-



# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 772-3238

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

☐ To install a new Sewage Disposal system  
☒ Local Upgrade Approval

ISSUED FOR THE Harvard

BOARD OF HEALTH

OWNER

R. D. and L. D. Swain

Assessors Map 17D

(SEE INSTRUCTIONS / OWNER PLANS / PERMIT FEE / FEE REQUIRED UPON ISSUING OF PERMIT)

LOCATION OF LOT

25 Portland Street

LOT NO. Parcel 50

DATE PERMIT ISSUED:

December 13, 2001

LOT SIZE: 4.34 acre

SOIL DESCRIPTION

0-21" top & subsoil, 21-48" sandy loam, 48-61" fine sandy loam, 61-97" sandy loam, ESHWT @ 21"

PERC RATE: Estimated 30 in/hr

ENGINEERING OR SPECIAL PREPARATION:

As noted in the attached drawings to registered plan no. 90-208

Gubianth, Frost & Hargrave Inc.

Permitted 7/17/01

Title 5 variances for perc testing and septic tank to well offset.

Compliance with MA Wetland Protection Act and Harvard Conservation Commission requirements are the responsibility of the owner/applicant.

*\* Shared leaching area  
by easement to 12 oak hill*

SYSTEM DESIGNED FOR Existing Four Bedrooms Maximum

WATER SUPPLY ☒ Well

PRIMARY INSTALLATION Microfast Unit and 1500 gallon pump chamber

SECONDARY INSTALLATION 33 x 10' W pressure distribution

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT

BOARD OF HEALTH

BOARD OF HEALTH

BOARD OF HEALTH

I, the undersigned, hereby certify that the above information is true and correct to the best of my knowledge and belief, and that the same complies with all applicable laws, rules and regulations.

SIGNED

*[Signature]*

☒ Consent ☐ Contravene ☐ Unrecorded Notice

### INSPECTIONS REQUIRED:

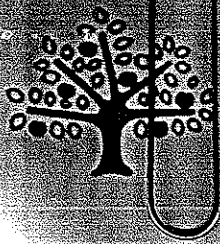
### Record of Inspections

Inspection Date and Initials

- ☒ Soil or direct observation to be made by the ASH
- ☒ Per plans by Eng. ASH
- ☒ Construct system prior to install
- ☒ Final fill and around ASH To be shown on Eng. ASH
- ☒ Replace certified seal on entry of constructed system
- ☒ At least plans ☒ By Design Engineer ☒ By Resident
- ☐ Work meeting for report and notes and submitted to this office
- ☒ Reviewed above all requirements submitted to this office
- ☒ DEP Regulations
- ☒ O & M Contract
- ☒ All inspections completed

Date	9/14/02	By	ASH
Date	9/14/02	By	ASH
Date	9/14/02	By	ASH
Date	9/14/02	By	ASH
Date	9/14/02	By	ASH
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Date	9/14/02	By	ASH

A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL A CERTIFICATE OF COMPLETION IS OBTAINED



**Nashoba Associated Boards of Health**  
Environmental Health Service  
30 Central Avenue, Ayer, MA 01432

**Commonwealth of Massachusetts**  
*Certificate of Compliance*  
Harvard, Massachusetts

This is to certify that the installation, allowed by the Sewage Disposal Works Construction Permit for:

**LOCAL UPGRADE APPROVAL**

At the following address: 25 FAIRBANK ST

has been constructed/abandoned in accordance with the provisions of Title 5 (310 CMR 15.000) and of the aforementioned Sewage Disposal Works Construction Permit.

This permit has been issued on the plans submitted by: GOLDSMITH, PREST & RINGWALL  
(Design Engineer)

Plan Number: FAIRBANKS

Approved on 12/18/2001

This Certificate of Compliance is for the use intended by the Sewage Disposal Works Construction Permit as described below:

**Existing Four Bedroom Maximum**

The issuance of this Certificate shall not be construed as a guarantee that the system will function as designed. This Certificate expires on: 9/6/2004

Design Engineer of Record: GOLDSMITH, PREST & RINGWALL

Installer of System: JOSHUA GOULD

For the Approving Authority

  
Ira Grossman

Date: 9/6/2002

(978) 772-3335

(800) 427 9762

FAX (978) 772-4947

(Massachusetts Department of Environmental Protection (DEP) approved form. See approval letter from DEP dated 3/5/99)



Bk: 44316 Pg: 317  
Page: 1 of 11 05/28/2009 11:28 AM

## DEED NOTICE

## REMDIAL USE APPROVAL- SEWAGE DISPOSAL SYSTEM

This Deed Notice cannot be removed from the recorded page and book at the Registry of Deeds without written approval by the Harvard Board of Health.

In consideration of the approval by the Harvard Board of Health ("Board") of a Title 5 Certificate of Compliance for the property:

25 Fairbank Street, Harvard, MA. Worcester County, Massachusetts places this notice on the deed for aforementioned property, recorded with the Worcester Northern District Registry of Deeds in Book 46380 Page 339 ("premise")

This premise utilizes a remedial use approved alternative subsurface sewage disposal system utilizing innovative technology as defined by the Department of Environmental Protection ("DEP") (hereinafter called the "system"). As such, the DEP requires periodic maintenance and testing of the system. In the event the system does not perform in accordance with the requirements of the Harvard Board of Health and/or the DEP, the owner of the property shall be responsible for repairing said system or replacing it with a system that has an approval from DEP.

This notice is to be incorporated on the deed per the DEP approval letter for the system installed on the premise. *See attachment A*

Executive as a sealed instrument this 29 day of May 2009.

*Nancy Linn Swain*  
Trustee of Robert D. Swain 1998 Revocable Trust

Worcester, ss.

On this 28 day of MAY 2009 before me, the undersigned notary public, personally appeared Nancy Linn Swain (owner) TRUSTEE duly authorized, proved to me through satisfactory evidence of identification which were licenses, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

*Nancy Linn Swain*  
NOTARY PUBLIC:  
My Commission Expires:  
March 4, 2016

*11/14*



Attachment A

19/1/01



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

Central Regional Office, 627 Main Street, Worcester, MA 01608

JANE SWIFT  
Governor

BOB DURAND  
Secretary

LAUREN A. LISS  
Commissioner

R.D and L.D Swain  
25 Fairbanks Street  
Harvard, MA 01451  
Attn. Robert Swain

Re: Harvard [REDACTED] 27  
[REDACTED] System for Remedial Use  
310 CMR 15.412 Variance for Existing [REDACTED]  
25 Fairbanks Street- Approval

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.412, the Central Regional Office of the Department of Environmental Protection has completed its review of the above referenced application for approval of a variance requested from the Harvard Board of Health for a 4-bedroom residential dwelling located at 25 Fairbanks Street, Harvard, MA.

The application contains a copy of the Board of Health's grant of a variance from the following provision of Title 5, 310 CMR 15.000:

State Regulation	State Code Requirement	Variance
310 CMR 15.104	Using Percolation Testing to determine the soil percolating capacity.	Variance from using the Percolation Test method. Use of alternative method in accordance with the "Title 5 Alternative to Percolation Testing Policy for System Upgrade" dated 9/8/00.
310 CMR 15.211 (1)	The septic tank shall conform to the minimum setback of 50-feet and the leach area 100-feet from a private well and; The on-site subsurface disposal system shall conform to a minimum 10-foot offset to property lines	A set back of 30-feet has been provided for the septic tank and 50-feet for the leach area to a private bedrock well and; the soil absorption system will be placed on a portion of the abutting property with an easement from the abutter.
310 CMR 15.212 (a)	Minimal vertical separation distance of the bottom of the leaching area to high groundwater shall be four feet	A two-foot vertical separation is provided
310 CMR 15.240 (4)	The minimum area for the design of a soil absorption system shall be determined by the results of the site evaluation set forth in section 15.100 through 15.107 and in accordance with the appropriate long-term acceptance rate criteria specified in section 15.242.	A 37 % reduction in the required size of the soil absorption system.

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

As part of the application, the Department received plans consisting of two (3) sheets titled “Subsurface Sewage Disposal System Upgrade” dated March 2001. The system is designed in accordance with section 15.203 (2) for a four bedroom single-family house and consists of a 1,500-gallon septic tank, MicroFAST system, a 1,000-gallon pump chamber with pressure distribution for a 16-foot by 53-foot leach field.

Based on its review of the application and in accordance with 310 CMR 15.410, the Department has determined both the following:

- a) The applicant has established that enforcement of 310 CMR 15.104, 15.211 (1), 15.212 (a) and 15.240 (4) would be manifestly unjust, considering all of the relevant facts and circumstances of this case.
  1. The seasonal water table is too high to allow percolation testing at this time and the applicant is requesting to use the Alternative to Percolation Testing Method.
  2. The applicant has a failed septic system and wishes to proceed with an immediate upgrade.
  3. The location of the septic system is the only area on the site suitable for placement. The property has physical constraints in the form of bordering vegetative wetlands and an on-site private well.
- b) The applicant has established that a level of environmental protection that is at least equivalent to that provided under 310 CMR 15.000 can be achieved without strict application of 310 CMR 15.104, 15.211 (1), 15.212 (a) and 15.240 (4)
  1. The design engineer has provided plans that meet the Department’s Policy # BRP/DWM/PeP-P00-4 (Title 5 Alternative To Percolation Testing Policy For System Upgrades dated 9/8/00).
  2. The proposed septic system incorporates alternative technology (MicroFAST), which will provide a degree of environmental protection at least equivalent to that of a conventional system.
  3. The proposed septic system is a mounded system meeting a 2-foot groundwater offset requirement allowed under the MicroFAST approval letter dated 8/13/01.
  4. The remedial use of the MicroFAST System incorporates pressure distribution, which will provide improved dispersion of effluent over entire area of the Soil Absorption System.
  5. The abutting neighbors have agreed to jointly repair their failed septic systems. The neighbors have provided each other with septic easements in order to facilitate the design and construction of both soil absorption systems while maintaining maximum setback distances to private wells and bordering vegetative wetlands.

The Department, therefore, **approves** the Board of Health’s grant of a variance from 310 CMR 15.104, 15.211 (1), 15.212 (a) and 15.240 (4)

Additionally, the Department imposes the following conditions as part of this approval:

1. The owner shall obtain a Disposal System Construction Permit from the Harvard Board of Health prior to construction.
2. The facility is limited to a design flow of 440 gpd.

Harvard – BRP - #w023087df.125

Page 3

3. The applicant shall provide to the Harvard Board of Health a copy of the recorded septic easements.
4. This system has not been designed for a garbage grinder. A garbage grinder is not permitted.
5. The owner shall adhere to the conditions and requirements (Section IV and V) of the Department's "Approval for Remedial Use" letter (attached) dated 8/13/01.
6. Should the replacement system fail, the owner shall be required to immediately notify the Board of Health, seal the septic tank outlet and operate the system as a tight tank until the Board issues a Certificate of Compliance for any needed upgrade or repairs. If the Board determines that the replacement system can not be repaired and that there is no other feasible on-site disposal alternative, the owner shall within thirty days of that determination apply to the Department for a tight tank in accordance with 310 CMR 15.260.
7. The above variances and stipulations shall be recorded at the appropriate Registry of Deeds and referenced in the deed for the property. A copy of the recording showing the book and page number shall be sent to this office. Attached is a copy of the wording to be used.

Please include the transmittal number listed above on any correspondences regarding your application. If you have any questions please feel free to call Thomas Ryder at (508) 792-7650 extension 2725.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

10/1/01  
Date

/tar: w023087a.125

Cc: Harvard Board of Health  
Nashoba Associated Boards of Health

Goldsmith, Prest and Ringwall, Inc.  
257 Ayer Road  
Harvard, MA 01451

Dana Samuelson – DEP Fees Coordinator, CERO

DEP – Watershed Permitting Program, Policy Section, Boston



COMMONWEALTH OF MASSACHUSETTS  
 EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

JANE SWIFT  
 Governor

BOB DURAND  
 Secretary

LAUREN A. LISS  
 Commissioner

**APPROVAL FOR REMEDIAL USE**  
 Pursuant to Title, 310 CMR 15.00

**Name and Address of Applicant:**

Bio-Microbics, Inc.,  
 8450 Cole Parkway  
 Shawnee, KS 66227

Trade name of technology and model: MicroFAST Treatment System Models MicroFAST 0.5, 0.9, 1.5, 3.0, 4.5 and 9.0; HighStrengthFAST Treatment System Models HighStrengthFAST 1.0, 1.5, 3.0, 4.5 and 9.0 and NitriFAST Treatment System Models NitriFAST 0.5, 1.0, 1.5, 3.0, 4.5 and 9.0 (hereinafter called the "System"). Schematic drawings of each model are attached and are a part of this Approval.

Date of Application: March 16, 2001  
 Transmittal Number: W 019013  
 Date of Issuance: August 13, 2001  
 Expiration date: August 13, 2006

**Authority for Issuance**

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection hereby issues this Approval for Remedial Use to: Bio-Microbics, Inc., 8450 Cole Parkway, Shawnee, KS 66227 (hereinafter "the Company"), approving the System described herein for Remedial Use in the Commonwealth of Massachusetts. Sale and use of the System are conditioned on compliance by the Company and the System owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Approval constitutes a violation of 310 CMR 15.000.

Glenn Haas, Acting Assistant Commissioner  
 Bureau of Resource Protection  
 Department of Environmental of Protection

Date

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

DEP on the World Wide Web: <http://www.state.ma.us/dep>

Printed on Recycled Paper

**Bio-Microbics Remedial Use Approval MicroFAST, HighStrengthFAST and NitriFAST****I. Purpose**

1. The purpose of this approval is to allow use of the System in Massachusetts, on a Remedial Use basis.
2. With the necessary permits and approvals required by 310 CMR 15.000, this Approval for Remedial Use authorizes the use and installation of the System in Massachusetts.
3. The System may only be installed on facilities that meet the criteria of 310 CMR 15.284(2).
4. This Remedial Use Approval authorizes the use of the System where the local approving authority finds that the System is for upgrade of a failed, failing or nonconforming system and the design flow for the facility is less than 10,000 gallons per day ( GPD) and there is no increase in design flow to be served by the system.

**II. Design Standards**

1. The FAST treatment system (Fixed Activated Sludge Treatment), Models MicroFAST 0.5, 0.75, 0.9, and 1.5, HighStrengthFAST 1.0 and 1.5, NitriFAST 0.5, 0.75, 0.9 and 1.5 all consist of a single tank having a primary settling zone and an aerobic biological zone. Solids are trapped in the primary zone where they settle. In the aerobic zone, the bacteria colony attaches itself to the surface of a submerged media bed and feeds on the sewage as it circulates. Models MicroFAST, HighStrengthFAST and NitriFAST 3.0, 4.5 and 9.0 consist of a standard Title 5 septic tank for settling solids and a second tank with the submerged media for aerobic treatment.
2. Models MicroFAST 0.5, 0.75 and 0.9. HighStrengthFAST 1.0, NitriFAST 0.5, 0.75 and 0.9 shall be installed in the second compartment of a two compartment septic tank with a total liquid capacity of at least 1,500 gallons. Models MicroFAST, HighStrengthFAST and NitriFAST 1.5 shall be installed in the second compartment of a 3000 gallon tank. The two compartment septic tank shall be installed between the building sewer and the pump chamber of a standard Title 5 system constructed in accordance with 310 CMR 15.100 - 15.279, subject to the provisions of this Approval. MicroFAST, HighStrengthFAST and NitriFAST Models 3.0, 4.5 and 9.0 shall be installed between a septic tank designed in accordance with 310 CMR 15.223 and the pump chamber of a SAS.
3. The System is approved for use at facilities with a maximum design flow up to 10,000 GPD.
4. The System may be used in soils with a percolation rate of up to 90 min./inch. For soils with a percolation rate of 60 to 90 min./inch, the effluent loading rate shall be 0.15 GPD/sq. ft.
5. Pressure distribution designed in accordance with Department guidelines is required for all installations of the System.

**Bio-Microbics Remedial Use Approval MicroFAST, HighStrengthFAST and NitriFAST**

**III. Allowable Soil Absorption System Design**

1. Reduction of the Required Soil Absorption System Size - An Applicant is eligible for up to a 50 percent reduction in the area of the soil absorption system required by 310 CMR 15.242, where all the following is met. Accordingly, in approving design and installation of the System by a particular Applicant, the local approving authority may allow up to a 50 percent reduction in the area of the soil absorption system required by 310 CMR 15.242, provided that all of the following conditions are met:
  - A. No reduction in the required separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
  - B. No reduction in the required four feet of naturally occurring pervious material is allowed unless the Applicant has demonstrated that the four foot requirement cannot be met anywhere on the site, that easements to adjacent property on which a system in compliance with the four foot requirement could be installed have been requested but cannot be obtained, and that a shared system is not feasible. Any such reduction must first be approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
  - C. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, the local approving authority may allow a reduction under a local upgrade approval in accordance with 310 CMR 15.405 (1) (a), (b), (f), (g), and (h).
  - D. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, even taking into account provisions for local upgrade approval as described above, then pursuant to 310 CMR 15.410, the applicant first must obtain variance(s) from the local approving authority and then approval of the Department.
2. Reduction of the Required Separation Distance to High Groundwater Elevation - An applicant is eligible for a reduction in separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation, where all of the following conditions are met. Accordingly, in approving design and installation of the System by a particular Applicant, the local approving authority may allow a reduction in the required separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation, provided that all of the following conditions are met:
  - A. A minimum two foot separation (in soils with a recorded percolation rate of more than two minutes per inch) or a minimum three foot separation (in soils with a recorded

**Bio-Microbics Remedial Use Approval MicroFAST, HighStrengthFAST and NitriFAST**

percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation is maintained.

- B. No reduction in the required SAS size is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
  - C. No reduction in the required four feet of naturally occurring pervious material is allowed unless the Applicant has demonstrated that the four foot requirement cannot be met anywhere on the site, that easements to adjacent property on which a system in compliance with the four foot requirement could be installed have been requested but cannot be obtained, and that a shared system is not feasible. Any such reduction must first be approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
  - D. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, the local approving authority may allow a reduction under a local upgrade approval in accordance with 310 CMR 15.405 (1) (a), (b), (f), (g), and (h).
  - E. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, even taking into account provisions for local upgrade approval as described above, then pursuant to 310 CMR 15.410, the applicant first must obtain variance(s) from the local approving authority and then approval of the Department.
3. Reduction of the Requirement for Four Feet of Naturally Occurring Pervious Material – An Applicant is eligible for a reduction in the required four feet of naturally occurring pervious material in an area of no less than two feet of naturally occurring pervious material, where all of the following conditions are met. Accordingly, in approving design and installation of the System by a particular Applicant, the local approving authority may allow a reduction in the required four feet of naturally occurring pervious material in an area with no less than two feet of naturally occurring pervious material, provided that all of the following conditions are met:
- A. The Applicant has demonstrated that the four foot requirement cannot be met anywhere on the site, and that easements to adjacent property on which a system in compliance with the four foot requirement could be installed have been requested but cannot be obtained, and that a shared system is not feasible.
  - B. No reduction in the required SAS size is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
  - C. No reduction in the required separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.



**Bio-Microbics Remedial Use Approval MicroFAST, HighStrengthFAST and NitriFAST**

- D. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, the local approving authority may allow a reduction under a local upgrade approval in accordance with 310 CMR 15.405 (1) (a), (b), (f), (g), and (h).
- E. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, even taking into account provisions for local upgrade approval as described above, then pursuant to 310 CMR 15.410, the applicant first must obtain variance(s) from the local approving authority and then approval of the Department.

**IV. General Conditions**

- 1. All provisions of 310 CMR 15.000 are applicable to the use of this System, the owner and the Company, except those that specifically have been varied by the terms of this Approval.
- 2. Any required sample analysis shall be conducted by an independent U.S. EPA or DEP approved testing laboratory, or a DEP approved independent university laboratory. It shall be a violation of this Approval to falsify any data collected pursuant to an approved testing plan, to omit any required data or to fail to submit any report required by such plan.
- 3. The facility served by the System and the System itself shall be open to inspection and sampling by the Department and the local approving authority at all reasonable times.
- 4. In accordance with applicable law, the Department and the local approving authority may require the owner of the System to cease operation of the System and/or to take any other action as it deems necessary to protect public health, safety, welfare and the environment.
- 5. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sewer system. Accordingly, no System shall be installed, upgraded or expanded, if it is feasible to connect the facility to a sanitary sewer, unless as allowed by 310 CMR 15.004.
- 6. Design and installation shall be in strict conformance with the Company's DEP approved plans and specifications, 310 CMR 15.000 and this Approval.

**V. Conditions Applicable to the System Owner**

- 1. The System is approved for the treatment and disposal of sanitary sewage only. Any wastes that are non-sanitary sewage generated or used at the facility served by the System shall not be introduced into the System and shall be lawfully disposed.
- 2. Effluent discharge concentrations shall meet or exceed secondary treatment standards of 30 mg/L biochemical oxygen demand (BOD<sub>5</sub>) and 30 mg/L total suspended solids (TSS). The effluent pH shall not vary more than 0.5 standard units from the influent water supply.
- 3. Operation and Maintenance Agreement:
  - A. Throughout its life, the Owner of the System shall have the System properly operated and maintained in accordance with Company's and designer's operation and

**Bio-Microbics Remedial Use Approval MicroFAST, HighStrengthFAST and NitriFAST**

maintenance requirements and this Approval and be under an operation and maintenance agreement (O&M). No O&M agreement shall be for less than one year.

- B. No System shall be used until an O&M agreement is submitted to the approving authority which:
  - a. provides for the contracting of a person or firm competent in providing services consistent with the System's specifications and the operation and maintenance requirements specified by the designer and those specified by the Department;
  - b. contains procedures for notification to the local approving authority and the Department within five days of a System failure, malfunction or alarm event and for corrective measures to be taken immediately; and
  - c. Provides the name of the operator, which must be a Massachusetts certified operator as required by 257 CMR 2.00 that will operate and monitor the System. The owner of the System shall at all times have the System properly operated and maintained, at a minimum every three months and every time there is an alarm event. The local approving authority and the Department shall be notified, in writing, within seven days every time the operator or operators are changed.
4. The owner shall furnish the Department any information, which the Department may request regarding the System, within 21 days of the date of receipt of that request.
5. Within 30 days of the approving authority's issuance of the Certificate of Compliance for the system, the owner shall submit a copy of the Certificate of Compliance to the Department.
6. By January 31<sup>st</sup> of each year for the previous year, the System owner shall submit to the Department and the local approving authority an O&M checklist and a technology checklist, completed by the System operator for each inspection performed during the previous calendar year. Copies of the checklists are attached to this approval.
7. The owner of the System shall record in the appropriate registry of deeds a notice that discloses the existence of this Remedial Use approved alternative system. A copy of the book and page number of the recording must be provided to the local approving authority and the Department prior to the issuance of the Certificate of Compliance.
8. The owner of the System shall provide a copy of this Approval, prior to the signing of a purchase and sale agreement for the facility served by the System or any portion thereof, to the proposed new owner.
9. Effluent from a system serving a facility with a design flow of less than 2000 GPD shall be monitored quarterly. Both influent and effluent from a system serving a facility with a design flow 2000 GPD to 10,000 GPD shall be monitored monthly. At a minimum, the following parameters shall be monitored: pH, BOD<sub>5</sub>, and TSS. All monitoring and operation and maintenance data shall be submitted to the local approving authority and the Department by January 31<sup>st</sup> of each year for the previous calendar year. After one year of monitoring and reporting and at the written request of the owner, the Department may reduce the monitoring and reporting requirements.
10. When sanitary sewer connection becomes feasible, within 60 days of such feasibility, the owner of the System shall obtain necessary permits and connect the facility served by the

**Bio-Microbics Remedial Use Approval MicroFAST, HighStrengthFAST and NitriFAST**

System to the sewer, shall abandon the System in compliance with 310 CMR 15.354, unless a later time is allowed, in writing, by the local approving authority, and shall in writing notify the Department of the abandonment.

**VI. Conditions Applicable to the Company**

1. By January 31<sup>st</sup> of each year, the Company shall submit to the Department, a report, signed by a corporate officer, general partner or Company owner that contains information on the System, for the previous calendar year. The report shall state: the number of units of the System sold for use in Massachusetts including the installation date and date of start-up during the previous year; the address of each installed System, the owner's name and address, the type of use (e.g. residential, commercial, school, institutional) and the design flow; and for all Systems installed since the date of issuance of this Approval, all known failures, malfunctions, and corrective actions taken and the address of each such event.
2. The Company shall notify the Director of the Watershed Permitting Program at least 30 days in advance of the proposed transfer of ownership of the technology for which this Approval is issued. Said notification shall include the name and address of the proposed new owner and a written agreement between the existing and proposed new owner containing a specific date for transfer of ownership, responsibility, coverage and liability between them. All provisions of this Approval applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.
3. The Company shall furnish the Department any information that the Department requests regarding the System, within 21 days of the date of receipt of that request.
4. Prior to its sale of the System, the Company shall provide the purchaser with a copy of this Approval. In any contract for distribution or sale of the System, the Company shall require the distributor or seller to provide the purchaser of the System, prior to any sale of the System, with a copy of this Approval.
5. If the Company wishes to continue this Approval after its expiration date, the Company shall apply for and obtain a renewal of this Approval. The Company shall submit a renewal application at least 180 days before the expiration date of this Approval, unless written permission for a later date has been granted in writing by the Department.

**VII. Reporting**

1. All notices and documents required to be submitted to the Department by this Approval shall be submitted to:

Director  
Watershed Permitting Program  
Department of Environmental Protection  
One Winter Street - 6th floor  
Boston, Massachusetts 02108

**Bio-Microbics Remedial Use Approval MicroFAST, HighStrengthFAST and NitriFAST****VIII. Rights of the Department**

1. The Department may suspend, modify or revoke this Approval for cause, including, but not limited to, non-compliance with the terms of this Approval, non-payment of the annual compliance assurance fee, for obtaining the Approval by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Approval, or as necessary for the protection of public health, safety, welfare or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to this Approval and/or the System against the owner, or operator of the System and/or the Company.

**IX. Expiration Date**

1. Notwithstanding the expiration date of this Approval, any System sold and installed prior to the expiration date of this Approval, and approved, installed and maintained in compliance with this Approval (as it may be modified) and 310 CMR 15.000, may remain in use unless the Department, the local approving authority, or a court requires the System to be modified or removed, or requires discharges to the System to cease.

W019013 Remedial Bio-Microbics 8-13 Combined

NASHOBA ASSOCIATED BOARDS OF HEALTH  
ENVIRONMENTAL HEALTH DIVISION

AYER, MA 01432

978 772-3338

SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

Permit For: SHARED SYSTEM

ISSUED FOR THE

Harvard

BOARD OF HEALTH

OWNER: JOHN SAWYER JR. (INCLUDES 1 & 3 FAIRBANK STREET)

(not transferable - formal permit transfer must be requested upon change of ownership)

LOCATION OF LOT: 3 LITTLETON RD. / 1 & 3 Fairbank St.

MAP/PARCEL:

Date Permit Issued: November 04, 2003

Lot Size:

Soil Description: 0-30" TOP & SUBSOIL, 30-124" FINE SANDY LOAM

Groundwater: 48"

PERC RATE: 11 MPI

ENGINEERING OR SPECIAL PREPARATION:

System to be installed according to engineered plan No: L-8880

Dated: 12/1/2000 Revised 9/18/2003

By: DAVID E. ROSS ASSOCIATES, INC.

Bedroom Count: SEVENTEEN BEDROOMS TOTAL

Water Supply: ☐ Well ☒ Town

Primary Installation: TWO - 4000 GALLON SEPTIC TANKS, 4000 GALLON PUMP CHAMBER

Secondary Installation: SIX - 93' L X 2' W X 2' EFF. DEPTH TRENCHES W/VENT

Special Notes:

YEARLY "TITLE 5" INSPECTIONS REQUIRED, DEP REQUIREMENTS

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT AGENT JK

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system.

SIGNED

☒ Owner

☐ Contractor

☐ Licensed Installer

Record of Inspections

NABH Licensed Installer:

INSPECTIONS REQUIRE

- ☒ TRENCH excavation, before fill/stone by ☐ Eng ☒ NABH
- ☒ Fill in place by ☐ Engineer ☒ NABH
- ☒ Completed system prior to backfill
- ☒ Final fill and grading BY ENG. & ON AS-BUILT PLAN
- ☒ Engineer certification in writing of completed system
- ☒ As built plans ☒ by design engineer ☒ by installer
- ☐ Well completion report and water test submitted to this office
- ☒ Recorded deed/fill easements submitted to this office
- ☒ RECORDED DEED PER DEP APPROVAL
- ☒ PUMP & ALARM
- ☒ All inspections completed

Insp. Date

Insp. By:

A NEWHOUSE CANNOT BE OCCUPIED OR SOLD UNTIL A CERTIFICATE OF COMPLIANCE IS OBTAINED.



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

Central Regional Office, 627 Main Street, Worcester, MA 01608

OCT 27 2003

MITT ROMNEY  
Governor

KERRY HEALEY  
Lieutenant Governor

ELLEN ROY HERZFELDER  
Secretary

ROBERT W. GOLLEDGE, Jr.  
Commissioner

October 22, 2003

John P. Sawyer, Jr.  
3 Littleton Road  
Harvard, MA 01451

Re: Harvard - BRP - #W037179  
BRP WP 58b, Shared System  
Approval  
3 Littleton Road  
1&3 Fairbanks Street

Dear Mr. Sawyer:

Pursuant to the State Environmental Code, 310 CMR 15.292, the Central Regional Office of the Department of Environmental Protection has received and completed its review of the above referenced application for approval of a shared system. The shared system shall serve three (3) facilities, which include a three (3) bedroom dwelling and a six (6) bedroom dwelling located at 3 Littleton Road; a three (3) bedroom dwelling located at 1 Fairbanks Street; and a four (4) bedroom dwelling and a one (1) bedroom dwelling located at 3 Fairbanks Street. The shared system shall be designed for a total of seventeen (17) bedrooms for a total design flow of 1,870 gallons per day. The location of the components of the shared system shall be 3 Littleton Road in Harvard, Massachusetts.

It is the Department's understanding that an unapproved shared system is currently serving 3 Littleton Road, 1 Fairbanks Street, and 3 Fairbanks Street and that this system is in failure necessitating a shared system upgrade. The current owners of these facilities are now requesting Department approval of a proposed upgrade to the shared system.

The proposed shared system upgrade includes two 4,000-gallon septic tanks in series followed by a 4,000-gallon pump chamber. The soil absorption system is comprised of six 93' long leaching trenches.

The application includes an approval letter from the Board of Health.

As part of the application, the Department received:

1. Two sheets titled "Sewage Disposal System for Parcel 1, #3 Littleton Road, Harvard, Massachusetts designed for John Sawyer" dated December 2000.
2. One sheet titled: "Plan of Easement in Harvard, Mass. Prepared for John Sawyer" dated February 2003.
3. Grant of Title 5 Covenant and Easement for John P. Sawyer, Jr. and Mabel T. Sawyer.
4. Grant of Title 5 Covenant and Easement for Daniel G. Page and Michele F. Page.
5. Grant of Title 5 Covenant and Easement for Patricia M. Hatch.

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

<http://www.mass.gov/dep> • Phone (508) 792-7650 • Fax (508) 792-7621 • TDD # (508) 767-2788



Printed on Recycled Paper

6. HPS System Maintenance Trust
7. Shared SDS Agreement
8. Shared System Operation and Maintenance Plan

Based upon its review of the application, and in accordance with 310 CMR 15.293, the Department hereby, **approves** the shared system subject to the following:

1. This system has not been designed for a garbage grinder. Garbage grinders are not permitted in any of the facilities.
2. The system shall be inspected annually in accordance with 310 CMR 15.301 (7) by a Department approved System Inspector. A copy of the inspection report shall be forwarded to this office within 30 days of the inspection.
3. The owners shall record a copy of the enclosed documents at the Registry of Deeds. The documents to be recorded are: "Grant of Title 5 Covenant and Easement" for grantor being owners John P. Sawyer, Jr. and Mabel T. Sawyer of 3 Littleton Road; "Grant of Title 5 Covenant and Easement" for grantor being owners Daniel G. Page and Michele F. Page of 1 Fairbanks Street; "Grant of Title 5 Covenant and Easement" for grantor being owner Patricia M. Hatch of 3 Fairbanks Street; "Shared SDS Agreement"; "HPS System Maintenance Trust", "Plan of Easement in Harvard, Mass. Prepared for John Sawyer"; "Shared System Operation and Maintenance Plan". A copy of these recordings showing book and page shall be forwarded to this office within 30 days of said recording.
4. Prior to installation of the shared system, the owners shall record a copy of this approval letter in the chain of title to the properties served by the shared system and submit to the Department the book and page number and date of such recording.
5. This shared system shall be maintained in accordance with 310 CMR 15.000 of the State Environmental Code and the Shared System Operation and Maintenance Plan.

This approval shall not supercede any conditions imposed upon the system by the Harvard Board of Health. The above conditions are meant to supplement any other conditions imposed upon the facility.

If you have any questions concerning this matter please feel free to call me at (508) 767-2823.

Sincerely,



David Boyer  
Environmental Engineer  
Bureau of Resource Protection

Db/hs: W037179a-125

Cc: Harvard Board of Health

Nashoba Assoc. Boards of Health



OFFICE OF THE

**BOARD OF HEALTH**

13 AYER ROAD • HARVARD, MASSACHUSETTS 01451 • (978) 456-4106  
FAX: (978) 456-4107



January 31, 2006

Sawyer, Hatch, & Page  
3 Littleton Road  
Harvard, MA 01451

RE: Title 5 Inspection of shared system at 3 Littleton Road (including 1 & 3  
Fairbanks Street

Dear Mr. Sawyer,

As part of the approval for a shared Subsurface Sewage Disposal System (SDS) at the above properties, a yearly Title 5 inspection is required. Please have this inspection done immediately and forward the results to the Nashoba Boards of Health and the Massachusetts Department of Environmental Protection.

Respectfully,

A handwritten signature in cursive script that reads "William Spacciapoli". To the right of the signature is a circular stamp or mark.

William Spacciapoli, Chair

DC: File  
NABH

BOWMAR, LARKIN, LILLY & BARTON

ATTORNEYS AND COUNSELLORS AT LAW

RALPH B. BOWMAR (1933-1973)  
ROBERT J. LARKIN (1937-1982)

18 MAIN STREET — P.O. BOX 40  
AYER, MASSACHUSETTS 01432  
(978) 772-3588 — (978) 772-3688

RICHARD W. LARKIN  
WILLIAM C. BARTON  
CHRISTOPHER T. LILLY, P.C.  
(ADMITTED IN MA AND NY)

LITTLETON OFFICE:  
ON THE COMMON, P.O. BOX 387  
LITTLETON, MASSACHUSETTS 01460  
(978) 486-3143

AYER FAX NUMBER: (978) 772-5177

THOMAS E. LILLY  
(OF COUNSEL)

August 9, 2004

Town of Harvard  
Board of Health  
Town Hall  
13 Ayer Road  
Shirley, MA 01464

ATTENTION: SUSAN FIRST

Re: Three-way septic system  
(Sawyer, Hatch, Page)

Dear Members of the Board:

Enclosed please find the original with two photocopies of the GRANT OF TITLE 5 COVENANT AND EASEMENT relative to the three-party shared septic system serving the Sawyer, Hatch, and Page properties in Harvard. The document includes the Covenant itself, with exhibits, the "Shared SDS Agreement" (concerning the arrangements among the parties themselves), and the "HPS SYSTEM MAINTENANCE TRUST" (providing the financial assurance requirements necessitated pursuant to 310 CMR 15.290), which has been approved by DEP.

It is necessary that the Harvard Board of Health sign the original document on page 7 of the Covenant. I expect to appear at the meeting of Tuesday evening, August 10, in order to collect the executed original so that it can be recorded along with the plan (which is in my possession).

As I discussed with Susan First, I would like to collect one of the extra copies that I have left with the Board. When the original document has been returned from the Registry of Deeds, I will provide a copy of same to the Harvard Board of Health and to DEP.

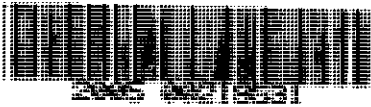
Thank you for your courtesy and cooperation in this matter.

Yours very truly,

  
Richard W. Larkin

Enclosures

cc: John P. Sawyer, Jr. and Mabel T. Sawyer  
Patricia M. Hatch  
Daniel G. Page and Michele F. Page  
Cathy S. Netburn, Esq.  
Ira M. Grossman



Bk: 38091 Pg: 283 Doc: COV  
Page: 1 of 1 12/27/2005 08:51 AM

## RESTRICTIVE COVENANT

Mail A. Jasins  
172 Harwood Ave  
Littleton, MA

In consideration of the approval by the Board of Health of the Town of Harvard ("Board") of a permit to replace the septic system at 2 and 6 Littleton Road, Harvard, Worcester County, Massachusetts recorded with said Deeds on the 15<sup>th</sup> day of August 1985 in Book 8879, Page 307 ("Premises")  
At

Alfred C. Jasins and Elaine Jasins, Husband and Wife, ("Owners"), their successors and assigns, hereby covenant and agree with the Board, as follows:

1. The undersigned Owners are the owners in fee simple of the Premises affected by this restrictive covenant. See deed dated August 15, 1985 recorded with Worcester Registry of Deeds Book 8879, Page 307
2. This covenant shall be binding upon the executors, administrators, devisees, heirs, successors, and assigns of the Owners and shall constitute a covenant running with the land.
3. The Owners agree to register this covenant with the Worcester Registry of Deeds.
4. The Owners covenant with the Board that so long as the present septic system services the Premises the premises will have no more than 11 bedrooms.
5. This covenant is for the benefit of the Board and relates to Title 5 of the Massachusetts Environmental Code, as most recently amended.
6. Upon written authorization of the Board, this covenant may be released at any time in the future.

IN WITNESS WHEREOF, the Owners have executed this Restrictive Covenant under seal as of the 18 day of NOV, 2005

APPROVED BY

[Signature]  
Board of Health  
12-13-05  
Date

WILLIAM SPECIAPOLI

[Signature]  
ELAINE JASINS  
[Signature]  
ALFRED C. JASINS  
Owners  
Date 11/18/05

[Signature]  
SUSAN MUKAI  
11/18/05

A. VALESKA ROSS  
Notary Public  
Commonwealth of Massachusetts  
My Commission Expires  
August 10, 2012

SUSAN MUKAI  
Notary Public  
My Commission Expires  
March 15, 2007

[Signature]  
susan mukai 12/22/05

Elaine Jasins & Alfred C. Jasins  
to me personally known to be the  
Persons whose names are subscribed  
to this instrument and such persons  
acknowledge that they executed the  
same for the purposes therein contained, and  
executed this instrument as their free act and deed.

ATTEST: WORC. Anthony J. Vigliotti, Register

OFFICE OF THE  
**BOARD OF HEALTH**

13 AYER ROAD • HARVARD, MASSACHUSETTS 01451 • (978) 456-4106  
FAX: (978) 456-4107



December 15, 2005

*Variances  
Deed Restricted Covenant  
11 Bedrooms.*

Alfred Jasins  
172 Harwood Avenue  
Littleton, MA 01460-1545

RE: 2 & 6 Littleton Road

Dear Mr. Jasins,

At its December 13, 2005 meeting, the Board of Health signed the restrictive covenant for eleven bedrooms for the houses at 2 & 6 Littleton Road. Please have the notarized document recorded at the Worcester Registry of Deeds and return a recorded copy to the Board.

If you have any questions regarding this process, please contact the Board at (978)-456-8315 on Tuesday or Thursday from 8am to 11 am.

Respectfully,

*William Spacciapoli*   
William Spacciapoli  
Chair

DC: Mark Donohoe, Acton Survey & Engineering, Inc.  
NABH  
File

**Acton Survey & Engineering, Inc.**

97 Great Road, Suite 6 • PO Box 666 • Acton, MA • 01720

Phone: (978) 263-3666 • Fax: (978) 635-0218

Email: [actonsurvey@verizon.net](mailto:actonsurvey@verizon.net)

September 8, 2005

Harvard Board of Health  
13 Ayer Road  
Harvard, MA 01451

Re: Alfred Jasins  
2 & 6 Littleton Road  
6322,j47

Dear Board Members:

This letter is in response to your agent's Review form of May 16, 2005 and Message reply of 6/16/05.

***Water Line Offset***

The property plan of record shows a water line between the two building extending off the property and we expect that the line was relocated, or might be required to be relocated. Title 5 requires lines within 10 feet of sewer system components to be pressure tested and be Class 150 pressure pipe. In addition to these requirements we required the water line to be sleeved. However, we have redesign the placement of the septic tank to provide a offset exceed 10 feet from the expected waterline location.

***Groundwater Offset***

The SAS has been redesigned to have a bottom elevation of 92.8 to conform with you agent's best case requirement.

***Subsurface Explorations***

The number of subsurface explorations was limited to decrease the disturbance of the yards and concerns of encountering the existing septic system or other underground structures. We believe that the two soil evaluations and the percolation test properly represent the subsurface conditions required for design purposes.

Soil evaluation 45-1 is shown, symbolically, as being 6 feet long and as being 1 foot from the SAS. The soil evaluation was, most likely, partially within the SAS.

***Septic Tanks***

The septic tanks are not in parallel.

The utilization of a single tank would require solids, from building 2, to flow 150 feet to a tank located near building 1. This is not good practice.

The septic tanks are properly dimensioned to insure that the contractor obtains and installs a tank meeting the minimum requirements of Title 5. Some manufacturers do not stipulate the capacity of the

REC'D SEP 13 2005

compartments of dual compartment tanks and the size of the compartments required are indicated on the plans.

### *Number of Bedrooms*

Our client informed us that the buildings contain several small rooms, which due to door and window placement are undesirable for use as a bedroom and are not used for that purpose.

A deed restriction limiting the use of the property to 11 bedrooms is agreeable. If the Town, or your agent, has a restriction that has been accepted by the Board we desire that one be forwarded to our client.

### *Venting*

There is no reason to vent the SAS.

### *Number of Lots*

Three lots are shown on the record plan on file at the Registry of Deeds. The interior lot lines are shown as being such. As the properties have been in common ownership and present zoning requires lot areas exceeding those of the individual lots, we expect that lots are considered to be one property.

### *Variances*

Please accept this letter as our client's request that the Board grant a variance from its "Approved Regulations Supplemental of Article XI of The State Sanitary Code" Section VI to allow the SAS to be elevated a minimum of 4 feet above groundwater elevations noted on April 18, 2005 and from its Regulation adopted on April 4, 1984, as required, to allow the SAS design to be based on the information shown on our design plan.

Please inform us if abutter notification should be required prior to the Board hold a hearing on these requests.

Thank you for any consideration you may give to this matter.

Very truly yours,  
Mark T. Donohoe, PE

  
for  
Acton Survey & Engineering, Inc.

cc: Alfred Jasins  
Ira Grossman, RS

Acton Survey & Engineering, Inc.  
97 Great Road, Suite 6 • PO Box 666 • Acton, MA • 01720  
Phone: (978) 263-3666 • Fax: (978) 635-0218  
Email: actonsurvey@verizon.net

NASHOBA ASSOCIATED BOARDS OF HEALTH  
ENVIRONMENTAL HEALTH DIVISION

AYER, MA 01432

978 772-3338

SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

Permit For: UPGRADE

2 & 6 LITTLETON ROAD

ISSUED FOR THE

Harvard

BOARD OF HEALTH

OWNER: ALFRED JASINS

(not transferable - formal permit transfer must be requested upon change of ownership)

LOCATION OF LOT: 2 LITTLETON RD. + 6

MAP/PARCEL:

Date Permit Issued: November 08, 2005

Lot Size: 21,245 SF

Soil Description: 0-36" FILL, 36-122" LOAMY SAND

Groundwater: 84"

PERC RATE: 13 MPI

ENGINEERING OR SPECIAL PREPARATION:

System to be installed according to engineered plan No: 6322-SDS

Dated: 12/16/2004 Rev.: 03/08/2005

By: ACTON SURVEY & ENGINEERING

Bedroom Count: 11 BEDROOMS TOTAL

Water Supply: ☐ Well ☒ Town

Primary Installation: TWO 2 COMPARTMENT TANKS

Secondary Installation: 74' L X 24' L GALLEY SYSTEM

Special Notes

VARIANCES AS NOTED ON PLAN

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT AGENT:

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system.

SIGNED

☒ Owner ☒ Contractor ☒ Licensed Installer

Record of Inspections

NABH Licensed Installer:

INSPECTIONS REQUIRED

- ☒ GALLEY excavation, before fill/stone by ☐ Eng ☒ NABH
- ☒ Fill in place by ☐ Engineer ☒ NABH
- ☒ Completed system prior to backfill
- ☒ Final fill and grading ON ENG. AS-BUILT PLAN
- ☒ Engineer certification in writing of completed system
- ☒ As built plans ☒ by design engineer
- ☐ Well completion report and water test submitted to this office
- ☒ Recorded deed/assessments submitted to this office
- ☒ DEED RESTRICTION
- ☒ WATERLINE LOCATION ON AS-BUILT PLAN
- ☒ All inspections completed

Insp. Date

Insp. By

12/10/05

12/16/05

12/20/05

12/28/05

12/28/05

12/28/05

A NEWHOUSE CANNOT BE OCCUPIED OR SOLD UNTIL A CERTIFICATE OF COMPLIANCE IS OBTAINED.





Nashoba Associated Boards of Health  
Environmental Health Service  
30 Central Avenue, Ayer, MA 01432

Commonwealth of Massachusetts  
Certificate of Compliance  
Harvard, Massachusetts

This is to certify that the installation, allowed by the Sewage Disposal Works Construction Permit for:

**UPGRADE**

At the following address: <sup>46 50</sup> 2 LITTLETON RD.

has been constructed/abandoned in accordance with the provisions of Title 5 (310 CMR 15.000) and of the aforementioned Sewage Disposal Works Construction Permit.

This permit has been issued on the plans submitted by: ACTON SURVEY & ENGINEERING  
(Design Engineer)

Plan Number: 6322-SDS

Approved on 11/8/2005

This Certificate of Compliance is for the use intended by the Sewage Disposal Works Construction Permit as described below:

**11 BEDROOMS TOTAL FOR 2&6 LITTLETON RD**

The issuance of this Certificate shall not be construed as a guarantee that the system will function as designed. This Certificate expires on: 12/29/2007

Design Engineer of Record: ACTON SURVEY & ENGINEERING

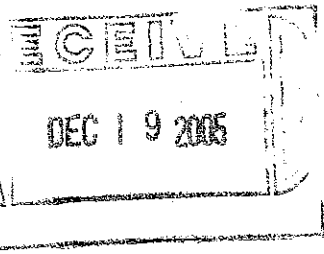
Installer of System: GLEN NICHOLS

For the Approving Authority

  
Ira Grossman

Date: 12/28/2005

# 2



4" CLEANOUT TO GRADE

2' RIMS & COVERS TO FINISH GRADE

2000 GAL COMBO

4" CLEANOUT TO GRADE

I G. Nichols const. CERTIFY THAT ON 12-16-05 I

INSTALLED THE ABOVE SYSTEM FOR G. Jasin's AT

LOT # 246 Littleton Rd IN ACCORDANCE WITH THE APPROVED DESIGN

BY John Sweeney Plan # Revised

AND PERMIT ISSUED BY THE HEMPHILL BOARD OF HEALTH.

License Number 169

[Signature]  
Installer's Signature & Date

2' RIMS & COVERS TO FINISH GRADE

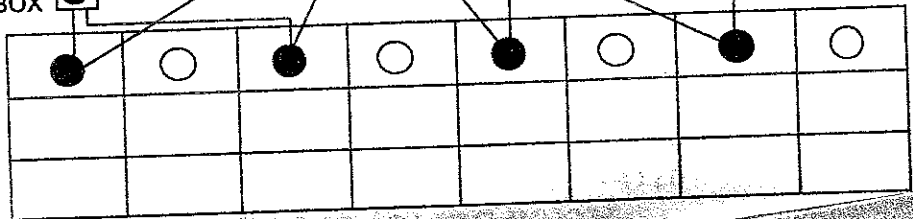
# 6

SM

2000 GAL COMBO

2' RIMS & COVERS TO FINISH GRADE

D-BOX



LITTLETON ROAD

# NASHOBA ASSOCIATED BOARDS OF HEALTH

## ENVIRONMENTAL HEALTH DIVISION

AYER, MA 01432

978 772-3338

### SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

Permit For: Local Upgrade Approval

ISSUED FOR THE

Harvard

BOARD OF HEALTH

OWNER: 5 LITTLETON ROAD REALTY TRUST

(not transferable - formal permit transfer must be requested upon change of ownership)

LOCATION OF LOT: 5 LITTLETON RD.

MAP/PARCEL:

Date Permit Issued: August 05, 2003

Lot Size: 0.37 ACRES

Soil Description: 0-50" TOP & SUBSOIL & FILL, 50-102" LOAMY SAND, 102-120" LOAMY SAND.

Groundwater: 58"

PERC RATE: 10 MPI

#### ENGINEERING OR SPECIAL PREPARATION:

System to be installed according to engineered plan No: 02223

Dated: 4/1/03

Revised:

By: GOLDSMITH, PREST & RINGWALL

Bedroom Count: EXISTING FOUR BEDROOMS

Water Supply: ☐ Well ☒ Town

Primary Installation: MICROFAST UNIT & 1000 GALLON PUMP CHAMBER

Secondary Installation: 35' L X 21' W PRESSURE LEACH FIELD

Special Notes:

VARIANCES REQUIRED TO HARVARD BOH REGULATIONS AS NOTED

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT AGENT:

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system.

SIGNED: *Michael Pankov* AS AGENT

☒ Owner

☒ Contractor

☒ Licensed Installer

STAFF ENGINEER, GPR

#### Record of Inspections

NABH Licensed Installer:

#### INSPECTIONS REQUIRED:

- ☒ BED excavation, before fill/stone by ☐ Eng. ☒ NABH
- ☒ Fill in place by ☒ Engineer ☒ NABH
- ☒ Completed system prior to backfill
- ☒ Final fill and grading TO BE SHOWN ON ENG. AS-BUILT
- ☒ Engineer certification in writing of completed system
- ☒ As built plans ☒ by design engineer ☒ by installer
- ☐ Well completion report and water test submitted to this office
- ☒ Recorded deed/fill easements submitted to this office
- ☒ RECORDED DEED (REMEDIAL, FAST USE)
- ☒ PUMP & ALARM INSPECTION
- ☒ All inspections completed

Insy. Date	Insy. By.

A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL A CERTIFICATE OF COMPLIANCE IS OBTAINED.

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Page: 1 of 1 03/23/2005 11:10 AM

NOTICE OF VARIANCE FORM  
STATE ENVIRONMENTAL CODE

Notice is hereby given that the real estate located on 5 Littleton Road,  
Harvard Massachusetts, as described in a deed from Edward A. Pieters to  
The #5 Littleton Rd. Realty Trust \* dated December 31, 1998 and  
recorded in Worcester County Registry of Deeds as Document # Book 20873,  
Page 282 is the subject of a variance from the State Environmental Code, Title 5,  
310 CMR 15.212 (a). Said variance relates to the nature and design of the sewage  
disposal system and is within the jurisdiction of the Massachusetts Department of  
Environmental Protection. \*BK 20873 P-275

Signed and sealed this 11<sup>th</sup> day of March, 2005.

Edward A. Pieters REALTY  
Trustee for 5 Littleton Rd Trust  
Signature of Owner(s) EDWARD A. PIETERS

STATE OF NEW MEXICO  
COUNTY OF LINCOLN

COMMONWEALTH OF MASSACHUSETTS

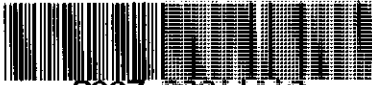
On this the 11<sup>th</sup> day of March, 2005, before me,  
VIRGINIA L. CURTISS the undersigned Notary Public, personally  
appeared EDWARD A. PIETERS, proved to me through  
satisfactory evidence of identity, which was/were EDWARD A. PIETERS  
to be the person(s) whose name(s) is/are signed on the proceeding or attached document,  
and acknowledged to me that he/she/they signed it voluntarily for its stated purpose.

Virginia L. Curtiss  
Notary Public  
My commission expires 2/26/2009

Goldsmith Peck & Ringwall  
39 main ST Ayer MA 01432  
Suite 301

Return:

ATTEST: WORC. Anthony J. Vigliotti, Register



2007 0011110

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Page: 1 of 1 01/26/2007 11:22 AM

DEED RESTRICTION

This Deed Restriction cannot be removed from the recorded page and book at the Registry of Deeds without written approval by the Harvard Board of Health.

THE DEED RESTRICTION SHALL BE PLACED ON THE FACE OF  
THE PROPERTY DESCRIPTION OF THE DEED

The undersigned hereby agrees that the following Deed Restriction shall be incorporated into the Deed to property located at 5 Littleton Road, Harvard, Worcester County, Massachusetts, and being the same premises more particularly described in a Deed recorded with Worcester South District Registry of Deeds in Book 20873, Page 282, such restriction to run with the land:

This property utilizes a Remedial Use approved alternative subsurface sewage disposal system utilizing innovative technology as defined by the Department of Environmental Protection ("DEP") (hereinafter called the "system"). As such, the DEP requires periodic maintenance and testing of the system, the details for which are contained with the records at the Harvard Board of Health.. Failure to comply with the requirements of the DEP and the Harvard Board of Health may result in the imposition of fines and/or other punitive action. Furthermore, in the event abutting property or improvements thereon are damaged during the installation, repair or maintenance of the system, the owner of this property shall be strictly responsible for the repair and/or replacement thereof.

The buildings and improvements presently existing and hereafter constructed in accordance with the plans for construction of 5 Littleton Road, Harvard, Massachusetts, presented to the Harvard Board of Health shall be limited to four (4) bedrooms until such time as approval is obtained from the regional and local Board of Health for expansion of the septic system capacity.

This restriction is to be incorporated into the deed and shall run with the title to land, per Department of Environmental Protection regulations and Harvard Board of Health regulations and may not be removed without written approval of the Harvard Board of Health.

Executed as a sealed instrument this 25<sup>th</sup> day of January, 2007.

\* 5 LITTLETON ROAD REALTY  
TRUST BY:

Edward A. Pieters, Jr.  
Edward A. Pieters, Jr., Trustee

HARVARD BOARD OF HEALTH BY:

Ira Grossman  
Ira Grossman as Agent  
1/25/07

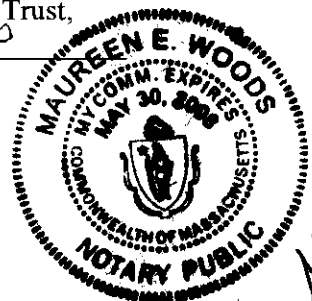
\* recorded in  
Book 20873 Page 275  
COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

DATE: 1/25/07

On this day before me, the undersigned notary public, personally appeared Edward A. Pieters, Jr., Trustee of 5 Littleton Road Realty Trust, proved to me through satisfactory evidence of identification which were licenses, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that they signed it voluntarily for its stated purpose, on behalf of said Trust,

Maureen E. Woods  
Notary Public:  
My Commission Expires:



→ MAIL  
Gould Law Offices  
P.O. Box 752  
Littleton MA 01460-2752

①

ATTEST: WORC. Anthony J. Vigliotti, Register

NH

## RESTRICTIVE COVENANT

In consideration of the approval by the Board of Health of the Town of Harvard ("Board") of a permit existing 3-bedroom home to be constructed at 5 Littleton Road, Harvard, Worcester County, Massachusetts recorded with said Deeds on March 13, 2008 Book 40614, Page 135. ("Premises")

Daniel and Erin Sullivan ("Owners"), their successors and assigns, hereby covenant and agree with the Board, as follows:

1. The undersigned Owners are the owners in fee simple of the Premises affected by this restrictive covenant. See deed dated 2/2/07 recorded with Worcester Registry of Deeds Book 40614, Page 135.
2. This covenant shall be binding upon the executors, administrators, devisees, heirs, successors, and assigns of the Owners and shall constitute a covenant running with the land.
3. The Owners agree to register this covenant with the Worcester District Registry of Deeds.
4. The Owners covenant with the Board that so long as the present septic system services the Premises, the Premises will have no more than 3 bedrooms.
5. This covenant is for the benefit of the Board and relates to Title 5 of the Massachusetts Environmental Code, as most recently amended.
6. Upon written authorization of the Board, this covenant may be released at any time in the future.

IN WITNESS WHEREOF, the Owners have executed this Restrictive Covenant under seal as of the \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

APPROVED BY:

[Signature]  
Board of Health, Agent  
3/13/08  
Date

[Signature]  
Erin A. Sullivan  
Owners  
3-26-08  
Date

THE COMMONWEALTH OF MASSACHUSETTS  
Worcester, SS. March 26, 2008

Then personally appeared the above named ~~Erin A. Sullivan~~ Daniel and Erin A. Sullivan and acknowledged the foregoing instrument to be their free act and deed, before me.

[Signature]  
Notary Public  
My Commission Expires: \_\_\_\_\_



LESLIE A. PHILLIPS  
Notary Public  
Commonwealth of Massachusetts  
My Commission Expires  
September 12, 2014

Return to:  
Erin Sullivan  
5 Littleton Rd  
Harvard, Ma 01451

ATTEST: WORC. Anthony J. Vigliotti, Register

KD

Wastewater Treatment Services, Inc.

44 Commercial Street  
Raynham, MA  
02767

Tel: (508) 880-0233  
Fax: (508) 880-7232

April 20, 2009

Harvard Board of Health  
13 Ayer Road  
Harvard, MA 01451

X when installed?

Attention: Health Agent

Reference: FAST® Wastewater Treatment System - Serial Number: 23902

Attached please find the Field Inspection & Service Report with field test results for services performed on 04/01/2009 at the property of Danno Sullivan located at 5 Littleton Road - Harvard, MA.

Please call if you have any questions or require additional information.

Sincerely,

*Wastewater Treatment Services*  
Wastewater Treatment Services, Inc.  
Service Department

Enclosures

Copy to: Danno Sullivan  
Massachusetts DEP



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# THE NEW YORK TIMES

[illegible][illegible]

# THE HISTORY OF THE UNITED STATES

1. 凡在本市行政区域内从事经营活动的个体工商户、企业法人、其他经济组织（以下统称“经营者”），均应当遵守本规定。

[illegible]

## 電子情報処理技術者協会

[illegible]

● 中国书画函授大学肇庆分校

1. The first step in the process is to identify the problem. This involves gathering information about the situation and understanding the needs of the stakeholders involved.

[illegible]

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**【参考文献】**

**DATE RECEIVED**

**【本報訊】**香港各界慶祝回歸籌委會主席、前港督彭定康昨日表示，在過去兩年多時間，他與香港各界建立了深厚的友誼，並衷心感謝各界對他的支持。他強調，香港回歸後，將繼續保持繁榮穩定，並為全球華人提供一個良好的生活環境。

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

**Figure 1.** The effect of the number of trials on the mean accuracy of the responses. The error bars represent the standard error of the mean. The asterisks indicate significant differences between the two conditions ( $p < .05$ , Wilcoxon signed rank test).

[illegible]

1. 凡在本公司工作之员工，其工资由基本工资、绩效工资、奖金、津贴、补贴、福利费、社会保险费、住房公积金等组成。

1. 本行在 2015 年 12 月 31 日及 2016 年 6 月 30 日，均无因提供担保而形成的或有负债。

姓名	性别	年龄	职业	住址	电话	备注
张三	男	35	教师	北京市海淀区中关村大街100号	13910123456	无
李四	女	28	医生	北京市朝阳区建国路123号	13801012345	无
王五	男	45	工程师	上海市浦东新区世纪大道100号	13621012345	无
赵六	女	30	会计	广州市天河区珠江新城100号	13530123456	无
孙七	男	25	学生	北京市昌平区回龙观镇100号	13420123456	无
周八	女	38	公务员	深圳市福田区福田街道100号	13700123456	无
吴九	男	40	经理	浙江省杭州市西湖区100号	13950123456	无
郑十	女	32	护士	江苏省南京市鼓楼区100号	13680123456	无
陈十一	男	22	程序员	广东省深圳市南山区100号	13510123456	无
冯十二	女	36	销售	山东省济南市经二路100号	13890123456	无
朱十三	男	42	教授	河南省郑州市金水区100号	13770123456	无
徐十四	女	29	设计师	四川省成都市高新区100号	13650123456	无
马十五	男	33	律师	辽宁省沈阳市和平区100号	13930123456	无
朱十六	女	37	作家	安徽省合肥市蜀山区100号	13810123456	无
李十七	男	27	记者	湖北省武汉市江汉区100号	13690123456	无
王十八	女	31	翻译	湖南省长沙市岳麓区100号	13570123456	无
张十九	男	41	研究员	福建省福州市鼓楼区100号	13960123456	无
赵二十	女	26	产品经理	江西省南昌市西湖区100号	13840123456	无
孙二十一	男	34	培训师	广东省广州市白云区100号	13720123456	无
周二十二	女	39	心理咨询师	浙江省宁波市海曙区100号	13600123456	无
吴二十三	男	23	实习生	江苏省苏州市工业园区100号	13980123456	无
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陈二十五	男	43	财务总监	四川省成都市锦江区100号	13640123456	无
冯二十六	女	28	市场专员	辽宁省大连市沙河口区100号	13920123456	无
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李二十八	女	24	运营专员	湖北省武汉市武昌区100号	13680123456	无
王二十九	男	32	产品经理	湖南省长沙市开福区100号	13560123456	无
张三十	女	40	销售经理	福建省福州市仓山区100号	13940123456	无
赵三十一	男	27	数据分析师	江西省南昌市东湖区100号	13820123456	无
孙三十二	女	33	培训师	广东省广州市海珠区100号	13700123456	无
周三十三	男	38	心理咨询师	浙江省宁波市北仑区100号	13600123456	无
吴三十四	女	22	实习生	江苏省苏州市吴江区100号	13980123456	无
郑三十五	男	35	项目经理	河南省郑州市二七区100号	13860123456	无
陈三十六	女	44	财务总监	四川省成都市青羊区100号	13640123456	无
冯三十七	男	29	市场专员	辽宁省大连市金州区100号	13920123456	无
朱三十八	女	37	人力资源	安徽省合肥市庐阳区100号	13800123456	无
李三十九	男	25	运营专员	湖北省武汉市汉阳区100号	13680123456	无
王四十	女	31	产品经理	湖南省长沙市雨花区100号	13560123456	无
张四十一	男	41	销售经理	福建省福州市晋安区100号	13940123456	无
赵四十二	女	26	数据分析师	江西省南昌市西湖区100号	13820123456	无
孙四十三	男	34	培训师	广东省广州市天河区100号	13700123456	无
周四十四	女	39	心理咨询师	浙江省宁波市江北区100号	13600123456	无
吴四十五	男	23	实习生	江苏省苏州市相城区100号	13980123456	无
郑四十六	女	35	项目经理	河南省郑州市金水区100号	13860123456	无
陈四十七	男	43	财务总监	四川省成都市武侯区100号	13640123456	无
冯四十八	女	28	市场专员	辽宁省大连市西岗区100号	13920123456	无
朱四十九	男	36	人力资源	安徽省合肥市瑶海区100号	13800123456	无
李五十	女	24	运营专员	湖北省武汉市东西湖区100号	13680123456	无
王五十一	男	32	产品经理	湖南省长沙市芙蓉区100号	13560123456	无
张五十二	女	40	销售经理	福建省福州市台江区100号	13940123456	无
赵五十三	男	27	数据分析师	江西省南昌市红谷滩区100号	13820123456	无
孙五十四	女	33	培训师	广东省广州市番禺区100号	13700123456	无
周五十五	男	38	心理咨询师	浙江省宁波市镇海区100号	13600123456	无
吴五十六	女	22	实习生			

[illegible]

Name: MICHAEL VANZ ☒ Gender ☐ Contracts ☐ License: 11111111

# THE FIVE FINGER DISCIPLINE

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8 and is to be kept SECRET.  
9  
10 SECRET

# THE GREAT WALL

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**A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THIS CERTIFICATE IS COMPLETED**

地址：廣東省廣州市海珠區新港東路11號  
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 傳真：020-83333333  
 郵政編碼：510300  
 網址：http://www.11111.com

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1. 本報為便利讀者起見，特在報社內設有「讀者服務部」，凡有關於本報之各項意見，請逕向該部接洽。

● 2013 年 12 月 1 日起，在全国范围内实施营业税改征增值税试点，建筑业、房地产业、金融业、生活服务业等全部营业税纳税人，纳入试点范围，由缴纳营业税改为缴纳增值税。

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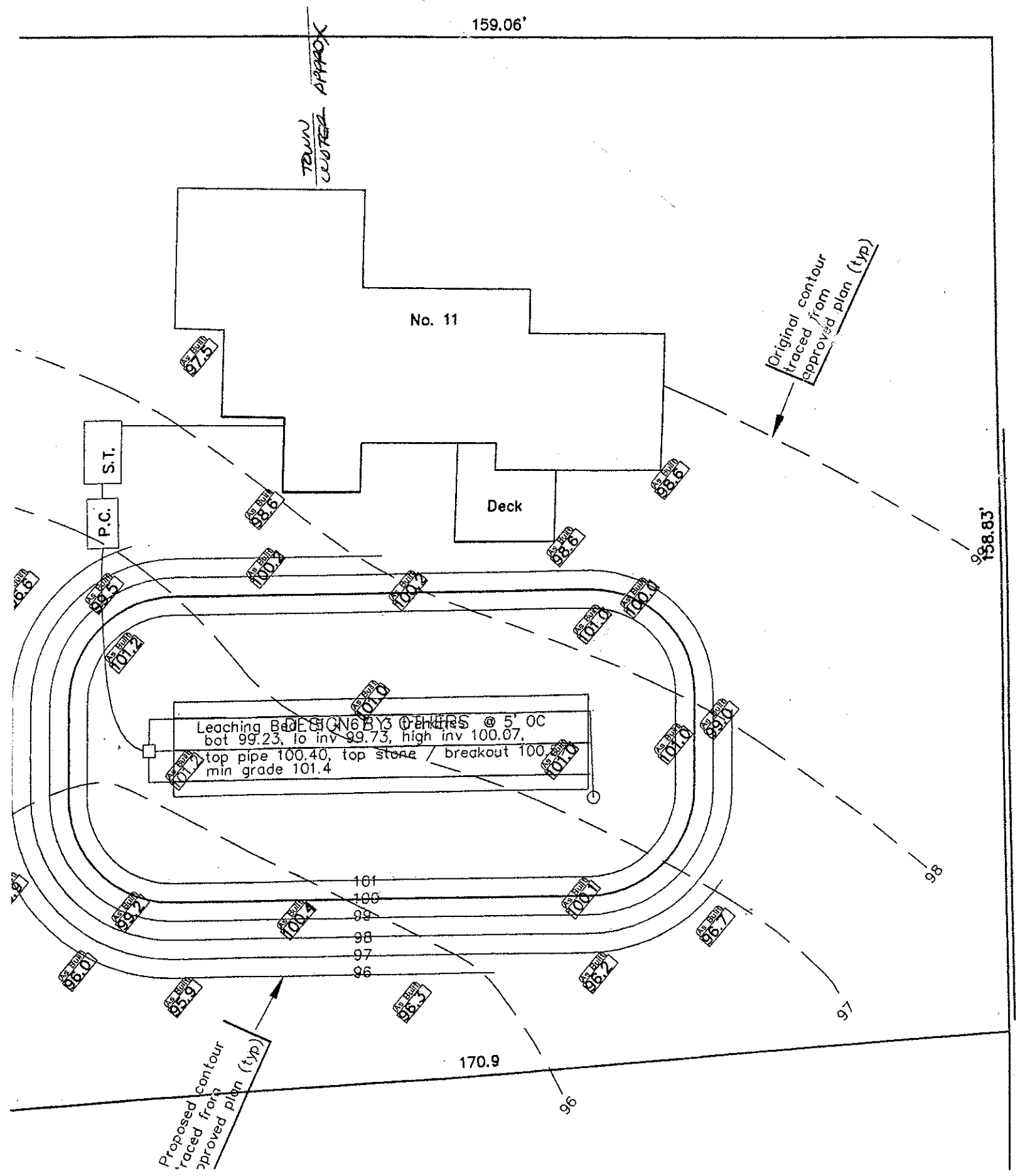
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 三、本報社址：台北市中正區中山路一號（即原中興路）  
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1. 2010年10月10日，某公司收到某客户支付的货款100,000元，存入银行。

## 参考文献

1. THE WARRANTY OF THIS CERTIFICATE SHALL NOT BE CONSIDERED A WARRANTY THAT THE SYSTEM WILL FUNCTION PROPERLY.  
2. INSTALLATION OR REPAIR MUST BE PERFORMED BY MAINTENANCE LICENSED INSTALLER.  
3. FAILURE BY INSTALLER TO CONFORM TO ALL REQUIREMENTS OF THIS PERMIT MAY LEAD TO SUSPENSION OR REVOCATION OF INSTALLER'S PERMIT.  
4. THE OWNER SHOULD BE AWARE OF WETLANDS PROTECTION REQUIREMENTS OF THE LOCAL COMPLETION COMMISSION.  
5. THE SYSTEM IS NOT DESIGNED FOR GARDENWASTE DISPOSAL.  
6. THE SYSTEM IS DESIGNED FOR USE STATED ABOVE.  
7. [REDACTED]  
8. LEACH SYSTEMS MUST BE KEPT 100 FEET FROM ALL WELLS.  
9. PROPER MAINTENANCE OF A SYSTEM REQUIRES ANNUAL PUMPING.  
10. COLIFORM BACTERIA TEST REQUIRED, COMPLETE POTABILITY TEST RECOMMENDED.

# MASSACHUSETTS AVENUE





**THE**  
**NEW**  
**YORK**  
**PUBLIC**  
**LIBRARY**  
**ASTEN**  
**DENVER**  
**AND**  
**TILDEN**



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

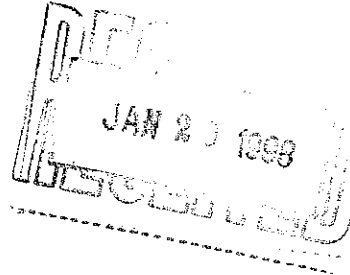
ARGEO PAUL CELLUCCI  
Governor

TRUDY COXE  
Secretary

DAVID B. STRUHS  
Commissioner

January 12, 1998

Robert T. Hynes  
11 School Street  
Sandwich, MA 02563



Re: Harvard - DWPC - #121272  
310 CMR 15.412, Variance  
13 Massachusetts Avenue

Dear Mr. Hynes:

The Department has completed its review of your variance request application (transmittal #121272) for an upgrade of an existing subsurface sewage disposal system at 13 Massachusetts Avenue, Harvard, Massachusetts.

The proposed replacement system is designed to dispose of sanitary wastewater from an existing four (4) bedroom residence with a design flow of 440 gallons per day. The system consists of two (2) 1,500 gallon septic tanks in series followed by a Bioclear system with a recirculating line back to the first septic tank. Following the Bioclear system is a 1,500 gallon pressure dosing chamber consisting of a 1/4 hp pump servicing four (4), 43 feet long, 1 1/2 inch diameter pressure distribution lines.

The requested variances to Title 5 are:

	<u>Variance</u>	<u>Code</u>
310 CMR 15.211 (1) Minimum setback distances from private water supply well	84 feet	100 feet
310 CMR 15.255 (2) Construction in fill - distance from toe of slope to adjacent property line.	0 feet	5 feet

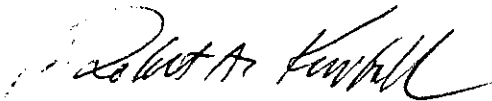
The Department is satisfied that the proposed repair will fulfill maximum feasible compliance due to the existing site constraints. Enforcement of the provision of the Code from which a variance is being sought would constitute manifest injustice. The applicant has proved to the Department's satisfaction that the same degree of environmental protection required under Title 5 can be achieved without strict application of the subject provision.

In accordance with 310 CMR 15.412, Variance, this office hereby **approves** the request with the following stipulations:

1. The owner shall obtain a disposal works construction permit from the Harvard Board of Health prior to construction.
2. This system has not been designed for a garbage grinder. A garbage grinder is not permitted.
3. The existing well servicing the property shall be abandoned in accordance with local regulations.
4. Should the soil absorption system fail, the owner shall be required to immediately notify the Board of Health and operate the system as a tight tank until the Board issues a certificate of compliance for any needed upgrade or repairs. If the Board determines that the replacement system can not be repaired and that there is no other feasible on-site disposal alternative, the owner shall within thirty days of that determination apply to the Department for a tight tank in accordance with 310 CMR 15.260.
5. Within thirty (30) days of when sewer becomes available the owner shall arrange with the local authority to connect to the sewer and to abandon the septic tank/Bioclear system in accordance with 310 CMR 15.354.
6. The above variances and stipulations shall be recorded in the deed of the property and a copy showing the book and page number be sent to this office. Attached is a copy of the wording to be used.

If you have any questions please feel free to call David Boyer, P.E., of my office at (508) 792-7650 extension 5020.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental Engineer  
Bureau of Resource Protection

db/hs: 121272ap.125

cc: Benjamin Osgood, Jr.  
New England Engineering Services, Inc.  
33 Walker Road  
North Andover, MA 01845

Harvard Board of Health

Dana Samuelson - DEP Fees Coordinator - CERO

DEP - BRP - Wastewater Management Program - Boston



# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 772-3338

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

- ☒ To install a new Sewage Disposal system  
☐ To repair existing Sewage Disposal system this permit is issued under the  
Emergency Section 11.05 of 310 CMR 11.00 Environmental Code, Title 1

ISSUED FOR THE Harvard BOARD OF HEALTH

OWNER Frederick Ward (Ballard Property)  
(NOT TRANSFERABLE - FORMAL PERMIT TRANSFER MUST BE REQUESTED UPON CHANGE OF OWNERSHIP)

LOCATION OF LOT OR INSTALLATION 21 Mass Ave LOT NO. \_\_\_\_\_

DATE PERMIT ISSUED August 11, 1992 LOT SIZE 2.09 acres

SOIL DESCRIPTION 0-1 1/2' top & subsoil, 1 1/2'-9 1/2' silty sand

PERC. RATE 13 min/inch

ENGINEERING OR SPECIAL PREPARATION: ☒ System to be installed according to engineered plan No. 733

by Joseph R. Henry

Variance required for less than 2 percs per each leaching area.

SYSTEM DESIGNED FOR Six bedroom dwelling

WATER SUPPLY: ☒ Town  
☐ Well

PRIMARY INSTALLATION 1500 gallon septic tank

SECONDARY INSTALLATION 40 L x 30' W leach bed in fill

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT

BOARD OF HEALTH

BOARD OF HEALTH

BOARD OF HEALTH

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system, and if I am the contractor installing this system, I further agree to correct any fault caused by defective material or workmanship appearing in this system within one year from date of occupancy

SIGNED B. D. Ryall AS AGENT FOR ☒ Owner ☐ Contractor ☐ Licensed Installer

### CERTIFICATE OF COMPLIANCE

#### INSPECTIONS REQUIRED:

- ☒ Bed ~~excavation~~ excavation, before fill / stone by eng./NABH  
☐ Fill in place by eng./NABH  
☒ Completed system prior to backfill  
☒ Final fill and grading by eng./NABH  
☒ Engineer certification in writing of completed system  
☒ As-built plan ☒ By Design Engineer ☒ By Installer: 4/93  
☐ Water supply (if well)  
☐ Recorded deed easements  
☒ Eng. to stk system  
☐  
☒ Inspection completed

Installer: <u>Gould</u>	
Date: <u>4/93</u>	By: <u>[Signature]</u>
Date: _____	By: _____
Date: <u>4/27/93</u>	By: <u>[Signature]</u>
Date: <u>5/27/93</u>	By: <u>Ross Assoc.</u>
Date: <u>5/27/93</u>	By: <u>[Signature] (Ross)</u>
Date: <u>5/27/93</u>	By: <u>[Signature]</u>
Date: _____	By: _____
Date: <u>12/30/93</u>	By: <u>[Signature]</u>
Date: _____	By: _____
Date: <u>5/27/93</u>	By: <u>[Signature]</u>

A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THIS CERTIFICATE IS COMPLETED.

### IMPORTANT NOTES

1. THE ISSUANCE OF THIS CERTIFICATE SHALL NOT BE CONSTRUED A GUARANTEE THAT THE SYSTEM WILL FUNCTION PROPERLY.
2. INSTALLATION OR REPAIR MUST BE PERFORMED BY NASHOBA LICENSED INSTALLER.
3. FAILURE BY INSTALLER TO CONFORM TO ALL REQUIREMENTS OF THIS PERMIT MAY LEAD TO SUSPENSION OR REVOCATION OF INSTALLER'S PERMIT.
4. THE OWNER SHOULD BE AWARE OF WETLANDS PROTECTION REQUIREMENTS OF THE LOCAL CONSERVATION COMMISSION.
5. THE SYSTEM IS NOT DESIGNED FOR GARBAGE DISPOSAL.
6. THE SYSTEM IS DESIGNED FOR USE STATED ABOVE.
7. PERMIT IS VOID TWO YEARS AFTER DATE OF ISSUE.
8. LEACH SYSTEMS MUST BE KEPT 100 FEET FROM ALL WELLS.
9. PROPER MAINTENANCE OF A SYSTEM REQUIRES ANNUAL PUMPING.
10. COLIFORM BACTERIA TEST REQUIRED, COMPLETE POTABILITY TEST RECOMMENDED.

# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 772-3338

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

- ☐ To install a new Sewage Disposal system  
☒ Local Upgrade with Title 3 Variance

ISSUED FOR THE Harvard BOARD OF HEALTH

OWNER: Sandra C. Ambrose

THIS PERMIT IS A PUBLIC DOCUMENT AND IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER

LOCATION OF LOT: 12 Oak Hill Road

LOT NO.:

DATE PERMIT ISSUED: September 10, 2002

LOT SIZE: 0.47 acres

SOIL DESCRIPTION: 0-21" top & subsoil, 21-48" sandy loam, 48-61" fine sandy loam, 61-97" sandy loam, PSHWT @ 21"

PERC RATE: Estimated

ENGINEERING OR SPECIAL PREPARATION: ☒ As noted on the plan according to engineering plan No. 00208

By: Goldsmith, Pease & Ringwald, Inc. Eastern VT/01

Variance as noted on plan to include a 50% reduction in the leaching area size.

SYSTEM DESIGNED FOR: Three (3) Bedroom Single Family

WATER SUPPLY: ☒ Well ☐ Town

PRIMARY INSTALLATION: Micro-Past Unit & 1000 gallon pump chamber

SECONDARY INSTALLATION: 45 L x 15' W pressure distribution

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT:

Signature of

Signature of

Signature of

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system.

SIGNED

As AGENT

☐ Owner ☐ Contractor ☐ Licensed Installer

### Record of Inspections

NAME: J. Gould

### INSPECTIONS REQUIRED:

- ☒ Design review, before all work by City (MASS)
- ☒ Final check by City (MASS)
- ☒ Complete system prior to backfill
- ☒ Final fill and grading by MAH (To be shown on Eng. as-built plan)
- ☒ Engineer verification in writing of completed system
- ☒ As installed ☒ By Design Engineer ☒ By Installer
- ☒ All work must be done and under final supervision of this office
- ☒ Permitted used of all materials submitted to this office
- ☒ Engineer to stake System location
- ☒ O & M Contract
- ☒ All inspections completed

Date	By
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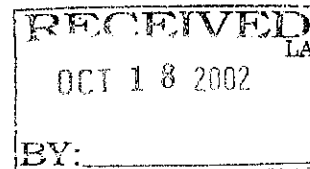
A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL A CERTIFICATE OF COMPLETION IS OBTAINED



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

JANE SWIFT  
Governor

BOB DURAND  
Secretary



LAUREN A. LISS  
Commissioner

Sandra Cambreleng  
10005 Orange Turnpike  
Monroe, NY 10950-5509

Re: Harvard -- DEP Transmittal No. W023088  
BRP WP64C, I/A System for Remedial Use  
310 CMR 15.412 Variance for existing Construction  
12 Oak Hill Road- Approval

Dear Ms. Cambreleng:

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.412, the Central Regional Office of the Department of Environmental Protection has completed its review of the above referenced application for approval of a variance requested from the Harvard Board of Health for a 3 bedroom residential dwelling located at 12 Oak Hill Road, Harvard, MA.

The application contains a copy of the Board of Health's grant of a variance from the following provision of Title 5, 310 CMR 15.000:

State Regulation	State Code Requirement	Variance
310 CMR 15.104	Using Percolation Testing to determine the soil percolating capacity.	Variance from using the Percolation Test method. Use of alternative method in accordance with the "Title 5 Alternative to Percolation Testing Policy for System Upgrade" dated 9/8/00.
310 CMR 15.211 (1)	The septic tank shall conform to the minimum setback of 50-feet from a private well and; The on-site subsurface disposal system shall conform to a minimum 10-foot offset to property lines	A set back of 30-feet has been provided for the septic tank to a private bedrock well; and the soil absorption system will be placed on a portion of the abutting property with an easement from the abutter.
310 CMR 15.212 (a)	Minimal vertical separation distance of the bottom of the leaching area to high groundwater shall be four feet	A three-foot vertical separation is provided
310 CMR 15.240 (4)	The minimum area for the design of a soil absorption system shall be determined by the results of the site evaluation set forth in section 15.100 through 15.107 and in accordance with the appropriate long-term acceptance rate criteria specified in section 15.242.	A 33 % reduction in the required size of the soil absorption system.

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.



As part of the application, the Department received plans consisting of two (3) sheets titled "Subsurface Sewage Disposal System Upgrade" dated March 2001. The system is designed in accordance with section 15.203 (2) for a three bedroom single-family house and consists of a 1,500-gallon septic tank, MicroFAST system, a 1,000-gallon pump chamber with pressure distribution for a 15-foot by 45-foot leach field.

Based on its review of the application and in accordance with 310 CMR 15.410, the Department has determined both the following:

- a) The applicant has established that enforcement of 310 CMR 15.104, 15.211 (1), 15.212 (a) and 15.240 (4) would be manifestly unjust, considering all of the relevant facts and circumstances of this case.
  1. The seasonal water table is too high to allow percolation testing at this time and the applicant is requesting to use the Alternative to Percolation Testing Method.
  2. The applicant has a failed septic system and wishes to proceed with an immediate upgrade.
  3. The location of the septic system is the only area on the site suitable for placement. The property has physical constraints in the form of bordering vegetative wetlands and an on-site private well.
- b) The applicant has established that a level of environmental protection that is at least equivalent to that provided under 310 CMR 15.000 can be achieved without strict application of 310 CMR 15.104, 15.211 (1), 15.212 (a) and 15.240 (4)
  1. The design engineer has provided plans that meet the Department's Policy # BRP/DWM/PeP-P00-4 (Title 5 Alternative To Percolation Testing Policy For System Upgrades dated 9/8/00).
  2. The proposed septic system incorporates alternative technology (MicroFAST), which will provide a degree of environmental protection at least equivalent to that of a conventional system.
  3. The proposed septic system is a mounded system meeting a groundwater offset requirement allowed under a local upgrade approval.
  4. The remedial use of the MicroFAST System incorporates pressure distribution, which will provide improved dispersion of effluent over entire area of the Soil Absorption System.
  5. The abutting neighbors have agreed to jointly repair their failed septic systems. The neighbors have provided each other with septic easements in order to facilitate the design and construction of both soil absorption systems while maintaining maximum setback distances to private wells and bordering vegetative wetlands.

The Department, therefore, approves the Board of Health's grant of a variance from 310 CMR 15.104, 15.211 (1), 15.212 (a) and 15.240 (4)

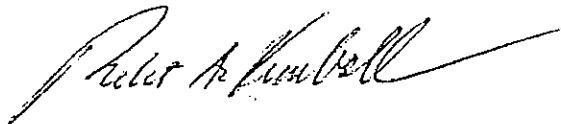
Additionally, the Department imposes the following conditions as part of this approval:

1. The owner shall obtain a Disposal System Construction Permit from the Harvard Board of Health prior to construction.
2. The facility is limited to a design flow of 330 gpd.

3. The applicant shall provide to the Harvard Board of Health a copy of the recorded septic easements.
4. This system has not been designed for a garbage grinder. A garbage grinder is not permitted.
5. The owner shall adhere to the conditions and requirements (Section IV and V) of the Department's "Approval for Remedial Use" letter (attached) dated 8/13/01.
6. Should the replacement system fail, the owner shall be required to immediately notify the Board of Health, seal the septic tank outlet and operate the system as a tight tank until the Board issues a Certificate of Compliance for any needed upgrade or repairs. If the Board determines that the replacement system can not be repaired and that there is no other feasible on-site disposal alternative, the owner shall within thirty days of that determination apply to the Department for a tight tank in accordance with 310 CMR 15.260.
7. The above variances and stipulations shall be recorded at the appropriate Registry of Deeds and referenced in the deed for the property. A copy of the recording showing the book and page number shall be sent to this office. Attached is a copy of the wording to be used.

Please include the transmittal number listed above on any correspondences regarding your application. If you have any questions please feel free to call Thomas Ryder at (508) 792-7650 extension 2725.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

10/1/01  
Date

/tar: w023088a.125

Cc: Harvard Board of Health

Nashoba Associated Boards of Health

Goldsmith, Prest and Ringwall, Inc.  
257 Ayer Road  
Harvard, MA 01451

Dana Samuelson - DEP Fees Coordinator, CERO

DEP - Watershed Permitting Program, Policy Section, Boston

*This variance determination is an action of the Department. If the applicant is aggrieved by this determination, s/he may request an Adjudicatory Hearing in accordance with 310 CMR 1.00 and M.G.L. C.30A. A request for an Adjudicatory Hearing must be made in writing and postmarked within 30 days of the date of issuance of this determination. Pursuant to 310 CMR 1.01(6), the request must state clearly and concisely the facts that are grounds for the request and the relief sought.*

*The hearing request, along with a valid check payable to Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00), must be mailed to:*

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

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*The hearing request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver, as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts in support of the claim of undue financial hardship.*

REQUEST OF VARIANCE FORM  
STATE ENVIRONMENTAL CODE

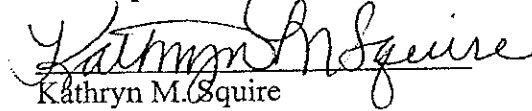
Notice is hereby given that the real estate located on 12 Oak Hill Road, Harvard, MA as described in a deed from Sandra P. Cambreleng to Christopher B. Squire and Kathryn M. Squire dated May 4, 2002 recorded with the Worcester County Registry of Deeds in Book 26607, Page 058 is the subject of a variance from the State Environmental Code, Title 5, 310 CMR 15.104, 310 CMR 15.211(1), 310 CMR 15.212(a), and 310 CMR 15.240(4) (See Attached)

Said variance relates to the nature, design and capacity of the sewage disposal system and is within the jurisdiction of the Massachusetts Department of Environmental Protection.

IN WITNESS WHEREOF, the Owner has executed this Restrictive Covenant under seal as of the 17 day of October, 2002.



Christopher B. Squire



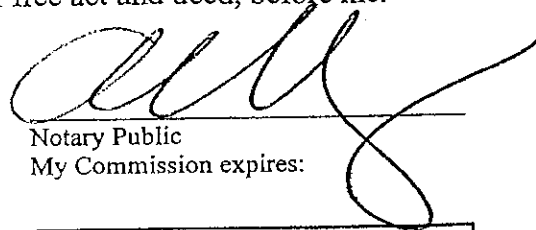
Kathryn M. Squire

COMMONWEALTH OF MASSACHUSETTS

Worcester, ss

October 17, 2002

Then personally appeared the above named Christopher B. Squire and Kathryn M. Squire and acknowledged the foregoing to be their free act and deed, before me.



Notary Public

My Commission expires:

ALBERT A. BARBIERI, JR.  
Notary Public  
Commonwealth of Massachusetts  
My Comm. Expires November 8, 2002

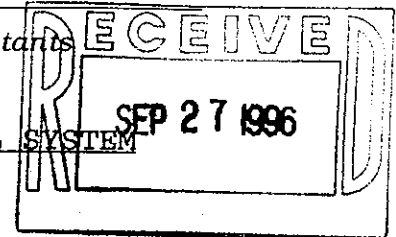
ALBERT A. BARBIERI, JR.  
ATTORNEY AT LAW  
206 AYER ROAD  
PO BOX 285  
HARVARD, MA 01451

02 OCT 17 PM 2:30Z  
OAK HILL RD HARVARD, MA  
303829  
doc-11

# DAVID E. ROSS ASSOCIATES, INC.

Civil Engineers, Land Surveyors, Environmental Consultants

## CERTIFICATION OF SUBSURFACE SEWAGE DISPOSAL SYSTEM



CLIENT: Elizabeth Lee, 9 Pond Road, Harvard, MA 01451

### LOCATION OF SYSTEM:

LOT #: -- STREET: 9 Pond Road TOWN: Harvard  
PLAN #: L-3654 JOB #: 8490

### DATE (s) OF/TYPE OF INSPECTION(s):

06-07-96 Layout Sewage disposal system  
08-02-96 Completed system prior to backfill  
08-06-96 Pump inspection  
08-28-96 Locate well on abutting property  
09-05-96 Final fill and grading  
09-26-96 Completed connection from Septic Tank to Pump Chamber

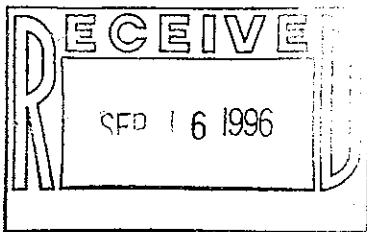
- Note: 1. Provisions of 310 CMR 15.405(1)(h) have been approved by the Harvard Board of Health on 09-24-96 for the abutting well to be less than 100 feet from this newly installed system. The well in question is 76 feet from the existing leaching area.
2. A variance to section 8 of the Harvard Board of Health regulations regarding a 5 foot groundwater offset, was approved by the Board for a proposed offset of 4 feet.

Based on the above visual inspections, it is my opinion, to the best of my knowledge, information and belief, that the above subsurface sewage disposal system has been constructed within reasonably acceptable construction tolerances to the above design plan and the requirements of Title 5 of the State Environmental Code.

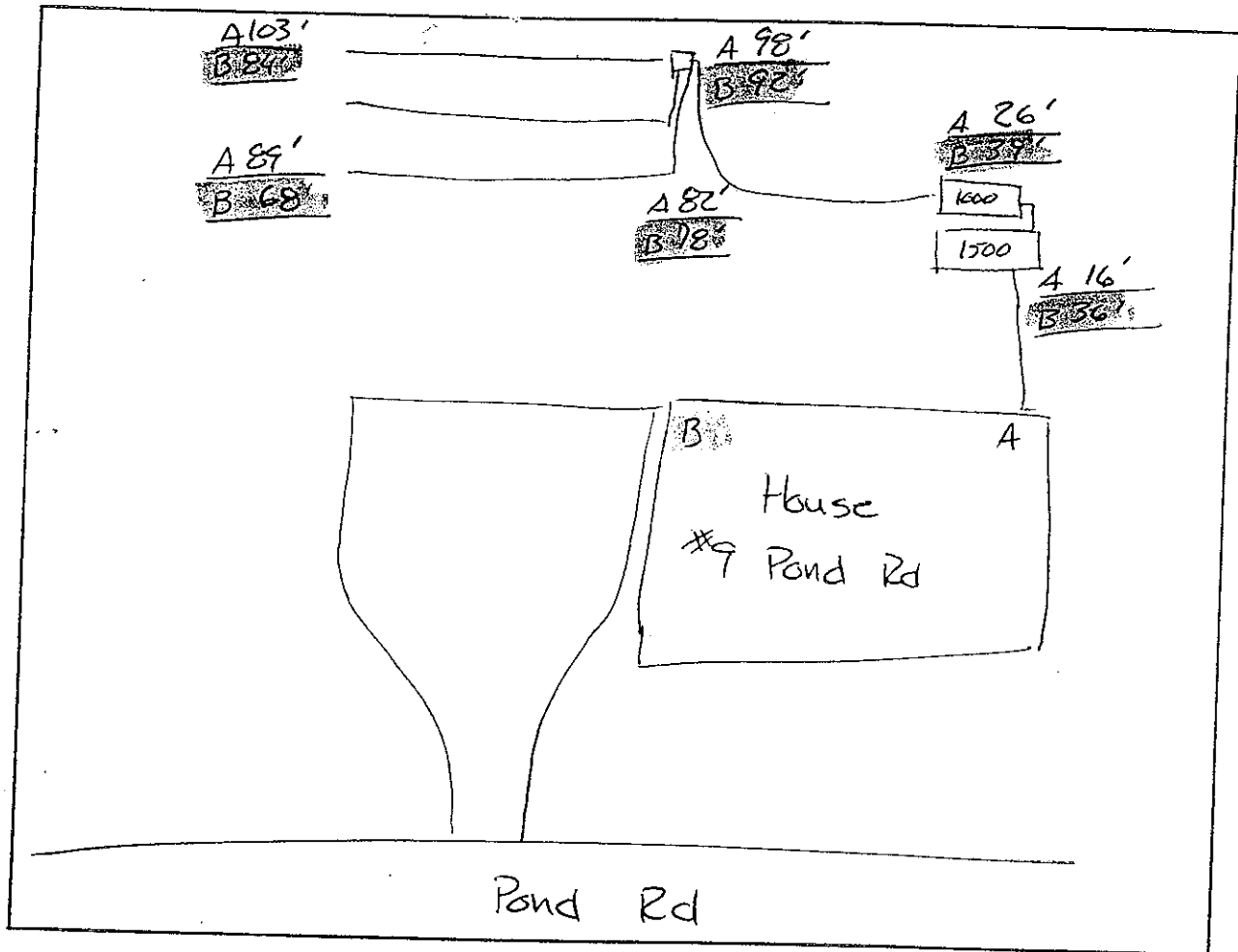
It should be noted that not all phases of construction were inspected.

By: Daniel B. Wolfe 9-26-96  
Daniel B. Wolfe, P.E.  
Mass. Registration #36523





INSTALLER'S AS-BUILT AND CERTIFICATION



I Joshua T. Gould CERTIFY THAT I HAVE INSTALLED THE  
ABOVE SYSTEM IN ACCORDANCE WITH THE APPROVED DESIGN PLAN BY  
David E. Ross & Assoc. L-3654 4/19/96  
(Engineer or Sanitarian) (Plan Number) (Revised)  
AND PERMIT ISSUED BY THE Harvard  
(Town)

BOARD OF HEALTH.

John T. Ross  
Installer's Signature

\_\_\_\_\_  
License Number



H/F Mahogany Run Condo

H/F Park

186.23'

60.00'

Pond Road

H/F Sawyer

Proposed Garage

Approx. location  
exist. septic  
system

#9 Pond Road  
(Plan BK. 190-Plan 55)

Septic tank (field located)  
Exist. Pump  
chamber

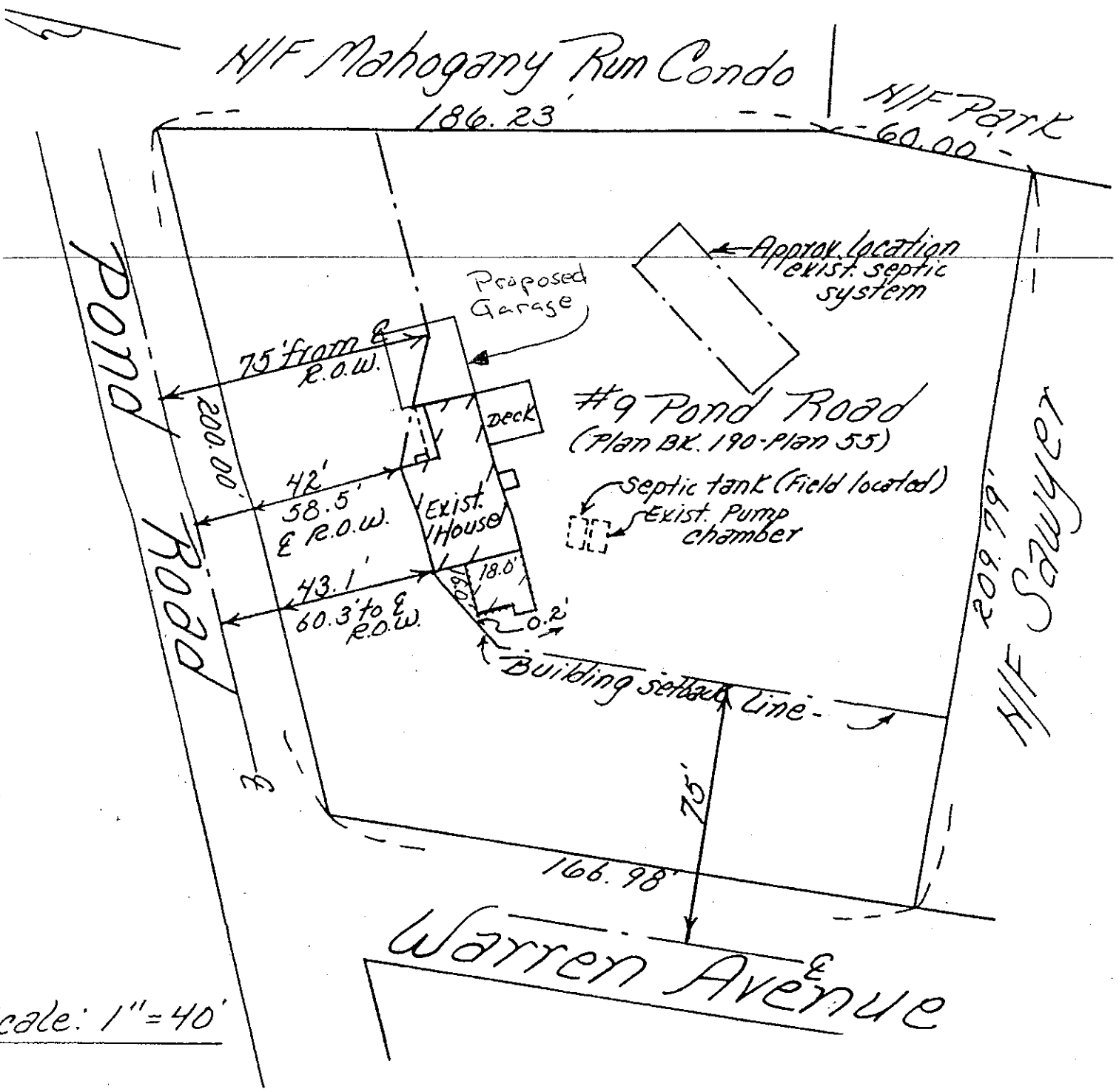
Exist.  
House

Building setback line

Warren Avenue

scale: 1" = 40'

6/03





Bk: 42381 Pg: 254  
Page: 1 of 2 02/06/2008 10:45 AM

## GRANT OF EASEMENT

The Town of Harvard, a Massachusetts municipal corporation, acting by and through its Board of Selectmen ("Grantor"), having an address to 14 Ayer Road, Harvard, Massachusetts 01451, in consideration of one dollar and no/100 (\$1.00), grants to MERA07, LLC, a Massachusetts Limited Liability Company, with a principal business address of 1 Still River Road, Harvard, Massachusetts 01451,

a perpetual, non-exclusive right and easement over and within that area of the land of the Grantor shown as Proposed Easement "A" on a plan entitled "Plan of Land in Harvard, Mass., prepared for MERA07, LLC, Scale 1" = 20", dated November, 2007, prepared by David E. Ross Associates, Inc., Civil Engineers - Land Surveyors, Environmental Consultants, P.O. Bo 368-111 Fitchburg Road, Ayer, MA 01432, Job No. 24622, Plan No. L-10595", which plan is recorded with the Worcester District Registry of Deeds in Plan Book 865, Plan 26 for Grantee, its employees, contractors and agents to enter upon, remove, deposit, slope, bank, and maintain material, filling, or support which may be deemed necessary for the construction, reconstruction, protection and maintenance of the subsurface sewage disposal system which currently exists or may be constructed thereon to serve the existing building thereon, and to actually construct, reconstruct, protect and maintain a subsurface sewage disposal system thereon for the benefit of property owned by the Grantee shown as MERA07, LLC on said Plan (the "Premises").

After the completion of any work performed pursuant to this easement, the Grantee, its successors or assigns, shall have the obligation to reasonably restore the area to its condition prior to the performance of the permitted works described in the preceding paragraph.

This grant of easement shall run in perpetuity to MERA07, LLC, its successors and assigns, provided that if a common sewer or wastewater disposal system with sufficient capacity is constructed and installed within any public way abutting the Premises, the building on the Premises shall be connected to such system within ninety (90) days after it becomes available and, within thirty (30) days after such connection, the subsurface sewage disposal system within the easement area shall be abandoned pursuant to Title 5 requirements for abandonment of a septic system after connection to a sewer system, whereupon the easement hereby granted shall terminate. Within fourteen (14) days after such termination, the Grantee shall prepare and record with the Worcester District Registry of Deeds and file an attested and recorded copy thereof in the Office of the Town Clerk an instrument, acceptable to the Grantor, certifying the termination, abandonment and release of the easement herein granted.

The Grantee and its heirs, successors and assigns, agree to indemnify and hold Grantor and its successors and assigns harmless from and against any and all cost, expenses and liability for injury or damage to persons or property resulting from the Grantee's exercise of its rights created by this non-exclusive easement, except that Grantor shall be responsible for the consequences of its own negligence.

Grantee and Grantor stipulate and agree that, both for themselves and for their heirs, successors and assigns, that the easement created by this conveyance does not constitute an interest which would require the Grantee, or its successors or assigns to join in any future development plan or

1 Still River Rd Harvard

02

related applications that may be desired by Grantor, its successors or assigns, or submitted by Grantor, its successor or assigns to any entity or agency. The Grantor, its successors or assigns, however, agrees to notify Grantee, its successors or assigns of intent to alter the use or surface of the Easement Area described herein.

For authority, see attested copy of vote of the Special Town Meeting to the Town of Harvard held on October 10, 2007 and recorded herewith. *in Book 42381 Page 248*

IN WITNESS WHEREOF, the said Town of Harvard has caused its corporate seal to be hereto affixed and these presents to be signed, acknowledged and delivered in its name and behalf by its Board of Selectmen, hereto duly authorized, this 29th day of January, 2008.

Signed and sealed in  
the presence of:

  
Timothy Bragan

TOWN OF HARVARD, by:

  
Lucy B. Wallace, Chair

  
Timothy A. Clark

  
Robert E. Eubank

its Board of Selectmen

# COMMONWEALTH OF MASSACHUSETTS

Worcester, ss.

On this 29th day of January, 2008, before me, the undersigned notary public, personally appeared Lucy B. Wallace, Timothy A. Clark and Robert E. Eubank, proved to me through satisfactory evidence of identification, which was personal recognition, to be the persons whose names are signed on the preceding document, and acknowledged to me that they signed it as Selectmen of the Town of Harvard voluntarily for its stated purpose.

  
Mark J. Lanza, Notary Public

My commission expires: February 14, 2014



Bk: 42381 Pg: 257  
Page: 1 of 3 02/05/2008 10:45 AM

## GRANT OF EASEMENT

The Town of Harvard, a Massachusetts municipal corporation, acting by and through its Board of Selectmen ("Grantor"), having an address to 14 Ayer Road, Harvard, Massachusetts 01451, in consideration of one dollar and no/100 (\$1.00), grants to the Congregational Church of Harvard, United Church of Christ ("Grantee") having an address of 5 Still River Road, Harvard, Massachusetts 01451.

a perpetual right and easement over and within that area of the land of the Grantor shown as Proposed Easement "C" on a plan entitled "Plan of Land in Harvard, Mass., prepared for MERA07, LLC, Scale 1" = 20', dated November, 2007, prepared by David E. Ross Associates, Inc., Civil Engineers - Land Surveyors, Environmental Consultants, P.O. Box 368-111 Fitchburg Road, Ayer, MA 01432, Job No. 24622, Plan No. L-10595", which plan is recorded with the Worcester District Registry of Deeds in Plan Book 865, Plan 26 for Grantee, its employees, contractors and agents to enter upon, remove, deposit, slope, bank, and maintain material, filling, or support which may be deemed necessary for the construction, reconstruction, protection, and maintenance of the subsurface sewage disposal system which currently exists or may be constructed thereon to serve the existing building thereon, and to actually construct, reconstruct, protect and maintain a subsurface sewage disposal system thereon for the benefit of property owned by the Grantee shown as The Evangelical Congregational Church of Harvard on said Plan (the "Premises"). After each excavation or fill, the Grantee, its successors or assigns, shall have the obligation to re-vegetate the disturbed or filled area to reasonably replicate vegetation prior to the excavation or filling.

After the completion of any work performed pursuant to this easement, the Grantee, its successors or assigns, shall have the obligation to reasonably restore the area to its condition prior to the performance of the permitted works described in the preceding paragraph.

This grant of easement shall run in perpetuity to Congregational Church of Harvard, United Church of Christ, its successors and assigns, provided that if a common sewer or wastewater disposal system with sufficient capacity is constructed and installed within any public way abutting the Premises, the building on the Premises shall be connected to such system within ninety (90) days after it becomes available and, within thirty (30) days after such connection, the subsurface sewage disposal system within the easement area shall be abandoned pursuant to Title 5 requirements for abandonment of a septic system after connection to a sewer system, whereupon the easement hereby granted shall terminate. Within fourteen (14) days after such termination, the Grantee shall prepare and record with the Worcester District Registry of Deeds and file an attested and recorded copy thereof in the Office of the Town Clerk an instrument, acceptable to the Grantor, certifying the termination, abandonment and release of the easement herein granted.

The Grantee and its heirs, successors and assigns, agree to indemnify and hold Grantor and its successors and assigns harmless from and against any and all cost, expense and liability for injury or damage to persons or property resulting from the exercise of their

5 Still River Rd Harvard

87  
3

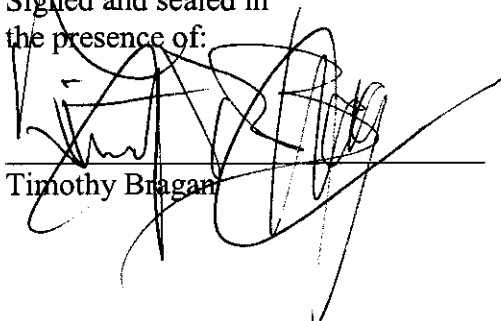
rights created by this non-exclusive easement, except that Grantor shall be responsible for the consequences of its own negligence.

Grantee and Grantor stipulate and agree that, both for themselves and for their heirs, successors and assigns, that the easement created by this conveyance does not constitute an interest which would require the Grantee, or its successors or assigns to join in any future development plan or related applications that may be desired by Grantor, its successors or assigns, or submitted by Grantor, its successor or assigns to any entity or agency. Grantor, its successors or assigns however, agrees to notify Grantee, its successors or assigns of intent to alter the use or surface of the Easement Area described herein.

For authority, see attested copy of vote of the Special Town Meeting to the Town of Harvard held on October 10, 2007 and recorded herewith. *in Book 42381 Page 256*

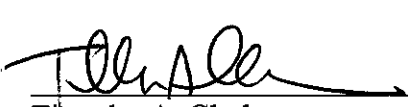
IN WITNESS WHEREOF, the said Town of Harvard has caused its corporate seal to be hereto affixed and these presents to be signed, acknowledged and delivered in its name and behalf by its Board of Selectmen, hereto duly authorized, this 29<sup>th</sup> day of January, 2008.

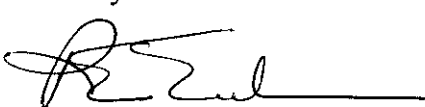
Signed and sealed in  
the presence of:

  
Timothy Bragan

TOWN OF HARVARD, by:

  
Lucy B. Wallace, Chair

  
Timothy A. Clark

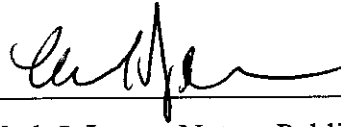
  
Robert E. Eubank

its Board of Selectmen

**COMMONWEALTH OF MASSACHUSETTS**

Worcester, ss.

On this 29th day of January, 2008, before me, the undersigned notary public, personally appeared Lucy B. Wallace, Timothy A. Clark and Robert E. Eubank, proved to me through satisfactory evidence of identification, which was personal recognition, to be the persons whose names are signed on the preceding or attached document, and acknowledged to me that they signed it as Selectmen of the Town of Harvard voluntarily for its stated purpose.



Mark J. Lanza, Notary Public

My commission expires: February 14, 2014

Bk: 32791 Pg: 354 Doc: COV  
Page: 1 of 1 02/06/2004 11:34 AM

## RESTRICTIVE COVENANT

In consideration of the approval by the Board of Health of the Town of Harvard ("Board") of a permit  
for a Three family dwelling to be constructed at 7 STILL RIVER Rd,  
Harvard, Worcester County, Massachusetts recorded with said Deeds on 6/9/89  
Book 12148, Page 144 ("Premises")

75/13

WILLIE & DARRELL WICKMAN ("Owners"), their successors and assigns, hereby covenant  
and agree with the Board, as follows:

1. The undersigned Owners are the owners in fee simple of the Premises affected by this restrictive covenant. See deed dated 6/9/89 recorded with Worcester Registry of Deeds Book 12148, Page 144.
2. This covenant shall be binding upon the executors, administrators, devisees, heirs, successors, and assigns of the Owners and shall constitute a covenant running with the land.
3. The Owners agree to register this covenant with the Worcester District Registry of Deeds.
4. The Owners covenant with the Board that so long as the present septic system services the Premises, the Premises will have no more than 10 bedrooms.
5. This covenant is for the benefit of the Board and relates to Title 5 of the Massachusetts Environmental Code, as most recently amended.
6. Upon written authorization of the Board, this covenant may be released at any time in the future.

IN WITNESS WHEREOF, the Owners have executed this Restrictive Covenant under seal as of the 4<sup>th</sup>  
day of FEBRUARY, 2004

APPROVED BY:

James C. Fitt  
Board of Health  
Date 01/22/04

Darrell Wickman  
Willie O Wickman  
Owners  
Date 2/4/04

## THE COMMONWEALTH OF MASSACHUSETTS

Worcester, SS. FEBRUARY 4, 2004

Then personally appeared the above named DARRELL AND WILLIE WICKMAN  
and acknowledged the foregoing instrument to be their free act  
and deed, before me.

Nancy J. Harrel  
Notary Public  
My Commission Expires: March 6, 2009

ATTEST: WORC. Anthony J. Vigliotti, Register

MAIL DARRELL WICKMAN  
P O Box 177  
HARVARD MA 01451



**NASHOBA ASSOCIATED BOARDS OF HEALTH  
ENVIRONMENTAL HEALTH DIVISION**

AYER, MA 01432

978 772-3338

**SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT**

Permit For: Local Upgrade Approval

ISSUED FOR THE

Harvard

BOARD OF HEALTH

**OWNER: ERIC & KRISTEN O'BRIEN**

(not transferable - formal permit transfer must be requested upon change of ownership)

**LOCATION OF LOT: 7 STILL RIVER RD.**

**MAP/PARCEL: 17C/PARCEL 1.**

**Date Permit issued: January 23, 2007**

**Lot Size: 2.36 ACRES**

**Soil Description: 0-32" TOP & SUBSOIL, 32-62" LOAMY SAND, 62-90" SANDY LOAM**

**Groundwater: 40"**

**PERC RATE: 3 MPI**

**ENGINEERING OR SPECIAL PREPARATION:**

System to be installed according to engineered plan No: L-10337

Dated: 12/01/2006 Rev.: 01/17/2007

By: **DAVID E. ROSS ASSOCIATES, INC.**

**Bedroom Count: TEN BEDROOM MULTI FAMILY**

**Water Supply: ☐ Well ☒ Town**

**Primary Installation: TWO 2500 GALLON SEPTIC TANK & 1500 GALLON DOSING CHAMBER**

**Secondary Installation: 27' L X 43' WIDE PRESSBY ENVIRO-SEPTIC SYSTEM**

**Special Notes:**

**VARIANCES AS NOTED ON PLAN TO INCLUDE A GROUNDWATER REDUCTION**

**(X) WELL DESTRUCTION**

**(X) WELL DESTRUCTION PERMIT**

*SEE 3/13/07 meeting, Deferred to Dec. 08*

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT AGENT: 16

*Thomas C. Phil* *David E. Ross* *Gene E. Doney*

I agree upon accepting this PERMIT to comply with all Board of Health regulations and the State Environmental Code during all phases of installing the septic system.

SIGNED

☒ Owner

☒ Contractor

☒ Licensed Installer

*Ronald P. Hamarre*  
#054

**Record of Inspections**

NABH Licensed Installer:

**INSPECTIONS REQUIRE**

Insp. Date

Insp. By:

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> FIELD excavation, before fill/stone by   | <input checked="" type="checkbox"/> Eng <input checked="" type="checkbox"/> NABH |
| <input checked="" type="checkbox"/> Fill in place by <input type="checkbox"/> Engineer <input checked="" type="checkbox"/> NABH                            |  |
| <input checked="" type="checkbox"/> Completed system prior to backfill   |  |
| <input checked="" type="checkbox"/> Final fill and grading ON ENG. AS-BUILT PLAN   |  |
| <input checked="" type="checkbox"/> Engineer certification in writing of completed system  |  |
| <input checked="" type="checkbox"/> As built plans <input checked="" type="checkbox"/> by design engineer <input checked="" type="checkbox"/> by installer |  |
| <input type="checkbox"/> Well completion report and water test submitted to this office  |  |
| <input type="checkbox"/> Recorded dead/fill assessments submitted to this office   |  |
| <input checked="" type="checkbox"/> DUAL PUMPS - effluent + ce filter  |  |
| <input checked="" type="checkbox"/> NOTICE ON DEED - 1/4 USE   |  |
| <input checked="" type="checkbox"/> All inspections completed  |  |

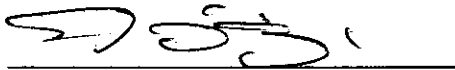
**A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL A CERTIFICATE OF COMPLIANCE IS OBTAINED.**

# **NOTICE OF INNOVATIVE/ALTERNATIVE SEPTIC SYSTEM**

Notice is hereby given of the existence or proposed use of a "Presby Enviro-Septic Leaching System," so-called on real property situated at 7 Still River Road, Harvard, MA described in a deed recorded with the Worcester District Registry of Deeds in Book 37700, Page 266. The within notice is given pursuant to the requirements of Title 5, 310 CMR 15.000, and the "Approval for Remedial Use" issued thereunder by the Massachusetts Department of Environmental Protection, dated May 22, 2006. A copy of said certification is attached hereto as Exhibit A.

Reference to this notice shall be included in any deed of the premises.

Witness my hand and seal this 31 day of October, 2007.



Eric A. O'Brien

## **COMMONWEALTH OF MASSACHUSETTS**

Worcester, ss

October 31, 2007

On this 31 day of October, 2007, before me, the undersigned notary public, personally appeared **Eric A. O'Brien** and proved to me through satisfactory evidence of identification, which was a Massachusetts Driver's License, to be the person whose name is signed on the attached or preceding document, and acknowledged to me that he signed it voluntarily for its stated purpose.



Notary Public:

My commission Expires:

**KATHERINE RAINER**  
**NOTARY PUBLIC**  
My Commission Expires April 17, 2009



**EXHIBIT A**

**“Approval for Remedial Use” dated May 22, 2006, by Glen Haas, Director of the Division of Watershed Management of the Commonwealth of Massachusetts Department of Environmental Protection, relative to the use and installation in remedial applications of the “Presby Enviro-Septic Leaching System,” so-called, pursuant to Title 5, 310 CMR 15.000.**



COMMONWEALTH OF MASSACHUSETTS  
 EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

MITT ROMNEY  
 Governor

KERRY HEALEY  
 Lieutenant Governor

STEPHEN R. PRITCHARD  
 Secretary

ROBERT W. GOLLEDGE, Jr.  
 Commissioner

**APPROVAL FOR REMEDIAL USE**  
 Pursuant to Title 5, 310 CMR 15.000

Name and Address of Applicant:

Presby Environmental, Inc.  
 Route 117, PO Box 617  
 Sugar Hill, NH 03586

Trade name of technology and model: **Presby Enviro-Septic Leaching System**  
 (Hereinafter called the "System"). The "Massachusetts Enviro-Septic® Wastewater Treatment System Quick Reference Guide" including schematic drawings of typical Systems, a technology checklist, and a System Installation Form are part of this Approval.

Transmittal Number: W021550  
 Date of Issuance: November 21, 2005, Revised May 22, 2006  
 Date of Expiration: November 21, 2010

**Authority for Issuance**

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental, Protection hereby issues this Approval to: Presby Environmental, Inc., Route 117, PO Box 617, Sugar Hill, NH 03586 (hereinafter "the Company"), approving the System described herein for Remedial Use in the Commonwealth of Massachusetts. Sale and use of the System are conditioned on compliance by the Company and the System owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Approval constitutes a violation of 310 CMR 15.000.

Glenn Haas, Director  
 Division of Watershed Management  
 Department of Environmental Protection

May 22, 2006  
 Date

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD Service - 1-800-298-2207.

DEP on the World Wide Web: <http://www.mass.gov/dep>

Printed on Recycled Paper

Approval for Remedial Use  
Presby Enviro-Septic Leaching System  
Page 2 of 8

**I. Purpose**

1. The purpose of this approval is to allow Remedial Use of the System in Massachusetts with the necessary permits and approvals required by 310 CMR 15.000.
2. With the necessary permits and approvals required by 310 CMR 15.000, this Approval for Remedial Use authorizes the use and installation of the System in Massachusetts.
3. The System may only be installed where conditions meet the criteria of 310 CMR 15.284(2). The System is an alternative system approved in accordance with 310 CMR 15.280 through 15.289 and is used to treat and dispose of wastewater.
4. This Approval for Remedial Use allows the use of the System where the local approving authority finds that the System is for upgrade of a failed, failing or nonconforming system. The Title 5 design flow for the facility must be less than 10,000 gallons per day.

**II. Design and Construction Standards**

1. The System is a subsurface unit that replaces a soil absorption system (SAS) designed in accordance with 310 CMR 15.000. The System consists of an 11 5/8-inch diameter corrugated, high-density plastic pipe with a 9.5-inch interior diameter and a length of 10 feet. The exterior of the pipe has ridges on the peak of each corrugation. The pipe is perforated with eight holes equally distributed around its inner circumference. Each hole has a plastic skimmer extending inwards. The exterior of the pipe shall have a minimum of two layers of fabric. The inner layer shall be a thick layer of coarse, randomly oriented polypropylene fabric. The outer layer shall be a non-woven geotextile polypropylene fabric. The pipe shall be installed in a concrete sand bed and surrounded on all sides by a minimum of six inches of sand. Depth to the high groundwater elevation shall be measured from the bottom of the sand underlying the pipe.
2. The System sand shall meet ASTM C-33.
3. Systems shall be installed with a differential venting for aeration and inspection at end of each run of pipe, section or serial bed and whenever the System is installed under impervious surfaces
4. The System shall be designed and installed using distribution boxes for inspection ports. The pipe between the distribution box and the System shall be installed at a minimum slope of 0.02 feet/foot.

5. Serial distribution laterals shall be limited to no more than 500 gpd. Multi-level systems shall not be allowed.
6. The System shall be installed in a bed or field configuration, as defined in 310 CMR 15.252. The effective leaching area shall be the bottom area (length times width) of the field or bed as presented in the Company's "Massachusetts Enviro-Septic® Wastewater Treatment System Quick Reference Guide".
7. Effluent loading rates adjusted to reduce the soil absorption system by 40 percent shall be in accordance with 310 CMR 15.242. No System shall be installed with a leaching area of less than 400 square feet.
8. The System shall not require pressure distribution.
9. The System may be used in soils with a percolation rate of up to 90 minutes per inch (MPI). For soils with a percolation rate of 60 to 90 MPI, the effluent loading rate shall be 0.15 GPD/SF

### III. Allowable Soil Absorption System Design

- I. Reduction of the Required Separation Distance to High Groundwater Elevation -  
An Applicant is eligible for a reduction in separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the SAS and the high groundwater elevation, where all of the following conditions are met. Accordingly, in approving design and installation of the System by a particular Applicant, the local approving authority may allow a reduction in the required separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of SAS and the high groundwater elevation, provided that all of the following conditions are met:
  - A. A minimum two foot separation (in soils with a recorded percolation rate of more than two minutes per inch) or a minimum three foot separation (in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the sand underlying the SAS and the high groundwater elevation is maintained.
  - B. No further reduction, than specified in Section II (7), in the required SAS size is allowed.
  - C. No reduction in the required four feet of naturally occurring pervious material is allowed unless the Applicant has demonstrated that the four foot requirement cannot be met anywhere on the site. Any such reduction must

first be approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.

- D. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, the local approving authority may allow a reduction under a local upgrade approval in accordance with 310 CMR 15.405 (1) (a), (b), (f), (g), and (h).
  - E. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, even taking into account provisions for local upgrade approval as described above, then pursuant to 310 CMR 15.410, the applicant first must obtain variance(s) from the local approving authority and then approval of the Department.
2. Reduction of the Requirement for Four Feet of Naturally Occurring Pervious Material – An Applicant is eligible for a reduction in the required four feet of naturally occurring pervious material in an area of no less than two feet of naturally occurring pervious material, where all of the following conditions are met. Accordingly, in approving design and installation of the System by a particular Applicant, the local approving authority may allow a reduction in the required four feet of naturally occurring pervious material in an area with no less than two feet of naturally occurring pervious material, provided that all of the following conditions are met:
- A. The Applicant has demonstrated that the four foot requirement cannot be met anywhere on the site.
  - B. No further reduction, than specified in Section II (7), in the required SAS size is allowed.
  - C. No reduction in the required separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of SAS and the high groundwater elevation is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
  - D. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, the local approving authority may allow a reduction under a local upgrade approval in accordance with 310 CMR 15.405 (1) (a), (b), (f), (g), and (h).
  - E. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, even taking into account provisions for local upgrade approval as described above, then pursuant to 310 CMR 15.410, the



applicant first must obtain variance(s) from the local approving authority and then approval of the Department.

### **III. General Conditions**

1. All provisions of 310 CMR 15.000 are applicable to the use of this System, the System owner and the Company, except those that are varied by the terms of this Approval.
2. All sample analysis must be conducted by an independent U.S. EPA or DEP approved testing laboratory, or a DEP approved independent university laboratory. It is a violation of this Approval to falsify any data collected, to omit any required data or to fail to submit any report required by such plan.
3. The facility served by the System and the System itself shall be open to inspection and sampling by the Department and the local approving authority at all reasonable times.
4. In accordance with applicable law, the Department and the local approving authority may require the System owner to cease operation of the system and/or to take any other action as it deems necessary to protect public health, safety, welfare and the environment.
5. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sewer system. No System shall be installed, upgraded or expanded, if it is feasible to connect the facility to a sanitary sewer, unless as allowed by 310 CMR 15.004. When a sanitary sewer connection becomes feasible, the facility served by the System shall be connected to the sewer, within 60 days of such feasibility, and the System shall be abandoned in compliance with 310 CMR 15.354, unless a later time is allowed, in writing, by the approving authority.
6. Design, installation and operation shall be in strict conformance with the Company's DEP approved plans and specifications, 310 CMR 15.000 and this Approval.

### **IV. Conditions Applicable to the System Owner**

1. The System is approved for the treatment and disposal of sanitary sewage only. Any wastes that are non-sanitary sewage generated or used at the facility served by the System shall not be introduced into the System and shall be lawfully disposed.
2. The System owner shall at all times properly operate and maintain the on-site sewage disposal system. The System owner shall have the System inspected annually by an operator trained by the Company and shall submit the results of that inspection, on a technology checklist, to the local approving authority.

3. The System owner shall furnish the Department any information that the Department requests regarding the operation and performance of the System, within 21 days of the date of receipt of that request.
4. No System owner shall authorize or allow the installation of the System other than by a person trained by the Company to install the System.
5. Prior to the issuance of a Certificate of Compliance for the System, the System owner shall record and/or register in the appropriate Registry of Deeds and/or Land Registration Office, a Notice disclosing both the existence of the alternative septic system subject to this Approval on the property and the Department's approval of the System. If the property subject to the Notice is unregistered land, the Notice shall be marginally referenced on the owner's deed to the property. Within 30 days of recording and/or registering the Notice, the System owner shall submit the following to the Department and the local approving authority: (i) a certified Registry copy of the Notice bearing the book and page/instrument number and/or document number; and (ii) if the property is unregistered land, a Registry copy of the owner's deed to the property, bearing the marginal reference.

**V. Conditions Applicable to the Company**

1. By January 31<sup>st</sup> of each year, the Company shall submit a report to the Department, signed by a corporate officer, general partner or Company owner that contains information on the System, for the previous calendar year. The report shall state: the number of units of the System sold for use in Massachusetts including the installation date and date of start-up during the previous year; the address of each installed System, the owner's name and address, the type of use (e.g. residential, commercial, school, institutional) and the design flow; and for all Systems installed since the date of issuance of this Approval, all known failures, malfunctions, and corrective actions taken and the address of each such event.
2. The Company shall notify the Director of the Watershed Permitting Program at least 30 days in advance of the proposed transfer of ownership of the technology for which this Approval issued. Said notification shall include the name and address of the proposed new owner and a written agreement between the existing and proposed new owner containing a specific date for transfer of ownership, responsibility, coverage and liability between them. All provisions of this Approval applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.
3. The Company shall develop and submit to the Department: an operating manual, including information on substances that should not be discharged to the System and a recommended schedule for maintenance of the System essential to consistent

Approval for Remedial Use  
Presby Enviro-Septic Leaching System  
Page 7 of 8

successful performance of the installed Systems within 60 days of the effective date of this Approval.

4. The Company shall make available, in print and electronic format, the referenced procedures in paragraphs 3 above to System owners, operators, designers and installers.
5. The Company shall institute and maintain a training program in the proper design, installation and inspection techniques of its System and provide a training course at least annually for prospective designers, installers and inspectors. The Company shall certify that installers and inspectors have completed the Company's training class, maintain a list of trained installers and inspectors, submit a copy to the Department, and update the list annually. Updated lists shall be forwarded to the Department.
6. The Company shall furnish the Department any information that the Department requests regarding the System, within 21 days of the receipt of that request.
7. The Company shall include copies of this Approval and the procedures in Section V (3) with each System that is sold. In any contract executed by the Company for distribution or re-sale of the System, the Company shall require the distributor or re-seller to provide each purchaser of the System with copies of this Approval and the procedures described in Section V (3).
8. The Company shall comply with 310 CMR 15.000 and all Department policies and guidance that apply and as they may be amended from time to time.
9. If the Company wishes to continue this Approval after its expiration date, the Company shall apply for and obtain a renewal of this Approval. The Company shall submit a renewal application at least 180 days before the expiration date of this Approval, unless written permission for a later date has been granted in writing by the Department. This approval shall continue in force until the Department has acted on the renewal application.

**VI. Conditions Applicable to Installers of the System**

1. Each Installer shall install the System in accordance with Company training on the installation of the System and the conditions of this Certification.
2. No Installer shall install the System unless the Installer has been trained by the Company on installation of the System or the installation is overseen by a Company representative(s).
3. Installers shall complete the System Installation Form and forward a copy to the Company and the local approving authority.

Approval for Remedial Use  
Presby Enviro-Septic Leaching System  
Page 8 of 8

4. The System installer shall provide the System owner and the local approving authority with a bill of lading certifying that the sand fill meets ASTM C-33.

**VII. Reporting**

1. All notices and documents required to be submitted to the Department by this Approval shall be submitted to:

Director  
Watershed Permitting Program  
Department of Environmental Protection  
One Winter Street - 6th floor  
Boston, Massachusetts 02108

**VIII. Rights of the Department**

1. The Department may suspend, modify or revoke this Approval for cause, including, but not limited to, non-compliance with the terms of this Approval, non-payment of the annual compliance assurance fee, for obtaining the Approval by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Approval, or as necessary for the protection of public health, safety, welfare or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to this Approval and/or the System against the owner, or operator of the System and/or the Company.

**IX. Expiration Date**

1. Notwithstanding the expiration date of this Certification, any System installed prior to the expiration date of this Certification, and approved, installed and maintained in compliance with this Certification (as it may be modified) and 310 CMR 15.000, may remain in use unless the Department, the local approving authority, or a court requires the System to be modified or removed, or requires discharges to the System to cease.

W021550

# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION

AYER, MA 01432

772-3338

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

To be used for a Sewage Disposal System

To be used for a Sewage Disposal System this permit is issued under the Emergency Section 111B of 810 CMR 11.00 Environmental Code, Title 1

ISSUED FOR THE HARVARD BOARD OF HEALTH

CARETAKER Deputy

LOCATION OF LOT OR INSTALLATION 16 Still River Road LOT NO. 16, 31

DATE PERMIT ISSUED June 10, 1989 LOT SIZE

20. DESCRIPTION 0-6" top & subsoil; 6"-32" silty sand with some stones; refusal at 12"; no groundwater observed

PERC RATE

ENGINEERING OR SPECIAL PREPARATION See 89-25 dated 5/30/89

Deputy Paul J. Associates  
 Shall to be abandoned, all accessible piping etc., to be removed, back filled with clean gravel and sealed. Gas line to be relocated as indicated on plan. Town water connection to be provided as shown on plan.

SYSTEM DESIGNED FOR bedroom dwelling

WATER SUPPLY Local

PRIMARY INSTALLATION 1000 gallon septic tank

SECONDARY INSTALLATION 2 33' long x 3' wide x 2' deep leaching trenches bottom elev. 110.0

110.0 Breakout protection to be provided by impermeable barrier of 12" clay or approved material.

PERMIT PREPARED FOR BOARD BY NASHOBA HEALTH DEPARTMENT

I agree to accept the PERMIT conditions with all Board of Health regulations and the State Department of Conservation and Fisheries and to maintain the system and to maintain the connection to the system. I further agree to correct any fault caused by defective work or equipment appearing within one year from date of occupancy.

SIGNED Paul J. Associates Deputy Paul J. Associates Deputy

☒ tank to be water tested  
☒ steps in place 6/10/89

### CERTIFICATE OF COMPLIANCE

- ☒ 1. All work completed in accordance with permit
- ☒ 2. All work completed in accordance with permit
- ☒ 3. All work completed in accordance with permit
- ☒ 4. All work completed in accordance with permit
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- ☒ 20. All work completed in accordance with permit

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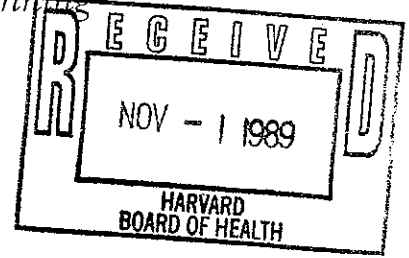
A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THIS CERTIFICATE IS COMPLETED.

### IMPORTANT NOTES

1. THE EXPIRATION OF THIS CERTIFICATE SHALL NOT BE CONSIDERED AS A WARRANTY THAT THE SYSTEM WILL FUNCTION PROPERLY.
2. INSTALLATION OF PERMITS MUST BE PERFORMED BY A QUALIFIED INSTALLER.
3. FAILURE BY INSTALLER TO COMPLY WITH ALL REQUIREMENTS OF THIS PERMIT MAY LEAD TO SUSPENSION OF PERMIT.
4. THE OWNER IS TO BE AWARE OF THE LOCAL PROTECTION REQUIREMENTS OF THE LOCAL CONSERVATION COMMISSION.
5. THE SYSTEM IS NOT DESIGNED FOR GARBAGE DISPOSAL.
6. THE SYSTEM IS DESIGNED FOR USE STATED ABOVE.
7. PERMIT IS VOID TWO YEARS AFTER DATE OF ISSUE.
8. LEACH SYSTEMS MUST BE KEPT 100 FEET FROM ALL WELLS.
9. MAINTENANCE OF A SYSTEM REQUIRES ANNUAL PUMPING.

# DeFeo, Wait & Associates, Inc.

*Civil/Sanitary Engineering & Land Use Planning*



October 20, 1989

Board of Health  
Town Hall  
Harvard, Massachusetts 01451

ATTENTION: Bernie Sullivan

RE: HARVARD -- Subsurface Sewage Disposal System,  
16 Still River Road, As-Built,  
Job #89-25

Dear Bernie:

Attached please find a print of the as-built conditions for 16 Still River Road. The subsurface sewage disposal system which has been constructed at this locus conforms to the as-built conditions shown on the plan and represents conditions that have been approved by the Harvard Board of Health.

Frank Mezzacappa and myself would like to thank you for all your help with this project. If you should have any questions please feel free to contact us.

Very truly yours,

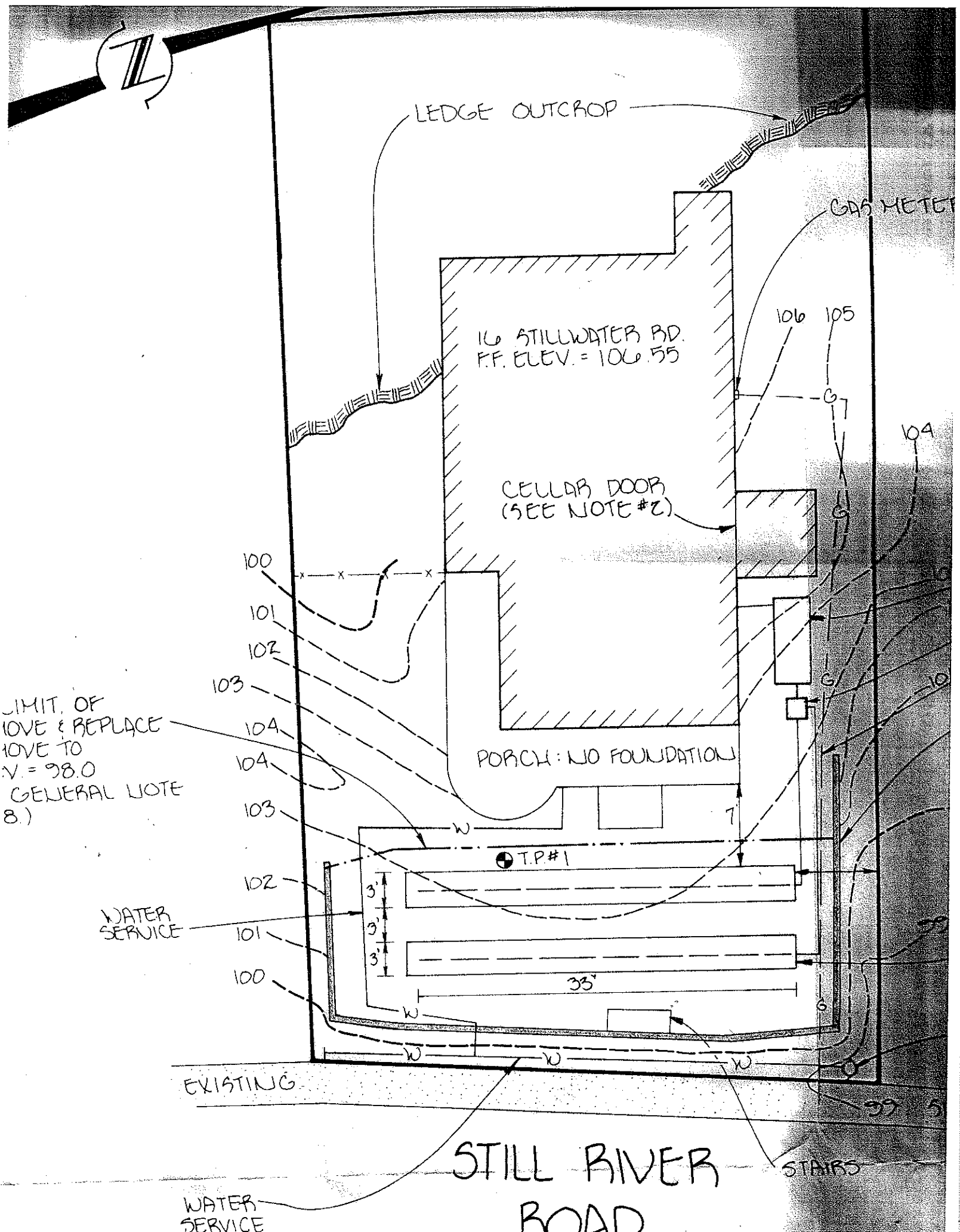
A handwritten signature in cursive script, appearing to read "Alan R. Kirschner".

Alan R. Kirschner, P.E.  
Vice President  
Water & Waste Management

Copy to: Caroline Sweeney  
16 Still River Road  
Harvard, Massachusetts 01451

Enclosure

ARK/bjr



LEDGE OUTCROP

GAS METER

16 STILLWATER RD.  
F.F. ELEV. = 106.55

CELLAR DOOR  
(SEE NOTE #2)

PORCH: NO FOUNDATION

LIMIT OF  
MOVE & REPLACE  
MOVE TO  
V. = 98.0  
GENERAL NOTE  
8.)

WATER  
SERVICE

EXISTING

STILL RIVER  
ROAD

STAIRS

WATER  
SERVICE



# NASHOBA ASSOCIATED BOARDS OF HEALTH

ENVIRONMENTAL HEALTH DIVISION  
AYER, MA 01432 172-3235

## SEWAGE DISPOSAL WORKS CONSTRUCTION PERMIT

THIS PERMIT IS FOR SEWAGE DISPOSAL WORKS  
AND IS NOT VALID UNLESS THE WORK IS COMPLETED WITHIN THE  
PERMITTED TIME FRAME OF 180 DAYS FROM THE DATE OF ISSUANCE.

ISSUED FOR THE Harvard BOARD OF HEALTH

OWNER James E. Oyster, Jr.

LOCATION OF LOT OR INSTALLATION 21 Still River Road

LOT NO. ITS 3-1

DATE PERMIT ISSUED November 1, 1994

LOT SIZE 2.40 AC.  
10.04 acres

SOIL DESCRIPTION 0-2' top 6 subsoil, 2'-9' sandy loam, ref. 5-9' on 9/94,  
scotting 3-3'

PERC RATE 5 min/inch

ENGINEERING OR SPECIAL PREPARATION: Answer to be provided according to proposed plan no. Job # 1658

Joe. A. Henry

Title 5 variance(s) required.

SYSTEM DESIGNED FOR Existing five bedrooms

WATER SUPPLY gpm

PRIMARY INSTALLATION 1000 gallon septic tank

SECONDARY INSTALLATION Six - 25' L x 2' W x 1' off. depth leaching trenches as  
designed, clay barrier

PERMIT ISSUED BY BOARD OF HEALTH DEPARTMENT FOR

*Frederic P. Blane* *R. D. Givette* *Robert A. Henry*

APPLICANT'S OATH: I, the undersigned, hereby certify that the information furnished herein is true and correct to the best of my knowledge and belief, and that I am not aware of any facts or circumstances which would render the same false or misleading.

*James E. Oyster, Jr.* *Agent for*

### CERTIFICATE OF COMPLIANCE

WORK ITEMS REQUIRED:

1. <u>Septic Tank</u>	11/1/94	<i>[Signature]</i>
2. <u>Leaching Trenches</u>	11/1/94	<i>[Signature]</i>
3. <u>Clay Barrier</u>	11/1/94	<i>[Signature]</i>
4. <u>Percolation Test</u>	11/1/94	<i>[Signature]</i>
5. <u>Soil Sampling</u>	11/1/94	<i>[Signature]</i>
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50. <u>Percolation Test</u>	11/1/94	<i>[Signature]</i>

A NEW HOUSE CANNOT BE OCCUPIED OR SOLD UNTIL THIS CERTIFICATE IS COMPLETED

### IMPORTANT NOTES

1. THE APPLICANT'S OATH IS A PART OF THIS PERMIT AND IS A GUARANTEE THAT THE SYSTEM WILL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PERMIT CONDITIONS.
2. THE APPLICANT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE LOCAL GOVERNMENT.
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# BOARD OF HEALTH

HARVARD, MASSACHUSETTS 01451



November 15, 1994

James Fuller  
DEP Central Region  
75 Grove Street  
Worcester, MA 01605

Dear Mr. Fuller:

At the November 10, 1994 meeting of the Board of Health, the Board approved 3-0, a repair to an existing house at 21 Still River Road for James Oyler, Jr. A variance request was made to Title 5 310 CMR 15.02(17) and 15.03(7). A 15 foot gravel limit is proposed in lieu of the required 25 feet. An impervious clay barrier is also proposed in lieu of downhill grading.

The Board felt that the same degree of environmental protection will be met as mandated by Title 5 with the approval of these variances.

If you have any questions regarding this matter, please contact Ira Grossman at the Nashoba Boards of Health.

For the Board members,

*Donna Owens*  
Donna Owens  
Secretary

c.c. Ira Grossman, NABH

Bruce Ringwall, Joseph Henry & Assoc., Inc.

September 29, 1994

Harvard Board of Health  
P.O. Box 220  
Harvard, MA 01450

RE: Title 5 Variance Request  
Repair Sewage Disposal System  
James Oyler, Jr.  
21 Still River Road, Harvard, MA 01450  
JRH & A Project No. 1668

Dear Board Members:

On behalf of our client, James Oyler, Jr. of Harvard, this office respectfully requests the Board to consider a Title 5 Variance for the following:

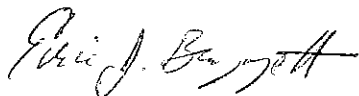
1. Relief from 310 CMR 15.03 (7) Distances whereby a 15 foot extension of the breakout elevation is proposed prior to a clay barrier and downhill slope of 3 to 1 thereafter.
2. Relief from 310 CMR 15.02 (17) whereby a 15 foot gravel limit is proposed around the trenches designed, in lieu of the 25 foot limit required by this section.

Construction Details and Specifications pertaining to the system for which these variances are requested are shown on the accompanying plans entitled "Repair Sewage Disposal System, Oyler Residence, Still River Road, Harvard, MA", dated September, 1994. In our opinion, the degree of Human Health and Environmental Protection mandated by Title 5 will be achieved with this design, and that strict adherence to 310 CMR 15.00 would constitute manifest injustice.

On behalf of our client, we thank the Board and its agents for their consideration and timely response to this matter.

Very truly yours,

JOSEPH R. HENRY & ASSOCIATES, INC.  
By:



Eric J. Bazzett  
Director of Engineering  
ejb:abk

## APPENDIX C

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COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

IANE SWIFT  
Governor

BOB DURAND  
Secretary

LAUREN A. LISS  
Commissioner

Harvard Public Schools  
14 Massachusetts Ave.  
Harvard, MA 01451  
Attn: Mihran Keoseian, Superintendent

RE: Harvard-BRP-# W017055  
314 CMR 5.00, Groundwater  
Discharge Permit # 0-723

Dear: Mr. Keoseian:

The Department has completed its review of your application (transmittal#W017055) for a permit to discharge into the ground treated effluent from a wastewater treatment facility serving the Bromfield School complex on Massachusetts Avenue, Harvard.

No comments objecting to the issuance or terms of the permit were received by the Department during the public comment period. After due public notice, I hereby issue the attached final discharge permit (0-723), which in accordance with 314 CMR 2.08, becomes effective upon issuance.

Parties aggrieved by the issuance of this permit are hereby advised of their right to request an Adjudicatory Hearing under the provision of Chapter 30A of the Massachusetts General Laws and 314 CMR 1.00, Rules for the Conduct of Adjudicatory Proceedings. Unless the person requesting the adjudicatory hearing requests and is granted a stay of the terms and conditions of the permit, the permit shall remain fully effective.

Very truly yours,

Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

3/27/02  
Date

rak/tar: 723fpmtl.125  
enclosure

HARVARD-BRP-#W017055

DGWP #0-723,

Permit Issuance

Page 2

cc: Sterns & Wheeler  
255 Stevens Street  
P.O. Box 975  
Hyannis, MA 02601  
Attn. Andrew D. Gronewold, P.E.

Harvard Board of Health

Dana Samuelson-PA-DEP-CERO

Mary Beth Costello, DEP-BRP-Boston

**GROUNDWATER  
DISCHARGE PERMIT**

Name and Address of Applicant: Harvard Public Schools, 14 Massachusetts Ave., Harvard

Date of Application: April 10, 2001

Application No./Permit No. W017055/ 0-723

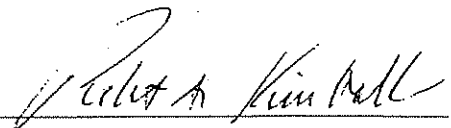
Date of Issuance: 3/26/02

Date of Expiration: 3/26/07

Effective Date: 3/26/02

**AUTHORITY FOR ISSUANCE**

Pursuant to authority granted by Chapter 21, Sections 26-53 of the Massachusetts General Laws, as amended, the following permit hereby issued to: Harvard Public Schools located at 14 Massachusetts Avenue, Harvard, MA (hereinafter called "the permittee") authorizing discharges from the onsite Wastewater Treatment Facility to the ground located at a town owned property on Massachusetts Avenue, Harvard Assessor's Map 22B Parcel 40, such authorization being expressly conditional on compliance by the permittee with all terms and conditions of the permit herein after set forth.

  
Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

3/27/02  
Date

## I. SPECIAL CONDITIONS

### **A. Effluent Limits**

The permittee is authorized to discharge into the ground from the wastewater treatment facilities for which this permit is issued a treated effluent whose characteristics, within one month after start-up of the facilities and continuing thereafter, shall not exceed the following values:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>
Flow, gallons per day	23,000 gpd
BOD, 5-day @ 20°C	30.0 mg/l
Total Suspended Solids	30.0 mg/l
Oil and Grease	15.0 mg/l
Nitrate-Nitrogen	10 mg/l
Total Nitrogen (TKN+NO <sub>3</sub> +NO <sub>2</sub> )	10 mg/l

- a) The pH of the effluent shall not be less than 6.5 nor greater than 8.5 at any time.
- b) The discharge of the effluent shall not result in any demonstrable adverse effect on the ground water or violate any water quality standards that have been promulgated.
- c) The monthly average concentration of BOD and total suspended solids in the discharge shall not exceed 15 percent of the monthly average concentrations of BOD and total suspended solids in the influent into the permittee's wastewater treatment facilities.
- d) When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the permitted flow limitations, the permittee shall submit to the permitting authorities projected loadings and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans.



**B. Monitoring and Reporting**

- 1) The permittee shall monitor and record the quality of the **influent** waste stream to the facility according to the following schedule and other provisions:

Parameter	Minimum Frequency of Analysis	Sample Type
BOD5	1 x Monthly	24 hour composite
TSS and Total Solids	1 x Monthly	24 hour composite
Ammonia-Nitrogen	1 x Monthly	24 hour composite
Total Nitrogen (TKN+NO3+NO2)	1 x Monthly	24 hour composite

- 2) The permittee shall monitor and record the quality and quantity of the **effluent**, prior to discharge to the ground, according to the following schedule and other provisions:

Parameter	Minimum Frequency of Analysis	Sample Type
Flow	Continuous recording	Min, Max, Average
pH	Daily	Grab
BOD5	Monthly	24 hour composite
TSS and Total Solids	Monthly	24 hour composite
Total Nitrogen (TKN+NO3+NO2)	Monthly ✓	24 hour composite
Nitrate Nitrogen	Monthly ✓	24 hour composite
Oil and Grease	Monthly	Grab
Volatile Organic Compounds (USEPA Method #624)	2 x Annually	Grab

- 3) The permittee shall monitor, record and report the quality of water in the three down gradient monitoring wells (MW1, MW2, MW4) and one upgradient monitoring well (MW3) according to the following schedule and other provisions:

pH	1 x Monthly
Specific Conductance	1 x Monthly
Static Water Level	1 x Monthly
Total Nitrogen	1 x Quarterly
Nitrate Nitrogen	1 x Quarterly
Total Volatile Organic Compounds EPA Method #624	2 x Annually

- 4) Any grab sample or composite sample required to be taken less frequently than daily shall be taken during the period of Monday through Friday inclusive. Grab samples shall be taken between 8:00 a.m. and 4:00 p.m. All composite samples shall be taken over the operating day.

The permittee shall submit all monitoring reports within 30 days of the last day of the reporting month. Reports shall be on an acceptable form, properly filled and signed and shall be sent to: Bureau of Resource Protection, Department of Environmental Protection, 627 Main Street, Worcester, Massachusetts and to the Director, Department of Environmental Protection, Office of Watershed Permitting, One Winter Street, Boston, MA 02108 and to the Board of Health, 13 Ayer Road, Harvard, Massachusetts.

### C. SUPPLEMENTAL CONDITIONS

- 1) The permittee shall notify the Department at least thirty (30) days in advance of the proposed transfer of ownership of the facility for which this permit is written. Said notification shall include a written agreement between the existing and new permittees containing a specific date for transfer of permit, responsibility, coverage and liability between them.
- 2) The permittee and any successor shall submit to the Department an annual financial report concerning the sewage treatment facility. The report shall include, at a minimum, the following:
  - a. all expenses for operation, maintenance, replacement or repair of the sewage treatment facility within the past year;
  - b. all revenue generated to meet such expenses;
  - c. initial and current balances in the capital reserve account and any other accounts; and
  - d. projected means of accumulation sufficient capital to replace the sewage treatment facility by the year 2022.

The report shall be prepared in accordance with generally accepted accounting principles consistently applied.

- 3) The permittee shall contract to have any and all solids and sludge generated by the treatment system for which this permit is issued removed off site by a properly licensed waste hauler for disposal at an EPA/DEP approved facility. The name and license number of the hauler along with the quality of wastes removed and the date(s) of removal shall be reported by the permittee in writing to the Department.
- 4) Plumbing from science laboratory sinks shall be connected directly to a Department approved non-hazardous industrial wastewater holding tank constructed in accordance with the conditions of the Department permit issued to the Bromfield School on October 17, 2000, Transmittal Number W015479.

- 5) The permittee shall notify the Department, in writing, within thirty (30) days of the following events:
- a) The date of treatment plant start up.
  - b) Any interruption of the treatment system operation, other than routine maintenance.
  - c) Final shutdown of the treatment system.
- 6) The permittee shall have a water conservation audit performed of the facilities served by the system and retrofit water saving devices wherever possible.

#### **D. Appeal Rights**

This Permit is an action of the Department. Any person aggrieved by this action, may request an Adjudicatory Hearing. A request for a hearing must be made in writing and postmarked within thirty (30) days of the Permit issuance date. Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought.

The Hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

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

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

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ROBERT W. GOLLEDGE, Jr.  
Commissioner

Paul Cohen, Town Administrator  
Town of Harvard  
13 Ayer Road  
Harvard, MA 01451

Re: Harvard - BRP - #W064230  
314 CMR 5.00, Groundwater Discharge  
GW #0-723, Bromfield School  
Compliance Inspection

Dear Mr. Cohen:

On September 1, 2005, the Department witnessed a final clear water test of the newly installed Anoxic Filter at the wastewater treatment facility serving the Bromfield School Complex. The installation of the filter unit was installed pursuant to the upgrade requirements in the Consent Order (ACOP-CE-04-1G013) in order to comply with the terms and conditions set within the Town's groundwater discharge permit (GW#0-723).

In attendance were representatives from your consulting firm, Environmental Partners Group; the equipment manufacturer, AWT Environmental Inc.; and the certified operator, Weston & Sampson Services. The following conditions were noted:

Anoxic Filter: The dual-compartment anoxic filter tank is installed between the post-equalization tank and the DynaSand ® filter. The new filter consists of 8 media banks, 2 recirculating pumps, 1 sludge pump, and two submersible aerators providing a total of approximately 7 hours of detention time.

The two 100-gpm recirculating pumps operate on timers (10 min. on / 10 min. off). Each pump discharges to four dedicated denitrification media banks at a rate of approximately 25 gpm. A flow meter on one pump provides verification of pump activation. Both pumps were activated, and appeared to operate satisfactorily. The sludge pump was also activated, and was found to be operational. The sludge pump operates on timers at a rate of 2 minutes on / 2 hours off.

After receiving denitrification within the first chamber of the Anoxic Filter, the wastewater flows to the second aeration chamber to remove any excess carbon present. Two submersible aerators are used to perform this function. Both aerators were operational, producing a fine bubble discharge. Other related work performed at the plant included installation of gate valves and

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pipng between the post-equalization tank and Anoxic Filter. This will allow by-passing flow around the Anoxic filter altogether, and allow flow to be conveyed directly to the DynaSand filter from the post-equalization tank if needed.


The audio/visual alarms for the Anoxic filter was tested and found to be operational; however, the alarm was not yet connected to an autodialer.

The Department **approves** the operation of the Anoxic Filter subject to the following conditions:

1. The Town shall connect an autodialer to the alarm for the Anoxic Filter unit within two weeks.
2. The Town shall adhere to conditions #1, #3, and #4 of the Department's previous correspondence dated July 27, 2005 regarding submittal of an Operation and Maintenance Manual, supplemental sampling, and flexibility of the aeration units.
3. The Town is also reminded of the unsafe access ladder within the DynaSand filter that was noted during the Department's March 25, 2004 compliance inspection. The access ladder should be extended to provide a safe manner in which the operator can enter the DynaSand filter unit.
4. The area around the subsurface tanks should be re-graded, loamed, and seeded. Additionally the area should be maintained through regular mowing.

If you should have any questions concerning this matter please feel free to call David Boyer of my staff at 508-767-2823.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental engineer V  
Bureau of Resource Protection  
Db/hs: clear water#723-125

Sept 2, 2005  
Date

Cc:

Harvard Board of Health

Environmental Partners  
35 Lincoln Street  
Suite 216  
Hingham, MA 02043

Wally Bruce  
Weston & Sampson Services  
Five Centennial Drive  
Peabody, MA 01960-7985



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

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STEPHEN R. PRITCHARD  
Secretary

ROBERT W. GOLLEDGE, Jr.  
Commissioner

Paul E. Cohen, Town Administrator  
13 Ayer Road  
Harvard, MA 01451

Re: Harvard - BRP  
314 CMR 5.00, Groundwater Discharge  
ACOP-CE-04-1G013  
Bromfield School - Return to Compliance

Dear Mr. Cohen:

On July 20, 2004, the Department and the Town of Harvard entered into an Administrative Consent Order to upgrade the Bromfield School wastewater treatment facility in order to comply with the terms and conditions of the Town's groundwater discharge permit (#0-723). Upgrades to the facility were completed in September 2005.

After reviewing the monthly discharge monitoring reports for this facility it appears that, with some minor exceptions, the treatment facility is performing satisfactorily and that the Town has satisfied the terms and conditions of its discharge permit. The Department therefore has determined that the Town has returned to compliance. No further action regarding the Consent Order is warranted.

If you have any questions concerning this matter please feel free to call David Boyer at 508-767-2823.

Very truly yours,

Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

May 11, 2006  
Date

Db/hs: acop-04-1g013rtc-125

Cc:

Harvard Board of Health

Weston & Sampson  
5 Centennial Drive  
Peabody, MA 01960-7985

Cheryl Poirier, CERO-BRP Enf. Coordinator



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

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Lieutenant Governor

IAN A. BOWLES  
Secretary

ARLEEN O'DONNELL  
Commissioner

Mihran Keoseian, Superintendent  
Harvard Public Schools  
14 Massachusetts Avenue  
Harvard, MA 01451

**NOTICE OF NONCOMPLIANCE**

**WARNING: THIS IS AN IMPORTANT NOTICE. FAILURE TO ADEQUATELY ADDRESS  
THIS NOTICE COULD RESULT IN SERIOUS LEGAL CONSEQUENCES.**

**RE: GROUNDWATER DISCHARGE PERMIT #723-0**

**NON-CE-07-1G002**

Dear Mr. Keoseian:

It has come to the Department's attention that the permittee is operating in noncompliance with one or more laws, regulations, orders, licenses, permits, or approvals enforced by the Department.

Attached hereto is a written description of (1) each activity referred to above, (2) the requirements violated (3) the action the Department requires you to take and (4) the deadline for taking such action. An Administrative Penalty may be assessed for every day from the date of this notice that you are in noncompliance.

Notwithstanding this Notice of Noncompliance, the Department reserves the right to exercise the full extent of its legal authority in order to obtain full compliance with all applicable requirements, including but not limited to criminal prosecution, civil action, including court-imposed civil penalties, or administrative penalties assessed by the Department.

If you have any questions, please contact David Boyer of my staff at (508) 767-2823

Very truly yours,

Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

Feb. 5, 2007  
Date

7002 2030 0007 8086 4306

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057.

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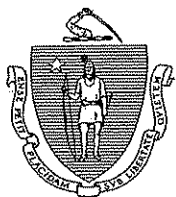
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Db/hs: NON-07-1G002cvt-125

Cc: Harvard BoH

Weston & Sampson Operators



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection – Watershed Permitting Program  
**GROUNDWATER DISCHARGE PERMIT PROGRAM**  
**NOTICE OF NONCOMPLIANCE (NON)**  
M.G.L. c.21 §§ 26-53, 314 CMR 5.00

Enforcement Notice:  
NON-CE-07-1G002

**For failure to submit permit renewal application**

**ATTENTION:** Mihran Keoseian, Supt.

**A General Information:**

PERMITTEE NAME: Harvard Public School

DATE: \_\_\_\_\_

PERMITTEE ADDRESS: 14 Massachusetts Ave  
Harvard, MA 01451

GW PERMIT #: 723-0

CITY/TOWN: Harvard

**B Location Where Noncompliance Occurred:**

**Date Noncompliance Occurred:**

Harvard Public Schools WWTF

Renewal Application was due by 9/27/06. Permit expires 3/26/07.

**C Description of Violations under M.G.L. c. 21 §§ 26 through 53 and 314 CMR 5.00**

The Department of Environmental Protection (DEP), Watershed Permitting Program records indicate that your facility is in violation of the following requirement: "Any person with a currently effective permit shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department," in accordance with 314 CMR 5.09(3)(b).

No groundwater permit renewal application for this facility has been submitted for approval, and no later submittal date has been approved as required.

**D Corrective Actions to Take and Deadline for Taking Such Actions**

Within **30** days of receiving this NON you must take **ALL** the following actions:

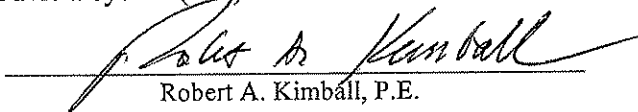
- Obtain and completely fill out a groundwater discharge permit renewal application (BRPWP11 or BRPWP12)  
Groundwater discharge permit renewal applications are available through the Internet at <http://www.state.ma.us/dep>, or by contacting the DEP Infoline at (617) 338-2255 (from area code 617 or outside Massachusetts) or 1-800-462-0444 (from area codes 508 and 413).
- Submit the completed application to the DEP Central Regional Office, 627 Main Street, Worcester, MA 01608, **and** a copy of the application to the DEP Boston Office, Watershed Permitting Program, One Winter Street, Boston, MA 02108.

**E Important Information**

If the required actions are not completed by the deadlines specified above, an administrative penalty may be assessed for every day after the date of this Notice that the noncompliance occurs or continues. The Department reserves its rights to exercise the full extent of its legal authority in order to obtain full compliance with all applicable requirements, including, but not limited to, criminal prosecution, civil action including court-imposed civil penalties, or administrative action, including administrative penalties imposed by the Department.

PLEASE NOTE that discharging pollutants to the ground without a valid permit is a separate violation subject to separate enforcement action in addition to this Notice, including those listed above.

If you have any questions about this NON please contact David Boyer at (508) 767-2823.

  
Robert A. Kimball, P.E.

Issuance/ DATE MAILED: Feb. 5, 2007

CERTIFIED MAIL#: 7002 2030 0007 8086 4306

CC: Watershed Permitting Program, Boston  
Harvard BOH  
Weston and Sampson Operators



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

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Commissioner

Timothy Bragan, Town Administrator  
Town of Harvard  
13 Ayer Road  
Harvard, MA 01451

Re: Harvard - BRP - GW #0-723  
314 CMR 5.00, Groundwater Discharge  
Bromfield School  
Compliance Inspection

Dear Mr. Bragan:

On March 29, 2007, the Department conducted a compliance inspection of the Town's wastewater treatment facility (WWTF) serving the Bromfield School complex (GW #0-723). The purpose of the inspection was to determine the Town's compliance with the terms and conditions of the above referenced groundwater discharge permit. Present at the inspection was the contract operator (Weston & Sampson).

Under the terms of its permit the Town is authorized to discharge up to 23,000 gpd of treated sanitary wastewater from the Bromfield School and Elementary School complex. A review of 2006 monthly monitoring reports revealed that effluent quality was generally satisfactory, with some minor excursions; however, it appears that since January 2007, effluent quality has deteriorated. Flows during 2006 show some inconsistencies, with some unusual flow increases. Flows typically averaged between 4,000 and 7,000 gpd.

The following conditions were noted with your contract operator:

Downstream pumping facilities: The Department did not inspect the downstream pumping facilities at the Bromfield School or Elementary School; however, these pump stations are reported to be operating properly. Both pump stations are equipped with functional alarms. In February 2007, run-time meters were installed in the Elementary School pump station to obtain daily data on influent flows to the treatment facility. Since late 2006 the Town has connected the municipal Library to the treatment facility via the High School septic tank/pump chamber.

Flow Equalization Tank (FET): The FET distributes incoming flows to the Bioclere® units using a duplex pump arrangement activated by a combination of floats and timers. Pumps are rated at approximately 23 gpm, and are routinely set to operate for 9 minutes "on" and 3 minutes

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“off”. Both original pumps have been replaced, and both replacement pumps are operational and alarmed. The FET also serves as the initial chemical addition point for sodium bicarbonate and methanol. Approximately 7 lbs/day of sodium bicarbonate are added to achieve a target alkalinity of 120 mg/l in the post-equalization tank. Methanol is used as a carbon source for denitrification. Sodium acetate was originally used for this purpose, but was eventually terminated due to pH concerns. The FET also includes a mixing pump that is not be utilized at this time.

Influent Compliance sampling: A composite sampler in the Elementary School pump station is used for compliance sampling.

Bioclere ® Biological Treatment Units: The Bioclere treatment system consists of two parallel process trains each consisting of two treatment units in series. Wastewater flow is split evenly between the two trains. Each unit is dosed by timers set for 10 minutes “on” and 2 minutes “off”. Wastewater effluent is recycled back to the FET at a 150% recycle rate. The first unit for each train exhibited acceptable biological growth, with the second unit exhibiting a reddish growth on the media indicative of nitrification.

Post Equalization Tank – A post-equalization tank receives flow from the Bioclere units prior to pumping to the anoxic filter. Both duplex pumps were operational, and dosing at a rate of 15-18 gpm. A 20% solution of methanol is also added to the force main. Approximately 2-5 gal/day of methanol is added at this point.

Anoxic Filter: The dual-compartment anoxic filter tank receives flow from the post-equalization pump chamber. The filter consists of 8 medial banks, 2 recirculating pumps, 1 sludge pump, and two submersible aerators. The filter provides a total detention time of approximately 7 hours. The operator reports problems with the anoxic filter at this time. Most of the media blocks appear to have broken from their supports and are floating. Flow through the media does not appear to be evenly distributed, and visible growth on the media blocks has diminished. The operator reports that cause(s) for the deterioration of the anoxic filter has not been determined at this time, but may be the result of inflow into the system. Accessibility to the filter media is severely restricted by small access covers.

The operator has terminated the aeration process in the anoxic filter at this time in order to maintain low dissolved oxygen levels.

DynaSand ® Filter: a continuous up-flow sand filter is used for TSS removal and effluent polishing. Due to the upset of the Anoxic filter, the operator has modified this filter in an attempt to obtain some denitrification. A pump was installed in the Anoxic Filter to pump flow into the DynaSand Filter in lieu of the designed gravity flow. This unit appears to be operating satisfactorily and producing a clear effluent. Sludge is withdrawn through an airlift and conveyed to the sludge storage tank. An access ladder within the unit process tank is of insufficient height for safe access.

Effluent Compliance Sampling: A composite sampler within the final pump chamber is used to determine final effluent quality.

Final Pump chamber: The final pump chamber receives flow from the DynaSand filter and discharges to the soil absorption system (SAS) for final disposal. The duplex pump arrangement appeared to be operating satisfactorily.

Flow measurement: Flow is measured by flow meters located on each of the two force mains located within the valve pit immediately downstream of the final pump chamber.

Monitoring wells: three downgradient and one upgradient monitoring wells were verified in place.

Generator: A backup emergency generator is operational and reportedly exercised on a weekly basis. The generator is capable of complete operation of the WWTF.


Process Control Building: the building is comprised is an electrical control room and a chemical feed room. Sodium bicarbonate mixing tank and methanol injection metering pumps are located here. The Bacta-pur Bactivator® feed system originally used to improve the nitrification/denitrification process is no longer utilized.

The Town is scheduled to meet with the Department in the near future to discuss a proposed increase in flows to the treatment facility. In order to allow a flow increase, the Town must first take measures to address the following operational issues:

1. Identify and correct the cause(s) of the upset in the anoxic filter. The loose media in the filter must be properly secured.
2. The Town should investigate possible infiltration/inflow (I/I) originating at either the Elementary School or the Bromfield School, and remediate any sources found.
3. The access ladder within the DynaSand filter must be extended. This safety issue was first brought to the Town's attention in April 2004, and has not yet been addressed.
4. Further evaluations of process units, especially the anoxic filter, may be required to examine the units' ability to handle additional flows and pollutant loadings.

If you should have any questions concerning this matter please feel free to call David Boyer of my staff at 508-767-2823.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

April 3, 2007  
Date

Db/hs: gw723 inspect-125

Cc: Harvard Board of Health



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

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Commissioner

Timothy Bragan, Town Administrator  
13 Ayer Road  
Harvard, MA 01451

Re: Harvard -- BRP WP12 - #W122957  
314 CMR 5.00, Groundwater Discharge  
GW #723-1, Permit Renewal  
Bromfield School  
Technical Deficiency Notice

Dear Mr. Bragan:

Pursuant to 314 CMR 5.00, the Department has completed its initial review of the above referenced application for renewal of the Town's groundwater discharge permit (GW 723-1) for the Bromfield School complex. The existing permit, which expired on March 26, 2007, allows for the discharge of up to 23,000 gallons per day (gpd) of treated wastewater to the ground. The terms and conditions of the original permit remain in affect since the Town's has filed for this renewal.

The Department has found that the application is *technically deficient*. The following deficiencies must be addressed before the Department can complete its review:

1. In reviewing this application, this office found that the existing groundwater discharge is located within a designated interim wellhead protection area (IWPA) of the Town's public water supply well on Bolton Road (PWS identification #2125000-03G). Department records reveal however, that this well is listed as inactive since 1999 and presently listed as an emergency supply requiring Department approval prior to activation.

Any discharge within a designated IWPA must comply with the indirect aquifer recharge requirements specified in the Department's policy titled: "Interim Guidelines on Reclaimed Water". Taking into consideration the emergency backup status of the well, however, we propose to incorporate an extended compliance schedule into the permit terms and conditions. Under this arrangement, the Town shall supplement this application by submitting to this office for approval a proposed schedule and engineering plans stamped by a registered Massachusetts Professional Engineer to

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upgrade the existing treatment facility to achieve the following effluent limits:

- a. pH: 6 -9 standard units
- b. turbidity: 5 NTU
- c. fecal coliform: 25 colonies/100 ml
- d. Total suspended solids: 10 mg/l
- e. Modifications to sampling requirements and frequency of testing

Once approved by the Department, the schedule and design plans shall be incorporated into the enforceable terms and conditions of the Town's discharge permit. Should the Department approve the reactivation of Harvard's Bolton Road well, the Town will be notified to proceed under the terms of the approved schedule with the necessary treatment facility upgrade.

2. The Town shall submit to the Department for approval a proposed schedule and plan for proposed upgrades to the anoxic filter discussed at the May 2, 2007 meeting in this office. This shall include enlargening the existing access hatches on the anoxic filter to facilitate routine inspection and maintenance of the media and other interior components. Other issues discussed included examining the source of external inflow into the system, as well as ladder access to the DynaSand ® filter.

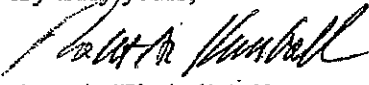
In accordance with 310 CMR 4.00, you have 180 days from the date of this letter in which to remedy the listed deficiencies and submit the deficient information along with the attached supplemental transmittal form to this office. Please be advised that the technical review time period provided for this application as expressed in 310 CMR 4.00 is hereby suspended pending submittal of the required material. You are advised that should the technical information be deemed inadequate a second time, the application will be denied and you will be required to submit a new permit application if you wish to still seek the permit.

If you fail to submit the required material within 180 days specified above, your application will be deemed withdrawn and you must reapply, if you still wish to seek a permit. Further you will not be entitled to a refund of your application fee.

The Department may at its option, agree to a written request for an extension of the time allowed to submit the specified information, if it receives the request with the time specified above.

Please include the transmittal number listed above on any correspondences regarding your application. If you have any questions please feel free to call David Boyer of my staff at (508) 767-2823.

Very truly yours,

  
Robert A. Kimball, P.E.  
Environmental Engineer  
Bureau of Resource Protection

May 21, 2007  
Date

BRP - Harvard  
Page 3

WPC 07-0176  
Db/hs: W122957df-125

CC:

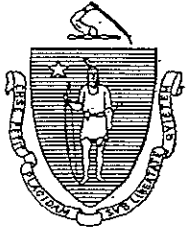
Harvard Board of Health

Weston & Sampson Services  
5 Centennial Drive  
Peabody, MA 01960

DEP, CERO, Fee Coordinator

Watershed Permitting Program, Boston





COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

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Lieutenant Governor

IAN A. BOWLES  
Secretary

LAURIE BURT  
Commissioner

Peter Annunziato, P.E.  
Aquapoint, Inc.  
241 Duchaine Blvd.  
New Bedford, MA 02745

Re: Harvard – BRP - GW #723  
314 CMR 5.00, Groundwater Discharge  
Anoxic Filter Inspection

Dear Mr. Annunziato:

On August 8 and 9, 2007, David Boyer of this office witnessed the inspection of the anoxic filter unit at the wastewater treatment facility serving the Bromfield School in Harvard, Massachusetts. In attendance were representatives from Aquapoint, Inc., the unit manufacturer, and the contract operator (Weston & Sampson).

The Town is permitted to discharge treated effluent from this facility pursuant to the terms of its groundwater discharge permit (GW #723). The facility experienced operational problems last winter that resulted in non-compliance with the nitrogen effluent limits specified in its permit. As a result the Town was required to inspect and correct deficiencies in the anoxic filter.

The anoxic filter is equipped with bundles of PVC media arranged in eight box frames attached to the tank bottom. The inspection revealed that the screws holding all eight of the submerged box frames had failed, and the media was floating. The media was then removed and inspected. This process was impeded by the lack of access hatches. We observed evidence of excessive biomass growth on media surfaces, that may impede pass through of wastewater through the units. Three of the eight plastic box frames had fractures, possibly caused by buildup of hydraulic pressure in these units due to the clogged media. Enclosed please find a DVD disc containing digital photographs documenting the fractured box frames and the clogged media sections.

This is not the first time operators have reported problems with detached media in this anoxic filter. We recommend that the anoxic filter design be modified to correct for the defective fasteners securing the submerged media. We also recommend that the wastewater pass through

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057.

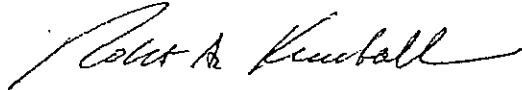
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system in the media be modified to improve scouring and removal of excessive biomass from media surfaces. It is also important that in the future, all anoxic tanks be equipped with access hatches or other means to facilitate routine inspection and removal of the media.

If you should have any questions concerning this matter please call David Boyer of my staff at 508-767-2823.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

Sept 6, 2007  
Date

Db/hs: gw723 anoxic pics-125

Cc:

David Ferris, BRP Wastewater Mgt Program, Boston  
Kevin Brander, BRP Wastewater Program, NERO  
Jeff Gould, BRP Wastewater Program SERO  
Mark Schleeweis, BRP Wastewater Program, WERO

Wally Bruce  
Weston & Sampson Services  
5 Centennial Drive  
Peabody, MA 01960



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

DEVAL L. PATRICK  
Governor

TIMOTHY P. MURRAY  
Lieutenant Governor

IAN A. BOWLES  
Secretary

LAURIE BURT  
Commissioner

REC'D MAR 07 2008

Timothy Bragan, Town Administrator  
13 Ayer Road  
Harvard, MA 01451

Re: Harvard - BRP WP 12 - #W122957  
314 CMR 5.00, Groundwater Discharge Permit  
GW #1-723  
Draft Permit and Public Notice

Dear Mr. Bragan:

The Department of Environmental Protection ("MassDEP") has completed its review of your application for renewal of the groundwater discharge permit (GW #1-723) for the Bromfield School complex in Harvard, Massachusetts.

As a result of our meeting on January 23, 2008, regarding the existing interim wellhead protection areas (IWPA) of the three public water supply wells, MassDEP has confirmed that the associated IWPA's for the two active water supply wells (PWIS #2125000-02G and #2125000-05G) are incorrectly depicted on the MassGIS site and will be corrected with the smaller protective radii. As a result, the wastewater treatment disposal area will not lie within the IWPA of either well. However, the disposal area will fall within the assumed IWPA of the emergency well (#2125000-03G) unless the Town takes steps to either abandon the well or move forward with a pump test to accurately determine the IWPA and reduce the radii. If the Town elects to abandon the well no further issues with the effluent limits will be necessary during this permit renewal. If the town elects to proceed with a pump test for the emergency well, measures must be put in place to ensure the IWPA does not fall within the area of the treatment disposal site. If you have further questions regarding the water supply wells, please feel free to call Barbara Kickham at 508-767-2724.

Enclosed for your review is a draft groundwater discharge permit (#1-723) containing specific conditions developed for this discharge provided that the Town proceeds with reducing the IWPA of the emergency well as discussed above. If the Town does not elect to reduce the IWPA then the discharge permit will be modified to address MassDEP's policy on "Interim Guidelines on Reclaimed Water" as previously mentioned in MassDEP's correspondence dated May 21, 2007. The applicant shall indicate in writing to this office within fourteen (14) days of receipt of the draft permit: (1) their acceptance of these permit conditions, or (2) a detailed description of any issues or problems, and (3) their proposed resolution of the emergency well IWPA.

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057.

<http://www.mass.gov/dep> • Phone (508) 792-7650 • Fax (508) 792-7621 • TDD # (508) 767-2788

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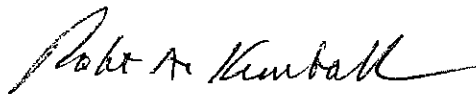
The enclosed document should be considered a draft only, because of provisions in the law requiring public notice of the proposed issuance of the permit and providing opportunity for public comments and/or public hearing. Following receipt of public comments and if necessary a public hearing, the Department will issue a final determination to issue or deny the Groundwater Discharge Permit (#1-723).

If the terms in the draft are acceptable, please publish the enclosed public notice form in a newspaper of general circulation in the municipality where the facility is located. This notice shall be published at the applicant's or permittee's expense in accordance with the requirements of 314 CMR 2.06. It is the applicant's responsibility to forward proof of publication to the Department at the above noted address.

The mandatory thirty (30) day public comment period will commence with the date of publication of the public notice. It is in the permittee's best interest to publish this notice upon receipt and forward the proof of publication to the Department as soon as possible to avoid delays in issuance of your permit. Please note that the Department cannot issue a final permit until the public comment period has closed.

If you have any questions please contact David Boyer of my staff (508) 767-2823.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

March 6, 2008  
Date

Wpc: 07-0176  
Db/hs: W122957 drft pmt-125

Enc.

Cc: Harvard Board of Health  
Nashoba Assoc. Boards of Health

Weston & Sampson Services  
Five Centennial Drive  
Peabody, MA 01960-7985

Wayne Perry  
Norfolk-Ram  
One Roberts Road  
Plymouth, MA 02360

Dana Samuelson, DEP Fees Coordinator, CERO

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF RESOURCE PROTECTION  
627 MAIN STREET  
WORCESTER, MASSACHUSETTS 01608  
TELEPHONE (508) 792-7650

PUBLIC NOTICE  
GROUNDWATER PERMIT APPLICATION

Notice is hereby given that the following application for a ground water discharge permit is being processed and that the following actions being proposed thereon pursuant to Section 43 of Chapter 21 of the General Laws, and 314 CMR 5.00 and 2.06:

APPLICANT: Town of Harvard  
PERMIT NO. 1-723  
FACILITY LOCATION: Bromfield School Complex, Massachusetts Avenue, Harvard, MA  
TYPE OF DISCHARGE: TREATED SANITARY DISCHARGE TO GROUND  
QUANTITY OF DISCHARGE: 23,000 Gallons Per Day  
PROPOSED ACTION: Tentative Determination to Issue Permit

A copy of the application, draft permit, and statement of basis or fact sheet relative to the draft permit may be obtained from the Department's Permit Section at the above address and telephone number. Comments on the proposed action or requests for a public hearing thereon pursuant to 314 CMR 2.07 must be filed with the Department at the above address within thirty (30) days of this notice.

Robert A. Kimball, P.E.



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

**GROUNDWATER DISCHARGE PERMIT**

DRAFT

Name and Address of Applicant: Harvard Public Schools  
14 Massachusetts Ave.  
Harvard, MA 01451

Date of Application: March 7, 2007

Application No./Permit No. 1-723

Date of Issuance: Draft

Date of Expiration: Draft

Effective Date: Draft

**AUTHORITY FOR ISSUANCE**

Pursuant to authority granted by Chapter 21, Sections 26-53 of the Massachusetts General Laws, as amended, 314 CMR 2.00, and 314 CMR 5.00, the Massachusetts Department of Environmental Protection (the Department or MassDEP) hereby issues the following permit to: The Town of Harvard (Harvard Public Schools) (hereinafter called "the permittee") authorizing discharges to the ground from the on-site wastewater treatment facility (WWTF) located on town owned property on Massachusetts Avenue (located at 14 Massachusetts Avenue, Harvard, MA; Harvard Assessor's Map 22B Parcel 40). The WWTF treats wastewater generated by the Harvard Elementary School and the Bromfield School with a projected school population of 880 persons at the Bromfield School and 695 persons at the Elementary School, such authorization being

expressly conditional on compliance by the permittee with all terms and conditions of the permit herein after set forth.

*DRAFT*

---

Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

---

Date

## **I. SPECIAL CONDITIONS**

### **A. Effluent Limits**

The permittee is authorized to discharge into the ground from the wastewater treatment facilities for which this permit is issued a treated effluent whose characteristics shall not exceed the following values:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>
Flow, gallons per day	23,000 gpd
BOD, 5-day @ 20°C	30.0 mg/l
Total Suspended Solids	30.0 mg/l
Oil and Grease	15.0 mg/l
Nitrate-Nitrogen	10 mg/l
Total Nitrogen (TKN+NO <sub>3</sub> +NO <sub>2</sub> )	10 mg/l

- a) The pH of the effluent shall not be less than 6.5 nor greater than 8.5 at any time or not more than 0.2 standard units outside the naturally occurring range.
- b) The discharge of the effluent shall not result in any demonstrable adverse effect on the ground water or violate any water quality standards that have been promulgated.
- c) The monthly average concentration of BOD and total suspended solids in the discharge shall not exceed 15 percent of the monthly average concentrations of BOD and total suspended solids in the influent into the permittee's wastewater treatment facilities.
- d) When the average annual flow exceeds 80 percent of the permitted flow limitations, the permittee shall submit a report to the Department, describing what steps the permittee will take in order to remain in compliance with the permit limitations and conditions, inclusive of the flow limitations established in this permit.



**B. Monitoring and Reporting**

- 1) The permittee shall monitor and record the quality of the **influent** waste stream to the facility according to the following schedule and other provisions:

Parameter	Minimum Frequency of Analysis	Sample Type
BOD <sub>5</sub>	1 x Monthly	24 hour composite
TSS and Total Solids	1 x Monthly	24 hour composite
Ammonia-Nitrogen	1 x Monthly	24 hour composite
Total Nitrogen (TKN+NO <sub>3</sub> +NO <sub>2</sub> )	1 x Monthly	24 hour composite

The permittee shall monitor and record the quality and quantity of the **effluent**, prior to discharge to the ground, according to the following schedule and other provisions:

Parameter	Minimum Frequency of Analysis	Sample Type
Flow	Daily	Min, Max, Average
pH	Daily	Grab
BOD <sub>5</sub>	Monthly	24 hour composite
TSS and Total Solids	Monthly	24 hour composite
Total Nitrogen (TKN+NO <sub>3</sub> +NO <sub>2</sub> )	Monthly	24 hour composite
Nitrate Nitrogen	Monthly	24 hour composite
Ammonia Nitrogen	Monthly	24 hour composite
Oil and Grease	Monthly	Grab
Total Phosphorus* (as P)	Quarterly	Grab
Orthophosphate* (as P)	Quarterly	Grab
Volatile Organic Compounds (USEPA Method #624)	Annually	Grab

\* After one full year of monitoring the Total Phosphorus and Orthophosphate results, MassDEP may determine, upon the request of the permittee, that the frequency of monitoring may be reduced if, in the judgment of MassDEP, the results of the sampling indicate that existing phosphorus levels will not adversely impact downgradient receptors.

- 2) The permittee shall sample the upgradient monitoring well (MW#3), and the downgradient monitoring wells (MW#1, MW#2, MW#4) as shown on the approved report titled "Hydrogeologic Assessment, Bromfield School Wastewater Disposal Site, Harvard, Massachusetts" prepared by Sterns & Wheler dated February 2001. Labels identifying each monitoring well's approved plan shall be affixed to the steel protective casing of each monitoring well.

The permittee shall monitor, record and report the quality of water in the monitoring wells according to the following schedule and other provisions:

Parameter	Minimum Frequency of Analysis
pH	Monthly
Specific Conductance	Monthly
Static Water Level *	Monthly
Total Nitrogen (TKN+NO <sub>3</sub> +NO <sub>2</sub> )	Quarterly
Nitrate Nitrogen	Quarterly
Total Phosphorus** (as P)	Quarterly
Orthophosphate ** (as P)	Quarterly
Total Volatile Organic Compounds EPA Method #624	2 x Annually

\* Static Water Level shall be expressed as an elevation and be referenced to the surveyed datum established for the site. It shall be calculated by subtracting the depth to the water table from the surveyed elevation of the top of the monitoring well's PVC well casing/riser.

\*\* After one full year of monitoring the Total Phosphorus and Orthophosphate results, MassDEP may determine, upon the request of the permittee, that the frequency of monitoring may be reduced if, in the judgment of MassDEP, the results of the sampling indicate that existing phosphorus levels will not adversely impact downgradient receptors.

- 3) Any grab sample or composite sample required to be taken less frequently than daily shall be taken during the period of Monday through Friday inclusive. Grab samples shall be taken between 8:00 a.m. and 4:00 p.m. All composite samples shall be taken over the operating day.

The permittee shall submit all monitoring reports within 30 days of the last day of the reporting month. Reports shall be on an acceptable form, properly filled and signed and shall be sent to: Bureau of Resource Protection, Department of Environmental Protection, 627 Main Street, Worcester, Massachusetts 01608 and to the Program Director, Watershed Permitting, Bureau of Resource Protection, Department of Environmental Protection, One Winter Street/5<sup>th</sup> Floor, Boston, MA 02108 and to the Harvard Board of Health, 13 Ayer Road, Harvard, Massachusetts.

Submission of monitoring reports in electronic format is available through eDEP and serves as data submission to both the Regional and Boston offices. To register for electronic submission go to: <http://www.mass.gov/dep/service/compliance/edeponlf.htm>

### C. Supplemental Conditions

- 1) The permittee shall notify the Department at least thirty (30) days in advance of the

proposed transfer of ownership of the facility for which this permit is written. Said notification shall include a written agreement between the existing and new permittees containing a specific date for transfer of permit, responsibility, coverage and liability between them.

- 2) A staffing plan for the facility shall be submitted to the Département once every two years and whenever there are staffing changes. The staffing plan shall include the following components:
  - a) The operator(s)'s name(s), operator grade(s) and operator license number(s);
  - b) The number of operational days per week;
  - c) The number of operational shifts per week;
  - d) The number of shifts per day;
  - e) The required personnel per shift;
  - f) Saturday, Sunday and holiday staff coverage;
  - g) Emergency operating personnel
- 3) The permittee is responsible for the operation and maintenance of all sewers, pump stations, and treatment units for the permitted facility, which shall be operated and maintained under the direction of a properly certified wastewater operator.
- 4) Operation and maintenance of the proposed facility must be in accordance with 314 CMR 12.00, "Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Discharges", and, 257 CMR 2.00, "Rules and Regulations for Certification of Operators of Wastewater Treatment Facilities."
  - a) The facility has been rated (in accordance with 257 CMR 2.00), to be a Grade 4 facility. Therefore, the permittee shall provide for oversight by a Massachusetts Certified Wastewater Treatment plant operator (Chief Operator) Grade 4 or higher. The permittee will also provide for a backup operator who shall possess at least a valid Grade 4 license.
  - b) The date and time of the operator's inspection along with the operator's name and certification shall be recorded on the required monthly monitoring reports.
- 5) If the operation and maintenance of the facility is contracted to a private concern, the permittee shall submit a copy of the contract, consistent with what is required by the approved Operation & Maintenance manual and signed only by the contractor, to the appropriate MassDEP Regional Office within thirty days of permit issuance. Along with the contract, a detailed listing of all contract operation obligations of the proposed contractor at other facilities shall also be submitted.
- 6) Any additional connections to the sewer system, beyond the existing schools facilities shall be approved by MassDEP and the local Board of Health prior to the connection.
- 7) All tests or analytical determinations to determine compliance with permit standards and requirements shall be done using tests and procedures found in the most recent version of

*Standard Methods for the Examination of Water and Wastewater* and shall be performed by a Massachusetts Certified laboratory.

- 8) The permittee shall notify the appropriate MassDEP Regional Office, in writing, within thirty (30) days of the following events:
  - a) Any interruption of the treatment system operation, other than routine maintenance.
  - b) Final shutdown of the treatment system.
- 9) The permittee shall contract to have any and all solids and sludges generated by the treatment system for which this permit is issued removed off site by a properly licensed waste hauler for disposal at an EPA/MassDEP approved facility. The name and license number of the hauler along with the quantity of wastes removed and the date(s) of removal shall be reported by the permittee in writing to the appropriate MassDEP Regional Office.
- 10) Simultaneously with the permit renewal application at year fifteen (2017) following the initiation of plant operations, the permittee shall submit two reports to the Department for its review and approval:
  - a. An engineering report, prepared by a registered professional engineer, that outlines in sufficient detail what modifications (if any) to the facility or other changes are required to insure that the facility can remain in compliance with its GWDP and other applicable requirements through the next 5 year permit term (year 20) and beyond; and
- 11) In the event that effluent limits are not met, or the groundwater quality in the down-gradient monitoring wells does not meet the groundwater quality standards for Class I groundwaters, the permittee may be obligated to modify, supplement or replace the permitted treatment process so as to ensure compliance with the groundwater quality standards.
- 12) Plumbing from science laboratory sinks shall be connected directly to a Department approved non-hazardous industrial wastewater holding tank constructed in accordance with the conditions of the Department permit issued to the Bromfield School on October 17, 2000, Transmittal Number #W015479.
- 13) The permittee shall have a water conservation audit performed of the facilities served by the system and retrofit water saving devices wherever possible.

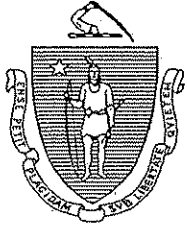
#### **D. Appeal Rights**

This Permit is an action of the Department. Any person aggrieved by this action, may request an Adjudicatory Hearing. A request for a hearing must be made in writing and postmarked within thirty (30) days of the Permit issuance date. Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought.

The Hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

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

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
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Central Regional Office, 627 Main Street, Worcester, MA 01608

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IAN A. BOWLES  
Secretary

LAURIE BURT  
Commissioner

Timothy Bragan, Town Administrator  
13 Ayer Road  
Harvard, MA 01451

Re: Harvard - BRP WP 12 - #W122957  
314 CMR 5.00, Groundwater Discharge Permit  
GW #1-723 - Final Permit

Dear Mr. Bragan:

Pursuant to its authority under the Massachusetts Clean Water Act, M.G.L. c. 21 § 26-53 (the "Act"), the Department of Environmental Protection ("MassDEP") has promulgated Ground Water Discharge Permit Regulations at 314 CMR 5.00 (the "Regulations"). The Regulations at 314 CMR 5.03 expressly authorize MassDEP to issue permits allowing the discharge of pollutants to the ground, subject to the terms and conditions specified in that permit.

No comments objecting to the issuance or terms of the permit were received by MassDEP during the public comment period.

Enclosed please find the final discharge permit (1-723) containing specific terms and conditions developed for this discharge. This permit shall become effective upon issuance. Parties aggrieved by the issuance of this permit are hereby advised of their right to request an Adjudicatory Hearing under the provision of Chapter 30A of the Massachusetts General Laws and 314 CMR 1.00: "Rules for the Conduct of Adjudicatory Hearing Proceedings." Unless the person requesting the adjudicatory hearing requests and is granted a stay of the terms and conditions of the permit, the permit shall remain fully effective.

After due public notice, I hereby, issue the attached final groundwater discharge permit. In accordance with 314 CMR 2.08, the permit becomes effective upon issuance and is subject to the conditions stipulated below:

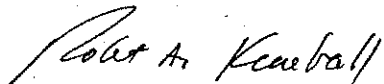


1. On January 23, 2008, MassDEP met with the Town to discuss issues related to the proximity of the discharge to the Interim Wellhead Protection Area (IWPA) of the Town's emergency public water supply well (#2125000-03G). The Department advised the Town that if the groundwater discharge is within the IWPA, the effluent limits for this discharge shall be based the Department's Interim Guidelines on Reclaimed Water. This will require substantial upgrades of the existing treatment facility prior to that date. It was agreed at that meeting that the Town would either abandon this well or conduct pump tests to ascertain whether the discharge is in the IWPA of this well. To date the Town has failed to resolve this issue. If by January 1, 2010, the Town fails to either abandon the emergency well or to demonstrate that its groundwater discharge is outside the IWPA, the stricter limits specified in Part I.A. of the Final Permit shall take effect. By January 30, 2009, the Town shall schedule a progress meeting with MassDEP to discuss the need to proceed with this upgrade.
2. Permittees shall keep at the facility at all times a copy of the approved facility operation & maintenance (O&M) manual and one complete set of stamped as-built plans, and shall make these available to Department personnel upon request.

Pursuant to 314 CMR 4.03, starting the fiscal year after the initial permit is issued, permittees shall pay an annual compliance fee to the Department to cover the cost of compliance activities performed by the Department, to include field inspections and review of Discharge Monitoring Reports.

If you have further questions regarding the pump test procedure for the emergency water supply well, please feel free to call Marielle Stone at 508-767-2827. If you have any questions concerning this matter, please feel free to contact David Boyer of my staff at (508) 767-2823.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection  
Db/hs: wl22957fincvr-125

Sept. 25, 2008

Date

Enc.

Cc: Harvard Board of Health  
Marybeth Chubb, DEP - Boston  
Dana Samuelson, DEP - CERO



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

**GROUNDWATER DISCHARGE PERMIT**

Name and Address of Applicant: Town of Harvard (Harvard Public Schools)  
14 Massachusetts Ave.  
Harvard, MA 01451

Date of Application: March 7, 2007

Application No./Permit No. 1-723

Date of Issuance: September 25, 2008

Date of Expiration: September 25, 2013

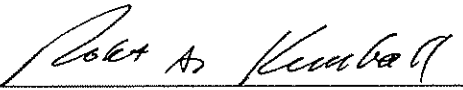
Effective Date: September 25, 2008

**AUTHORITY FOR ISSUANCE**

Pursuant to authority granted by Chapter 21, Sections 26-53 of the Massachusetts General Laws, as amended, 314 CMR 2.00, and 314 CMR 5.00, the Massachusetts Department of Environmental Protection (the Department or MassDEP) hereby issues the following permit to: The Town of Harvard (Harvard Public Schools) (hereinafter called "the permittee") authorizing discharges to the ground from the on-site wastewater treatment facility (WWTF) located on town owned property on Massachusetts Avenue (located at 14 Massachusetts Avenue, Harvard, MA; Harvard Assessor's Map 22B Parcel 40). The WWTF treats wastewater generated by the Harvard Elementary School and the Bromfield School with a projected school population of 880 persons at the Bromfield School and 695 persons at the Elementary School, such authorization being



expressly conditional on compliance by the permittee with all terms and conditions of the permit herein after set forth.



Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection

Sept. 25, 2008  
Date

## I. SPECIAL CONDITIONS

### **A. Effluent Limits\***

Until January 1, 2010 the permittee is authorized to discharge into the ground from the wastewater treatment facilities for which this permit is issued a treated effluent whose characteristics shall not exceed the following values:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>
Flow, gallons per day	23,000 gpd
BOD, 5-day @ 20°C	30.0 mg/l
Total Suspended Solids (TSS)	30.0 mg/l
Oil and Grease	15.0 mg/l
Nitrate-Nitrogen	10 mg/l
Total Nitrogen (TKN+NO <sub>3</sub> +NO <sub>2</sub> )	10 mg/l

- a) The pH of the effluent shall not be less than 6.5 nor greater than 8.5 at any time or not more than 0.2 standard units outside the naturally occurring range.
- b) The discharge of the effluent shall not result in any demonstrable adverse effect on the ground water or violate any water quality standards that have been promulgated.
- c) The monthly average concentration of BOD and total suspended solids in the discharge shall not exceed 15 percent of the monthly average concentrations of BOD and total suspended solids in the influent into the permittee's wastewater treatment facilities.
- d) When the average annual flow exceeds 80 percent of the permitted flow limitations, the permittee shall submit a report to the Department, describing what steps the permittee will take in order to remain in compliance with the permit limitations and conditions, inclusive of the flow limitations established in this permit.

If by January 1, 2010, the Town has failed to abandon its emergency water supply well (#2125000-03G) or to demonstrate through an approved pump test that this discharge is outside the IWPA, this permit shall be subject to the Department's Interim Guidelines on Reclaimed Water, and the following additional Effluent Characteristics shall also apply:

Total Suspended Solids	10 mg/l
Turbidity	5 NTU
Fecal Coliform	Median of no detectable colonies/100 ml Over continuous, running 7 day sampling periods, not to exceed 14/100 ml or 200 colonies/100 ml

**B. Monitoring and Reporting\*\***

- 1) The permittee shall monitor and record the quality of the **influent** waste stream to the facility according to the following schedule and other provisions:

<u>Parameter</u>	<u>Minimum Frequency of Analysis</u>	<u>Sample Type</u>
BOD <sub>5</sub>	1 x Monthly	24 hour composite
TSS and Total Solids	1 x Monthly	24 hour composite
Ammonia-Nitrogen	1 x Monthly	24 hour composite
Total Nitrogen (TKN+NO <sub>3</sub> +NO <sub>2</sub> )	1 x Monthly	24 hour composite

The permittee shall monitor and record the quality and quantity of the **effluent**, prior to discharge to the ground, according to the following schedule and other provisions:

<u>Parameter</u>	<u>Minimum Frequency of Analysis</u>	<u>Sample Type</u>
Flow	Daily	Min, Max, Average
pH	Daily	Grab
BOD <sub>5</sub>	Monthly	24 hour composite
TSS and Total Solids	Monthly	24 hour composite
Total Nitrogen (TKN+NO <sub>3</sub> +NO <sub>2</sub> )	Monthly	24 hour composite
Nitrate Nitrogen	Monthly	24 hour composite
Ammonia Nitrogen	Monthly	24 hour composite
Oil and Grease	Monthly	Grab
Total Phosphorus* (as P)	Quarterly	Grab
Orthophosphate* (as P)	Quarterly	Grab
Volatile Organic Compounds (USEPA Method #624)	Annually	Grab

\* After one full year of monitoring the Total Phosphorus and Orthophosphate results, MassDEP may determine, upon the request of the permittee, that the frequency of monitoring may be reduced if, in the judgment of MassDEP, the results of the sampling indicate that existing phosphorus levels will not adversely impact downgradient receptors.

\*\* As previously stated in Section I.A., if the treatment disposal site is to remain within the emergency well IWPA after January 1, 2010, the frequency of analysis for the **effluent** stated above shall include the following modifications/additions:

BOD <sub>5</sub>	Weekly	24 hour composite
Total Nitrogen	Weekly	24 hour composite
Total Suspended Solids	Weekly	24 hour composite

<u>Turbidity</u>	<u>Continuous</u>	<u>Min., Max, Average</u>
<u>Fecal coliform</u>	<u>2 x Week</u>	<u>Grab</u>

- 2) The permittee shall sample the upgradient monitoring well (MW#3), and the downgradient monitoring wells (MW#1, MW#2, MW#4) as shown on the approved report titled "Hydrogeologic Assessment, Bromfield School Wastewater Disposal Site, Harvard, Massachusetts" prepared by Sterns & Wheeler dated February 2001. Labels identifying each monitoring well's approved plan shall be affixed to the steel protective casing of each monitoring well.

The permittee shall monitor, record and report the quality of water in the monitoring wells according to the following schedule and other provisions:

<u>Parameter</u>	<u>Minimum Frequency of Analysis</u>
<u>pH</u>	<u>Monthly</u>
<u>Specific Conductance</u>	<u>Monthly</u>
<u>Static Water Level *</u>	<u>Monthly</u>
<u>Total Nitrogen (TKN+NO<sub>3</sub>+NO<sub>2</sub>)</u>	<u>Quarterly</u>
<u>Nitrate Nitrogen</u>	<u>Quarterly</u>
<u>Total Phosphorus** (as P)</u>	<u>Quarterly</u>
<u>Orthophosphate ** (as P)</u>	<u>Quarterly</u>
<u>Total Volatile Organic Compounds</u>	
<u>EPA Method #624</u>	<u>2 x Annually</u>

\* Static Water Level shall be expressed as an elevation and be referenced to the surveyed datum established for the site. It shall be calculated by subtracting the depth to the water table from the surveyed elevation of the top of the monitoring well's PVC well casing/riser.

\*\* After one full year of monitoring the Total Phosphorus and Orthophosphate results, MassDEP may determine, upon the request of the permittee, that the frequency of monitoring may be reduced if, in the judgment of MassDEP, the results of the sampling indicate that existing phosphorus levels will not adversely impact downgradient receptors.

- 3) Any grab sample or composite sample required to be taken less frequently than daily shall be taken during the period of Monday through Friday inclusive. Grab samples shall be taken between 8:00 a.m. and 4:00 p.m. All composite samples shall be taken over the operating day.

The permittee shall submit all monitoring reports within 30 days of the last day of the reporting month. Reports shall be on an acceptable form, properly filled and signed and shall be sent to: Bureau of Resource Protection, Department of Environmental Protection, 627 Main Street, Worcester, Massachusetts 01608 and to the Program Director, Watershed Permitting, Bureau of

Resource Protection, Department of Environmental Protection, One Winter Street/5<sup>th</sup> Floor, Boston, MA 02108 and to the Harvard Board of Health, 13 Ayer Road, Harvard, Massachusetts.

Submission of monitoring reports in electronic format is available through eDEP and serves as data submission to both the Regional and Boston offices. To register for electronic submission go to: <http://www.mass.gov/dep/service/compliance/edeponlf.htm>

### **C. Supplemental Conditions**

- 1) The permittee shall notify the Department at least thirty (30) days in advance of the proposed transfer of ownership of the facility for which this permit is written. Said notification shall include a written agreement between the existing and new permittees containing a specific date for transfer of permit, responsibility, coverage and liability between them.
- 2) A staffing plan for the facility shall be submitted to the Department once every two years and whenever there are staffing changes. The staffing plan shall include the following components:
  - a) The operator(s)'s name(s), operator grade(s) and operator license number(s);
  - b) The number of operational days per week;
  - c) The number of operational shifts per week;
  - d) The number of shifts per day;
  - e) The required personnel per shift;
  - f) Saturday, Sunday and holiday staff coverage;
  - g) Emergency operating personnel
- 3) The permittee is responsible for the operation and maintenance of all sewers, pump stations, and treatment units for the permitted facility, which shall be operated and maintained under the direction of a properly certified wastewater operator.
- 4) Operation and maintenance of the proposed facility must be in accordance with 314 CMR 12.00, "Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Discharges"; and, 257 CMR 2.00, "Rules and Regulations for Certification of Operators of Wastewater Treatment Facilities."
  - a) The facility has been rated (in accordance with 257 CMR 2.00), to be a Grade 4 facility. Therefore, the permittee shall provide for oversight by a Massachusetts Certified Wastewater Treatment plant operator (Chief Operator) Grade 4 or higher. The permittee will also provide for a backup operator who shall possess at least a valid Grade 4 license.
  - b) The date and time of the operator's inspection along with the operator's name and certification shall be recorded on the required monthly monitoring reports.
- 5) If the operation and maintenance of the facility is contracted to a private concern, the permittee shall submit a copy of the contract, consistent with what is required by the

approved Operation & Maintenance manual and signed only by the contractor, to the appropriate MassDEP Regional Office within thirty days of permit issuance. Along with the contract, a detailed listing of all contract operation obligations of the proposed contractor at other facilities shall also be submitted.

- 6) Any additional connections to the sewer system, beyond the existing schools facilities shall be approved by MassDEP and the local Board of Health prior to the connection.
- 7) All tests or analytical determinations to determine compliance with permit standards and requirements shall be done using tests and procedures found in the most recent version of *Standard Methods for the Examination of Water and Wastewater* and shall be performed by a Massachusetts Certified laboratory.
- 8) The permittee shall notify the appropriate MassDEP Regional Office, in writing, within thirty (30) days of the following events:
  - a) Any interruption of the treatment system operation, other than routine maintenance.
  - b) Final shutdown of the treatment system.
- 9) The permittee shall contract to have any and all solids and sludges generated by the treatment system for which this permit is issued removed off site by a properly licensed waste hauler for disposal at an EPA/MassDEP approved facility. The name and license number of the hauler along with the quantity of wastes removed and the date(s) of removal shall be reported by the permittee in writing to the appropriate MassDEP Regional Office.
- 10) Simultaneously with the permit renewal application at year fifteen (2017) following the initiation of plant operations, the permittee shall submit two reports to the Department for its review and approval:
  - a. An engineering report, prepared by a registered professional engineer, that outlines in sufficient detail what modifications (if any) to the facility or other changes are required to insure that the facility can remain in compliance with its GWDP and other applicable requirements through the next 5 year permit term (year 20) and beyond; and
- 11) In the event that effluent limits are not met, or the groundwater quality in the down-gradient monitoring wells does not meet the groundwater quality standards for Class I groundwaters, the permittee may be obligated to modify, supplement or replace the permitted treatment process so as to ensure compliance with the groundwater quality standards.
- 12) Plumbing from science laboratory sinks shall be connected directly to a Department approved non-hazardous industrial wastewater holding tank constructed in accordance with the conditions of the Department permit issued to the Bromfield School on October 17, 2000, Transmittal Number #W015479.

- 13) The permittee shall have a water conservation audit performed of the facilities served by the system and retrofit water saving devices wherever possible.

#### **D. Appeal Rights**

This Permit is an action of the Department. Any person aggrieved by this action, may request an Adjudicatory Hearing. A request for a hearing must be made in writing and postmarked within thirty (30) days of the Permit issuance date. Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought.

The Hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

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

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

#### **PART II GENERAL PERMIT CONDITIONS**

The following conditions apply to all permits:

- 1 No discharge authorized in the permit shall result in a violation of the Massachusetts

Surface Water Quality Standards (314 CMR 4.00) or the Massachusetts Ground Water Quality Standards (314 CMR 6.00), or any amendments thereto. Upon promulgation of any amended standards, this permit may be revised or amended in accordance with such standard and 314 CMR 2.10 and 3.12 or 5.12. For purposes of determining compliance with ground water quality standards, a violation of the ground water quality standards, and the discharge permit, will be determined to occur when any parameter measured in any downgradient well exceeds the applicable criteria listed in 314 CMR 6.06. In those cases where it is shown that a measured parameter exceeds the applicable criteria listed in 314 CMR 6.06 at the upgradient monitoring well, a violation of the ground water quality standards and the discharge permit will be determined to occur when it is shown that a measured parameter in any downgradient well exceeds the level of that same measured parameter in the upgradient well for the same sampling period. A statistical procedure approved by the Director shall be used in determining when a measured parameter exceeds the allowable level.

2     Duty to comply.         The permittee shall comply at all times with the terms and conditions of the permit, 314 CMR, M.G.L. c.21 §§ 26 through 53, and all other applicable state and federal statutes and regulations.

3     Standards and prohibitions for toxic pollutants.         The permittee shall comply with effluent standards or prohibitions established under PL92-500, Section 307(a) for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

4     Proper operation and maintenance.     The permittee shall at all times properly operate and maintain all facilities and equipment installed or used to achieve compliance with the terms and conditions of the permit, and in accordance with 314 CMR 12.00.

5     Duty to halt or reduce activity.         Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or discharges or both until the facility is restored or an alternative method of treatment is provided. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

6     Power Failure. In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

- (a)     provide an alternative power source sufficient to operate the wastewater control facilities; or
- (b)     halt, reduce or otherwise control production and/or primary discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

7     Duty to mitigate.         The permittee shall take all reasonable steps to minimize or prevent any adverse impact on human health or the environment resulting from non-compliance with the permit.



8 Duty to provide information. The permittee shall furnish to the Director within a reasonable time any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine whether the permittee is complying with the terms and conditions of the permit.

9 Inspection and entry. The permittee shall allow the Director or his authorized representatives to:

- (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records required by the permit are kept;
- (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
- (c) Inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under the permit; and
- (d) Sample or monitor at reasonable times for the purpose of determining compliance with the terms and conditions of the permit.

10 Monitoring. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 unless other test procedures are specified in the permit.

11 Record keeping. The permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and all records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

Records of monitoring information shall include:

- (a) The date, exact place, and time of sampling or measurements;
- (b) The individual(s) who performed the sampling or measurement;
- (c) The date(s) analyses were performed;
- (d) The individual(s) who performed the analysis;
- (e) The analytical techniques or methods used; and
- (f) The results of such analyses.

12 Prohibition of bypassing. Except as provided in 314 CMR 5.19(13), bypassing is prohibited and the Director may take enforcement action against a permittee for bypassing, unless the discharge is to a surface water and:

- (a) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention or untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the permittee could have installed adequate backup equipment to prevent a bypass which occurred during normal

periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notice of the bypass to the Director:

1. In the event of an anticipated bypass at least ten (10) days in advance, if possible; or
2. In the event of an unanticipated bypass as soon as the permittee has knowledge of the bypass and no later than twenty-four (24) hours after its first occurrence.

13 Bypass not exceeding limitations. The permittee may allow a bypass to occur which does not cause effluent limitations to be exceeded, but only if necessary for the performance of essential maintenance or to assure efficient operation of treatment facilities.

14 Permit actions. The permit may be modified, suspended, or revoked for cause. The filing of a request by the permittee for a permit modification, reissuance, or termination, or a notification of planned changes or anticipated non-compliance does not stay any permit conditions.

15 Duty to reapply. If the permittee wishes to continue an activity regulated by the permit after the expiration date of the permit, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least one hundred and eighty (180) days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director.

16 Property rights. The permit does not convey any property rights of any sort or any exclusive privilege.

17 Other laws. The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State and local laws and regulations.

18 Oil and hazardous substance liability. Nothing in the permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under PL 92-500, Section 311 and M.G.L. c. 21E.

19 Removed substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed in a manner consistent with applicable Federal and State laws and regulations including, but not limited to, the State and Federal Acts, the Massachusetts Hazardous Waste Management Act, M.G.L. c.21C, and the federal Resource Conservation and Recover Act, 42 U.S.C. §6901, et seq. 310 CMR 19.00 and 30.000, and other applicable regulations.

20 Reporting requirements:

- (a) Monitoring Reports. Monitoring results shall be reported on a Discharge Monitoring Report (DMR) at the intervals specified elsewhere in the permit. If the permittee monitors any pollutant more frequently than required by the permit, the results

of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(b) Compliance schedules. Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than fourteen (14) days following each schedule date.

(c) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility or activity which could significantly change the nature or increase the quantity of pollutants discharged. Unless and until the permit is modified, any new or increased discharge in excess of permit limits or not specifically authorized by the permit constitutes a violation.

(d) Anticipated non-compliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in non-compliance with permit requirements.

(e) Twenty-four (24) hour reporting. The permittee shall report any non-compliance which may endanger health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the non-compliance, including exact dates and times, and if the non-compliance has not been corrected, the anticipated time it is anticipated to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the non-compliance.

The following shall be included as information which must be reported within twenty-four (24) hours:

1. Any unanticipated bypass which exceeds any effluent limitation in the permit.
2. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within twenty-four (24) hours.

(f) Other non-compliance. The permittee shall report all instances of non-compliance not reported under 314 CMR 5.19(20)(a), (b) or (e) at the time monitoring reports are submitted. The reports shall contain the information listed in 314 CMR 5.19(20)(e).

(g) Toxics. All manufacturing, commercial, mining, or silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

1. That any activity has occurred or will occur which would result in the discharge of any toxic pollutant listed in 314 CMR 3.16 which is not limited in permit, if that discharge will exceed the highest of the following notification levels:

- a. One hundred micrograms per liter (100 µg/l);
- b. Two hundred micrograms per liter (200 µg/l) for acrolein and

acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

c. Five (5) times the maximum concentration value reported for that pollutant in the permit application; or

2. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

(h) Indirect dischargers. All Publicly Owned Treatment Works shall provide adequate notice to the Director of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to PL 92-500, §301 or 306 if it were directly discharging those pollutants; and

2. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

3. For purposes of 314 CMR 5.19, adequate notice shall include information on the quality and quantity of effluent introduced into the POTW, and any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(i) Information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

21 Signatory requirement. All applications, reports, or information submitted to the Director shall be signed and certified in accordance with 314 CMR 3.14 and 5.14.

22 Severability. The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

23 Reopener clause. The Director reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the State or Federal Acts in order to bring all discharges into compliance with said statutes.

24 Approval of plans and specifications for treatment works. All discharges and associated treatment works authorized herein shall be consistent with the terms and conditions of this permit and the approved plans and specifications. Any modification to the approved treatment works shall require written approval of the Director or the Department.

25 Transfer of permits.

(a) RCRA facilities. Any permit which authorizes the operation of a RCRA facility which is subject to the requirements of 314 CMR 8.07 shall be valid only for the person to whom it is issued and may not be transferred.

(b) Transfers by modification. Except as provided in 314 CMR 5.19(25)(a) and (c) a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued or a minor modification made to identify the new permittee.

(c) Automatic transfers. As an alternative to transfers under 314 CMR 5.19(25)(b), any permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least thirty (30) days in advance of the proposed transfer date in 314 CMR 5.19(25)(c)2.
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
3. The Director does not notify the existing permittee and the proposed new permittee of his intent to modify or revoke and reissue the permit. A modification under 314 CMR 5.19(25) may also be a minor modification. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in 314 CMR 5.19(25)(c)2.

## 26 Permit Fees.

(a) Any permittee, other than a public entity, required to obtain a surface water or ground water discharge permit pursuant to M.G.L. c.21, s.43 and 314 CMR 3.00 and 5.00, shall be required annually to obtain an inspection certificate from the Division and submit the information and fee associated therewith in accordance with 314 CMR 2.12.



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

DEVAL L. PATRICK  
Governor

TIMOTHY P. MURRAY  
Lieutenant Governor

IAN A. BOWLES  
Secretary

LAURIE BURT  
Commissioner

Timothy Bragan, Town Administrator  
Town of Harvard  
13 Ayer Road  
Harvard, MA 01451

RE: HARVARD - BRP -GW#723-1  
314 CMR 12.00  
NON-CE-09-1G003

**NOTICE OF NONCOMPLIANCE**

**THIS IS AN IMPORTANT NOTICE. FAILURE TO TAKE ADEQUATE ACTION IN RESPONSE TO THIS NOTICE COULD RESULT IN SERIOUS LEGAL CONSEQUENCES.**

Dear Mr. Bragan :

Based on a review of monthly operator reports the Department has determined that the Town is in noncompliance with one or more laws, regulations, orders, licenses, permits, or approvals enforced by the Department. Reports submitted indicate that the Town's wastewater treatment facility at the Bromfield School complex (GW#723-1) exceeded permit limits for Biochemical Oxygen Demand (BOD) for the last three months of 2008.

Attached hereto is a written description of 1) the activity referred to above, 2) the requirements violated, 3) the action the Department now wants you to take, and 4) the deadline for taking such actions.

If you fail to comply with the attached actions to be taken, by the prescribed deadlines, you may be subject to legal action, including, but not limited to, criminal prosecution, court-imposed civil penalties, or civil administrative penalties assessed by the Department. A civil administrative penalty may be assessed for every day from now on that you are in noncompliance with the requirements referred to above.

HARVARD – GW#723-1

NON-CE-09-1G003

Page 2 of 3

If you have any questions about this matter, please contact Margo Webber or David Boyer at (508) 767-2738 and (508) 767-2823 respectively.

Very truly yours,



Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection  
mw/non-ce-09-1g003cwr-125  
enclosure

Jan. 29, 2009

Date

cc:

Cheryl Poirier - MassDEP- CERO, Worcester  
Michael Maher – MassDEP-CERO, Worcester  
Marybeth Chubb – MassDEP-BRP, Boston

Wallace Bruce  
Weston & Sampson  
5 Centennial Drive  
Peabody, MA 01960

**NOTICE OF NONCOMPLIANCE NON-CE-09-1G003**

**NONCOMPLIANCE SUMMARY**

**NAME OF ENTITY IN NONCOMPLIANCE:**

Harvard Public Schools  
Massachusetts Avenue  
Harvard, MA 01451

**LOCATION WHERE NONCOMPLIANCE OCCURRED OR WAS OBSERVED:**

Permit noncompliance was reported at the wastewater treatment facility serving the public schools complex on Massachusetts Avenue (GW#723-1).

**DATE(S) WHEN NONCOMPLIANCE OCCURRED OR WAS OBSERVED:**

Noncompliance was reported in monthly operator reports for October, November, and December 2008.

**DESCRIPTION OF NONCOMPLIANCE:**

The permittee violated permit effluent limits for Biochemical Oxygen Demand ( 30 mg/l ) for the months of October, November, and December 2008. Monthly operator reports indicated that one possible cause of this violation may be clogged media in the anoxic unit.

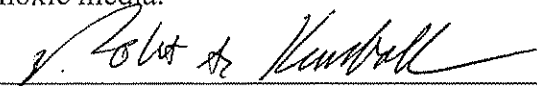
**DESCRIPTION OF REQUIREMENTS NOT COMPLIED WITH:**

314 CMR 5.19(4)      The permittee has failed to properly operate and maintain the facility and equipment used to achieve compliance with the terms and conditions of the permit.

**ACTIONS TO BE TAKEN, AND THE DEADLINE FOR TAKING SUCH ACTION:**

1. Within thirty (30) days of receipt of this NON, submit an evaluation on the cause(s) of the BOD exceedence and a proposed schedule of recommended actions to bring the facility into compliance with its permit limits.
2. Within thirty (30) days of receipt of this NON, submit a proposed plan to address reoccurring problems with clogged anoxic media.

1/29/09  
Date

  
Robert A. Kimball, P.E.  
Environmental Engineer V  
Bureau of Resource Protection





COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

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IAN A. BOWLES  
Secretary

LAURIE BURT  
Commissioner

June 4, 2009

Timothy Bragan  
Harvard Town Administrator  
13 Ayer Road  
Harvard, MA 01451

RE: **Town: Harvard**  
PWS Name: Harvard Water Department  
PWS ID#: 2125000  
Program: System Modification  
Action: Change in Wellhead Protection

Dear Mr. Bragan:

The status of Bolton Road Well #3 (Source Code ID 2125000-03G) is for emergency use only. The well may only be used with prior written approval from MassDEP under a Declaration of Water Supply Emergency. In order to change the status of Well #3 to an active water supply source, Harvard Water Department, must apply for and receive new source approval permits (BRP WS13 and 15) from MassDEP. Should you wish to abandon this source, you must submit an Abandonment permit (BRP WS36) to MassDEP.

Bolton Road Well #3 was assigned a default Interim Wellhead Protection Radius (IWHP) of ½ mile for lack of existing pumping test or metered withdrawal data. The Town of Harvard's groundwater discharge at the Bromfield School falls within the default IWHPA, which required the town to comply with MassDEP's policies and guidelines concerning reclaimed water (MassDEP letter dated May 21, 2007). Due to the fact that Bolton Road Well #3 has status as an emergency source requiring written authorization for use and is unlikely to be used in the future on a regular basis, MassDEP has reduced the protective radius.

Bolton Road Well #3 (2125000-03G) has been reassigned a minimum Zone I radius of 100 feet and an IWHPA of 422 feet.

If you have any questions, please contact Barbara Kickham at (508) 767-2724 or me at (508) 767-2827.

Sincerely,

Marielle Stone  
Section Chief  
Drinking Water Program

Cc: Dave Boyer, CERO-WWP  
Bruce Bouck, Boston-DWP  
Richard Nota, Harvard Water Department  
Harvard Board of Health

## APPENDIX D

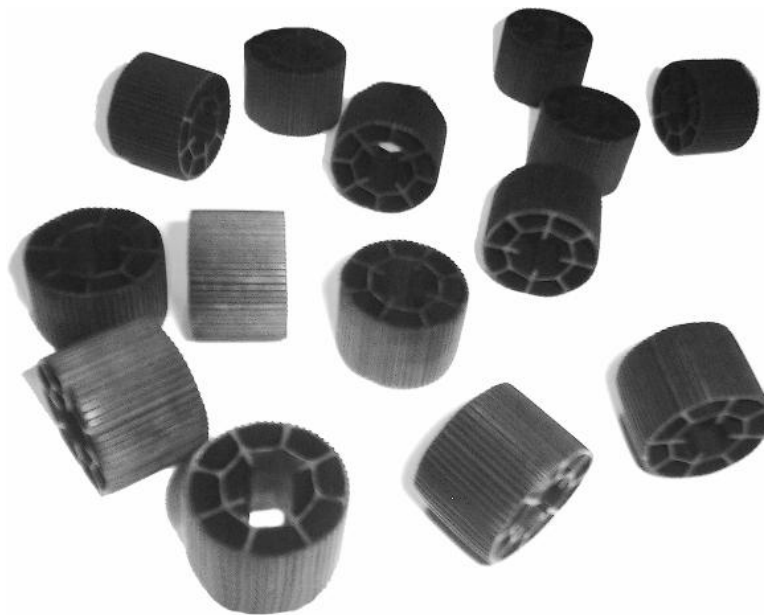
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## **LOTUS™ – ActiveCell™**

An Aquapoint / Hydroxyl MBBR Technology

**SELF CONTAINED  
FIELD ERECTED & RETROFIT  
WASTEWATER TREATMENT SYSTEMS**

**TREATS FLOWS FROM 1,000 GPD TO 2 MGD**



### **Aquapoint Inc.**

259A Samuel Barnet Blvd. • New Bedford, MA, 02745  
Ph: (508) 998-7577 (Sales ext: 6) • Fax: (508) 998-7177  
Email: [sales@aquapoint.com](mailto:sales@aquapoint.com) • [www.aquapoint.com](http://www.aquapoint.com)



# LOTUS™ - ActiveCell™

## WASTEWATER TREATMENT SYSTEMS

### INTRODUCTION

Aquapoint's Lotus-ActiveCell technology is a submerged fixed-film moving bed biological reactor (MBBR) process that is designed to treat wastewater with varying organic and nutrient concentrations. The core technology behind the Lotus treatment process is *Hydroxyl's ActiveCell450™ Biofilm Carrier* (media). *ActiveCell450 Biofilm Carrier* was engineered by the Canadian Government to provide excellent oxygen transfer and a large protected surface area for efficient growth of bacterial communities. The simplicity, resiliency and flexibility of Lotus-ActiveCell's fixed-film process makes it suitable for a variety of applications and treatment standards. Mechanical pretreatment equipment and Aquapoint tertiary treatment products can be added to the process train to achieve the desired level of treatment whether it be secondary, nitrification, denitrification, phosphorus reduction, disinfection or reuse standards.



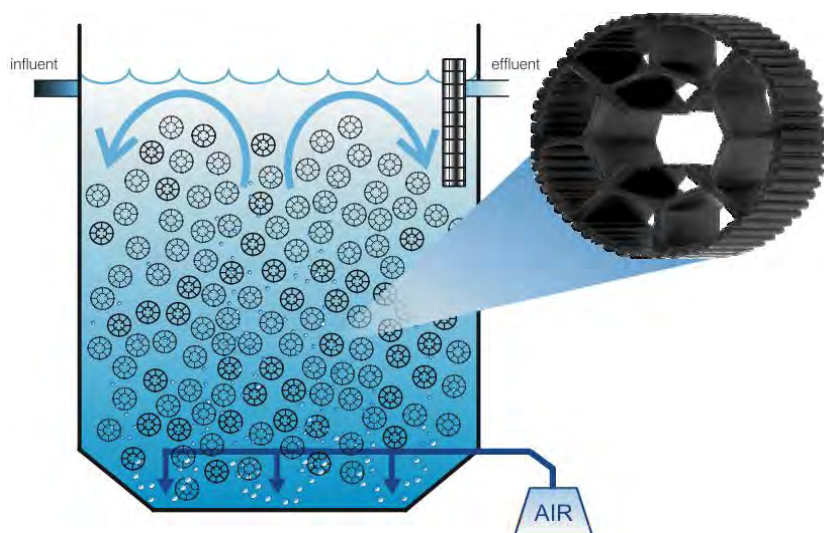
*This 320,000 gpd Lotus-ActiveCell system is designed to treat wastewater for 1,250 homes and a commercial downtown area. Treated effluent is reused for sub-surface irrigation on an 18 hole golf course.*

## **LOTUS - ActiveCell FEATURES**

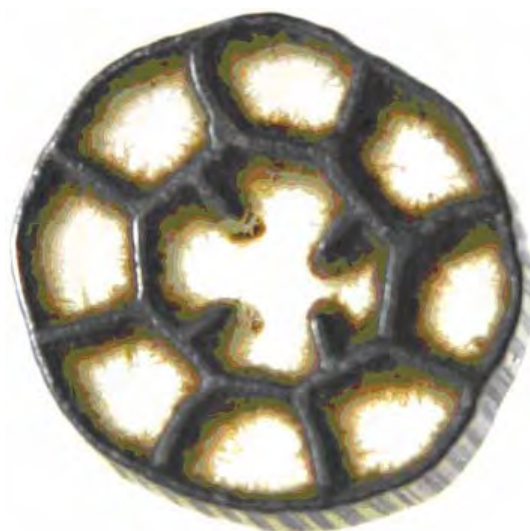
***Treats flows from 1,000 gpd to 2 MGD:*** Because the Lotus-ActiveCell process is capable of treating a wide range of flows, the systems come in a variety of sizes. The process can be employed in modular units or field constructed vessels. Reactors are installed in parallel to accommodate large flows, and arranged in series to achieve high levels of treatment.

***Lotus-ActiveCell is a biological fixed film treatment process*** in which microorganisms attach themselves to a highly permeable media that is submerged in the wastewater. Treatment is accomplished as the biology absorbs the organic and inorganic matter in the waste stream. The biological fixed film process is self-purging and requires minimal maintenance.

***Simple process constructed of high quality components:*** The Lotus-ActiveCell process consists of free floating biofilm carriers that are retained in the treatment basin by a media retention screen and mixed as air is uniformly distributed into the water through a coarse bubble aeration grid. The reactor basins can be constructed of stainless steel, fiberglass or concrete. All systems utilize stainless steel coarse bubble aeration grids, stainless steel media retention screens and UV resistant HDPE *ActiveCell450 Biofilm Carriers*.



Lotus-ActiveCell MBBR process basin



Biomass growth on an ActiveCell450 Biofilm Carrier

***Lotus-ActiveCell is a custom designed treatment process:*** Influent hydraulic, organic and nutrient characteristics must be determined prior to the design phase so that the process can be sized to achieve the sites permitted effluent requirements. A design criteria form is included in this package for this purpose.

***Broad range of applications:*** Typical Lotus-ActiveCell installations include residential and commercial clusters, subdivisions, hotels, small communities, reactor interceptors, municipal systems and municipal retrofits.

***Variety of treatment environments:*** Lotus-ActiveCell is partitioned into several treatment chambers that can operate under aerobic or anoxic conditions. This design feature allows for the formation of highly efficient and specialized microbiological communities that can perform distinctly different biological treatment processes such as BOD reduction, nitrification and denitrification.

***Minimal sludge generation:*** Because the biomass responsible for treatment adheres to the ActiveCell450 biofilm carrier media, there is a high solids retention time in the reactors. This allows for the development of well established and advanced biological communities that work to mineralize solids and reduce sludge generation. Additionally, submerged fixed film treatment processes eliminate the need to manage mixed liquor suspended solids (MLSS), food to mass ratios (F/M) and return activated sludge (RAS) because the biofilter is self-regulating and self-purging. MBBR processes minimize sludge generation, and eliminate complex operational requirements associated with activated sludge based treatment processes.



## LOTUS - ActiveCell FEATURES CONTINUED

**Low operating costs:** The stability and simplicity of the submerged fixed-film treatment process along with the durability of the components reduces the life cycle operation and maintenance costs compared to those generally associated with suspended growth treatment processes.

**Minimal operation & maintenance requirements:** Routine maintenance procedures consist of air compressor and pump maintenance. Every Lotus-ActiveCell treatment system comes with complete technical manuals that include troubleshooting information, maintenance checklists and other tools designed to make operation and maintenance easy and effective.

**Above ground or in ground installations:** Topographical site characteristics such as high groundwater or bedrock can make in ground installations difficult and/or costly. Lotus-ActiveCell can be installed completely above grade eliminating the need to combat topographical challenges. Above ground installations also enable the plants to be easily moved to another location making Lotus-ActiveCell an ideal temporary treatment solution. In ground installations typically come with a lower capital equipment cost and have aesthetic advantages.

**Retrofit capability:** The Lotus-ActiveCell process can be used to retrofit and upgrade existing treatment plants. Conventional activated sludge systems can be upgraded to Integrated Fixed Film Activated Sludge (IFAS) systems resulting in increased hydraulic capacity and greater levels of treatment by simply adding media to existing treatment basins. Retrofitting other processes such as lagoons or oxidation ponds may require the addition of basins for the ActiveCell process.

**Simple, cost effective project phasing:** Hydraulic, organic and nutrient treatment capacity can be increased to some degree with the addition of *ActiveCell450 Biofilm Carriers* to existing basins. This is a cost effective approach to phasing that will provide up to a 30% increase in capacity. For applications where additional phases will add greater than 30% of the daily flow, additional treatment trains can be added in parallel to increase the plants capabilities.

**Small footprint:** ActiveCell450 biofilm carriers have a high surface area to volume ratio that allows for a highly efficient treatment process. The large surface area and high biomass retention time enables the use of treatment basins that are a fraction of the size of those required for some suspended growth processes.

**Biological Nutrient Removal (BNR):** Systems can be designed to substantially remove nitrogen and phosphorus from the wastewater. Pages 5 and 6 of this document describe the required treatment processes

**Optional equipment:** A variety of ancillary equipment can be used to compliment a Lotus-ActiveCell system. Bar racks or screens, flow meters, chemical dosing systems, UV disinfection modules, dissolved air floatation (DAF) units and sludge dewatering systems can be added to the process flow train. Additionally, pre-assembled office, laboratory or mechanical equipment rooms are available with all systems.



Biomass growth on *ActiveCell450 Biofilm Carriers*



## **LOTUS – ActiveCell TREATMENT PROCESS**

Primary settled or screened wastewater can flow directly to the Lotus-ActiveCell reactor(s) by gravity or can be pumped in from an equalization basin. Once the wastewater enters the plant, it flows by gravity through each treatment compartment contacting the submerged, free-moving *ActiveCell450 Biofilm Carriers*. Stainless steel media retention screens are installed to ensure that the media is retained within each basin.

As flow enters each aerobic treatment compartment, dissolved oxygen is transferred into the wastewater by an air compressor and stainless steel coarse bubble aeration grids. The aeration grids are designed to provide complete coverage of the bottom of the basin and distribute air downward against the bottom of the treatment reactor to prevent settling of solids. The diffused air provides the oxygen needed for aerobic treatment and prevents short-circuiting by completely mixing the media and the wastewater.

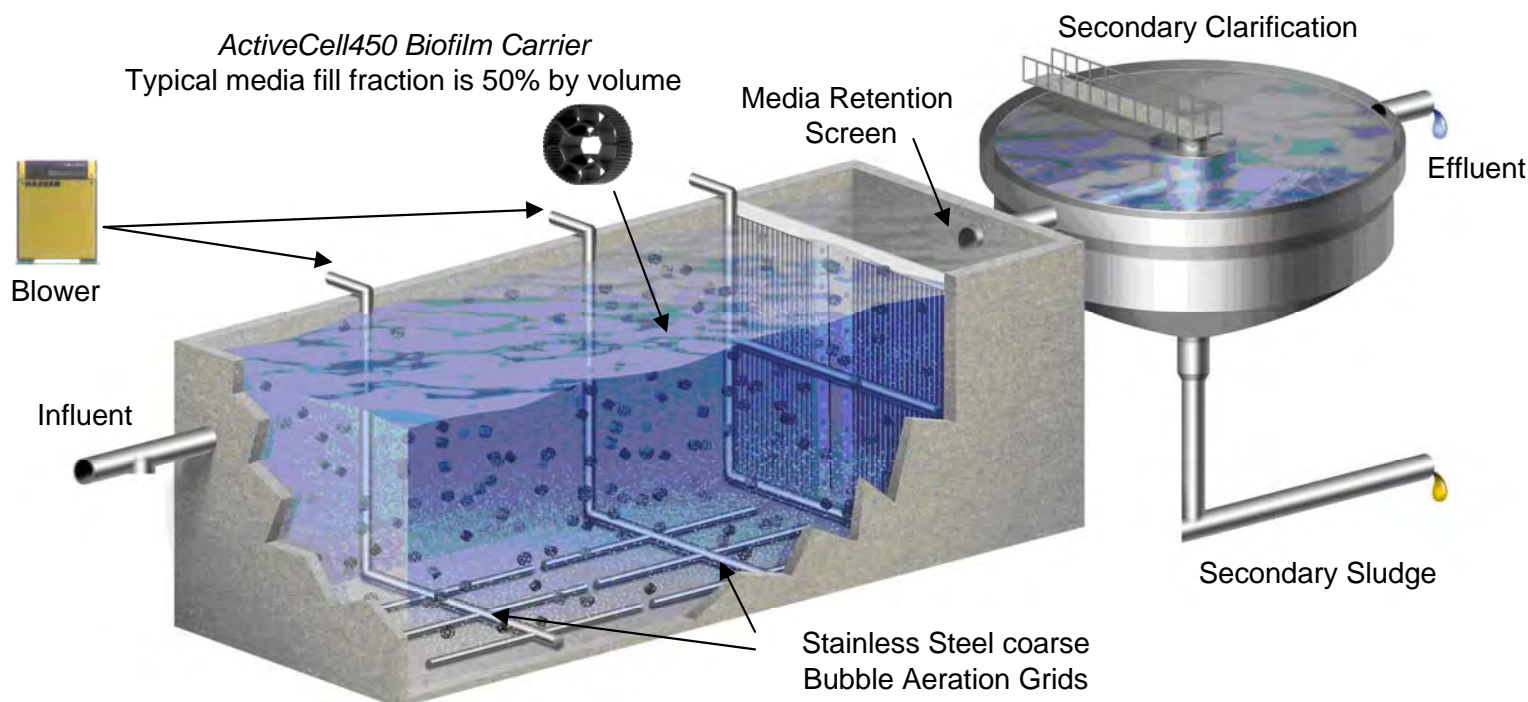
In the Lotus-ActiveCell aerobic chambers, treatment is accomplished by a population of aerobic microorganisms that attach themselves to the media and consume the organic material in the wastewater. These microorganisms form a biological film known as biomass. As the microorganisms multiply and the biomass thickens, diffused oxygen is consumed before it can penetrate the full depth of the film. Consequently the biomass develops aerobic, anoxic and anaerobic layers.

As the microorganisms near the media surface become starved for oxygen and organic carbon that is consumed by the surface layer, they lose their ability to cling to the media. The mixing of the wastewater washes the biomass off the media and a new biological film begins to form. This process of losing the biomass is called “sloughing” and is primarily a function of organic and hydraulic loading on the system. Sloughing does not compromise treatment and allows the media beds to be self-purging, self-regulating and maintenance free. These characteristics eliminate the need to manage mixed liquor suspended solids (MLSS), food to mass ratios (F/M) and return activated sludge (RAS).

Sloughed biomass flows with treated wastewater to secondary solids separation (typically clarification) where it settles as secondary sludge. The sludge is periodically pumped back to a primary tank, sludge holding basin or digester for eventual removal and treated effluent flows out of the clarifier by gravity to the next stage of treatment or disposal.

This physical process is essentially the same for the reduction of BOD<sub>5</sub> and nitrification (conversion of ammonia nitrogen to nitrate nitrogen).

### **Lotus – ActiveCell Aerobic Schematic:**





## **NITROGEN REDUCTION (NITRIFICATION/DENITRIFICATION)**

Removing ammonia from wastewater is a well-established and quantifiable biological process. Nitrogen exists in the influent waste stream primarily in the form of organic nitrogen and ammonia nitrogen (Total Kjeldahl Nitrogen or TKN). The principle part of the organic nitrogen is mineralized to ammonia nitrogen by bacterial activity. Therefore, ammonia nitrogen is commonly regarded as the starting point in the nitrogen reduction process.

**Nitrification** is the conversion of ammonia ( $\text{NH}_3$ ) nitrogen to nitrate ( $\text{NO}_3$ ) nitrogen. This biological process is accomplished aerobically by Autotrophs, Nitrosomonas and Nitrobacter bacteria in the presence of dissolved oxygen. Lotus-ActiveCell can reliably achieve effluent ammonia concentrations to less than 1mg/l.

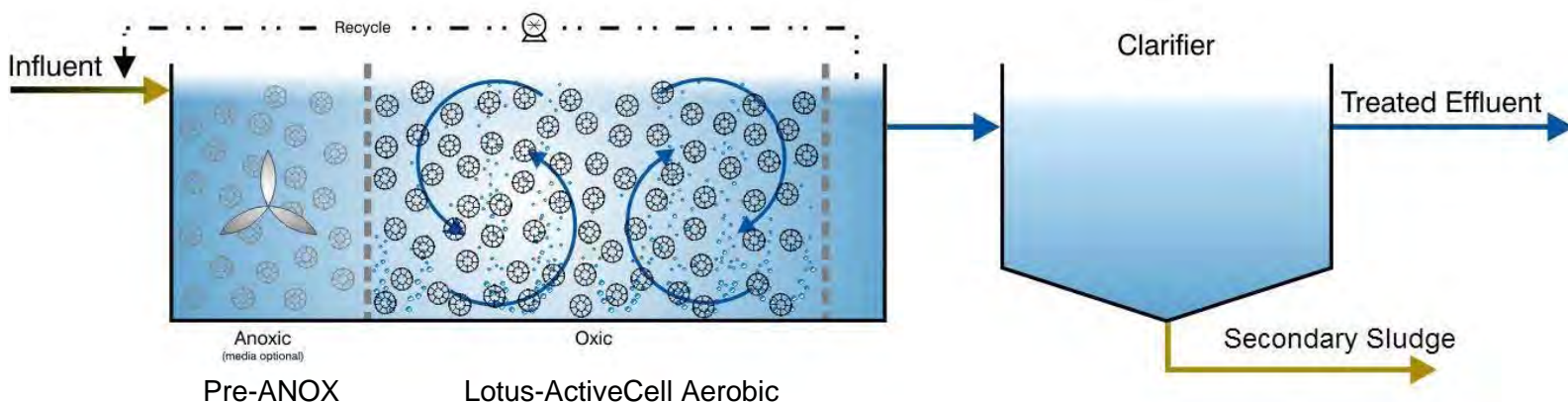
Successful nitrification is accomplished with a healthy microorganism population and an environment where pH, alkalinity, temperature, organic loading and oxygen supply are stable. In a Lotus-ActiveCell system; the pH is buffered by the carbonate system associated with wastewater; the temperature remains relatively constant because the biological activity in the plant produces heat; the organic loading is consistent because the wastewater is treated in the compartments prior to nitrification processes; and the air compressors provide an adequate supply of oxygen.

**Denitrification** is the conversion of nitrate ( $\text{NO}_3$ ) nitrogen to nitrite ( $\text{NO}_2$ ) nitrogen and then to nitrogen gas which is released into the atmosphere. This is a biological process performed by Facultative Heterotrophic bacteria in the presence of a soluble carbon source and anoxic conditions (dissolved oxygen = < 0.3mg/l).

Denitrification occurs by several different means and through process control adjustments. In the Lotus-ActiveCell submerged media beds, diffused oxygen is consumed by the aerobic outer portion of the biomass and anoxic conditions are created within the biological film. This allows for significant nitrogen removal via simultaneous nitrification and denitrification. Further denitrification can be achieved by re-circulating nitrified wastewater from the final aerobic chamber back to the anoxic zone of a primary settling tank or by incorporating an attached growth Aquapoint Pre-ANOX Denitrification Reactor in the Lotus-ActiveCell design.

In the Pre-ANOX Reactor, a mechanical mixer is used to mix the organic carbon in the influent wastewater, the re-circulated nitrified water and the media. This mixing sustains anoxic conditions and ensures contact of denitrifying bacteria, nitrified water and carbon needed to denitrify. Efficient denitrification in the Pre-ANOX Reactor is contingent on the presence of sufficient quantities of organic carbon. Therefore, an external carbon feed system may be implemented depending on the level of nitrogen removal that is required and the quantity of organic carbon in the influent waste stream.

### **Lotus - ActiveCell Pre-ANOX Denitrification Process Diagram:**

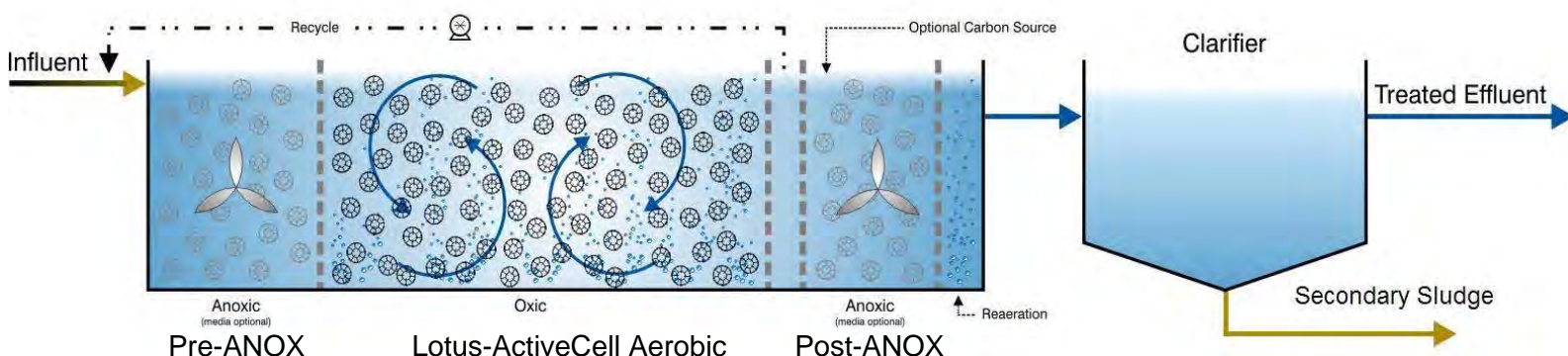




## **TERTIARY DENITRIFICATION**

To achieve total nitrogen (TN) concentrations of < 10 mg/l, Pre and Post-ANOX Denitrification Reactors are required. The Pre-ANOX Reactor uses nitrified water re-circulated from the final aerobic chamber as discussed above to provide between 70% and 80% reduction in total nitrogen. The Post-ANOX chamber serves as a polishing denitrification reactor to remove most of the remaining nitrate present in the waste stream. An external chemical feed systems is incorporated to dose carbon to the Post-ANOX Reactor because the organic carbon available in raw wastewater no longer exists in sufficient quantities after the water has undergone aerobic treatment. This proven denitrification method is a process recognized by the EPA.

### **Lotus - ActiveCell Pre and Post-ANOX Denitrification Process Diagram:**

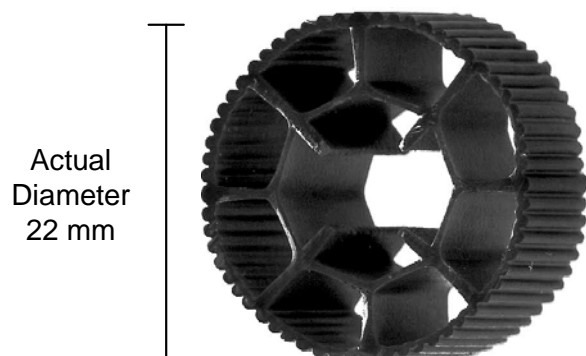


## **PHOSPHORUS REDUCTION**

Lotus-ActiveCell treatment systems achieve phosphorus reduction by incorporating chemical precipitation in the secondary clarification stage. In this process coagulant, typically aluminum or iron salts, are automatically dosed to the clarifier using a chemical feed pump. The metal salts react with phosphates in the wastewater to form insoluble precipitates. The coagulant dosing rates are based on the stoichiometric metal salt to phosphorous ratio dictated by the concentration of phosphorus in the daily wastewater flow. This means that the efficiency of phosphorus removal is simply related to the coagulant dose provided that alkalinity is present in sufficient quantities. The precipitates settle out in the clarifier and are pumped to a sludge holding tank or to a sludge dewatering unit. Lotus-ActiveCell systems are capable of producing effluent total phosphorus concentrations of <1 mg/l without that addition of filtration equipment. Greater reduction in total phosphorus can be achieved by incorporating a physical barrier filter such as a sand filter, disc filter or a membrane.

## LOTUS - ActiveCell COMPONENTS

**Biologically inert plastic media:** ActiveCell450 Biofilm Carriers are designed to be mechanically durable and enhance oxygen transfer throughout the MBBR. Systems have been in operation for close to 20 years with no noticeable degradation of the media



ActiveCell450 Biofilm Carrier

**Stainless steel grids and screens:** Lotus-ActiveCell treatment systems utilize stainless steel media retention screens and coarse bubble aeration grids. Stainless steel ensures durability, long life span and virtually no maintenance.



Stainless steel media retention screen



Kaeser Blower Models

**Blowers:** The Lotus-ActiveCell oxygen transfer system utilizes Kaeser rotary lobe blowers. Kaeser blowers produce low noise (typically 70 decibels), little vibration and have a small footprint. The blowers can be installed indoors or outdoors and require minimal maintenance.

**State of the art controls:** Controls are housed in NEMA 4X or NEMA 12 enclosures enabling indoor or outdoor installation. Each panel is custom designed based on the equipment that has been incorporated in your Lotus-ActiveCell treatment plant. Programmable logic controls (PLCs) are standard on all systems. Controls can incorporate remote dialers, dialup modems and wireless telemetry components for remote monitoring capability.



Cylindrical stainless steel aeration grid



PLC control panel

## GENERAL INFORMATION

Existing septic tanks and grit & screening systems may be adapted to form the primary treatment stage of the Lotus-ActiveCell treatment process.

Typical routine service procedures required are pump and air compressor maintenance. Tertiary treatment equipment added to the process chain will require additional service. In most states a licensed wastewater treatment plant operator is required to perform this maintenance.

Lotus-ActiveCell treatment units can be delivered to your site as completely assembled modular treatment compartments. Aquapoint's operations team will provide onsite consultation for every installation. Each modular unit has lifting eyes positioned around the top of the structure to ensure secure and balanced lifting. Units can be lifted with a crane or excavator depending on the size of the treatment plant. The compartments are set into place and anchored to a concrete mounting slab supplied by the contractor. Mounting slabs for in ground systems must offset any buoyant forces caused by groundwater. Interconnecting piping of the various treatment stages is the responsibility of the general contractor.

Lotus-ActiveCell is commissioned by filling the system with fresh water and pouring the *ActiveCell450 Biofilm Carriers* into the basin so that the air compressors and clarifier pumps can be tested. Once the system has been commissioned, it is ready to receive wastewater flow and will take six to twelve weeks to establish a healthy biomass for treatment. The biological development period can be greatly reduced with the addition of commercially available bacteria.



*A 100,000 gpd above ground fiberglass Hydroxyl ActiveCell wastewater treatment system utilizing ActiveCell450 Biofilm Carrier. The system is designed to reduce BOD<sub>5</sub> from 1500 mg/l to < 200 mg/l for a seafood processing plant before the effluent is discharged to the town's sewer system.*

## APPENDIX E

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# HOUSE . . . . . No. 1130

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## The Commonwealth of Massachusetts

PRESENTED BY:

**Jennifer Benson**

*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled:*

The undersigned legislators and/or citizens respectfully petition for the passage of the accompanying bill:

An Act relative to a wastewater management district in the town of Harvard.

PETITION OF:

NAME:	DISTRICT/ADDRESS:
Jennifer Benson	37th Middlesex
James B. Eldridge	Middlesex and Worcester

# The Commonwealth of Massachusetts

In the Year Two Thousand and Nine

An Act relative to a wastewater management district in the town of Harvard.

*Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:*

1       SECTION 1. The purpose of this act is to ensure and facilitate the connection of buildings and  
2 structures located in the Harvard Wastewater Management Service Area to the common  
3 wastewater management system to be constructed and installed therein; reduce and prevent  
4 contamination and pollution of drinking water, groundwater and other natural resources in said  
5 service area; provide for an efficient and financially self-sustaining wastewater management  
6 system in said areas; facilitate the implementation of Title V of the State Environmental Code in  
7 order to protect and improve groundwater supplying drinking water; protect persons residing in  
8 said service area from the risks and hazards associated with such contamination and pollution, all  
9 to the public benefit and good, and to the extent and manner provided herein.

10       SECTION 2. As used in this act, the following words shall, unless the context requires  
11 otherwise, have the following meanings:

12       “Board of Health”, the Board of Health of the Town of Harvard.

13       “Commission” the Harvard Wastewater Management District Commission of the Town  
14 established by Section 4 of this Act.

15       “Costs”, all costs and expenses of the planning, design, acquisition, construction, installation,  
16 reconstruction, alteration, extension, improvement or enlargement of the wastewater  
17 management system including, without limitation, costs of labor, materials, professional  
18 services, consulting services, equipment, grinder and ejector pumps, materials, supplies,  
19 machinery, structures, all rights in real and personal property, costs of demolitions or relocations,  
20 costs of removal or relocations of public utilities, financing charges and expenses, debt service  
21 costs relative to the wastewater management system.

22 "Facility", shall mean a facility as defined in 310 CMR 15.002 of the State Environmental  
23 Code as of May 1, 2009.

24 "Revenues", all revenues, rates, fees, charges, rents, proceeds of loans, grant funds, insurance  
25 proceeds, investment earnings and other receipts derived from the operation of the wastewater  
26 management system.

27 "Harvard Wastewater Management Service Area", shall mean that portion of the Town of  
28 Harvard shown on a plan entitled "Proposed Sewer Service Plan, Town of Harvard, Mass.  
29 prepared for Town of Harvard", dated 11/19/2008 and revised on 3/30/2009 prepared by Norfolk  
30 Ram in Association with Weston & Sampson and filed in the office of the Town Clerk of the  
31 Town or as such service area may be modified by majority vote of the Town at a town meeting,  
32 upon the recommendation of the Commission.

33 "Town", the Town of Harvard.

34 "Wastewater management system", the wastewater collection, conveyance, treatment and  
35 disposal systems serving more than one facility to be constructed or to be in the possession of  
36 and under the jurisdiction and control of the Commission, including all components thereof.

37 "Wastewater", greywater and blackwater from domestic, municipal and other governmental  
38 and institutional uses, but not from industrial sources, as defined in 310 CMR 15.002 of the  
39 State Environmental Code.

40 SECTION 3. There is hereby established in the Town of Harvard a commission to be known as  
41 the Harvard Wastewater Management District Commission, which shall have the rights, powers  
42 and duties specified in this Act and the General Laws relating to town boards, and shall be  
43 subject to such instructions as the Town may from time to time impose by vote of its town  
44 meeting.

45 Except as otherwise provided in this Act, said commission shall consist of three members,  
46 each of whom shall be a resident of the Town. At least one such member shall reside in the  
47 Harvard Wastewater Management Service Area. The members shall be appointed by the Board  
48 of Selectmen of the Town within sixty days after the effective date of this Act, provided that the  
49 design of the wastewater management system to be constructed in said service area has been  
50 approved by vote of the Town at a town meeting. Of the members first appointed, one shall serve  
51 in office for a term expiring on June thirtieth in the year following the effective date of this Act,  
52 and one for a term expiring on June thirtieth in the second year following the effective date of  
53 this Act, and one for a term expiring on June thirtieth in the third year following the effective  
54 date of this Act. Thereafter, said board of selectmen shall appoint successors for a term of three  
55 years, or in the case of an appointment to fill a vacancy, for the unexpired term, and until the  
56 successor is appointed and qualified. Any member of said commission shall be eligible for  
57 reappointment. Any member of said commission may be removed at any time for cause. No

vacancy in the membership of said commission shall impair the right of a quorum to exercise the powers of said commission. Two members of said commission shall constitute a quorum and the affirmative vote of two members shall be necessary for any action taken by vote of said commission.

Said commission shall annually elect one of its members as chair. The members shall serve without compensation. The members of said commission shall not be municipal employees within the meaning of Chapter 268A of the General Laws.

The Commission shall have all the rights, authority and powers necessary or convenient to carry out and effectuate this Act, including, but without limiting the generality of the foregoing, the rights, authority and power to:

(a) to hire, employ or engage the services of engineers, land surveyors, consultants and such other experts as it deems necessary and determine their duties;

(b) to construct, install, improve, extend, enlarge, operate, maintain, repair and reconstruct the wastewater management system, subject to the limitations set forth in Section 10 of this Act;

(c) to hold, manage, maintain, control and regulate the use of Town-owned property, real or personal, tangible or intangible, or interests therein, for the purposes of this Act, consistent with all requirements of the General Laws;

(d) to adopt rules and regulations relative to the use of and connection to the wastewater management system including the types of wastewater that can be discharged into the system, subject to the approval of the Board of Selectmen. The Commission may, by regulation, prescribe civil penalties, which shall enure to the Town, in accordance with Section 10 of Chapter 83 of the General Laws for the violation of any such rule or regulation of the Commission. Prior to adopting or amending such rules and regulations, the Commission shall hold a public hearing thereon, notice of which, giving the time, date and place, shall be placed in a newspaper of general circulation in the town, once in each of two successive weeks, with the first such publication being not less than fourteen (14) days before the hearing. Any such rules and regulations so adopted or amended and so approved shall be filed in the office of the Town Clerk whereupon they shall take effect. The Commission may also assess fines not exceeding three hundred dollars for each violation of its rules and regulations in accordance with Section 21 of Chapter 40 of the General Laws;

(e) to apply for, receive, accept, administer, expend and comply with the conditions of any grant, gift, loan, donation, or appropriation of any money or property in aid of the purposes of this Act;

(f) to sell, exchange, transfer or otherwise dispose of any surplus personal property, tangible or intangible, consistent with all requirements of the General Laws;



92 (g) to contract for and procure wastewater management, treatment and disposal from any  
93 person, private or public corporation or government agency or entity, consistent with all  
94 requirements of the General laws, when necessary or convenient for the operation of the  
95 wastewater management system;

96 (h) to use and expend monies borrowed or appropriated by the Town for the purposes of this  
97 Act;

98 (i) to make contracts of every name and nature and to execute and deliver all instruments  
99 necessary or convenient for carrying out its duties;

100 (j) to create an overall wastewater management policy and plan for the Harvard Wastewater  
101 Management Service Area, which shall be consistent with the Town's Master Plan and Open  
102 Space and Recreation Plan;

103 (k) to fix, revise, charge, collect and abate fees, rates, assessments, delinquency charges and  
104 other charges for wastewater collection, treatment and disposal services, facilities and  
105 commodities for facilities connected to the wastewater management system;

106 (i) Subject to Section 5 of this Act, such fees, rates, rents, assessments, delinquency charges  
107 and other charges of general application shall be adopted and revised by the Commission at least  
108 annually in accordance with procedures to be established by the Commission for assuring that  
109 interested persons are afforded notice and an opportunity to present data, views and arguments.  
110 The commission shall hold at least one public hearing on its schedule of fees, rates and charges  
111 or any revision thereof prior to adoption, notice of which shall be delivered to the Board of  
112 Selectmen of the Town and be published in a newspaper of substantial circulation in the Town at  
113 least one month in advance of the hearing. No later than the date of such publication, the  
114 Commission shall make available to the public and deliver to said selectmen and the Finance  
115 Committee of the Town the proposed schedule of fees, rates and charges and its proposed  
116 operating and capital budgets for its next fiscal year. The commission may combine its fees, rates  
117 and other charges for wastewater services provided by it in a single schedule of charges. Fees,  
118 rates, rents, assessments, abatements and other charges established by the Commission shall not  
119 be subject to supervision or regulation by any department, division, commission, board, bureau,  
120 or agency of the Commonwealth. Such schedule shall provide for the metering, monitoring and  
121 other measuring of, and charging for, wastewater management services provided by the  
122 commission to consumers of such services in said service area, except for the Town, provided,  
123 further, that no betterment or special assessment shall be made by the Commission under the  
124 authority of Chapters 80 or 83 of the General Laws or any other provision of law against  
125 property owned by the Town, the Commonwealth, any political subdivisions thereof or the  
126 United States or any agencies thereof. In lieu of any betterment assessment or special  
127 assessment, the Town shall receive a reduction in any outstanding General Fund advances or  
128 loans or make payment or transfer from the General Fund equal to the amount such assessment.

(ii) Subject to Section 5 of this Act, the fees, rates, rents, assessments and other charges so established by the Commission shall be so fixed and adjusted in respect to the aggregate thereof so as to provide revenues at least sufficient (1) to pay the current expenses of the Commission, (2) to pay the principal of, premium, if any, and interest on bonds or other evidences of indebtedness issued by the Town for the Commission as the same become due and payable, (3) to create and maintain such reasonable reserves as may be reasonably required by any trust agreement or resolution securing bonds, (4) to provide funds for paying the cost of all necessary repairs, replacements and renewals of the wastewater management system and (5) to pay or provide for any amounts which the Commission may be obligated to pay or provide for by law or contract including any resolution or contract with or for the benefit of the holders of bonds issued for the Commission. The annual operating budget of the Commission shall be submitted to the Board of Selectmen and Finance Committee of the Town for review and recommendation, and all funds expended by the Commission shall be subject to appropriation by town meeting.

(l) to exercise the powers and privileges of, and to be subject to limitations upon towns and cities provided by the provisions of Sections 1 to 24, inclusive, and 27 to 29, inclusive, of Chapter 83 of the General Laws, insofar as such provisions may be applicable and are consistent with the provisions of this Act;

(m) to do all things necessary, convenient or desirable for carrying out the purposes of this Act or the powers expressly granted or necessarily implied in this Act; and

(n) consistent with the Constitution and laws of the Commonwealth, the Commission shall have such other powers as may be necessary for or incident to carrying out the foregoing powers and the accomplishment of the purposes of this Act; provided, however, that nothing in this Act shall impose any duty on the Commission to maintain groundwater levels within or without the boundaries of the Town.

SECTION 4. The Town is hereby authorized to establish an Enterprise Fund in accordance with the provisions of Section 53F1½ of Chapter 44 of the General Laws for the operation of the wastewater management system. On or before one year after the effective date of this act and annually thereafter, the Commission shall prepare a proposed capital improvement program for the next three succeeding fiscal years of said commission and shall adopt an operating and capital improvement budget for the next succeeding fiscal year. Such program and budgets shall include a description of the operations and projects proposed to be undertaken during such periods, the costs proposed to be incurred in connection with such operations and projects, the method of financing such costs and an estimate of the effect, if any, that such costs will have on the current or projected fees, rates, assessments and other charges of the Commission. The program and budget shall be annually prepared and the budget shall be presented for approval to the town meeting. The commission shall submit its operating capital budget to the Board of Selectmen and Finance Committee of the Town for review and recommendation. The Commission shall hold at least one public hearing on the proposed capital improvement program

and budget and operating budget prior to adoption, which hearing may be combined with a hearing provided in Section 4, Paragraph(i) of this Act, notice of which shall be delivered to said board of selectmen and be published in a newspaper of substantial circulation in the Town at least one month in advance of the hearing. No later than the date of such publication, the Commission shall make available to the public and deliver to said board of selectmen copies of the proposed program and budgets.

SECTION 5. The Town may incur debt for development of the wastewater management system in accordance with Chapter 44 of the General Laws. Notwithstanding any provision of Section 17 of Chapter 44 of the General Laws to the contrary, the Town may make temporary loans for a period of not more than five years in anticipation of the money to be derived from the sale of bonds for the construction and installation of the wastewater management system in said service area. The principal of, premium, if any, and interest on all notes and bonds issued by the Town for the Commission, unless otherwise provided by the Town, shall be payable solely from the funds provided therefore from revenues as herein provided, but shall be general obligations of the Town for payment of which the full faith and credit of said Town shall be pledged.

SECTION 6. The Commission shall have the benefit, without further acceptance of Sections 16A and 16B of said Chapter 83, to the extent applicable and consistent with this Act. Applications for abatements in accordance with Section 16E of said Chapter 83 shall be made to the Commission within thirty days after the date of such demand. Upon written application, the collector of taxes for the Town shall issue lien certificates in accordance with Section 23 of Chapter 60 of the General Laws. No recordation of certificates issued by the Town pursuant to said Section 23 of said Chapter 60 shall affect liens for the unpaid fees, rates, rents, assessments, and other charges of the Commission.

SECTION 7. Notwithstanding any provision of Section 13 of Chapter 80 of the General Laws to the contrary, (a) the Board of Assessors of the Town may apportion all betterment assessments or unpaid balances thereof relative to the wastewater management system in said service area into equal portions of up to thirty to be paid annually for a period of up to thirty years after such assessments first appear on the affected landowner's real estate tax bill; and (b) betterment assessments made by the Commission shall, at the election of the Commission, bear interest at one rate of up to five per cent per annum or, at a rate of up to two per cent above the rate of interest chargeable to the Town for the betterment project to which the assessments relate, from the thirtieth day after betterment assessments have been committed to the Town Collector.

SECTION 8. The Commission shall have the benefit, without further acceptance of Section 13B of said Chapter 80 and Section 16G of said Chapter 83.

SECTION 9. (a) Notwithstanding the provisions of Section 3 of Chapter 83 of the General Laws, said commission shall not be required to connect any home, facility or lot to the wastewater management system, except as set forth in Paragraph (b) below. The Commission

shall not permit the connection of (i) a new facility; (ii) a facility that has been reconstructed resulting in an increase of the gross floor area or in the number of bedrooms; or (iii) a facility that has undergone a change in use to the wastewater management system or permit an increase in design flow into the wastewater management system for a facility in existence on May 1, 2009, if that new or changed facility could not have been constructed with a wastewater disposal system or septic system which would comply with Title V of the State Environmental Code or other applicable regulations of the Massachusetts Department of Environmental Protection or the increase in design flow could not have been permitted in the absence of a connection to the wastewater management system, unless the Commission, with the approval of the Board of Selectmen, determines that such a connection is necessary for the health, welfare or safety of the Town or creates a demonstrable benefit to the Town.

(b) Any facility within the Harvard Wastewater Management Service Area which is served by a subsurface sewage disposal system which is in a state of failure as determined by the Board of Health or the Massachusetts Department of Environmental Protection shall be connected to the wastewater management system within six months after the owner of the facility receives written notice from the Commission that the wastewater management system is complete and operational.

(c) Any owner of a facility who is aggrieved by a decision of the Commission relative to such owner's application to voluntarily or involuntarily connect such owner's facility to the wastewater management system may appeal the Commission's decision to the Board of Selectmen by filing a written petition with the Board of Selectmen within sixty (60) days after receipt of the Commission's written decision. The Board of Selectmen may hold a hearing on the petition, consult with the Board of Health, and shall render a written decision thereon affirming, modifying or reversing the Commission's decision within ninety (90) days after receipt of the petition or such longer period of time as may be agreed to by the Board of Selectmen and the petitioner. If the Board of Selectmen fails to act on such a petition within said period of time, the Commission's decision shall be deemed to be affirmed.

SECTION 10. Insofar as the provisions of this Act are inconsistent with the provisions of any general or special law, administrative order or regulation, or by-law, rule, regulation or code of the Town, other than rules and regulations or orders of the Board of Health or by-laws of the Town which require homes or facilities to be connected to the wastewater management system involuntarily, the provisions of this Act shall be controlling.

SECTION 11. This Act, being necessary for the health and welfare of the Town of Harvard and its inhabitants, shall be liberally construed to effectuate its purposes. This Act shall be construed in all respects so as to meet all constitutional requirements. In carrying out the purposes and provisions of this Act, all steps shall be taken which are necessary to meet constitutional requirements whether or not such steps are required by statute.

241       SECTION 12. This Act shall take effect upon its passage.



OFFICE OF THE  
TOWN CLERK

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13 AYER ROAD • HARVARD, MASSACHUSETTS 01451-1458  
(978)456-4100 • FAX: (978)456-4113



The following is a copy of the final vote taken under Article 24, at the Annual Town Meeting of the qualified voters of the Town of Harvard held on May 2, 2009:

Acting on Article 24, voted majority yes to authorize the Board of Selectmen to petition the State Legislature to enact a special act substantially the same as the special act set forth below or pass any vote or votes in relation thereto.

**AN ACT RELATIVE TO A WASTEWATER MANAGEMENT DISTRICT IN THE TOWN OF HARVARD**

**Section 1. Name.** This act shall be known as the Harvard Wastewater Management District Act.

**Section 2. Purpose.** The purpose of this act is to ensure and facilitate the connection of buildings and structures located in the Harvard Wastewater Management Service Area to the common wastewater management system to be constructed and installed therein; reduce and prevent contamination and pollution of drinking water, groundwater and other natural resources in said service area; provide for an efficient and financially self-sustaining wastewater management system in said areas; facilitate the implementation of Title V of the State Environmental Code in order to protect and improve groundwater supplying drinking water; protect persons residing in said service area from the risks and hazards associated with such contamination and pollution, all to the public benefit and good, and to the extent and manner provided herein.

**Section 3. Definitions.** As used in this act, the following words shall, unless the context requires otherwise, have the following meanings:

"Board of Health", the Board of Health of the Town of Harvard.

"Commission" the Harvard Wastewater Management District Commission of the Town established by Section 4 of this Act.

"Costs", all costs and expenses of the planning, design, acquisition, construction, installation, reconstruction, alteration, extension, improvement or enlargement of the wastewater management system including, without limitation, costs of labor, materials, professional services, consulting services, equipment, grinder and ejector pumps, materials, supplies, machinery, structures, all rights in real and personal property, costs of demolitions or relocations, costs of removal or relocations of public utilities, financing charges and expenses, debt service costs relative to the wastewater management system.

"Facility", shall mean a facility as defined in 310 CMR 15.002 of the State Environmental Code as of May 1, 2009.

"Revenues", all revenues, rates, fees, charges, rents, proceeds of loans, grant funds, insurance proceeds, investment earnings and other receipts derived from the operation of the wastewater management system.

"Harvard Wastewater Management Service Area", shall mean that portion of the Town of Harvard shown on a plan entitled "Proposed Sewer Service Plan, Town of Harvard, Mass. prepared for Town of Harvard", dated 11/19/2008 and revised on 3/30/2009 prepared by Norfolk Ram in Association with Weston & Sampson and filed in the office of the Town Clerk of the Town or as such service area may be modified by majority vote of the Town at a town meeting, upon the recommendation of the Commission.

"Town", the Town of Harvard.

"Wastewater management system", the wastewater collection, conveyance, treatment and disposal systems serving more than one facility to be constructed or to be in the possession of and under the jurisdiction and control of the Commission, including all components thereof.

"Wastewater", greywater and blackwater from domestic, municipal and other governmental and institutional uses, but not from industrial sources, as defined in 310 CMR 15.002 of the State Environmental Code.

**Section 4. Commission.** There is hereby established in the Town of Harvard a commission to be known as the Harvard Wastewater Management District Commission, which shall have the rights, powers and duties specified in this Act and the General Laws relating to town boards, and shall be subject to such instructions as the Town may from time to time impose by vote of its town meeting.

Except as otherwise provided in this Act, said commission shall consist of three members, each of whom shall be a resident of the Town. At least one such member shall reside in the Harvard Wastewater Management Service Area. The members shall be appointed by the Board of Selectmen of the Town within sixty days after the effective date of this Act, provided that the design of the wastewater management



system to be constructed in said service area has been approved by vote of the Town at a town meeting. Of the members first appointed, one shall serve in office for a term expiring on June thirtieth in the year following the effective date of this Act, and one for a term expiring on June thirtieth in the second year following the effective date of this Act, and one for a term expiring on June thirtieth in the third year following the effective date of this Act. Thereafter, said board of selectmen shall appoint successors for a term of three years, or in the case of an appointment to fill a vacancy, for the unexpired term, and until the successor is appointed and qualified. Any member of said commission shall be eligible for reappointment. Any member of said commission may be removed at any time for cause. No vacancy in the membership of said commission shall impair the right of a quorum to exercise the powers of said commission. Two members of said commission shall constitute a quorum and the affirmative vote of two members shall be necessary for any action taken by vote of said commission.

Said commission shall annually elect one of its members as chair. The members shall serve without compensation. The members of said commission shall not be municipal employees within the meaning of Chapter 268A of the General Laws.

The Commission shall have all the rights, authority and powers necessary or convenient to carry out and effectuate this Act, including, but without limiting the generality of the foregoing, the rights, authority and power to:

- (a) to hire, employ or engage the services of engineers, land surveyors, consultants and such other experts as it deems necessary and determine their duties;
- (b) to construct, install, improve, extend, enlarge, operate, maintain, repair and reconstruct the wastewater management system, subject to the limitations set forth in Section 10 of this Act;
- (c) to hold, manage, maintain, control and regulate the use of Town-owned property, real or personal, tangible or intangible, or interests therein, for the purposes of this Act, consistent with all requirements of the General Laws;
- (d) to adopt rules and regulations relative to the use of and connection to the wastewater management system including the types of wastewater that can be discharged into the system, subject to the approval of the Board of Selectmen. The Commission may, by regulation, prescribe civil penalties, which shall enure to the Town, in accordance with Section 10 of Chapter 83 of the General Laws for the violation of any such rule or regulation of the Commission. Prior to adopting or amending such rules and regulations, the Commission shall hold a public hearing thereon, notice of which, giving the time, date and place, shall be placed in a newspaper of general circulation in the town, once in each of two successive weeks, with the first such publication being not less than fourteen (14) days before the hearing. Any such rules and regulations so adopted or amended and so approved

shall be filed in the office of the Town Clerk whereupon they shall take effect. The Commission may also assess fines not exceeding three hundred dollars for each violation of its rules and regulations in accordance with Section 21 of Chapter 40 of the General Laws;

(e) to apply for, receive, accept, administer, expend and comply with the conditions of any grant, gift, loan, donation, or appropriation of any money or property in aid of the purposes of this Act;

(f) to sell, exchange, transfer or otherwise dispose of any surplus personal property, tangible or intangible, consistent with all requirements of the General Laws;

(g) to contract for and procure wastewater management, treatment and disposal from any person, private or public corporation or government agency or entity, consistent with all requirements of the General laws, when necessary or convenient for the operation of the wastewater management system;

(h) to use and expend monies borrowed or appropriated by the Town for the purposes of this Act;

(i) to make contracts of every name and nature and to execute and deliver all instruments necessary or convenient for carrying out its duties;

(j) to create an overall wastewater management policy and plan for the Harvard Wastewater Management Service Area, which shall be consistent with the Town's Master Plan and Open Space and Recreation Plan;

(k) to fix, revise, charge, collect and abate fees, rates, assessments, delinquency charges and other charges for wastewater collection, treatment and disposal services, facilities and commodities for facilities connected to the wastewater management system;

(i) Subject to Section 5 of this Act, such fees, rates, rents, assessments, delinquency charges and other charges of general application shall be adopted and revised by the Commission at least annually in accordance with procedures to be established by the Commission for assuring that interested persons are afforded notice and an opportunity to present data, views and arguments. The commission shall hold at least one public hearing on its schedule of fees, rates and charges or any revision thereof prior to adoption, notice of which shall be delivered to the Board of Selectmen of the Town and be published in a newspaper of substantial circulation in the Town at least one month in advance of the hearing. No later than the date of such publication, the Commission shall make available to the public and deliver to said selectmen and the Finance Committee of the Town the proposed schedule of fees, rates and charges and its proposed operating and capital budgets for its next fiscal year. The commission may combine its fees, rates and other charges for wastewater services provided by it in a single schedule of charges. Fees, rates,

rents, assessments, abatements and other charges established by the Commission shall not be subject to supervision or regulation by any department, division, commission, board, bureau, or agency of the Commonwealth. Such schedule shall provide for the metering, monitoring and other measuring of, and charging for, wastewater management services provided by the commission to consumers of such services in said service area, except for the Town, provided, further, that no betterment or special assessment shall be made by the Commission under the authority of Chapters 80 or 83 of the General Laws or any other provision of law against property owned by the Town, the Commonwealth, any political subdivisions thereof or the United States or any agencies thereof. In lieu of any betterment assessment or special assessment, the Town shall receive a reduction in any outstanding General Fund advances or loans or make payment or transfer from the General Fund equal to the amount such assessment.

(ii) Subject to Section 5 of this Act, the fees, rates, rents, assessments and other charges so established by the Commission shall be so fixed and adjusted in respect to the aggregate thereof so as to provide revenues at least sufficient (1) to pay the current expenses of the Commission, (2) to pay the principal of, premium, if any, and interest on bonds or other evidences of indebtedness issued by the Town for the Commission as the same become due and payable, (3) to create and maintain such reasonable reserves as may be reasonably required by any trust agreement or resolution securing bonds, (4) to provide funds for paying the cost of all necessary repairs, replacements and renewals of the wastewater management system and (5) to pay or provide for any amounts which the Commission may be obligated to pay or provide for by law or contract including any resolution or contract with or for the benefit of the holders of bonds issued for the Commission. The annual operating budget of the Commission shall be submitted to the Board of Selectmen and Finance Committee of the Town for review and recommendation, and all funds expended by the Commission shall be subject to appropriation by town meeting.

(l) to exercise the powers and privileges of, and to be subject to limitations upon towns and cities provided by the provisions of Sections 1 to 24, inclusive, and 27 to 29, inclusive, of Chapter 83 of the General Laws, insofar as such provisions may be applicable and are consistent with the provisions of this Act;

(m) to do all things necessary, convenient or desirable for carrying out the purposes of this Act or the powers expressly granted or necessarily implied in this Act; and

(n) consistent with the Constitution and laws of the Commonwealth, the Commission shall have such other powers as may be necessary for or incident to carrying out the foregoing powers and the accomplishment of the purposes of this Act; provided, however, that nothing in this Act shall impose any duty on the Commission to maintain groundwater levels within or without the boundaries of the Town.

**Section 5. Budgets.** The Town is hereby authorized to establish an Enterprise Fund in accordance with the provisions of Section 53F1\2 of Chapter 44 of the General Laws for the operation of the wastewater management system. On or before one year after the effective date of this act and annually thereafter, the Commission shall prepare a proposed capital improvement program for the next three succeeding fiscal years of said commission and shall adopt an operating and capital improvement budget for the next succeeding fiscal year. Such program and budgets shall include a description of the operations and projects proposed to be undertaken during such periods, the costs proposed to be incurred in connection with such operations and projects, the method of financing such costs and an estimate of the effect, if any, that such costs will have on the current or projected fees, rates, assessments and other charges of the Commission. The program and budget shall be annually prepared and the budget shall be presented for approval to the town meeting. The commission shall submit its operating capital budget to the Board of Selectmen and Finance Committee of the Town for review and recommendation. The Commission shall hold at least one public hearing on the proposed capital improvement program and budget and operating budget prior to adoption, which hearing may be combined with a hearing provided in Section 4, Paragraph(i) of this Act, notice of which shall be delivered to said board of selectmen and be published in a newspaper of substantial circulation in the Town at least one month in advance of the hearing. No later than the date of such publication, the Commission shall make available to the public and deliver to said board of selectmen copies of the proposed program and budgets.

**Section 6. Borrowing.** The Town may incur debt for development of the wastewater management system in accordance with Chapter 44 of the General Laws. Notwithstanding any provision of Section 17 of Chapter 44 of the General Laws to the contrary, the Town may make temporary loans for a period of not more than five years in anticipation of the money to be derived from the sale of bonds for the construction and installation of the wastewater management system in said service area. The principal of, premium, if any, and interest on all notes and bonds issued by the Town for the Commission, unless otherwise provided by the Town, shall be payable solely from the funds provided therefore from revenues as herein provided, but shall be general obligations of the Town for payment of which the full faith and credit of said Town shall be pledged.

**Section 7. System Usage Charge Liens and Abatements.** The Commission shall have the benefit, without further acceptance of Sections 16A and 16B of said Chapter 83, to the extent applicable and consistent with this Act. Applications for abatements in accordance with Section 16E of said Chapter 83 shall be made to the Commission within thirty days after the date of such demand. Upon written application, the collector of taxes for the Town shall issue lien certificates in accordance with Section 23 of Chapter 60 of the General Laws. No recordation of certificates issued by the Town pursuant to said Section 23 of said Chapter 60 shall affect liens for the unpaid fees, rates, rents, assessments, and other charges of the Commission.

**Section 8. Betterment Assessment Payback Period and Interest Rate.**

Notwithstanding any provision of Section 13 of Chapter 80 of the General Laws to the contrary, (a) the Board of Assessors of the Town may apportion all betterment assessments or unpaid balances thereof relative to the wastewater management system in said service area into equal portions of up to thirty to be paid annually for a period of up to thirty years after such assessments first appear on the affected landowner's real estate tax bill; and (b) betterment assessments made by the Commission shall, at the election of the Commission, bear interest at one rate of up to five per cent per annum or, at a rate of up to two per cent above the rate of interest chargeable to the Town for the betterment project to which the assessments relate, from the thirtieth day after betterment assessments have been committed to the Town Collector.

**Section 9. Deferral of Betterment Assessments and Usage Charges.** The Commission shall have the benefit, without further acceptance of Section 13B of said Chapter 80 and Section 16G of said Chapter 83.

**Section 10. Connections to the System.**

(a) Notwithstanding the provisions of Section 3 of Chapter 83 of the General Laws, said commission shall not be required to connect any home, facility or lot to the wastewater management system, except as set forth in Paragraph (b) below. The Commission shall not permit the connection of (i) a new facility; (ii) a facility that has been reconstructed resulting in an increase of the gross floor area or in the number of bedrooms; or (iii) a facility that has undergone a change in use to the wastewater management system or permit an increase in design flow into the wastewater management system for a facility in existence on May 1, 2009, if that new or changed facility could not have been constructed with a wastewater disposal system or septic system which would comply with Title V of the State Environmental Code or other applicable regulations of the Massachusetts Department of Environmental Protection or the increase in design flow could not have been permitted in the absence of a connection to the wastewater management system, unless the Commission, with the approval of the Board of Selectmen, determines that such a connection is necessary for the health, welfare or safety of the Town or creates a demonstrable benefit to the Town.

(b) Any facility within the Harvard Wastewater Management Service Area which is served by a subsurface sewage disposal system which is in a state of failure as determined by the Board of Health or the Massachusetts Department of Environmental Protection shall be connected to the wastewater management system within six months after the owner of the facility receives written notice from the Commission that the wastewater management system is complete and operational.

(c) Any owner of a facility who is aggrieved by a decision of the Commission relative to such owner's application to voluntarily or involuntarily connect such owner's facility to the wastewater management system may appeal the

Commission's decision to the Board of Selectmen by filing a written petition with the Board of Selectmen within sixty (60) days after receipt of the Commission's written decision. The Board of Selectmen may hold a hearing on the petition, consult with the Board of Health, and shall render a written decision thereon affirming, modifying or reversing the Commission's decision within ninety (90) days after receipt of the petition or such longer period of time as may be agreed to by the Board of Selectmen and the petitioner. If the Board of Selectmen fails to act on such a petition within said period of time, the Commission's decision shall be deemed to be affirmed.

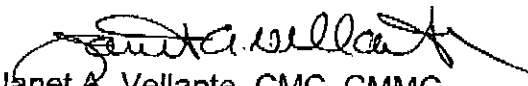
**Section 11. Consistency with Law.** Insofar as the provisions of this Act are inconsistent with the provisions of any general or special law, administrative order or regulation, or by-law, rule, regulation or code of the Town, other than rules and regulations or orders of the Board of Health or by-laws of the Town which require homes or facilities to be connected to the wastewater management system involuntarily, the provisions of this Act shall be controlling.

**Section 12. Construction.** This Act, being necessary for the health and welfare of the Town of Harvard and its inhabitants, shall be liberally construed to effectuate its purposes. This Act shall be construed in all respects so as to meet all constitutional requirements. In carrying out the purposes and provisions of this Act, all steps shall be taken which are necessary to meet constitutional requirements whether or not such steps are required by statute.

**Section 13. Effective Date.** This Act shall take effect upon its passage.

Voted: majority, yes

A true copy, Attest:

  
Janet A. Vellante, CMC, CMMC  
Harvard Town Clerk

OFFICE OF THE  
TOWN CLERK

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13 AYER ROAD • HARVARD, MASSACHUSETTS 01451-1458  
(978)456-4100 • FAX: (978)456-4113

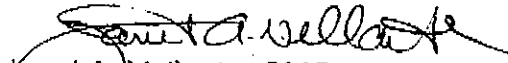


The following is a copy of the final vote taken under Article 25, at the Annual Town Meeting of the qualified voters of the Town of Harvard held on May 2, 2009:

Acting on Article 25, voted greater than 2/3rds yes that the Town appropriate \$2,000,000. for the purpose of financing the planning and construction of a sewer system to serve the "Harvard Wastewater Management Service Area" as defined in "An Act Relative To A Wastewater Management District In the Town of Harvard" set forth in the motion adopted under Article 24 of the Warrant for the 2009 Annual Town Meeting including, without limitation, all costs thereof as defined in Section 1 of Chapter 29C of the Massachusetts General Laws, as most recently amended by Chapter 78 of the Acts of 1998; that to meet this appropriation the Treasurer, with the approval of the Board of Selectmen is authorized to borrow 2,000,000, and issue bonds or notes therefore under Sections 7 and 8 of Chapter 44 of the Massachusetts General Laws or , or any other enabling authority and/or Chapter 29C of the Massachusetts General Laws, as most recently amended by Chapter 78 of the Acts of 1998, contingent upon the passage of a Proposition Two and One-Half debt exclusion ballot question at the Annual Town Election on May 5, 2009; that such bonds or notes shall be general obligations of the Town, unless the Treasurer, with the approval of the Selectmen determines that they should be issued as limited obligations and may be secured by local system revenues as defined in Section 1 of said Chapter 29C, as most recently amended by Chapter 78 of the Acts of 1998; that the Treasurer, with the approval of the Selectmen, is authorized to borrow all or a portion of such amount from the Massachusetts Water Pollution Abatement Trust Fund established pursuant to said Chapter 29C, as most recently amended by Chapter 78 of the Acts of 1998, contingent upon the passage of a Proposition Two and One-Half debt exclusion ballot question at the Annual Town Election on May 5, 2009; and in connection therewith to enter into a loan agreement and/or security agreement with said Trust and otherwise to contract with the Trust and the Department of Environmental Protection with respect to such loan and for any federal or state aid available for the project or for the financing thereof; that the Board of Selectmen and/or the Harvard Wastewater Management District Commission is authorized to enter into a project regulatory agreement with the Department of Environmental Protection, to expend all funds available for said project and to take any other action necessary to carry out said project.

Voted: greater than 2/3rds, yes

A true copy, Attest:

  
Janet A. Vellante, CMC, CMMC  
Harvard Town Clerk

**ANNUAL TOWN ELECTION – MAY 5, 2009**

**QUESTION #1 – Proposition 2 ½ Debt Exclusion**

"Shall the Town of Harvard be allowed to exempt from the provisions of proposition two and one-half, so-called, the amounts required to pay for the bond issued in order to finance the design and construction of wastewater management system improvements in the Town Center area?"

Yes	782
No	144
Blanks	22



## APPENDIX C

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### COMMONWEALTH CAPITAL APPLICATION FOR FY2010

## FISCAL YEAR COMMONWEALTH CAPITAL APPLICATION - PDF Created On 9/2/2009

Original Application

Municipality: HARVARD Address: 13 Ayer Road Harvard MA 01451 Date: 9/2/2009 10:05:00 PM

Name/Title: Liz Allard Land Use Boards Clerk Email: tallard@harvard.ma.us Phone: 978 456 4106

Municipal applicants will need to provide evidence of having met or made a binding commitment to the following criteria. Note: If electronic files were submitted to document compliance with the criteria last fiscal year (FY 09) these files should be referenced but need not be resubmitted with an FY10 application.

PLAN FOR & PROMOTE LIVABLE COMMUNITIES & PLAN REGIONALLY (19)		Existing	Commit
1	<b>Current Master Plan <u>OR</u></b>	(6) <input checked="" type="radio"/>	(0) <input type="radio"/>
Supporting File: 125 - Table of Contents.pdf. Supporting File: 125 - Cover-Front Section.pdf. Supporting File: 125 - MP Executive Summary.pdf. The update of Harvard's third Master Plan was completed in 2002. Key to the plan was the 10 year implementation plan of community based initiatives outlined in Chapter 5 of the plan. Seven years since into the plan Harvard has achieved many of the primary goals outlined that recommended specific zoning changes, neighbor plans to be completed or studies to be performed. Several projects have progressed beyond the planning stage and are in different phases of implementation.			
	<b>Executive Order 418 Community Development Plan; <u>OR</u></b>	(4) <input type="radio"/>	(0) <input type="radio"/>
	<b>Current housing plan <u>AND</u> current DCS-approved Open Space and Recreation Plan; <u>OR</u></b>	(3) <input type="radio"/>	(0) <input type="radio"/>
	<b>Current housing plan <u>OR</u> current DCS-approved Open Space and Recreation Plan</b>	(2) <input type="radio"/>	(0) <input type="radio"/>
1a	<b>Commitment to complete a Master, 418, Housing, or Open Space &amp; Recreation Plan by Dec. 31, 2010</b>	(0) <input type="radio"/>	(2) <input type="radio"/>
1b	<b>Funding or regulatory actions implementing 2 specific Plan recommendations since July 1, 2007</b>	(3) <input type="radio"/>	(1) <input type="radio"/>
2	<b>Water resource plan: Source Water Protection, Water Conservation, Comprehensive Wastewater, or Integrated Water Resource Management</b>	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>
Supporting File: 125 - Source Protection Plan Contents and Summary.pdf. A Comprehensive Source Water Protection Plan was prepared for the Town of Harvard Water Department by the Mass Rural Water Association and was completed in July 2006. Harvard has a limited public water supply which services approximately 100 connections located in the town center. Three churches, private residences, a handful of retail/service businesses, the public schools and almost all municipal buildings are located here. The wells that provide drinking water are located within the Bare Hill Pond Watershed which is the largest open body of water within Harvard and is a significant environmental and recreational resource for the town. Full text of the Source protection plan is available in PDF form.			
3	<b>Execution of a compact or MOU, provision of funding, or regulatory change to attain a regional or intergovernmental goal since July 1, 2007</b>	(3) <input type="radio"/>	(1) <input type="radio"/>
4	<b>Adoption of the Community Preservation Act</b>	(4) <input checked="" type="radio"/>	(2) <input type="radio"/>
The Town meeting voted to adopt the Community Preservation Act at a Special Town Meeting of the Town of Harvard on 2-26-2001, by Art. 2. Officials were appointed to the nine member Community Preservation Committee and have continued to be elected or appointed since that time.			
ZONE FOR & PERMIT CONCENTRATED DEVELOPMENT AND MIXED USE (26)		Existing	Commit
5	<b>Zoning for mixed-use in an applicable location</b>	(4) <input checked="" type="radio"/>	(2) <input type="radio"/>
Supporting File: 125 - Map 2-B Zoning.pdf. The town of Harvard established a commercial "C" district flanking portions of Ayer Road as it runs north from Route 2 back in 1986 (Sections 125-12 thru 14 & 23). In response to the Master Plan recommendations, Small, Medium and Large Scale commercial uses were modified and zoning changes were adopted by the town March 27, 2004. The Ayer Road Village Special Permit defined in Section 125-52 of the protective bylaws allows and encourages mixed used development including multi-family residential housing, provides incentives for open space conservation/historic preservation and encourages property owners to redevelop existing parcels with shared access and shared parking with well planned sites rather than subdividing them into multiple parcels with multiple driveway cuts.			
5a	<b>If mixed-use zoning is a DHCD approved 40R District or for Transit Oriented Development (TOD)</b>	(2) <input type="radio"/>	(1) <input type="radio"/>
5b	<b>Building permit issued for a mixed-use development since July 1, 2007</b>	(2) <input type="radio"/>	(0) <input type="radio"/>
Note: A Building Permit has not yet been issued for the first Ayer Road Village –Special Permit which was approved for Wheeler Realty Trust in 2008. The project is on hold subject to financing and tax credit approvals as of August 2009.			
6	<b>Zoning for accessory dwelling units (ADU)</b>	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>
A provision in the protective bylaws allowed "in-law apartments" in existing single family homes as far back as 1982 and was revised in 1986. The bylaws were substantially revised by the town meeting action on March 25, 2006 creating Section 125-18 "Accessory Apartment Use". This allowed the creation of accessory apartments by Special Permit within a formerly established primary residence, outbuilding or accessory structure without any restriction as to the relationship of the occupant to the owner of the property.			
6a	<b>Occupancy permit issued for at least one accessory dwelling unit since July 1, 2007</b>	(2) <input type="radio"/>	(0) <input type="radio"/>
Note: According to Building Commissioner Gabe Vallente several permits have been granted by the ZBA but none have been granted a CO as of August 2009			
7	<b>Zoning allowing by-right multi-family dwellings (not age restricted)</b>	(3) <input type="radio"/>	(1) <input type="radio"/>
7a	<b>If zoning allows by-right multi-family dwellings of 4 or more units (not age restricted)</b>	(3) <input type="radio"/>	(1) <input type="radio"/>
8	<b>Zoning for clustered development / Open Space Residential Development (OSRD)</b>	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>
One of the first items implemented from the 2002 Master Plan, a cluster bylaw titled "Open Space and Conservation – Planned Residential Development (OSC-PRD)" was developed by the Planning Board and adopted by the town meeting on March 29, 2003 (See Harvard Protective Bylaws Section 125-35). As an alternative to subdivision approval, this special permit process allows single family, multifamily (not to exceed 6 units per building) dwellings integrated into a rural setting of agricultural, open space or passive recreation areas. Flexible siting criteria for lot sizes and setbacks makes this a flexible alternative to standard subdivision plans. A minimum of 50% of the OSC-PRD parcel must be permanently protected common open space, of which: no more than 25% can be wetlands; no area can exceed a finished grade of 33%; no more than 300 feet from the nearest building; must be compact and contiguous and not less than a dimension of 50 ft; and must be open to the sky and pervious.			
8a	<b>If cluster is mandated, by-right, or includes a density bonus</b>	(2) <input checked="" type="radio"/>	(1) <input type="radio"/>
A development density bonus up to a maximum of 25% is available to projects that use the OSC-PRD process that : propose significant increases in open space; provide permanent protection for agricultural land or historic structures or other unique features on the site; deed restricted housing units for affordable or elderly housing; limit multifamily units to 2 bedroom units; make significant on site environmental improvements or improvements that benefit other off-site public facilities.			
8b	<b>A cluster development has been permitted since July 1, 2007</b>	(2) <input type="radio"/>	(0) <input type="radio"/>

## FISCAL YEAR COMMONWEALTH CAPITAL APPLICATION - PDF Created On 9/2/2009

Original Application

Municipality: HARVARD Address: 13 Ayer Road Harvard MA 01451 Date: 9/2/2009 10:05:00 PM

Name/Title: Liz Allard Land Use Boards Clerk Email: lallard@harvard.ma.us Phone: 978 456 4106

Municipal applicants will need to provide evidence of having met or made a binding commitment to the following criteria. Note: If electronic files were submitted to document compliance with the criteria last fiscal year (FY 09) these files should be referenced but need not be resubmitted with an FY10 application.

	One Cluster Subdivision was approved prior to July 2007 (see #33 for bonus point request)		
EXPAND HOUSING OPPORTUNITIES (21)		Existing	Commit
9	Zoning requiring the inclusion of affordable units (IZ)	(3) <input type="radio"/>	(1) <input type="radio"/>
9a	Building permits issued for affordable units under an inclusionary bylaw/ordinance since July 1, 2007	(2) <input type="radio"/>	(0) <input type="radio"/>
10	Increased housing stock by 50-99% or more of state goal	(3) <input type="radio"/>	(0) <input type="radio"/>
	100% or more of state goal	(4) <input type="radio"/>	(0) <input type="radio"/>
11	66 % or more of new units produced using a listed smart growth technique	(4) <input type="radio"/>	(0) <input type="radio"/>
12	Attainment of Housing Production certification (.5% of housing units) <u>OR</u>	(4) <input type="radio"/>	(0) <input type="radio"/>
	Attainment of a Chapter 40B threshold	(5) <input type="radio"/>	(0) <input type="radio"/>
13	Production of housing units on municipal land or with municipal funding since July 1, 2007	(3) <input type="radio"/>	(0) <input type="radio"/>
MAKE EFFICIENT DECISIONS & INCREASE JOB AND BUSINESS OPPORTUNITIES (11)		Existing	Commit
14	Redevelopment Strategy: (a) inventory, (b) remediation, revitalization, <u>or</u> reuse strategy, or (c) site planning	(4) <input type="radio"/>	(2) <input type="radio"/>
15	Approved 43D Priority Development Site or provision of a (a) financial, <u>or</u> (b) regulatory redevelopment incentive	(4) <input type="radio"/>	(2) <input type="radio"/>
16	Adoption of permitting best practices	(3) <input type="radio"/>	(1) <input type="radio"/>
PROTECT LAND AND ECOSYSTEMS (21)		Existing	Commit
17	15-25% of town area protected [by a Chapter 184-type restriction or Article 97] <u>OR</u>	(4) <input type="radio"/>	(0) <input type="radio"/>
	25% or more of town area protected	(5) <input checked="" type="radio"/>	(0) <input type="radio"/>
According to the MassGIS Data layer updated July 14, 2009 Harvard 26.42% of its land area defined as Protected Open Space			
18	Land protected via a restriction or fee acquisition alone or with a land trust since July 1, 2007	(4) <input checked="" type="radio"/>	(0) <input type="radio"/>
Harvard's most recent gift of land was an assemblage of 3 parcels of approximately 40 acres in total of partial woodland, pasture and open field by the Dunlap family (Harvard Assessors map 19, parcels, 14, 69 & 70). A permanent conservation restriction (Worcester Registry of deeds Book 41900, Page 304) was negotiated between the owner, the Harvard Conservation Commission and the non-profit Harvard Conservation Trust. Acceptance of the conservation restriction was made by the Conservation Commission, Board of Selectmen and the Harvard Conservation Trust during the month of May in 2007, with final approval of the conservation restriction made by Ian Bowles, Secretary of Energy and Environmental Affairs on August 31, 2007.			
19	Existence of an agricultural commission	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>
An Agricultural Advisory Commission was created by an act of the Annual Town Meeting of the Town of Harvard on 3-27-2006 by Art. 22.			
20	Adoption of a Right-to-Farm bylaw/ordinance	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>
A "Right to Farm Bylaw" was adopted by the Annual Town Meeting of the Town of Harvard on 3-27-2006 by Art. 23.			
21	Stewardship plan for a municipal forest	(3) <input type="radio"/>	(1) <input type="radio"/>
22	Transfer of Development Rights (TDR) or other zoning for agricultural, forestry, or natural resource conservation	(3) <input type="radio"/>	(1) <input type="radio"/>
USE NATURAL RESOURCES WISELY (8)		Existing	Commit
23	Adoption of a bylaw, ordinance, or regulation that encourages the use of Low Impact Development (LID) to address stormwater	(4) <input type="radio"/>	(2) <input type="radio"/>
24	Implementation of the 2006 Massachusetts Water Conservation Standards	(4) <input type="radio"/>	(2) <input type="radio"/>
PROMOTE CLEAN ENERGY (9)		Existing	Commit
25	Implementation of energy efficiency measures	(3) <input type="radio"/>	(1) <input checked="" type="radio"/>
We request one commitment point for our application filed on August 14, 2009 for The commonwealth's Green Communities Grant Program. Harvard established an Energy Advisory committee who is in the middle of a comprehensive municipal building energy audit and has provided guidance to department heads regarding the implementation of energy efficiency improvements to lighting and HVAC systems for our public school buildings over the past year.			
26	Production or purchase of renewable energy	(3) <input type="radio"/>	(1) <input type="radio"/>
27	Clean energy regulations and incentives	(3) <input type="radio"/>	(1) <input type="radio"/>
PROVIDE TRANSPORTATION CHOICE (9)		Existing	Commit
28	Regulations requiring or actions to facilitate bicycling and walking since July 1, 2007	(3) <input type="radio"/>	(1) <input checked="" type="radio"/>
We request one commitment point for the pursuit of a comprehensive town center pedestrian pathway and non-vehicular circulation plan in conjunction with the pursuit of making Harvard a "Safe Routes to School" community. A backbone plan for non-vehicular connections called the Harvard Recreation Trail Plan is outlined in item #33 for which funding has been received and construction underway for a critical North/South connector that lies outside of the town center. This plan will be developed jointly by the Board of Selectmen, Historic Commission and the Parks and Recreation Commission.			
29	Regulation requiring or completion of a context sensitive transportation project since July 1, 2007	(3) <input type="radio"/>	(1) <input type="radio"/>
30	Regulations requiring or implementation of innovative transportation measures since July 1, 2007	(3) <input checked="" type="radio"/>	(1) <input type="radio"/>

## FISCAL YEAR COMMONWEALTH CAPITAL APPLICATION - PDF Created On 9/2/2009

Original Application

Municipality: HARVARD Address: 13 Ayer Road Harvard MA 01451 Date: 9/2/2009 10:05:00 PM

Name/Title: Liz Allard Land Use Boards Clerk Email: lallard@harvard.ma.us Phone: 978 456 4106

Municipal applicants will need to provide evidence of having met or made a binding commitment to the following criteria. Note: If electronic files were submitted to document compliance with the criteria last fiscal year (FY 09) these files should be referenced but need not be resubmitted with an FY10 application.

We request three points for the following actions that have been completed by the Town of Harvard: 1) "Ayer Road Functional Design Report" Prepared by CDM May 2008, evaluated the Ayer Road Corridor through the commercial district and developed a pedestrian/bicycle friendly access management plan while promoting sustainable redevelopment of the commercial District into improved "Village Center" in concert with the Master Plan objectives identified in 2002. 2) Zoning was approved in 2004 that encourages shared site access and shared parking facilities in the commercial "C" district using the Ayer Road Village Special Permit (See Protective Bylaws Section 125-52) to reduce impervious areas by requiring compliance with DEP Best management practices for stormwater management.			
ADVANCE EQUITY (6)		Existing	Commit
31	Actions that promote fair housing since July 1, 2007	(3) <input type="radio"/>	(1) <input type="radio"/>
32	Actions that promote environmental equity since July 1, 2007	(3) <input type="radio"/>	(1) <input type="radio"/>
PROMOTE SUSTAINABLE DEVELOPMENT VIA OTHER ACTIONS (10)		Existing	Commit
33	Existence of or commitment to additional local measures or actions 2, 4, 6, 8, OR 10	(10) <input type="radio"/>	(0) <input type="radio"/>
	See explanation above	(8) <input type="radio"/>	(0) <input type="radio"/>
	See explanation above	(6) <input checked="" type="radio"/>	(0) <input type="radio"/>
Request 2 pts for fulfillment of 2002 Master Plan Objectives prior to 2007: (Initiative 1: Creation of Coordinating Committee) (Initiative 2: Conservation Cluster Bylaw) (Initiative 6 : Update of Open Space Plan), (Initiative 15A&B: Ayer Road Special Permit District ARV-SP Bylaw) (Initiative 15 E: Ayer Road Corridor Study) (Initiative 16 B&C: Town Center Public Action Plan and Wastewater Feasibility Study) (Initiative 20 B: Open Space, Pedestrian and Bicycle access plan – See Recreation Trail Plan below) Request 2pts. for permitting Harvard's first OSC-PRD Open Space Conservation Planned Residential Development aka "Cluster Development", approved by the Planning Board in 2004. It is located on Blanchard Road, developed by the Deer Run Realty Trust and has 20.92 acres of protected open space and a total of five dwelling units: four new and one existing dwelling. Request 2 pts. For the ongoing development of a Recreation Trail System – \$10,000 in CPC Funding was approved in March 2005 to compete a recreation trail study to provide a backbone for non- vehicular transportation that would connect the center of Harvard to outlying recreation resources. Key easements from private property owners have been secured and permission from Mass Highway to improve and relocate an existing snowmobile trail has been obtained. \$10,000 was received through an earmark from the legislature for Design Services in 2007 for the trail. A grant from DCR in 2008 for \$41,700 was awarded for construction of sections of the trail ( additional matching funds of \$7500 from CPA fund and \$5100 in direct labor were committed in 2007). This Trail linkage will reconnect the northern half of Harvard that was severed by the construction of Route 2 and allow bicycles, pedestrians and snowmobiles to avoid using Route 111 – Ayer Road, and connect to outlying neighborhoods, neighboring Devens and the commercial district to existing trail networks and recreation areas in Harvard.			
	See explanation above	(4) <input type="radio"/>	(0) <input type="radio"/>
	See explanation above	(2) <input type="radio"/>	(0) <input type="radio"/>
BONUS - 1 POINT FOR EVERY FISCAL YEAR COMMITMENT IMPLEMENTED: 0			
No previous year's commitments found			
TOTAL: EXISTING, COMMIT AND BONUS POINTS (MAXIMUM)			
Total Requested Score: 51			