

Design, Operation, and Maintenance of Small Waste Water Treatment Facilities

Legal Notice

The Board of Health of the Town of Holliston, Commonwealth of Massachusetts, acting under the authority of Chapter 111, Section 31 of the Massachusetts General Laws and any amendments and additions thereto, and by any other power thereto enabling, and acting thereunder and in accordance therewith, have, in the interest of and for the preservation of the public health, duly made and adopted the following amendment to its "Rules and Regulations and Specifications for Wastewater Treatment or Disposal Systems", effective upon publication.

Section V: SPECIFICATIONS FOR TREATMENT PLANTS is hereby deleted in its entirety and is replaced with the following:

SECTION V: SPECIFICATIONS FOR "TREATMENT PLANTS"

1.00 PERMIT REQUIREMENTS:

1.10 DISPOSAL WORKS CONSTRUCTION PERMIT:

No system or facility to be used for treating, neutralizing, stabilizing, or disposing of wastewater from homes, public buildings, commercial or industrial buildings, or any types of establishments, shall be located, constructed, installed, operated, altered, or repaired until a DISPOSAL WORKS CONSTRUCTION PERMIT for such shall have been issued by the BOARD OF HEALTH. No construction of any building or facility which rely upon such wastewater system or facility shall be allowed until a DISPOSAL WORKS CONSTRUCTION PERMIT shall have been issued by the Board of Health.

Such system or facility as regulated herein shall include, but not be restricted to, SEWERS serving such facility, WASTEWATER PUMPING STATIONS, WASTEWATER TREATMENT WORKS, ALL WASTEWATER TREATMENT OPERATIONS, SLUDGE TREATMENT AND MANAGEMENT, DISINFECTION, ADVANCED WAST TREATMENT, SUBSURFACE DISPOSAL AND LAND TREATMENT, WASTEWATER RECYCLING AND RE-USE.

Such system or facility as regulated herein shall be referenced as SMALL WASTEWATER TREATMENT PLANT ("SWWTP").

1.20 CERTIFICATE OF COMPLIANCE AND OPERATIONS PERMIT:

No SWWTP as permitted herein shall be placed in service, nor shall new buildings or facilities or additions to existing buildings or facilities which rely upon such SWWTP be occupied or used until the BOARD OF HEALTH has issued a CERTIFICATE OF COMPLIANCE AND OPERATIONS PERMIT.

2.00 SUBMITTALS:

2.10 APPLICATIONS, REPORTS, PLANS, DATA, DOCUMENTS:

A copy of all applications, reports, plans, specifications, data, and supporting documents required by these regulations and by the regulations of any other agency in connection with the approval or operation and maintenance of the subject facility shall be submitted to the Board of Health. In the case of requests for a Board of Health action, such materials shall be submitted a minimum of 90 Days prior to date upon which an action by the Board of Health is desired. In the case of submittals to other agencies, all material shall be submitted to the Board of Health at the time of submittal to that agency. A Board of Health Disposal Works Construction Permit will not be issued prior to approval by the Massachusetts Department of

Environmental Quality Engineering. Other submittals shall be made in accordance with schedules as specifically designated by the Board of Health.

3.00 OTHER REGULATIONS AND GUIDELINES:

3.10 FEDERAL, STATE, AND LOCAL REGULATIONS:

The applicant for any SWWTP shall comply with all applicable FEDERAL, STATE, and TOWN or CITY regulations as existing and may be amended from time to time. All data, reports, and plans designated by those regulations shall be submitted to the Board of Health. All data required by these regulations shall be promptly submitted to the Board of Health in a timely fashion.

3.20 STANDARDS FOR DESIGN, OPERATIONS, AND MAINTENANCE:

These regulations herein do not and are not intended to cover all aspects of engineering design, operations, and maintenance of SWWTPs. Rather they outline the specific BOARD OF HEALTH INTERESTS AND POLICIES that may not be adequately reflected in other existing regulations, policies, and manuals. Where local regulations or specifications or guidelines of other political subdivisions or agencies of jurisdiction or as included herein are more strict, they shall prevail.

The applicant shall specifically follow the following regulations and guidelines which address the various aspects for the systems and facilities considered herein, and are incorporated as a part of these regulations by reference where applicable.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
Guidelines for the Design, Construction, Operation and Maintenance of Small Sewage
Treatment Facilities with Subsurface Effluent Disposal
Title 5 – The State Environmental Code
Ground Water Quality Standards
Ground Water Discharge Permit Program

NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION
Guidelines for the Design of Wastewater Treatment Works
1980 Edition TR-16

WATER POLLUTION CONTROL FEDERATON
MANUAL OF PRACTICE NO. 8 – Wastewater Treatment Plant Design

RECOMMENDED STANDARDS FOR SEWAGE WORKS: GREAT LAKES – UPPER
MISSISSIPPI RIVER BOARD OF STATE SANITARY ENGINEERS (the Ten State Standards)

WATER POLLUTION CONTROL FEDERATION
MANUAL OF PRACTICE NO. 9 – SEWER DESIGN AND CONSTRUCTION
(Same as AMERICAN SOCIETY OF CIVIL ENGINEERS Manual and Reports on
Engineering Practice No. 37)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, Municipal Environmental
Laboratory, “Design Information on Rotating Biological Contractors (EPA-60012-84-106)

For situations not covered by these regulations and guidelines, good engineering practices, as determined by the Board of Health, shall govern.

While it is recognized that certain modifications or exceptions may be necessary where justified in unusual situations, any such modifications or exceptions shall only be provided by application for variance to the BOARD OF HEALTH. Any variances to these regulations issued by the BOARD OF HEALTH shall comply with the provisions outlined in the State Environmental Code, Title 5.

4.00 GENERAL PROJECT PLANNING REQUIREMENTS:

Certain basic principals shall be considered early in the planning and design process in order to ensure that the SWWTP development process will meet all requirements.

4.10 ENVIRONMENTAL COMPATIBILITY:

The plans for the proposed system or facility shall take into account all aspects of public health and environmental quality protection. Efforts shall be taken to preserve water supply, private property, wetlands, wildlife habitat, recreational sites, historic sites, and natural beauty.

The design shall be prepared so as to have the least possible adverse impact on the public health and the environment.

The project proposal shall include evidence that the wastewater system or facility will result in the least adverse impact on the public health or the environment as compared with other possible wastewater management alternatives for the project.

4.20 GENERAL DISCHARGE AND TREATMENT REQUIREMENTS:

No discharge from a SWWTP shall result in degradation of grown or surface waters in a manner inconsistent with their proposed use. There shall be compliance with all applicable water quality standards. The existing characteristics of the receiving waters must be considered to ensure compliance. There shall be no discharge into any wetland, stagnant waters, lakes, or streams.

4.30 HYDROGEOLOGICAL INVESTIGATION:

The applicant shall submit a hydrogeological survey report, prepared by a qualified geotechnical engineer or hydrogeologist, to show the impact of the subsurface discharge of the SWWTP on ground water. The report shall include a determination of the flow direction, contaminant levels, extent of wastewater discharge plume, ground and surface waters affected, and any interaction with water supply, public or private. This analysis shall be performed for the SWWTP design plan and also for any other viable wastewater treatment or disposal strategy for the project to be served.

4.40 WETLANDS AND FLOOD PLAINS:

No portion of the SWWTP shall be within 100 feet of wetlands or the 100 year Flood Plain.

No portion of the subsurface disposal works for SWWTP shall be located less than 200 feet from a wetland or the 100 year Flood Plain. No component of the treatment plant, except for underground piping, shall be constructed less than two (2) feet above the high water level in any area subject to flooding. Such distances are considered "minimum" and may be increased by the Board or Health if site specific conditions warrant.

4.50 GENERAL SITING AND DESIGN REQUIREMENTS:

SWWTP design shall include attenuation of odor and noise problems, and shall satisfactorily address the general aesthetic appearance, to both protect the operator and satisfy neighborhood environmental requirements.

4.51 DISTANCES:

No portion of the SWWTP shall be located less than the following distances stated to the component listed as follows:

MINIMUM ACCEPTABLE SEPARATION DISTANCES IN FEET

COMPONENT	Plant Buildings	Pumping Station	Subsurface Tank	Leaching Area	Sewer or Force Main
Well*	100	100	100	400	50
Water Supply Line	----	10	10	25	10
Dwelling Unit	100	50	50	100	----
Subsurface Drain	----	25	25	50*	5
Property Boundary	150	50	50	100	10
Surface Water*	100	100	100	200	50
Wetland*	100	100	100	200	50

* This distance may be required to be greater if the hydrogeological evaluation indicates that contamination will occur at the stated distance.

4.60 ULTIMATE DISPOSAL OF SLUDGE AND SOLIDS:

Provision for final or ultimate disposal of sludge and solids shall be clearly indicated and established. The estimated quality must be stated. If sludge and solids are to be disposed of off-site, the final destination must be established prior to issuance of any permit. The applicant must demonstrate, to the satisfaction of the Board of Health, that the destination for the sludge and solids is in compliance with all applicable federal, state, and local regulations and also that it will reliably be available for such purpose for the length of time that its use is required for the SWWTP.

If disposal is to be on-site, it must comply with the terms of the section above "General Discharge and Treatment Requirements."

4.70 TREATMENT PLANT RELIABILITY:

The SWWTP shall be planned and designed so as to provide for maximum reliability at all times. The facility shall be capable of operating satisfactorily during power failures, flooding, peak loads, equipment failure, and maintenance shutdowns. Such reliability shall be obtained through the use of various design techniques which will result in a facility which is virtually "Fail-Safe."

Multiple units or dual compartments with unit drains shall be provided for all processes, including disinfection facilities, so that draining, cleaning, repairing, or replacing, and other maintenance can be provided without omitting any treatment processes.

4.80 BY-PASSES AND OVERFLOWS:

No by-passes, either upstream of or at the SWWTP shall be permitted.

4.90 DISINFECTION:

Disinfection of the SWWTP effluent by ultraviolet irradiation or ozonation shall be required.

5.00 SUBSURFACE DISPOSAL FACILITIES:

5.10 GROUND WATER:

The bottom interface of any subsurface disposal or leaching facilities shall be located a minimum of five (5) feet above the MAXIMUM ELEVATION OF THE GROUND WATER OR SATURATED SOIL ZONE. This elevation shall include consideration of the mounding effect of the ground water caused by the discharge of the SWWTP effluent. Such analysis shall be calculated using generally acceptable analytical or numerical methods.

When geologic conditions permit, the "Hantush" formula and procedure may be used. When the assumptions of that procedure cannot be met to derive a reliable result, it shall be required to utilize such method as finite difference equations for ground water flow and elevation.

5.20 DISTANCE TO BEDROCK:

The bottom interface of any subsurface disposal or leaching facility shall be located a minimum of ten (10) feet above the elevation of bedrock or impervious soil layer. Impervious soil shall be defined as having a percolation rate of greater than 20 minutes per inch.

5.30 THICKNESS OF PERMEABLE SOIL:

A depth of at least five (5) feet of naturally occurring permeable soil shall be maintained below the bottom of the leaching area. To be considered permeable, the soil shall have a percolation rate of 20 minutes per inch or less.

6.00 SEWERS:

The lateral sewer system serving the SWWTP shall be of a design and construction in accordance with WPCF MOP #9. Adequate capacity shall be provided for peak flow rates and shall provide for a cleansing velocity of at least two (2) feet per second at 75 percent of the estimated peak discharge. For low service connection areas, peak flow rate shall be calculated by the fixture unity method as described in MOP #9. The minimum pipe size allowed shall be eight (8) inches in diameter.

7.00 GROUND WATER MONITORING:

7.10 INSTALLATION:

The permittee shall install, at a minimum, ground water monitoring wells in accordance with the following:

- One up-gradient cluster of three monitoring wells

- Two down-gradient clusters of three monitoring wells

- One monitoring well for ground water level only near the center of the leaching works

Screen depths for the cluster wells shall be set at elevations such that at least two screen depths will yield samples at time of seasonal low ground water (e.g. September sampling period)

Such locations shall be as approved by the Board of Health and as indicated appropriate from the results of the hydrogeological investigation. Monitor wells shall be installed and in place prior to issuance of CERTIFICATE OF COMPLIANCE AND OPERATIONS PERMIT.

7.2 GROUND WATER ELEVATION:

The permittee shall determine and provide the Board of Health with elevations of the water table to the nearest one-hundredth of a foot in all monitor wells on a monthly basis.

8.00 EFFLUENT LIMITS AND TESTING REQUIREMENTS:

Effluent limitations shall be as required by DEQE regulations for Class I and Class II ground waters. All ground waters are considered to be in this classification unless proved to be otherwise following procedures set forth by DEQE.

8.10 WASTEWATER:

8.11 TREATMENT PLANT INFLUENT:

The influent to the treatment plant shall be sampled and tested weekly for 5-Day Biochemical Oxygen Demand (B.O.D.) and Total Suspended Solids

8.12 TREATMENT PLANT EFFLUENT:

The effluent from the treatment plant shall be sampled and tested as follows:

DAILY	Flow pH	Specific Conductance
WEEKLY	5-Day Biochemical Oxygen Demand (B.O.D.) Total Suspended Solids (T.S.S.) Coliform Bacteria Fecal Coliform Bacteria	
MONTHLY	Total Kjeldahl Nitrogen Ammonia Nitrogen Nitrate Nitrogen Total Dissolved Solids Sodium	
SEMI-ANNUAL	Oil and Grease Volatile Organic Compounds (USEPA Procedure #624)	
ANNUALLY	Arsenic Barium Cadmium Chromium Fluoride Lead	Copper Zinc Mercury Total Trihalomethanes Selenium Silver
5 – YEARS	Pesticides Radioactivity	

All sampling and analyses, except for the daily and weekly frequency tests which will commence at time of plant startup, shall be performed initially at 60 days after plant startup and at the stated frequency thereafter.

8.20 GROUND WATER MONITOR WELLS:

MONITOR WELL TESTING in the upgradient and down gradient wells shall be performed semiannually in the months of April and September for all parameters designated above as semiannually or more often. Testing for other parameters shall be at the stated frequency, either annually or every 5 years during the month of April.

On an annual basis, the Board of Health, either on its own motion or upon written request from the permittee, may review the sampling frequency and the tested parameters and may modify either or both if it deems it necessary.

9.00 OPERATION:

9.10 OPERATOR:

A Certified Waste Water Treatment Plant Operator having the Grade appropriate for the plant as determined by the regulations of the Board of Certification of Operators of Waste Water Treatment Facilities shall be retained by the permittee. Such operator shall spend a minimum of three (3) hours per day at the plant. When conditions warrant as may be determined by the Board of Health, additional hours shall be required. Such operator shall be designated the Chief Operator and will be responsible for the operation of the SWWTP.

9.20 BACK – UP OPERATOR:

A second Certified Waste Water Treatment Plant Operator, having the same grade as the Chief Operator shall be available in the absence of the Chief Operator.

9.30 OPERATIONAL GUARANTEE:

Prior to issuance of the CERTIFICATE OF COMPLIANCE AND OPERATIONS PERMIT, the permittee shall provide security in an amount specified by the Board of Health to guarantee the operation of the SWWTP for a period of at least one year. The security shall provide for salaries, operational costs, and cost for immediate replacement, if necessary of a major unit operation of the plant, or in the event of plant failure to operate, an amount sufficient to cover the costs of hauling 100% of the waste water to another facility for disposal for a one year period.