

**ARTICLE IV**  
**Small Package Waste Water Treatment Plants**  
**[Adopted XX, XXXX, 2019]**

**§ 201-4. Background and justification.**

The disposal of wastewater, including sanitary sewage, in Boxford, is regulated under 310 CMR 15.00, Title 5, as amended, and local Board of Health regulations. Board of Health authority applies to systems with a daily discharge of up to 10,000 gallons per day (310 CMR 15.004(1)(a)). Questions have been raised about the appropriateness of current regulations for small wastewater systems when applied to small package wastewater treatment plants with a daily discharge of 2000 to 10,000 gallons. These questions include the increased impact of such facilities on groundwater and the environment, the life expectancy of such facilities and the long-term liability and ownership of such facilities. To address these concerns, acting under the provisions of MGL c.111 §31, and in the interest and for the protection of public health, the Boxford Board of Health hereby defines additional restrictions and conditions on small package treatment plants in Boxford with a daily discharge of 2,000 to 10,000 gallons. Treatment plants with a daily discharge over 10,000 gallons per day are under the authority of the Massachusetts Department of Environmental Protection.

**§201-5. Regulation 1-2019**

**§ 201-5.1. Definitions.**

When used in this regulation or in communications, notices, orders or other references relative thereto, the following words and phrases shall have the meanings ascribed to them below and shall apply in the interpretation and enforcement of this regulation:

**ABUTTER-** The owner of any property that lies within 500 feet radial from any lot line of the subject property, including those properties across a traveled way or body of water. In the case of property that has frontage on a pond, abutters will include all those properties with frontage on the pond.

**APPLICANT-** The person, organization, town department or body, private organization or company, or any other entity proposing the installation of a small package treatment wastewater treatment plant (WWTP).

**BOH-** Boxford Board of Health.

**BOXFORD BOARD OF HEALTH-** The responsible Town authority for any and all installations, modifications, construction, and use of a WWTP in the Town of Boxford, Massachusetts.

**BOXFORD BOARD OF HEALTH AGENT-** An agent of the BOH with the authority to act on the behalf of the BOH. The Agent will normally be the Health Agent or a member of the BOH.

**BYPASS -** the diversion of wastes from any portion of a treatment works

DEP- Massachusetts Department of Environmental Protection.

ENHANCED SECONDARY TREATMENT - secondary treatment that includes disinfection to ensure that the effluent is capable of meeting an effluent limitation of no more than 200 fecal coliform organisms per 100 ml, and additional processes capable of meeting an effluent limitation of 10 mg/l of nitrate nitrogen and total nitrogen

GROUND WATER - water below the land surface in a saturated zone, including perched ground water.

HAZARDOUS SUBSTANCE - any of the substances designated under 40 CFR Part 116 pursuant to § 311 of the Federal Act, 33 U.S.C. § 321, or any hazardous material as defined in M.G.L. c. 21E.

HAZARDOUS WASTE - a hazardous waste pursuant to 310 CMR 30.000: *Hazardous Waste*

LEACHING FACILITY- As defined in 310 CMR 15 as amended.

LOT- An area of land in one ownership, with definite boundaries.

MILLIGRAMS PER LITER-OR mg/L - the weight in milligrams of any specific substance or substances contained in one liter of solution

MONITORING WELL - a well that is specifically designed, constructed, emplaced, and located to measure the impact of a discharge of pollutants on ground water quality and quantity

NITROGEN REMOVAL (REDUCTION) SYSTEM- An approved Massachusetts DEP Title 5 (310 CMR 15.000) innovative/alternative technology used to reduce or remove nitrogen from septic system leaching areas.

OWNER-The entity or organization that owns the WWTP and includes as equal shareholders all owners of housing units served by the WWTP. All shareholders in the entity or organization shall share equal responsibility for the operation, maintenance, and repair of the WWTP.

PERMIT- The written authorization issued by the BOH to the Owner for construction and operation of the WWTP.

PRIMARY TREATMENT - the process or group of processes capable of removing from sewage a minimum of 25% of the five day biochemical oxygen demand, 55% of the suspended solids, and 85% of the floating and settleable solids.

SECONDARY TREATMENT - the process or group of processes capable of removing from untreated wastewater a minimum of 85% of the five day biochemical oxygen demand and suspended solids, and virtually all floating and settleable solids, followed by disinfection.

SOIL ABSORPTION SYSTEM- As defined in 310 CMR 15, as amended.

SMALL PACKAGE WASTE WATER TREATMENT PLANT (WWTP)- A subsurface sewage disposal system with a daily discharge of 2,000 to 10,000 gallons per day that serves multi-unit housing.

SUBSURFACE SANITARY SEWAGE DISPOSAL SYSTEM- Individual sewage disposal system or on-site subsurface sewage disposal system as defined in 310 CMR 15 as amended with a daily discharge of up to 2,000 gallons per day.

TOTAL DISSOLVED SOLIDS - the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136, or other method approved by the DEP.

WATERS OF THE COMMONWEALTH - all waters within the jurisdiction of the Commonwealth, of Massachusetts including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, ground waters, and vernal pools.

WETLAND RESOURCE AREA- Any land area or surface area so defined by the Massachusetts Wetlands Protection Act, MGL c. 131, § 40, and regulations promulgated pursuant thereto 310 CMR 10.00, and Town of Boxford Wetlands Protection Bylaw and regulations promulgated pursuant thereto.(See Boxford Code Ch. 192, Wetlands Protection. The regulations promulgated pursuant thereto are on file in the office of the Town Clerk).

WWTP- (Small Package) Waste Water Treatment Plant. that includes any and all devices, processes, and properties real or personal used in the collection, pumping, transmission, storage, treatment, disposal, recycling, reclamation or reuse of water-borne pollutants

ZONE 1 AND ZONE 2- The protective radii around a public water supply as defined and assigned by DEP for every public water supply and is defined in 310 CMR 22.02.

### **§ 201.5.2 Compliance with Existing Regulations**

- A. At a minimum, any WWTP shall follow and meet all requirements of Massachusetts 310 CMR 15.00, Title 5, as amended; and Boxford Code §201-1 to §201-3; §201-8 to §201-12; and §201-19 to §201-26, inclusive.
- B. In calculating daily discharge from a WWTP serving Housing for the Elderly, each unit of housing containing no more than 2 bedrooms shall use a discharge of 150 gallons per day with no garbage grinder (Boxford Code §201-11.3). The daily discharge of any additional, non-housing unit buildings served by the WWTP shall be calculated using the assignments listed in 310 CMR 15.203, as amended, or as determined by the BOH.
- C. All housing units served by the WWTP and the WWTP itself must be located on the same lot (Boxford Code § 201-2).

### **§ 201-5.3 Additional Requirements**

In addition to all existing requirements for subsurface sanitary systems in Boxford, small package waste water treatment plants shall meet the following additional requirements.

#### **A. System Design and Components**

All WWTP in Boxford shall contain adequately sized components for Pretreatment, Secondary Treatment, Enhanced Secondary Treatment, and a Disposal Area/Leaching

Facility, unless otherwise allowed by the BOH.

## **B. Hydrogeological Evaluation.**

The WWTP applicant shall submit a hydrogeological evaluation report in accordance with Massachusetts DEP guidelines and prepared by a qualified geotechnical engineer or hydrologist, showing the impact of the subsurface discharge of the WWTP on ground water. The report shall include determination of the discharge flow direction and projected wastewater plume. The report shall assess the impact of the proposed discharge on all potentially impacted ground water sources of potable water for public water systems and all private drinking water supplies, and to determine whether the proposed discharge will cause or contribute to a violation of 314 CMR 4.00: *Massachusetts Surface Water Quality Standards* or impair the actual or potential use of the ground water as a source of potable water;

## **C. WWTP Distances**

No portion of the WWTP shall be located less than the following distances stated to the components listed as follows (in feet):

<u>Component</u>	<u>Subsurface Tank</u>	<u>Leaching Area</u>
Well	100	400
Dwelling Unit	50	200
Property Boundary	100	200
Surface Water	100	300
Wetland	100	200

These distances may be changed by the BOH depending on the findings of the Hydrogeological Evaluation.

## **D. Preliminary Plan**

Prior to submitting final drawings and specifications for a WWTP, the owner shall submit to the BOH a preliminary plan for the proposed WWTP which includes all components of the system including types and sizing of holding/septic tanks (primary treatment); advanced pretreatment such as but not limited to media filters (secondary treatment); enhanced secondary treatment including nitrogen removal and disinfection methods such as ultraviolet or ozone treatment; and details on the final dispersal area/leaching field. The plan shall be presented to the BOH at a regularly scheduled meeting. The BOH will have up to 30 days to approve the preliminary plan following said meeting.

## **E. WWTP Subsurface Leaching Facilities**

(1). No WWTP leaching facility or discharge from that facility will be allowed within the Zone I of a public water supply source, or the six- month ground water travel time to the public water supply source, whichever is larger.

(2) The bottom interface of the WWTP leaching facility shall be no less than five (5) feet above the maximum elevation of the ground water or saturated soil zone. This elevation shall be calculated after adding the effect of Groundwater Mounding to the

high groundwater elevation as determined pursuant to 310 CMR 15.103(3).

- (3) The bottom of the WWTP leaching facility shall be located a minimum of ten (10) feet above the elevation of bedrock or impervious soil layer. Impervious soil is defined as having a percolation rate of greater than 20 minutes per inch.
- (4) A depth of at least five (5) feet of naturally occurring permeable soil shall be maintained below the bottom of the leaching area. Permeable soil is defined as having a percolation rate of 20 minutes per inch or less.

#### **F. Effluent Testing**

The effluent resulting after enhanced secondary treatment of the waste water shall be tested for the parameters listed in Table 1

- (1) Monthly for the first three (3) months of operation and then every six (6) months
- (2) Testing shall be performed by a MEPA certified laboratory (*ref: 310 CMR 22.11A*).
- (3) Effluent Limitations. The BOH may allow effluent limitations less stringent than the water quality based effluent limitations if and only if, it is demonstrated to the satisfaction of the BOH that lesser limitations are sufficient to protect the use of the ground water as an actual or potential source of potable water, and to protect the use of surface waters for the designated uses set forth in 314 CMR 4.00: *Massachusetts Surface Waste Quality Standards* (*ref: 314 CMR 5.10(9)*).

Table 1.

Effluent and Monitoring Well Sample Analysis

Parameter	Units	Maximum Standard <sup>a</sup>
<b>Field Parameters</b>		
Temperature	Degrees C	NS <sup>b</sup>
Specific Conductivity	mS/cm <sup>c</sup>	NS
Dissolved Oxygen	mg/L	NS
pH	units	NS
Biological Oxygen Demand	mg/L	NS
<b>Inorganics</b>		
Alkalinity as CaCO <sub>3</sub>	mg/L	NS
Chloride	mg/L	250 <sup>d</sup>
Total cyanide	mg/L	0.2 <sup>e</sup>
Nitrate as Nitrogen	mg/L	10
Sulfate	mg/L	250 <sup>d</sup>
Total Dissolved Solids	mg/L	500 <sup>d</sup>
<b>Dissolved Metals</b>		
Arsenic	mg/L	0.01
Cadmium	mg/L	0.005
Calcium	mg/L	NS
Chromium	mg/L	0.1
Copper	mg/L	1.3
Iron	mg/L	0.3 <sup>d</sup>
Lead	mg/L	0.015
Manganese	mg/L	0.05 <sup>d</sup>
Mercury	mg/L	0.002
Sodium	mg/L	20 <sup>d</sup>
Zinc	mg/L	5 <sup>d</sup>
<b>Microbial</b>		
Total Coliforms	cfu/100mL <sup>f</sup>	0
Fecal Coliforms <sup>g</sup>	cfu/100ml	0

<sup>a</sup>From *Drinking Water Standards & Guidelines for Chemicals in Massachusetts Drinking Water*, 2017.

<sup>b</sup>No standard

<sup>c</sup>mS/cn = milliSiemens/centimeter

<sup>d</sup>SMCL: Secondary Maximum Contaminant Level Concentration

<sup>e</sup>MMCL standard for free cyanide

<sup>f</sup>cfu = Colony Forming Units

<sup>g</sup>No testing required if TC = 0

## G. System Inspection

A Title 5 Inspection shall be carried out on the WWTP every three (3) years and the results from said inspection sent to the BOH within thirty (30) days of the inspection (310 CMR 15.301).

## H. WWTP Discharging from 5,000 to 10,000 gpd

- (1) WWTPs discharging from 5,000 to 10,000 gpd shall install ground water monitoring wells based on the hydrogeological evaluation as follows:

- One up-gradient cluster of two (2) monitoring wells
- Two down-gradient clusters of two (2) monitoring wells
- One (1) monitoring well for ground water level near the center of the leaching/dispersal field

Each monitoring well cluster shall contain one (1) well screened in shallow overburden across the water table, and one (1) well screened in a deep portion of the overburden

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

- (2) The location of the ground water monitoring wells shall be approved by the BOH prior to installation.
- (3) Ground water monitoring wells shall be installed according to DEP requirements (*e.g.*, *Standard References for Monitoring Wells* (WSC-310-91), and *DEP DRMR Supplement*, January 1999).
- (4) The parameters listed in Table 1 will be measured on samples withdrawn from the up-gradient and 2 down-gradient wells The BOH reserves the right to require additional testing if deemed necessary for parameters such as VOCs (Volatile Organic Compounds), SOCs (Synthetic Organic Compounds), and other parameters as detailed in 310 CMR 22.00, the Massachusetts Drinking Water Regulations.
  - (a) Testing shall be performed by a MEPA certified laboratory (*ref*: 310 CMR 22.11A).
  - (b) Testing of all parameters shall be carried out according to the following schedule:
    - One (1), six (6), and 12 months after the WWTP becomes operational
    - Thereafter, every April and September (twice annually)
  - (c) The BOH may require additional testing if it concludes that any parameter indicates a potential problem with the WWTP.

#### **§ 201-5.4. Reports**

The owner of the WWTP or the owner's designated representative as identified to the BOH, shall be responsible for submitting all analysis and inspection reports to the BOH within thirty (30) days of the analysis or investigation. Any disruption or damage to the system will be reported immediately to the BOH or, if outside of normal working hours, to the Boxford Communications Department, 978-887-8136 or, in the event of an emergency, 911. The Owner shall maintain a record of all analyses, inspections, and any disruptions of the WWRP in a readily accessible location, and make such record available to the BOH upon request.

#### **§ 201-5.5 Modifications or Changes to Approved Operations and Monitoring**

Any proposed modification or changes to the Approved Operations and monitoring of the WWTP shall be made in writing to the BOH by the owner of the WWTP or the owner's designated representative. No changes shall be made until the BOH has reviewed and approved the proposed changes. The BOH may request a presentation from the owner or owner's representative about the proposed changes at a scheduled meeting of the Board. The BOH reserves the right to modify or disapprove any proposed changes.

#### **§ 201-5.6 Private Ownership Certification**

(1) The owner shall be responsible for the operation of the facility, including reporting, monitoring, maintenance, repair and replacement of the WWTP. This owner shall be identified in writing to the BOH together with documents proving ownership or assigned responsibility of the WWTP from the owner.

(2) The owner shall not change organizational arrangements, nor sell, assign, or transfer the WWTP without the prior written approval of the BOH.

(3) The owner shall own or control the land on which the WWTP is located, and shall own or control land, or obtain easements that provide access to:

- (a) the land on which the WWTP is located;
- (b) the wastewater collection system and any associate appurtenances;
- (c) all land within 100 feet of any component of the collection system;
- and
- (d) the land area surrounding the disposal system that is essential to system operation and maintenance.

(4) The owner shall certify to the BOH and the Town of Boxford that each shareholder shall share the financial and operational responsibility for the WWTP.

#### **§ 201-5.7 General Conditions**

(1) No discharge authorized in the permit shall cause or contribute to a violation of 314 CMR 4.00: *Massachusetts Surface Water Quality Standards*.

(2) Duty to Comply. The owner shall comply at all times with the terms and conditions of the permit granted by the BOH to operate the WWTP.

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

(4) Best Management Practices or BMP – The WWTP shall be operated according to Best Management Practices and will include schedules of activities, prohibitions of practices, maintenance procedures, and other management practices designed to prevent or reduce the discharge of pollutants to waters of the Commonwealth. BMPs include treatment requirements, operating procedures, structures, devices and practices to control plant site runoff, spillage, or leaks, sludge or waste disposal, or drainage from raw material storage.

(5) Proper Operation and Maintenance. The owner 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 WWTP permit. All equipment shall be maintained in an acceptable condition for its intended use. The Owner shall utilize a Certified Wastewater Facility Operator (as defined in Massachusetts 257 CMR 2.00) for all operations carried out at the WWTP.

(5) Duty to Halt or Reduce Activity. Upon reduction, loss, or failure of the treatment facility, the owner shall, to the extent necessary to maintain compliance with its permit, control production, discharges, or both, until the facility is restored or an alternative method of treatment is provided. The owner may not raise as a defense 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 the permit, the owner shall either:

(a) provide an alternative power source such as an emergency generator sufficient to operate the wastewater control facilities;

(b) halt, reduce or otherwise control production or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

(7) Duty to Mitigate. The owner 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. Additionally, the owner shall take all necessary steps to prevent an operational upset of the WWTP.

(8) Duty to Provide Information. The owner and any operator of the permitted facility shall furnish to the BOH within a reasonable time as specified by the BOH any information which the BOH may request to determine whether cause exists for modifying, suspending, revoking and reissuing, or terminating the permit, or to determine whether the owner is complying with the terms and conditions of the permit.

- (9) Inspection and Entry. The owner shall allow the BOH or its authorized representatives to:
- (a) Enter upon the owner'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) The owner shall physically secure the treatment works and monitoring wells and limit access to the treatment works and monitoring wells only to those personnel required to operate, inspect and maintain the treatment works and to collect samples.

(11) The owner shall identify each monitoring well by permanently affixing to the steel protective casing of the well a tag with the identification number listed in the permit.

(12) Recordkeeping.

(a) The owner 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 five years from the date of the sample, measurement, report or application. This period may be extended by request of the BOH at any time. Records of monitoring information shall include without limitation:

- (1) The date, exact place (such as well number) time of the sampling or measurements;
- (2) The individual(s) who performed the sampling or measurement;
- (3) The date(s) analyses were performed;
- (4) The individual(s) who performed the analyses;
- (5) The analytical techniques or methods used; and
- (6) The results of such analyses.

(b) The owner shall make and retain for a period of at least 5 years records of all operations carried out at the WWTP including routine maintenance, repairs, and emergency operations. Records shall include:

- (1) The date, time and nature of the operation
- (2) The individual(s) who performed the operation
- (3) The length of time the WWTP was shut down if at all
- (4) A description on what was done during the operation and the end result

(13) Prohibition of Bypassing. Except as provided in 314 CMR 5.16(13), bypassing is prohibited and the BOH may take enforcement action against a owner for bypassing unless:

- (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 of untreated wastes, or maintenance during normal periods of equipment

downtime. This condition is not satisfied if the owner could have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; or

(c) The owner submitted notice of the bypass to the BOH:

1. In the event of an anticipated bypass, at least ten days in advance, if possible;  
or
2. In the event of an unanticipated bypass, as soon as the owner has knowledge of the bypass and no later than 24 hours after its first occurrence.

(14) Permit Actions. The WWTP permit may be modified, suspended, or revoked for cause. The filing of a request by the owner for a permit modification, reissuance, or termination, or a notification of planned changes or anticipated non-compliance does not stay any permit condition.

(15) 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 owner of obligation to comply with any other applicable Federal, State, or local law, or regulation.

(16) 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 Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26 through 53, and the Federal Act, 33 U.S.C. § 1251 *et seq.*, the Massachusetts Hazardous Waste Management Act, M.G.L. c. 21C, and the Federal Resource Conservation and Recovery Act, 42 U.S.C. § 6901, *et seq.*, 310 CMR 19.000: *Solid Waste Management* and 310 CMR 30.000: *Hazardous Waste*.

(17) Reopener Clause. The BOH reserves the right to make appropriate revisions to the permit to establish any appropriate effluent limitations, schedules of compliance, or other provisions, as authorized by the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26 through 53, or the Federal Act, 33 U.S.C. § 1251 *et seq.*, to bring all discharges into compliance with these statutes.

**§ 201-5.8. Violations and penalties.**

Any Applicant who shall violate any provisions of this Regulation for which penalty is not otherwise provided shall, upon conviction, be fined not less than \$100 nor more than \$500 per violation. Each separate incident of failing to comply with this regulation shall constitute a separate violation. Each day the incident continues shall constitute a separate violation.

**§ 201-9. Severability.**

So far as the BOH may provide, each section of these rules and regulations shall be construed as separate to the end that if any section, item, sentence, clause or phrase shall be held invalid for any reason, the remainder of these rules and regulations shall continue in full force and effect.

**§ 201.10 . Appeals.**

Any Applicant to whom an order has been served pursuant to this regulation may request a hearing before the BOH by filing a written petition within seven days. Upon receipt of such petition, the BOH shall schedule a hearing within 30 days. Anyone aggrieved by the decision of the BOH may seek relief therefrom within 30 days in a court of competent jurisdiction.

**§ 201.11. Effective date.**

This regulation shall take effect on

**APPROVED** by Vote of the Board of Health at a posted, open meeting on

A Public Hearing was advertised to the public and held on ----- as required by MGL Ch. 111 §31.

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Alexander A. Constan, PhD

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Hans C. Jeppesen, M.D.

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Richard F Taylor, PhD

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Heather Forand., Vice-Chairman

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Richard Fahrner, Ph.D., Chairman