

WATER SUPPLY PROTECTION OVERLAY DISTRICT EXHIBIT 8



Water Supply Protection Overlay District

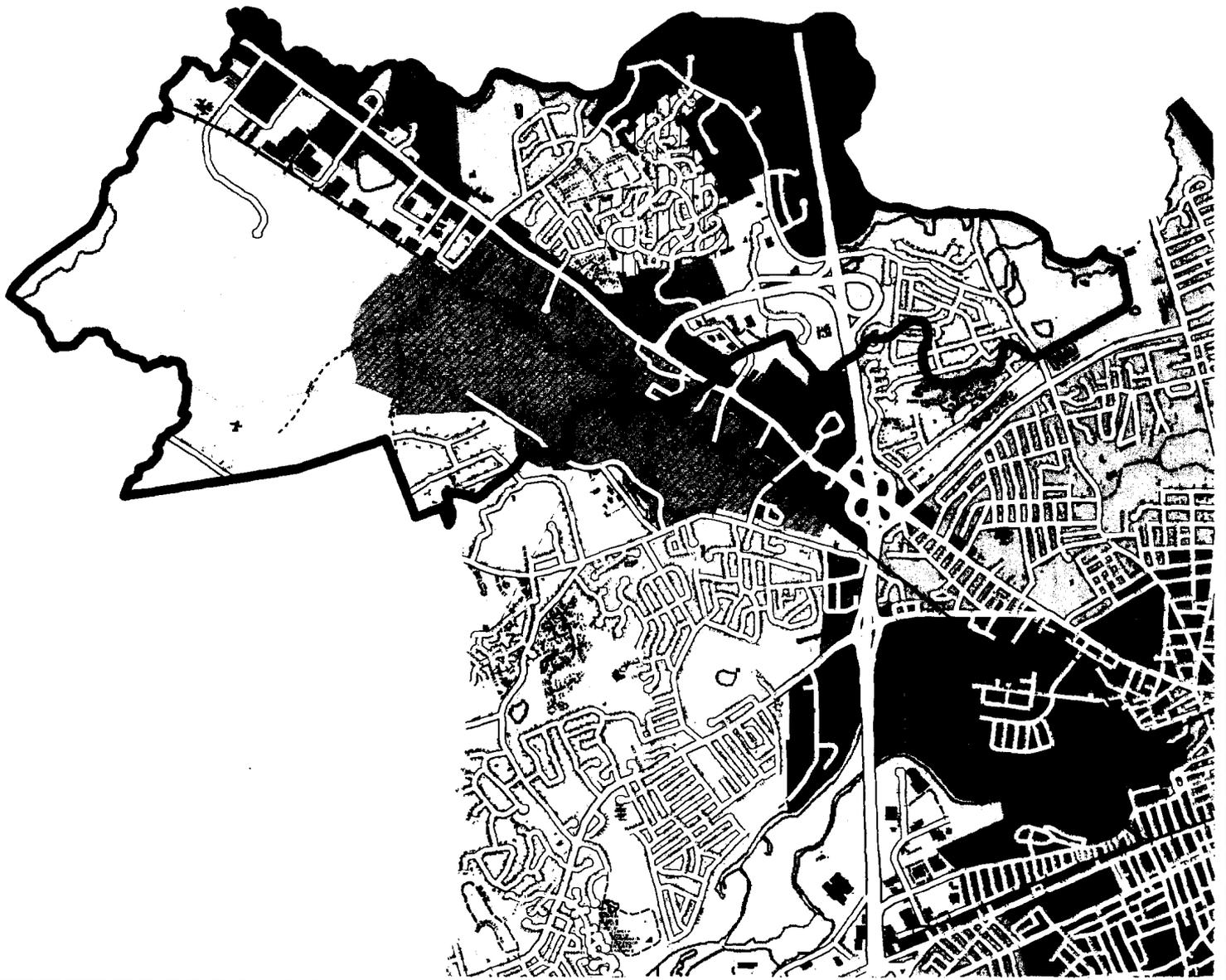


EXHIBIT 8**ARTICLE X. WATER SUPPLY PROTECTION DISTRICT****Sec. 16-650. Purpose.**

It is the purpose and intent of this article to establish an overlay district to increase protection for the Pennichuck Brook Watershed above the supply pond dam, including Pennichuck Brook, its associated ponds, wetlands, and tributaries, said water being the primary source of the city's public drinking water supply. Regulations within the district are intended to preserve the purity of the drinking water supply; to maintain the ground water table; and to maintain the filtration and purification function of the land; thereby protecting the public health, safety and welfare.

(Ord. No. O-98-46, 12-9-98)

Sec. 16-651. Definitions.

Contaminated runoff is stormwater that has come in contact with process waste, raw materials, toxic pollutants, hazardous substances, oil or grease.

Impervious surface is material or structure on, above, or below the ground that does not allow precipitation or surface water to penetrate directly into the soil.

Infiltration, is the entry of water from precipitation, irrigation, or runoff into the soil.

Mean annual high water mark is the line from visible markings and changes in soils and vegetation from the prolonged presence of water which distinguishes between predominantly aquatic and terrestrial land.

Peak discharge is the maximum instantaneous rate of flow during a storm, usually in reference to a specific design storm event.

Pretreatment is limited treatment of stormwater runoff provided prior to discharge of such runoff to the stormwater management system, and is intended to remove coarse solids, thereby facilitating maintenance and enhancing the longevity of the stormwater management system.

Recharge is water that infiltrates into an aquifer, usually from overlying soils.

Redevelopment is the development, rehabilitation, expansion, and completion of phased projects on previously developed sites.

Runoff, is precipitation, snow melt, or irrigation that flows over the land, eventually making its way to a surface water such as a stream, river, or pond.

Stormwater management system is a conveyance system for the capture, treatment, and discharge of stormwater runoff.

Toxic or hazardous material is any substance or mixture with physical, chemical, or infectious characteristics posing a significant, actual, or potential hazard to water supplies or other hazards to human health if such substance or mixture were discharged to land or water. Toxic or hazardous materials include, without limitation, synthetic organic chemicals, petroleum products, heavy metals, radioactive or infectious wastes acids and alkalis, and all substances defined as toxic or hazardous under applicable state or federal statutes, and also include such products as solvents and thinners in quantities greater as solvents and thinners in quantities greater than normal household use.

Treated stormwater is stormwater runoff that meets the requirements set forth in Section 16-145.

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Wetlands are, for the purposes of this article, are those wetlands defined and delineated in accordance with the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands," dated 1989.

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Sec. 16-653. Boundaries and zones.

The water supply protection district is herein established to include all lands within the City of Nashua lying within the watershed of the Pennichuck Brook upgradient of the supply pond dam. The map entitled "Water Supply Protection District Map, City of Nashua, New Hampshire," dated October 28, 1998, and prepared by the City of Nashua Community Development Division shall delineate the boundaries of the district. This map as may be amended is hereby declared to be a part of this article.

There shall exist a conservation zone within the water supply protection district which shall consist of all land areas located within three hundred (300) feet of the annual high water mark of Supply Pond, Bowers Pond, Holt Pond, Harris Pond, and Pennichuck Pond, and all land areas located within one hundred fifty (150) feet horizontally from all water bodies that are connected via surface water to the aforementioned ponds and the wetlands associated with those water bodies. The conservation zone shall be delineated on the map.

To fulfill its function as a prime aquifer recharge zone, the conservation zone is intended to be maintained as an undisturbed natural buffer for the purpose of protecting the drinking water supply. In case where a lot is not located entirely within the water supply protection district, the requirements of the water supply protection district shall apply to that portion of the lot located within the water supply protection district.

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Sec. 16-654. Application for uses in the water supply protection district.

Notwithstanding the requirements of other provisions of this article, applications submitted for uses proposed within the water supply protection district shall be accompanied by sufficiently detailed information and plans to clearly show the extent of the conservation zone and the use proposed to be located on the subject property. The zoning administrator shall review the information provided to determine its sufficiency.

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To reduce potential damage to the conservation zone from significant storm events, overflow capacity may be provided within the conservation zone only by vegetated swales. Piping, headwalls, rip rap and all other techniques other than vegetated swales are prohibited. Tree cutting is strictly limited to what is absolutely necessary to construct and maintain the vegetated swale. All other tree cutting in the conservation zone is prohibited.

Land contained in the conservation zone may satisfy the open space requirements of any lot including those lands.

Parking lots and sidewalks may encroach up to seventy-five (75) feet into the conservation zone, provided that the following criteria are met:

- (1) The proposed structure does not impede the flow of ground water below it;
- (2) The stormwater management practices used on the site provide for capture and treatment of all stormwater created by the ten (10) year, twenty-four (24) hour storm event on the impervious surfaces within the disturbed area of the conservation zone, and that adequate storage capacity is provided for such stormwater;
- (3) The stormwater management system on the site provides for the disposal of stored stormwater by infiltration, with all infiltration taking place outside of the conservation zone;
- (4) The stormwater management system on the site for the detention of any stormwater provide adequate safeguard for arresting the flow of any contaminated stormwater;
- (5) In cases where parking lots or other structures are placed in the conservation zone under this provision, procedures shall be submitted with the maintenance plan for the stormwater management system which provide for the removal of snow to an area outside of the conservation zone.

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Sec. 16-656. Restriction on fertilizer and pesticide use.

The use of fertilizers or pesticides is prohibited on any lands within the conservation zone or within two-hundred fifty (250) feet horizontally from the annual high water mark of all waterbodies and all associated wetlands, whichever is greater.

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Sec. 16-657. Lots of record and nonconforming uses.

- (a) The lawful use of any building or land existing at the time of the enactment of this article may be continued.
- (b) For lots of record as of the date of adoption of this article which have distances from the front lot line to the edge of a water body and associated wetlands in the conservation zone of less than one hundred fifty (150) feet, the restrictions of the conservation zone in that location shall be considered waived up to a distance of seventy-five (75) [will never be greater than 75 feet. This paragraph shall not apply to the three hundred (300) foot conservation area around the ponds.
- (c) In cases where legal loss of record, as of December 16, 1998 cannot reasonably be used for a permitted use due solely to the provisions of this article, a special exception may be granted allowing the use provided that there shall be no resulting significant adverse impact to the water supply.

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(d) Any use made nonconforming by the provisions of this article may be expanded provided such expansion would otherwise be permitted in the underlying zoning district and a minimum of fifty (50) percent open space is maintained.

(e) In other cases where currently developed sites are proposed for expansion or redevelopment, a special exception may be granted, if the following conditions are met:

(1) The proposed expansion or redevelopment would be allowed under current zoning ordinances and meets all other requirements for a special exception as set forth in section 16-208 of this chapter.

(2) The proposed expansion cannot be reasonably accomplished within the constraints of this article.

(3) Determination by the conservation commission within thirty (30) days from formal submission of the proposal declaring that the proposed use will not create a danger of prohibited acts under section 15-33 of the NROs.

(4) No increase of impervious surface in the conservation zone is proposed, except as designated in section 16-654.

(5) All stormwater management systems must be compliant with the requirements set forth in section 16-145, "Stormwater Management Standards," and must be sufficient to infiltrate all stormwater from the ten (10) year twenty-four (24) hour storm event."

(Ord. No. O-98-46, 12-9-98)

EXHIBIT 8**DIVISION 3. WATER SUPPLY PROTECTION DISTRICT****Sec. 16-145. Stormwater management standards.**

The following stormwater management standards shall be applied to all subdivision and site plans:

- (a) *Definitions.* The definitions set forth in section 16-651 are incorporated by reference for this and subsequent sections.
- (b) *Untreated stormwater.*
 - (1) No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion into wetlands or water bodies.
 - (2) Rooftop runoff may be considered uncontaminated for the purposes of these standards and therefore does not require treatment.
- (c) *Post-development peak discharge rates.*
 - (1) Stormwater management systems must be designed so that the ten (10) year twenty-four (24) hour post-development peak discharge rate does not exceed the ten (10) year twenty-four (24) hour pre-development peak discharge rates.
 - (2) In order to meet this standard, controls must be developed for the 2-year and the 10-year 24-hour storm events. The 100-year 24-hour storm event must be evaluated to demonstrate that there will not be increased flooding impacts off-site.
 - (3) Measurement of peak discharge rates shall be calculated using point of discharge or the downgradient property boundary. The topography of the site may require evaluation at more than one location if flow leaves the property in more than one direction. An applicant may demonstrate that a feature beyond the property boundary is more appropriate as a design point.
- (d) *Recharge to groundwater.* Infiltration from the two (2) year twenty-four (24) hour storm event post development shall equal or exceed the infiltration from the two (2) year twenty-four (24) hour storm event pre-development.
- (e) *Water quality.*
 - (1) For discharges to the conservation zone, the runoff volume to be treated for water quality is calculated as one (1.0) inch of runoff multiplied by the total impervious area of the post-development project site.
 - (2) For all other discharges, the runoff volume to be treated for water quality is calculated as one-half (0.5) inch of runoff multiplied by the total impervious area of the post-development project site.
 - (3) Removal of eighty (80) percent of the total suspended solids (TSS), floatables, greases, and oils. For new developments, stormwater management systems shall be designed to remove eighty (80) percent of the average annual load of total suspended solids (TSS), floatables, greases, and oils after the site is developed. This standard is met when:
 - (i) The planning board determines that suitable nonstructural practices for source control and pollution prevention are implemented;

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(ii) Stormwater management best management practices (BMPs) capture the prescribed runoff volume; and

(iii) Stormwater management BMPs are maintained as designed.

BMPs shall be selected so that a total of eighty (80) percent TSS removal is provided by one or more BMPs as shown on the following chart. Use the column showing design rates for the projected removal rate, unless there is a demonstration that a higher or lower figure within the column showing the range of average TSS should be used. BMPs not listed below should be evaluated based on data on removal efficiencies provided by the applicant. The eighty (80) percent TSS removal requirement shall apply to post-development conditions after the site is stabilized.

The following table is appropriate for evaluating stormwater systems designed to handle one-half (1/2) inch of runoff. If different level of treatment is proposed, a letter from Pennichuck Water Works indicating their concurrence with the stormwater treatment proposal must be submitted with the site or subdivision plan.

TABLE INSET:

BMP List/Design Rate	Range of Average TSS Removal Rates	Brief Design Requirements.
(Extended) detention pond/70%	60--80%	Sediment forebay.
Wet pond (a)/70%	60--80%	Sediment forebay.
Constructed wetland (b)/80%	65--80%	Designed to infiltrate or retain.
Water quality swale/70%	60--80%	Designed to infiltrate or retain
Infiltration trench/80%	75--80%	Pretreatment critical.
Infiltration basin/80%	75--80% (predicted)	Pretreatment critical.
Dry well/80%	80% (predicted)	Rooftop runoff (uncontaminated only)
Sand filter (c)/80%	80%	Pretreatment.
Organic filter (d)/80%	80%+	Pretreatment.
Water quality inlet/25%	15-35% w/cleanout	Off-line only; 0.1" minimum water quality volume (WQV) [storage].
Sediment trap (forebay)/25%	25% w/cleanout	Storm flows for 2-year event must not cause erosion; 0.1" minimum WQV storage.
Drainage channel/25%	25%	Check dams; non-erosive for 2 years.
Deep sump and hooded catch basin/15%	15% w/cleanout	Deep sump general rule = 4 × pipe diameter or 4.0' for pipes 18" or less.
Street Sweeping/10%	10%	Discretionary non-structural credit, must be part of approved plan.
	Per documentation from	

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Trade stormwater systems	independent test sources.	Designed and installed to manufacturers' specifications.
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Notes:

- (a) Includes wet extended detention ponds, wet ponds, multiple pond designs.
- (b) Includes shallow marsh, extended detention wetlands, pocket wetland, and pond/wetland designs.
- (c) Includes surface, underground, pocket and perimeter designs.
- (d) Includes compost, peat/sand, and storm treat designs.
- (f) *Critical areas land uses with higher potential pollutant loads.* Stormwater discharges from areas with high potential pollutant loads require the use of specific stormwater management BMPs, as detailed in this section. The use of infiltration practices without pretreatment prohibited.

(1) The following uses are considered to create high potential pollutant loads:

- (i) Any use requiring a National Pollutant Discharge Elimination System (NPDES) stormwater discharge permit associated with industrial activity;
- (ii) Auto salvage yards/auto recycler facilities;
- (iii) Auto fueling facilities/gas stations;
- (iv) Fleet storage areas (cars, buses, trucks, public works);
- (v) Vehicle service, maintenance and equipment cleaning areas;
- (vi) Retail parking lots;
- (vii) Road salt storage or loading areas if exposed to rainfall;

(viii) Commercial nurseries;

- (ix) Metal rooftops, including roofs made from aluminum, tin, galvanized steel, copper, or rooftops which contribute significant pollutant loads;
- (x) Outdoor storage and loading/unloading areas of hazardous substances;
- (xi) SARA 312 generators if materials or containers are exposed to rainfall; and
- (xii) The service, repainting, and hull maintenance areas of marinas.

(2) The following BMP's are required within areas with high potential pollutant loads:

- (i) Source reduction; and
- (ii) Pretreatment.

(3) The following are prohibited within areas with high potential pollutant loads located in a conservation zone:

- (i) Infiltration trenches;
- (ii) Infiltration basins; or
- (iii) Dry wells.

(4) The following restrictions apply to certain BMPs: Sand or organic filters, detention basins, wet ponds or constructed wetlands may be used only if sealed

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or lined.

(g) *Best management practices within three hundred (300) feet of wetlands or water bodies.* BMPs approved for use within three hundred (300) feet of a wetland or water body, designed to treat one (1.0) inch of runoff multiplied by the total impervious surface of the post-development project site, are limited to:

- (1) Extended detention basins;
- (2) Wet ponds;
- (3) Constructed wetlands;
- (4) Water quality swales;
- (5) Sand filters;
- (6) Organic filters;
- (7) Infiltration basins;
- (8) Infiltration trenches; and
- (9) Deep sump and hooded catch basins (used with other BMPs).

Stormwater management systems should incorporate designs which allow for shutdown and containment in the event of an emergency spill or other unexpected contamination event.

(h) *Redevelopment.* Redevelopment of previously developed sites must meet the stormwater management standards to the maximum extent possible. However, if it is not practicable to meet all standards, new stormwater management systems must be designed to improve existing conditions.

(i) *Erosion and sedimentation controls.* Erosion and sedimentation controls must be implemented to prevent impacts during construction or land disturbance activities.

Examples of BMPs for erosion and sedimentation control are staked hay bales, filter fences, hydroseeding, and phased development. Many stormwater BMP technologies (e.g. infiltration technologies) are not designed to handle high concentrations of sediments typically found in construction runoff and must be protected from construction-related sediment loadings. Construction BMPs must be maintained while construction or land disturbance activities continue.

(Ord. No. O-98-46, 12-9-98; Ord. No. O-00-33, 2-13-01)

Sec. 16-146. Operation and maintenance plans.

All stormwater management systems shall have an operation and maintenance plan (O&M plan) to ensure that systems function as designed. This plan shall be reviewed and approved as a part of the site or subdivision plans. The operation and maintenance plan shall, at a minimum, identify:

- (1) Stormwater management system(s) owner(s);
- (2) The party or parties responsible for operation and maintenance;
- (3) A schedule for inspection and maintenance;
- (4) The routine and non-routine maintenance tasks to be undertaken; and
- (5) A certification signed by the owner(s) attesting to their commitment to comply with the O&M plan.

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The stormwater management system owner is generally considered to be the landowner of the property, unless other legally binding agreements are established. Execution of the operation and maintenance plan shall be considered a condition of approval of any site plan run with the property. The owner shall provide covenants for filing with the registry of deeds, in a form satisfactory to the planning board, which provide that the obligations of the maintenance plan run with the land.

Additionally, the owner shall provide for filing with the registry of deeds such legal instruments as are necessary to allow the city or its designee to inspect or maintain the stormwater management systems for compliance with the O&M plan.

The owner shall keep the O&M plan current, including making modifications to the O&M plan as necessary to ensure that BMPs continue to operate as designed and approved. Proposed modifications of O&M plans will be submitted to the planning board for review and approval. Also, the owner must notify the planning board within thirty (30) days of a change in owner or party responsible for implementing the plan. Proposed changes in inspection frequency, maintenance schedule, or maintenance activity shall also be submitted, along with appropriate documentation, for review and approval. The planning board may, in its discretion, approve a reduction in the frequency of inspection or maintenance or a change in maintenance activity, provided that the owner has demonstrated that such changes will not compromise the long-term function of the stormwater system. The planning director shall within sixty (60) days notify the owner of acceptance of the plan modification or request additional information. No response from the planning board at the end of sixty (60) days shall constitute acceptance of the plan modification. The currently approved plan shall remain in effect until notification of approval has been issued, or the sixty (60) day period has lapsed.

The owner shall retain records (such as maintenance logs and contractor receipts) demonstrating compliance with the scheduled maintenance activities for a period of not less than three (3) years. The city may request copies of such records, or may request inspection of such records on the property. Failure to produce such records or copies of such records within fourteen (14) days of such a request shall constitute a condition of non-compliance with site plan approval, subject to enforcement as outlined under section 16-147.

The owner shall ensure that an annual report is provided to the planning director on or before the first day of January of each year. Such reports shall, at a minimum, include:

- (1) The location of the property;
- (2) The name, address, and phone number of the owner;
- (3) The name, address, and phone number of the party responsible for maintenance if other than the owner;
- (4) A brief description of the site uses and stormwater management system;
- (5) A summary of inspections completed and the results of such inspections; and
- (6) A summary of any maintenance activities or corrective actions undertaken.

Annual reports shall be signed by the owner or other legally responsible party, and shall attest to the accuracy of information provided in the report. Failure to submit annual reports shall constitute a condition of non-compliance with site plan approval subject to enforcement as outlined under section 16-147.

(Ord. No. O-98-46, 12-9-98)

Sec. 16-147. Enforcement.

In addition to all other remedies available to the city, in the event that the owner has failed to maintain such systems in accordance with the approved operation and maintenance plan, the city may secure the maintenance of stormwater management systems at the owner's expense under the

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provisions of NH RSA 676:17-a."
(Ord. No. O-98-46, 12-9-98)

Secs. 16-148--16-160. Reserved.

1 **Minimize Parking Lot Impacts.** In Item 1b) CEI correctly points out, since the
2 1998 Watershed Management Plan recommendations were made, Pennichuck has
3 completed a “raingarden” demonstration project at the Pennichuck Plaza in
4 Merrimack.¹⁰ We do not doubt that the Pennichuck Plaza “raingarden” is well
5 intended and provides an example that should be followed. We do not believe
6 that one voluntary demonstration project in one parking lot eight years after the
7 watered down recommendations of the Watershed Management Plan can be
8 considered “substantially” implementing the recommendations that the Watershed
9 Management Plan was intended to address.

10 **Transportation Impacts of Subdivisions (1c) and Use of on-site Infiltration**
11 **(1e).** Exhibit EP-4 notes that Pennichuck completed report in March 2003, which
12 led to the Pennichuck Raingardens. Again, we do not believe that one voluntary
13 demonstration project in one parking lot can be considered a success story given
14 the problems being experienced in the watershed.

15 **Use of Clearing & Grading Plans (1e) and Minimize Lawn Size and**
16 **Encouragement of Native Species.** EP-4 shows that CEI developed standards
17 that were later incorporated into a report by the Nashua Regional Planning
18 Commission and others. While EP-4 states that PWW conducts (or intends to
19 conduct) “Plan review & inspections by PWW when possible”, in our experience
20 Pennichuck has provided relatively little assistance in this area.

21 **Q. What about the other recommendations that Ms. Pannetier states have been**
22 **“substantially” implemented on EP-4?**

¹⁰ See Exhibit 9, attached, showing the location of the project.

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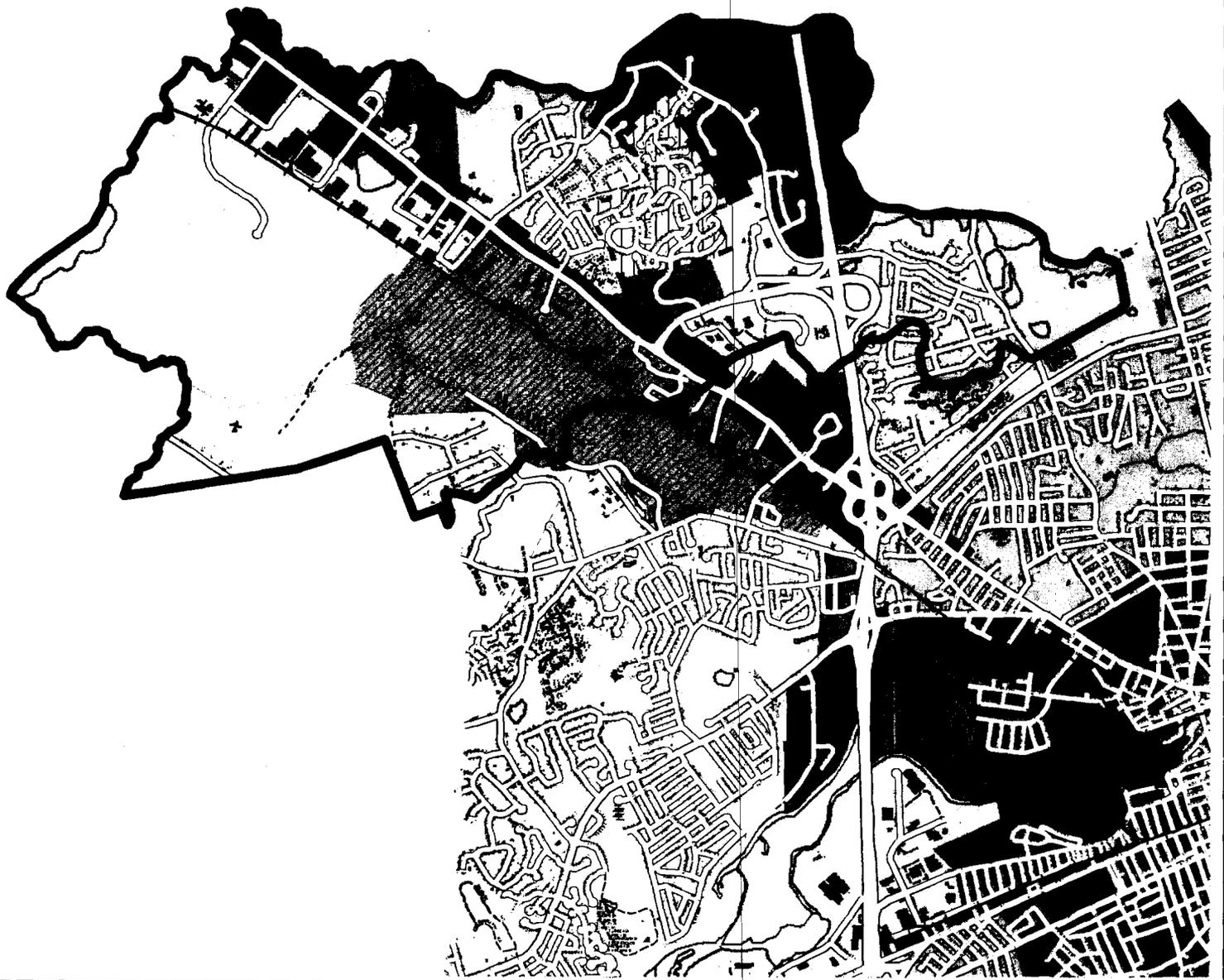


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(e) In other cases where currently developed sites are proposed for expansion or redevelopment, a special exception may be granted, if the following conditions are met:

(1) The proposed expansion or redevelopment would be allowed under current zoning ordinances and meets all other requirements for a special exception as set forth in section 16-208 of this chapter.

(2) The proposed expansion cannot be reasonably accomplished within the constraints of this article.

(3) Determination by the conservation commission within thirty (30) days from formal submission of the proposal declaring that the proposed use will not create a danger of prohibited acts under section 15-33 of the NROs.

(4) No increase of impervious surface in the conservation zone is proposed, except as designated in section 16-654.

(5) All stormwater management systems must be compliant with the requirements set forth in section 16-145, "Stormwater Management Standards," and must be sufficient to infiltrate all stormwater from the ten (10) year twenty-four (24) hour storm event."

(Ord. No. O-98-46, 12-9-98)

EXHIBIT 8**DIVISION 3. WATER SUPPLY PROTECTION DISTRICT****Sec. 16-145. Stormwater management standards.**

The following stormwater management standards shall be applied to all subdivision and site plans:

- (a) *Definitions.* The definitions set forth in section 16-651 are incorporated by reference for this and subsequent sections.
- (b) *Untreated stormwater.*
 - (1) No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion into wetlands or water bodies.
 - (2) Rooftop runoff may be considered uncontaminated for the purposes of these standards and therefore does not require treatment.
- (c) *Post-development peak discharge rates.*
 - (1) Stormwater management systems must be designed so that the ten (10) year twenty-four (24) hour post-development peak discharge rate does not exceed the ten (10) year twenty-four (24) hour pre-development peak discharge rates.
 - (2) In order to meet this standard, controls must be developed for the 2-year and the 10-year 24-hour storm events. The 100-year 24-hour storm event must be evaluated to demonstrate that there will not be increased flooding impacts off-site.
 - (3) Measurement of peak discharge rates shall be calculated using point of discharge or the downgradient property boundary. The topography of the site may require evaluation at more than one location if flow leaves the property in more than one direction. An applicant may demonstrate that a feature beyond the property boundary is more appropriate as a design point.
- (d) *Recharge to groundwater.* Infiltration from the two (2) year twenty-four (24) hour storm event post development shall equal or exceed the infiltration from the two (2) year twenty-four (24) hour storm event pre-development.
- (e) *Water quality.*
 - (1) For discharges to the conservation zone, the runoff volume to be treated for water quality is calculated as one (1.0) inch of runoff multiplied by the total impervious area of the post-development project site.
 - (2) For all other discharges, the runoff volume to be treated for water quality is calculated as one-half (0.5) inch of runoff multiplied by the total impervious area of the post-development project site.
 - (3) Removal of eighty (80) percent of the total suspended solids (TSS), floatables, greases, and oils. For new developments, stormwater management systems shall be designed to remove eighty (80) percent of the average annual load of total suspended solids (TSS), floatables, greases, and oils after the site is developed. This standard is met when:
 - (i) The planning board determines that suitable nonstructural practices for source control and pollution prevention are implemented;

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(ii) Stormwater management best management practices (BMPs) capture the prescribed runoff volume; and

(iii) Stormwater management BMPs are maintained as designed.

BMPs shall be selected so that a total of eighty (80) percent TSS removal is provided by one or more BMPs as shown on the following chart. Use the column showing design rates for the projected removal rate, unless there is a demonstration that a higher or lower figure within the column showing the range of average TSS should be used. BMPs not listed below should be evaluated based on data on removal efficiencies provided by the applicant. The eighty (80) percent TSS removal requirement shall apply to post-development conditions after the site is stabilized.

The following table is appropriate for evaluating stormwater systems designed to handle one-half (1/2) inch of runoff. If different level of treatment is proposed, a letter from Pennichuck Water Works indicating their concurrence with the stormwater treatment proposal must be submitted with the site or subdivision plan.

TABLE INSET:

BMP List/Design Rate	Range of Average TSS Removal Rates	Brief Design Requirements.
(Extended) detention pond/70%	60--80%	Sediment forebay.
Wet pond (a)/70%	60--80%	Sediment forebay.
Constructed wetland (b)/80%	65--80%	Designed to infiltrate or retain.
Water quality swale/70%	60--80%	Designed to infiltrate or retain
Infiltration trench/80%	75--80%	Pretreatment critical.
Infiltration basin/80%	75--80% (predicted)	Pretreatment critical.
Dry well/80%	80% (predicted)	Rooftop runoff (uncontaminated only)
Sand filter (c)/80%	80%	Pretreatment.
Organic filter (d)/80%	80%+	Pretreatment.
Water quality inlet/25%	15-35% w/cleanout	Off-line only; 0.1" minimum water quality volume (WQV) [storage].
Sediment trap (forebay)/25%	25% w/cleanout	Storm flows for 2-year event must not cause erosion; 0.1" minimum WQV storage.
Drainage channel/25%	25%	Check dams; non-erosive for 2 years.
Deep sump and hooded catch basin/15%	15% w/cleanout	Deep sump general rule = 4 × pipe diameter or 4.0' for pipes 18" or less.
Street Sweeping/10%	10%	Discretionary non-structural credit, must be part of approved plan.
	Per documentation from	

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Trade stormwater systems	independent test sources.	Designed and installed to manufacturers' specifications.
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Notes:

- (a) Includes wet extended detention ponds, wet ponds, multiple pond designs.
- (b) Includes shallow marsh, extended detention wetlands, pocket wetland, and pond/wetland designs.
- (c) Includes surface, underground, pocket and perimeter designs.
- (d) Includes compost, peat/sand, and storm treat designs.
- (f) *Critical areas land uses with higher potential pollutant loads.* Stormwater discharges from areas with high potential pollutant loads require the use of specific stormwater management BMPs, as detailed in this section. The use of infiltration practices without pretreatment prohibited.

(1) The following uses are considered to create high potential pollutant loads:

- (i) Any use requiring a National Pollutant Discharge Elimination System (NPDES) stormwater discharge permit associated with industrial activity;
- (ii) Auto salvage yards/auto recycler facilities;
- (iii) Auto fueling facilities/gas stations;
- (iv) Fleet storage areas (cars, buses, trucks, public works);
- (v) Vehicle service, maintenance and equipment cleaning areas;
- (vi) Retail parking lots;
- (vii) Road salt storage or loading areas if exposed to rainfall;

(viii) Commercial nurseries;

- (ix) Metal rooftops, including roofs made from aluminum, tin, galvanized steel, copper, or rooftops which contribute significant pollutant loads;
- (x) Outdoor storage and loading/unloading areas of hazardous substances;
- (xi) SARA 312 generators if materials or containers are exposed to rainfall; and
- (xii) The service, repainting, and hull maintenance areas of marinas.

(2) The following BMP's are required within areas with high potential pollutant loads:

- (i) Source reduction; and
- (ii) Pretreatment.

(3) The following are prohibited within areas with high potential pollutant loads located in a conservation zone:

- (i) Infiltration trenches;
- (ii) Infiltration basins; or
- (iii) Dry wells.

(4) The following restrictions apply to certain BMPs: Sand or organic filters, detention basins, wet ponds or constructed wetlands may be used only if sealed

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or lined.

(g) *Best management practices within three hundred (300) feet of wetlands or water bodies.* BMPs approved for use within three hundred (300) feet of a wetland or water body, designed to treat one (1.0) inch of runoff multiplied by the total impervious surface of the post-development project site, are limited to:

- (1) Extended detention basins;
- (2) Wet ponds;
- (3) Constructed wetlands;
- (4) Water quality swales;
- (5) Sand filters;
- (6) Organic filters;
- (7) Infiltration basins;
- (8) Infiltration trenches; and
- (9) Deep sump and hooded catch basins (used with other BMPs).

Stormwater management systems should incorporate designs which allow for shutdown and containment in the event of an emergency spill or other unexpected contamination event.

(h) *Redevelopment.* Redevelopment of previously developed sites must meet the stormwater management standards to the maximum extent possible. However, if it is not practicable to meet all standards, new stormwater management systems must be designed to improve existing conditions.

(i) *Erosion and sedimentation controls.* Erosion and sedimentation controls must be implemented to prevent impacts during construction or land disturbance activities.

Examples of BMPs for erosion and sedimentation control are staked hay bales, filter fences, hydroseeding, and phased development. Many stormwater BMP technologies (e.g. infiltration technologies) are not designed to handle high concentrations of sediments typically found in construction runoff and must be protected from construction-related sediment loadings. Construction BMPs must be maintained while construction or land disturbance activities continue.

(Ord. No. O-98-46, 12-9-98; Ord. No. O-00-33, 2-13-01)

Sec. 16-146. Operation and maintenance plans.

All stormwater management systems shall have an operation and maintenance plan (O&M plan) to ensure that systems function as designed. This plan shall be reviewed and approved as a part of the site or subdivision plans. The operation and maintenance plan shall, at a minimum, identify:

- (1) Stormwater management system(s) owner(s);
- (2) The party or parties responsible for operation and maintenance;
- (3) A schedule for inspection and maintenance;
- (4) The routine and non-routine maintenance tasks to be undertaken; and
- (5) A certification signed by the owner(s) attesting to their commitment to comply with the O&M plan.

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The stormwater management system owner is generally considered to be the landowner of the property, unless other legally binding agreements are established. Execution of the operation and maintenance plan shall be considered a condition of approval of any site plan run with the property. The owner shall provide covenants for filing with the registry of deeds, in a form satisfactory to the planning board, which provide that the obligations of the maintenance plan run with the land.

Additionally, the owner shall provide for filing with the registry of deeds such legal instruments as are necessary to allow the city or its designee to inspect or maintain the stormwater management systems for compliance with the O&M plan.

The owner shall keep the O&M plan current, including making modifications to the O&M plan as necessary to ensure that BMPs continue to operate as designed and approved. Proposed modifications of O&M plans will be submitted to the planning board for review and approval. Also, the owner must notify the planning board within thirty (30) days of a change in owner or party responsible for implementing the plan. Proposed changes in inspection frequency, maintenance schedule, or maintenance activity shall also be submitted, along with appropriate documentation, for review and approval. The planning board may, in its discretion, approve a reduction in the frequency of inspection or maintenance or a change in maintenance activity, provided that the owner has demonstrated that such changes will not compromise the long-term function of the stormwater system. The planning director shall within sixty (60) days notify the owner of acceptance of the plan modification or request additional information. No response from the planning board at the end of sixty (60) days shall constitute acceptance of the plan modification. The currently approved plan shall remain in effect until notification of approval has been issued, or the sixty (60) day period has lapsed.

The owner shall retain records (such as maintenance logs and contractor receipts) demonstrating compliance with the scheduled maintenance activities for a period of not less than three (3) years. The city may request copies of such records, or may request inspection of such records on the property. Failure to produce such records or copies of such records within fourteen (14) days of such a request shall constitute a condition of non-compliance with site plan approval, subject to enforcement as outlined under section 16-147.

The owner shall ensure that an annual report is provided to the planning director on or before the first day of January of each year. Such reports shall, at a minimum, include:

- (1) The location of the property;
- (2) The name, address, and phone number of the owner;
- (3) The name, address, and phone number of the party responsible for maintenance if other than the owner;
- (4) A brief description of the site uses and stormwater management system;
- (5) A summary of inspections completed and the results of such inspections; and
- (6) A summary of any maintenance activities or corrective actions undertaken.

Annual reports shall be signed by the owner or other legally responsible party, and shall attest to the accuracy of information provided in the report. Failure to submit annual reports shall constitute a condition of non-compliance with site plan approval subject to enforcement as outlined under section 16-147.

(Ord. No. O-98-46, 12-9-98)

Sec. 16-147. Enforcement.

In addition to all other remedies available to the city, in the event that the owner has failed to maintain such systems in accordance with the approved operation and maintenance plan, the city may secure the maintenance of stormwater management systems at the owner's expense under the

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provisions of NH RSA 676:17-a."
(Ord. No. O-98-46, 12-9-98)

Secs. 16-148--16-160. Reserved.

1 **Minimize Parking Lot Impacts.** In Item 1b) CEI correctly points out, since the
2 1998 Watershed Management Plan recommendations were made, Pennichuck has
3 completed a “raingarden” demonstration project at the Pennichuck Plaza in
4 Merrimack.¹⁰ We do not doubt that the Pennichuck Plaza “raingarden” is well
5 intended and provides an example that should be followed. We do not believe
6 that one voluntary demonstration project in one parking lot eight years after the
7 watered down recommendations of the Watershed Management Plan can be
8 considered “substantially” implementing the recommendations that the Watershed
9 Management Plan was intended to address.

10 **Transportation Impacts of Subdivisions (1c) and Use of on-site Infiltration**
11 **(1e).** Exhibit EP-4 notes that Pennichuck completed report in March 2003, which
12 led to the Pennichuck Raingardens. Again, we do not believe that one voluntary
13 demonstration project in one parking lot can be considered a success story given
14 the problems being experienced in the watershed.

15 **Use of Clearing & Grading Plans (1e) and Minimize Lawn Size and**
16 **Encouragement of Native Species.** EP-4 shows that CEI developed standards
17 that were later incorporated into a report by the Nashua Regional Planning
18 Commission and others. While EP-4 states that PWW conducts (or intends to
19 conduct) “Plan review & inspections by PWW when possible”, in our experience
20 Pennichuck has provided relatively little assistance in this area.

21 **Q. What about the other recommendations that Ms. Pannetier states have been**
22 **“substantially” implemented on EP-4?**

¹⁰ See Exhibit 9, attached, showing the location of the project.