

**DRAFT**  
**Town of Southampton**  
**Stormwater Management & Erosion and Sediment Control Regulations**  
**(pulled from Section XIV of the Zoning Bylaw)**

**for June 17, 2020 Planning Board Meeting**

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- B. Definitions
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Blue highlights = flagged for attention as finalize document

#### A. Purpose and Authority

Pull from Bylaw once language finalized.

#### B. Definitions

The following definitions describe the meaning of the terms used in these Regulations ~~is~~ bylaw:

“Abutter” is the owner(s) of record of abutting lots and those within 300 feet of the property line of the lot where the ~~proposed~~ project is located.

“Adverse impact” means any deleterious effect on waters or wetlands, including their quality, quantity, surface area, species composition, aesthetics or usefulness for human or natural uses which are or may potentially be harmful or injurious to human health, welfare, safety or property, to biological productivity, diversity, or stability or which unreasonably interfere with the enjoyment of life or property, including outdoor recreation.

“Agricultural activity” producing or raising one or more of the following agricultural commodities for commercial purposes:

1. animals, including but not limited to livestock, poultry, and bees;
2. fruits, vegetables, berries, nuts, maple sap, and other foods for human consumption; and
3. feed, seed, forage, tobacco, flowers, sod, nursery or greenhouse products, and ornamental plants or shrubs.

and as further defined by the Massachusetts Wetlands Protection Act and its implementing regulations.

“Alter” is any activity that will measurably change the ability of a ground surface area to absorb water or will change existing surface drainage patterns. Alter may be similarly represented as “alteration of drainage characteristics,” and “conducting land disturbance activities.”

“As-built drawings” are ~~full-size~~ drawings that completely record and document applicable aspects and features of conditions of a project following construction using the plans derived from a Stormwater Management Permit. These shall include all final grades and clearly depict all changes to project design from the approved plans, if any.

and be certified by the Project Engineer who must be a Massachusetts Registered Professional Engineer.

“Authorized Enforcement Agency” ~~is: Th~~ the [Southampton](#) Planning Board, its employees or agents designated to enforce ~~these regulations and Governing is b~~ Bylaw.

“Best management practices” (BMPs) are structural or biological devices that temporarily store or treat stormwater runoff to reduce flooding, remove pollutants, and provide other amenities. They can also be non-structural practices that reduce pollutants at their source. BMPs are described in the Massachusetts Stormwater Handbook described below.

“Construction activity” is disturbance of the ground by removal of vegetative surface cover or topsoil, grading, excavation, clearing or filling.

“Design storm” is a rainfall event of specified size and return frequency that is used to calculate the runoff volume and peak discharge rate to a BMP.

“Detention” is the temporary storage of storm runoff in a BMP, which is used to control the peak discharge rates, and which provides gravity settling of pollutants.

“Disturbance” is any land clearing, grading, bulldozing, digging or similar activities.

“Drainage area” means that area contributing runoff to a single point measured in a horizontal plane, which is enclosed by a ridge line.

“Easement” means a grant or reservation by the owner of land for the use of such land by others for a specific purpose or purposes, and which must be included in the conveyance of land affected by such easement.

[“Erosion” is the wearing away of the land surface by natural or artificial forces, such as wind, water, ice, gravity, or vehicle traffic, and subsequent detachment and transportation of soil particles.](#)

[“Erosion and sediment control plan” is a document containing narrative, drawings and details—developed by a qualified professional engineer \(PE\) or a certified professional in erosion and sedimentation control \(CPESC\) — that includes best management practices or equivalent measures designed to control surface runoff, erosion, and sedimentation during construction and construction-related land disturbance activities.](#)

[“Flooding” is a local and temporary inundation or a rise in the surface of a body of water.](#)

such that it covers land not usually under water.

“Flow attenuation means prolonging the flow time of runoff to reduce the peak discharge.

“Forest Cutting Plan” is a plan for the cutting of trees on forest land that is prepared and submitted in accordance with M.G.L. Chapter 132 Sections 40 - 46A. The Forest Cutting Plan requires approval by a Service Forester of the Massachusetts Department of Conservation and Recreation, as provided under 304 CMR 11.

“Governing Bylaw” refers to... add citation when have for Stormwater Management bylaw.

“Grading” means changing the level or shape of the ground surface.

“Groundwater” is all water beneath any land surface, including water in the soil and bedrock beneath water bodies, but not including water in manmade structures.

“Hydrology mode” may include one of the following:

- TR-20, a watershed hydrology model developed by the Natural Resources Conservation Service act that is used to route a design storm hydrograph through a pond;
- TR 55, or Technical Release 55, “Urban Hydrology for Small Watersheds” is a publication developed by the Natural Resources Conservation Service to calculate stormwater runoff and an aid in designing detention basins;
- Hydrocad, computer software for modeling stormwater runoff and designing stormwater management systems.

“Impervious surfaces” are areas, such as pavement or rooftops, which prevent the infiltration of water into the soil.

“Infeasible” means not technologically possible, or not economically practicable and achievable in light of best industry practices.

**Commented [A1]:** New definition from MS4 Settlement Agreement

“Infiltration” is the downward movement of water from the surface to the subsoil.

“Low impact development” is a development approach that seeks to mimic (or in the case of redevelopment, restore/recreate) a site’s predevelopment hydrology through protection of on-site natural features and environmentally sensitive site design that limits impervious areas, preserves open space, and uses decentralized small scale facilities to capture and manage rainfall (or snowmelt) close to where it falls. These small-scale

facilities serve to slow, absorb, and treat flow and include bioretention areas, grass swales, porous pavements, cisterns, and green roofs and walls.

**ADD: “Land uses with higher potential pollutant loads (LUPPLs)”**

“Massachusetts Stormwater Handbook and Stormwater Standards” is the guidance issued by MassDEP, and as amended, that coordinates the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act G.L. c. 131 § 40 and Massachusetts Clean Waters Act G.L. c. 21, §. 23-56. The Handbook addresses stormwater impacts through implementation of performance standards to promote increased stormwater recharge, the treatment of runoff from polluting land uses, low impact development (LID) techniques, pollution prevention, the removal of illicit discharges to stormwater management systems, and improved operation and maintenance of stormwater best management practices (BMPs). MassDEP applies the Stormwater Management Standards pursuant to its authority under the Wetlands Protection Act, M.G.L. c. 131, § 40, and the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53. The revised Stormwater Management Standards have been incorporated in the Wetlands Protection Act Regulations, 310 CMR 10.05(6)(k) and the Water Quality Certification Regulations, 314 CMR 9.06(6)(a).

**ADD: “MAXIMUM EXTENT PRACTICABLE” and related standards?**

“Municipal Separate Storm Sewer System (MS4)” or “Municipal Storm Drain System” is the system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of Southampton .

“New development” is any construction activities or land alteration resulting in total earth disturbances greater than 40,000 square feet (or activities that are part of a larger common plan of development disturbing greater than 40,000 square feet) on an area that has not previously been developed to include impervious cover.

“Nonpoint source pollution” is pollution from many diffuse sources caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into water resource areas.

“Operation and maintenance plan” is a plan that defines the functional, financial and

organizational mechanisms for the ongoing operation and maintenance of a stormwater management system to ensure that it continues to function as designed.

“Outfall” is the terminus of a storm drain or other stormwater structure where the contents are released.

“Owner” is the person with a legal or equitable interest in a property.

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

“Performance guarantee” is a guarantee in the form of a surety or cash bond, irrevocable letter of credit, or other means of security acceptable to the Planning Board provided by the developer to be used to complete or correct improvements if the developer does not complete the improvements as promised.

“Permeable soil” are soil materials with a sufficiently rapid infiltration rate so as to greatly reduce or eliminate surface and stormwater runoff. These soils are generally classified as NRCS hydrologic soil types A and B.

“Person” is any individual, group of individuals, or entity, including an association, partnership, corporation, company, business, organization, trust, estate, administrative agency, public or quasi-public corporation or body, the Commonwealth or political subdivision thereof.

“Point source” is any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container, from which pollutants are or may be discharged.

“Pollutant” is any element of property or sewage, agricultural, industrial or commercial waste, runoff, leachate, heated effluent, or other matter whether originating at a point or nonpoint source, that is or may be introduced into any sewage treatment works or Waters of the Commonwealth. Pollutants shall include:

1. Paints, varnishes and solvents;
2. Oil and other automotive fluids;
3. Nonhazardous liquid and solid wastes and yard wastes;
4. Refuse, rubbish, garbage, litter, or other discarded or abandoned objects, accumulations and floatables;
5. Pesticides, herbicides and fertilizers;
6. Hazardous materials and wastes; sewage, fecal coliform and pathogens;
7. Dissolved and particulate metals;

8. Animal wastes and residues;
9. Rock, sand, salt and soils;
10. Construction wastes and residues;
11. Noxious or offense matter of any kind.

“Post-construction impervious surface” is the final impervious cover on the portion of the property where construction activities have occurred.

“Post-development” refers to the conditions that reasonably may be expected or anticipated to exist after completion of the land development activity on a specific site or tract of land. Post-development refers to the phase of a new development or redevelopment project after completion, and does not refer to the construction phase of a project.

“Pre-development” refers to the conditions that exist at the time that plans for the land development of a tract of land are submitted to the Stormwater Authority. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time prior to the first plan submission, shall establish pre-development conditions.

“Recharge” is the replenishment of underground water reserves.

“Recorded” means recorded in the Hampshire County Registry of Deeds

“Registry of deeds” is the Hampshire County Registry of Deeds, the registry in which the land in question is situated, and, when appropriate, shall include the land court.

“Redevelopment” is any construction, land alteration, or improvement of impervious surfaces resulting in total earth disturbances greater than 40,000 square feet or activities that are part of a larger common plan of development disturbing greater than 40,000 square feet that does not meet the definition of “new development” (see above).

“Related entities” are any corporation in which the owner is an officer, director or shareholder; a limited partnership in which the owner is a limited partner or general partner; a general partnership in which the owner is a partner; a limited liability company in which the owner is a shareholder or director; a trust in which the owner is a trustee or beneficiary; or any other entity in which the owner has a beneficial interest.

“Retention” is the holding of runoff in a basin without release except by means of evaporation, infiltration, or emergency bypass.

“Runoff” is rainfall, snowmelt, or irrigation water flowing over the ground surface.

“Sediment” is any mineral or organic soil material that is transported by wind or water

from its origin to another location, the product of erosion processes.

“Sedimentation” is a process of depositing material that has been suspended and transported in water.

“Site” is the area extent of construction activities, including but not limited to the creation of new impervious cover and improvement of existing impervious cover.

“Start of construction” is the first land-disturbing activity associated with a development, including land preparation such as: clearing, grading and filling; installation of streets and walkways; excavation for basements; footings, piers or foundations; erection of temporary forms; and installation of accessory buildings such as garages.

“Stormwater Authority” administers, implements, and enforces the Southampton Stormwater Management and Erosion and Sediment Control Bylaw (give citation) and associated regulations. See Section A above for more information on Authority and Section E below for more information on Administration.

“Stormwater management” is the use of structural or non-structural practices that are designed to reduce stormwater runoff pollutant loads, discharge volumes, and/or peak flow discharge rates.

“Stormwater management permit” is the permit issued by the Southampton Planning Board, after review of an application, plans (stormwater management and erosion and sediment control), calculations, and other supporting documents, which is designed to protect the Town from the adverse effects of uncontrolled and untreated stormwater runoff.

“Stormwater management plan” is a plan to be submitted with the application for a Stormwater Management Permit, which shall include current and proposed site conditions, proposed improvements, proposed stormwater control measures, development schedules, and such other matters as may be required by the Southampton Planning Board.

“Stop work order” is an order issued that requires that all construction activity on a site be stopped.

“Swale” is a natural depression or wide shallow ditch used to temporarily store, route, or filter runoff.

ADD: “Zone 2”



**C. Applicability**

Pull from Bylaw once language finalized.

**D. Exemptions**

Pull from Bylaw once language finalized.

**E. Administration**

Pull from Bylaw once language finalized.

**F. Permit Procedures and Requirements**

1. Permit Required

No land owner or land operator shall receive any of the building, grading, or other land development permits required for land disturbance activities, and no land owner shall commence land disturbance activities, without approval of a Stormwater Management Permit from the Southampton Planning Board and without meeting the requirements of these Regulations and Governing is-Bylaw.

2. Pre-application and Concept Plan Meeting

Prior to investing in extensive professional design efforts, it may be beneficial for applicants Applicants for a Stormwater Management Permit are encouraged to attend at least one pre-application meeting with the Southampton Planning Board. This meeting is intended to provide the applicant with advice and guidance relative to the approval process; and allow the applicant and Planning Board to have a preliminary conversation about the site, stormwater management and erosion control considerations, and concept plan. The Planning Board may invite to this meeting other town boards and officers at its discretion.

For this pre-application meeting, the Town has a Low Impact Development design checklist to encourage a better site design approach. This checklist identifies several items that will be helpful for this preliminary meeting and may help to streamline the permitting process overall.

This meeting can be combined with the pre-submission review meeting described under the Subdivision Regulations.

2.3. Filing Application Requirements

The site owner or his/her agent shall submit a stormwater management permit application or an application for waiver for review and approval for any proposed development specified in Section C of these Regulations. Seven copies of the stormwater management permit application shall be clearly labeled and submitted to the Town Clerk, who will date stamp and distribute to Planning Board and other review boards as indicated on the permit application. An electronic copy shall also be submitted in a form agreeable to the

**Commented [P2]:** Added to help promote LID approach, but also for potential cost savings to applicant.

**Commented [P3]:** Need to prepare this checklist.

**Commented [A4]:** Cindy found that there is no real application for waiver. How are these handled?

**Commented [P5]:** Ed indicated that application ought go to Town Clerk for date stamp.

Planning Board.

Application for approval of a Stormwater Management Permit shall include the following:

- a. Completed and signed Permit Application Form, including permit application routing slip.
- b. A list of abutters, certified by the Assessor's Office, within 300 feet of the property line of the site, including property owners in another municipality, if not already provided through site plan review material.

It is the Applicants' responsibility to provide Notification to these abutters of the date, time, location and subject matter of the first Planning Board meeting at which this appears as an Agenda item. Said notice shall be mailed, certified, no later than the date that the application is filed with the Town Clerk. Proof of such abutter notification must be submitted by the Applicant to the Planning Board at the Public Meeting.

- ~~b-c.~~ A stormwater management plan, supporting computations, drawings, and sufficient information describing the manner, location, and type of measures in which stormwater runoff will be managed from the entire development as specified in Sections H and K. The plan shall serve as the basis for all subsequent construction.
- ~~e-d.~~ An erosion and sediment control plan that, which shall contain sufficient information to describe the nature and purpose of the proposed development as specified in Sections H and K.
- ~~d-e.~~ A draft Operation and Maintenance Plan, with an ongoing Inspection and Maintenance agreement as specified in Section I.
- ~~e-f.~~ A non-refundable permit application review fee based on the fee structure established by the Planning Board. Applicable stormwater permit review-application fees shall be paid to the Planning Board on submittal of an application. The Planning Board may establish a permit review fee schedule, based on the type and complexity of projects, and may update this fee as needed, to cover the costs of permit administration for Stormwater Management Permits.
- ~~f-g.~~ Applicants shall select a consultant engineer from the Planning Board's approved list of peer review consultants, and shall pay for the services of the selected consultant to:
  - (1) complete a review and evaluation of all permit application materials and file a written report with the Planning Board;
  - (2) complete all construction-related inspections required under Section F-6, and file reports on these inspections with the Planning

**Commented [A6]:** There seem to be two application forms on the Planning Board website. Can these be combined? These should also be updated based on any changes here and in regulations?.

**Commented [P7]:** The following is from Zoning Site Plan Review requirements. From this language, looks like Applicant provides notice for first Planning Board meeting? Also, prior to filing application with Town Clerk? Is this what you want?

**Commented [P8]:** This = project or stormwater management permit for project?

**Commented [P9]:** This seems to present timing issue. Yes, no?

**Commented [A10]:** In PB fee schedule under Special Permit for Erosion and Sediment Control for Stormwater Management, called "application fee." Fees are as follows currently:

\$650 for subdivision, cluster, and commercial/industrial.  
\$75 for family residence with disturbance of 40k to 80k sf.  
\$125 for family residents with disturbance greater than 80k sf.

Changes shown here seek to reconcile permit review fee here and application fee in #8 below, which seem to be duplicative.

Need to attend to:  
Permit Application Fee  
Costs of peer review  
Costs of third party inspections

**Commented [A11]:** Move to Administration.

**Commented [P12]:** Cindy reported that the Planning Board is selecting the engineer for review of plans and conducting inspections. She will confirm that need to change language here.

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Board in accordance with Section G.

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g. Performance Survey

**Commented [A13]:** Mention here, but put below with elaboration.

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The applicant may request, and the Southampton Planning Board may grant, a waiver from any information requirements it judges to be unnecessary to the review of a particular plan, upon the recommendations of the Highway Department or other agent designated by the Planning Board.

### 3.4. Procedures for Review and Approval of Stormwater Management Permit Applications

- a. The procedures for review and approval of stormwater management plan applications shall be consistent with these Regulations and Governing Bylaw-Subdivision Definitive Plan approval process, as appropriate to the use.
- b. The Southampton Planning Board will review the permit application for administrative completeness. If the Planning Board determines the application to be incomplete, the Planning Board will inform the applicant that the application will be denied based on the determination that the application is administratively incomplete unless the incomplete items are addressed by a specific date to be determined by the Planning Board. The Planning Board will require that an extension of the review period be granted to allow additional time for the applicant to provide the required information and the Planning Board and/or other reviewing boards to review the application once complete information has been submitted.
- ~~b.c.~~ The plan shall be circulated to the Planning Board shall refer copies of the stormwater management permit application to the Building Inspector, Conservation Commission, Board of Health, and Highway Department to determine compliance with the requirements of these Regulations and Governing Bylaw prior to approval. Said bodies shall submit comments and recommendations to the Planning Board.
- d. The applicant shall also submit copies of the stormwater permit application to the consultant engineer selected from the Stormwater Authority's approved list of consultant engineers, for review.
- c.e. The Planning Board shall hold a public hearing within sixty-five (65) days of the receipt of a complete application and shall take final action within ninety (90) days from the close of the hearing unless such time is extended by agreement between the applicant and the Planning Board. Whenever possible, public hearings for stormwater management permit applications shall be combined with public hearings for site plan approval, subdivision

**Commented [P14]:** If change above, change here too.

**Commented [A15]:** In your Zoning Bylaw—Section G.6—you currently have initial inspection, prior to approval of any plan. How do you want to work that in here?

review, special permits or other permits. Notice of the public hearing shall be given by publication in a local paper of general circulation, by posting and by first-class mailings to abutters at least seven days prior to the hearing, in accordance with the procedures in M.G.L. Chapter 40A, Section 11.

#### 4.5. Criteria for Review of Stormwater Management Permit Applications

a. Of specific interest to the Planning Board in review of the stormwater management permit application will be:

- Operations at the construction site;
- planned stormwater management BMPs during the construction phase; and
- planned stormwater management BMPs to be used to manage runoff created after development.

**Commented [A16]:** Language pulled from MS4 permit requirements.

a-b. In addition to other criteria used by the Southampton Planning Board in making permit decisions, for the uses specified in these Regulations is bylaw, the Planning Board must also find that the Stormwater Management Plan and Erosion and Sediment Control Plan submitted with the permit application meets the following criteria:

- the Stormwater Management Plan and the Erosion and Sediment Control Plan are consistent with the Purposes and Objectives of these regulations is Bylaw in Section A;
- the Stormwater Management Plan meets the Performance Standards described in Section H;
- the Erosion and Sediment Control plan must meet the Content Requirements Performance Standards Design Requirements in Section K.

#### 5.6. Planning Board Action

The Southampton Planning Board's action, rendered in writing, shall consist of either:

- a. Approval of the Stormwater Management Permit Application based upon determination that the proposed plan meets the purposes in Section A, the standards in Section H, and the content requirements in Section K, and will adequately protect the water resources of the community and is in compliance with the requirements set forth in these Regulations;
- b. Approval of the Stormwater Management Permit Application subject to any conditions, modifications or restrictions required by the Board which will

ensure that the project meets the purposes in Section A, the standards in Section H, and the content requirements in Section K, and adequately protects water resources, set forth in these Regulations;

- c. Disapproval of the Stormwater Management Permit Application based upon a determination that the proposed plan, as submitted, does not meet the purposes in Section A, and the standards in Section H, and the content requirements in Section K, or adequately protect water resources, as set forth in these Regulations ~~is by law~~.

Failure of the Planning Board to take final action upon an Application within the time specified above shall be deemed to be approval of said Application. Upon certification by the Town Clerk that the allowed time has passed without Board action, the Board must issue a Stormwater Management Permit.

#### 6.7. Inspections

No plan will be approved without adequate provision for inspection of the property before development activity commences. See Section G below.

#### 8. Project start date

The project shall begin within three (3) years after issuance of the Stormwater Management Permit. If the project does not begin within three (3) years, and the Southampton Planning Board finds that the approved Stormwater Management Plan is inconsistent with current site conditions, the applicant shall submit a modified Plan that requires approval prior to commencement of land-disturbing activities. The Planning Board may grant an extension, at its discretion, to the three-year statute of limitations on a Stormwater Management Permit.

**Commented [P17]:** Time frame here aligns with what is in Subdivision Regs. There is no such timeframe that I could find in Zoning..

#### 9. Plan Changes

No changes may be made to an approved Stormwater Management Permit without the prior approval of the Southampton Planning Board. The applicant must notify the Planning Board in writing of any proposed change. If the Planning Board deems the change to be significant, it may require that an amended Stormwater Management Permit application be filed, and that a new hearing be held, with prior notification to abutters.

Any plan updates should be clearly dated and shared with all Town boards and officials that provided comment and recommendations on the original plan submission. Any updated plans should also provide the following indication: "This replaces the original plan approved on: (add date here)"

### G. Site Supervision and Inspections

No plan will be approved without adequate provision for inspection of the property before development activity commences.

**Commented [A18]:** Pulled this out of preceding section to be stand alone section given importance of inspections as part of ensuring proper design, functioning, and obtaining of As Built Plans.

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#### 1. Pre-construction Meeting

Prior to starting any clearing, excavation, and construction, the applicant, the applicant's technical representative, the general contractor or any other person with authority to make changes to the project, may be required to meet with the Southampton Planning Board or its designated representative to review the approved plans and their proposed implementation. The need for a pre-construction meeting shall be determined by the Southampton Planning Board based on the project scope.

2. On-site Plan for Reference

The approved Erosion and Sedimentation Control Plan and associated plans for grading, stripping, excavating, and filling work, bearing the signature of approval of the Southampton Planning Board, shall be maintained at the site during the progress of the work.

3. Inspections

Periodic inspections of the stormwater management system construction shall be conducted by the selected consultant engineer from the Planning Board's approved list, who shall be a Professional Engineer licensed by the Commonwealth of Massachusetts. The applicant shall be responsible for paying the costs of all inspections.

For the **pre-bury inspection and final inspection** described below, the applicant's Project Design Engineer, who shall be a Professional Engineer licensed by the Commonwealth of Massachusetts, is required to conduct these inspections. For the final inspection, the Project Design Engineer shall notify the **Planning Board and Highway Department** as to date and time.

For all inspections, written reports shall include:

- the inspection date and location;
- name of inspector and credentials;
- type of inspection and if erosion and sediment control inspection, whether compliant with regular inspections at least once every seven (7) calendar days; or once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater;
- an evaluation, indicating that either work is in compliance with the stormwater management permit and approved or that there are violations and failure to comply with the requirements of the approved plan.

Written reports shall be submitted to the Planning Board.

The applicant shall promptly correct any portion of the work ~~which that~~ does not

**Commented [P19]:** Complies with MS4 permit Section 2.3.5.cii.2

**Commented [A20]:** Revised given idea for use of peer review consultant for inspections.

**Commented [A21]:** How do you want to handle variations from approved plan?

**Commented [A22]:** Should there be sign off process, acceptance and approval of written report? What should applicant's role be with respect to these reports? Should they sign off as well?

comply or the applicant will be subject to the bonding provisions [in Section L](#) or the penalty provisions [in Section M](#). The [Planning Board or its designee](#) may conduct random inspections to ensure effective control of erosion and sedimentation during all phases of construction.

~~The applicant shall arrange with the Southampton Highway Department or other agents designated by the Planning Board for scheduling the following inspections:~~

- a. [Site erosion controls inspection](#), before the start of construction, *and* either:
  - o [at least once every seven \(7\) calendar days](#); or
  - o [once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater](#);

~~a. Pre-bErosion Control Inspections: after site clearing, rough grading and final grading to ensure erosion control practices are in accord with the plan.~~

c. [Final Inspection before the performance guarantee is released: when all work, including construction of stormwater management facilities and landscaping, has been completed. Final inspection shall include a full, dated video inspection of all stormwater pipes installed.](#)

[If the system is found to be inadequate due to operational failure, even though built according to the Stormwater Management Plan, the system shall be corrected by the applicant. If the applicant fails to act, the Southampton Planning Board may use the performance guarantee to complete the work.](#)

[If the system does not comply with the Plan, the applicant shall be notified in writing of the violation and the required corrective actions. A Stop Work order shall be issued until any violations are corrected and all work previously completed has received approval by the Planning Board.](#)

[If the Project Design Engineer finds the system to be properly installed and functioning, he/she shall provide certification to the Planning Board. Certification to the Planning Board shall consist of an engineering stamp on the final as-built drawings.](#)

~~when all work, including construction of stormwater management facilities and landscaping, have been completed.~~

[The Planning Board and/or its agents reserves the right to conduct random inspections to ensure effective control of erosion and sedimentation during all phases of construction at the applicant's expense.](#)

[If in the course of inspections by the Planning Board, or its agent, it is determined](#)

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that water resources or the MS4 is not being adequately protected, enforcement action will proceed at the discretion of the Planning Board given the level of the perceived offense.

4. Right of entry for inspection. When any new drainage control facility is installed on private property, or when any new connection is made between private property and a public drainage control system or sanitary sewer, the filing of an application shall be deemed as the property owner's permission to the Planning Board and/or its agent for the right to enter the property at reasonable times and in a reasonable manner for the purpose of the inspection. This includes the right to enter a property when it has a reasonable basis to believe that a violation of these Regulations and Governing Bylaw is occurring or has occurred and to enter when necessary for abatement of a public nuisance or correction of a violation of these Regulations.

## **H. Stormwater Management and Erosion and Sediment Control Performance Standards**

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### 1. Resources and Guidance

a. The Massachusetts Stormwater Handbook and Stormwater Standards, as updated or amended, is hereby incorporated by reference as part of these Regulations, and shall furnish additional policy, criteria and information, including specifications and standards for the proper implementation of the requirements of these Regulations.

Volume 1 lays out the legal and regulatory framework for the Massachusetts Stormwater Handbook. The Massachusetts Stormwater Standards are contained in Chapter 1 of Volume 1.

Volume 2 addresses the elements of stormwater management, particularly Best Management Practices (BMPs). This volume includes lists of acceptable stormwater treatment practices, including the specific design criteria for each stormwater practice. The manual may be updated and expanded from time to time, based on improvements in engineering, science, monitoring and local maintenance experience, at the discretion of the Massachusetts Department of Environmental Protection. Stormwater treatment practices that are designed and constructed in accordance with these design and sizing criteria will be presumed to meet the minimum water quality performance standards.

### b. Rainfall Data

The recommendation for rainfall data to be used in calculations is currently being updated in the Massachusetts Stormwater Handbook. In the meantime, the DEP Interim recommendation is as follows:

“TP 40 values should continue to be used for calculating stormwater peak



runoff rates unless an applicant voluntarily chooses to use the NOAA or NRCC Atlases and the selected methodology has a higher precipitation value than that of TP40 for the geographic location being evaluated.”

For further MassDEP guidance, see:

<http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/mapreciprates.pdf>

For NOAA Atlas 14, see:

[https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html) Also, see report

(revised 2019) at:

[https://www.nws.noaa.gov/oh/hdsc/PF\\_documents/Atlas14\\_Volume10.pdf](https://www.nws.noaa.gov/oh/hdsc/PF_documents/Atlas14_Volume10.pdf)

For the Northeast Regional Climate Center (NRCC) Atlas, see:

<http://precip.eas.cornell.edu/>

c. Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, as updated or amended.

## 2. Massachusetts Stormwater Handbook and Stormwater Standards

### 1. Minimum Control Requirements

Stormwater management systems design shall be consistent with, or more stringent than, the requirements of the Massachusetts Stormwater Management Handbook.

(1) Suitable nonstructural practices for source control and pollution prevention and implemented;

When the proposed discharge may have an impact upon a sensitive receptor, including aquifers, streams, wetlands, and/or storm sewers, the Highway Superintendent may require an increase in these minimum requirements, based on existing stormwater system capacity.

### 3. Low Impact Development Strategies

All projects subject to these Regulations must use Low Impact Development (LID) strategies to the maximum extent practicable in order to reduce runoff from both new and redevelopment projects. If full compliance is not provided, an applicant must document why key steps in the process could not be met and what is proposed for mitigation. Strategies should:

- a. Identify, map, and preserve the site’s natural features and environmentally sensitive areas such as wetlands, aquifers, native vegetation, mature trees, slopes, drainage ways, permeable soils, flood plains, woodlands, and soils, particularly prime farmlands soils to the greatest extent possible;
- b. Prevent adverse impacts of proposed activities on habitats mapped by the Massachusetts Natural Heritage and Endangered Species Program as endangered, threatened or of special concern, estimated habitats of rare wildlife and certified vernal pools, and priority habitats of rare species.

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- c. Minimize grading and clearing;
- d. Delineate potential building envelopes, avoiding environmental resource areas and appropriate buffers by clustering buildings and reducing building footprints;
- e. Develop methods to minimize impervious surfaces and protect and preserve open space. Reduce impervious surfaces wherever possible through alternative street design, such as omission of curbs and use of narrower streets, shared driveways, and through use of shared parking areas where allowed by the Zoning Bylaw;
- f. Promote erosion and sediment control by using measures that are appropriate to the conditions of the site. Prevention of erosion is preferred over sedimentation control.

During planning:

- i. Avoid sensitive areas, steep slopes, and highly erodible soils to the maximum extent possible when developing site plans;
- ii. Maximize groundwater recharge;
- iii. Sequence activities to minimize simultaneous areas of disturbance;
- iv. Identify potential problem areas before the site plan is finalized and approve;
- v. Divert uncontaminated water around disturbed areas.
- vi. Plan to use sediment barriers along contour lines, with a focus on areas where short-circuiting (i.e., flow around the barrier) may occur;
- vii. Use berms at the top of steep slopes to divert runoff away from the slope's edge;
- viii. Design trapezoidal or parabolic vegetated drainage channels, not triangular;
- ix. Use vegetated channels with rip rap check dams, instead of impervious pavement or concrete, to reduce the water velocity of the conveyance system;
- x. Design a check dam or sediment forebay with level spreader at the exit of outfalls to reduce water velocity of the discharge and collect sediment;
- xi. Use turf reinforcement matting to stabilize vegetated channels, encourage vegetation establishment, and withstand flow velocities without scouring the base of the channel;
- xii. Plan open channels to follow land contours so natural drainage is not disrupted;
- xiii. Use organic matting for temporary slope stabilization and synthetic matting for permanent stabilization;
- xiv. Provide a stable channel, flume, or slope drain where it is necessary to carry water down slopes.
- xv. Protect and manage on- and off-site materials storage areas (overburden and stockpiles of dirt, borrow areas, or other areas used solely by the permitted project are considered a part of the project)

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During construction:

- i. Minimize the amount of disturbed area and protect natural resources;
- ii. Institute interim and permanent stabilizations measures no more than 7 days after construction activity has temporarily or permanently ceased on that portion of the site;
- iii. Protect slopes on the construction site;
- iv. Protect all storm drain inlets and armor all newly constructed outlets;
- v. Use perimeter controls at the site;
- vi. Stabilize construction site entrances and exits to prevent off-site tracking of sediment;
- vii. Clean and sweep up any debris accidentally tracked, dumped or spilled off site.
- viii. Inspect stormwater controls at regular intervals and especially following any storm.

g. Manage runoff using smaller, decentralized, low-tech stormwater management techniques to treat and recharge stormwater close to the source;

h. Lengthen flow paths and maximize sheet flow;

i. Use nonstructural, low-tech methods including open drainage systems, disconnection of roof runoff, and street sweeping where possible;

j. Integrate the following techniques into the site design to create a hydrologically functional lot or development site, based on soil, groundwater level, and topographic conditions:

i. Reduction of impervious surface

ii. On-site infiltration, flow attenuation, and pollutant removal of runoff on-site to existing areas with grass, trees, and similar vegetation and through the use of open vegetated swales and natural depressions, and amended soils that will store, filter, and infiltrate runoff;

iii. Bioretention (rain gardens);

iv. Open vegetated swales and natural depressions;

v. Use of permeable pavement;

vi. Use of roof gardens where practicable;

i-vii. Re-use of stormwater to replace water used for irrigation, toilet flushing, or industrial processes.

k. Follow the guidance for design and treatment of infiltration practices in Volume 2 of the Massachusetts Stormwater Handbook, as amended, or other federally or State approved design guidance;

l. Use native plants;

m. Manage all construction materials and wastes on site so as to avoid polluted flows. This includes: demolition materials, excess or discarded building or site material, including, but not limited to concrete truck washout, chemicals, litter,

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and sanitary waste. These wastes may not be discharged into the Municipal Storm Drain System.

4. Design Criteria Related to Drinking Water Supply Protection

All of Southampton’s drinking water supply comes from groundwater sources, either public or private wells. As such it is imperative that commercial and industrial land uses, not prohibited under Section XII of the Zoning Bylaw, and that may include land uses with higher potential pollutant loads (LUPPLs), including high-intensity-use parking lots, and fleet or materials storage areas, take into account additional design criteria, even if outside of the designated Zone 2 area:

a. Curb parking lots and route flow through a pretreatment facility equipped with a well-marked emergency shutoff valve before infiltration. Should there be a spill, shutting off the valve will keep contaminated flow from reaching infiltration areas and avert potential contamination of groundwater.

a.b. If proposed development land use involves the storage or use of hazardous chemicals, incorporate handling and storage “best management” practices” that prevent such chemicals from contaminating runoff discharged from a site into infiltration systems, receiving water bodies or storm drains, and include a list of such chemicals in the application.

b.c. Pretreat rRunoff from parking lots shall be pre-treated by using oil and water separators or other controls to remove oil and sediment.

5. Additional Stormwater Management Design Criteria

e.d. All stormwater management facilities shall be designed to provide an emergency overflow system and incorporate measures to provide a nonerosive velocity of flow along its length and at any outfall.

e.e. The designed release rate of any stormwater structure shall be modified if any increase in flooding or stream channel erosion would result at a downstream dam, highway, structure, or normal point of restricted stream flow.

f. Stormwater BMPs for new development and redevelopment must be optimized for nitrogen removal. See Section K on Plan Content Requirements for more information.

g. Stormwater BMPs for new development and redevelopment in the watershed of Pequot Pond must be optimized for phosphorous removal. See Section K on Plan Content Requirements for more information.

e-h. The applicant shall consider public safety in the design of any stormwater facilities. The banks of detention, retention, and infiltration basins shall be sloped at a gentle grade into the water as a safeguard against personal injury, to encourage the growth of vegetation and to allow the alternate flooding and exposure of areas along the shore. Basins shall have a 4:1 slope to a depth two

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feet below the control elevation. Side slopes must be stabilized and planted with vegetation to prevent erosion and provide pollutant removal. The banks of detention and retention areas shall be designed with sinuous rather than straight shorelines so that the length of the shoreline is maximized, thus offering more space for the growth of vegetation;

- e. ~~All applicants for projects that involve the storage or use of hazardous chemicals shall incorporate handling and storage “best management” practices that prevent such chemicals from contaminating runoff discharged from a site into infiltration systems, receiving water bodies or storm drains, and shall include a list of such chemicals in the application.~~

6. Additional Standards for New Development Projects. For new development projects, stormwater management systems shall be designed to:

Remove 90% of the average annual load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site

AND

60% of the average annual load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site. The required removal percentage is not required for each storm; it is the average removal over one year that is required. Pollutant removal shall be calculated consistent with EPA Region 1’s BMP Performance Extrapolation Tool or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, any federally or state approved design guidance or performance standards (e.g. State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance.

7. Additional Standards for Redevelopment Projects. For redevelopment projects, stormwater management systems shall be designed to:

Remove 80% of the average annual post-construction load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site

AND

50% of the average annual load of Total Phosphorus (TP) generated from the total post-construction surface area on the site. Pollutant removal shall be calculated consistent with EPA Region 1’s BMP Performance Extrapolation Tool or other BMP performance evaluation tool provided by EPA Region 1 where available. If EPA Region 1 tools do not address planned or installed BMP performance, any federally or state approved BMP design guidance or performance standards (e.g. State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance.

Stormwater Management Measures

3. Specific Design Criteria

I. Design Requirements for Erosion and Sediment Control Plan

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**Commented [P36]:** Does it make sense to use what EPA had had as equivalent? Retain the volume of runoff equivalent to, or greater than, 0.80 inch multiplied by the total post-construction impervious surface area on the site

## I. Operation and Maintenance Plan

### 1. Draft Operation and Maintenance Plan.

All stormwater management systems must have an operation and maintenance plan and agreement to ensure that systems function as designed.

A draft Operation and Maintenance Plan (O&M Plan) and agreement is required at the time of application for all projects subject to these Regulations, and prior to issuance of any stormwater management permit. The O&M Plan shall be designed to ensure compliance with the Permit, these Regulations, and that the Massachusetts Surface Water Quality Standards, 314, CMR 4.00 are met in all seasons and throughout the life of the system. The Operation and Maintenance Plan shall be binding on all subsequent owners of land served by the private stormwater management facility.

Such agreement shall provide for access to the facility at reasonable times for regular inspections by the Town or its authorized representative and for regular or special assessments of property owners to ensure that the facility is maintained in proper working condition to meet design standards and any provision established. The O&M Plan shall remain on file with the Southampton Planning Board and shall be an ongoing requirement. Contents of the O&M Plan are enumerated in Part. of this Section below.

### 2. Final Operation and Maintenance Plan.

The Applicant or Owner shall submit a final and executed O&M Plan that reflects all changes made to project design from the approved submission, if any.

The final Operation and Maintenance Plan and signed mMaintenance aAgreement shall be recorded by the applicant and/or owner in the land records of the Registry of Deeds along with any easements necessary to maintaining stormwater facilities. Proof of such recording shall be filed by the applicant and/or owner with the permit granting authority. The required contents of the Operation, Maintenance, and Inspection Agreement are specified in Part. of this Section below.

### 1-3. Contents of the Operation and Maintenance Plan, and Inspection Agreement

- a. Prior to issuance of any building permit for which stormwater management is required, the Planning Board shall require the applicant or owner to execute an operation, maintenance and inspection agreement binding on all subsequent owners of land served by the private stormwater management facility. The agreement shall be designed to ensure that water quality standards are met in all seasons and throughout the life of the system. Such agreement shall provide for access to the facility at reasonable times for regular inspections by the Town or its authorized representative and for regular or special assessments of property owners to ensure that the facility is maintained in proper working condition to meet design standards and any provision established. The agreement-O&M Plan

shall include:

~~(2)~~ii. Maintenance agreements that specify:

- (a) The names and addresses of the person(s) responsible for operation and maintenance.
- (b) The person(s) responsible for financing maintenance and emergency repairs.

~~(b)~~

(d) Records of installation and maintenance;

(e) A description and delineation of public safety features.

(f) An estimated operations and management budget.

~~(g)~~(g) An inspection and maintenance schedule for all drainage structures, including swales and ponds, and including routine and non-routine maintenance tasks to be performed, the time period for each.

~~(h)~~(h) An operation and maintenance log form

~~(i)~~(i) Agreement that the person(s) responsible for operation and maintenance shall:

- follow this schedule and maintain an operation and maintenance log to include inspections, repairs, replacement, and disposal (type of material and disposal location);
- maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams and structures, vegetation, erosion and sediment control measures and other protective devices;
- conduct such repairs or restoration and maintenance so that it shall be in accordance with approved plans;
- submit annual certification to documenting the work that has been done over the last 12 months to properly operate and maintain the stormwater control measures

~~(j)~~(j) The agreement shall also provide that, if after notice by the Highway Superintendent to correct a violation requiring maintenance work, satisfactory corrections are not made by the owner(s) within thirty days, the Planning Board may perform all necessary work to place the facility in proper working condition. If the violation is an immediate threat to public health or public safety, 24-hour notice shall be sufficient prior to actions required to return the facility or practice to proper working condition. The owner(s) of the facility shall be assessed the cost of the work and any penalties

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(k) A map and list of easements with the purpose and location of each (See subsection 4 below).

(l) Information on how future property owners will be notified of the presence of the stormwater management system and the requirement for proper operation and maintenance

(~~h~~)(m) The signature(s) of the owner(s) and person(s) responsible for operation and maintenance.

#### 4. Stormwater management easements

a. Stormwater management easements shall be indicated by the property owner(s) as necessary for:

- i. Access for facility inspections and maintenance.
- ii. Preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for the 100-year storm event.
- iii. Direct maintenance access by heavy equipment to structures requiring regular cleanout.

c. Stormwater management easements are required for all areas used for off-site stormwater control, unless a waiver is granted by the Town.

d. Easements shall be recorded with the Registry of Deeds prior to issuance of a Certificate of Completion.

#### ~~Changes to Operation and Maintenance Plans~~

a. The owner of the property on which work has been done pursuant to these Regulations for private stormwater management facilities, or any other person or agent in control of such property, shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams and structures, vegetation, erosion and sediment control measures and other protective devices. Such repairs or restoration and maintenance shall be in accordance with approved plans.

A maintenance schedule shall be developed for the life of any stormwater management facility and shall state the maintenance to be completed, the time period for completion, and who shall be legally responsible to perform the maintenance. This maintenance schedule shall be printed on the stormwater management plan.

The owner shall maintain records of installation and maintenance and provide a brief annual report to the Stormwater Authority on all maintenance and repairs performed each year. The Stormwater Authority or its agent shall have authority to check all maintenance records.

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6. Changes to operation and maintenance plans.

The owner(s) of the stormwater management system must notify the Planning Board of changes in ownership or assignment of financial responsibility.

~~i. Changes to Operation and Maintenance Plans~~

~~e. The agreement shall be recorded by the applicant and/or owner in the land records of the Registry of Deeds.~~

1. The permittee shall submit as-built drawings of all on-site stormwater controls and treatment practices, both structural and nonstructural, designed to manage the stormwater associated with the completed site. As-built drawings shall be full size plans that include all final grades and clearly depict all changes to project design from the approved plans, if any, and be certified by the Project Engineer who must be a Massachusetts Registered Professional Engineer. These plans shall be submitted upon project completion, unless an extension is granted by the Planning Board. Submission shall include one paper copy and digital format in pdf format.

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**K. Content Requirements for Stormwater Management and Erosion and Sediment Control Plans**

1. Stormwater Management and Erosion and Sediment Control Plan

The application for a stormwater management permit shall consist of submittal of a stormwater management and erosion and sediment control plan, prepared by a professional engineer licensed by the Commonwealth of Massachusetts, which meets the design requirements provided by these Regulations and Governing this ~~b~~Bylaw.

The plan shall include sufficient information to evaluate the environmental characteristics of the affected areas, the potential impacts of the proposed development on water resources; and the effectiveness and acceptability of measures proposed for reducing adverse impacts from construction managing stormwater runoff and post-development stormwater runoff.

The Plan shall comply with ~~must be designed to meet the standards and criteria set forth in these regulations, the e-Massachusetts Stormwater Management Handbook and Standards as set forth in Section H 2 of this bylaw and the DEP Stormwater Management Handbook Volumes I and H amended from time to time. The Plan must be submitted with the stamp and signature of a professional engineer (PE) licensed by the Commonwealth of Massachusetts.~~ The applicant shall also certify on the drawings that all clearing, grading, drainage, construction, and development shall be conducted in strict accordance with the plan.

The Plan shall also include an Operation and Maintenance Plan as specified in Section I and any other information requested by the Planning Board.

2. Contents of the Stormwater Management and Erosion Control Plan

The minimum information submitted for support of a stormwater management plan shall be as follows:

- a. Names, addresses and phone numbers of the applicant, owner and preparer;
- a. A locus map;
- ~~a-b.~~ Lot lines and lines of existing streets
- ~~b-c.~~ The existing zoning and land use at the site;
- ~~e-d.~~ The existing site hydrology;
- e. A description ~~and~~ delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which storm water flows;
- f. A delineation of 100-year flood plains, if applicable;
- g. Estimated seasonal high groundwater elevation (November to April) in areas

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to be used for storm water retention, detention, or infiltration;

~~e-h.~~ Habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened, or of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats of Rare Species within five hundred (500) feet of any construction activity;

~~i.~~ The proposed land use;

~~j.~~ The location(s) of existing and proposed easements;

~~k.~~ The location of existing and proposed utilities, roadways; driveways, and parking areas;

~~e-l.~~ The site's existing and proposed topography with contours at 2-foot intervals;

~~m.~~ The proposed limits of disturbance;

~~n.~~ Estimate of the total area expected to be disturbed by excavation, grading, or other construction activities;

~~o.~~ The existing and proposed vegetation and ground surfaces with runoff coefficient for each;

~~p.~~ Soils information from test pits performed at the location of proposed stormwater management facilities, including soil descriptions, depth to season high groundwater, depth to bedrock, and infiltration rates. Soils information will be based on site test pits logged by a Massachusetts Registered Soil Evaluator, a Massachusetts Registered Sanitarian, or a Massachusetts Registered Professional Engineer;

~~f-q.~~ A drainage area map showing pre and post-construction watershed boundaries, drainage area and storm water flow paths;

~~g-r.~~ A description and drawings of all components of the proposed drainage system including:

(1) locations, cross sections, and profiles of all brooks, streams, drainage swales and their method of stabilization;

~~(1)~~(2) drainage patterns and approximate slopes anticipated after major grading activities;

~~(2)~~(3) all measures for the detention, retention or infiltration of water;

~~(3)~~(4) all measures for the protection of water quality;

~~(4)~~(5) the structural details for all components of the proposed drainage systems and storm water management facilities;

~~(5)~~(6) notes on drawings specifying materials to be used, construction specifications, and typicals;

~~(6)~~(7) expected hydrology with supporting calculations;

(8) Proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if

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applicable;

~~(7) Any other information requested by the Planning Board~~

~~(8) Timing, schedules, and sequence of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization;~~

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s. Hydrologic and hydraulic design calculations for the pre-development and post-development conditions. Calculations shall include:

- (1) Description of design storm frequency, intensity, and duration;
- (2) Time of concentration;
- (3) Runoff Curve Number (RCN) based on land use and soil hydrologic group;
- (4) Pre and post-development peak runoff rates and total runoff volumes for 2,10, 25, and 100-year 24-hour storm events;
- (5) Information on construction measures used to maintain the infiltration capacity of the soil where any kind of infiltration is proposed;
- (6) Infiltration rates where applicable;
- (7) Groundwater recharge analysis and BMP drawdown (time to empty)
- (8) Culvert capacities;
- (9) Flow velocities;
- (10) Data on the increase in rate and volume of runoff for the specified design storms;
- (11) Data showing how the project will meet stormwater retention and/or water quality requirements of New Development or Redevelopment specified in Section . This shall include:
  - Water quality design calculations showing the estimated Nitrogen load from the proposed project and the load reduction achieved through proposed BMPs (calculations should use material provided for in Attachment 1 of Appendix H of the Massachusetts MS4 Permit or as otherwise updated by EPA Region 1);
  - Water quality design calculations showing the estimated Phosphorus load from the proposed project and the load reduction achieved through proposed BMPs (Attachments 2 and 3 in Appendix F of the Massachusetts MS4 Permit or as otherwise updated by EPA Region 1);
  - Documentation of sources for all computation methods and field test results.
- (12) Data showing BMP performance for land uses of higher potential pollutant loads if applicable.
- (13) Documentation of sources for all computation methods and field test results.

u. Post-development downstream analysis, if deemed necessary by the Stormwater Authority. The downstream analysis will evaluate the hydrologic impacts of the project downstream of the project to a location where the watershed to project size is approximately equal to 10:1;

v. Landscaping plan, showing and describing existing and proposed vegetation and the woody and herbaceous vegetative stabilization and management techniques

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to be used within and adjacent to the stormwater practices;

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- w. A description of provisions for project phasing with timing, schedules, and sequence of development, including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization.

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3. Contents of the erosion and sediment control plan.

The erosion and sediment control plan, which must meet the design requirements in Section H, shall consist of:

- a. Description of site conditions and location of details of selected erosion and sediment control measures appropriate to the site, including a narrative of the construction sequence/phasing of the project. The narrative should include both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas;
- b. Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable;
- c. Location and description of an implementation schedule for temporary and permanent seeding, vegetative controls, and other stabilization measures
- d. A description of construction and waste materials expected to be stored on site.
- e. A description of how demolition materials, litter, sanitary waste, and any other waste will be managed on site and. The Plan should include a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater and spill prevention and response;
- f. A maintenance schedule for the period of construction;
- g. Name and contact information for party responsible for maintaining erosion and sediment control measures.

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**L.K. Performance ~~Bond~~Guarantee**

Where a performance ~~bond~~guarantee is not required on another permit for the same project, ~~the~~ Planning Board shall require from the developer a surety or cash bond, irrevocable letter of credit, or other means of security acceptable to the Planning Board prior to the issuance of any building permit for the construction of a development requiring a stormwater management facility. The amount of the security shall not be less than the total estimated construction cost of the stormwater management facility. The ~~bond-guarantee~~ so required in this section shall include provisions relative to forfeiture for failure to complete work specified in the approved stormwater management plan, compliance with all of the provisions of ~~these~~ Regulations and Governing Bb Bylaw and other applicable laws and regulations, and any time limitations.

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The bond shall not be fully released without a final inspection of the completed work ~~certified by the Project Design Engineer by the Highway Department of the stormwater management facilities being in compliance with the approved plan and the provisions of these Regulations and Governing Bylaw~~, submission of ~~final~~ "As-built" Drawings, Operation and Maintenance Plan, and ~~issuance of Certification of Completion~~ by the Planning Board ~~of the stormwater management facilities being in compliance with the approved plan and the provisions of this bylaw.~~

**M. Enforcement and Penalties**

~~Pull from Bylaw.~~

**N. Severability**

~~Pull from Bylaw.~~