STORMWATER MANAGEMENT RULES AND REGULATIONS

1. PURPOSE

The purpose of these Stormwater Management Rules and Regulations (the Regulations) is to implement the Cohasset Stormwater Management Bylaw (the Bylaw). These Regulations establish minimum requirements and procedures to control the adverse effects of increased stormwater runoff, decreased groundwater recharge, and non-point source pollution associated with new development and redevelopment. Increased volumes of stormwater, contaminated stormwater runoff from impervious surfaces, and soil erosion and sedimentation are major causes of:

- impairment of water quality and decreased flow in lakes, ponds, streams, rivers, coastal waters, wetlands and groundwater;
- contamination of drinking water supplies;
- erosion of stream channels;
- alteration or destruction of aquatic and wildlife habitat;
- flooding; and
- overloading or clogging of municipal catch basins and storm drainage systems.

The United States Environmental Protection Agency and Massachusetts Department of Environmental Protection (Mass DEP) have identified sedimentation from land disturbance activities and polluted stormwater runoff from land development and redevelopment as major sources of water pollution, impacting drinking water supplies, natural habitats, and recreational resources. Regulation of activities that result in the disturbance of land and the creation of stormwater runoff is necessary for the protection of Cohasset water bodies and groundwater resources, to safeguard the health, safety, and welfare of the general public and to protect the natural resources of the Town of Cohasset. The Regulations address the issues mentioned above and as referenced in the Bylaw.

2. AUTHORITY

A. The Regulations are adopted by the Cohasset Conservation Commission (Conservation Commission) in accordance with the Bylaw.

B. Nothing in the Regulations is intended to replace or be in derogation of the requirements of the Bylaw or any other rules and regulations adopted thereunder unless the Regulations are more stringent.

C. The Regulations may be periodically amended by the Conservation Commission in accordance with the procedures outlined in Section 7 of the Bylaw. The Cohasset Stormwater Committee, acting in an advisory role, may advise the Conservation Commission from time to time on recommended changes to the Regulations, or on recommended methods for implementation thereof.

3. ADMINISTRATION

The Conservation Commission shall administer, implement and enforce the Regulations. Projects and activities approved by the Conservation Commission shall be deemed to be in compliance with the intent and provisions of the Regulations.
4. PROCEDURES

The issuance of an Administrative Approval or Stormwater Permit is required prior to the approval of any regulated activity as listed in Section 4 of the Bylaw. The site owner or his agent shall file for an Administrative Approval or Stormwater Permit with the Conservation Commission. While application may be made by a representative, the permittee must be the owner of the site. All permits, decisions and actions with respect to a parcel of land "run with the land" and are binding upon subsequent property owners.

A. Pre-Application Meeting. Applicants are strongly encouraged to schedule a pre-application meeting with the Conservation Commission and/or its Stormwater Agent at the earliest feasible time for the following purposes:

1. Discuss the proposed development plans and need for a Stormwater Permit or Administrative Approval, and the estimated review fees to be submitted at time of application.

2. Advise the designer and/or applicant of the Conservation Commission's goals with respect to stormwater management at the site, and to the extent practical, of any known concerns or issues regarding stormwater management at the subject site.

3. Advise the designer and/or applicant of application submittal requirements or of additional information needed in the application at the time of filing.

4. The Conservation Commission encourages the use of Low Impact Development (LID) techniques in site design, and a pre-application review can be useful in the process of LID design in creating a working dialogue and understanding with it regarding the goals of the stormwater design. Unlike conventional development and stormwater controls, an LID approach to design begins with an assessment of environmental and hydrologic conditions at the site and how to best address these conditions. Preliminary planning for the site is as critical as the ultimate stormwater controls chosen. A pre-application meeting may be helpful to avoid unnecessary stormwater management activity and may possibly help to eliminate the need for filing an application altogether. The assistance of the Conservation Commission during any pre-submittal application meeting is intended to be advisory in nature and in no way changes the applicant’s sole responsibility for the successful design of stormwater management systems for the site. Applicants are reminded that the objective of the LID approach is to:

   a. Develop a site plan that reflects natural hydrology.
   b. Minimize impervious surfaces.
   c. Treat stormwater in numerous small, decentralized structures.
   d. Use natural topography for drainage ways and storage areas.
   e. Preserve portions of the site in undisturbed, natural conditions.
   f. Lengthen travel paths to increase time of concentration and attenuate peak rates.

B. Applications: The Administrative Approval or Stormwater Permit application shall be made to
the Conservation Commission in a form and containing information as specified in the Regulations and shall be accompanied by payment of the appropriate Application Fee, Review Fee or Estimated Fee. The Review Fee shall be collected by the Conservation Commission prior to any review. The Application and Review Fees for the Administrative Approval or Stormwater Permit shall be in addition to any fee requirements for other applications for permits for the same project before the Conservation Commission or any other Town Board or Commission which may review the project.

1. An **Administrative Approval** application package shall include the following:

   a. A Stormwater Management Plan stamped by a Licensed Professional Engineer describing the proposed alteration activities and the mitigation measures and best management practices to be employed to manage stormwater generated by the alteration, and certifying post-development runoff characteristics (including peak flow, total volume of runoff, and water quality of the runoff) for development and redevelopment projects as equal to or less than the pre-development runoff characteristics. The following additional submittals may be required, but only if determined necessary by the Conservation Commission or their Stormwater Agent to support the engineer's Stormwater Management Plan and certification: plan of proposed grading, more detailed description and/or drawings of proposed stormwater management system with map of pre- and post-development drainage, existing and proposed vegetation, recharge analysis, hydrologic calculations, estimated seasonal high groundwater, and Erosion and Sediment Control Plan.

   b. Abutters list, as referenced in Section 6. of the Regulations; and

   c. Application and review fees.

**TEEE (s)**

Eleven (11) copies of the Administrative Approval application package must be filed with the Conservation Commission for distribution to the Stormwater Agent, Conservation Commission members, Building Inspector, Town Clerk, and other Boards and Commissions reviewing the project.

2. A **Stormwater Permit** application package shall include the following:

   a. Stormwater Management Plan stamped by a Licensed Professional Engineer certifying post-development runoff characteristics (including peak flow, total volume of runoff, and water quality of the runoff) for development and redevelopment projects as equal to or less than the pre-development runoff characteristics. The plan shall show proposed grading, description of stormwater management system with map of pre- and post-development drainage, existing and proposed vegetation, recharge analysis, hydrologic calculations, and estimated seasonal high groundwater;

   b. Abutters list, as referenced in Section 7. of the Regulations;

   c. Erosion and Sediment Control Plan;

   d. Operations and Maintenance Plan listing permittees, maintenance agreements, maintenance schedule, and estimated annual budget (including anticipated sources of funding) for operations and maintenance;
e. Record(s) of stormwater easements;
f. For subdivision applications, a plan showing the building envelope within each house lot and proposed grading, drainage, and stormwater disposal for each lot; and
g. Application and review fees.

**THREE (3)**

Eighteen (18) copies of the Stormwater Permit application package must be filed with the Conservation Commission for distribution to the Stormwater Agent, Conservation Commission members, Building Inspector, Town Clerk, and other Board or Commissions reviewing the project.

C. **Information Requests:** The Conservation Commission may request such additional information as may be necessary to enable it to determine whether the proposed regulated activity is adequately addressed by the applicant in order to protect water resources and meet the objectives of the Bylaw and the Regulations.

D. **Determination of Completeness:** The Conservation Commission shall make a determination as to the completeness of the application and adequacy of the materials submitted within five (5) business days of receipt. No review shall take place until the application has been found to be complete.

E. **Project Changes:** The permittee, or its agent, must notify the Conservation Commission and its Stormwater Agent in writing of any change or alteration of a regulated activity before the change or alteration occurs. If the Conservation Commission or its Stormwater Agent determines that the change or alteration is significant, based on the Bylaw or the stormwater management and design standards listed in the Regulations, the Conservation Commission or its Stormwater Agent may require that an amended application be filed. If any change or alteration of the requirements of the Stormwater Permit occurs during regulated activities, including significant changes in schedule, the Conservation Commission or its Stormwater Agent may require the installation of interim erosion and sedimentation control measures before considering whether to allow such change or alteration.

F. **Entry:** It is understood by the Applicant that filing an application for a permit grants the Conservation Commission or its Stormwater Agent, permission to enter the subject site to verify the information contained in the application, to perform their duties under the Bylaw and the Regulations, and to inspect, survey, or sample as the Conservation Commission deems reasonably necessary to determine compliance with the permit.

G. **Erosion and Sediment Control Plan:** The Erosion and Sediment Control Plan shall contain sufficient information to describe the nature and purpose of the proposed development or redevelopment, pertinent conditions of the site and the adjacent areas, and proposed erosion and sedimentation controls and Pollution Prevention Plan that are needed during land disturbance and construction, including source control and pollution prevention measures, best management practices (BMPs) to address erosion and sedimentation, stabilization measures, and procedures for operating and maintaining the BMPs, especially in response to wet weather events and frost. The plan shall include a schedule for sequencing construction and stormwater management activities that minimizes land disturbance by ensuring that vegetation is preserved to the maximum extent practicable, and disturbed portions of the site are stabilized as quickly as possible.
The applicant shall submit such material as is necessary to show that the proposed development or re-development will comply with the design standards and shall contain the information listed below.

1. Standards. The Erosion and Sediment Control Plan shall be designed to meet the requirements of the Massachusetts Stormwater Management Policy (as referred to in the Code of Massachusetts Regulations at 310 CMR 10.00 and 314 CMR 9.00) or the latest edition of the Post Development Criteria for Stormwater Management (Appendix A), whichever more stringently protects the Town’s environmental resources.

2. Contents. The Erosion and Sediment Control Plan shall contain the following information:

   a. Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan, and the Cohasset Assessors Map and Parcel Number of the property or properties affected.

   b. Title, date, north arrow, names of abutters, scale (1"=20' or 1"=40'), legend, and locus map (1"=800').

   c. Location and description of natural features including:

      i. Watercourses and water bodies, wetland resource areas, riparian zones and all floodplain information, including the 100-year flood elevation based upon the most recent Flood Insurance Rate Map, or as calculated by a licensed professional engineer for areas not assessed on these maps. Identify all surface waters and wetlands within a half-mile of the project that may receive stormwater runoff from the project;

      ii. Existing vegetation of various kinds including tree lines, shrub layer, ground cover and herbaceous vegetation, and trees with a caliper twelve (12) inches or larger, noting specimen trees and forest communities; and

      iii. 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, Potential Vernal Pools, and Priority Habitats of Rare Species within five hundred (500) feet of any construction activity.

   d. Existing abutting streets showing drainage and driveway locations and curb cuts.

   e. Existing soils (type, hydrologic group, erodibility) based on the Natural Resources Conservation Service (NRCS) Soil Surveys, including the volume and nature of imported soil materials, if any.

   f. Topographical features including existing and proposed contours at intervals no greater than two (2) feet with spot elevations provided when needed, and any rock or ledge outcroppings.

   g. Steep slopes for pre-development and post-development conditions, delineated by 0%-15%, 15%-25%, and over 25%.

   h. Surveyed property lines showing distances and monument locations, all existing and
proposed easements, rights-of-way, and other encumbrances, the size of the entire parcel, and the delineation and number of square feet of the land area to be disturbed.

i. Drainage patterns, watersheds and subwatersheds, with calculations of proposed land disturbance within each subwatershed and areas of soil to be disturbed in each watershed throughout the duration of the proposed land disturbance activity.

j. Location, type and details of all temporary and permanent erosion and sediment control measures with a narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas.

k. Locations on site that are not to be disturbed.

l. Areas of any phased construction to minimize exposed soils.

m. Culvert construction and/or dewatering issues, if any.

n. Paths and mechanisms to divert uncontaminated water around disturbed areas, to the maximum extent practicable.

o. Location and description of, and implementation schedule for temporary and permanent seeding, vegetative controls, temporary sediment basins, and other temporary and final stabilization measures.

p. A description of provisions for phasing the project where 40,000 square feet of contiguous area or greater is to be altered or disturbed.

q. Plans, reports, and calculations must be stamped and certified by a Licensed Professional Engineer.

r. Such other information as may be required by the Conservation Commission.

H. Stormwater Management Plan: The Stormwater Management Plan shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed best management practices for the permanent management and treatment of stormwater. The Stormwater Management Plan shall contain sufficient information for the Conservation Commission to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater. The Stormwater Management Plan shall contain drawings and narratives that fully describe the project and shall be in accordance with the criteria established in the Regulations and must be submitted with the stamp and signature of a Licensed Professional Engineer (PE) licensed in the Commonwealth of Massachusetts.

1. Standards. The Stormwater Management Plan shall be prepared in accordance with the Massachusetts Stormwater Management Policy or the latest edition of the Post Development Criteria for Stormwater Management (Appendix A), whichever more stringently protects the Town’s environmental resources.

2. Stormwater Management Plan Requirements. The Stormwater Management Plan shall contain the following information:
a. Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan, and the Cohasset Assessors Map and Parcel Number of the property or properties affected.

b. A locus map, at a scale of 1"=800'.

c. The existing zoning, and land use at the site, including if site is located in the Town’s Special Flood Plain and Watershed Protection District, and Town’s Water Resource District.

d. A description of the existing and proposed land use.

e. The location(s) of existing and proposed easements.

f. The location of existing and proposed utilities, septic systems, drinking water supply wells, or irrigation wells; and any underground storage tanks, or contaminated sites as defined under M.G.L. c. 21E.

g. The site's existing and proposed topography with contours at two (2) foot intervals, and any rock or ledge outcroppings.

h. The existing site hydrology including a description and delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which stormwater flows. Identify all surface waters and wetlands within a half-mile of the project that may receive stormwater runoff from the project.

i. A delineation of 100-year flood plains, if applicable.

j. An estimate made by a Massachusetts Approved Soil Evaluator of seasonal high groundwater elevation in each area to be altered and in each area to be used for stormwater retention, detention, or infiltration.

k. A description of existing soils based on the NRCS Soil Surveys

l. A description of existing and proposed vegetation and ground surfaces with runoff coefficient for each.

m. A drainage area map showing pre- and post-construction watershed boundaries, drainage areas and stormwater flow paths.

n. A description and drawings of all components of the existing and proposed stormwater management system including:

   i. locations, cross sections, and profiles of all brooks, streams, drainage swales and their method of stabilization;

   ii. all measures for the collection, conveyance, treatment, detention, retention or infiltration of water;

   iii. all measures for the protection of water quality;

   iv. the structural details for all components of the proposed drainage systems and stormwater management facilities;

   v. notes on drawings specifying materials to be used, construction specifications, and typical details; and
vi. proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if applicable.

o. Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in the Regulations. Such calculations shall include:
   i. Description of the design storm frequency, intensity and duration;
   ii. Time of concentration for each watershed area;
   iii. Soil Runoff Curve Number(s) (RCN) based on land use and soil hydrologic group for each watershed area;
   iv. Peak runoff rates and total runoff volumes for each watershed area;
   v. Information on construction measures used to maintain the infiltration capacity of the soil where any kind of infiltration is proposed;
   vi. Infiltration rates, where applicable;
   vii. Culvert capacities;
   viii. Flow velocities;
   ix. Data on the increase in rate and volume of runoff for the specified design storms; and
   x. Documentation of sources for all computation methods and field test results.

p. For applications associated with residential or commercial/industrial subdivisions, include an overall development plan showing all construction activity and proposed grading for all project phases, and show the proposed building envelope within each house lot and the proposed grading, drainage, and stormwater disposal for each lot.

q. Post-development downstream analysis if deemed necessary by the Conservation Commission.

r. Soils information from test pits dug at the location of proposed stormwater management facilities, including but not limited to soil descriptions, depth to seasonal high groundwater, depth to bedrock, and percolation rates. Soils information will be based on site test pits logged by a Massachusetts Approved Soil Evaluator, or a Licensed Professional Engineer.

s. Landscaping plan describing the woody and herbaceous vegetative stabilization and management techniques to be used within and adjacent to the stormwater practice.

t. The timing, schedules, and sequence of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization.

u. A maintenance schedule for the period of construction.

v. A Long Term Pollution Prevention Plan (as required by the Massachusetts Stormwater Management Policy Manual, Standard 4). The plan shall include measures to prevent illicit discharges to the stormwater management system, including wastewater discharges and discharges of stormwater contaminated by
contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

w. Any other information requested by the Conservation Commission.

I. Operation and Maintenance Plan: An Operation and Maintenance Plan (O&M Plan) for the permanent stormwater management system is required at the time of application for all projects requiring a Stormwater Permit, and may be required for certain Administrative Approval projects that employ stormwater management systems for which long term O&M is critical, as determined by the Conservation Commission. The O&M Plan shall be designed to ensure compliance with the Bylaw and that the Massachusetts Surface Water Quality Standards, as contained in 314 CMR 4.00, are met in all seasons and throughout the life of the system. The Conservation Commission shall make the final decision of what maintenance option is appropriate in a given situation. The Conservation Commission will consider natural features, proximity of site to water bodies and wetlands, extent of impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making its decision. Once approved by the Conservation Commission, the O&M Plan shall be recorded at the Norfolk County Registry of Deeds by the permittee, shall remain on file with the Conservation Commission and shall constitute an ongoing requirement. Stormwater management easements shall be provided by the property owner(s) and shall be sufficient in location and extent to carry out the required maintenance. The O&M Plan shall conform to the requirements listed below.

1. Operation and Maintenance Plan Requirements. An O&M Plan shall include:

   a. The name(s) of the owner(s) for all components of the system.

   b. A plan that is drawn to scale showing the location of the systems and facilities including catch basins, manholes/access lids, drain lines, and stormwater BMPs in each treatment train along with the discharge points.

   c. A copy of the Long Term Pollution Prevention Plan (as required for submittal with the Stormwater Management Plan (see Section 4.H.2.v.)).

   d. An estimated operations and maintenance budget.

   e. A maintenance agreement that specify:

      i. The names and addresses of the person(s) responsible for operation and maintenance;

      ii. The person(s) responsible for financing maintenance and emergency repairs;

      iii. An Inspection and Maintenance Schedule for all stormwater management facilities including routine and non-routine maintenance tasks to be performed;

      iv. A list of easements with the scope and location of each; and

      v. The signature(s) of the owner(s).

2. Stormwater Management Easement(s).
a. Stormwater management easements shall be given 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; and
   iii. direct maintenance access by heavy equipment to structures requiring regular cleanout maintenance.

b. The scope of each easement shall be sufficient to allow the work described in this section and specified in the maintenance agreement signed by the property owner.

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

d. Easements shall be recorded with the Norfolk County Registry of Deeds prior to issuance of a Certificate of Completion by the Conservation Commission.

3. In the case of stormwater BMPs that are serving more than one lot, the applicant shall include with the O & M Plan a description for implementing and enforcing the O & M Plan. The applicant shall identify the lots or units that will be serviced by the stormwater BMPs, and provide a copy of the legal instrument (deed, homeowner’s association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of stormwater BMPs. In the event that the stormwater BMPs will be operated and maintained by an entity, municipality, state agency or person other than the sole owner of the lot upon which the stormwater management facilities are placed, the applicant shall provide a plan and easement deed (as noted in subsection 2. above) that provides a right of access for performance of said operation and maintenance functions. At the time of issuing its decision on a Stormwater Permit application, the Conservation Commission may require that the permittee provide a copy of Stormwater Permit conditions and the legal instrument to each unit or lot owner at or before the purchase of each unit or lot to be serviced by the stormwater BMPs.

4. Changes to Operation and Maintenance Plans.

   a. The owner(s) of the stormwater management system must notify the Conservation Commission and its the Stormwater Agent of changes in ownership or assignment of financial responsibility.

   b. The maintenance schedule in the maintenance agreement may be amended to achieve the purposes of the Bylaw and the Regulations by mutual agreement of the Conservation Commission and the parties responsible for the implementation of the schedule. Amendments must be in writing and signed by such parties. Such parties shall include owner(s), persons with financial responsibility, and persons with operational responsibility. Once the amended O&M Plan is signed, a copy shall be filed at the Registry of Deeds at the expense of the current owner(s).

5. Annual Report Submittal. The parties responsible for O&M Plans must submit annual
5. FEES
A. The Conservation Commission shall require the following fee(s) to be included with each application for either an Administrative Approval or Stormwater Permit. Such fees shall include:

(1) an Application Fee established by the Conservation Commission to cover Town’s expenses connected with processing the application; and (2) a Review Fee sufficient to cover professional review services for the project, as the Conservation Commission is authorized to retain a Licensed Professional Engineer or attorney, other professional consultant to advise the Conservation Commission on any or all aspects of the application and plans. The Application Fee is fixed and due at time of application. The Review Fee may vary depending upon the complexity of the project.

The applicant will be provided an estimate of the Review Fee as determined by the Conservation Commission or Stormwater Agent, and this (3) Estimated Fee must be paid to the Town prior to the start of the review process. No fees shall be required of any Town of Cohasset department or board.

1. Application Fee:
   a. Application Fee is payable at the time of application and is non-refundable.
   b. Application Fees are in addition to any other local or state fees that may be charged under any other law, bylaw, or local ordinance.
   c. The Application Fee for an Administrative Approval application shall be $50.00 is established on the most recently approved Stormwater Review Fee Schedule.
   d. The Application Fee for a Stormwater Permit application shall be $500.00 is established on the most recently approved Stormwater Review Fee Schedule.
   e. The Application Fee may be reduced or increased by the Conservation Commission. Any such change shall be made at a posted public hearing of the Conservation Commission not less than thirty (30) days prior to the date upon which the change is to be effective.

2. Review Fee:
   a. The Conservation Commission is authorized to require an applicant to pay a Review Fee for the reasonable costs and expenses for expert engineering, or attorney review or other professional consultant services deemed necessary by the Conservation Commission in order to come to a final decision on the application.
   b. Payment may be required at any point in the deliberations prior to a final decision.
   c. The Review Fee shall be determined at the time of project review based on a specific scope of work, and shall be calculated at a rate determined by the Conservation Commission.
   d. The services for which a fee may be utilized include, but are not limited to, hydrologic and drainage analysis, stormwater quality analysis, site inspections, asbuilt plan review, and analysis of legal issues.
e. The Conservation Commission is also authorized to require an applicant to pay reasonable costs and expenses for certain activities which utilize the services of Town personnel.

f. The Conservation Commission may require any applicant to pay an additional fee, calculated at a rate determined by the Conservation Commission, per hour of review, inspection and monitoring services for any project filing that requires an excess of two (2) hours of review, inspection, and monitoring time by a Town staff person.

g. Subject to applicable law, any unused portion of any Review Fee collected shall be returned by the Conservation Commission to the applicant within forty-five calendar days of a written request by the applicant, unless the Conservation Commission decides in a public meeting that other action is necessary.

h. Engineering and consultant review fees collected under this section shall be deposited in a special account established by the Town pursuant to M.G.L. c.44, § 53G for the imposition of reasonable fees for the employment of outside consultants.

i. The Conservation Commission shall include a full accounting of these fees as part of its annual report to the Town.

3. Estimated Fee:
   a. The Review Fee may vary depending upon the complexity of the project.
   b. The applicant shall be required to pay an estimate of the review fee (Estimated Fee) as determined by the Conservation Commission or Stormwater Agent, and this Estimated Fee must be paid to the Town prior to the start of the review process.

4. Revision of Fee Schedules and Regulations Governing Fees: The Conservation Commission may periodically review and revise its regulations and schedules.
   a. Amendments shall be preceded by a public hearing.
   b. A copy of the written decision will be filed with the Town Clerk within ten (10) days after final action is taken.
reports regarding the inspection and maintenance of the stormwater BMPs for which they are responsible. The reports must include:

   a. Descriptions of the condition of the BMPs;
   b. Descriptions of inspection and maintenance work performed; and
   c. Receipts for any payments made for maintenance performed.

6. Records: The permittee shall:

   a. Maintain an operation and maintenance log (a rolling log recording all O&M activities for the past three (3) years), including inspections, repairs, replacement and disposal (for disposal, the log shall indicate type of material and disposal location);
   b. Make this log available to Mass DEP and the Conservation Commission upon request; and
   c. Allow members and agents of the Mass DEP and the Conservation Commission to enter and inspect the premises to evaluate and ensure that the permittee complies with the Operation and Maintenance Plan requirements for each BMP.

5. FEES

A. The Conservation Commission shall require the following fee(s) to be included with each application for either an Administrative Approval or Stormwater Permit. Such fees shall include: (1) an Application Fee established by the Conservation Commission to cover Town’s expenses connected with processing the application; and (2) a Review Fee sufficient to cover professional review services for the project, as the Conservation Commission is authorized to retain a Licensed Professional Engineer or attorney, other professional consultant to advise the Conservation Commission on any or all aspects of the application and plans. The Application Fee is fixed and due at time of application. The Review Fee may vary depending upon the complexity of the project. The applicant will be provided an estimate of the Review Fee as determined by the Conservation Commission or Stormwater Agent, and this (3) Estimated Fee must be paid to the Town prior to the start of the review process. No fees shall be required of any Town of Cohasset department or board.

1. Application Fee:

   a. Application Fee is payable at the time of application and is non-refundable.
   b. Application Fees are in addition to any other local or state fees that may be charged under any other law, bylaw, or local ordinance.
   c. The Application Fee for an Administrative Approval application shall be $50.00
   d. The Application Fee for a Stormwater Permit application shall be $500.00
   e. The Application Fee may be reduced or increased by the Conservation Commission. Any such change shall be made at a posted public hearing of the Conservation Commission not less than thirty (30) days prior to the date upon which the change is to be effective.
2. Review Fee:

a. The Conservation Commission is authorized to require an applicant to pay a Review Fee for the reasonable costs and expenses for expert engineering, or attorney review or other professional consultant services deemed necessary by the Conservation Commission in order to come to a final decision on the application.

b. Payment may be required at any point in the deliberations prior to a final decision.

c. The Review Fee shall be determined at the time of project review based on a specific scope of work, and shall be calculated at a rate determined by the Conservation Commission.

d. The services for which a fee may be utilized include, but are not limited to, hydrologic and drainage analysis, stormwater quality analysis, site inspections, as-built plan review, and analysis of legal issues.

e. The Conservation Commission is also authorized to require an applicant to pay reasonable costs and expenses for certain activities which utilize the services of Town personnel.

f. The Conservation Commission may require any applicant to pay an additional fee, calculated at a rate determined by the Conservation Commission, per hour of review, inspection and monitoring services for any project filing that requires an excess of two (2) hours of review, inspection, and monitoring time by a Town staffperson.

g. Subject to applicable law, any unused portion of any Review Fee collected shall be returned by the Conservation Commission to the applicant within forty-five calendar days of a written request by the applicant, unless the Conservation Commission decides in a public meeting that other action is necessary.

h. Engineering and consultant review fees collected under this section shall be deposited in a special account established by the Town pursuant to M.G.L. c.44, § 53G for the imposition of reasonable fees for the employment of outside consultants.

i. The Conservation Commission shall include a full accounting of these fees as part of its annual report to the Town.

3. Estimated Fee:

a. The Review Fee may vary depending upon the complexity of the project.

b. The applicant shall be required to pay an estimate of the review fee (Estimated Fee) as determined by the Conservation Commission or Stormwater Agent, and this Estimated Fee must be paid to the Town prior to the start of the review process.

4. Revision of Fee Schedules and Regulations Governing Fees:

The Conservation Commission may periodically review and revise its regulations and schedules.
6. ADMINISTRATIVE APPROVAL APPLICATION REVIEW PROCESS

Applications for administrative approval shall be reviewed by the Conservation Commission, or the Stormwater Agent on behalf of the Conservation Commission, in accordance with Section 10.D. of the Bylaw.

A. The Administrative Approval Application Review Process shall not require a public hearing.

B. Notice to Abutters. The applicant shall provide notification to all abutters (as defined in Section 7 of the Regulations). The applicant shall provide notification at the mailing addresses shown on the most recent applicable tax list from the municipal assessor. Notification shall be at the applicant’s expense. The notification shall state that the application is being made pursuant to the Bylaw, shall briefly describe the proposed project, and state where copies of the application may be examined or obtained. The applicant shall notify abutters by either certified mail, return receipt requested, or by certificates of mailing. The applicant shall mail notice to abutters at the time of application, and must present either the certified mail receipts or certificate of mailing receipts for all abutters to the Conservation Commission before a decision on the application can be made. The presentation of the receipts for all abutters identified on the tax list shall constitute compliance with abutter notification requirements. The Conservation Commission shall determine whether the applicant has complied with abutter notification requirements. Failure to give notice will require an extension of the application review process at the expense of the applicant.

7. STORMWATER PERMIT HEARING

Stormwater Permit applications shall be reviewed within a noticed public hearing in accordance with Section 10 of the Bylaw.

A. Notice: Notice of hearings is to be provided by publication in a newspaper of general circulation (usually the Patriot Ledger) and notice to abutters and shall be given for all matters requiring public hearings.

1. Notice by Publication. Notice by publication will be undertaken by the Conservation Commission. The cost will be borne by the applicant. The notice must appear in the newspaper at least seven (7) business days before the hearing.

2. Notice shall also be given in accordance with the open meeting law, M.G.L. c. 39, § 23B.

3. Notice to Abutters. The applicant shall provide notification to all abutters as defined in this section. The applicant shall provide notification at the mailing addresses shown on the most recent applicable tax list from the municipal assessor. Notification shall be at the applicant’s expense. The notification shall state that the application is being made pursuant to the Bylaw, shall briefly describe the proposed project, state where copies of the Stormwater Permit application may be examined or obtained, and shall specify the date and time of the
hearing. The applicant shall notify abutters by certified mail return receipt requested, or by certificates of mailing. Mailing of notice at least seven (7) working days prior to the public hearing shall constitute timely notice. The applicant shall present either the certified mail receipts or certificate of mailing receipts for all abutters at the beginning of the public hearing. The presentation of the receipts for all abutters identified on the tax list shall constitute compliance with abutter notification requirements. The Conservation Commission shall determine whether the applicant has complied with abutter notification requirements. Failure to give notice will require continuation of the hearing.

a. Abutters includes property owners adjacent to the property where the activity is proposed and property owners within one hundred (100) feet of the subject property, including if separated from that land by a public or private street or a body of water and not unreasonably distant from the subject property. Abutters shall also include, for any project involving a water body, any property owner who abuts that water body and is within three hundred (300) feet of the subject property, measured from the low-water line both across the water body and along the same shoreline of the water body as is the subject property. Additionally, if the water body is subject to the jurisdiction of the Harbormaster, notice shall be given to the Harbormaster.

b. Common Ownership. If an abutting property is in common ownership, same-family ownership, or in ownership by different entities with common principals, with the subject property, then the definitions of abutters shall be extended to the first property of someone who is not the applicant, a same-family owner or same-principal owner.

4. Notice Given at First Session Only. Notice need only be given of the first session of a hearing, unless further notice is requested or required by the Conservation Commission.

5. Requirement of Written Consent of Owner. The prior written consent of the subject property owner must be obtained before any work is done on the land of another, even if the Applicant has a legal right of way or easement.

B. Continuances: Hearings may be continued by the Conservation Commission with the approval of the applicant. All continuances must be to a specified date. If a continuance is granted due to amendments to the project proposal, revised site plans shall be submitted, and revised site requirements put in place, seven (7) days prior to the next scheduled hearing.

C. Burden Of Proof: It is the applicant's responsibility to be aware of and meet the requirements of the Bylaw and the applicant has the burden of proving that the project or activity is in compliance with the Bylaw.

D. Quorum and Votes: A quorum is defined as a simple majority of those in office. The Conservation Commission need not vote on the merits of a permit application immediately upon conclusion of a public hearing, and may take the matter under advisement. The Conservation Commission may appoint one or more of its members or agents to draft a decision for presentation, vote and signature at a later date.
9. SURETY

The Conservation Commission may require the permittee to post before the start of any regulated activity a surety bond, irrevocable letter of credit, cash, or other acceptable security. The form of the bond shall be approved by Town Counsel, and be in an amount deemed sufficient by the Conservation Commission to ensure that the work will be completed in accordance with the permit. If the project is phased, the Conservation Commission may release part of the bond as each phase is completed in compliance with the permit but the bond may not be fully released until the Conservation Commission has received the final inspection report and issued a Certificate of Completion as required by the Regulations.

10. INSPECTION AND SITE SUPERVISION

All inspections will be conducted by the Conservation Commission or its Stormwater Agent if requested by the Conservation Commission.

A. Preconstruction Meeting: Prior to clearing, excavation, construction, or any land alteration activity requiring a permit, the applicant, the applicant's technical representative, the general contractor, pertinent subcontractors, and any person with authority to make changes to the project, shall meet with the Conservation Commission or its Stormwater Agent to review the permitted plans and proposed implementation.

B. Conservation Commission Inspection: The applicant must notify the Conservation Commission and its Stormwater Agent in advance before the commencement of construction and in advance of construction of critical components of the stormwater management facilities. The Conservation Commission or its Stormwater Agent shall inspect the site prior to approval of any plan, and make inspections as hereinafter required and shall either approve that portion of the work completed or shall notify the permittee wherein the work fails to comply with the approved plans and any conditions of approval. One copy of the permit plans and conditions of approval signed by the Conservation Commission shall be maintained at the site. A copy of the NPDES Construction General Permit and Stormwater Pollution Prevention Plan (if applicable) shall be kept at site as well. In order to obtain inspections, the permittee shall notify the Conservation Commission and the Stormwater Agent at least three (3) working days before each of the following events:

1. Erosion and sediment control measures are in place and stabilized;
2. Rough Grading has been substantially completed;
3. Final Grading has been substantially completed;
4. Bury Inspection: prior to backfilling of any underground drainage or stormwater conveyance structures;
5. Close of the Construction Season; and
6. Final Landscaping (permanent stabilization) and completion of the project.

C. Permittee Inspections: At the discretion of the Conservation Commission, periodic inspections
of the stormwater management system construction shall be conducted by the permittee's professional engineer or his designee who has been approved by the Conservation Commission. All inspections shall be documented and written reports prepared that contain the following information:

1. The date and location of the inspection;
2. Whether construction is in compliance with the approved stormwater management plan;
3. Variations from the approved construction specifications; and
4. Any other variations or violations of the conditions of the approved stormwater management plan.

D. Final Inspection: After the approved Stormwater Management Plan has been implemented and before the surety is released, the applicant must submit a record plan detailing the site conditions and actual stormwater management system as installed. The applicant must submit an explanation detailing any differences between the plans approved with the permit and the as-built plans. This explanation must be approved and stamped by a Licensed Professional Engineer. The Conservation Commission or its Stormwater Agent shall inspect the system to confirm its "as-built" features. This inspection shall also evaluate the effectiveness of the system in an actual storm. The inspection shall determine whether the stormwater BMPs are operating as designed. In conducting the inspection, the Conservation Commission shall look for any indication that the stormwater BMPs are not functioning as designed. Evidence of any such malfunctioning may include, without limitation, sand plumes at outfalls, excessive sands in catch basins, oil sheens, stressed vegetation, accumulated litter, and/or failure of the BMP to drain after 72 hours. No Certificate of Completion will be issued unless and until the stormwater BMPs are functioning in accordance with the Stormwater Permit Conditions and the Massachusetts Stormwater Management Standards, if applicable. If the inspection finds the system to be inadequate, this information shall be submitted to the Conservation Commission which will then issue a Certificate of Completion.

If the system is found to be inadequate by virtue of physical evidence of operational failure, even though it was built as called for in the Stormwater Management Plan, it shall be addressed and corrected by the permittee before the surety is released. If the permittee fails to act the Town may use the surety bond to complete the work. Examples of inadequacy shall include, but not be limited to: errors in the infiltrative capability, errors in the maximum groundwater elevation, failure to properly define or construct flow paths, or erosive discharges from basins.

11. FINAL REPORT

Upon completion of the work, the permittee shall submit a Final Report from a Licensed Professional Engineer certifying that all erosion and sediment control devices, and approved changes and modifications, have been completed in accordance with the conditions of the approved permit. Any discrepancies must be noted in the cover letter. As part of the Final Report, the permittee shall also include the following:

A. Certified as-built construction plans. The as-built plan shall be drawn to scale and identify the location of any systems for conveying stormwater on the site and show that these systems do not
allow the entry of any illicit discharges into the stormwater management system. The as-built shall identify the location of any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between the stormwater and wastewater management systems and the location of any measures taken to prevent the entry of illicit discharges into the stormwater management system.

B. An Illicit Discharge Compliance Statement verifying that no illicit discharges exist on the site. For redevelopment projects, the Illicit Discharge Compliance Statement shall also document all actions taken to identify and remove illicit discharges, including, without limitation, visual screening, dye or smoke testing, and the removal of any sources of illicit discharges to the stormwater management system.

C. An Operations and Maintenance (O & M) Compliance Statement. The O & M Compliance Statement shall identify the party responsible for implementation of the O & M Plan and state:

1. the site has been inspected for erosion and appropriate steps have been taken to permanently stabilize any eroded areas;

2. all aspects of the stormwater BMPs have been inspected for damage, wear and malfunction, and appropriate steps have been taken to repair or replace the system or portions of the system so that the stormwater at the site may be managed in accordance with the Bylaw and the Regulations, and Massachusetts Stormwater Management Standards, if applicable;

3. future responsible parties have been notified of their continuing legal responsibility to operate and maintain the structure; and

4. the Operation and Maintenance Plan for the stormwater BMPs is being implemented.

12. CERTIFICATE OF COMPLETION

The Conservation Commission will issue a letter certifying completion upon receipt and approval of the final reports and/or upon otherwise determining that all work of the permit has been satisfactorily completed in conformance with the Bylaw.

13. PERPETUAL INSPECTION AND MAINTENANCE

A. Maintenance Responsibility:

1. Stormwater management facilities and practices included in a Stormwater Management Plan with an inspection and maintenance agreement in accordance with Section 4.I of the Regulations must undergo ongoing inspections to document maintenance and repair needs and ensure compliance with the requirements of the agreement, the plan and the Regulations.

2. The owner of the property on which work has been done pursuant to the 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 sedimentation controls, and other protective devices. Such repairs or restoration and maintenance shall be in
accordance with the approved plans.

B. Maintenance Inspections:

1. All stormwater management facilities must undergo inspections to document maintenance and repair needs and ensure compliance with the requirements of the Bylaw and accomplishment of its purposes as specified in the Operation and Maintenance Plan described under Section 4.1 of these Regulations.

2. At a minimum, inspections shall occur during the first year of operation and at intervals of at least once (1) every three (3) years thereafter. In addition, the Operation and Maintenance Plan as specified under Section 4.1 of the Regulations between the owner and the Conservation Commission shall be executed for privately-owned stormwater management systems that specifies the person responsible for conducting long term inspections.

3. Inspection reports shall be submitted to and maintained by the Conservation Commission for all stormwater management systems. Inspection reports for stormwater management systems shall include:
   a. The date of inspection;
   b. Name of inspector;
   c. The condition of:
      i. Pretreatment devices;
      ii. Vegetation or filter media;
      iii. Fences or other safety devices;
      iv. Spillways, valves, or other control structures;
      v. Embankments, slopes, and safety benches;
      vi. Reservoir or treatment areas;
      vii. Inlet and outlet channels and structures;
      viii. Underground drainage;
      ix. Sediment and debris accumulation in storage and forebay areas (including catch basins);
      x. Any nonstructural practices; and
      xi. Any other item that could affect the proper function of the stormwater management system; and
   d. Description of the need for maintenance.

C. Right-of-Entry for Inspection: The permittee grants the Conservation Commission, its agents, officers, and employees permission to enter the site at reasonable times and in a reasonable manner for the purpose of inspection. The Conservation Commission, its agents, officers, and employees shall also have authority to enter upon privately-owned land for the purpose of performing their
duties under the Regulations and may make, or cause to be made, such examinations, surveys, or sampling as the Conservation Commission deems necessary, subject to the constitutions and laws of the United States and the Commonwealth.

D. Records of Maintenance and Repair Activities: The person(s) responsible for the operation and maintenance of a stormwater management facility shall make and keep a record of all operation and maintenance activities showing compliance with the Operation and Maintenance Plan, and shall retain such record for at least three (3) years. Such record shall be provided to the Conservation Commission, upon request, and made available to the Conservation Commission during inspection of the facility and at other reasonable times.

E. Failure to Maintain:

1. If the person responsible fails or refuses to meet the requirements of the Operation and Maintenance Plan, the Conservation Commission, after thirty (30) days written notice (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24 hours notice shall be sufficient), may correct a violation of the design standards or maintenance requirements by performing the necessary work to place the facility or practice in proper working condition. Pursuant to M.G.L. c. 40, § 58, the Conservation Commission may assess the owner(s) of the facility for the cost of repair work which shall be a lien on the subject property.

2. After notification is provided to the person responsible, that person shall have thirty (30) days or other time frame mutually agreed to between that person and the Conservation Commission for correcting any and all deficiencies. The Conservation Commission shall then conduct a subsequent inspection to ensure completion of repairs.

14. ENFORCEMENT

A. Enforcement: The Conservation Commission or its authorized agent shall enforce the Bylaw, the Regulations, and any associated orders, violation notices, and enforcement orders, and may pursue all available civil, criminal and non-criminal remedies for such violations.

B. Notices and Orders:

1. The Conservation Commission may issue a written notice of violation or enforcement order to enforce the provisions of the Bylaw or the Regulations, which may include an order to:

   a. Cease and desist from construction or land disturbing activity until there is compliance with the Regulations and the stormwater management permit;
   
   b. Repair, maintain; or replace the stormwater management system or portions thereof in accordance with the Operation and Maintenance Plan;
   
   c. Perform monitoring, analyses, and reporting;
   
   d. Fix adverse impact resulting directly or indirectly from malfunction of the stormwater management system.
2. If the Conservation Commission determines that abatement or remediation of adverse impacts is required, the order may set forth a deadline by which such abatement or remediation must be completed. Said order may further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the Town of Cohasset may, at its option, undertake such work.

C. Violations: Any person who violates any provision of the Bylaw, or the Regulations, or any order or permit issued thereunder, may be ordered to correct the violation and/or shall be punished by a fine of one hundred dollars ($100.00). Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

D. Non-Criminal Disposition: As an alternative to criminal prosecution or civil action, the Conservation Commission may elect to utilize the non-criminal disposition procedure set forth in M.G.L. c. 40, §21D and Article 1, Section 1 (b) of the Town’s General Bylaws. The penalty for violation shall be one hundred dollars ($100.00). Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

E. Appeals: The decisions or orders of the Conservation Commission shall be final. Further relief shall be to a court of competent jurisdiction.

F. Remedies Not Exclusive: The remedies listed in this Bylaw are not exclusive of any other remedies available under any applicable federal, state or local law.

15. SEVERABILITY

The invalidity of any one or more section, provision, paragraph, sentence, or clause of the Regulations shall not invalidate any other section, provision, paragraph, sentence, or clause thereof, nor shall such invalidity invalidate any permit or determination previously issued thereunder.

APPENDIX A: Post Development Criteria for Stormwater Management

Appendix A - Post Development Criteria for Stormwater Management
Engineering Guidance for the Stormwater Management Rules and Regulations

Purpose
The purpose of Appendix A - Post Development Criteria for Stormwater Management - is to guide and assist engineers with compliance with the Town of Cohasset's Stormwater Management Bylaw (the Bylaw) and the Stormwater Management Rules and Regulations (the Regulations) that have been adopted to implement the Bylaw. It is not the intent of Appendix A to dictate which strategies are preferable or which must be used. A wide variety of stormwater management strategies are possible and acceptable. Strategies include intelligent site design, minimizing impervious surfaces and land disturbance, source control and pollution prevention, disconnecting and distributing storm flows to prevent concentration, implementing structural and non-structural best management practices (BMPs), stormwater storage and reuse, providing construction period erosion and sedimentation control, and the ensuring long-term operation and maintenance of stormwater management systems.

Guidance for Applications

Administrative Approval
Application requirements for smaller projects, subject to Administrative Approval are described in Section 9.C. of the Bylaw, and in Section 4.B.1 of the Regulations. In addition to submitting the application form, list of abutters, and application and review fees, applicants shall, at a minimum, submit an abbreviated Stormwater Management Plan (SMP) that includes information listed and described in the table below. The level of detail in this SMP submittal should reflect the complexity of the project and the nature and extent of the impacts that may arise both during and after construction. More details or additional information, or a complete SMP shall be submitted if determined to be necessary by the Conservation Commission or its Stormwater Agent after review of any initial SMP submittal. At a minimum, applicant's engineer should a provide a narrative discussion of the project along with appropriate plan(s) and map(s) showing the proposed site alterations, changes in type of land cover, and proposed drainage management that will comply with the Bylaw, and this SMP shall be stamped and certified by a Massachusetts Licensed Professional Engineer (Engineer's Certification) in compliance with Section 9.C. of the Bylaw. As noted in Section 10.A. of the Bylaw and Section 4.A. of the Regulations, applicants are strongly encouraged to schedule a pre-application meeting with the Conservation Commission to review the proposed development plans. An abbreviated SMP should address each of the following:

List of Required Contents for an Abbreviated Stormwater Management Plan

<table>
<thead>
<tr>
<th>Reg. Ref.</th>
<th>Required Submittal Item(s)</th>
<th>Explanation and Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.2.a.</td>
<td>Names, addresses, and telephone numbers of the owner, applicant, and person(s) or firm(s) preparing the plan, and the Cohasset Assessor’s map and parcel number of the property or properties affected.</td>
<td>Supply by completing the Application Form.</td>
</tr>
<tr>
<td>H.2.b.</td>
<td>A locus map, at a scale of 1”=800’.</td>
<td>If a USGS Quadrangle map is used, this map would also provide information requested under item H.2.h. below on nearby surface waters and wetlands within a half-mile of the project that may receive stormwater runoff from the project.</td>
</tr>
<tr>
<td>H.2.c.</td>
<td>The existing zoning, and land use at the site, including if site is located in the Town’s Special Flood Plain and Watershed</td>
<td>Identify this information in the report narrative; and shown on site plan only if property is partially in one</td>
</tr>
<tr>
<td>H.2.d</td>
<td>The existing and proposed land use</td>
<td>Identify existing and proposed use in the report narrative.</td>
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<tr>
<td>H.2.e</td>
<td>The location(s) of existing and proposed easements.</td>
<td>If any easements for drainage or other utilities exist, then show these on the plan. Also show any drainage easements that are proposed as part of the proposed project.</td>
</tr>
<tr>
<td>H.2.f</td>
<td>The location of existing and proposed utilities, septic systems, drinking water supply wells, or irrigation wells; and any underground storage tanks, or contaminated sites as defined under MGL Ch.21E</td>
<td>Show all listed features if present on site.</td>
</tr>
<tr>
<td>H.2.g</td>
<td>The site’s existing and proposed topography with contours at 2 foot intervals, and any rock or ledge outcroppings.</td>
<td>The town’s existing topographic maps (2-ft interval maps) are acceptable as base plans as long as any actual site condition differences are noted on the plan. Or, submit a new topographic survey plan showing the existing site conditions, and drawing of proposed conditions.</td>
</tr>
<tr>
<td>H.2.h</td>
<td>The existing site hydrology including a description and delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which stormwater flows. Identify all surface waters and wetlands within a half-mile of the project that may receive stormwater runoff from the project.</td>
<td>Provide a description in the report narrative; and show same on the site plan. Information on nearby surface waters and wetlands within a half-mile of the project that may receive stormwater runoff from the project can be shown on a USGS Quadrangle map (see item H.2.b above).</td>
</tr>
<tr>
<td>H.2.i</td>
<td>A delineation of 100-year flood plains, if applicable.</td>
<td>Identify if site is inside or outside of the 100 year flood plain in the report narrative; and show flood plain limit on site plan only if property is partially or wholly in the flood plain.</td>
</tr>
<tr>
<td>H.2.j</td>
<td>An estimate made by a Massachusetts Approved Soil Evaluator of seasonal high groundwater elevation in each area to be altered and in each area to be used for stormwater retention, detention, or infiltration.</td>
<td>Need to provide this information only if work will impact or encounter groundwater; or if new stormwater retention, detention, or infiltration facilities are being proposed.</td>
</tr>
<tr>
<td>H.2.k</td>
<td>The existing soils based on the NRCS Soil Surveys.</td>
<td>Provide copy of the NRCS Soil Survey Map with the locus outlined on the map, and copies of the soil descriptions and engineering properties sections of the survey for each soil type on site.</td>
</tr>
<tr>
<td>H.2.l</td>
<td>The existing and proposed vegetation and ground surfaces with runoff coefficient for each.</td>
<td>Survey or sketch on the site plan the approximate limits of woods, grass, rock outcrops, exposed soil or gravel areas, pavement areas, etc.; also list the Hydrologic Curve Number (CN) values for each cover type as listed in the NRCS TR-55 publication.</td>
</tr>
<tr>
<td>H.2.m</td>
<td>A drainage area map showing pre- and post-construction watershed boundaries, drainage areas and stormwater flow paths.</td>
<td>Show this information on the site plan provided from item H.2.g. above.</td>
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<tr>
<td>H.2.n.</td>
<td>A description and drawings of all components of the existing and proposed stormwater management system including:</td>
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<tr>
<td>i.</td>
<td>locations, cross sections, and profiles of all brooks, streams, drainage swales and their method of stabilization;</td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td>all measures for the collection, conveyance, treatment, detention, retention or infiltration of water;</td>
<td></td>
</tr>
<tr>
<td>iii.</td>
<td>all measures for the protection of water quality;</td>
<td></td>
</tr>
<tr>
<td>iv.</td>
<td>the structural details for all components of the proposed drainage systems and stormwater management facilities;</td>
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<tr>
<td>v.</td>
<td>notes on drawings specifying materials to be used, construction specifications, and typical details; and</td>
<td></td>
</tr>
<tr>
<td>vi.</td>
<td>proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if applicable.</td>
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</tr>
</tbody>
</table>

Show this information on the site plan provided from item H.2.g. above.

Show brook, stream, drainage swale locations on plan; but provide cross-sections, profiles, method of stabilization, etc. only if modifying these features.

Show these measures on the site plan if proposed.

Provide a description in the report narrative; and show any water quality treatment BMPs on the plan.

Provide a description in the report narrative; and show any new drain lines or stormwater BMPs on the site plan.

Provide details of construction for stormwater BMPs.

Provide a description in the report narrative; and show all new buildings, structures, impervious areas, regarded/resurfaced areas, and how drainage from these areas will be managed.

Applicants for Administrative Approval that are not subject to wetlands regulations have the option of submitting the Massachusetts Department of Environmental Protection (MADEP) Stormwater Policy Manual submittals; but if proposed site changes are not subject to wetlands regulations, then Applications for Administrative Approval do not require submittal of the MADEP Stormwater Policy Manual submittals. Either way, applicants are required to comply with the applicable MADEP standards, and the aforementioned Engineer’s Certification must include reference to compliance with the applicable MADEP standards. If an application for Administrative Approval is for work subject to the Wetlands Protection Act or Cohasset Wetlands Bylaw, then only the MADEP Stormwater Policy Manual submittals are required (to avoid duplication of effort) and such submittals must include the above noted information requested in the Bylaw, and the Regulations, and Appendix A.

**Stormwater Permit**

Application requirements for larger projects, subject to a Stormwater Permit are described in Section 9.B. of the Bylaw, and in Section 4.B.2. of the Regulations. In addition to submitting the application form, list of abutters, and application and review fees, applicants shall, at a minimum, submit an Erosion and Sediment Control Plan, a Stormwater Management Plan, and an Operations & Maintenance Plan (for any stormwater management BMPs). The SMP shall be comprehensive and shall address all of the information listed in the Regulations (by submitting, or indicating why not required). Also, for applications associated with residential or commercial/industrial subdivisions, the SMP must include an overall development plan showing all construction activity and proposed grading for all project phases, and shall show the proposed building envelope within each house lot and the proposed grading, septic system area, drainage, and stormwater disposal for each lot, such that the total stormwater impact of the project at full build out (not just the streets and ways) can be reviewed and regulated under the permit.

Applicants for a Stormwater Permit that are not subject to wetlands regulations are not required to submit the MADEP Stormwater Policy Manual submittals, but are encouraged to do so. Either way, applicants are required to comply with the applicable MADEP standards, and the aforementioned Engineer’s Certification must include reference to compliance with the applicable MADEP standards. Applications
subject to the Wetlands Protection Act are required to submit the MADEP Stormwater Policy Manual submittals, and the following substitutions are acceptable to avoid duplication of effort, as long as any additional information requested in the Bylaw, the Regulations, and Appendix A is also addressed:

- MADEP Stormwater Report as substitution for the SMP, and this report would also include the following two parts:
  - MADEP Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (DEP Standard 8) as substitution for the Erosion and Sediment Control Plan;
  - MADEP Post Construction Operation and Maintenance Plan (MADEP Standard 9) as substitution for the Operations & Maintenance Plan.

The level of detail in the above noted reports should reflect the complexity of the project and the nature and extent of the impacts that may arise both during and after construction. More details or additional information shall be submitted if determined to be necessary by the Conservation Commission or its Stormwater Agent after review of the SMP submittal. At a minimum, applicant’s engineer should provide a narrative discussion of the project along with appropriate plan(s) and map(s) showing the proposed site alterations, changes in type of land cover, detailed hydrologic and hydraulic calculations, and proposed stormwater management that will comply with the Bylaw, and reports shall be stamped and certified by a Licensed Massachusetts Professional Engineer in compliance with Section 9.B. of the Bylaw. As noted in Section 10.A. of the Bylaw and Section 4.A. of the Regulations, applicants are strongly encouraged to schedule a pre-application meeting with the Conservation Commission to review the proposed development plans and discuss submittal requirements.

Environmentally Sensitive Site Design and Low Impact Development (LID) Techniques

Environmentally sensitive site design and LID for stormwater management are relatively new compared to other more traditional stormwater management methods, and these focus on preventing the generation and/or concentration of stormwater and non-point source pollution by reducing impervious surfaces, disconnecting flow paths, managing or treating stormwater at its source, maximizing open space, minimizing disturbance, and protecting natural features and processes. LID techniques attempt to mimic pre-development natural hydrologic features by managing rainfall at, or closer to, the source, using decentralized micro-scale controls that are as uniformly distributed as possible. Examples of micro-scale controls include small lot level landscape features such as bio-retention - rain gardens and swales, or constructed wetlands, or roof runoff collection and recharge to the ground, or detention / storage in rain barrels or cisterns to enable reuse of stormwater to meet dry weather irrigation needs. Applicants under the Bylaw should consider environmentally sensitive site design and LID for managing stormwater on their site, and should minimize site disruption, and evaluate a decentralized approach (i.e. utilizing numerous smaller treatment and infiltration devices located closer to impervious surfaces), in lieu of more traditional centralized systems that collect and concentrate drainage from the entire site into one location.

Applicants filing the MADEP stormwater reports have opportunity to receive LID Site Design Credits by incorporating environmentally sensitive design or low impact development techniques. Such credits are also acceptable under the Bylaw. The MADEP Low Impact Development Site Design Credits encourage environmentally sensitive site design and LID techniques for managing stormwater that minimize impervious surfaces and preserve natural hydrologic conditions. The credits allow project proponents to reduce or eliminate the structural stormwater BMPs and help to reduce the Required Recharge Volume (Standard 3) and the Required Water Quality Volume (Standard 4) provided that any pervious surfaces used to treat and infiltrate stormwater runoff meet the requirements set forth in the MADEP Stormwater Management Standards. Examples of such LID Site Design Techniques that can earn credits include the following:

- vegetated filter strip(s) used as pervious area for disconnecting rooftop and non-rooftop runoff
• measures to reduce impervious areas, thus shrinking the size of the stormwater BMPs
• decentralized stormwater management system using vegetative filter strips to direct stormwater runoff to BMPs located throughout the site
• porous pavement to provide groundwater recharge and reduce peak flow and stormwater runoff volume by diverting stormwater into the ground and away from pipe-and-basin stormwater systems. (Depending on design, paving material, soil type, and rainfall, porous paving can infiltrate as much as 70% to 80% of annual rainfall.) Grass pavers, also porous, can improve site appearance by providing vegetation where there would otherwise be pavement.

Utilization of LID Site Design Credits allowed by the MADEP Stormwater Management Standards does not relieve the design engineer from the standard of good engineering practice for safe conveyance of stormwater runoff and sound drainage design, and does not by its application alone provide relief from the requirements of the Bylaw.

Massachusetts Stormwater Management Standards

In 2008 Massachusetts issued regulations that include Stormwater Management Standards (that replaced the former Massachusetts Stormwater Policy), through amendments to 310 CMR 10.00: Wetlands Protection Regulations and 314 CMR 9.00: 401 Water Quality Certification for Discharge of Dredged or Fill Material, Dredging, and Dredged Material Disposal in Waters Within the Commonwealth. Recognizing that the Massachusetts Stormwater Management Standards shall be met for all projects within the jurisdiction of these state regulations, and that the Massachusetts Stormwater Policy Manual\(^1\) which includes additional guidance to these regulations, may change over time, all stormwater management designs must meet the latest stormwater design criteria or standards established in the MADEP Stormwater Policy Manual or the design criteria or standards within this Appendix A whichever is more stringent in the protection of the town’s environmental and infrastructure resources.

Any project requiring an application\(^2\) under the Bylaw, regardless of whether said project is subject to state or local wetlands regulations, shall comply with the Massachusetts Stormwater Management Standards (as issued 2008, including any subsequent state revisions thereto) as modified for application in the Town of Cohasset below, and shall also comply with other specific engineering standards stated in this Appendix A if more stringent. This Appendix A provides guidance for application of the state standards within the Town of Cohasset and provides certain design standards that may differ from, clarify, or in some cases exceed those stated in the Massachusetts Stormwater Management Standards. Nevertheless, the intent is the same, and that is to promote increased stormwater recharge, treatment of runoff from polluting land uses, environmentally sensitive site design and LID techniques, pollution prevention, removal of illicit discharges to stormwater systems, and improved operation and maintenance of BMPs.

Review of MADEP Standards and their Applicability, and Modification as Cohasset Standards for all applications under the Bylaw

Each of the following Massachusetts Stormwater Management Standards will apply for projects regulated under the Bylaw and the Regulations. In addition, for each standard, there may be additional standards or post development criteria required by the Regulations. Guidance on these additional standards or post development criteria is included below, organized according to the state standard numbers:

\(^1\) The MADEP Stormwater Policy Manual is also occasionally referred to by the state (and herein) as the Stormwater Policy Handbook.

\(^2\) Note: Compliance with the MADEP standards should not be confused with requirement to file reports and forms in complete compliance with the MADEP Stormwater Policy Manual, which as noted in Appendix A, is only required for projects subject to state and local wetlands regulations.
MADEP Standard 1: No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Cohasset Applicability and Modification for Standard 1. MADEP Standard 1 applies, with the following modification: In addition, no new stormwater outfall or increase in stormwater (above existing conditions) shall discharge untreated stormwater off-site, or cause down-gradient erosion. Runoff from non-metal roofs may be discharged without pretreatment. Runoff from metal roofs (roofs which are galvanized steel or copper) proposed to be discharged off-site to an area within the Cohasset Water Resource District requires pretreatment by means of a BMP capable of removing metals, such as a sand filter, organic filter, filtering bioretention area or equivalent.

MADEP Standard 2: Stormwater management systems shall be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

Cohasset Applicability and Modification for Standard 2. MADEP Standard 2 applies, with the following modification: The Natural Resource Conservation Service (NRCS) hydrologic calculation method TR-20 shall be utilized for estimating the effects of land use changes on runoff volume and peak rates of discharge. TR-55 shall not be used, except that TR-55 may be used for calculating the Time of Concentration (Tc) for sheet flow, shallow concentrated flow, & channel flow. Applicants must calculate runoff rates from pre-existing and post-development conditions for all points of discharge from the property. Measurement of peak discharge rates is calculated at a design point (or if applicable at multiple design points), with such points typically being the lowest point(s) of discharge at the down-gradient property boundary. The topography of the site may require evaluation at more than one design point, if flow leaves the property in more than one direction. An applicant may demonstrate that a feature beyond the property boundary (e.g. culvert) is more appropriate as a design point, particularly if off-site flooding is a concern.

To prevent storm damage and downstream and off-site flooding, Standard 2 requires that the post-development peak discharge rate from the property is equal to or less than the pre-development rate from the 2-year, 10-year, and 100-year 24-hour storms, and for each design point if flow leaves the property in more than one direction. Applicants must slow runoff rates through intelligent site design, storage and gradual release, incorporating BMPs such as LID techniques, extended dry detention basins, and wet basins. Where an area is within the 100-year coastal flood plain or land subject to coastal storm flowage, the control of peak discharge rates may be less critical and may be waived by the Conservation Commission if the applicant can prove that peak flow control is not critical; however there are many portions of Cohasset within sub-watersheds that contribute to the 100-year coastal flood plain or land subject to coastal storm flowage (e.g. sub-watersheds for James Brook / Stuart Brook / Jacobs Meadow area; Cohasset Harbor, Treats Pond area, Sraits Pond area) that are particularly susceptible to stormwater pollution, modification of salinity, and/or flooding from excessive storm flows in combination with tidal fluctuations during storm events, and in such areas the control of all peak discharges shall be a requirement.
MADEP Standard 3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

Cohasset Applicability and Modification for Standard 3. MADEP Standard 3 applies, with the following modification: In addition, to prevent storm damage, alteration of stream channels, and down-gradient or off-site flooding, Cohasset requires that the post-development discharge volume from the property not be more than the pre-development discharge volume for the 2-year, 10-year, and 100-year 24-hour storms, and for each design point if flow leaves the property in more than one direction. Applicants must demonstrate volume control for these storm events through intelligent site design, on-site storage, and reuse, by incorporating BMPs such as LID techniques, extended dry detention basins, and wet basins. Where an area is within the 100-year coastal flood plain or land subject to coastal storm flowage, the control of volume may be less critical and may be waived by the Conservation Commission if the applicant can prove that volume control is not critical; however there are many portions of Cohasset within sub-watersheds that contribute to the 100-year coastal flood plain or land subject to coastal storm flowage (e.g. sub-watersheds for James Brook / Stuart Brook / Jacobs Meadow area; Cohasset Harbor, Treats Pond area, Strats Pond area) that are particularly susceptible to stormwater pollution, modification of salinity, and/or flooding from excessive storm flows in combination with tidal fluctuations during storm events, and in such areas the control of post-development volumes will be a requirement, and will only be waived if the applicant can prove that there are extenuating circumstances, and has complied to the “maximum extent practicable”, and such waiver may be subject to conditions imposed by the Commission on other controls (such as, but not limited to controlling post-development peak flows to be less than pre-development peak flows). For purposes of Standard 3, “to the maximum extent practicable” means that (1) the applicant has made all reasonable efforts to meet the Standard; (2) the applicant has made a complete evaluation of all possible applicable infiltration and volume control measures, including environmentally sensitive site design that minimizes land disturbance and impervious surfaces, low impact development techniques, and structural stormwater best management practices; and (3) if the post-development recharge (or runoff volume) does not at least approximate the annual recharge (or runoff volume) from pre-development conditions, the applicant has demonstrated that s/he is implementing the highest practicable method for recharge and volume control.

Additional Guidance on hydrologic standards if waivers are sought on volume control: Compliance with Pre-to Post-Volume Control requirements are expected to come into play at many Cohasset locations comprised solely of C and D soils and bedrock at the land surface, where MADEP only requires proponents to infiltrate the required recharge volume “to the maximum extent practicable”.

- The Conservation Commission will seek compliance to the maximum extent feasible, and if waivers are considered, start with waiver on the larger but less frequent events. For example, relax the standard for the 100 year 24-hour storm, before considering waiver on the 10 year 24-hour storm, etc. The minimum standard will be pre- to post- volume control on the two year 24-hour storm event.

- In addition, or in the alternative, where post-developed runoff volumes cannot be maintained at pre-developed amounts, another strategy that the Conservation Commission will consider is to issue a waiver but require as a condition that post-developed peak rates to be less than pre-developed rates. This strategy is reported⁵ to be more effective than only requiring post-development peaks to equal pre-development peaks. The recommended pre- to post percent reduction will range from about 10 percent to 50 percent for frequent storm events (e.g. the 1- or 2-year storm) to 60 percent to 80 percent of the 100-year storm.

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The waiver criteria suggested above do not result in complete post development control of runoff volume to match pre-development runoff volume, but they will help to provide 24 hours of detention of pre-to post excess runoff generated by the more frequent rainfall depths. In these waiver situations, larger storm events will also experience some detention, but probably much less than 24 hours. The premise of these criteria is for runoff to be stored and released in as gradual a manner as possible so that critical erosive velocities would seldom be exceeded in downstream channels, and so that the timing of flows would allow for down-gradient flooding to subside before release of up-gradient volume.

Additional Guidance on waiving volume control if there are site contamination risks: MADEP recognizes that on some sites, there is a risk that infiltrating the required recharge volume may cause or contribute to groundwater contamination. Consequently, the Conservation Commission will also consider waiving pre- to post-volume control where MADEP requires infiltration only to the “maximum extent practicable” on the following sites:

- sites where recharge is proposed at or adjacent to an area classified as contaminated, sites where contamination has been capped in place, and/or sites that have an Activity and Use Limitation (AUL) that precludes inducing runoff to the groundwater, pursuant to MGL Chapter 21E and the Massachusetts Contingency Plan found at 310 CMR 40.0000;
- sites that are the location of a solid waste landfill as defined in 310 CMR 19.000, and sites where groundwater from the recharge location flows directly toward a solid waste landfill or 21E site.  

MADEP Standard 4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This standard is met when:

a) Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;

b) Structural stormwater best management practices are sized to capture the required water quality volume as determined in accordance with the Massachusetts Stormwater Handbook; and

c) Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Cohasset Applicability and Modification for Standard 4. MADEP Standard 4 applies, with the following modification: Cohasset shall accept applicant’s compliance with MADEP Standard 4 as evidence that applicant has complied with the Performance Standards for “water quality of the runoff” as set forth in Sections 8.A and 8.B.3 of the Bylaw. Nevertheless, the Town of Cohasset may require monitoring or sampling if the Conservation Commission considers it appropriate to ensure protection of critical areas or to verify the effectiveness of alternative technologies that are not included in “Table TSS” of the Massachusetts Stormwater Management Standards, or do not have a specified TSS removal rate and that have only limited data about their long-term performance.

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4 A mounding analysis is needed if a site falls within this category. See MADEP Stormwater Policy Manual Volume 3.
MA DEP Standard 5: For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If, through source control and/or pollution prevention, all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L.c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Cohasset Applicability and Modification for Standard 5. MADEP Standard 5 applies, with the following modification: Section 4. of the Bylaw requires a Stormwater Permit for all land uses with higher potential pollutant loads as defined in the Massachusetts Stormwater Management Policy, and these land uses also include areas within a site that are the location of activities subject to an individual National Pollutant Discharge Elimination System (NPDES) permit or the NPDES Multi-Sector General Permit. A detailed source control and pollution prevention plan is required for sites with land uses that have higher potential pollutant loads, and this shall be provided as part of the SMP required by the Regulations at Section 4.H.2.i.

Additional Guidance on Stormwater discharges from Land Uses with Higher Potential Pollutant loads

Stormwater discharges from land uses or activities with higher potential pollutant loadings, are addressed by the MADEP Stormwater Management Standard 5, but these may also be subject to additional criteria, and require the use of specific stormwater management BMPs at the discretion of the Conservation Commission. The use of infiltration practices in these areas without pretreatment is prohibited.

MADEP Standard 6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1. or 2(a)2. to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of the public water supply.

Cohasset Applicability and Modification for Standard 6. MADEP Standard 6 applies, with the following modification: If an NPDES Construction General Permit or Multi-Sector General Permit is required for a discharge to an ORW, both MADEP and the Conservation Commission must approve the Stormwater Pollution Prevention Plan (SWPPP).

Additional Guidance on Stormwater Discharges to Sensitive Areas

Stormwater discharges to critical areas with sensitive resources (i.e., shellfish beds, swimming beaches, aquifer recharge areas, water supply reservoirs) are addressed by the MADEP Stormwater Management Standard 6, but these may also be subject to additional criteria, or may need to utilize or restrict certain stormwater management practices at the discretion of the Conservation Commission.

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5 For purpose of the MA Stormwater Standards, land uses subject to the 2000 NPDES Multi-Sector General Permit are land uses with higher potential pollutant loads. A full list of these land uses is set forth in the 2000 NPDES Multi-Sector General Permit. See http://cfpub.epa.gov/npdes/stormwater/masscfm#permitf Factsheet

6 If the land use is also subject to the NPDES Multi-Sector General Permit, a Stormwater Pollution Prevention Plan (SWPPP) will also be required. To avoid duplication of effort, a project proponent may prepare one document that satisfies the SWPPP requirements of the NPDES Multi-Sector General Permit and the long-term pollution prevention plan requirements of Standards 4 and 5.
MADEP Standard 7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

Cohasset Applicability and Modification for Standard 7. MADEP Standard 7 as written does not apply and is superseded by the following: For purposes of the implementing the Bylaw and the Regulations, redevelopment projects are defined the same as under MADEP Standard 7 to include the following: (1) Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving; (2) Development, rehabilitation, expansion and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area; and (3) Remedial projects specifically designed to provide improved stormwater management, such as projects to separate storm drains and sanitary sewers and stormwater retrofit projects. However, such redevelopment projects in Cohasset are required to meet the following MADEP Stormwater Management Standards only to the maximum extent practicable: The pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall be brought into compliance with Standard 1 to the maximum extent practicable. Otherwise, redevelopment projects in the Town of Cohasset shall comply with the applicable town bylaws and regulations and also comply with all requirements of the Stormwater Management Standards and improve existing conditions.

MADEP Standard 8: A plan to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

Cohasset Applicability and Modification for Standard 8. MADEP Standard 8 applies if the applicant’s project is subject to a Notice of Intent filing under the state’s Wetland Protection Act (and local Cohasset Bylaw). If not subject to wetlands regulations, an Erosion and Sediment Control Plan is required of the applicant by the Bylaw and the Regulations. Erosion and Sediment Control Plans submitted to the Conservation Commission shall comply with the Regulations at Section 4.G. Projects that disturb one acre of land or more are required to obtain an EPA NPDES Construction General Permit and prepare a Stormwater Pollution Plan (SWPPP). These applicants may avoid duplication of effort by preparing a single document that satisfies the SWPPP requirements, the MADEP Standard 8 requirements, and the Regulations at Section 4.G.

Additional Guidance on Erosion and Sediment Controls during Construction:
Land clearing and grading during construction exposes soils to erosion, and if not controlled, eroded soils may reach streams, ponds and wetlands causing sedimentation and adding pollutants attached to the soil particles. In addition, removal and disturbance of land cover has significant effect on the rates and volumes of stormwater runoff during the construction period. The following excerpts from Fundamentals of Urban Runoff Mgmt are provided to emphasize the Conservation Commission’s concerns that stormwater controls provided during the construction period are equally as important as post-construction stormwater controls:

"Runoff is dramatically increased during the construction phase of site development. Sediment control practices are very seldom designed to provide water quantity control, especially for channel erosion. Thus, the greater the area of disturbance, the greater the peak discharge and total volume of runoff. If stream channel protection is a program goal, the erosion that the permanent stormwater system is intended to reduce or prevent (even if using permanent source controls) may occur prior to implementation of those permanent controls."

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"An effective stormwater management program is not going to achieve its goals if the receiving systems are severely impacted during the construction phase of a project. In addition to significant sediment loads, the construction phase of site development can increase the total volume and peak rates of stormwater exiting a site and cause downstream channel instability concerns."

As noted in the Massachusetts Stormwater Handbook, BMPs used during construction must be different from the BMPs that will be used to handle stormwater after construction is completed and the site is stabilized. Many stormwater technologies (infiltration technologies) are not designed to handle the high concentrations of sediments typically found in construction runoff, and thus must be protected from construction-related sediment loadings. All proposed construction period BMPs must be properly designed, and sediment traps must be sized to provide adequate capacity and retention time to allow for proper settling of fine-grained soils. Construction period BMPs must also be properly operated and maintained.

At a minimum, the following guidelines shall be followed for erosion and sedimentation control, however this list is not exclusive or comprehensive, and applicants should consult with available references for more complete guidance.8

1. Prior to any land disturbance activities commencing on the site, the developer shall physically mark limits of no land disturbance on the site with tape, signs, or orange construction fence, so that workers can see the areas to be protected. The physical markers shall be inspected by the site manager daily.

2. A construction phasing plan shall be included in the Erosion and Sedimentation Control Plan and land disturbance activities exceeding two acres in size should not be disturbed without a sequencing plan that requires stormwater controls to be installed and the soil stabilized, as disturbance beyond the two acres continues. Mass clearings and grading of the entire site shall be avoided.

3. The area of disturbance shall be kept to a minimum. Disturbed areas remaining idle for more than 14 days shall be stabilized.

4. Appropriate erosion and sediment control measures shall be installed prior to soil disturbance.

5. Divert runoff away from highly erodible soils and/or steep slopes; direct runoff to stable areas.

6. Measures shall be taken to control erosion within the project area. Sediment in runoff water shall be trapped and retained within the project area. Wetland areas and surface waters shall be protected from sediment even if work is outside of wetland buffer zones.

7. Sediment shall be removed once the volume reaches ¼ to ½ the height of the silt fence or hay bale.

8. Soil stockpiles must be stabilized or covered at the end of each workday. Stockpile side slopes shall not be greater than 2:1. All stockpiles shall be surrounded by sediment controls.

9. Dust shall be controlled at the site.

10. A tracking pad shall be constructed at all entrance/exit points of the site to reduce the amount of soil carried onto roadways and off the site.

11. On the cut side of roads, ditches shall be stabilized immediately with stone, rock rip-rap, erosion control matting or other non-erodible liners, or where appropriate, vegetative measures such as hydroseeding or sod; and where channel lining is infeasible and velocity checks are required, check dams shall be put in place.

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8 For more information on erosion and sediment control, see the following publications: (i) Volume 2 of the Massachusetts Stormwater Handbook, (ii) the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas (http://mass.gov/dep/water/esfull.pdf) (iii) the Nonpoint Source Manual (http://projects.geosyntec.com/NPSManual/).
12. Permanent seeding shall be undertaken in the Spring from March through May, and in late summer and early fall from August to October 15. During the peak summer months and in the fall after October 15, when seeding is found to be impractical, temporary mulch or erosion control blankets shall be applied. Permanent seeding may be undertaken during the summer if plans provide for adequate mulching and watering.

13. All slopes steeper than 3:1 (h:v, 33.3%), as well as perimeter dikes, sediment basins or traps, and embankments must, upon completion, be immediately stabilized with sod, or loam & seed with anchored straw mulch or mulch blankets, or other approved stabilization measures. Areas outside of the perimeter sediment control system must not be disturbed.

14. Monitoring and maintenance of erosion and sediment control measures by the site manager throughout the course of construction shall be required.

15. Temporary sediment trapping devices must not be removed until permanent stabilization is established in all contributory drainage areas. Similarly, stabilization must be established prior to converting sediment traps/basins into permanent (post-construction) stormwater management facilities. As noted BMPs used during construction must be different from the BMPs that will be used to handle stormwater after construction is completed. However, if temporary and permanent BMP locations, such as basin locations, are the same, then all such facility locations that were used as temporary facilities shall be cleaned (e.g. excavated to remove all silt and sediments) prior to being completed to finished stabilized grades for final operation.

16. All temporary erosion and sediment control measures shall be removed after final site stabilization is confirmed by inspection. Disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 days of removal.

MADEP Standard 9: A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

Cohasset Applicability and Modification for Standard 9. MADEP Standard 9 applies if the applicant’s project is subject to a Notice of Intent filing under the state’s Wetland Protection Act (and local bylaw). Even if not subject to wetlands regulations, an Operation and Maintenance Plan is required of the applicant by the Bylaw and the Regulations. O&M Plans submitted to the Conservation Commission shall comply with the Regulations at Section 4.I. Some applicants may need to develop an operation and maintenance plan for stormwater BMPs to meet the requirements of a NPDES Multi-Sector General Permit or a NPDES General Permit for Municipal Separate Storm Sewer Systems (MS4 Permit). To avoid duplication of effort, such applicants may be able to prepare one operation and maintenance plan that fulfills the requirements of the Regulations at Section 4.I., MADEP Standard 9 and the applicable NPDES general stormwater permit.

Additional Guidance on Operation and Maintenance Plans:
To ensure compliance, the Stormwater Permit and/or Wetlands Order of Conditions (if applicable) issued by the Conservation Commission will include the continuing conditions set forth below.

1. All stormwater BMPs shall be operated and maintained in accordance with the design plans and the O&M Plan approved by the Conservation Commission.

2. The responsible party shall, in accordance with Sections 4.I.4 and 4.I.5 of the Regulations:
   a. Submit an annual O&M report;
   b. Maintain an O&M log;
   c. Make this log available to MADEP and the Conservation Commission upon request; and
   d. Allow members and agents of the MADEP and the Conservation Commission to enter and inspect the premises to evaluate and ensure that the responsibility party complies with the O&M Plan requirements for each BMP.
Town of Cohasset
Stormwater Management Rules and Regulations

These same continuing conditions will be included in the Stormwater Certificate of Completion (and/or Wetlands Certificate Compliance (If applicable) issued by the Conservation Commission.

MADEP Standard 10: All illicit discharges to the stormwater management system are prohibited.

Cohasset Applicability and Modification for Standard 10. MADEP Standard 10 applies to all Cohasset Stormwater Discharges. The “Stormwater management system” referenced in this standard is the system for conveying, treating, and infiltrating stormwater on-site, including stormwater best management practices and any pipes intended to transport stormwater to the groundwater, a surface water, or municipal separate storm sewer system. Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater. Notwithstanding the foregoing, an illicit discharge does not include discharges from the following activities or facilities: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing and water used to clean residential buildings without detergents.

Additional Guidance on Illicit Discharges:
The Town of Cohasset, like many municipalities that own and operate roadways, is subject to coverage under the NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (the MS4 Permit); and is required to have a stormwater management program that includes illicit discharge detection and elimination. The program in Cohasset has been managed by the Board of Health. Projects that are subject to a Cohasset Stormwater Permit that involve alteration of town roadways and/or town owned stormwater systems that are covered by the MS4 Permit, the applicant must demonstrate compliance with Standard 10 by documenting the actions taken to identify and eliminate illicit discharges under the MS4 Permit. To prevent duplication of effort, the proponent may submit copies of reports prepared to satisfy the illicit discharge detection and elimination program requirements of the MS4 Permits as its Illicit Discharge Compliance Statement.

Hydrologic Criteria for Design of Structural Practices

For stormwater BMP sizing and hydrologic modeling of pre- and post-development conditions, the following criteria shall apply.

1. Impervious cover is measured from the site plan and includes any material or structure on or above the ground that prevents water from infiltrating through the underlying soil. Impervious surface is defined to include, without limitation: paved parking lots, sidewalks, roof tops, driveways, patios, and paved, gravel and compacted dirt surfaced roads.

2. Off-site areas shall be assessed based on their "pre-developed condition" for computing the water quality volume (i.e., treatment of only on-site areas is required). However, if an offsite area drains to a proposed BMP, flow from that area must be accounted for in the sizing of a specific practice. Moreover, if an off-site area drains to a facility, off-site areas should be modeled, assuming an "ultimate buildout condition" upstream.

3. Off-site areas draining to a proposed facility should be modeled as "present condition" for peak-flow attenuation requirements.

4. The pre-development land use for on-site areas shall be characterized based on the applicant’s existing conditions plan showing types of land cover and soil types, subject to review for accuracy by the Conservation Commission or their Stormwater Agent. Any site that was wooded within the last five years must be considered undisturbed woods for all pre-construction runoff conditions, regardless of clearing or cutting activities that may have occurred on the site during that pre-application period.

5. For purposes of computing runoff, all pervious lands in the site shall be assumed prior to
development to be in good condition regardless of conditions existing at the time of computation unless proven otherwise by the applicant to the satisfaction of the Conservation Commission or their Stormwater Agent.

6. Soil Runoff Curve Number(s) (RCN) shall be based on land use and type of land cover, and soil hydrologic group for each watershed area or sub-watershed area. Soil types shall be determined by creating (and providing with the application) an overlay map or plan showing the site and the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil classifications that exist on the site. TR-55 shall be used for calculating RCNs and/or weighted average RCNs if applicable.

7. The maximum length of sheet flow used in Time of concentration (Tc) calculations shall be limited 100 feet (for unpaved surfaces) to 150 feet (for paved surfaces) for predevelopment conditions or post development conditions, and the length of sheet flow should not extend past the point where there is evidence of concentrated flow on the ground. Tc will directly affect the overall shape of the runoff hydrograph, including the peak runoff rate. The shorter the Tc, the higher the runoff rate, including the peak. In light of these effects, it can be seen that to estimate a peak runoff rate or an entire runoff hydrograph for a given rainfall, it is imperative that a reasonably accurate estimate of Tc is developed. Tc determinations will be carefully scrutinized by the Conservation Commission.

8. TR-55 shall be used for calculating the Tc for sheet flow, shallow concentrated flow, & channel flow.

9. The model TR-20 shall be used for developing hydrographs for the required design storms and for determining peak discharge rates and runoff volumes. The area under the hydrograph curves represents the total runoff volume. Analysis shall be provided for the 2-year, 10-year, and 100-year 24-hour storms.

10. Determination of flooding and channel erosion impacts to receiving streams due to land development projects shall be measured at each point of discharge from the development project and such determination shall include any runoff from the balance of the watershed which also contributes to that point of discharge.

11. The specified design storms shall be defined as a 24-hour storm using the rainfall distribution recommended by the Northeast Regional Climate Center "Atlas of Precipitation Extremes for the Northeastern United State and Southeastern Canada", and selection of data shall be specific to the South Shore of Massachusetts.

12. Proposed residential, commercial, or industrial subdivisions shall apply these stormwater management criteria to the land development as a whole, such that individual lots in new subdivisions shall not be considered as separate land development projects, but rather the entire subdivision shall be considered a single land development project. Hydrologic parameters shall reflect the ultimate land development and shall be used in all engineering calculations.

13. Separate tributary area plans at a suitable readable scale shall be submitted with all stormwater calculations, one for pre-development conditions, and one for post-development conditions. These plans shall show sub-watersheds, flow paths for calculating Tc, NRCS soil types, and land cover types.

14. A Stormwater Management Summary Form (provided below) shall be completed for each subwatershed and provided with the Stormwater Management Report.
## Stormwater Management Summary Form

Applicant: ___________________  Project Name: ___________________

Stormwater Plan Prepared by: ___________________

Sub-watershed #: _______________

<table>
<thead>
<tr>
<th>Hydrologic Item</th>
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<th>Post-Development</th>
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<td>Peak Rate 10 yr</td>
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<td>Sq. ft. Impervious Area and Percent Impervious</td>
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<tr>
<td>Water Quality Volume (per MADEP Stormwater Policy)</td>
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Appendix A: Post Development Criteria for Stormwater Management  
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Naturalized Detention Basins

As noted in Appendix A, applicants under the Bylaw should first consider environmentally sensitive site design and LID for managing stormwater on their site, and should minimize site disruption, and evaluate a decentralized approach utilizing numerous smaller treatment and infiltration devices located closer to impervious surfaces (e.g. rain gardens and swales) in lieu of more traditional centralized systems that collect and concentrate drainage from the entire site into one location. Nevertheless, if a larger or more centralized detention basin is the preferred option due to site constraints, then applicants are encouraged to utilize naturalized basins in lieu of conventional detention basins wherever feasible. “Naturalized basins” are attractively landscaped basins that incorporate native plants and use an informal pattern to mimic the natural environment. They have several advantages over traditional basins, including:

1. The deeper root systems of the native plant materials encourage and maintain infiltration capacity for recharging groundwater tables and increasing base flows.
2. The plants trap pollutants, increasing the water quality of the discharge.
3. The vegetation serves to cool water temperatures and slow storm water velocities.
4. They are visually more attractive and can help beautify a neighborhood, increasing property values.
5. They require less maintenance. Generally annual mowing and periodic trimming of trees and plants is sufficient.

Minimum Design Standards

The following design guidelines shall be considered for naturalized basins to achieve maximum benefit:

1. Construct basin with a sediment forebay at the inlet, sized to hold a minimum of one year worth of sediment accumulation if no other pre-treatment is proposed. Sediment forebays shall be accessible and easily maintained.
2. Size the treatment storage area to hold the water quality volume.
3. Construct basin to have a natural low flow channel with turf reinforcement material to remove pollutants and prevent erosion.
4. Incorporate a naturally landscaped area at the ground surface. The ground surface around the basin shall be large enough to be in scale with the overall landscaped area. The purpose is to filter and soften views from residential areas.
5. Plant all areas of the naturalized basin, including basin floors, side slopes, berms, impoundment structures, or other earth structures, with suitable vegetation such as naturalized meadow plantings or lawn grass specifically suited for storm water basins. Suggested plants include:
   - Grasses: Big Blue Stem, Switchgrass and wildflower mixes. In wet areas, plant Sweetflag, Yellow Iris and Soft Rush for color and texture.
   - Shrubs: Red Chokeberry (Aronia arbutifolia), Silky Dogwood (Cornus amomum), Arrowwood (Viburnum Dentatum), Cranberrybush (Viburnum trilobum).
   - Trees: Red Maple (Acer rubrum), River Birch (Betula nigra), Sweetgum (Liquidambar styraciflua), various Willows.
6. Trees may not be planted below the pool area of the basin. If shrubs are used, they must be adapted to wet or moist soil conditions.
7. Mulch may be used in shrub beds located within the pool area with a non-floating type mulch.
8. Group trees or shrubs to avoid a spotty effect.
9. Provide access to the basin for maintenance. Blend access area in with the surrounding landscape to the extent feasible. Maintenance access shall be planted with grass and at least 10 feet wide with a maximum slope of 15% and a maximum cross slope of 3%.

10. Protect the basin from construction impacts: Use proper erosion/sediment control during construction; and prevent soil compaction on the floor of the basin during construction. (Soil compaction by heavy equipment, can reduce water intake of soils to 1/20 or less of the original rate). To limit smearing or compacting soils, do not construct the basin in winter or when it is raining. Use light earth-moving equipment to excavate the infiltration basin because heavy equipment compacts the soils beneath the basin floor and side slopes and reduces infiltration capacity. However, because some compaction of soils is inevitable during construction, add the required soil amendments and deeply till the basin floor with a rotary tiller or a disc harrow to a depth of 12 inches to restore infiltration rates after final grading.

11. Basins shall follow natural landforms to the greatest extent possible or be shaped to mimic a naturally formed depression, i.e. the basin perimeter should be curvilinear. A more traditionally shaped (oval or rectangular) basin may be permitted when conditions such as topography, parcel size, or other site conditions warrant.

12. Place inlets and outlets to maximize the flow path through the facility. Generally, the flow path shall be at least twice as long as wide. Baffles, pond shaping or islands can be added within the permanent pool to increase the flow path.

13. Ensure adequate freeboard for the selected design storm and provide an emergency outlet.

14. The interior slopes of the basin within the pool area shall not exceed a slope of four horizontal to one vertical.

15. A minimum of six inches of topsoil with at least 6% organic content shall be provided for all planting ground cover beds or lawn areas.

16. Low flow outlets shall be designed to prevent clogging.

17. If designed for infiltration, then basin must be designed to drain within a 72-hour period following the rainfall event, and have a minimum separation from seasonal high groundwater of at least 2 feet. Greater separation is necessary for bedrock. If there is bedrock on the site, conduct an analysis to determine the appropriate vertical separation. The greater the distance from the bottom of the basin media to the seasonal high groundwater elevation, the less likely the basin will fail to drain in the 72-hour period following precipitation.

18. For basins that cannot infiltrate the water quality volume, consider using a bioretention soil filter conforming to the following:

   a. Impoundment Depth – Peak storage depth within the filter area for water quality volume may not exceed 18 inches.

   b. Filter bed – The soil filter must extend across the bottom of the entire filter area. The soil must be at least 18” deep and underlain by a gravel bedding. A non-woven filter fabric shall be installed between the soil and gravel with sufficient permeability rates to drain the water quality volume. The soil filter must consist of loamy, coarse sand, mulch mixture typical of the soil mix for bioretention areas, as follows: 40 % sand, 20-30% topsoil, and 30-40%

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9 For basins that cannot infiltrate the water quality volume, other basin designs to consider include Wet Basin design, or Constructed Wetlands designs. Refer to the MADEP Stormwater Policy Manual for further guidance.

10 For details on bioretention soil mix specifications, refer to the “Bioretention Areas & Rain Gardens” section of Volume 2, Chapter 2 of the Massachusetts Stormwater Handbook.
compost. The soil mix must be uniform, free of stones, stumps, roots or similar objects larger than 2 inches.

c. Pipe layout and spacing – Layout of the underdrain pipe system must be sufficient to effectively drain the entire filter area. There must be at least one line of underdrain pipe for every 8 feet of the filter area's width. The slope of the pipe must be 0.5% or greater.

d. Pipe bedding – Minimum 12 inches over top of drainage pipe, 6" thick at sides, and 6 inches below drainage pipe of clean well-graded gravel.

e. Surface Cover – The top of the filter bed system must be covered with a 4 inch layer of sandy loam and mulch and then covered with plantings consisting of species tolerant of frequent inundation.

f. Underdrain outlet – Underdrain outlets must be provided and discharge to an area capable of withstanding concentrated flows and saturated conditions without eroding.

Landscape and Soil Condition Guidelines for Improved Stormwater Management

The manner by which construction sites are managed for post-development soil conditions and landscaping can have significant impacts on the quantity and quality of stormwater. For example, site construction activities that follow site clearing typically involve stripping of topsoil and subsoil, and compaction of soil that results from movement of heavy equipment such as excavators and bulldozers. This combined effect of this loss of soil and compaction significantly increases runoff quantities; and decreases stormwater quality because the organic content of topsoil/subsoil helps to absorb and adsorb many pollutants. However, such conditions can be remediated by tilling soil to reduce compaction effects, by amending soils with compost, and by restoring topsoil.

Landscaping affects on stormwater quantity and quality are related to shifts in the types of land cover, and shifts in grading that may cause both increased runoff and increased concentration of runoff. For example, grassed areas will result in more runoff and pollution than wooded areas or landscaped beds due to lower rates of rainfall abstraction (capture of rain in micro-pools and irregular surfaces), less vegetative uptake, smoother surfaces, lawn compaction (over time), and the use of fertilizers and pesticides for lawn care. Landscaping that mimics natural settings with multiple tiers (e.g. an overstory of larger shade trees, an understory of trees and shrubs, and groundcover) provides significantly higher stormwater capture and recharge through more natural uptake of rainfall. The guidelines provided in this section, if followed, will help to create landscapes that have better stormwater management characteristics, more diversity of wildlife habitat, and less dependence on irrigation, maintenance, and chemical applications.

Soil Preservation and Soil Amendment

As noted, compacted soils impede water infiltration, have a higher runoff coefficient, restrict root penetration, and contain less pore space needed for alternating cycles of rainwater storage and aeration. Prevention of soil stripping and compaction is the preferred option for proper landscape and soil management. Identifying and protecting areas that (1) will remain natural and not be cleared, or (2) parts of the site that will be restricted from unnecessary access by construction equipment, will help prevent soil alteration, removal and/or compaction. However, in many areas prevention will not be practical, and in these areas certain soil amendment methods should be employed to compensate for soil loss and/or compaction. Soil amendment typically involves deep tilling an area to a depth of at least 12 inches to facilitate deep water penetration and soil oxygenation, and to work into the soil organic matter such as aged compost, and forestry by-products, (but amendments do not include topsoil or any mix with soil). Soil amendment improves water drainage, moisture penetration, soil oxygenation, and water holding capacity.
Several of the recommended stormwater BMPs and Low Impact Development Site Design Credits discussed in the MADEP Stormwater Policy Manual, refer to the need for soil protection and/or soil amendment as part of proper BMP design and construction. Examples of these stormwater management practices that may require soil amendment (if existing natural soils are stripped or compacted) include but are not limited to the following BMPs (with volume/chapter references):

- **Drainage Channels** (see Volume 2, Chapter 2, Construction section) - “Soil amendments, such as aged compost that contains no biosolids, may be needed to encourage vegetation growth.”

- **Infiltration Basins** (see Volume 2, Chapter 2, Design section) - “After the basin floor is shaped, place soil additives on the basin floor to amend the soil. The soil additives shall include compost, properly aged to kill any seed stock contained within the compost. Do not put biosolids in the compost. Mix native soils that were excavated from the A or B horizons to create the basin with the compost, and then scarify the native materials and compost into the parent material using a chisel plow or rotary device to a depth of 12 inches.”; (and in the Construction section) - “Because some compaction of soils is inevitable during construction, add the required soil amendments and deeply till the basin floor with a rotary tiller or a disc harrow to a depth of 12 inches to restore infiltration rates after final grading.”

- **Rooftop Runoff Directed to Qualifying Areas** (see Volume 3, LID Credit 2) – “To prevent compaction of the soil in the qualifying pervious area, construction vehicles must not be allowed to drive over the area. If it becomes compacted, the soil must be amended, tilled and revegetated to restore its infiltrative capacity once construction is complete.”

- **Roadway, Driveway or Parking Lot Runoff Directed to Qualifying Area** (see Volume 3, LID Credit 3) – “To prevent compaction of the soil in the qualifying pervious area, construction vehicles must not be allowed to drive over the area. If it becomes compacted, the soil must be amended, tilled and revegetated to restore its infiltrative capacity once construction is complete.”

**Soil amendment guidelines:** In most cases, New England soils will benefit from soil analysis and appropriate amendment. Soil analysis of new or renovated turf areas should include a determination of soil texture, including percentage of organic matter and a measure of pH value. If necessary, three to four cubic yards of organic matter per 1,000 square feet of landscape area should be incorporated to a depth of four to six inches, so that the organic content of landscaped soils is not less than 18% by volume in the top six inches of the finished topsoil. In new areas where topsoil is limited or nonexistent, or where soil drainage is poor because of subsurface hardpan or bedrock, 6 to 24 inches of sandy loam topsoil should be spread in all planting and turf areas, in addition to incorporating if necessary organic matter into the top horizon of imported soil so organic content in the top six inches is as noted above.

Compost-amended soil combined with good turf growth and landscaping will provide applicants and the Town of Cohasset with the following water resource benefits: (1) increased water conservation (lower irrigation needs), (2) increased nutrient retention, (3) improved aesthetics, (4) reduced need for chemicals, (5) improved stormwater retention, and (6) cost-savings related to all of the above. An example specification for compost is included at the end of this section.

**Other groundcover considerations:** Maintaining a mulch layer of two to three inches in planted areas assists soils in retaining moisture, reducing weed growth that competes for soil moisture, and minimizing erosion. Preferred mulch types include finely ground wood chips, yard waste compost, and shredded composted bark mulch. Permeable weed barrier mats with crushed stone or washed gravel are also an option. However, plastic sheeting or other non-porous materials should not be used.

Mulch used specifically in stormwater management areas should be finely ground hardwood bark mulch and should not be a type that will float away.
Recommended Landscape Strategies

- Existing natural vegetation should be retained where possible; and where possible, existing mature trees, natural rock outcrops, stone walls, etc. incorporated into the landscape plan.
- Landscapes should ideally remain functional and attractive during all four seasons.
- Lawn areas should be kept to a minimum. Natural re-growth, mulched planting beds and alternative ground cover plant varieties are preferred.
- Native plants, or plant species that have been naturalized in the area or the surrounding region should be used. Plant species listed on the current “Invasive Species List for Massachusetts” shall not be used.
- Where depressed landscape strips and rain gardens are used as part of the drainage system, plantings shall be tolerant of periodic wet and dry conditions and should be selected by a Licensed Landscape Architect. Stormwater storage should not exceed 12 inches of depth, and collected water should drain within 72 hours. Sites that do not have suitably permeable soils shall have an underdrain system to ensure positive drainage.

Example Compost Specification\textsuperscript{11}. Compost shall be a well-decomposed humus material derived from the aerobic decomposition of biodegradable matter, free of viable weed seeds and other plant propagules (except airborne weed species), foreign debris such as glass, plastic, etcetera and substances toxic to plants. Compost shall be suitable for use as a soil amendment and shall support the growth of ornamental nursery stock and turf establishment. It shall be in a shredded or granular form and free from hard lumps. Biodegradable matter, separated at the point of generation, may include leaves and yard trimmings, food scraps, food processing residuals, manure and/or other agricultural residuals, forest residues and bark. Compost shall not contain biosolids\textsuperscript{12}. Compost shall pose no objectionable odor and shall not closely resemble the raw material from which it was derived, with a maximum of 1 percent foreign matter. Compost shall have a minimum organic matter content of 40 percent minimum dry unit weight as determined by loss on ignition in accordance with ASTM D 2974. Compost shall be loose and friable, not dusty, have no visible free water and have a moisture content of 35 - 55 percent in accordance with ASTM D 2974. The maximum particle size of compost shall be 25 mm in accordance with AASHTO T27 and shall be free of sticks, stones, roots or other objectionable elongated material larger than 50 mm in greatest dimension. The pH of compost shall be in the range of 5.5 – 7.5; and have a C:N ratio in the range of 11-25:1. Compost shall be properly aged to kill any seed stock contained within the compost. The maturity of the compost shall be tested and reported using the Solvita Compost Maturity Test and must score 6 or higher to be acceptable\textsuperscript{13}. The soluble salt content of compost shall not exceed 4.0 mmhos/cm (dS/m) as determined by using a dilution of 1 part compost to 1 part distilled water.

\textsuperscript{11} This example is derived from a Massachusetts Highway Department specification, but adapted for uses expected in Cohasset. An extended list of commercial sources of compost material is available from the Division of Consumer Programs, Bureau of Waste Products, MADEP.

\textsuperscript{12} MADEP defines “biosolids” as “residuals” that have been treated certain state standards, where “residuals” is a general term for the solid and semi-solid sludge and products resulting from the treatment of sanitary wastewater.

\textsuperscript{13} If the Solvita test kit is used, the compost samples shall be tested on site by the contractor, in the presence of the Stormwater Agent; or laboratory test results could be provided instead.