North Andover Stormwater Management and Erosion Control Regulations

Land Disturbance Permit

Adopted **2/15/11**

Contents

STORMWATER MANAGEMENT AND EROSION CONTROL REGULATIONS

1.0 PURPOSE

The United States Environmental Protection Agency has identified sedimentation and polluted stormwater runoff from land disturbance, land development and redevelopment activities as major sources of water pollution. To address the impact of these sources of water pollution, the Town of North Andover has adopted a local Stormwater Management and Erosion Control Bylaw, Chapter 160 (the bylaw). The bylaw is necessary to protect the Town of North Andover water bodies and groundwater resources, to safeguard the health, safety, and welfare of the general public and protect the natural resources of the Town.

Section 160-5 of the Town of North Andover Stormwater Management and Erosion Control Bylaw authorizes the Planning Board to adopt regulations to effectuate the purposes of this Bylaw. The purpose of these regulations is to clearly set forth administrative procedures and design criteria necessary to achieve the objectives of the Town of North Andover Stormwater Management and Erosion Control Bylaw: to prevent or diminish the impacts of sedimentation and polluted stormwater from land disturbance, land development and redevelopment activities by controlling runoff and preventing soil erosion and sedimentation from site construction and development.

2.0 AUTHORITY

The Regulations contained herein have been adopted by the Planning Board in accordance with the Town of North Andover Stormwater Management and Erosion Control Bylaw, Section 160-5.

Nothing in these Regulations is intended to replace or be in derogation of the requirements of the Town of North Andover Zoning Bylaw, the Town of North Andover Wetlands Protection Bylaw, the Town of North Andover General Bylaw, any other Bylaw that may be adopted by the Town of North Andover, or any Rules and Regulations adopted thereunder.

These Stormwater Regulations may be periodically amended by the Planning Board in accordance with the procedures outlined in Section 160-5 of the Town of North Andover Stormwater Management and Erosion Control Bylaw.

3.0 DEFINITIONS

The definitions contained herein apply to issuance of a Land Disturbance Permit established by the Town of North Andover Stormwater Management and Erosion Control Bylaw and implemented through these Regulations. Terms not defined in this section shall be construed according to their customary and usual meaning unless the context indicates a special or technical meaning.

All definitions are provided in Appendix A of these Regulations.

4.0 ADMINISTRATION

4.1 Permit Granting Authority

The Permit Granting Authority for a Land Disturbance Permit shall be the Planning Board and, as such, the Planning Board shall administer, implement and enforce these Regulations. **The Planning Board may, by majority vote at a public meeting, delegate any of the responsibilities for the administration of this Bylaw to the Town Planner (referred to herein as designated Agent or Agent)**. Projects and activities approved by the Planning Board or its Agent and for which a Land Disturbance Permit is issued shall be deemed in compliance with the intent and provisions of these Stormwater Management and Erosion Control Regulations and with the bylaw.

4.2 Waivers

The Planning Board or its designated Agent may waive strict compliance with any requirement of these regulations where such action is:

- Allowed by federal, state or local statutes, and
- Is in the public interest, and

- Is not inconsistent with the purpose and intent of the Town of North Andover Stormwater Management and Erosion Control Bylaw, Chapter 160.

Any applicant may submit a written request to be granted such a waiver. Such a request shall be accompanied by an explanation or documentation supporting the waiver request and demonstrating that strict application of these Regulations does not further the purposes or objectives of the Bylaw and these Regulations.

5.0 APPLICABILITY

These Stormwater Regulations apply to all activities subject to the Applicability Section of the Stormwater Management & Erosion Control Bylaw, Chapter 160, except as exempted in Section 160-4 (B) or unless the Planning Board or its designated Agent has determined that the provisions of this Bylaw should be waived for the particular activity pursuant to Section 160-9 of the Bylaw. Projects and/or activities not specifically under the currently regulated jurisdiction of any of the Town of North Andover boards, commissions or departments but still within the jurisdiction of the Town of North Andover Stormwater Management & Erosion Control Bylaw are also subject to these regulations.

Activities entailing land disturbance or change in surface material (e.g. paving or repaving) of over 43,560 square feet (one acre) must obtain a Land Disturbance Permit from the Planning Board or its designated Agent in accordance with the permit procedures and requirements defined in Section 6.0 of these Regulations.

If the area of disturbance is less than 43,560 square feet, but either the project site or the area of land draining to it, (based on existing topography and surface hydrology), are greater than or equal to 43,560 square feet, and if any alteration in the direction, rate, timing, quantity or quality of runoff from the site is proposed a Land Disturbance Permit is also required. For example, if a property owner wants to relocate an existing drainage swale on his property and the upgradient area that flows to the swale is at least 43,560 square feet, a permit will be required.

For the purposes of calculating the area of land disturbed or changes in surface materials, the methodology set forth by EPA in the stormwater regulations applicable to the Town of North Andover 40 CFR 122.26(b)(15)(i) will be followed. Specifically, a potential permittee shall apply for a permit if a single construction activity will disturb 43,560 square feet or more of land or will disturb less than 43,560 square feet but is part of a larger common plan or development or sale that would disturb 43,560 square feet or more. A larger common plan of development or

sale means a contiguous area where multiple separate and distinct construction activities are planned to occur at different times on different schedules under one plan, e.g., a housing development of five 1⁄4 acre lots. A single operator with multiple, but separate and distinct, construction activities not part of a larger common plan of development or sale, as defined in this paragraph, need not apply for a permit so long as each distinct construction activity disturbs less than 43,560 square feet of land.

6.0 LAND DISTURBANCE PERMIT PROCEDURES

No land owner or land operator shall initiate regulated land disturbance activities without first meeting the requirements of this Bylaw and obtaining a Land Disturbance Permit (LDP) from the Planning Board prior to commencing the proposed activity.

Projects requiring a Land Disturbance Permit shall be required to submit the materials as specified in this section, and are required to meet the stormwater management criteria as specified in Section 7.2.

6.1 Applicant

The Applicant for a Land Disturbance Permit shall be the owner of record of all of the land shown on any plan submitted for approval to the Planning Board, or any person or persons authorized to submit plans and/or documents on behalf of the owner.

The owner shall certify in writing the identity of each Applicant who is authorized to submit plans and/or documents and act on behalf of the owner, including engineers, surveyors, contractors or attorneys, or any person or persons having an equitable interest in the land under an agreement or option to purchase the land.

Regardless of whether the Applicant is the owner of the property or an authorized representative, all applications for a Land Disturbance Permit shall include original signatures of all owners. Where the owner is a partnership, trust or corporation, documents must be submitted indicating who has signing authority to enter into agreement on behalf of the partnership, trust or corporation. If the property owner subsequently withdraws consent to the

application after the application is filed, the Board may deny the application for this lack of consent of the owner.

6.2 Application

Applications for a Land Disturbance Permit shall include the materials as specified in this section and must meet the stormwater management criteria as specified in Section 7.2. The applicant shall file with the Planning Board or its designated Agent, two paper copies plus one digital copy of a completed application package for a Land Disturbance Permit (LDP). Additional copies may be requested by the Planning Board or its designated Agent as needed. The Land Disturbance Permit Application package shall include:

a) A completed Application Form with original signatures of all owners (see form in Appendix A;
b) If a Public Hearing is required, a list of abutters, certified by the Assessor's Office (abutters at their mailing addresses shown on the most recent applicable tax list of the assessors, including owners of land directly opposite on any public or private street or way, and abutters to the abutters within 300 feet of the property line of the applicant, including any in another municipality or across a body of water);
c) Payment of applicable application and review fees in accordance with the current Schedule of Planning Board Filing Fees.
d) Stormwater Management Plan (Section 7);
e) Erosion and Sediment Control Plan (Section 8);
f) Operation and Maintenance Plan (Section 9) .

6.3 Completeness of Application

Applications shall be reviewed for form and contents in accordance with Section 7.2 of these Regulations. The Planning Staff shall notify the applicant of any deficiencies in the application package within 14 days of receipt.

No further action shall be taken on an Application until it is deemed complete.

The Planning Board or its designated agent may request additional information as is necessary to enable the Planning Board to determine whether the proposed land disturbance activity will comply with the provisions of the bylaw.

The Planning Board or its designated agent has the authority to waive any application requirements if it finds that such information is not needed for a thorough review of an application.

6.4 Distribution

Once an Application is deemed complete, Planning Staff shall file one copy of the Application packet with the Town Clerk, and distribute additional copies to the Public Works, Conservation, Building/Zoning and other departments as appropriate.

6.5 Entry

The Planning Board or its agent shall have the authority, with prior approval from the property owner, or pursuant to court process, to enter upon privately owned land for the purpose of performing their duties under this Bylaw and its regulations and may make or cause to be made such inspections, surveys or sampling as the Planning Board deems reasonably necessary to determine compliance with the permit.

6.6 Fees

Fees shall be payable to the Town of North Andover in the form of a money order, bank or certified check.

An Applicant's failure to pay any additional review or inspection fee within five business days of receipt of the notice that further fees are required may be grounds for disapproval of the application.

A. Application Fees

An Application Fee may be established by the Planning Board to cover expenses connected with the review of the Land Disturbance Permit. The amount of such fees will be listed in the Schedule of Planning Board Filing Fees.

B. Independent Consultant Reviews and Fees

In addition to the above fees, the Planning Board is authorized to require an applicant to pay a fee for the reasonable costs and expenses for specific expert engineering, environmental site monitoring, and other consultant services deemed necessary by the Planning Board for proper review of an application or to ensure compliance.

Such fee shall be held in escrow, to be used to engage independent consultants should the Planning Board determine this to be necessary, based on the characteristics or complexity of the issues raised by the application. Such fee shall be governed and administered in accordance with M.G.L.,c.44, § 53G or § 53E ½ .

If the Planning Board finds that the initial deposit is not sufficient to cover the cost of the independent consultant services, the applicant shall be required to submit forthwith such additional amount as is deemed required by the Planning Board to cover such costs. The Planning Board shall notify the applicant of such additional amount in writing by certified mail. Failure to submit such additional amount as required by the Board within fourteen (14) days of receipt of said notice shall be deemed reason by the Board to deny said application.

If the actual cost incurred by the Town for review of said application is less than the amount on deposit as specified above, the Planning Board shall authorize that such excess amount be refunded to the applicant concurrently with final action on said application.

In order to minimize costs to the applicant, t**he Planning Board will accept the findings of any previous outside environmental review of the project** conducted for another town board or committee, provided it meets the Board's needs in ensuring proper review of an application and assessing compliance with the Bylaw and Regulations.

C. Maintenance Fees for Municipally Operated Systems

Any development subject to a Land Disturbance Permit which will require Town inspection, maintenance, ownership or operation of the stormwater system shall be subject to a non-refundable charge based on the cost of implementing an O&M Plan prepared in accordance

with DEP standards and any specific conditions of a permit granted under the Bylaw for a 3-year period. The funds for maintenance shall be paid to the Town for disbursement by the Director of Public Works to either the Department of Public Works, or to contracted services.

D. Revision of Fee Schedules and Regulations Governing Fees

The Planning Board may review and revise its fee schedules periodically as it sees fit. Amendments shall be preceded by a public hearing.

The Planning Board or its designated Agent may waive or discount its fees applicable under the Bylaw and these Regulations at its discretion, particularly for minor projects that do not warrant significant additional review.

6.7 Public Hearing

Except when issuance of the Land Disturbance Permit has been delegated to the Town Planner, or when the project has already been reviewed by the Conservation or Planning Departments for stormwater effects, the Planning Board will hold a public hearing on the application where comments and questions from the public regarding the application will be addressed. A notice in the local newspaper of a hearing on the Land Disturbance Application and that the Planning Board is accepting comments on the Land Disturbance Application shall be published at the applicant's expense, at least five (5) business days before the hearing date. Copies of the notice shall be mailed, postage prepaid, to the applicant, property owner (if different) and abutters (as listed on the certified abutters list) at least seven (7) business days in advance of the hearing.

In addition, the Land Disturbance Application shall be available for inspection by the public during normal business hours at the Town offices. Comments may be submitted to the Planning Board during business hours at the Town offices.

Once begun, the public meeting may not continue for more than sixty (60) days unless such time is extended by written agreement between the applicant and the applicant to a date certain announced at the meeting.

6.8 Actions

The Planning Board or its designated Agent's action on a Land Disturbance Permit Application, rendered in writing, shall consist of either:

a) Approval of the Application and issuance of a Land Disturbance Permit if it finds that the proposed plan meets the Standards and Criteria set forth in the Bylaw and these Regulations, will adequately protect water resources, and meets the objectives and requirements set forth in the Bylaw and these Regulations;

b) Approval of the Application and issuance of a Land Disturbance Permit with conditions, modifications, requirements for operation and maintenance requirements of permanent structural BMPs, designation of responsible party, or restrictions that the Planning Board or its designated Agent determines are required to ensure that the project plan will adequately protect water resources, and meets the objectives and requirements set forth in the Bylaw and these Regulations; or

c) Disapproval of the Application and denial of a Land Disturbance Permit if it finds that the proposed plan, as submitted fails to meet the objectives and requirements of this Bylaw and its Regulations or to adequately protect water resources, as set forth in the Bylaw and these Regulations. If the Planning Board finds that the applicant has submitted insufficient information to describe the site, the work, or the effect of the work on water quality and runoff volume, the Planning Board may also disapprove the application, denying a permit.

6.9 Deadline for Action

Failure of the Planning Board or its designated Agent to take final action upon an Application for a Land Disturbance Permit within 60 calendar days of receipt of a complete application shall be deemed to be approval of said application, unless extension of said deadline date is mutually agreed upon in writing by the Reviewing Agent and the applicant. Upon certification by the Town Clerk that the allowed time has passed without Planning Board action, the Planning Board or its designated Agent shall issue a Stormwater Management Permit.

If, in the Planning Board's opinion, additional time or information is required for review, the Planning Board by written agreement of the applicant may continue a consideration of the request for permit **to a date certain announced at the meeting.**

6.10 Appeals

A written decision of the Planning Board shall be final when it is executed by the Planning Board or its chair or acting chair and filed in the Town Clerk's office. Further relief of a decision by the Planning Board made under the Bylaw shall be reviewable in the Superior Court or Land Court in accordance with applicable law. Appeal action shall be filed within 60 days of issuance in accordance with M.G.L. Ch 249 § 4. The remedies listed in this Bylaw are not exclusive of any other remedies available under any applicable federal, state or local law.

No work shall commence until the applicable appeal period has passed with no appeal or if an appeal has been filed, the appeal has been finally resolved by adjudication or otherwise. Prior to the start of construction, the applicant must obtain written verification from the Town Clerk that no appeals of the Planning Board's decision are pending.

6.11 Project Delay

Should a land-disturbing activity associated with an approved plan in accordance with this Section not begin within 12 months following permit issuance, the Planning Board may re-evaluate the approved stormwater management plan to determine whether the plan still satisfies local program requirements and to verify that all design factors are still valid. If the Board finds the previously filed plan to be inadequate, a modified plan shall be submitted and approved prior to the commencement of land-disturbing activities

All activity, exclusive of maintenance required in perpetuity, permitted by the Land Disturbance Permit must be completed within two years of permit issuance. Extensions of time can be granted by the Planning Board upon formal written request by the applicant, made at least 30 days prior to expiration of the permit.

6.12 Plan Changes

The Applicant/permittee, or the Applicant's agent, must notify the Planning Board or its designated agent in writing of any change or alteration in a permitted activity before such change or alteration occurs. Modifications resulting in grade changes less than one (1) foot may be considered minor and may be granted by the Planning Board's designated agent. If the Planning Board or its designated agent determines that the change or alteration is significant, based on the design criteria in these Regulations, the Planning Board may require that an amended application or a new application (including applicable fees unless waived by the Planning Board) be filed. If any change or alteration from the Land Disturbance Permit occurs during land disturbing activities, including significant changes in schedule, the Planning Board or its designated agent may require the installation of interim erosion and sedimentation control measures before considering the change or alteration.

6.13 Project Completion

The Planning Board will issue a Certificate of Completion upon receipt and approval of final reports and documentation as outlined in Section 12.0 of these Regulations and/or upon otherwise determining that all work of the permit has been satisfactorily completed in accordance with the Bylaw. The Certificate of Completion shall be recorded at the Essex North District Registry of Deeds (or Registry of District of the Land Court, if registered land) at the applicant's expense and proof of recording provided to the Planning Board.

7.0 STORMWATER MANAGEMENT PLAN

An application for a Land Disturbance Permit shall include the submittal of a Stormwater Management Plan (SMP) to the Planning Board. The Stormwater Management Plan shall contain sufficient information for the Planning Board to evaluate the environmental impact, effectiveness and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater runoff, and to assess compliance with these Regulations.

The Stormwater Management Plan shall be designed to meet the most recent version of the Massachusetts Stormwater Standards and additional criteria established in Section 7.2 of these

Regulations, and must be submitted with the stamp and signature of a Professional Engineer (PE) licensed to conduct such work in the Commonwealth of Massachusetts. The engineer shall certify that the plan complies with all the requirements of the Town of North Andover Stormwater Management & Erosion Control Bylaw and these Regulations, except as noted. Failure to have these certifications shall result in denial of the application.

7.1 Stormwater Management Plan Contents

The Stormwater Management Plan shall fully describe the project in drawings, narrative, and calculations. It shall include:

a) Contact Information. The name, address, and telephone number of all persons having a legal interest in the property and the tax reference number and parcel number of the property or properties affected;
b) A brief narrative description of the project, including how and where stormwater is to be controlled;
c) A locus map;
d) Location and names of all abutters as they appear on the most recent tax list(s) including those in adjacent communities;
e) The size of the entire parcel, each drainage area on or to the parcel, and the delineation and number of square feet of the land area subject to disturbance;
f) The existing zoning and land use at the site and abutting properties;
g) The proposed land use;
h) Surveyed property lines showing distances and monument locations, all existing and proposed easements, rights-of-way, utilities and other encumbrances;
i) Lines of existing abutting streets showing drainage and driveway locations and curb cuts;
j) Existing and proposed topography on the site, at two foot (2') intervals, with areas of steep slopes between 15 and 25 percent, and over 25 percent specifically delineated, and with spot elevations provided when needed. Existing topography fifty feet (50') beyond the perimeter of the parcel as it appears on the most current Town of North Andover topographic mapping shall also be shown;
k) Location, delineation and description (including pertinent hydrology and water quality) of all existing and proposed watercourses, water bodies, and Wetland Resource Areas on or entering the site, or adjacent to the site, or into which stormwater from the site flows, collects or percolates.
l) Wetland Resource Areas shall include those protected under the Massachusetts Wetlands Protection Act (MGL CH 131, Sec 40) and/or the Town of North Andover Wetlands Protection Bylaw (Chapter 178);

The location of the 100-year flood boundary on or within one hundred feet (100') of the project site, based upon the most recent Flood Insurance Rate Map (FIRM) or as calculated by a professional engineer for areas not assessed on these maps;

m) Location, delineation and description of 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 proposed area of disturbance;
n) The general outline of existing vegetation, wooded areas, significant trees, unique species and tree clusters and the extent of all vegetation, wooded areas, significant mature trees, unique species and/or tree clusters to be removed;
o) Locations of existing and proposed wells and septic systems on or within 100 feet of the site;
p) A drainage area map showing pre and post construction watersheds, subwatersheds and stormwater flow paths, including municipal drainage system flows;
q) A description of existing soils on the site (type, hydrologic soil group, erodibility), and the volume and nature of any imported soil materials;
r) Estimated seasonal high groundwater elevation in areas to be used for stormwater retention, detention, or infiltration, and the basis for determination;
s) Proposed improvements, including locations of buildings or other structures, impervious surfaces, and drainage facilities;
t) A description and drawings of all components of the 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 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.
u) Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in this Regulation. Such calculations shall be conducted in accordance with the most recent version of the Massachusetts Stormwater Handbook and the criteria set forth in Section 7.2 and shall include:
    i. Description of the design storm frequency, intensity and duration;

ii. Time of concentration;
iii. Soil Runoff Curve Number (RCN) based on land use and soil hydrologic group;
iv. Peak runoff rates and total runoff volumes for each watershed and subwatershed area under existing and proposed conditions;
v. Infiltration rates, where applicable;
vi. Culvert capacities
vii. Flow velocities;
viii. Documentation of sources for all computation methods and field test results.

v) Post-Development downstream analysis, if deemed necessary by the Planning Board;

S**ite plans** included with the Stormwater Management Plan **shall be prepared on 24x 36 inch sheets and shall include** a t**itle, date, north arrow, names of abutters, scale** (1"=20' or 1"=40'), legend, and locus map (1"=800'). Revised plans shall contain a notation listing and describing all revisions, additions, and deletions made to the originally submitted plans and the date of each**.**

7.2 Design and Performance Criteria

At a minimum all projects subject to a Land Disturbance Permit shall comply with the criteria, specifications, and performance standards of the most recent version of Massachusetts Stormwater Management Standards and accompanying Stormwater Management Handbook, as well the criteria contained herein. The following general performance criteria shall be applicable to all stormwater management plans, unless otherwise provided for in this Regulation:

A. Low Impact Design (LID)

a) The design of the project shall, to the maximum extent feasible, employ environmentally sensitive site design as outlined in the most recent version of the Massachusetts Stormwater Management handbook and shall attempt to reproduce natural hydrologic conditions with respect to ground and surface waters.
b) Evaluation of Low Impact Development practices is required and implementation of such practices to the maximum extent practicable is encouraged. Guidance on these practices is provided in the Massachusetts Stormwater Management Handbook.

c) In order to conserve potable water supplies and maximize recharge, it may be appropriate on some sites to store and reuse clean runoff (e.g. from roofs) for reuse on the site for irrigation or other graywater purposes. This can be accomplished through the use of cisterns and rain barrels. Where appropriate, a water budget may be required to be prepared to determine applicability.

B. Hydrologic and Hydraulic Criteria

a) Hydrologic analyses using TR-55/TR-20 methodology shall be performed on the entire project site and include any off site areas that drain to or through the project site.
b) The analyses shall be analyzed for the 2, 10, 25 and 100-year design storms under pre-development and post-development conditions. In addition, analyses shall be analyzed for the 1 inch storm for those areas that are defined as 'critical areas', in the Massachusetts Stormwater Handbook; otherwise, the analyses shall be performed for the ½ inch storm. The 24-hour rainfall amounts for the 2, 10, 25 and 100 year storms are to be based on the Northeast Regional Climate Center (NRCC) "Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada" or more recent NRCC data as it is developed. For North Andover, the 24 hr rainfall amounts are as follows (rounded to the nearest one-tenth of an inch):

    2-yr, 24 hr event = 3.2 inches
    10-yr, 24 hr event = 4.8 inches
    25-yr, 24 hr event = 6.0 inches
    100-yr, 24 hr event = 8.6 inches

    The total volumes should be used with a Type III SCS/NRCS synthetic rainfall distribution, or rainfall distribution based on local precipitation frequency data.
c) The post-development peak discharge rate shall be equal to or less than the pre-development peak discharge rate (based on a 2-year, 10-year, 25-year, and 100-year, 24-hour storm.
d) Hydrologic analyses are to be performed on a pre and post sub-watershed basis with designated control points at each location where runoff leaves the site or enters a water body.
e) The same land area shall be used in the analysis to facilitate comparison of existing and proposed conditions.
f) The total volume of discharge as well as peak rate shall be evaluated at each control point.
g) The site shall be designed to ensure that all runoff from the site up to the 100 year storm enters the flow control structure(s). For example, the drainage system may only be sized

to handle a 25-year storm, with larger storms flooding the distribution system and traveling overland. This overland flow, or overflow, must be directed into the peak flow control structure(s);

h) 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;

i) For purposes of computing runoff, all pervious lands on the site shall be assumed prior to development to be in good condition regardless of conditions existing at the time of computation.

j) Off-site areas should be modeled as “present land use condition” in good hydrologic condition.

k) The length of overland sheet flow used in time of concentration (t_c) calculations shall be limited to no more than 50 feet for pre- and post-development conditions.

l) Detention time for the one-inch storm is defined as the center of mass of the inflow hydrograph and the center of mass of the outflow hydrograph.

C. Recharge

a) Annual groundwater recharge rates shall be maintained, by promoting infiltration through the use of structural and non-structural methods. At a minimum, annual recharge from the post development site shall mimic the annual recharge from the pre-development site condition.

b) The stormwater runoff volume to be recharged to groundwater should be determined using the methods prescribed in the latest version of the Massachusetts Stormwater Management Handbook.

c) The recharge volume criteria do not apply to any portion of a site designated as a stormwater hotspot. Hotspots are defined as sites with higher potential pollutant loads, based on the Massachusetts Stormwater Management Handbook.

d) The Planning Board may alter or eliminate the recharge volume requirement if the site is situated on unsuitable soils (i.e., marine clays), karst or in an urban redevelopment area. In this situation, non-structural practices (filter strips that treat rooftop or parking lot runoff, sheet flow discharge to stream buffers, and grass channels that treat roadway runoff) should be implemented to the maximum extent practicable and the remaining or untreated volume included in the water quality volume.

D. Water Quality

a) The Stormwater Management Plan shall incorporate source controls of contaminants and employ Best Management Practices (BMPs) to minimize stormwater pollution.
b) The water quality volume for sizing of water quality best management practices (BMPs) shall be based on 1/2-inch of runoff from the tributary area and, in all cases, shall be consistent with the latest version of the Massachusetts Stormwater Standards, including standards for critical environmental areas. Zones A and B of Lake Cochichewick are considered critical areas.
c) All water quality BMPs shall be selected and designed using the appropriate criteria from the most recent version of the Massachusetts DEP Stormwater Management Manual.
d) For other water quality BMPs not included in the Massachusetts Stormwater Management Manual, or for which pollutant removal rates have not been provided, the effectiveness and pollutant removal of the structural control must be documented through prior studies, literature reviews, or other means and receive approval from the Planning Board before being included in the design of a stormwater management system.
e) For projects within the Lake Cochechiwick and Shawsheen River watershed areas, suitable water quality BMPs must be selected in consideration of the sensitivity and/or impaired status of the receiving water body.
f) Adequate access shall be provided to all water quality BMPs for inspection and maintenance.
g) The perimeter of all surface basins shall be curvilinear so that from most edges of the basin, the whole basin will not be in view. A more traditionally shaped (oval or rectangular) basin may be permitted when conditions such as topography, parcel size, or other site conditions warrant. Basins shall follow natural landforms to the greatest extent possible or be shaped to mimic a naturally formed depression.
h) Inlets and outlets of surface basins shall be placed to maximize the flow path through the facility. At a minimum, the flow path shall be twice as long as wide. Baffles, pond shaping or islands can be added within the permanent pool to increase the flow path. If there are multiple inlets, the length-to-width ratio shall be based on the average flow path length for all inlets.
i) Low flow outlets shall be designed to prevent clogging.

E. Redevelopment

a) Projects involving redevelopment of existing sites shall be designed in accordance with the redevelopment checklist provided in the latest Massachusetts Stormwater Handbook.

b) All redevelopment projects must provide a net improvement to stormwater conditions at the site, either in the area of disturbance or to other areas on the site. The Planning Board may require improvements to areas outside of disturbance activity where known problems exist and reasonable solutions are available. Such opportunities might include:
   i. Reduce impervious surfaces
   ii. Implement source controls of potential stormwater pollutants on the entire site
   iii. Reroute drainage to maximize treatment efficiencies
   iv. Segregate roof runoff for direct infiltration or capture and re-use.
   v. Update Operation and Maintenance plans and procedures for the entire site

F. Landscape Design

a) Landscape designs shall be developed based on soil, light and other site specific conditions. Plant species shall be chosen for their ability to thrive in the post-development soil, water and use conditions of the site without significant supplemental water or fertilizer, once established.
b) Plant species shall be native to inland Essex County or shall be cultivars of these native species.
c) Wildflower meadows and shrubs are advisable to reduce the amount of lawn or turf on a site.
d) For landscape areas adjacent to roadways, salt tolerant plans shall be used.
e) Irrigation shall be provided by the use of a rain water harvesting system to the extent feasible.

8.0 EROSION AND SEDIMENT CONTROL PLAN

An Erosion and Sediment Control Plan is required at the time of application for all projects, unless the requirement has been waived. Plan approval by the Planning Board or its Agent is required prior to any site altering activity. The plan shall be designed to ensure compliance with the Permit, these Regulations, and if applicable, the NPDES General Permit for Storm Water Discharges from Construction Activities. In addition, the plan shall ensure that the Massachusetts Surface Water Quality Standards (314 CMR 4.00) are met in all seasons.

If a project requires a Stormwater Pollution Prevention Plan (SWPPP) per the NPDES General Permit for Storm Water Discharges from Construction Activities, then the Applicant is required

to submit a complete copy of the SWPPP (including the signed Notice of Intent and approval letter) as part of its application for a LDP. If the SWPPP meets the requirements of the NPDES General Permit, it will be considered equivalent to the Erosion and Sediment Control Plan described in this Section.

8.1 Erosion and Sediment Control Plan Contents

The Erosion and Sediment Control 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 erosion and sedimentation controls. The applicant shall submit such material as is necessary to show that the proposed development will comply with the design criteria listed in Section 8.2.

For larger developments where construction phasing occurs, the Erosion and Sediment Control Plan shall be updated as needed based on changing conditions at the site.

The Erosion and Sediment Control Plan shall include, at a minimum:

a) A general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and waters of the United States within one mile of the site.
b) A legible site map, showing the entire site, identifying at a minimum:

    i. **Limits of clearing and grading;**
    ii. **Locations and methods of all proposed erosion/sedimentation measures and BMPs, including key dimensions and other important details;**
    iii. Detailed drawings and types of both temporary and permanent erosion and sediment control structures;
    iv. The location of critical areas on the site (areas that have potential for serious erosion problems.)
    v. Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable.
    vi. Location of temporary and permanent seeding, vegetative controls, and other temporary and final stabilization measures.
    vii. Locations for storage of materials, waste, vehicles, equipment, soil, snow and other potential pollutants;

viii. Locations where stormwater discharges to a surface water (include all roads, drains and other structures that could carry stormwater to a wetland or other water body, on or offsite); and
ix. Locations of any proposed dewatering facilities.

c) Description of the following in narrative, calculations or drawings, as appropriate:

i. All pollution control measures (structural and non-structural BMPs) that will be implemented as part of the construction activity to control pollutants in storm water discharges. Appropriate control measures must be identified for each major construction activity and the operator responsible for the implementation of each control measure must also be identified;
ii. The intended sequence and timing of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization, and the general sequence during the construction process in which the erosion and sediment control measures will be implemented;
iii. Structural practices to divert flows from exposed soils, retain/detain flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site;
iv. Interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented;
v. A maintenance schedule for the period of construction;
vi. Construction and waste materials expected to be stored on-site with updates as appropriate, including descriptions of controls, and storage practices to minimize exposure of the materials to stormwater, and spill prevention and response practices;
vii. Measures to minimize, to the extent practicable, off-site vehicle tracking of sediments onto paved surfaces and the generation of dust;
viii. Proposed dewatering operations including proposed locations of discharge;
ix. Description of and implementation schedule for temporary and permanent seeding, vegetative controls, and other temporary and final stabilization measures; and
x. Measures used to maintain the infiltration capacity of existing soils where any kind of infiltration is proposed.

8.2 Erosion and Sediment Control Criteria

The Erosion and Sediment Control Plan shall be designed to meet the following criteria and guidelines.

a) Minimize total area of disturbance and minimize unnecessary clearing and grading from all construction sites. Clearing and grading shall only be performed within areas needed to build the project, including structures, utilities, roads, recreational amenities, post-construction stormwater management facilities, and related infrastructure.
b) Keep stormwater runoff velocities low. The removal of existing vegetative cover during development and the resulting increase in impermeable surface area after development will increase both the volume and velocity of runoff. These increases must be taken into account when providing for erosion control.
c) Protect disturbed areas from stormwater runoff. Best management practices can be utilized to prevent water from entering and running over the disturbed area. Diversions and other control practices intercept runoff from higher watershed areas, store or divert it away from vulnerable areas, and direct it toward stabilized outlets.
d) Placement of structural practices in floodplains must be avoided to the degree practicable.
e) Site plans should ensure that existing vegetation is preserved where possible and that disturbed portions of the site are stabilized. Use of impervious surfaces for stabilization should be avoided.
f) 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 daily.
g) Appropriate erosion and sediment control measures shall be installed prior to disturbance and maintained in accordance with the manufacturer's specifications and good engineering practices to ensure they perform as intended. Sediment in runoff water shall be trapped and retained within the project area. Wetland areas and surface waters shall be protected from sediment.
h) Erosion and Sediment Control measures used shall be chosen based on the goal of minimizing site disturbance from installation of such measures.
i) Sediment trapping and settling devices shall be employed to trap and/or retain suspended sediments and allow time for them to settle out in cases where perimeter sediment controls (e.g., silt fence and hay bales) are deemed to be ineffective in trapping suspended sediments on-site. Sediment basins shall also be used to minimize peak rate of runoff in accordance with the Massachusetts Stormwater Standards.
j) BMPs to be used for infiltration after construction shall not be used as BMPs during construction unless otherwise approved by the Board. Many 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.

k) Sediment shall be removed once the volume reaches ¼ to ½ the height of a hay bale. Sediment shall be removed from silt fence prior to reaching the load-bearing capacity of the silt fence which may be lower than ¼ to ½ the height.

l) Sediment from sediment traps or sedimentation ponds shall be removed when it reaches a depth of six inches.

m) On and off-site material storage areas, including construction and waste materials, shall be properly protected and managed.

n) Erosion and sediment controls shall be coordinated with the sequence of grading, development and construction operations; control measures shall be in effect prior to commencement of each increment/phase of the process and control measures from prior phases shall continue to be maintained until the site is stabilized;

o) Land disturbance activities exceeding two acres in size shall 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 should be avoided. Prior to any construction on the site, applicant shall submit a construction phasing plan to the Planning Department for review and approval.

p) Soil and other materials shall not be stockpiled or redistributed, either temporarily or permanently, in locations or in such a manner as would cause suffocation of tree root systems;

q) Topsoil shall be stripped from disturbed areas, stockpiled in approved areas and stabilized with temporary vegetative cover if it is to be left for more than thirty (30) calendar days; perimeter sediment controls shall be installed around each area of stockpiled topsoil.

r) 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.

s) Projects must comply with applicable Federal, State and local laws and regulations including waste disposal, sanitary sewer or septic system regulations, and air quality requirements, including dust and debris control.

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

u) Dust shall be controlled at the site.

v) On the cut side of roads, ditches shall be stabilized immediately with rock rip-rap or other non-erodible liners, or where appropriate, vegetative measures such as sod.

w) All graded areas beyond the Street Right-of-Way shall be covered with four (4") inches of topsoil and planted with a native species of vegetative cover, sufficient to prevent erosion;

x) Temporary seeding, mulching or other suitable stabilization methods shall be used to protect exposed soil areas during construction; as feasible, natural vegetation shall be retained and protected; during the months of October through March, when seeding may be impractical, an anchored mulch or sod shall be applied as approved by the Planning Board or by its Designee; diversions and/or prepared outlets may be required in critical areas during construction.

y) 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, appropriate temporary mulch shall be applied. Permanent seeding may be undertaken during the summer if plans provide for adequate mulching and watering.

z) Permanent vegetation and erosion control structures, as necessary, shall be installed preferably immediately after construction is completed but otherwise no later than the first full spring season immediately thereafter; they shall comply with the erosion and sedimentation vegetative practices recommended by the U.S. Soil Conservation Service;

aa) Native species shall be used for re-vegetation;

bb) Slopes (greater than 3:1) shall be protected from erosion by limiting clearing of these areas in the first place or, where grading is unavoidable, by providing special techniques to prevent upland runoff from flowing down a steep slope and through immediate stabilization to prevent gullying. Offsite runoff shall be diverted from highly erodible soils and steep slopes to stable areas.

cc) Interim and permanent stabilization measures shall be instituted on a disturbed area immediately after construction activity has temporarily or permanently ceased on that portion of the site. Two methods are available for stabilizing disturbed areas: mechanical (or structural) methods and vegetative methods. In some cases, both are combined in order to retard erosion.

dd) Temporary sediment trapping devices must not be removed until permanent stabilization is established in all contributory drainage areas. Similarly, stabilization shall be established prior to converting sediment traps/basins into permanent (post-construction) stormwater management facilities. All facilities used as temporary measures shall be cleaned prior to being put into final operation.

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

9.0 OPERATION AND MAINTENANCE PLAN

An Operation and Maintenance Plan (O&M Plan) for the permanent storm water management system is required at the time of application for all projects. The O&M Plan shall be designed to ensure compliance with these Regulations, the Massachusetts Stormwater Management Standards, and the Massachusetts Surface Water Quality Standards contained in 314 CMR 4.00 in all seasons and throughout the life of the system.

Once approved by the Planning Board, the Operation and Maintenance Plan shall remain on file with the Planning Board and shall be an ongoing requirement. Depending on the complexity of the systems installed, the Planning Board may require that the O&M Plan be recorded at the Essex North Registry of Deeds by the Planning Board or its agent at the expense of the current owner(s).

9.1 O&M Plan Contents

a) The Operation and Maintenance Plan shall be a stand-alone document prepared by a Massachusetts licensed Professional Engineer and shall include:
   i. The name(s) of the owner(s) for all components of the system.
   ii. The signature(s) of the property owner(s).
   iii. The names and addresses of the person(s) responsible for operation and maintenance. If responsibility is to be contracted to a third party, a copy of the maintenance agreement(s) must be provided.
   iv. A plan or map showing the location of the systems and facilities including easements, catch basins, manholes/access lids, main, and stormwater devices.
   v. An Inspection and Maintenance Schedule for all stormwater management facilities including routine and non-routine maintenance tasks to be performed.
   vi. A list of easements with the purpose and location of each. Easements shall be recorded with the Essex North Registry of Deeds prior to issuance of a Certificate of Completion by the Planning Board.
   vii. Provisions for the Planning Board or its designee to enter the property at reasonable times and in a reasonable manner for the purpose of inspection.

b) Stormwater management easements shall be provided by the property owner(s) as necessary for:
   i. Access for facility inspections and maintenance;
   ii. Preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for the 100-year storm event;

iii. Direct maintenance access by heavy equipment to structures requiring regular maintenance.

c) The O&M Plan shall apply to the entire project site, not just area the disturbance area.

d) At a minimum, inspections shall occur during the first year of operation and in accordance with the operation and maintenance plan in the approved Land Disturbance Permit.

e) The owner of the property shall maintain a log of all operation and maintenance activities, including without limitation, inspections, repairs, replacement and disposal (for disposal, the log shall indicate the type of material and the disposal location). This log shall be made available to the Planning Board upon request.

f) Inspection reports for stormwater management systems shall include:
   i. The date of inspection;
   ii. Name of inspector;
   iii. The condition of each BMP, including components such as:
   iv. Pretreatment devices
   v. Vegetation or filter media
   vi. Fences or other safety devices
   vii. Spillways, valves, or other control structures
   viii. Embankments, slopes, and safety benches
   ix. Reservoir or treatment areas
   x. Inlet and outlet channels and structures
   xi. Underground drainage
   xii. Sediment and debris accumulation in storage and forebay areas (including catch basins)
   xiii. Any nonstructural practices
   xiv. Any other item that could affect the proper function of the stormwater management system
   xv. Description of the need for maintenance;

9.2 Changes to Operation and Maintenance Plans

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

The maintenance schedule in the O&M Plan may be amended to achieve the purposes of this Stormwater Management and Erosion Control Bylaw and Regulations by mutual agreement of the Planning Board and the Responsible Parties. Amendments must be in writing and signed

by all Responsible Parties. Responsible Parties shall include owner(s), persons with financial responsibility, and persons with operational responsibility.

9.3 Operations & Maintenance Records

Parties responsible for the operation and maintenance of a stormwater management facility shall provide records of all maintenance and repairs to the Planning Board upon request. Parties responsible for the operation and maintenance of a stormwater management facility shall make records of the installation and of all maintenance and repairs, and shall retain the records for at least five (5) years. These records shall be made available to the Planning Board during inspection of the facility and at other reasonable times upon request.

If a responsible person fails or refuses to meet the requirements of the O&M Plan, the Planning Board, 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. The Planning Board may assess the owner(s) of the facility for the cost of repair work, which shall be a lien on the property.

10.0 INSPECTIONS AND SITE SUPERVISION

10.1 Preconstruction Meeting

Prior to clearing, excavation, construction, or any land disturbing 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 Planning Board’s representative to review the permitted plans and proposed implementation.

10.2 Notice of Construction Commencement

The applicant must notify the Planning Board two (2) business days prior to the commencement of construction. In addition, the applicant must notify the Planning Board two (2) days prior to construction of critical components of any stormwater management facility.

One copy of the permit plans and conditions of approval signed by the Planning Board shall be maintained at the site during the progress of the work. If applicable, a copy of the NPDES Construction General Permit and Stormwater Pollution Prevention Plan (if applicable) shall also be kept on site.

10.3 Erosion and Sediment Control Inspections

To ensure that erosion control practices are in accord with the approved Erosion and Sediment Control Plan, Erosion Control Inspections shall be conducted by the Applicant/Permittee or an authorized representative at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater, from the start of construction until the site is permanently stabilized. Inspection frequency may be reduced to at least once a month if the site is temporarily stabilized, runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen), or if construction is occurring during seasonal dry periods. The Applicant is required to notify the Planning Board of any change in inspection frequency, including termination of inspections due to site stabilization.

As a condition of approval, the Planning Board may require an Environmental Site Monitor, approved by the Planning Board, be retained by the applicant to conduct such inspections and prepare and submit such reports to the Planning Board. Representatives or agents of the Planning Board may also make periodic inspections of the site to evaluate the adequacy of erosion and sediment controls.

Inspections by the Applicant or an authorized representative must include all areas of the site disturbed by construction activity and areas used for storage of materials that are exposed to precipitation. Inspectors must look for evidence of, or the potential for, pollutants entering the storm water conveyance system. Sedimentation and erosion control measures identified in the Erosion and Sediment Control Plan must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

For each inspection required by the Planning Board, an inspection form must be completed by the Applicant or an authorized representative with the following information, at a minimum:

a) The inspection date;
b) Names, titles, and qualifications of personnel making the inspection;
c) Weather information and a description of any discharges occurring at the time of the inspection;
d) Weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred;
e) Location(s) of discharges of sediment or other pollutants from the site;
f) Location(s) of BMPs that need to be maintained;
g) Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;
h) Location(s) where additional BMPs are needed that did not exist at the time of inspection;
i) Photographs documenting site conditions at the time of inspection and
j) Corrective action required including any changes to the SWPPP necessary and implementation dates.

If a project requires a Stormwater Pollution Prevention Plan (SWPPP) per the NPDES General Permit for Storm Water Discharges from Construction Activities (Construction General Permit), then the permittee is required to submit all Inspection Reports to the Planning Board or its designated Reviewing Agent upon request. If the Inspection Reports meet the requirements of the Construction General Permit, it will be considered equivalent to the Erosion Control Inspection as described above.

A record of each inspection and of any actions taken must be retained for at least three (3) years from the date of completion of the project. The inspection reports must identify any incidents of non-compliance with the permit conditions. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the construction project or site is in compliance with this permit.

All erosion and sediment control measures and other protective measures identified in the Erosion and Sediment Control Plan must be maintained in effective operating condition. If site inspections identify BMPs that are not operating effectively, maintenance must be performed as

soon as possible and before the next storm event whenever practicable to maintain the continued effectiveness of storm water controls.

10.4 Construction Inspections

The Planning Board may require periodic inspections of the stormwater management system construction by a professional engineer or other qualified personnel to ensure compliance with the conditions of the LDP, or the overall effectiveness and functioning of the system.

All such inspections shall be documented and written reports prepared that contain the following information:

a) The date and location of the inspection;
b) Names, titles, and qualifications of personnel making the inspection;
c) Whether construction is in compliance with the approved stormwater management plan;
d) Variations from the approved construction specifications;
e) Photographs documenting site conditions at the time of inspection and
f) Any other variations or violations of the conditions of the approved stormwater management plan.

If at any time during construction the Planning Board or its designated Reviewing Agent determines that there is a failure to comply with the plan, the property owner shall be notified in writing of the nature of the violation and the required corrective actions. A Stop Work Order shall be issued until any violations are corrected and all work previously completed has received approval by the Planning Board or its designated Agent.

11.0 SURETY

11.1 Stormwater Completion Surety

The Permitting Authority may require the permittee to post before the start of land disturbance activity, a surety bond, or other acceptable security. The form of the bond shall be approved by the Permitting Authority, and be in an amount deemed sufficient by the Permitting Authority to insure that the work will be completed in accordance with the permit.

If the project is phased, the Permitting Authority 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 Permitting Authority has issued a certificate of completion.

11.2 Stormwater Maintenance Surety

The Planning Board may also require the Applicant to secure the future maintenance of the stormwater system by a cash bond of an amount as determined by the Planning Board. In the event that the Applicant does not follow maintenance procedures and programs as approved by the Planning Board, the Board shall have the authority to expend any portion of said security to provide such maintenance for up to five (5) years after completion of the project.

12.0 CERTIFICATE OF COMPLETION

Upon completion of the project, the Applicant shall submit the following material to the Planning Board demonstrating that the completed project is in accordance with the approved plans and specifications:

a) Certification by a Registered Professional Engineer that the systems have been installed and are functioning according to the approved plan.
b) As-built plan, stamped by a Registered Professional Engineer or Land Surveyor, to include the following information:
    i. Limit of work
    ii. Post-construction topography
    iii. Finished grades of all structures
    iv. Invert elevations of all stormwater structures
    v. All structures, pavement, utilities
    vi. Off-site alterations
    vii. Deviations from the approved plan shall be noted and explanation for the deviation provided
c) Electronic copy of the as-built plan
d) Documentation of compliance with all permit conditions
e) Maintenance surety has been submitted
f) All Inspection reports required during construction have been submitted

g) Final Operation & Maintenance Plan submitted
h) Maintenance contracts in place
i) Land Disturbance Permit has been recorded at Registry of Deeds

The Planning Board's designated Agent shall inspect the system to confirm its "as-built" features. If the system is found to be inadequate by virtue of physical evidence of operational defect and/or failure, even though it was built as called for in the Stormwater Management Plan, it shall be corrected by the applicant before the Certificate of Completion is released. If the applicant fails to act the Planning Board or its designated Agent may use the surety bond to complete the work.

Upon receipt and approval of the final inspection and reports and/or upon otherwise determining that all work of the permit has been satisfactorily completed in conformance with this Regulation, the Planning Board shall issue a letter certifying completion in conformance with this Regulation.

13.0 ENFORCEMENT

Enforcement powers of the Planning Board are granted in the Stormwater Management and Erosion Control Bylaw, Section 160-10.

The Planning Board or its designated Agent shall enforce the Bylaw, Regulations, orders, violation notices, and enforcement orders, and may pursue all civil, criminal and non-criminal remedies for such violations.

13.1 Notices and Orders

The Planning Board or an authorized agent of the Planning Board may issue a written notice of violation or enforcement order to enforce the provisions of the Bylaw or the Regulations there under, which may include requirements to:

a) Cease and desist from construction or land disturbing activity until there is compliance with the Bylaw 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.

If the Planning Board or an authorized agent of the Planning Board 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.

13.2 Fines

Any person who violates any provision of the Town of North Andover Stormwater Management and Land Disturbance Bylaw, or Regulations, order or permit issued there under, may be ordered to correct the violation and/or shall be punished by a fine of not more than $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

13.3 Non-Criminal Disposition

As an alternative to criminal prosecution or civil action, the Town of North Andover may elect to utilize the non-criminal disposition procedure set forth in G.L. Ch. 40, §21D. The penalty for the 1st violation shall be $200. The penalty for the 2nd violation shall be $500. The penalty for the 3rd and subsequent violations shall be $1000. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

13.4 Remedies Not Exclusive

The remedies listed in the Bylaw and these Regulations are not exclusive of any other remedies available under any applicable federal, state or local law.

14.0 SEVERABILITY

The invalidity of any section, provision, paragraph, sentence, or clause of these Regulations shall not invalidate any other section, provision, paragraph, sentence, or clause thereof, nor shall it invalidate any permit or determination that previously has been issued.

APPENDIX A - DEFINITIONS

ABUTTER: The owner(s) of land abutting the land disturbance site.

AGENT: The Town Planner

AGRICULTURE: The normal maintenance or improvement of land in agricultural or aquacultural use, as defined by the Massachusetts Wetlands Protection Act (M.G.L. c. 131 § 40) and its implementing regulations (310 CMR 10.00).

ALTERATION OF DRAINAGE CHARACTERISTICS: Any activity on an area of land that changes the water quality, or the force, quantity, direction, timing or location of runoff flowing from the area. Such changes include, but are not limited to: change from distributed runoff to confined, concentrated discharge; change in the volume of runoff from the area; change in the peak rate of runoff from the area; and change in the recharge to groundwater on the area.

APPLICANT: Shall be the owner of record of all of the land shown on any plan submitted for approval to the Planning Board in accordance with the Stormwater Management Bylaw and Land Disturbance Regulations or any person or persons acting on behalf of the applicant for purposes of preparing and submitting plans and documents to the Planning Board, and may include engineers, surveyors, contractors or attorneys, and may also include any person or persons having an equitable interest in the land under an agreement or option to purchase the land. The owner shall certify in writing the identity of each applicant who is authorized to submit plans and/or documents and act on behalf of the owner. Without such certification an applicant shall not act on behalf of the owner. The applicant shall submit the title reference or references from the Essex County Registry of Deeds indicating the owner of record. All applications shall include original signatures of all owners.

BEST MANAGEMENT PRACTICE (BMP): An activity, procedure, restraint, or structural improvement that helps to reduce the quantity or improve the quality of stormwater runoff.

CONSTRUCTION AND WASTE MATERIALS: Excess or discarded building or construction site materials that may adversely impact water quality, including but not limited to concrete truck washout, chemicals, litter and sanitary waste.

CLEARING: Any activity that removes the vegetative surface cover and/or organic layer. Clearing activities generally include grubbing activity as defined below.

DESIGN CRITERIA: Engineering design criteria as contained in the Stormwater Regulations authorized under this bylaw.

DETENTION: The temporary storage of storm runoff; used to control the peak discharge rates, and which provides settling of pollutants.

DEVELOPMENT: The modification of land to accommodate a new use or expansion of use, usually involving construction.

DISTURBANCE OF LAND: Any action, including clearing and grubbing, that causes a change in the position, location, or arrangement of soil, sand, rock, gravel, or similar earth material.

ENVIRONMENTAL SITE MONITOR: A Professional Engineer, or other trained professional approved by the Planning Board and retained by the holder of a Land Disturbance Permit to periodically inspect the work and report to the Planning Board.

EROSION: The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

ESTIMATED HABITAT OF RARE WILDLIFE AND CERTIFIED VERNAL POOLS: Habitats delineated for state-protected rare wildlife and certified vernal pools for use with the Wetlands Protection Act Regulations (310 CMR 10.00) and the Forest Cutting Practices Act Regulations (304 CMR 11.00).

GRADING: Changing the level or shape of the ground surface.

GRUBBING: The act of clearing land surface by digging up roots and stumps.

ILLICIT CONNECTION: A surface or subsurface drain or conveyance which allows an illicit discharge into the North Andover storm drain system, regardless of whether said connection was previously allowed, permitted or approved before the effective date of this Bylaw.

ILLICIT DISCHARGE: Direct or indirect discharge to the North Andover storm drain system that is not composed entirely of stormwater, including without limitation sewage, process

wastewater, or wash water, except as exempted in 160-4(D) of this Bylaw or in implementing regulations.

IMPERVIOUS SURFACE: Any material or structure on or above the ground that limits water infiltrating the underlying soil. Impervious surface includes without limitation: roads, paved parking lots, sidewalks, sports courts and rooftops. Impervious surface also includes soils, gravel driveways, and similar surfaces with a runoff coefficient (Rational Method) greater than 85.

LAND-DISTURBING ACTIVITY or LAND DISTURBANCE: Any activity, including clearing and grubbing, that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material.

LAND-DISTURBANCE PERMIT: A permit issued by the Planning Board.

LOT: An area of land in one ownership, with definite boundaries, used, or available for use, as the site of one or more buildings

LOW IMPACT DEVELOPMENT (LID): An approach to environmentally friendly land use planning and stormwater management that includes a suite of landscaping and design techniques that attempt to maintain the natural, pre-developed ability of a site to manage rainfall. LID techniques typically preserve natural drainage characteristics and/or capture water on site, filter it through vegetation, and let it soak into the ground where it can recharge the local water table rather than becoming surface runoff.

MASSACHUSETTS ENDANGERED SPECIES ACT: (M.G.L. c. 131A) and its implementing regulations at (321 CMR 10.00) which prohibit the "taking" of any rare plant or animal species listed as Endangered, Threatened, or of Special Concern.

MASSACHUSETTS STORMWATER MANAGEMENT POLICY: The Policy issued by the Department of Environmental Protection, as amended, that coordinates the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act MGL c. 131 s. 40 and the Massachusetts Clean Waters Act MGL c. 21, ss. 23-56. The Policy addresses stormwater impacts through implementation of performance standards to reduce or prevent pollutants from reaching water bodies and control the quantity of runoff from a site.

MUNICIPAL STORM DRAIN SYSTEM or MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4): The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or manmade or altered

drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of North Andover.

OPERATION AND MAINTENANCE PLAN: A plan developed by a Massachusetts licensed professional engineer (PE) describing the functional, financial and organizational mechanisms for the ongoing operation and maintenance of a stormwater management system to ensure that it continues to function as designed.

OUTFALL: The point at which stormwater flows out from a discernible, confined point source or concentrated conveyance into waters of the Commonwealth.

OUTSTANDING RESOURCE WATERS (ORWs): Waters designated by Massachusetts Department of Environmental Protection as ORWs. These waters have exceptional sociologic, recreational, ecological and/or aesthetic values and are subject to more stringent requirements under both the Massachusetts Water Quality Standards (314 CMR 4.00) and the Massachusetts Stormwater Management Standards. ORWs include vernal pools certified by the Natural Heritage Program of the Massachusetts Department of Fisheries and Wildlife and Environmental Law Enforcement, all Class A designated public water supplies with their bordering vegetated wetlands, and other waters specifically designated.

OWNER: Shall be the owner of record of all the land shown on any plan submitted. The owner shall submit the title reference or references from the Essex County Registry of Deeds (or Registry District of the Land Court if the land constitutes registered land) indicating the owner of record.

PERMITTEE: The person who holds a land disturbance permit and therefore bears the responsibilities and enjoys the privileges conferred thereby.

PERSON: An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

PLANNING BOARD: The designees authorized to implement all actions and procedures authorized by the Bylaw. The Planning Board may, by majority vote at a public meeting, delegate any of the responsibilities for the administration of this Bylaw to the Town Planner.

POINT SOURCE: Any discernible, confined, and concentrated conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, concentrated fissure, or container from which pollutants are or may be discharged.

PRE-CONSTRUCTION: All activity in preparation for construction.

PRIORITY HABITAT OF RARE SPECIES: Habitats delineated for rare plant and animal populations protected pursuant to the Massachusetts Endangered Species Act and its regulations.

PRIVATE STORM DRAIN SYSTEM or PRIVATE SEPARATE STORM SEWER SYSTEM: The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system that is not owned and maintained by the Town.

RECHARGE: Addition of stormwater runoff to the groundwater by natural or artificial means.

REDEVELOPMENT: Development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface or increase the impervious area on previously developed sites.

RESPONSIBLE PARTIES: The Applicant, Owner(s), persons with financial responsibility, and persons with operational responsibility.

RETENTION: The holding of stormwater runoff in a basin without release except by means of evaporation, infiltration, or emergency bypass.

RUNOFF: Rainfall, snowmelt, or irrigation water flowing over the ground surface.

SEDIMENT: Mineral or organic soil material that is transported by wind or water from its origin to another location; the product of erosion processes.

SEDIMENTATION: The process or act of deposition of sediment.

SITE: Any lot or parcel of land or area of property where land-disturbing activities are, were, or will be performed.

SLOPE: The incline of a ground surface expressed as a ratio of horizontal distance to vertical distance.

SOIL: Earth materials including duff, humic materials, sand, rock and gravel.

STABILIZATION: The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or retard erosion.

STORMWATER: Stormwater runoff, snow melt runoff, surface water runoff and drainage.

STORMWATER MANAGEMENT PLAN AND NARRATIVE: A document containing narrative, drawings and details prepared by a Massachusetts licensed qualified professional engineer (PE) which includes structural and non-structural best management practices to manage and treat stormwater runoff generated from regulated development activity. A stormwater management plan also includes an Operation and Maintenance Plan describing the maintenance requirements for structural best management practices.

STRIP: Any activity which removes the vegetative ground surface cover, including tree removal, clearing, grubbing, and storage or removal of topsoil.

TSS: Total Suspended Solids. Material, including but not limited to trash, debris, soils, sediment and sand suspended in stormwater runoff.

VERNAL POOLS: Vernal pools are seasonally wet basin depressions that do not support breeding populations of fish, because of periodic drying. Vernal Pools serve as breeding sites for unique organisms and may be protected by state, local and federal laws. Specifically Vernal Pools are isolated depressions or closed basins which temporarily confine water during periods of high water table and high input from spring runoff or snowmelt or heavy precipitation, and support populations of non-transient microorganisms, serve as breeding habitat for select species of amphibians or contain a variety of wetland plant species. They serve as temporarily flooded amphibian breeding habitat, as well as habitat for other wildlife. These pools are characteristically small; they rarely exceed 150 feet in width, however a given pool may vary in size from year to year depending on the amount of rainfall or snowmelt. In the absence of those habitat functions, the areas will be considered isolated vegetated wetlands. The existence of either a confined basin depression; evidence of amphibian and/or reptiles species that breed only in vernal pools; the presence of fairy shrimp or their eggs; or documented presence of water in a confined basin depression for at least two continuous months in the spring and/or summer will verify the existence of a vernal pool.

WATERCOURSE: A natural or man-made channel through which water flows, including a river, brook, or stream.

WETLAND RESOURCE AREA: Areas specified in the Massachusetts Wetlands Protection Act M.G.L. c. 131, s.40 and Regulations promulgated thereunder and in the Town of North Andover Wetland Protection By-law and Regulations. Wetlands include: wet meadows, marshes, swamps, bogs, areas where groundwater, flowing or standing surface water or ice provide a significant part of the supporting substrate for a plant community for at least five

months of the year; emergent and submergent communities in inland waters; that portion of any bank which touches any inland water.