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NH DES Site Specific Program Policy Alternatives

New Hampshire Estuaries Project

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Introduction and Background

In New Hampshire, the Department of Environmental Services' (NH DES) Site Specific Program, which enforces Administrative Rule Env-Ws 415 pursuant to RSA 485, is the primary mechanism for regulating stormwater runoff from development sites to surface waters. Rule Env-Ws 415 expires June 30, 2004. Although Program staff will recommend renewing the current Rule to continue regulatory authority over the short term, NH DES has also expressed an intention to organize a committee that will renew and revise Env-Ws 415 during the course of 2004 and 2005.[1]

On a national scale, recent stormwater policy evolution has been driven primarily by National Pollution Discharge Elimination System (NPDES) Phase II requirements coming into effect.

Neighboring states have been actively involved in updating stormwater regulations. Vermont and Maine are currently involved in the revision of stormwater rules, and both states have developed drafts for public review. These drafts are referenced in this paper. Maine is also currently in the process of revising its stormwater Best Management Practices, while Vermont recently completed and published its Best Management Practices guide. Massachusetts's stormwater policy was most recently revised in the late 1990s.

The New Hampshire Estuaries Project (NHEP) is part of the National Estuary Program, a joint local/state/federal program established by the U.S. Environmental Protection under the Clean Water Act with the goal of protecting nationally significant estuarine resources. The mission of the NHEP is to promote, protect, and enhance the environmental quality of the state's estuaries. As such, the NHEP supports NH DES efforts to revise and improve Rule Env-Ws 415 to strengthen the Site Specific Program.

[1] Personal correspondence with R. Mauck, 11/25/2003.

In 2000, the NHEP published its *Management Plan* for implementing the NHEP mission, developed by stakeholders and citizens from throughout the coastal watershed.[2] Two Actions within the *Plan* relate to the Site Specific Program revision process:

- Action LND-9B directs the NHEP to: "Reduce the quantity, improve the quality, and regulate the timing of stormwater flow into tidal wetlands through changes to the NH DES Site Specific Program."

- Action LND-21 directs the NHEP to: "Prevent the introduction of untreated stormwater to freshwater wetlands by enacting legislation giving NH DES authority to regulate stormwater discharge to wetlands."

The *Management Plan* identifies NH DES as the lead party to implement LND-9B and LND-21. In an effort to initiate steps that will address these Actions, the NHEP conducted research to develop policy alternatives for NH DES to consider during the Site Specific Program review process. Included were policies to:

- Restrict the discharge of stormwater into wetlands;
- Regulate phased developments, such as subdivisions, for their cumulative impact; and,
- Regulate the quality and quantity of pre- and post-development stormwater discharge.

The purpose of this report is to provide NH DES with applicable stormwater management policy alternatives for consideration during the revision of Env-Ws 415 and the Site Specific Program.

When approached for suggestions on how the NHEP could assist NH DES staff with the Rule revision process, NH DES requested assistance with identifying consistently referenced and credible citations for best management practice recommendations, particularly those that promote infiltration, in other states. A list of references cited by best management practices manuals is included as an appendix to this paper (Appendix A).

[2] For more information on the NHEP and the NHEP *Management Plan*, visit http://www.nh.gov/nhep.

1. Policy alternatives to restrict the direct discharge of stormwater to wetlands.

Stormwater runoff from impervious surface areas accumulates a wide range of pollutants, which, if untreated, contribute nonpoint source pollution to surface waters. Wetlands are important ecosystems not only for their filtering capacity and biological productivity, but also because they are often hydrologically associated with drinking water supplies such as aquifer recharge areas and reservoirs. Large volumes of stormwater and the contaminants it typically carries can degrade wetlands functions that State law is intended to protect. Restricting the discharge of stormwater to wetlands is one way to protect wetland ecosystems and water quality. However, the introduction of stormwater to wetlands is not regulated by New Hampshire, and Env-Ws 415 does not restrict the discharge of stormwater to wetlands.

Many states restrict the discharge of stormwater to wetlands by prohibiting discharges of stormwater to 'waters of the State', then elsewhere defining 'waters of the State' as including wetlands[3]. However, three New England states, Massachusetts, Rhode Island, and Maine, restrict untreated stormwater discharge to wetlands with direct policy statements:

A. Massachusetts

The *Massachusetts Stormwater Management Policy*,[4] released by the Executive Office of Environmental Affairs, Department of Environmental Protection, outlines nine Stormwater Management Standards in a policy statement. The first standard directly addresses stormwater discharge to wetlands:

> 1. No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

This policy is enforced under the Wetlands Protection Act, Massachusetts General Laws Chapter 131 §40, by municipal conservation commissions and the Department of Environmental Protection. Massachusetts restricts the discharge of stormwater into freshwater and coastal wetlands including a 100 foot buffer area.

B. Rhode Island

The state of Rhode Island addresses the issue of direct stormwater discharge to surface waters in Department of Environmental Management Rule 6.01, Section D. Number 6, from *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act*,[5] which reads:

[3] Email correspondence with Stefania Shamet, Assistant Regional Counsel, Environmental Protection Agency - Region 3, 3/25/03.
[4] Massachusetts Stormwater Management Policy: http://www.state.ma.us/dep/brp/stormwtr/files/2103ch.pdf
[5] Rhode Island DEM, http://www.state.ri.us/dem/pubs/regs/REGS/WATER/WETLND98.PDF

6. All wetland functions and values must be protected to the maximum extent possible so as to prevent pollutants, sediment, direct discharge of stormwater runoff, or any material foreign to a wetland or hazardous to life, from entering any wetland.

Rule 7.01, Section A, then goes on to include the discharge of 'road runoff' as being among the regulated activities requiring a permit:

A. A proposed project or activity which may alter freshwater wetlands requires a permit from the Director. Pursuant to Section 2-1-21(a) of the Act, except as exempt herein and except for farmers carrying out normal farming and ranching activities in accordance with Section 2-1-22(i)(1) of the Act, no person, firm, industry, company, corporation, city, town, municipal or state agency, fire district, club, non-profit agency, or other individual or group may excavate; drain; fill; place trash, garbage, sewage, road runoff, drainage ditch effluents, earth, rock, borrow, gravel, sand, clay, peat, or other materials or effluents upon; divert water flows into or out of; dike; dam; divert; clear; grade; construct in; add to or take from or otherwise change the character of any freshwater wetland as defined herein, in any way, without first obtaining a permit from the Director.

Rule 7.01, Section B, goes further to regulate activities which, due to their proximity to a wetland system, are likely to impact the wetland and are therefore also subject to the rules.

B. In addition to those projects or activities proposed either partially or wholly within freshwater wetlands, projects or activities taking place outside of freshwater wetlands which in all likelihood, due to their close proximity to wetlands or due to the size or nature of the project or activity will result in an alteration of the natural character of any freshwater wetland, require a permit from the Director. Such projects generally include those which:
1) Result in a change to the normal surface run-off characteristics which increases the rate and/or volume of water flowing into, or draining or diverting water away from, freshwater wetlands by such activities as:
(a) Creating or significantly increasing impervious areas;
(b) Modifying run-off characteristics by grading significant amounts of land area or clearing and permanently modifying significant amounts of vegetative cover on areas draining to freshwater wetlands;
(c) Diversion of and concentration of surface run-off through swales, ditches, grading, drainage systems and other surface run-off conveyance systems to or away from freshwater wetlands; and/or
2) Result in diversion of groundwater into or away from freshwater wetlands by:
(a) Installation of subdrains which will lower groundwater elevations supplying freshwater wetlands or increase flow into wetlands;
(b) Installation of underground utilities bedded in pervious materials which may act as a subdrain to divert groundwater away from, or concentrate such water to freshwater wetlands;

(c) Installation of wells, other than wells intended for a single family home, which will remove significant amounts of water supplying and/or affecting any freshwater wetland; and/or
3) Result in a modification to the quality of water reaching freshwater wetlands which could change their natural character

C. Maine

The Maine Department of Environmental Protection is in the process of revising Chapter 500 of the Code of Maine Rules on Stormwater Management Law.[6] Language contained within this draft requires that stormwater discharged into wetlands must meet State stormwater treatment standards before discharge, and requires that new or increased discharges be spread into a sheet flow. Section 5 of Chapter 500, Other Applicable Protection Standards, reads as follows:

> C. Discharge to freshwater or coastal wetlands. Stormwater treatment standards for the Waterbody must be met before the stormwater enters an intervening wetland, unless otherwise approved by the department. Freshwater and coastal wetlands must receive stormwater in the same manner as before the project unless otherwise approved or required by the department. In general, new or increased stormwater discharges into wetlands must be put into sheet flow using level spreaders designed to meet the requirements in Section 4(D)(4). The department will consider alternate stormwater treatment measures if those measures will not unreasonably adversely affect the wetland.
>
> The discharge of runoff to a wetland may not increase the storage duration within the wetland for more than 24 hours from runoff due to a 2-year storm, and may not increase the mean storage depth within a wetland more than two inches from the runoff due to a 2-year storm. Cumulative impacts due to runoff from other projects will be considered when applying this standard to any wetland.

2. Policy alternatives to regulate stormwater discharge for the cumulative impacts of development.

Current Site Specific Program regulations enable the State to require temporary and permanent erosion and stormwater control measures on development sites with land disturbance greater than 100,000 square feet (50,000 square feet in areas subject to the state Comprehensive Shoreland Protection Act). However, developers build some large development projects in a sequential lot-by-lot fashion so impacts are apportioned to individual lots, which can reduce the area disturbed at any one time to below the regulatory threshold. But once completed, the large development can have substantial stormwater impacts on surface areas.[7]

[6] Code of Maine Rules on Stormwater Management, Chapter 500 http://www.state.me.us/dep/blwq/docstand/stormwater/group.htm
[7] *New Hampshire Estuaries Project Management Plan,* 2000, p. 5-54.

This shortcoming of the Site Specific Program can be addressed through the addition of language that is aimed at eliminating loopholes for phased developments. The NHEP *Management Plan* recommends changing the Site Specific Program to ensure regulation of all sites with collective land disturbance greater than 100,000 square feet (50,000 square feet in all areas subject to the state Comprehensive Shoreland Protection Act). This will ensure that Site Specific regulations, including stormwater and erosion controls on large developments, are applied as intended.[8]

Other states have developed regulations that contain language specifically aimed at ensuring that phased developments are required to meet the same stormwater control measures as other developments. For example:

A. Vermont

The *Vermont Stormwater Management Rule* (draft)[9] addresses phased developments, such as subdivisions and other developments which occur in stages, with terminology aimed at ensuring that such developments are permitted for their cumulative impervious surface area rather than as for the impacts of each individual stage by using the terms 'Cumulative Development' and 'Phased Development.' These terms are defined within Section 200, Definitions, as follows:

> "Cumulative development" means the sequential creation of impervious surfaces by a person after the adoption date of these rules, on a site that is owned or controlled by such person or a person with affiliated ownership, such that the total of all individual impervious surfaces created equals one acre or more.
>
> "Phased Development" means a development completed in two or more stages, which are completed as part of a larger common plan of development or master plan.

These terms are then applied within the Rules to regulate development that occurs in stages. Section 302, Permitting Thresholds, addresses several instances related to phased and/or cumulative development in which a permit is required:

> A stormwater discharge permit is required for the following discharges of collected stormwater runoff:
>
> (a) Discharges of stormwater runoff from new development in which the area of all impervious surfaces contributing stormwater runoff to one or more stormwater discharge points is equal to or greater than one acre (43,560 square feet);

[8] *New Hampshire Estuaries Project Management Plan*, 2000, p. 5-54.
[9] Vermont Stormwater Management Rule (Draft): http://www.anr.state.vt.us/dec/waterq/Stormwater/Stormwaterrules.pdf

> (b) Discharges of stormwater runoff from the expansion of existing impervious surfaces at an existing permitted development or an existing unpermitted development, if the new impervious surface created is equal to or greater than one acre. If the expansion is less than one acre, but the total resulting impervious surface is equal to or greater than one acre, then a permit is required for the expanded portion of the existing permitted development or existing unpermitted development. However, if the expansion is less than one acre, the total resulting impervious surface is equal to or greater than one acre, and the Secretary determines that the expansion is *de minimus* and is not part of a phased development or a cumulative development, then a permit is not required for the expanded portion. If the expansion is less than one acre and is part of a phased development or a cumulative development that results in one acre or more of impervious surface, then a permit is required for the existing unpermitted development or existing permitted development and the expansion.
>
> (d) Discharges of stormwater runoff from the redevelopment of existing impervious surfaces at an existing permitted development or an existing unpermitted development, if the redevelopment involves impervious surfaces equal to or greater than one acre;
>
> (g) Discharges of stormwater runoff from impervious surfaces that do not meet a permit threshold in subsection (a) through (f) above, but which are part of a phased development or cumulative development that meets a permit threshold in (a) through (f) above;

B. Wisconsin

In Rule NR 216, the Wisconsin Department of Natural Resources addresses phased developments within its definition of 'Construction Site.' Therefore, all construction sites, including phased developments, are subject to permitting requirements. Section NR 216.002 (2) defines 'Construction Site' as:

> …(A)n area upon which one or more land disturbing construction activities occur that in total will disturb 5 or more acres of land, including areas that are part of a larger common plan of development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan such that the total disturbed area is 5 or more acres.

3. Policy alternatives to regulate the quantity and quality of pre- and post-development stormwater runoff.

The goal of minimizing differences between the quantity and quality of pre- and post- development stormwater runoff is a common foundation of stormwater management policy in many states, including Vermont, Rhode Island, Massachusetts, and New Jersey, which drives regulations.

A. Vermont

The *Vermont Stormwater Management Rule* (Draft) is under development pursuant to 10 V.S.A. § 1264. Vermont policy requires that post-development runoff be as identical as possible to pre-development runoff. Specific sections address this requirement.

Section 102, Purpose, Section 102(d), and Section 104, Policy, state the overall goal of minimizing changes to predevelopment discharge resulting from new development:

> Section 102, Purpose
>
> It is the purpose of the Stormwater Management Rule to reduce the adverse effects of stormwater runoff, and to:
>
> (d) Provide for the permitting of stormwater discharges in a manner to assure compliance with the Vermont Water Quality Standards and 10 V.S.A. § 1264, and to maintain after development, as nearly as possible, the predevelopment runoff characteristics;
>
> Section 104, Policy
>
> The primary goals for management of stormwater runoff will be to assure compliance with the Vermont Water Quality Standards and to maintain after development, as nearly as possible, the predevelopment runoff characteristics, or in the case of redevelopment, pre-redevelopment characteristics.

Section 102(e) states the goal of reducing stormwater discharge by reducing impervious surface area or by requiring treatment to reduce volume at redevelopment sites using specific benchmarks:

> (e) Require for redevelopment that, either the existing impervious surface shall be reduced by 20% or, a stormwater treatment practice shall be designed to capture and treat 20% of the water quality volume from the existing impervious area.

B. Rhode Island

Rhode Island Department of Environmental Management Rule 7.01, Section B, contained in *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act*, includes several provisions related to stormwater discharge which address activities that affect the quantity of stormwater runoff adjacent to wetlands.

> B. In addition to those projects or activities proposed either partially or wholly within freshwater wetlands, projects or activities taking place outside of

> freshwater wetlands which in all likelihood, due to their close proximity to wetlands or due to the size or nature of the project or activity will result in an alteration of the natural character of any freshwater wetland, require a permit from the Director. Such projects generally include those which:
> 1) Result in a change to the normal surface run-off characteristics which increases the rate and/or volume of water flowing into, or draining or diverting water away from, freshwater wetlands by such activities as:
> (a) Creating or significantly increasing impervious areas;
> (c) Diversion of and concentration of surface run-off through swales, ditches, grading, drainage systems and other surface run-off conveyance systems to or away from freshwater wetlands; and/or
> 2) Result in diversion of groundwater into or away from freshwater wetlands by:
> (a) Installation of subdrains which will lower groundwater elevations supplying freshwater wetlands or increase flow into wetlands

C. Massachusetts

The *Massachusetts Stormwater Management Policy*, released by the Executive Office of Environmental Affairs, Department of Environmental Protection, outlines nine Stormwater Management Standards in a policy statement. Stormwater Management Standard #2 addresses pre- and post- construction stormwater discharge rates:

> Stormwater Management Standards
>
> 2. Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

D. New Jersey

Chapter 7A of the New Jersey Freshwater Wetlands Protection Act Rules contains specific requirements for pre- and post- development stormwater runoff levels, including measured evidence that post-development stormwater runoff is 100% of pre-development runoff:

> 7:8-5.3 Nonstructural stormwater management strategies
>
> b. Nonstructural stormwater management strategies incorporated into site design shall:
>
> 4. Minimize the decrease in the "time of concentration" from pre-construction to postconstruction. "Time of Concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed;
>
> 7:8-5.4 Erosion control, groundwater recharge and runoff quantity standards

2. The minimum design and performance standards for groundwater recharge are as follows:

i. The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at N.J.A.C. 7:8-5.6, either:

1. Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual preconstruction groundwater recharge volume for the site; or

2. Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the two-year storm is infiltrated.

3. In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at N.J.A.C. 7:8-5.6, complete one of the following:

i. Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the two, 10, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;

ii. Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site for the two, 10, and 100-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area;

iii. Design stormwater management measures so that the post construction peak runoff rates for the two, 10 and 100-year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates. The percentages apply only to the postconstruction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed.

Conclusion

The New Hampshire Estuaries Project compiled this report to provide the New Hampshire Department of Environmental Services with stormwater management policy alternatives and recommendations to consider during the revision of Env-Ws 415. As this review of rules within neighboring New England states and other cold-climate states demonstrates, several opportunities exist to revise Env-Ws 415 and affect significant positive changes to the location, quantity, and quality of stormwater discharge in the coastal watershed, as well as the state as a whole. It is the hope and intention of the NHEP that this report will be a useful reference for the committee charged with the responsibility of updating Env-Ws 415.

The NHEP continues to maintain an interest in these policy revisions and welcomes opportunities to participate in the review process itself.

References Cited

Code of Maine Rules on Stormwater Management, Chapter 500
http://www.state.me.us/dep/blwq/docstand/stormwater/group.htm

Massachusetts Stormwater Management Policy
http://www.state.ma.us/dep/brp/stormwtr/files/2103ch.pdf

New Jersey Freshwater Wetlands Protection Act Rules
http://www.nj.gov/dep/rules/adoptions/2004_0202_watershed.pdf

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Viewed on 3/24/04.

Vermont Stormwater Management Rule (Draft)
http://www.anr.state.vt.us/dec/waterq/Stormwater/Stormwaterrules.pdf

Appendix A: BMP References

In discussions to determine how NHEP staff could assist NH DES with preparing for the revision of Env-Ws 415, DES staff requested citations to support performance capabilities of various stormwater Best Management Practices (BMP). Below are two sets of references. The first section is a summary of comprehensive references frequently cited within several BMP manuals. The second section is a compilation of references cited within the BMP manuals of several New England and other cold-climate states.

I. Comprehensive References

The Practice of Watershed Protection: Techniques for protecting our nation's streams, lakes, rivers and estuaries. Center for Watershed Protection (2000).

This publication includes articles on the performance and background of various stormwater treatment practices, including wet and dry ponds, stormwater wetlands, infiltration, sand filters, grassed swales, and other practices.

International Stormwater Best Management Practices Database
http://www.bmpdatabase.org/index.htm

This database provides access to BMP performance data in a standardized format for roughly 200 BMP studies conducted over the past fifteen years. The database may be searched and/or downloaded on this Web site, and is also available on CD-ROM. Additional BMP studies are currently being prepared for the database. The database was developed by the Urban Water Resources Research Council (UWRRC) of ASCE under a cooperative agreement with the U.S. Environmental Protection Agency.

II. References Cited in State BMP Manuals

This section lists references and studies cited in Best Management Practices manuals from Maine, Vermont, Massachusetts, New Jersey, and Maryland.

A. Maine: Cited from *Maine Erosion and Sediment Control BMPs*.
http://www.maine.gov/dep/blwq/docstand/escbmps/

"Best Management Practices for Forestry: Protecting Water Quality", Maine Forest Service, 2003.

Connecticut Guidelines for Soil Erosion and Sediment Control, Council on Soil and Water Conservation, Room 239, State Office Bldg., 165 Capitol Avenue, Hartford CT 06106, Phone: (203) 566-7234.

Erosion Draw, 3.0, Erosion Control Standards and Construction Drawings, Salix-Applied Earthcare, 3141 Bechelli Lane, Redding, CA 96002, Phone: (530)224-0878.

"Field Manual on Sediment and Erosion Control Best Management Practices for Contractors and Inspectors" by Jerald S. Fifield, Forester Press, 2001.

"Linking Stormwater BMP Designs and Performance to Receiving Water Impact Mitigation," ASCE, 1801 Alexander Bell Drive, Reston, VA 20191-4400.

"Rhode Island Erosion and Sediment Control Handbook", Rhode Island State Conservation Committee, 9 Hayes Street, Providence, RI 02908, Phone: (401) 277-3162.

Virginia Erosion and Sediment Control Handbook, Division of Soil and Water Conservation, Virginia Dept. of Conservation & Historic Resources, 203 Governor St., Suite 206, Richmond, VA 23219, Phone: (804) 786-2064.

B. Vermont: Cited from *Vermont Handbook for Erosion Prevention and Sediment Control*. http://www.vtwaterquality.org/stormwater/htm/sw_erosionhandbk.htm

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