

**New Hampshire House Bill 1295
Chapter 71 Laws of 2008
Stormwater Study Commission**

**Final Report
November 2010**

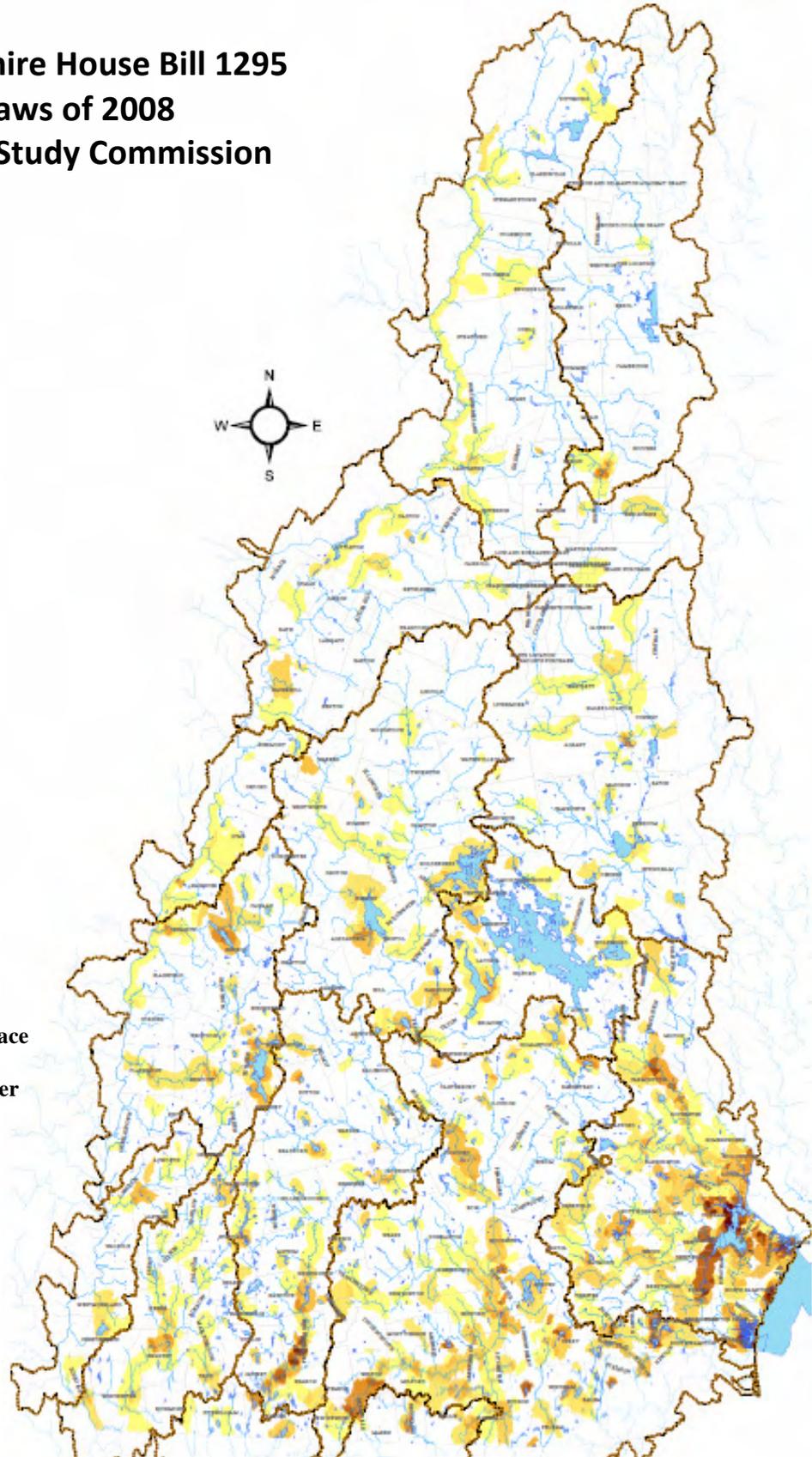


Figure 1. 2010 surface water impairments related to stormwater with 1-mile buffer (NHDES, 2010).

Table of Contents

List of Acronyms.....	3
Report Authorization	4
Commission Membership.....	4
Executive Summary.....	5
General Findings	7
Overview	8
THE STORMWATER PROBLEM	8
THE COST OF STORMWATER MANAGEMENT.....	10
THE ECONOMICS OF LOW IMPACT DEVELOPMENT	12
Recommendations	14
1. DEFINE THE TERM “STORMWATER” IN STATE LAW	15
Recommendation	15
Proposed Legislation.....	15
Discussion	15
2. PROPERTY OWNER’S RESPONSIBILITY FOR STORMWATER	16
Recommendation	16
Proposed Legislation.....	16
Discussion	17
3. STATEWIDE STORMWATER UTILITY PROGRAM.....	18
Recommendation	18
Proposed Legislation.....	18
Discussion	19
a. STATEWIDE STORMWATER DISCHARGE PERMIT.....	29
Recommendation.....	29
Proposed Legislation.....	29
Discussion.....	29
4. MUNICIPAL AUTHORITY TO REGULATE STORMWATER.....	31
Recommendation	31
Proposed Legislation.....	31
Discussion	32
Recommended Future Work	38
References	39

List of Acronyms

ACECNH – American Council of Engineering Companies in New Hampshire
AoT – Alteration of Terrain
BIA – Business and Industry Association
BMP – Best management practices
CWP – Center for Watershed Protection
CWNS – 2008 EPA Clean Watersheds Needs Survey
DES – New Hampshire Department of Environmental Services
DOT – New Hampshire Department of Transportation
EPA – U.S. Environmental Protection Agency
ERU – Equivalent Residential Unit
GIS – Geographical Information System
HB – House Bill
HUC – USGS Hydrologic Unit Code for watersheds
F&G – New Hampshire Fish and Game Department
LiDAR – Light Detection and Ranging
LID – Low impact development
MS4 – Municipal Separate Storm Sewer System
NHARPC – New Hampshire Association of Regional Planning Commissions
NHDES – New Hampshire Department of Environmental Services
NHDOT – New Hampshire Department of Transportation
NHLA – New Hampshire Lakes Association
NHLGC – New Hampshire Local Government Center
NHRC – New Hampshire Rivers Council
NPDES – National Pollutant Discharge Elimination System
OEP – New Hampshire Office of Energy and Planning
PREP – Piscataqua Region Estuaries Partnership
RDA – Residual Designation Authority
SMF – Stormwater Mitigation Fund
SWA – Southeast Watershed Alliance
UNHSC – University of New Hampshire Stormwater Center
USGS – United States Geological Survey

Report Authorization

New Hampshire House Bill 1295, Chapter 71, Laws of 2008, established this commission to study the issues relating to stormwater including:

- a. The effect of stormwater and stormwater management on water quality, water supply and quantity, terrestrial and aquatic habitat, flooding, and drought hazards;
- b. The relationship between land use change and stormwater;
- c. The relationships among and adequacy of federal, state, and local regulations and practices that pertain to stormwater management;
- d. State and municipal infrastructure construction and maintenance practices;
- e. The role of design, construction, and maintenance practices by residential, commercial, and industrial property owners; and,
- f. The effects of climate change on stormwater and stormwater management.

Commission Membership

David Cedarholm, Chair	New Hampshire Public Works Association
Judith Spang, Vice Chair	New Hampshire House of Representatives, Chair, Resources, Recreation and Development Committee
David Borden	New Hampshire House of Representatives
Jacalyn Cilley	New Hampshire Senate
Eber Currier	New Hampshire Farm Bureau
Paul Currier	New Hampshire Department of Environmental Services
Dave Danielson	New Hampshire Association of Regional Planning Commissions
Chris Devine	New Hampshire Local Government Center
Karen Ebel	The Nature Conservancy
Mark Hemmerlein (replacing Charlie Hood)	New Hampshire Department of Transportation
Steve Kahl	New Hampshire Lakes Association
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Amy Manzelli	Business and Industry Association
Josh Cline (replacing Carl Paulsen)	New Hampshire Rivers Council
Joe Robertie	New Hampshire Timberland Owners Association
Robert Roseen	University of New Hampshire Stormwater Center
Dari Sassan	Office of Energy and Planning
Donald H. Sienkiewicz	Home Builders & Remodelers Association of New Hampshire
L. Mike Kappler (replacing Eric Stohl)	New Hampshire House of Representatives
Michael Trainque	American Council of Engineering Companies in New Hampshire

Executive Summary

Stormwater is water from precipitation, either rainfall or snowmelt, that runs over the land surface and does not soak into the ground. Across the country, stormwater is recognized by the U.S. EPA and state environmental departments as one of the leading causes of water pollution. New Hampshire House Bill 1295, Chapter 71, Laws of 2008 (Appendix A), established this Commission to study the issues relating to stormwater including the effect of stormwater and stormwater management on water quality, water supply and quantity, terrestrial and aquatic habitat, flooding, and drought hazards; the relationship between land use change and stormwater; the relationships among and adequacy of federal, state, and local regulations and practices that pertain to stormwater management; state and municipal infrastructure construction and maintenance practices; the role of design, construction, and maintenance practices by residential, commercial, and industrial property owners; and, the effects of climate change on stormwater and stormwater management.

To address the duties of the Commission, the first year of work was dedicated to information gathering. The Commission invited presentations from experts in the fields of stormwater, climate change, permitting, wildlife and others areas. Interim reports, meeting minutes, and presentations, are included in Appendices G, H, and I. As a result of the presentations and discussion, the Commission established three subcommittees: Stormwater Needs (“Needs”), Regulatory Authority (“Regulatory”), and Funding. The Stormwater Needs Subcommittee compiled a list of pertinent findings from the Commission’s first year of work, including “needs” for improved stormwater management. This compilation was the basis for the other two subcommittees’ work. The Regulatory Subcommittee identified existing federal, state, and local regulations related to stormwater and drafted recommendations for amended or new legislation, as necessary, to address the stormwater needs compiled by the Needs Subcommittee. The Funding Subcommittee then estimated the cost of meeting the needs compiled by the Needs Subcommittee as well as the cost of implementing amended or new legislation recommended by the Regulatory Subcommittee. Details regarding each subcommittee’s responsibilities, membership, and work products are included in Appendices B, C, and D.

Through its work, the Commission found that stormwater is recognized as one of the leading causes of water pollution in the United States. In New Hampshire, stormwater has been identified as contributing to over 80% of the surface water quality impairments in the state (NHDES, 305(b) Surface Water Quality Report, 2008). Imperviousness and other land use development has contributed to stormwater runoff which has increased the frequency and magnitude of flooding in the last five years, resulting in tragic loss of life and millions of dollars of damage to our road and highway systems, private residences and business properties (New Hampshire Climate Change Action Plan, 2009). The capital costs to properly manage stormwater in New Hampshire are estimated to be over \$182 million (NHDES Extrapolated Stormwater Costs from the

2008 Clean Water Needs Survey (Appendix D3). Commission members and stormwater professionals generally agreed that this estimate is low, and the true cost of stormwater management in the state could very likely be significantly more, perhaps approaching a billion dollars.

While the monetary cost of managing stormwater is high, the potential cost of inaction is even higher. Without new programs, new revenue sources, and a significant shift of thinking, the state will likely experience even more extensive flooding and degradation of water resources. Further, inaction would make New Hampshire susceptible to increased federal regulations from the U.S. Environmental Protection Agency under the Clean Water Act "Residual Designation Authority". The EPA is currently considering expanding the definition of small municipal separate storm sewer systems (MS4s) under the federal stormwater program to include communities with excessive imperviousness and/or impaired water bodies. This change would effectively include the communities most responsible for the statewide negative impacts of stormwater by putting them under federal jurisdiction and require compliance with the Clean Water Act.

To address these findings, the Commission carefully developed the recommendations contained within this report. The Commission feels that not only do these recommendation address the stormwater-related issues identified through its work, but that they also address many of the issues of other legislative study Commissions, including the Sustainable Infrastructure Funding Commission, Land Use Commission and the Groundwater Commission. For example, one of the Commission's recommendations is to establish stormwater utilities. Stormwater utilities can assess and collect fees from property owners based on the costs to manage stormwater to mitigate effects on surface waters. This is typically determined by the percent impervious cover of a lot. Such fees would serve to address the funding needs identified by the Infrastructure Commission. In addition, incentive programs established through a utility should help to reduce stormwater runoff and associated pollution due imperviousness. This would increase groundwater infiltration and recharge, a desirable result as identified by the Groundwater Commission. Improved land development practices leading to less imperviousness and less stormwater would protect wetlands, supporting recommendations of the Land Use Commission. Further discussion of these recommendations is included in the Recommendations section of this report.

The recommendations of the Commission are summarized below:

1. Amend State law to define the term "stormwater".
2. Amend State law to clarify that all property owners are responsible for stormwater originating from their property. Create statutory definitions that will provide the underpinning for local and statewide stormwater management based on property owner responsibility.
3. Amend State law to create a statewide, watershed-based, stormwater utility program with local options that could be phased in over a period of years.

- Amend the existing language in RSA 149-I about municipal stormwater utilities to be consistent with and complementary to the statewide utility concept.
- 3a. If the recommendation of creating a statewide stormwater utility program is not implemented, amend State law to create a statewide stormwater discharge permit system administered by NHDES.
 4. Amend State law to clearly enable and require municipalities to regulate stormwater within their boundaries.

General Findings

The Commission reports the following general findings:

- Stormwater resulting from land development practices, primarily excessive imperviousness, increase the severity of flooding, enhances the potential impact of climate change-induced flooding, and may increase the severity of droughts because of a lack of groundwater recharge to sustain stream flow and provide groundwater for users during droughts.
- There is a significant need for watershed-level stormwater management planning and implementation. Existing political boundaries and the division of Regional Planning Commission territories typically cross watershed boundaries. This hinders successful watershed approaches to stormwater management.
- Regulatory gaps reduce the efficiency and effectiveness of state and federal permitting activities primarily because they are limited to large scale developments (i.e., the federal construction general permit threshold is 1 acre of disturbance, the state alteration of terrain permit threshold is 100,000 square feet (about 2.5 acres) or 50,000 square feet in the protected shoreland). Further, new development or redevelopment projects do not address the problems caused by existing land uses.
- There is a significant lack of uniformity in the regulation of stormwater at the municipal level that poses unnecessary challenges for developers and contractors. A statewide or standardized regulatory approach would solve this issue.
- Conventional stormwater management practices and programs are not fully protective of water quality.
- The NHDES 2008 Surface Water Quality Assessment reports that 83% of the surface water quality impairments in New Hampshire are primarily due to stormwater runoff.

- The cost of managing stormwater, including adequate infrastructure is not equally spread across system users, nor is it adequately funded through existing funding sources.
- There is a lack of incentives for “good” development to protect water quality and hydrology. Creating incentives would support technological advances and create new affordable markets for solutions such as pervious pavement.
- Implementation and enforcement of construction-phase and post-construction sediment and erosion control is inadequate.
- To protect surface waters not subject to the State’s Comprehensive Shoreland Protection Act, NH needs greater incentives for and encouragement of surface water/wetland buffer maintenance and restoration, and carefully placed performance-based BMPs at the edges of buffers.
- Local, statewide education and outreach is needed to help the public understand the direct relationship between an individual’s actions on their property, (i.e., application of fertilizers or pesticides, addition of impervious surfaces, or other activities) and the effect of those actions on water quality.

Overview

THE STORMWATER PROBLEM

In New Hampshire, NHDES has determined that stormwater contributes to over 80 percent of the water quality impairments in the state (NHDES, 305(b) Surface Water Quality Report, 2008) (Figure 1, see report cover page). Unlike pollution from industry or sewage treatment facilities, i.e., point source pollution, which is caused by discrete sources that are easily identified, stormwater pollution, is caused by development activities of people everywhere. The stormwater problem has frequently been described to the Commission as “death by 1,000 cuts” and because we all contribute to the problem, it is reasonable that the responsibility of managing stormwater should fall on everyone.

A forested landscape infiltrates most precipitation and snowmelt, and this infiltration process cleanses water before it becomes surface water. However, as a result of increased impervious surfaces in a watershed (e.g., rooftops, roads, parking lots, driveways, decks, patios, lawns) in a watershed, stormwater can become polluted or can create a greater volume and flow of runoff than nature was designed to handle. Numerous studies over the last 20 years show a correlation between impervious cover and water quality. Specifically, as impervious surfaces increase in a watershed, water quality declines (CWP, Impacts of Impervious Cover on Aquatic Habitat, 2003; USGS & NHDES, Effects of Urbanization on Stream Quality at Selected Sites in the Seacoast Region in New Hampshire, 2001-03, 2003; Morse and Kahl, 2003). This is because

impervious surfaces prevent stormwater from soaking into the ground. In a natural environment, rain or melting snow hits the ground surface and slowly infiltrates into and through the soil, recharging streams, rivers, and underground aquifers with naturally filtered water. In a developed landscape, rain strikes impervious surfaces and quickly washes over the land surface, picking up fertilizers, dirt, pesticides, oil and grease, and other pollutants before running off into surface waters. Left untreated, or inadequately treated, stormwater entering our rivers, lakes, and coastal waters and can cause water quality impairments.

The addition of impervious surfaces in a watershed is directly related to the growth and development of the landscape. When people move to a particular region, there are increased needs for housing, services, buildings, and infrastructure to get people from place to place. In New Hampshire's coastal watershed for example, between 1990 and 2005, 21,641 acres of impervious surfaces were added to the watershed (an average of 1,443 acres per year) (PREP, State of the Estuaries Report, 2009). In the same time period, the median imperviousness per capita in the watershed grew from 0.128 acres per person to 0.188 (PREP, State of the Estuaries Report, 2009). This means that land consumption per person in the coastal watershed is increasing and the rest of the state is likely following this trend.

In the next 20 years, New Hampshire is projected to add about 180,000 new residents. It is anticipated that the majority of this growth will be absorbed in the four southeastern counties on one third of the state's land base (NHOEP, Interim Population Growth Projections, 2010). When comparing these areas of projected growth with the existing impairments due to stormwater (Figure 1), it is clear that the region of the state where the greatest population growth is anticipated is also where the most stormwater-related impairments already exist. Without adequately addressing the existing stormwater problems across the state and preparing for growth through improved planning and improved stormwater management strategies, additional degradation of the state's water resources from stormwater pollution is inevitable.

The potential impacts of climate change compound the problems of increased imperviousness since imperviousness increases the severity of flooding, even without changes in precipitation patterns. According to the daily discharge data on the Lamprey River near Newmarket, New Hampshire, seven of the fifteen highest storm events since 1934 have occurred in the last 5 years. Throughout the state, these major flooding events have taken human life, threatened property, destroyed infrastructure, and cost taxpayers money; one event cost the state over \$35 million (New Hampshire Climate Change Action Plan, 2009). Research examining the impacts of climate change predict increases in rainfall depths of 28 – 60% and demonstrate that existing urban infrastructure (i.e., culverts) will be under-capacity by as much as 35% (Roseen, Stormwater Management, Community Resiliency, and Climate Change presentation, 2008 in Appendix I). In addition, we are likely to see more frequent large storm events with longer periods of drought. Outdated rainfall depth data, conventional land use and

development practices, and diminishing vegetated buffers around surface waters and wetlands increase the burden on our already aging and deteriorating stormwater infrastructure and make us more susceptible to the impacts of climate change.

THE SOLUTIONS

To adapt to these changes and to restore our water resources there must be a paradigm shift away from the conventional stormwater management and land development practices that have degraded our water resources. The solutions are not difficult—we just need to begin to change the way we develop and manage the landscape.

A comprehensive, watershed-based strategy that equally distributes the responsibility and cost of stormwater management across all users is essential to restoring and protecting the state's water resources. Such a watershed-based approach will also enable the State to provide for social and economic growth while still maintaining a healthy environment.

Without implementing better stormwater management, stormwater impaired watersheds in New Hampshire could be the next to see increased federal regulations from the U.S. Environmental Protection Agency. Under the Clean Water Act "Residual Designation Authority" (RDA) found in § 402(p)(2)(E) of the Clean Water Act, and 40 C.F.R. § 122.26(a)(9)(i)(C) and (D), EPA can require permits for new and existing stormwater discharges that contribute to a water quality violation or are a significant contributor of pollutants to waters of the United States. EPA Region 1 has not exercised this authority yet in New Hampshire, but since 2008 permits have been issued under RDA in watersheds in Maine, Massachusetts, and Vermont where existing programs were not adequately addressing stormwater.

THE COST OF STORMWATER MANAGEMENT

The Commission's Funding Subcommittee considered several sources of information as part of their evaluation of stormwater costs including, but not limited to: the U.S. EPA, the NHDES, the NHDOT, individual municipalities, and several quasi-public organizations. Unfortunately, there are no comprehensive sources of cost information and the cost estimates are wide ranging. Furthermore, the management techniques for stormwater are rapidly evolving making it even more difficult to make an accurate assessment of the true cost of the total stormwater needs. The cost data from several of the sources investigated by the Commission are presented below.

The EPA Clean Watersheds Needs Survey 2008 report to congress indicated that the total reported water quality needs for the nation were estimated to be over \$ 298 billion. The estimated costs related to Stormwater Management Programs were estimated to be \$ 42.3 billion or 14.2 % of the total. This includes \$ 7.6 billion for conveyance infrastructure; \$ 7.4 billion for treatment systems; \$ 17.4 billion for green

infrastructure; and \$ 9.9 billion for general stormwater management. The 2008 EPA report included a state-by-state breakdown of the estimated needs. The breakdown of the estimated costs for stormwater needs for the State of New Hampshire was as follows:

Conveyance Infrastructure:	\$ 51 million
Treatment Systems:	\$ 10 million
Green Infrastructure:	\$ 2 million
General SW Management:	<u>\$ 2 million</u>
Total:	\$ 65 million

The estimated costs included the costs to plan and implement structural and non-structural measures to control the runoff water resulting from precipitation in NPDES Phase I, Phase II, and non-traditional (e.g. universities, prisons, school districts) municipal separate storm sewer systems (MS4), as well as unregulated sources. It should be noted that these costs to address stormwater needs exist, at least in part, as a result of poor land use practices, excessive impervious surfaces, and the subsequent poor runoff management caused by development. An important goal of a NH stormwater management program will be to educate the public and development sector so that future development incorporates BMPs to address stormwater issues before they arise.

The NHDES has also compiled cost estimates based on current needs. The 2008 Clean Water Needs Survey compiled the costs related to stormwater management from various municipalities across the State. This included both MS4 communities, as well as non MS4 communities (Appendix D2). The total estimated cost based on that compilation was just over \$64.6 million.

More recently, Mr. Eric Williams of the NHDES compiled estimated costs, based on the 2008 CWNS, for several urbanized areas and urbanized clusters and then extrapolated this information to determine what the estimated cost would be for urbanized areas statewide. This analysis resulted in a total projected capital cost for stormwater needs statewide, including both urbanized areas and urbanized clusters, of just over \$182.6 million. A copy of this data is included in Appendix D3 of this report.

The NHDOT also provided cost data compiled from the stormwater controls and BMPs that are being incorporated into highway projects statewide. These costs were then extrapolated to a per acre cost. The per acre costs range from less than \$100/acre to over \$100,000/acre thus illustrating both the wide range in costs based on BMPs for specific applications and the difficulty in determining with any reasonable accuracy the total estimated costs of the needs. This is further compounded by the fact that new and innovative programs are needed to manage stormwater; a conclusion reached by this Commission and included in the recommendations in this report.

It is the consensus opinion of this Commission, based on our own evaluation of current stormwater needs, the requirements being imposed upon MS4 communities by the EPA under the Stormwater Phase II Rule, and the evolving nature of stormwater management in general, that the true costs of stormwater needs are significantly greater than those estimated in the 2008 CWNS and other sources, perhaps by as much as several orders of magnitude. The true costs to address stormwater needs in New Hampshire are likely to be in excess of \$ 500 million and could even approach \$ 1.0 billion or more.

THE ECONOMICS OF LOW IMPACT DEVELOPMENT

The economic advantages of Low Impact Development (LID) are often not well understood and are deserving of close attention to inform municipal land use decisions. Economic benefits are being realized through the incorporation of LID-based strategies by municipalities, commercial developers, and others. On a national level, substantive economic benefits for commercial development and municipal infrastructure projects – for both construction budgets and project life-cycle costs – are increasingly being observed when using a combination of conventional and green infrastructure for stormwater management.

While green infrastructure elements may add expense to a project, costs savings are often realized on an overall project basis as the need for conventional stormwater infrastructure such as curbing, catch-basins, piping, ponds, and other hydraulic controls are reduced. Cost savings are observed for projects consistent with new state and federal permitting requirements addressing volume and pollutant reduction. Other economic benefits include land development savings from a reduced amount of land disturbance required for a project, reduction in home cooling by 33 to 50 percent from use of natural vegetation and reduced pavement area (MacMullan, 2007), and higher property values of 12 to 16 percent. (Mohammed, 2006).

Two particular case studies in New Hampshire for commercial and residential development each had significant savings over the cost of permitting and construction of conventional designs.

Boulder Hills, is an LID condominium community in southern New Hampshire which features the State's first porous asphalt road. The site incorporated porous pavements and rooftop infiltration systems. The benefits of implementing this LID design included local permitting, cost savings and positive exposure for the developers. Although porous asphalt was more costly, cost savings in other areas were realized including less drainage piping, reduction of the quantity of erosion control measures, fewer catch basins, and the elimination of curbing, outlet control structures, and land dedicated to stormwater detention ponds. The LID option resulted in higher costs for roadway and driveway construction; however, it had an 11% reduction in the amount of land that was

disturbed. The LID option was calculated to save the developers 6% compared to a conventional design for the total stormwater management costs.

Greenland Meadows is a retail shopping center built in 2008 in coastal New Hampshire that features the largest porous asphalt installation in the Northeast. The development is located on a 56-acre parcel and includes a Lowe's Home Improvement, Target, and a future supermarket, paved parking areas consisting of porous asphalt and non-porous pavements, landscaping areas, a large constructed gravel wetland, as well as other advanced stormwater management methods. Despite many challenges, substantial savings of 26 percent of the cost for stormwater management was achieved in comparison with the original conventional design by the use of LID systems and the avoidance of some costly conventional strategies.

Additional low impact development case studies can be found in Appendix D5 of this report.

Recommendations

There are potentially significant costs for stormwater, even for just allowing aging and inadequate stormwater infrastructure to go unaddressed. A cost analysis would likely be a necessary component of implementing most of the recommendations in this report. To accurately weigh the costs and benefits of implementing a recommendation, a comparison to the true cost of “doing nothing” should also be evaluated.

While the Commission recognizes the broader implications of current economic conditions, it feels that the recommendations put forth in this report represent the necessary steps toward improving New Hampshire’s stormwater infrastructure and water quality statewide. While the Commission defers to the General Court to determine how and when these recommendations shall best be integrated with the State’s overall regulatory and economic landscape, these recommendations reflect the Commission’s views that prompt action is necessary for the health and safety of our State’s citizens and the quality of our natural environment upon so much of our economy depends.

In response to the findings, the Commission reports the following recommendations, proposed legislation, and discussion. Although these recommendations are complementary, each is a separate recommendation that could be implemented independent of the others.

It is important to note that in putting the proposed legislation into statute, it is not the intention to create an affirmative obligation, or liability, for property owners to prevent naturally occurring conditions, or to create a disincentive to maintain land for forestry or agriculture. For example, it would not be expected or desired for a riparian property owner to armor their riverfront that is slowly and naturally being eroded because the owner feared liability as a result of a legislative proposal. It is also not the intention to make property owners responsible for stormwater not originating on the property.

Further, prior to implementing such measures, analyses should be conducted not only in regards to the legality, but also to the overall benefit of new fees or regulations. From a legal standpoint, any recommended legislation must hold up to the protections of existing nonconforming uses as provided under RSA 674:19 and Part I, Articles II & XII of the New Hampshire Constitution.

1. DEFINE THE TERM “STORMWATER” IN STATE LAW

Recommendation

Add a definition of stormwater in State law to clarify that stormwater is not sewage or waste. Expand upon and make the stormwater definition consistent with the federal definition of 40 CFR 122.26(b)(13) “*Stormwater* means stormwater runoff, snow melt runoff, and surface runoff and drainage”.

Amend the definition of “other wastes” in RSA 485-A:2, VIII to clarify that “other wastes” does not include sewage, stormwater, or industrial wastes.

Proposed Legislation

The recommended definition of stormwater for New Hampshire law is as follows:

Amend RSA 485-A:2 by inserting after paragraph XI-a, the following new paragraph:

XI-b. “Stormwater” means water from precipitation that results, directly or indirectly, in stormwater runoff, snowmelt runoff, and surface runoff and drainage, together with debris, chemicals, sediment, or other substances that may be carried along with the water. Stormwater is not regulated as sewage, industrial waste, or other wastes.

To remove all ambiguity about the distinction between waste and stormwater, the definition of “other wastes” should also be amended as follows:

Amend RSA 485-A:2, VIII as follows:

VIII. “Other wastes” means garbage, municipal refuse, decayed wood, sawdust, shavings, bark, lime, ashes, offal, oil, tar, chemicals~~[-and other substances other than sewage, or industrial wastes]~~, and any ~~other~~ **waste** substance **which is** harmful to human, animal, fish or aquatic life, **other than sewage or industrial wastes**.

Discussion

RSA 485-A does not contain the word “stormwater”. It is ambiguous whether or not the statutory definition of “other wastes” includes stormwater. Therefore, it is also ambiguous whether or not a discharge of stormwater requires a state permit under RSA 485-A:13. RSA 485-A should be amended to define stormwater, and clarify that stormwater is not sewage or waste, and does not require a permit under existing law. The definition recommended here is also consistent with the federal definition contained in 40 CFR 122.26(b)(13): “*Stormwater* means stormwater runoff, snow

melt runoff, and surface runoff and drainage.” It also incorporates concepts from the definition of stormwater contained in the Innovative Land Use Handbook.

The Regulatory Subcommittee examined whether the term “runoff” was defined under federal or state law and if not, whether it should be. Several states define runoff or similar terms. Va. Code Ann. §10.1 – 560; Ark. C. A. § 15 – 23 – 501; Tex. Water Code Ann. §46.013, Sec. 3.01 (n). Courts considering the issue have confirmed that neither federal code nor federal regulations define the term. Those cases have defined runoff as either “merely another term for surface water” or “the flow of excess precipitation (such as rain or snow) into a stream.” See *Georgetown Square v. United States Fidelity and Guaranty Company*, 523 N.W. 2nd 380, 385-86 (1994); *State of Missouri v. The Army Corps of Engineers*, 526 F.Supp. 660, 678 (1980). Therefore, no definition of the term “runoff” is needed in New Hampshire statute because its plain meaning is obvious.

2. PROPERTY OWNER’S RESPONSIBILITY FOR STORMWATER

Recommendation

Include the concept in State statute that property owners are responsible for stormwater that originates on and discharges from their property and that such stormwater discharges shall not cause or contribute to a violation of water quality standards, including antidegradation. Create statutory definitions to support statewide stormwater management based on property owner responsibility. It is not the intention of this proposal to make property owners responsible for stormwater flowing over and discharging from their property that does not originate on their property.

Use the words “water quality standards” consistently in statute.

Proposed Legislation

To incorporate this into the statutes, RSA 485-A:12, which provides for enforcement of water quality standards, should be amended by inserting after paragraph II the following new paragraph:

II-a. The owner of property shall be responsible for stormwater originating on the property. Such stormwater shall not cause or contribute to a violation of water quality standards, including antidegradation.

New definitions for “developed property”, “impervious surface”, and related concepts are needed for the majority of recommendations included in this report,

specifically for either a stormwater utility or a stormwater permit legislative proposal. Definitions related to developed property would be consistent with terminology of the Comprehensive Shoreland Protection Act, and definitions related to impervious surface would be consistent with the terminology of the Alteration of Terrain rules. The following definitions should be added into the statute to which stormwater utility or stormwater permit provisions are added, to support either a statewide stormwater utility system or statewide stormwater permit system, as follows:

- i. "Developed property" means land that has been altered by the construction, installation, or other placement of one or more structure(s) or other impervious surfaces on or in the land, such that it no longer absorbs the same volume of stormwater that would have been absorbed had the property been left in an unaltered state.*
- ii. "Unaltered state" means unaltered state as defined in RSA 483-B:4. That statute defines the term as "native vegetation allowed to grow without cutting, limbing, trimming, pruning, mowing, or other similar activities except as needed to maintain the health of the plant being trimmed, as allowed by rules of the department."*
- iii. "Impervious surface" means impervious surface as defined in RSA 483-B:4. That statute defines the term as "any modified surface that cannot effectively absorb or infiltrate water. Examples of impervious surfaces include, but are not limited to, roofs, decks, patios, and paved, gravel, or crushed stone driveways, parking areas, and walkways unless designed to effectively absorb or infiltrate water."*
- iv. "Disconnected impervious surface" means impervious surface that does not contribute directly to stormwater runoff, but directs stormwater runoff to pervious areas to infiltrate into the soil or be filtered by overland flow, or an approved low impact development system, so that the net rate and volume of stormwater runoff from the disconnected impervious surface is not greater than the rate and volume from an equal area in an unaltered state. Disconnection can also be achieved by filtering stormwater by an approved LID system, even in circumstances where infiltration may not be desirable. This definition is adapted from Env-Wq 1500 Alteration of Terrain rules.*
- v. "Connected impervious surface" means impervious surface that is not disconnected.*

Discussion

The stormwater management concepts in the Commission's recommendations are based on the idea that property owners are responsible for the effects on the state's waters caused by stormwater emanating from their property. This concept is already in RSA 485-A:12 as well as the Surface Water Quality Regulations Env-Wq 1700:

“485-A:12 Enforcement of Classification. –

II. If, after adoption of a classification of any stream, lake, pond, or tidal water, or section of such water, including those classified by RSA 485-A:11, it is found that there is a source or sources of pollution which lower the quality of the waters in question below the minimum requirements of the classification so established, the person or persons responsible for the discharging of such pollution shall be required to abate such pollution within a time to be fixed by the department. If such pollution is of municipal or industrial origin, the time limit set by the department for such abatement shall be not less than 2 years nor more than 5 years. For good cause shown, the department may from time to time extend any time limit established under this paragraph. Any determination by the department under this paragraph shall be subject to appeal as provided for in RSA 485-A:19.

“Env-Wq 1701.02 Applicability.

(a) These rules shall apply to all surface waters.

(b) These rules shall apply to any person who causes point or nonpoint source discharge(s) of pollutants to surface waters, or who undertakes hydrologic modifications, such as dam construction or water withdrawals, or who undertakes any other activity that affects the beneficial uses or the level of water quality of surface waters.”

3. STATEWIDE STORMWATER UTILITY PROGRAM

Recommendation

Add Stormwater Management as a purpose for which Village Districts may be created.

Create a statewide stormwater utility program to 1) raise revenue for stormwater BMP construction and management and 2) create incentives, through the utility fee structure, for property owners to install and maintain stormwater BMPs. A detailed discussion explaining stormwater utilities is included in Appendix D4 of this report.

Proposed Legislation

Given the considerations discussed herein, the Commission recommends that future work include the development of specific legislative language for the creation of a statewide stormwater utility.

The Commission's Regulatory Subcommittee invested much time and effort in the development of the stormwater utility legislation concept draft contained in Appendix E1. However, it is only a concept draft and bears further consideration to assure that the language is as precise and accurate as possible, that it meets with the approval of NHDES, and that it is not inconsistent with other existing state or federal laws.

While the Commission endorses the statewide stormwater utility concept described in the Discussion section below, the Commission as a whole did not have sufficient time to review the language contained in the stormwater utility legislation concept draft and therefore does not endorse the specific language in Appendix E1.

Discussion

CONCEPT

The stormwater utility legislation concept draft language is based loosely on existing statutes, including RSA 149-I which enables formation of municipal stormwater utilities, and RSA 485-A:45-54, establishing the Winnepesaukee River Basin Program. The language is intended as a concept draft, and requires further work to be fully ready for the legislative process.

The Commission agrees that a statewide, watershed-based stormwater utility is the best way to achieve the successful implementation of stormwater management to meet water quality standards and to provide a consistent and dedicated revenue stream for a stormwater program to be viable and self-supporting. The current economic climate and lack of adequate funding from existing sources for water, wastewater, and stormwater programs in general leaves little or no funding available for stormwater management on both the State and local level. Any proposed stormwater programs are likely to fail without a source of funding outside of the State's general fund and any federal grants. For these reasons, legislative action is needed on a state level to enable, assist, and encourage communities at the local level, without which community adoption is unlikely.

Although the passage of RSA 149-I in 2008 enabled municipalities to create municipal stormwater utilities, none have yet been created. Some municipalities are studying the possibility of forming one. However, it appears that political and financial obstacles may hinder communities from forming a stormwater utility. Thus, additional legislation at the State level is needed. Moreover, a statewide approach would result in both more uniformity across the State and quicker actions to deal with escalating stormwater problems in developed areas. Although stormwater problems could be dealt with in a statewide stormwater permit system similar to the federal NPDES permit system, a strictly regulatory approach is likely to be more costly and less successful than a stormwater utility system.

The statewide stormwater utility would be designed to encourage creation of municipal or inter-municipal stormwater utilities, encourage participation by municipal stormwater utilities in a statewide program, and authorize regional, watershed-based utilities under state government in areas not served by municipal or inter-municipal utilities. The goal is to have the entire State of New Hampshire covered under a statewide stormwater utility or groups of individual municipal or regional utilities, after a phase in period. Individual municipalities would therefore have three options:

1. They could form their own stormwater utility. This could be a new municipal entity or a Village District. It would operate on its own, pursuant to RSA 149-I, the statute that enables municipalities to create wastewater and stormwater utilities.
2. Neighboring municipalities could band together to form an inter-municipal stormwater utility (RSA 149-I and RSA 53-A). The inter-municipal stormwater utility would be a new entity with the legal status of a municipality.
3. If a municipality does not opt for either its own stormwater utility or an inter-municipal stormwater utility by a set time, the default option would apply. The default would be that each municipality become part of a HUC-12 watershed-based stormwater utility, by operation of law. These default state watershed based stormwater utilities would be administered by NHDES and a local or regional watershed utility advisory board.

Option 1: Municipal Stormwater Utility with Incentives

The first option is for a municipality to develop and operate its own utility program. The utility would be developed based on guidance from DES. The funds generated by the utility would be held locally and used solely for the implementation of the program.

Incentives for reduction of impervious cover by property owners are an important element. One incentive for adoption at the municipal level is that funds generated locally will be retained by the community. For that reason, a greater amount of funds will be available to the municipality to fund efforts that, in many cases, are already underway, however funded by other sources (e.g. roads, water and wastewater). Other incentives include reductions in the fee could be offered for practices that reduce discharges and treat for water quality. These fee reductions will serve as an incentive to encourage more innovative and effective stormwater management practices. Incentives should include disconnection of impervious surfaces from storm sewers and other stormwater conveyance, reduction of impervious cover (e.g. pavement removal), installation of vegetated buffers, rain gardens, and other items. A full list would need to be developed.

Option 2: Inter-Municipal Stormwater Utility

This option would involve the establishment of an inter-municipal cooperative agreement, such as a village district, analogous to districts for wastewater management. It could also be developed as a component of a regional watershed entity such as the Southeast Watershed Alliance. Advantages of a watershed or inter-municipal approach are that it allows the flexibility of addressing stormwater management and contaminant loads where they can be most effective, and have the greatest economic benefit. There may be areas and activities within the watershed where improvements may have greater impact with respect to stormwater improvements and be less costly. Such examples include: reduction of nutrient loads through land use controls (ordinances, site plan review regulations, etc) and planning versus removal by wastewater treatment facilities; and preservation of undeveloped lands versus retrofitting existing development. Stormwater controls and contaminant reduction efforts alike would need to account equally for reduction with similar schedules for implementation.

An inter-municipal agreement would need to be structured such that any activities funded by a municipality that took place elsewhere in the watershed would be credited to all participants. This point is crucial and would need to be addressed at a federal permit level for MS4 communities and a state level for non-MS4 communities.

The dispensation and usage of fees generated would need to be determined. A portion could be held by the Utility to cover program administration, watershed-based retrofits, and other program related activities, and a portion could remain with the municipality to administer the stormwater utility program and other program related activities.

Option 3: State Administered Watershed Utility.

The third option is the default condition for all municipalities that do not chose option 1 (local utility) or 2 (regional utility). Option 3 is similar to Option 2, but administered by the state. A municipal-state agreement would need to be structured such that any activities funded by a municipality that took place elsewhere in the watershed would be credited towards MS4 or state permit compliance. This would need to be addressed at a federal permit level for MS4 communities and a state level for non-MS4 communities.

Fees generated would be distributed both to the state and municipality. The state would receive a portion of funds generated to cover program administration, watershed-based retrofits, to fund circuit riders, and other program related activities. The majority of funds generated would remain with the municipality to administer the stormwater utility program and other program related activities.

Following approval of legislation, municipalities would have 12 months to select one of the three options. At the end of 12 months, communities that had not decided to establish a municipal program or join a regional program would by default be placed into a state-administered utility.

Regardless of whether a municipality had its own utility, joined an inter-municipal utility, or defaulted into the state-wide utility, each utility would operate under the same performance criteria, to be specified in rules adopted by NHDES. Details of the stormwater utilities will have to be worked out, but should be flexible so as to allow for adaptation to different municipalities, different watersheds, and different circumstances and needs.

The new law should contain an “opt out” provision whereby a municipality could petition NHDES for an exemption from the stormwater utility requirement. The conditions for exemption should be prescribed in concept in the enabling legislation. NHDES should then promulgate by rule the particular conditions which would qualify a municipality for an exemption. The thrust of the exemption criteria should be that a community has little connected impervious surface, and therefore its impact to stormwater is negligible, or that a community has adopted effective land use and stormwater management regulations that accomplish the same purposes and meet the performance specifications for a stormwater utility. If a municipality is exempted because of little connected impervious surface, the municipality assumes the responsibility to advise NHDES if its circumstances change. In any event, NHDES would review municipal exemptions every ten years.

NHDES would develop and promulgate rules for administration and implementation, setting utility fees, for BMP designs, specifications, and maintenance standards, for acceptable methods for disconnection of impervious surface, and other aspects of stormwater utility operation needed to create statewide consistency.

WATERSHED-BASED UTILITY BOUNDARIES

State stormwater utilities should be created on a watershed basis, using level 12 of the Hydrologic Unit Codes (“HUC-12”). See Figure 2. Over 300 HUC-12 watersheds exist within NH boundaries. However, this does not mean that more than 300 watershed-based stormwater utilities would be created, for several reasons. First, some of the watersheds would be combined within one municipal utility because they would lie mostly within that municipality. Second, provision is made for inter-municipal utilities. An inter-municipal utility could combine several HUC-12 watersheds. Third, some HUC-12 watersheds have little or no developed property and provision has been made for these watersheds to be exempted from the stormwater utility requirement. Lastly, those municipalities that do not create or join a stormwater utility will be included by default in a state-wide utility, also watershed based, which may include several HUC-12 watersheds.

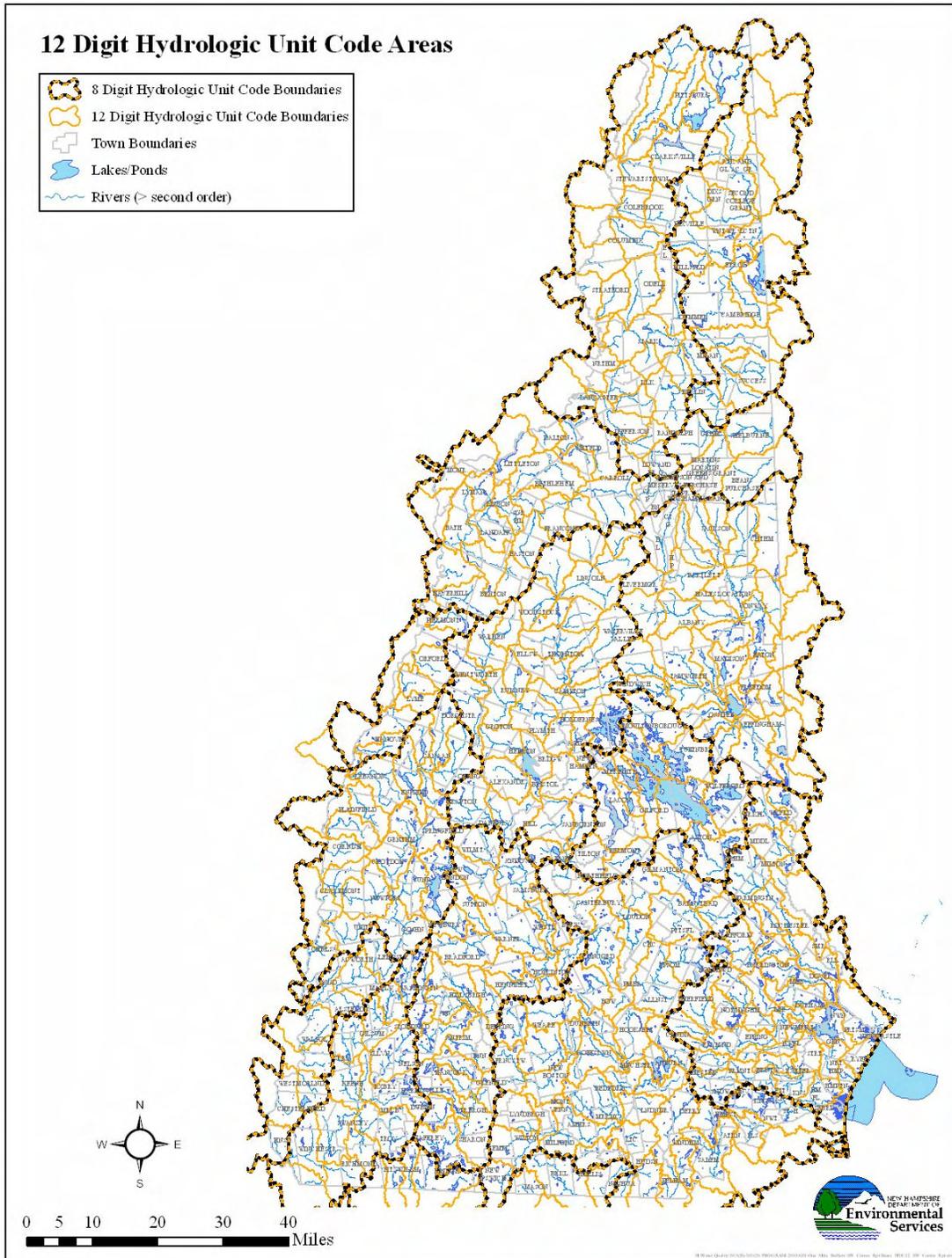


Figure 2. 12 Digit Hydrologic Unit Code Areas.

PHASING CONSIDERATIONS

The creation of stormwater utilities should be phased in over a period of years, beginning with the watersheds that have most stormwater impairments to surface waters, and areas that are subject to NPDES stormwater permit requirements. The 305(b) report is a biennial report that the State prepares which assesses the water quality of the State's waters. Based on the 2010 305(b) report, the HUC-12 watersheds with the most area tributary to impaired surface waters are located in the Coastal Watershed and the Lower Merrimack Watershed. See Figure 3.

Starting in the Coastal Watershed is ideal for several reasons. First, it has the most watershed area tributary to stormwater-impaired waters of any major drainage basin in the State. Second, several MS4 communities are located there. The NPDES permit(s) issued under the EPA Stormwater Phase II Rule for the MS4 defines the required program (specific actions) and provides the incentive for taking action. Third, the Coastal Watershed drains to the Great Bay estuary which has recently been reported as impaired for nitrogen pollution, and stormwater is a major source of nitrogen pollution. Fourth, the Southeast Watershed Alliance (SWA) has already been formed and would be an effective vehicle through which to organize utilities in the priority HUC-12 watersheds within the larger Coastal Watershed. The SWA was established by the legislature as a volunteer organization and currently consists of 28 of the 44 communities in the watershed. Utilities developed in this watershed could serve as models and could become the basis for setting up other stormwater utilities across the state, including the Statewide or State-administered Stormwater Utility.

Every other year, the 305(b) report is updated. Following each update, the 10 most stormwater-impaired HUC-12 watersheds which have not already come into a municipal or regional utility or the state-wide stormwater utility program should be required to do so. At that time, they would have the option to form their own utility, join an inter-municipal utility, or default into a state watershed-based utility.

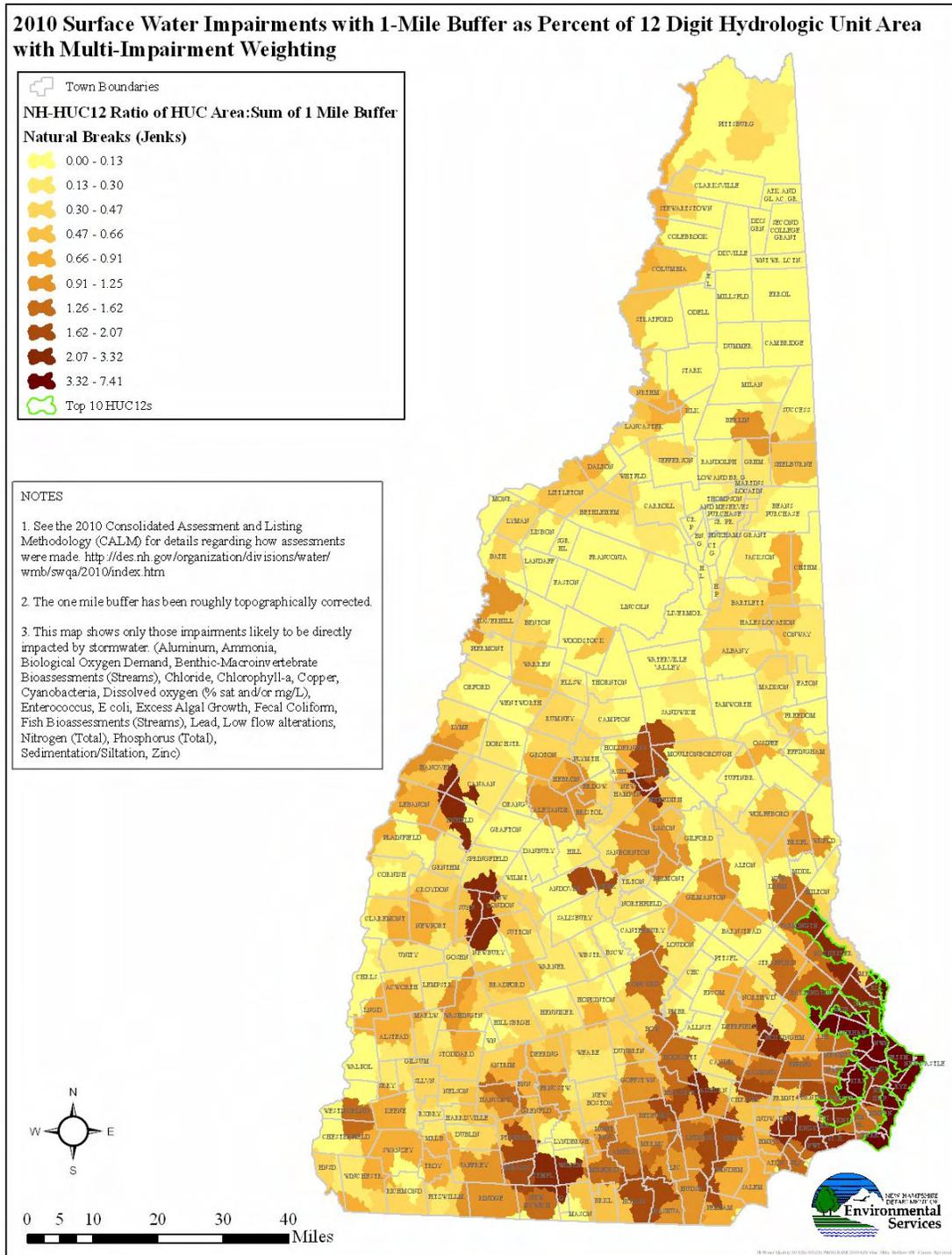


Figure 3. 12 Digit Hydrologic Unit Area with Multi-Impairment Weighting.

To create the HUC12 impairment weighting the area of each 1 mile buffer around each impaired AUID was multiplied by the number of impairments within that AUID. The sum of the weighted 1 mile buffers within a given HUC12 was then divided by the area of the HUC12 to create the HUC12 area normalized weighting.

UTILITY FEE

In the formative stage of a utility, a relatively minor fee would be charged to each developed property owner. After engineering estimates of the actual costs for stormwater management are completed, the fees would be adjusted to cover the actual expected costs. However, by implementing stormwater controls to disconnect impervious areas, property owners could qualify for abatement of the fee. The utility would have to specify the type of stormwater control that would qualify for abatement, and the amount of the abatement that would be available for each type of stormwater control.

Over time, the fee should be adjusted as the actual costs of constructing and operating stormwater controls in the watershed become better known. This will make the incentive for property owners to install stormwater controls increasingly attractive. At the same time, it would increase the revenue of the utility when: (1) the utility is more mature and, presumably, has developed a capacity to manage funds; and (2) the easier stormwater controls have been installed, leaving remaining need for more costly stormwater controls.

A utility fee would be collected from each developed property in municipality or a watershed, in proportion to the connected impervious surface on the property, or some similar metric. The fee would accomplish two main objectives: 1) finance the construction and management of stormwater BMPs; and 2) create incentives, through the utility fee structure, for property owners to install and maintain BMPs. The fee for developed properties with a high proportion of connected impervious surface and no BMPs would be high, and properties with a low proportion of connected impervious surface (maximum BMPs installed and maintained) would be assessed a low fee, or possibly no fee at all.

While it is not yet defined how imperviousness would be determined, the goal would be to assess the fee for all three program options using a standardized approach to quantifying the impervious cover that is contributing to stormwater runoff off-site, typically called “effective impervious cover” or “connected impervious cover”. One approach taken by municipalities that have implemented stormwater utilities is to establish an Equivalent Residential Unit (ERU) determined on the average impervious cover on a typical residential lot and combined with tax records. This is commonly about 1,400 - 2,500 sq. ft. per ERU. Residential properties are charged a single ERU and commercial properties a multiple of ERUs. Fees are recommended in the range of \$2-\$6 per ERU per month for residential properties which translates to a range of \$25-\$75 per month per acre of impervious area for commercial properties. Impervious cover assessment would be a component of routine municipal property assessment. This would be analogous to determination of square footage for tax records.

Revenues derived through a stormwater utility should be used to pay for administration of the utility, for operation and maintenance costs for municipally-owned BMPs, and to pay capital costs for utility expenditures that are specifically related to stormwater activities. A grant program could be established by the utility to assist property owners with installation of BMPs.

Undeveloped properties that do not constitute “developed property” pursuant to the recommended definition would not be subject to a utility fee. It is expected that forest lands and many agricultural lands would be in this category.

STORMWATER MITIGATION FUND

A State-administered fund would be developed from an impact fee on new and redevelopment projects greater than 10,000 square feet which do not meet state requirements. The SMF would be structure in part, similar to the Aquatic Resource Mitigation fund (RSA 482-A:28 to 33) administered by the NHDES. The SMF could be used to support a circuit rider program, targeted stormwater management improvements, a grant program, and other program related activities.

The SMF should include incentives for developers to promote LID land use planning and development. The SMF would reinforce the connection between stormwater, land use, impervious coverage, and impacts. Incentives would have a fee structure based on percent impervious cover (IC) for both new and redevelopment.

This will benefit developers using environmentally sensitive development by reducing and or eliminating fees. New development fee structure could be based on DES anti-degradation undisturbed cover and impervious cover ratios (65:10).

Redevelopment opportunities are tremendous due to high degrees of imperviousness and fee structure would need to differ from new development. Level and duration of abatement would be based on degree of impervious cover reduction. Redevelopment may present a wide range of constraints and limitations. An evaluation of options may be needed to work in conjunction with broader state watershed goals. Stormwater requirements for redevelopment should vary based upon the surface area of the site that is covered by existing impervious surfaces. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated.

For redevelopment projects with less than 40% existing impervious surface coverage, the stormwater management requirements should be the same as other new development projects with the important distinction that the project can meet those requirements either on-site or at an approved off-site location within the same subwatershed provided the project satisfactorily demonstrates that

impervious area reduction and LID strategies and BMPs have been implemented on-site to the maximum extent practicable¹.

For redevelopment sites with more than 40% existing impervious surface coverage, stormwater should be managed for water quality in accordance with one or more of the following techniques, listed in order of preference:

1. Implement measures onsite that result in an effective impervious cover of at least 30% of the existing impervious surfaces and pavement areas, and 50% of the additional proposed impervious surfaces and pavement areas through the application of porous media; or
2. Implement other LID techniques onsite to the maximum extent practical to provide treatment for at least 50% of the redevelopment area; or
3. Implement off-site BMPs to provide adequate water quality treatment for an area equal to or greater than 50% of redevelopment areas may be used to meet these requirements provided that the project satisfactorily demonstrates that impervious area reduction, LID strategies, and/or onsite BMPs have been implemented to the maximum extent practical. An approved off-site location must be identified, the specific management measures identified, and an implementation schedule developed. The project must also demonstrate that there is no downstream drainage or flooding impacts as a result of not providing on-site management for large storm events.

The fee would be collected locally but is distributed as a component to the State (75%) and component that the municipality (25%), similar to vehicle licensing.

REVISIONS TO RSA 149-I

The existing language in RSA 149-I relative to municipal stormwater utilities should be replaced or significantly revised since it does not adequately address all of the requirements pertaining to stormwater utilities. Revisions should also be made to be consistent with and complementary to the statewide utility concept. The Commission was unable to develop particular recommendations in the time available. The Commission recommends that any legislation establishing statewide stormwater utilities would respect and support any municipal stormwater utilities that had been created previously.

¹ The approach for managing redevelopment originated from the 2010 Rhode Island Stormwater Design and Installation Standards Manual, and the 2010 Subdivision Regulations of Durham, New Hampshire.

3A. STATEWIDE STORMWATER DISCHARGE PERMIT

Recommendation

In the absence of a statewide stormwater utility, create a fee-based statewide stormwater discharge permit at NHDES for all developed properties in the state. Because of administrative complication, this is not the Commission's preferred option, and is offered here only as a back-up in the event that legislation creating stormwater utilities is not forthcoming.

Proposed Legislation

Legislative language can be developed for future consideration if the legislature determines not to propose the stormwater utility concept presented in Recommendation 3 above. One option would be to create a stormwater permit program similar to the provisions of the permit program for sewage or waste found in RSA 485-A: 13.

Discussion

The Commission has a consensus opinion that funding by means of stormwater utilities, rather than strict regulation (i.e., a statewide permit) is the preferred approach to implementing stormwater management plans as the utility provides a consistent, dedicated source of funding as well as incentives and flexibility.

In absence of a statewide stormwater utility, the Commission recommends a statewide stormwater permit program to address the environmental goals of a stormwater program and raise revenue to meet these goals. Permits would be required for all developed property in the state through permit-by-rule or general permits, which could potentially be issued to every property owner, including private, municipal, state, and federal property, in the state. General permits would be created and phased in by watershed to address the individual concerns and characteristics of each watershed. As with a utility, a phased approach is recommended beginning in the most severely impaired watersheds.

A statewide permit program would establish statewide requirements for mitigating potential adverse impacts to water quality from stormwater and implementation of BMPs to control stormwater from developed areas. These requirements could be met through a local program enacted by towns such as site plan and zoning regulations, stormwater ordinances, low impact development ordinances and similar measures. If the town failed to act, the town would be subject to statewide requirements.

The Commission recommends the statewide stormwater utility option over the statewide stormwater discharge permit option because it is incentives-based and has greater flexibility with respect to fee reduction and environmental protection. In addition, a utility is capable of applying for and receiving federal funds. A permit fee would be the funding mechanism for the stormwater water discharge permit system. The Commission acknowledges that its recommendation that the stormwater discharge permit system be funded through permit fees may cause such a proposal to be inexpedient to legislate. However, the Commission has recommended the fee because the permit option will necessitate adding new positions at the Department of Environmental Services which will require funding outside of the State's general fund.

There are several potential drawbacks to a statewide permit program. The first is the scale of the effort needed to assess imperviousness on properties statewide. For example, who will do this assessment, and who will be responsible for responding to landowners who implement BMPs to reduce their fee? The second is the logistical problem of, and compliance with, collection of a fee that would presumably be done by the NHDES or a statewide agency to be determined. At the local or even county level, such a fee could be collected as part of property billing. At the state level, it is unclear how the fee would be collected. Third, the NHDES would presumably establish a new program to administer the fees collected and to allocate fees to priority remediation projects. Such centralization probably makes sense for efficiency, but may make the program unpopular compared to one run at a more local scale. In New Hampshire, the municipalities typically are averse to state or federally imposed requirements and programs and generally prefer to have the flexibility and autonomy of local control to meet regulatory requirements.

Non-compliance with a permit program allows for punitive action; however, this is viewed as a disincentive since property owners would only do the bare minimum necessary to comply with permit requirements and it could stifle innovative and creative approaches to stormwater management. It would be necessary to balance punitive measures with meaningful incentives.

One of the most significant hurdles that would have to be overcome for a statewide permit program is the source of resources (especially money) to implement and then administer the program on an ongoing basis.

Because of the magnitude and logistics of implementing a program that applies statewide, it is likely that a phased approach to implementation would be necessary. There are several options for such phasing:

- 1) A stormwater permit system could be initially targeted at watersheds with most significantly impaired waters. However, this would not be consistent

with antidegradation goals because higher quality waters would not be protected until the phased implementation applied to them.

- 2) The permit system could apply first to larger properties, for example those covered under AoT rules. However, studies in New England have shown that the impacts from individual shoreline house lots can be substantial.
- 3) The Commission does not support a different fee based on whether the waterbody is on the impaired waters list. Higher fees in one part of the State compared to others will result in public resistance based on perceived unfairness.

4. MUNICIPAL AUTHORITY TO REGULATE STORMWATER

Recommendation

Clearly enable municipalities to regulate stormwater within their boundaries, including operation and maintenance aspects not currently covered in enabling legislation for municipal land use planning and regulation. This would be independent of, and complementary to, municipal stormwater utilities. NHDES should be tasked to develop stormwater control regulations incorporating statewide uniform minimum performance standards for municipal adoption within 18 months.

Proposed Legislation

Given the considerations discussed herein, the Commission recommends that future work include the development of specific legislative language to more clearly enable municipalities to regulate stormwater.

The Commission's Regulatory Subcommittee invested much time and effort in the development of the municipal authority to regulate stormwater legislation concept draft contained in Appendix E2. However, it is only a concept draft and bears further consideration to assure that the language is as precise and accurate as possible, that it fully accomplishes the goal of providing a common basis for municipal stormwater regulation, and that it is not inconsistent with other existing state or federal laws.

While the Commission endorses the municipal authority to regulate stormwater concept described in the Discussion section below, the Commission as a whole did not have sufficient time to review the language contained in the municipal authority to regulate stormwater legislation concept draft and therefore does not endorse the specific language in Appendix E2. The Commission realizes that this language does not fully accomplish the goal of uniform, statewide performance specifications for municipal stormwater ordinances, but it can be a basis for further work.

Discussion

The Commission investigated municipal authority to regulate stormwater under existing State law. The Commission identified possible sources of such municipal authority, with the assistance of a memo from Eric Williams (N.H. Dept. of Environmental Services) dated January 30, 2009, titled "Questions Regarding Legal Authority to Regulate Stormwater in New Hampshire" (Appendix C3). The Commission also consulted a July 1, 2008 interdepartmental communication from Richard Head, Associate Attorney General at the Department of Justice to Michael J. Walls, Assistant Commissioner at the Department of Environmental Services regarding stormwater discharges and transfers of surface waters (Appendix C4).

The 2003 NPDES small MS4 General Permit issued for New Hampshire by EPA Region I, and its successor 2010 draft permit, presumes that municipalities have the power to regulate stormwater, or at least stormwater that is conveyed by municipally-owned infrastructure.

The Regulatory Subcommittee identified the following statutes which it has been asserted enable municipalities to regulate stormwater:

- "Towns may make bylaws for . . . [t]he collection, removal and destruction of garbage, snow and other waste materials" RSA 31:39, I(f);
- "In municipalities where the sewage or stormwater is pumped or treated, the mayor and aldermen may adopt such ordinances and bylaws relating to the system, pumping station, treatment plant or other appurtenant structure as are required for proper maintenance and operation and to promote the objectives of the sewage system or stormwater utility" RSA 149-I:6;
- "It is hereby declared . . . that the department shall, in the administration and enforcement of this chapter, strive to provide that all sources of pollution within the state shall be abated within such times and to such degrees as shall be required to satisfy the provisions of state law or applicable federal law, whichever is more stringent. . . [T]he department shall adhere to the following policies: [first, install primary treatment for all discharges of sewage and industrial wastes; second, install secondary treatment whenever necessary to protect the uses assigned to the particular stream classification; third, "after all stream classification requirements throughout the state have been satisfied, . . . continue the program of pollution abatement by installing other forms of treatment desirable to maintain all surface waters of the state in as clean a condition as possible, consistent with available assistance funds and technological developments" RSA 485-A:3, I-III;

- “zoning ordinances shall be designed . . . to assure proper use of natural resources and other public requirements” RSA 674:17, I(h);
- “Innovative land use controls may include . . . Environmental characteristics zoning” RSA 674:21, I(j);
- “A municipality may . . . authorize the planning board to require preliminary review of subdivisions . . . and the manner in which streets within such subdivision shall be graded and improved and to which streets water, sewer, and other utility mains, piping, connections or other facilities . . . shall be installed” RSA 674:35;
- “The site plan review regulations which the planning board adopts may provide for the safe and attractive development or change or expansion of use . . . and guard against such conditions as would involve danger or injury to health, safety, or prosperity by reason of inadequate drainage or conditions conducive to flooding of the property or that of another” RSA 674:44, II(a)(1); and
- “The site plan review regulations of the planning board may stipulate . . . the extent to which and the manner in which streets shall be graded and improved and to which water, sewer, and other utility mains, piping, connections, or other facilities shall be installed” RSA 674:44, IV.

After consideration of these statutes, the Commission concluded that, at best, the municipalities have authority to regulate stormwater as part of a stormwater utility and in connection with certain zoning related land use approval processes, such as subdivision, site plan and building permit approvals. But, such authority does not clearly enable municipalities to regulate stormwater related to existing land uses in the absence of a stormwater utility or action by a municipal land use board. Moreover, the land use approval process typically governs a use during the development or redevelopment phase, and not necessarily over the lifetime of the resulting development, although the terms and conditions placed on the approvals can and frequently do extend over the lifetime of a development. Thus, the Commission believes it is desirable to authorize municipalities to regulate stormwater in general, particularly small MS4 municipalities, so that they may comply with requirements of the NPDES stormwater general permit.

In addition, municipalities are the best situated to know about their own needs and problems, including where stormwater problems are the worst and the impact of these problems on the local environment, safety, and economy. Enabling the regulation of stormwater at the municipal level would most efficiently identify and resolve stormwater problems, as well as fill a gap in how stormwater is currently regulated. Stormwater management issues result in large part from local land use patterns and decisions. Municipalities generally govern land use through zoning. So, it makes sense for municipalities to have clear authority to regulate stormwater,

especially in light of the statewide need for stormwater management at the local level that the Commission has discerned.

Municipalities should be given authority to regulate stormwater originating from properties within their boundaries when not initiated by or associated with zoning/land use approval process, including authority to set performance standards for BMPs and to require property owners to put BMPs in place on their property and maintain them. NHDES should adopt rules for minimum performance standards for construction and maintenance of BMPs that could be adapted by municipalities for local regulations. This enabling legislation would create a parallel process to a stormwater utility for municipalities that want, or are required to under EPA's small MS4 permit, to regulate stormwater, but do not want to create a municipal stormwater utility.

There was considerable discussion among both the Commission and the Regulatory Subcommittee about the merits of giving municipalities the power to regulate stormwater without prescribing the way the power is to be exercised. It is desirable that requirements placed upon property owners by municipal stormwater regulations be identical, or at least very similar from one municipality to another to avoid the patchwork of different regulations that exists now, for example in municipal zoning and subdivision regulations. Any proposed legislation must fully incorporate that idea.

Based on input received during Commission deliberations from development, environmental, and government representatives, the Commission believes that it is crucial to assure that municipalities regulate stormwater consistently with each other. Consistency between municipal regulations will insure that natural resources are protected more equally across the State, regardless of political boundary. It will also insure better regulatory compliance during development, re-development, and post-construction stormwater management activities because developers and other stormwater managers will have a better understanding of uniform regulations.

To achieve consistent stormwater regulation among municipalities, the Commission recommends that enabling legislation task NHDES with developing by administrative rule, state minimum performance standards for construction and maintenance of BMPs, including model stormwater regulations incorporating these standards that could be adopted by municipalities for local regulations. NHDES should do this with advice from interested stakeholders. Similar to most other environmental standards set by the State, municipalities should be able to include performance standards that are more stringent, but not less stringent, than the State-developed minimum performance standards.

The majority of the Commission is in favor of municipalities being required to either: (1) adopt the state minimum performance standards through a model ordinance or

other means; or (2) adopt revised standards tailored to a particular municipality which is at least as stringent as the state standards. A similar concept has been used in Maine for its shoreland protection laws. See Mandatory Shoreland Zoning Act, 38 M.R.S.A. sections 435-449 and Maine Department of Environmental Protection's Guidelines for Municipal Shoreland and Zoning Ordinances (Chapter 1000) (<http://www.maine.gov/dep/blwq/docstand/szpage.htm#state>)

This approach will set minimum standards of performance for developing consistent regulations statewide. The purpose of minimum performance standards is to ensure adequate protection of water quality and aquatic habitat. The purpose of consistency and uniformity of regulations is to improve the ease with which the development community and property owners can comply with design and construction requirements, while also providing greater environmental protection. The model ordinance will also assist municipalities with compliance, especially those lacking expertise and time to develop their own regulations. Requiring compliance with minimum performance standards without providing a model ordinance outlining ways to comply with those standards could provide onerous for some communities and result in a lack of uniformity across the state. The intention is to provide a high degree of similarity among requirements of different municipalities, similar to fire and electrical code, rather than develop regulations which are unique to each municipality.

The State minimum standards of performance should include a set of minimum standards which are developed to address the following:

1. Low impact development ("LID") site planning and design requirements
2. Groundwater recharge
3. Water quality
4. Conveyance and natural channel protection
5. Overbank flood protection
6. Redevelopment and infill projects
7. Pollution prevention
8. Groundwater protection
9. Operations and maintenance

Based on the Commission's research, stormwater control based on watershed drainage patterns is the most desirable, therefore the Commission also recommends that when NHDES develops minimum performance standards for stormwater, it encourages, if not requires, watershed drainage analysis in connection with land development.

In light of the need for prompt action to control stormwater in the State, the Commission recommends that NHDES be given specific deadlines in the enabling legislation that establish a rapid pace of developing the minimum performance standards and the model stormwater ordinance incorporating those standards. After

some discussion, the Commission generally agreed that no more than 18 months should be allowed to issue the standards and related model ordinance given the need for prompt statewide action.

Some municipalities have already enacted stormwater regulations. These municipalities should not be penalized by having to abandon their existing ordinances. The Commission recommends that these municipalities be allowed to continue to use their existing regulations so long as they are at least as stringent as the new State standards. The enabling legislation should contain a provision which allows such municipalities to submit their existing regulations to NHDES for review against the new State minimum performance standards and to receive comment from NHDES as to whether or not the ordinance is equivalent to the state minimum performance standards.

In developing the State minimum performance standards and the model ordinance, NHDES has numerous sources from which to work. The sources include the following:

1. Federal Energy Independence and Security Act of 2007 ("EISA")

Section 438 of EISA contains a concise, yet far-reaching, standard for stormwater runoff for federal development projects, as follows:

The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.

2. New Hampshire Water Resources Primer published by DES, 2008.
3. Town of Durham Stormwater Regulations (Appendix F1)
4. City of Manchester Stormwater Ordinance [Appendix F2]
5. South Burlington, VT Ordinance Regulating the Use of Public and Private Sanitary Sewerage and Stormwater Systems (Appendix F3)
6. Innovative Land Use Planning Techniques: A Handbook for Sustainable Development published by NHDES, 2008
7. U.S. Geological Survey Report, Effects of Urbanization on Stream Quality at Selected Sites in the Seacoast Region in New Hampshire, 2001-03

8. Measuring the Impacts of Development on Maine Surface Waters written by Chandler Morse and Steve Kahl, 2003.
9. Maine legislation: Mandatory Shoreland Zoning Act, 38 M.R.S.A sections 435-449 and Maine Department of Environmental Protection's Guidelines for Municipal Shoreland and Zoning ordinances (Chapter 1000)
(<http://www.maine.gov/dep/blwq/docstand/szpage.htm#state>)

Recommended Future Work

The following recommendation for future work represent recommendations and areas for further study that the Commission felt were important, but did not have time to address due to time constraints.

Suggested Areas for Future Work:

- Based on the concept draft legislative language in Appendix E1, draft specific legislation for the creation of a statewide stormwater utility.
- Based on the concept draft legislative language in Appendix E2, draft specific legislative language for municipalities to regulate stormwater.
- Revision of the existing language in RSA 149-I relative to municipal stormwater utilities to add clarification and to be consistent with and complementary to the statewide utility concept, should the concept be adopted.
- Evaluate the costs and potential environmental benefits of modifying the criteria for qualifying for a general permit-by-rule under Env-Wq 1500, Alteration of Terrain, to lower the threshold for the area of land disturbed or to otherwise require additional activities involving the alteration of terrain to obtain an individual permit from the Department of Environmental Services.
- Develop and implement a circuit rider program to specifically focus on stormwater issues. The circuit rider could be funded by the State, by a grant program, by the stormwater utilities or by a combination of funding sources.
- Development of incentives to promote better watershed-based stormwater management on a local, regional, and statewide level.
- If a statewide, watershed-based stormwater utility system is not enacted, create a fee-based statewide stormwater discharge permit at NHDES for all developed properties in the state.
- More extensive study of the following areas:
 - Infrastructure needs/costs for adequate stormwater control.
 - Sediment and erosion control needs.
 - The affects of stormwater on terrestrial and aquatic wildlife habitat.
 - Ways to adapt to the on-going effects of climate change, particularly as regarding flooding and erosion due the increased frequency of intense storms.

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