MEMORANDUM

DATE: **November 1, 2010**

TO: **Honorable John H. Lynch, Governor**
Honorable Terie Norelli, Speaker of the House
Honorable Sylvia B. Larsen, President of the Senate
Honorable Karen O. Wadsworth, House Clerk
Tammy L. Wright, Senate Clerk
Michael York, State Librarian

FROM: **David Cedarholm, Chair**

SUBJECT: **Final Report on HB 1295, Chapter 71, Laws of 2008**

Please find the enclosed Final Report of the Commission to Study the Issue of Stormwater Management, Submitted in compliance with HB 1295, Chapter 71:5, Laws of 2008.

If you have any questions or comments regarding this report or the work of the Commission, please do not hesitate to contact me at 603-868-5578 or dcedarholm@ci.durham.nh.us.

Respectfully submitted on behalf of the Commission,

David Cedarholm, Chair

DC: jem
Enclosures

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

Final Report
November 2010

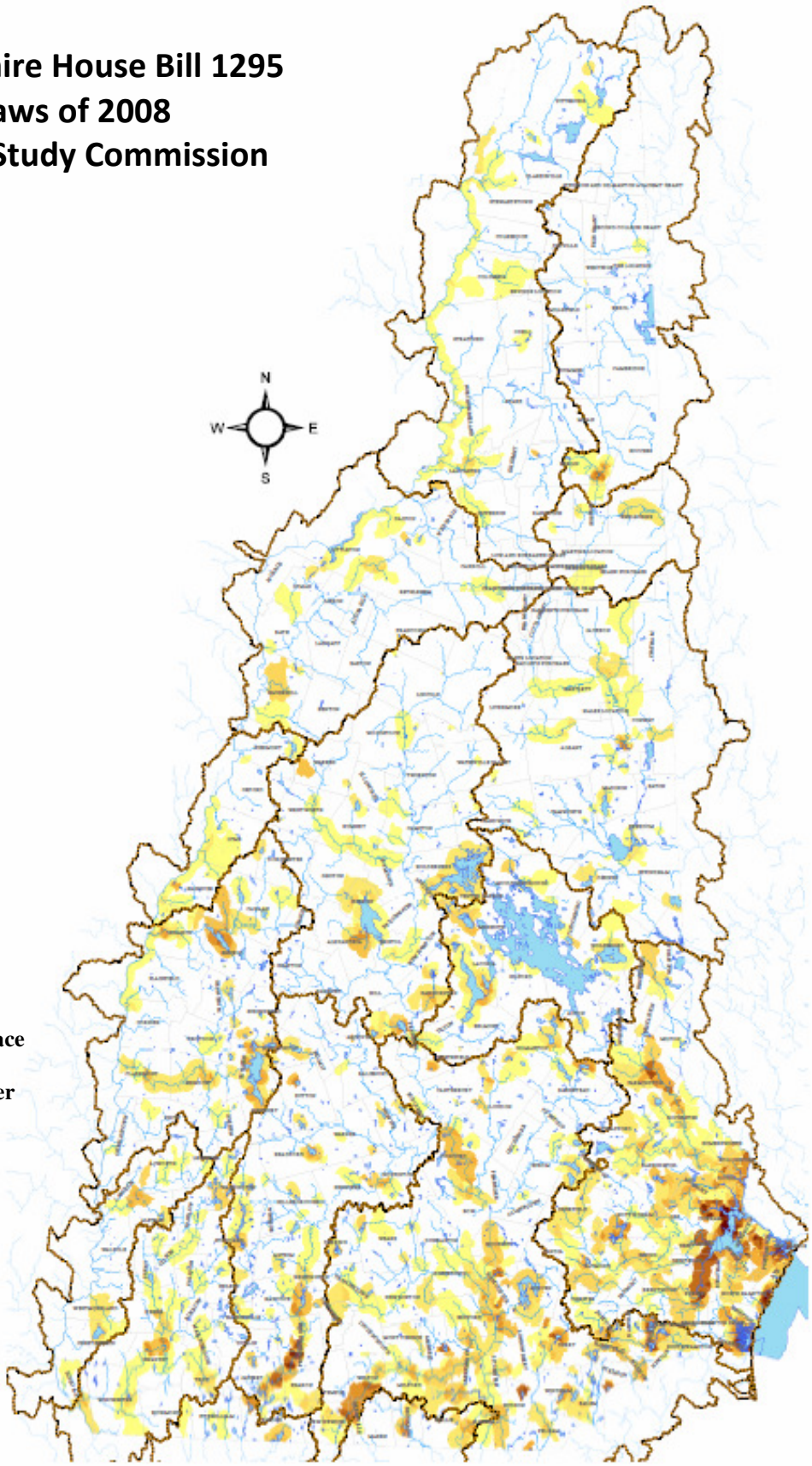

Figure 1. 2010 surface water impairments related to stormwater with 1-mile buffer (NHDES, 2010).

Table of Contents

List of Acronyms

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
Newbold Le Roy	Associated General Contractors of New Hampshire
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:	$ 2 million
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 Winnipesauke 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.

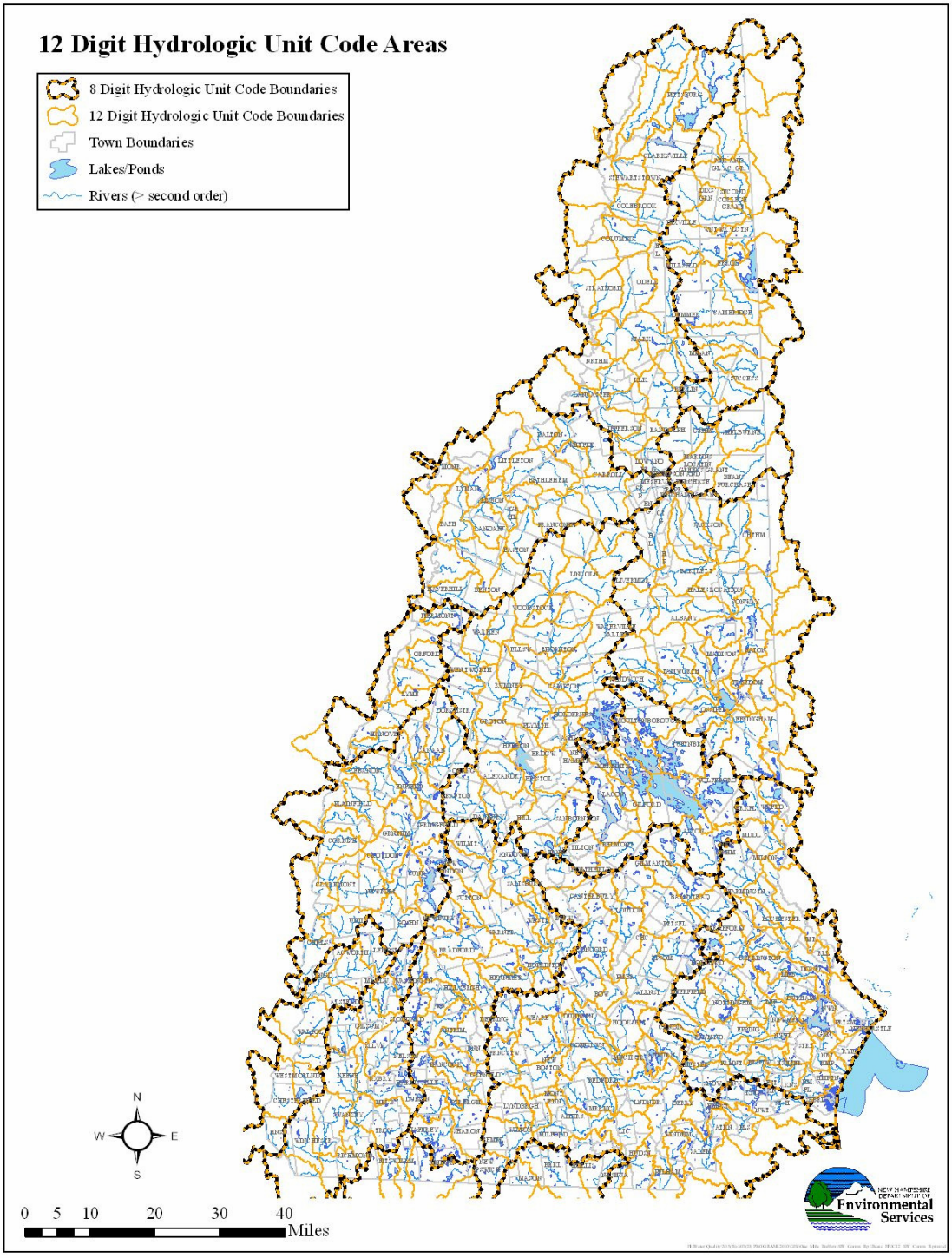

Figure 2. 12 Digit Hydrologic Unit Code Areas.

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.

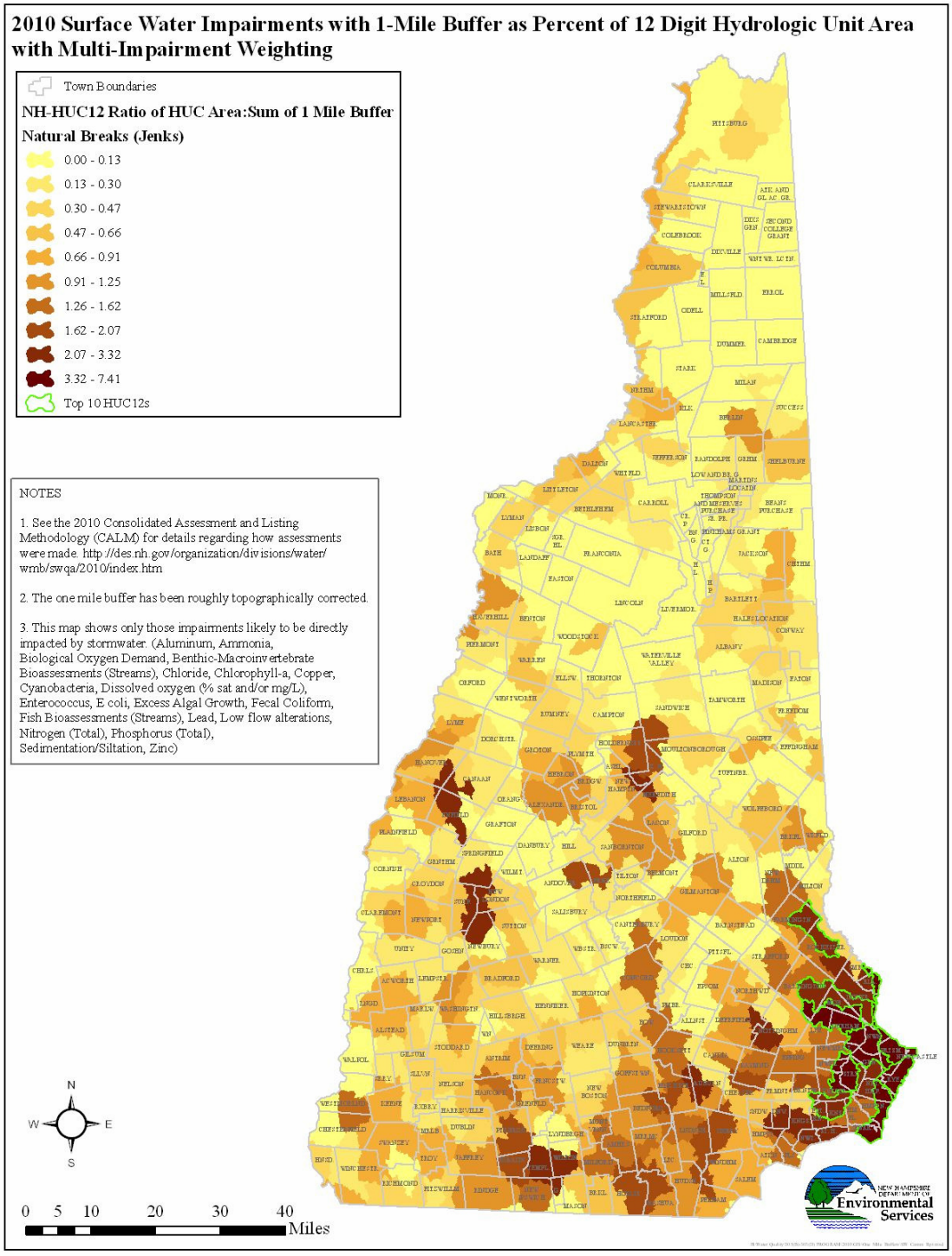

Figure 3. 12 Digit Hydrologic Unit Area with Multi-Impairment Weighting.

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 practicable[1].

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]the 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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Appendices

Appendix A – Authorizing Legislation for HB 1295

CHAPTER 71

HB 1295 – FINAL VERSION

30Jan2008… 0122h
03/27/08 1114s
30Apr2008… 1562eba

2008 SESSION

08-2312
06/04
HOUSE BILL ***1295***
AN ACT establishing a Commission to study issues relating to stormwater.
SPONSORS: Rep. Spang, Straf 7; Rep. Borden, Rock 18; Sen. Cilley, Dist 6
COMMITTEE: Resources, Recreation and Development

ANALYSIS

This bill establishes a Commission to study issues relating to stormwater.

- -

Explanation: Matter added to current law appears in ***bold italics.***
Matter removed from current law appears [~~in brackets and struckthrough.~~]
Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

30Jan2008… 0122h
03/27/08 1114s
30Apr2008… 1562eba
08-2312
06/04

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Eight

AN ACT establishing a Commission to study issues relating to stormwater.

Be it Enacted by the Senate and House of Representatives in General Court convened:

71:1 Commission Established. There is established a Commission to study the issue of stormwater management.

71:2 Membership and Compensation.

I. The members of the Commission shall be as follows:

(a) Three members of the house of representatives, including at least one member of the resources, recreation, and development committee, appointed by the speaker of the house of representatives.

(b) One member of the senate, appointed by the president of the senate.

(c) The Commissioner of the department of environmental services, or designee.

(d) A representative of the New Hampshire Association of Regional Planning Commissions, appointed by that organization.

(e) A representatives of the Business and Industry Association of New Hampshire, appointed by that organization.

(f) A representative of the New Hampshire Local Government Center, appointed by that organization.

(g) An expert on stormwater management or watershed management from the university system of New Hampshire, appointed by the university president.

(h) The director of the office of energy and planning, or designee.

(i) A representative of the Home Builders & Remodelers Association of New Hampshire, appointed by that organization.

(j) A member of the New Hampshire Rivers Council, appointed by that organization.

(k) A member of the New Hampshire Lakes Association, appointed by that organization.

(l) A representative of the Associated General Contractors of New Hampshire, appointed by that organization.

(m) A representative of the New Hampshire Public Works Association who is employed by a municipal separate storm sewer system community.

(n) A representative of the American Council of Engineering Companies of New Hampshire, appointed by the council.

(o) The Commissioner of the department of transportation, or designee.

(p) A member of the Nature Conservancy, appointed by that organization.

(q) A member of the New Hampshire Timberland Owners Association, appointed by that organization.

(r) A member of the New Hampshire Farm Bureau, appointed by that organization.

II. Legislative members of the Commission shall receive mileage at the legislative rate when attending to the duties of the Commission.

71:3 Duties. The Commission shall study:

(a) The effects 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.

(f) The effects of climate change on stormwater and stormwater management.

71:4 Chairperson. The members of the Commission shall elect a chairperson from among the members. The first meeting of the Commission shall be called by the first-named house member. The first meeting of the Commission shall be held within 45 days of the effective date of this section.

71:5 Report. The Commission shall make an interim report on or before November 1, 2008, with a final report of its findings and any recommendations for proposed legislation to the speaker of the house of representatives, the president of the senate, the house clerk, the senate clerk, the governor, and the state library on or before November 1, 2009.

71:6 Effective Date. This act shall take effect upon its passage.

Approved: May 21, 2008

Effective Date: May 21, 2008

Appendix B – Stormwater Needs Subcommittee

Introduction

It was the responsibility of the Stormwater Management Needs ("Needs") Subcommittee to:

- Compile a list of pertinent findings from guest speaker presentations (see Appendix C for a complete list) and Commission discussions, including regulatory gaps, areas for improvement, and other stormwater related "needs" for improved stormwater management, in accordance with the statutory duties of the Commission.
- Present findings to the full Commission as well as the Regulatory Authority and Funding Subcommittees to provide direction for Commission work.

Subcommittee Members and Participants

Rep. David Borden, New Hampshire House of Representatives;
Paul Currier, Department of Environmental Services;
David Danielson, NH Association of Regional Planning Commissions;
Karen Ebel, The Nature Conservancy;
Donald Sienkiewicz, Home Builders & Remodelers Association of New Hampshire;
Rep. Judith Spang, New Hampshire House of Representatives, Chair, Resources, Recreation and Development Committee;
Jillian McCarthy, Department of Environmental Services
Robert Roseen, University of New Hampshire Stormwater Center

Process

The subcommittee began by identifying the many findings presented by guest speakers or discussed during Commission meetings. Guest speaker presentations and meeting minutes were reviewed and each finding was entered in a spreadsheet (see "Needs Identification Matrix" in Appendix E1). Forty-five key findings were recorded and resulted in the identification of 32 "needs" for improved stormwater management. The Subcommittee distributed the spreadsheet to the Commission and solicited ideas for potential solutions to the identified needs. The subcommittee then reviewed the Commissioners' responses and consolidated the needs and associated potential solutions into nine categories (see "Summary of Needs for Improved Stormwater Management in New Hampshire in Appendix E2).

To develop a strategy for the Commission to move forward and focus their efforts, the Commission members took an internal survey (Appendix E3) in November of 2009 to rank and assess the relative importance of the nine needs categories. The survey rankings were substantive in that they were not forced; equal rankings within the survey were possible. The Commission ranked the nine categories as follows with 1 being the highest ranked and 9 being the lowest.

1. Municipal Stormwater Ordinances and Regulations
2. Stormwater Management Practices

3. Cost Sharing and Stormwater Utilities
4. Buffer Protection
5. Low Impact Development (LID) and Smart Growth
6. Watershed Management Planning
7. Outreach and Technical Assistance
8. Erosion and Sediment Control
9. State Permitting

The Subcommittee presented the survey results and final work products to the Commission and the Regulatory Authority and Funding Subcommittees to direct their work. Work products are listed below and contained in this appendix.

B1. Stormwater Needs Identification Matrix
B2. Stormwater Needs Summary
B3. Stormwater Needs Survey Results

B1 - Stormwater Needs Identification Matrix

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
Regulation/Policy Needs						
1	Stormwater management for existing development is needed as a critical component for elimination of impairments. Existing regulatory authority needs to be expanded to include corrections to existing development to retrofit for stormwater. Comment: See 40 CFR 122.26(b)(13): stormwater runoff, snow melt runoff and surface runoff and drainage.	1.) The Final 2008 303(d) and 305(b) Surface Water Quality Assessment prepared by the New Hampshire Department of Environmental Services reports that stormwater contributes to roughly 83% of the surface water quality impairments. 1 2.) Disturbance within an existing footprint often does not trigger a state or federal permit and presents a missed opportunity for retrofitting. Even though municipal building permits are required, drainage and other stormwater improvements are not often considered. 6 3.) Existing regulation places the burden on new development to ameliorate existing stormwater problems, shifting social costs away from current land owners and potentially creating political resistance in the development and construction industry.	1.) Identify and interpret any existing legislation/regulations that give authority to regulate existing development for the purposes of stormwater management. 2.) Determine the cost of regulating vs. not regulating existing development for the purposes of stormwater management. 3.) Identify how other states are managing stormwater from existing development, including the regulations, programs, incentives, and consequences for not restoring impaired waters.	Create regulatory authority to require stormwater management improvements to existing developments in hydrologically/quality impaired watersheds, even in the absence of a change in use or significant reconstruction/redevelopment.	Specifically authorize municipalities to adopt stormwater management regulations, including the creation of a stormwater utility, through enabling legislation.	Create incentives for property owners to improve drainage.

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
2	Stormwater management for new and re-development is needed as a critical component for maintaining and protecting existing water quality. Regulation needs to be expanded to include smaller scales of development than the 100,000 sf AoT trigger and the 1 acre Construction General Permit (CGP) trigger, and needs to include municipal stormwater management to take advantage of local knowledge and a stake in the outcome for development under 1 acre of disturbance.	1.) Gaps in regulated activities are a significant problem, e.g., the cumulative impact of single house lots that do not trigger a state or federal permit. The inability to track cumulative impacts over time means regulation often "kicks in" only when impairments are identified. This is more difficult and costly to remedy. 6 2.) Existing stormwater regulations may not be protective of water quality, aquatic habitat, and biota as individual lots are often not regulated for stormwater. The cumulative impact of unregulated activities can lead to higher peak flows and increased flooding and impact the public, infrastructure and the environment. 3 3.) Some projects that create a significant construction-phase land disturbance are unregulated, e.g., projects where the road is built first and lots are build over time so that there is never more than 100,000 sf of disturbance to trigger a NH AoT permit. 6.	1.) Need to identify the impact that this scale of development has on water quality as well as regulation, incentives, technical assistance and other means necessary to minimize the impact. 2.) Need to track the projects/activities at this scale of development.	Lower the trigger threshold for land disturbance activities for the AoT program. Threshold triggers need to be determined and should be dependent on whether disturbance is new development or re-development, as well as dependent upon land use. Lower or eliminate threshold	Develop special provisions for re-and infill development in urban areas. Require LID through local site plan review & allow for cap & trade if LID is not feasible at a particular site.	Require mitigation, restoration of buffers, drainage improvements, etc. and allow cap & trade (similar to CSPA)
3	Consideration of watershed-based impervious cover limits	There is a direct correlation between land use change and stormwater with an increase in runoff volume and velocity and a decrease in infiltration as the land is converted from forest to developed. The primary cause of stormwater is the increase in impervious surfaces associated with development, including rooftops and roadways. The threshold at which impervious surfaces within the upstream watershed have been shown nationally to cause impacts to water quality at 10% impervious cover. More recent, regional data shows impacts to stream channels, waters quality, and biota at about 4-5% impervious. 3		Post process the upcoming DOT 6" DOT aerial photos for watershed impervious cover data.	Utilize impervious cover as a surrogate for impairments caused by development for nutrients (N&P, and TSS, etc.)	
4	Watershed level stormwater management with consistency in stormwater regulations across municipalities within watershed boundaries.	Inconsistent or absent municipal stormwater regulations. Local governments have varying resources, budgets, and capabilities, which creates inconsistency in stormwater management programs and requirements at the local level across the state. 1,2.		RPC & DES assistance to municipalities to coordinate stormwater regulations for consistency based on localized priorities.	Re-delineation of RPC boundaries to better correspond to watershed boundaries and strengthen RPC ability/authority to provide municipal	Support the development of watershed-based hydrologic models.

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
				Promote municipal adoption of stormwater related model ordinances (e.g., DES Innovative land Use Planning Techniques Handbook)	assistance. Circuit Rider specifically designated to assist municipalities with ordinance review/development for consistency with state & fed standards and with other municipalities in the watershed. Development of state-wide model ordinances and requirements for municipal adoption (Maine example?)	
5	Need to address the barriers to development in impaired watersheds through water quality credit trading, incentives for smart growth in impaired watersheds, or other means	Antidegradation requirements in the federal Clean Water Act and NH Surface Water Quality Standards [Env-Wq 1700], in particular the "no additional loading" standard for impaired watersheds, creates a significant barrier to new development in impaired watersheds, even if the particular development in question is good for other reasons (e.g., smart growth location), and the impairment was caused by "bad" existing development in the same watershed, which could be retrofit to reduce the impairment. This represent another shifting of costs away from some of those responsible and able to contribute to resolution of the problem, toward those not responsible and potentially unable to resolve the problem on their own. 6		State permitting programs (401/ AoT, etc.) need to consider off-site (within the watershed) mitigation as a credit toward impacts – similar to wetlands.	Comment: This would result in a system that would be much too complicated to use on a daily basis. Follow the KISS theory; set standards & enforce, let localities figure out how to do it. Keep the DES out except for enforcement.	

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
6	Need to develop an antidegradation implementation plan that is fair and equitable and a process to effectively implement it.	Antidegradation, although a powerful tool to protect water quality, could be a significant barrier to new development, and its implementation could be broadly unfair. There is reluctance by regulators to implement it and implementation could be strongly resisted by the regulated community. 6	Research how other states are implementing antidegradation.	Develop incentives to concentrate development, reduce/eliminate sprawl.		
7	Increased enforcement of construction-phase and post-construction BMPs to ensure that they are correctly installed and maintained	Lack of enforcement seriously undermines efforts to properly design construction-phase stormwater management structures, which must be adjusted to actual conditions once constructed, and must be maintained regularly (for example, the CGP requires contractors to submit stormwater pollution prevention plans (SWPPPs) and maintain stormwater management structures regularly during construction - but EPA has too few field inspectors to check all construction sites. 6		Erosion and sediment control training for contractors and municipal building and code enforcement officers by CPESC or other regime	State or municipal inspection and enforcement of SWPPPs	
8	Need for statewide minimum performance criteria for stormwater management with incentives for municipal adoption, administration, and initial enforcement.	Inconsistent or absent municipal stormwater regulations. Local governments have varying resources, budgets, and capabilities, which creates inconsistency in stormwater management programs and requirements at the local level across the state. 1,2				

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
9	Need to develop an adaptation strategy to deal with current and predicted future climate change impacts in floodplains and in areas increasingly prone to flooding.	1.) Future storm patterns and climate conditions could bring even larger and more frequent storm events than currently experienced. Watershed hydrology, in response to development, is altered and culminates in greater frequency and intensity of high flow events. 6 2.) Storms in NH are ~ 30-60% larger, making the design storms used for the last 50-100 years out of date & culverts and pipes & other infrastructure under capacity by as much as 35% 2. 3.) Stormwater managment strategies to reduce runoff volumes associated with land use changes can also be used to manage increases in storm depth from climate change. 2 4.) There are many issues with regard to flooding that humans have control over such land use and subsequent impact of runoff volume.	1.) Need to understand/predict climate change effects on storm patterns and the track the impact of climate change on current and future municipal and state budgets. 2.) Evaluate flood-prone areas and locate areas within their watershed that need to be protected.	Promote and enable to use of LiDAR (Light Detection and Ranging) in updating flood plain maps.	Prohibit the development or expansion of state-owned properties in floodplain areas.	Do away with flood insurance and force removal from flood zones.
10	Clear regulatory authority for all municipalities to manage stormwater.	The input of the NH Attorney General's Office and the Local Government Center indicates that municipal jurisdiction over stormwater management is not clear.	Identify and interpret all existing enabling legislation related to stormwater management and identify gaps.	If authority is found to not sufficiently exist, specifically authorize municipalities to adopt stormwater management regulations through enabling legislation.		
11	Need to reduce the stormwater impacts from road construction and maintenance activities including lack of maintenance.	Road maintenance of local, state, and federally owned roads is unregulated or poorly regulated, but constitute a significant area of impervious surface.		Work with DOT & municipal road agents to better understand barriers and stormwater management strategies unique to linear road projects.		

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
Best Management Practices Needs						
1	To address water quality and hydrology concerns created by stormwater by implementing stormwater management that includes infiltration mechanisms to reduce post-development runoff volumes and rates, delay runoff times of concentration, and slow velocities, as well as mechanisms to provide storage, and filtration, in particular vegetated filtration to address nutrients.	Water quality concerns, such as increased nutrient loading, accelerated eutrophication (aging) of surface waters, low dissolved oxygen, increased turbidity (reduced clarity), and increased bacteria loading occur when stormwater is not adequately treated to remove pollutants prior to being discharged to surface waters. 1	1.) Compile existing information identifying pollutants that result from particular land use activities and make available to the public to increase overall awareness of stormwater. 2.) Need to clearly identify the connection between stream temperature, stormwater hydrology, riparian buffer integrity, and BMP system type (re: thermal impacts) for cold water fisheries, especially in respect to brook trout. 3.) Need to identify the historic cold water fisheries that have been impacted by thermal pollution.	Statewide minimum performance criteria for stormwater management with incentives for municipal adoption - municipal administration and initial enforcement	Promote or require the use of rainwater-harvesting gutters and cisterns on all buildings to turn the problem of unwanted, excess stormwater) into a resources that reduces mining of fossil groundwater resources.	
2	To address water quality and hydrology concerns naturalized channels are needed to maintain channel morphology, macroinvertebrates and fish species and aquatic habitat. The frequency and duration of bank full, channel forming discharges should be	Degradation in the hydrology, channel morphology, water quality, macroinvertebrates and fish are common with increasing impervious area within a watershed, which results in less diverse channel morphology and aquatic habitat, increase in nutrient and pollutant levels in surface waters, and a shift in macroinvertebrate and fish communities from those species that require high quality water to those that can tolerate degraded water quality and habitat conditions.3		Retention, reduce discharge velocity		

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
	equivalent to pre-development runoff volume.					
3	Utilize stormwater management strategies to reduce the existing impervious cover and effective impervious cover or the impact of existing impervious surfaces	The threshold at which impervious surfaces within the upstream watershed have been shown to cause impacts to stream channels, water quality, and biota is ~ 4-5%. 3	Accurate impervious surface GIS data coverages for the entire state.			
4	Standard design specifications for Low Impact Development (LID) practices and scientifically based treatment performance data for stormwater management practices.	1.) There is a lack of stormwater treatment performance data. A large number of devices are in existence that may be superior, but are infrequently used. 2 2.) LID practices are not sufficiently utilized. Both regulators & the regulated community have been slow to adopt LID in part because of lack of awareness or appreciation of the significance of LID in stormwater management. LID is perceived to be in conflict with other design considerations - e.g., fire dept. wants wide roads, and pushes road standards at odds with LID. LID understanding and enforcement, in hand with local zoning and subdivision regulations, vary widely across municipalities. 6 3.) Individuals and municipalities are hesitant to use LID practices because they do not feel confident that the practices work, in particular porous pavements because the industry will not bond its products.	Compile research on stormwater treatment performance, identify and fill data gaps.	Education, outreach & technical support to municipalities to go through existing regulations and address barriers to implementing LID.		

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
5	Reduce the impact of winter road and parking lot de-icers on water quality.	1.) In NH impervious surfaces are associated with winter maintenance and the use of road salt, calcium chloride and sodium chloride. 3. These de-icers are broadly used and are a significant water pollutant that cannot be easily treated. 2.) Porous asphalt has been shown by the UNH Stormwater Center to require less salt and other winter maintenance than conventional pavement		Insist on reduction in use of salt – educate road agents and truck drivers.		
Planning Needs						
1	Need for infill development and mixed used village center development to encourage walking, biking, and alternative means of transportation, as well as public transportation to service outside of village centers with incentives.	1.) Sprawling development patterns and dependence on the personal automobile have required a tremendous amount of land to be dedicated to roads and automobile storage, which are both impervious and receive auto-related pollutant deposits including nitrogen, sulfur and lead from exhaust, and zinc from galvanized bumpers and guardrails. 6 2.) Uneven regulatory playing field may cause irrational and counter-productive results, e.g., MS4 communities in compact urban areas may drive projects into the suburbs and rural fringe where no such regulations apply, exacerbating sprawl, auto-dependence, and impervious cover.	BMPs need to be developed for source control of stormwater quality/quantity from smaller infill type developments located in areas with inadaquate existing infrastructure.	Develop cap & trade programs with possible in lieu fees		

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
2	State and municipal opportunities need to be expanded to encourage better site selection, to host pre-application meetings with the town, state, and other stakeholders, to make adjustments to permit criteria to take advantage of function, performance criteria, best environmental results instead of size and type and design criteria, enforcement and compliance. 4	Permits are dependent upon what the applicants requests and whether or not permit conditions are met, not necessarily what the permitting agency wants to see. State agency permit decisions are based solely on statutes and rules. Decisions about where to put a project (in a locale) are largely made before permitting. State or federal permitting may happen before, in parallel with, or after local permit decisions depending on the municipality.4		Integrated permitting	Regulatory incentives to "good" development and developers for managing stormwater proactively and beyond minimum compliance.	
3	A sprawl index is needed to show that as population goes up the amount of impervious cover goes up (get data from OEP)	New Hampshire has experienced 20-25% population growth in some portions of the state in the last 10 years.2 This growth is creating more impervious surfaces at an increasing rate, i.e., development is becoming higher impact. 6		Make the development of open land difficult & expensive –		
Protection Needs						
1	Riparian buffer and wetland setbacks need to be encouraged according to the resource protection needs identified in a specific location, where possible (Laura Demming paper reference)	1.) The intentional hardening of streambanks is a poor substitute for natural, vegetated riparian buffers as the riparian vegetation provides shading, organic matter and food to fish and other animals in a stream and it serves to reduce nutrient inputs to the stream channel and instream nutrient processing.3 2.) Riparian buffers, in particular riparian forests, are necessary for the retention of nitrogen and phosphorus within streams and precludes the movement of nutrients to downstream ecosystems.	The quantitative measures of the value of riparian buffers and wetland buffers. Wetland buffers are an ineffective solution if the BMPs are not inplace to prevent refocusing of stormwater discharge from developments.	Recommended or required minimum state-wide buffer set-backs with conditions Specifying a design storm that meets new concerns would be a big help to designers.	Technical assistance/guidance for landowners and municipalities to meet minimum buffer setbacks and still achieve their desired outcome.	Work with municipalities to develop regulations for their own buffer setbacks.

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
2	Need to protect the miles of unprotected streambanks and other water resources that are not subject to the Shoreland Protection Act	Shoreland Protection Permit is intended to implement the Comprehensive Shoreland Protection Act to protect shorelands surrounding state surface waters by managing disturbance within the protected shoreland area. The Shoreland Permit applies to projects within 250 feet of all lakes, ponds and impoundments 10 acres or greater in size, all 4th order and greater streams, all designated river segments under RSA 483 and all waters subject to the ebb and flow of the tide (including tidal marshes, rivers and estuaries). 5	The number of stream miles and shoreland of other water resources that are not currently protected under the Shoreland Protection Act – 1st – 3rd order "headwater" stream protection	RPCs to work with municipalities to develop buffer solutions as state solutions are developed.		
3		Most of the good, easily developable land in the state has already been developed. The remaining lands available for development often pose a challenge due to smaller parcel sizes, steep slopes, more ledge, and shallow depth to groundwater. All of these challenges make it more difficult to manage stormwater from the development of these lots. 6		Develop incentives to not develop certain land	Model ordinances for developing difficult lands e.g., steep slopes, shallow bedrock, etc.	
Funding Needs						

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
1	Need to broadly spread the cost of fixing water quality and quantity problems across all users. Comment: needs definition	1.) All residents of a watershed (or state) contribute to watershed degradation by our dependence on impervious developed areas for residences, commerce, and transportation. But regulation, and thus the cost of addressing the problem, is focused on a small class of economic actors (developers of new commercial, residential, and industrial property). Shifting regulation to the retrofitting of existing commercial, industrial, and residential property is necessary, but not sufficient. 6 2.) Builders can be naturally resistant to BMPs or management structures that add cost, but have little or no perceived value to the purchase, and thus reduce profit. 6	1.) Feasibility of various funding mechanisms. 2.) Compilation of comparisons of conventional stormwater management versus low impact development.	State-wide Stormwater Utility	Municipal Stormwater Utilities	Technical assistance to municipalities to develop regulations and enforcement to address water quality and quantity problems.
2	Reduce the burden on existing infrastructure and replace failing infrastructure, where necessary	1.) Existing culverts, detention ponds and other stormwater management structures have been constructed based on outdated rainfall data or no data at all, and structures currently being designed and permitted are not designed for future increases in either watershed imperviousness or increased storm intensity. 6 2.) Conventional stormwater management has focused on getting water off a site as quickly as possible through pipes and other means of conveyance. Decentralized stormwater treatment and infiltration lessen the burden on this infrastructure and the impact of the quality of downstream receiving waters.	1.) Need to review and adjust rainfall data to accurately reflect current and predicted future storm events to accurately size infrastructure and other stormwater structures. 2.) Need to project the repair and replacement costs of stormwater infrastructure.	Fully apply the CWA construction grants and revolving loan fund to treat stormwater the same as the state has been treating waste waters. (for waste water the state contributes 20-30%, but not for stormwater.)		
3	More affordability or incentives for using porous pavements, rain gardens, and other LID-type resources	The cost of some LID resources, such as porous pavements and rain garden soil mixes, are prohibitively high due to scale costs and lack of widespread demand. 6		Develop incentives for pervious pavement		

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
Outreach Needs						
1	Technical Assistance with permit compliance for all applicable stormwater permits. Comment: from whom? If DES would increases state costs and developers would not like open ended assistance from DES at the developer's expense.	Current management and protection programs for stormwater include: the EPA National pollutant Discharge Elimination System (NPDES) Construction General Permit, Multi-Sector General Permit, and the Municipal Separate Storm Sewer System Permit; the NH Section 401 Water Quality Certification and Antidegradation, the NH Alteration of Terrain Program, the NH Shoreland Protection Act 4		Boiler-plate SWPPPs for routine projects	NROC-style technical assistance	Support for Stormwater Coalitions and other voluntary organized groups for permit compliance support.
2	Increased understanding and municipal stormwater management on smaller projects under local authority.	The majority of land use decisions are made by local governments on smaller (<1 acre) development projects. 1,2		Educate and solicit input from Selectmen and Road Agents, Planners and CEO's, municipal boards and staff.on the need for and methods of stormwater management and associated operation and maintenance.	Educate others, including trade associations, lake and watershed associations, including groups represented on the Stormwater Commission.	Encourage the adoption of stormwater ordinances that pertain to developments based on site location and environmental conditions regardless of area of disturbance.
3	Need a shift in perspective from conventional stormwater management to instead minimize the source of stormwater and maintain and treat stormwater as close to the source as possible to reduce downstream impacts on natural resources and prevent downstream flooding.	Conventional stormwater management practices are not working and provide insufficient pollutant removal, insufficient cooling to protect wildlife and habitat, insufficient stream channel protection, and have no total runoff volume control. Current research shows that stormwater treatment practices fail 2/3 of the time for some water quality constituents. 2 The long established approach to stormwater is to move it off site with little thought to downstream or watershed-wide consequences. 6	Watershed wide hydraulic models would help establish baseline conditions and identify areas in most need of attention.	Create incentives for developers and engineers to pursue innovative stormwater management focused on source control		

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
4	Increased outreach and education on stormwater and stormwater management to small developers/builders/contractors and homeowners to understand the value of stormwater management.	Small developers/builders/contractors and homeowners can contribute significantly to the stormwater problem, but are often unaware of the problem, their contribution, and how to reduce it. 6 Depending on conditions and locations, small developments (i.e. > 1 acre) have potential to make significant stormwater contributions especially cumulatively for multiple sites in same watershed,		Work with trade associations to provide education and outreach		
Infrastructure Needs						
1	Many municipalities typically have aging, deteriorated, inadequate, and/or non-existant stormwater infrastructure. Most of this infrastructure is below ground out-of-sight/-out- of-mind and as a result there is lack of knowledge about its condition.	The MS4 communities have mapped their infrastructure and begun to identify the conditional needs to comply with NPDES permits – findings are included in annual reporting to EPA. Most Towns and some Cities are not MS4s and often have even greater lack of knowledge about their systems. Impaired water bodies identified in 303(d) list are the end result of failed or non-existing infrastructure.	Extensive mapping of infrastructure and GIS/watershed based models would provide means for idenfying where infrastructure is lacking.	Expansion of MS4 permitting to all Cities and Towns.	Establish Stormwater utilities to help fund repair or replacement with new effective technologies.	Shift focus to source control.
2	Many older private developments have aging, deteriorated, inadequate, and/or non-existant stormwater infrastructure.	Unless part of an MS4, many older private developments have no mechanism or organization to report to.				

NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE

	IDENTIFIED NEED	BASED ON FINDING(S)	DATA / RESEARCH NEEDS	POTENTIAL SOLUTION (1)	POTENTIAL SOLUTION (2)	POTENTIAL SOLUTION (3)
3	Much State owned infrastructure is aging, deteriorated, inadequate, and/or non-existant stormwater infrastructure.					

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B2 – Stormwater Needs Summary

SUMMARY OF NEEDS FOR
IMPROVED STORMWATER MANAGEMENT IN NEW HAMPSHIRE
Stormwater Commission HB1295
October 28, 2009

INTRODUCTION

This document provides a summary of the regulatory gaps, areas for improvement, and other "Needs" for improved stormwater management identified by the Commission to:

- Minimize the effects of stormwater on water quality, water supply and quantity, terrestrial and aquatic habitat, flooding, and drought hazards;
- Better manage land use change and to minimize the generation of stormwater,
- Minimize gaps, duplication, or inconsistencies in federal, state, and local ordinances and regulations, and practices that pertain to stormwater management;
- Improve state and municipal infrastructure construction and maintenance practices;
- Improve the design, construction, and maintenance practices of residential, commercial, and industrial property owners to reduce the generation of stormwater and the impact of stormwater on water resources; and
- Minimize and develop strategies to adapt to the effects of climate change on stormwater and stormwater management.

NEEDS FOR IMPROVED STORMWATER MANAGEMENT

1. Watershed Management Planning

- Support watershed level stormwater management by:
  - Supporting uniformity in stormwater regulations across municipalities within watershed boundaries;
  - Supporting watershed-based hydrologic modeling;
  - Strengthen RPC (RPC) (or County) ability/authority to provide municipal assistance and require review of watershed impacts by RPCs with jurisdiction over land lying within an affected watershed.
  - Promoting/enabling LiDAR in updating flood plain maps; and
  - Prohibiting development/expansion of state-owned properties in floodplain areas.

2. State Permitting

- Address the regulatory gaps in and improve efficiency and effectiveness of state permits and certification programs to better protect water quality from stormwater pollution by:
    - Lowering the trigger threshold for the Alteration of Terrain (AoT) Permit with different trigger thresholds for re-development versus new development and land use to capture and track the cumulative impacts of small-scale development;
    - Developing integrated permitting with an expanded pre-proposal process; and
    - Developing regulatory incentives for environmentally responsible developers and development for managing stormwater beyond the minimum compliance.
- Address the barriers to development in impaired watershed and other watersheds with limitations on increases in pollutant loading through water quality credit trading, incentives for smart growth in impaired watersheds, or other means for the AoT program and the 401 Water Quality Certification.

3. Municipal Stormwater Ordinances and Regulations

- Encourage all municipalities to adopt, implement, and enforce uniform stormwater-related ordinances and/or land use regulations by one or more of the following:
    - Providing a RPC circuit rider to assist municipalities with ordinance review for consistency with state and federal regulations and standards as well as with other municipalities in the watershed;
    - Creating a statewide model stormwater ordinance and requiring municipal adoption, but allowing municipalities to adopt stricter and/or non-substantive provisions, subject to state approval with guidance of municipality's RPC (Maine example);
    - Creating a model ordinance for development on lands with steep slopes, shallow groundwater, ledge and other landscape characteristics that challenge development and stormwater management; and
    - Encouraging the adoption of a stormwater ordinance or local land use regulations that pertain to developments on site location and environmental condition, regardless of area of disturbance.
    - Creating legislation that clearly enables municipalities to impose stormwater management regulations, including stormwater management improvements to existing development in hydrologically- or quality-impaired watershed;

4. Stormwater Management Practices

- Address water quality and quantity concerns created by stormwater by implementing stormwater management that includes mechanisms to reduce post-development runoff volumes and velocities, delays runoff times of concentration, and provides for habitat and water quality protection by:
    - Developing state-wide minimum criteria for stormwater management with incentives for municipal adoption with municipal administration and initial enforcement;
    - Requiring reduction in use of salt – educate road agents and truck drivers;

- Developing a road salt applicator certification program;
- Addressing aging, deteriorated, inadequate, and/or non-existent private; municipal, and state-owned stormwater infrastructure through extensive mapping and GIS/watershed based models, expansion of MS4 permitting to all cities and towns, and focusing on source control;
- Utilizing impervious cover as a surrogate for impairments caused by development for nutrients and sediment; and
- Developing an antidegradation implementation plan that is fair and equitable and a process to effectively implement it.

5. Cost Sharing & Stormwater Utilities

- Broadly spread the cost of fixing water quality and quantity problems across all users by:
  - Amending stormwater utility enabling legislation RSA 149-I:6 to clearly apply to stormwater independent of reference to "sewers" or "sewage";
  - Fully apply the CWA construction grants and revolving loan fund to treat stormwater the same as waste water; and
  - Promoting and developing watershed-wide, region-wide, or state-wide stormwater utilities.

6. Low Impact Development (LID) and Smart Growth

- Develop incentives for municipalities, developers, engineers, and property owners to pursue innovative stormwater management including low impact development and smart growth to:
  - Promote re-development and infill development to reduce sprawl;
  - Promote the use and increase the availability and affordability of pervious pavements;
  - Focus on source control to reduce the amount of stormwater generated on a site and reduce the associated need for structural stormwater management practices;
  - Requiring LID through site plan review and allowing cap & trade for sites where LID is not feasible; and
  - Promote further research and development of effective innovative stormwater infrastructure.

7. Erosion & Sediment Control

- Improve implementation and enforcement of construction-phase sediment and erosion control to insure they are correctly installed and maintained by:
  - Developing erosion and sediment control training or certification for contractors and municipal building code enforcement officers; and
  - Implementing state or municipal inspection and enforcement of stormwater pollution prevention plans (SWPPPs).

8. Buffer Protection

- Encourage riparian buffer and wetland setbacks in accordance with resource protection needs to protect the miles of currently unprotected streambanks and other water resources that are not subject to the Comprehensive Shoreland Protection Act by:
    - Requiring buffers and water quality mitigation/restoration, improvements, etc. and allow for cap & trade or in-lieu fee (similar to CSPA & wetlands mitigation fund);
    - Recommending or requiring minimum state-wide buffer setbacks with conditions and performance standards for stormwater management infrastructure and discharges near buffer boundaries; and
    - Developing incentives to protect land with steep slopes, shallow depth to groundwater, ledge, or other landscape characteristics that make it difficult to develop and treat stormwater.

9. Outreach & Technical Assistance

- Improve outreach and technical assistance across stakeholders by:
    - Working with municipalities to develop new or revise existing regulations and enforcement mechanisms to promote better stormwater management and address barriers to implementing LID;
    - Working with DOT and municipal road agents to better understand barriers to implementing more effective stormwater management strategies and maintenance requirements for linear road projects;
    - Developing standard model SWPPPs for routine projects;
    - Providing NROC-style technical assistance;
    - Providing support for Stormwater Coalitions and other voluntarily-organized groups for permit compliance support;
    - Educating the public, as well as trade associations, lake and watershed associations on the importance of stormwater management, and promoting outreach by these organizations; and
    - Developing a statewide or regional stormwater educational campaign similar to energy star.

B3 – Stormwater Needs Survey Results

HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

Summary of Findings from Internal Committee Survey of Ranking of Needs for Improved Stormwater Management
January 4, 2010

Overview: This document summarizes the results of an internal survey taken by HB1295 committee members to rank and assess the relative importance of the *Needs for Improved Stormwater Management* (Needs). The list of Needs is the product of the Needs Subcommittee whom reviewed the committee meetings to produce a single comprehensive document of issues identified by the committee's working during the first year. The survey was conducted in November of 2009. The survey is a ranking of the relative importance of the Needs. By the nature of the Needs list, all of the items are considered to be important. The survey is intended to aid the focus of future committee efforts.

Process: The subcategories are presented as ranked importance. The top items from each subcategory are included from the Needs list. The rankings are substantive in that they were not forced, equal rankings within the survey were possible.

Summary: The subcategories are inter-related and have a large degree of overlap. The survey indicates clearly the need for increased state involvement from the perspectives of regulations, authority, and funding to establish a uniformity in approach. The response appears to be the result of the currently wide ranging approaches reflected at the local level.

The top 3 ranked subcategories were: 1) Municipal Stormwater Ordinances And Regulations, 2) Stormwater Management Practices, and 3) Cost Sharing & Stormwater Utilities. The importance of uniformity statewide for regulations, and minimum design standards for stormwater management was paramount. This was followed by the identified need to develop funding mechanisms to support municipal programs.

1. MUNICIPAL STORMWATER ORDINANCES AND REGULATIONS

a. Creating a statewide model stormwater ordinance and requiring municipal adoption, but allowing municipalities to adopt stricter and/or non-substantive provisions, subject to state approval with guidance of municipality's RPC (Maine example);
b. Providing a RPC circuit rider to assist municipalities with ordinance review for consistency with state and federal regulations and standards as well as with other municipalities in the watershed;
c. Creating legislation that clearly enables municipalities to impose stormwater management regulations, including stormwater management improvements to existing development in hydrologically- or quality-impaired watershed;

2. STORMWATER MANAGEMENT PRACTICES

a. Developing state-wide minimum criteria for stormwater management with incentives for municipal adoption with municipal administration and initial enforcement;

b. Developing an antidegradation implementation plan that is fair and equitable and a process to effectively implement it.
c. Requiring reduction in use of salt – educate road agents and truck drivers;
d. Addressing aging, deteriorated, inadequate, and/or non-existent private; municipal, and state-owned stormwater infrastructure through extensive mapping and GIS/watershed based models, expansion of MS4 permitting to all cities and towns, and focusing on source control;

3. COST SHARING & STORMWATER UTILITIES

a. Amending stormwater utility enabling legislation RSA 149-I:6 to clearly apply to stormwater independent of reference to "sewers" or "sewage";
b. Fully apply the CWA construction grants and revolving loan fund to treat stormwater the same as waste water;
c. Promoting and developing watershed-wide, region-wide, or state-wide stormwater utilities.

4. BUFFER PROTECTION

a. Recommending or requiring minimum state-wide buffer setbacks with conditions and performance standards for stormwater management infrastructure and discharges near buffer boundaries; and
b. Requiring buffers and water quality mitigation/restoration, improvements, etc. and allow for cap & trade or in-lieu fee (similar to CSPA & wetlands mitigation fund);

5. LOW IMPACT DEVELOPMENT (LID) AND SMART GROWTH

a. Focus on source control to reduce the amount of stormwater generated on a site and reduce the associated need for structural stormwater management practices;
b. Promote re-development and infill development to reduce sprawl;

6. WATERSHED MANAGEMENT PLANNING

Support watershed level stormwater management by:

a. Supporting uniformity in stormwater regulations across municipalities within watershed boundaries;
b. Strengthen RPC (RPC) (or County) ability/authority to provide municipal assistance and require review of watershed impacts by RPCs with jurisdiction over land lying within an affected watershed.

7. OUTREACH & TECHNICAL ASSISTANCE

a. Working with municipalities to develop new or revise existing regulations and enforcement mechanisms to promote better stormwater management and address barriers to implementing LID;

b. Educating the public, as well as trade associations, lake and watershed associations on the importance of stormwater management, and promoting outreach by these organizations;

8. EROSION & SEDIMENT CONTROL

a. Developing erosion and sediment control training or certification for contractors and municipal building code enforcement officers;

9. STATE PERMITTING

a. Developing regulatory incentives for environmentally responsible developers and development for managing stormwater beyond the minimum compliance.
b. Lowering the trigger threshold for the Alteration of Terrain (AoT) Permit with different trigger thresholds for re-development versus new development and land use to capture and track the cumulative impacts of small-scale development;
c. Developing integrated permitting with an expanded pre-proposal process;

Appendix C – Regulatory Authority Subcommittee

Subcommittee Responsibility

The Regulatory Authority Subcommittee was tasked with:

- Identifying existing regulatory authority for federal, state, and local governments.
- Determining whether sufficient authority exists to implement potential solutions to stormwater needs (identified by the Needs Subcommittee).
- If regulatory authority is determined to be insufficient, to draft recommendations, based on feedback from the full Commission, for amended or new legislation to create appropriate authority.

Subcommittee Members and Participants

David Cedarholm, New Hampshire Public Works Association;
Paul Currier, Department of Environmental Services;
Steve Kahl, New Hampshire Lakes Association;
Rep. L. Mike Kappler, New Hampshire House of Representatives;
Newb LeRoy, Association General Contractors of New Hampshire;
Amy Manzelli, Business and Industry Association;
Donald Sienkiewicz, Home Builders & Remodelers Association of New Hampshire;
Jillian McCarthy, Department of Environmental Services
Robert Roseen, UNH Stormwater Center
Michael Trainque, American Council of Engineering Companies in New Hampshire
Karen Ebel, The Nature Conservancy

Subcommittee Findings and Recommendations

Subcommittee work documents are listed below and included in this appendix:

C1. Regulatory Authority Subcommittee Report
C2. Chart of Existing Federal and New Hampshire Laws Related to Stormwater
C3. Questions Regarding Legal Authority to Regulate Stormwater in New Hampshire
C4. Interdepartment Communication from Richard Head, Associate Attorney General Regarding Stormwater Discharges
C5. RSA 149:I

C1 – Regulatory Authority Subcommittee Report

I. BACKGROUND AND OMNIBUS RECOMMENDATIONS

After having considered the needs the full Commission identified, the Regulatory Authority Subcommittee ("Regulatory Subcommittee"): (1) identified all existing laws that govern stormwater; and (2) developed recommendations for new legislation.

A. Meeting Dates

The Regulatory Subcommittee met on:

April 28, 2009
August 24, 2009
July 28, 2010
August 2, 2010
August 16, 2010
September 15, 2010

B. Membership

Amy Manzelli	Business and Industry Association of NH (Chair)
Rep. Judith Spang	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Karen Ebel	The Nature Conservancy
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Department of Transportation
Donald Sienkiewicz	NH Homebuilders and Remodelers Association.
Dave Cedarholm	NH Public Works Association
Robert Roseen	University of New Hampshire Stormwater Center
Eber Currier	NH Farm Bureau
Rep. L. Mike Kappler	NH House of Representatives
Michael Trainque	American Council of Engineering Companies
Dave Danielson	Association of Regional Planning Commissions
Jillian McCarthy	NH DES (Commission Staff)

C. Legislative Recommendations Should Stand Alone

Many of the individual recommendations for legislation are related. However, each concept should be proposed separately and not contain internal cross-referencing. That way, if any concept fails the legislative process, not all of the concepts will meet the same fate simply because of being contained in the same bill.

D. Possible Exemption for Agriculture and Forestry

The Commission and the Regulatory Subcommittee discussed whether agriculture and timber operations would be exempt from any new legislation concerning stormwater. The Commission was unable to reach consensus on this point. Some members felt that

because farmland and forested lands do not contribute, or contribute only slightly, to the stormwater problem, they should be exempt. Other members felt that agriculture and timber operations are too frequently exempted from environmental legislation and that it would not be too much of a burden for them to comply with any new legislation concerning stormwater. In particular, because these type of operations typically do not involve much or any impervious cover, the burden would be minimal. For example, under the recommended stormwater utility option, most operations would probably have no fee. One suggested approach was that agricultural operations be exempt only if they complied with the most recent best management practices, similar to the state's Comprehensive Shoreland Protection Act. RSA 483-B:3, III.

II. SUMMARY OF LAWS IN FORCE IN NEW HAMPSHIRE AFFECTING STORMWATER

The Regulatory Subcommittee prepared a chart that identifies and summarizes federal and New Hampshire laws that affect stormwater, both directly or indirectly. (Attached at Appendix C2).The chart includes federal code, state statutes, and federal and state rules. A comprehensive understanding of existing laws was required to assure that any legislative proposals resulting from the Commission's work would be consistent, complementary, and not redundant with the existing laws.

III. RECOMMENDATIONS FOR NEW LEGISLATION

A. Statewide Stormwater Utility

The Regulatory Subcommittee recommends a statewide stormwater utility because a solid economic plan is necessary for the successful implementation of new stormwater programs. Given current economic conditions, any proposed stormwater programs are likely to fail without a source of funding outside of the State's general fund. Any new programs will require a consistent and dedicated revenue stream to be viable and self-supporting. The current economic climate and lack of adequate funding for water, wastewater, and stormwater programs in general leaves little funding available. For this reason, action is needed on a state level, to assist communities at the local level.

The basic idea is for a statewide stormwater utility process that encourages creation of municipal or inter-municipal stormwater utilities, encourages municipal stormwater utilities to participate in the state program, and authorizes regional, watershed-based utilities under state government in areas not served by municipal utilities or utilities formed by inter-municipal agreements. The goal is to have the entire State of New Hampshire covered under either an individual municipal utility, an intermunicipal regional utility, or a state-administered watershed-based utility.

A utility fee would be collected from each property in the state, 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 best management practices ("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.

In the initial stage of the utility, a relatively minor fee would be charged to each property owner. However, by implementing stormwater controls, property owners may 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 increased. This will make the incentive 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.

The concept draft legislative 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 Winnipesauke River Basin Program. The language is intended as a concept draft, and requires further work to be fully ready for the legislative process.

State stormwater utilities should be created on a watershed basis, using level 12 of the Hydrologic Unit Codes ("HUC-12"). *See* Figure 1 (report cover page). About 300 HUC-13 watersheds exist in NH. However, this does not mean that about 300 watershed-based stormwater utilities would be created, for several reasons. First, many 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 would combine many HUC-12 watersheds. Third, some HUC-12 watersheds have little or no developed property and provision has been made for opting out of the stormwater utility requirement. Lastly, those municipalities that do not create or join a stormwater utility will be automatically included in a state-wide utility, also watershed based, which will include many HUC-12 watersheds.

As noted, municipalities would have three options. First, they could form their own stormwater utility. This would be a new municipal entity. It would operate on its own, pursuant to the statute. Second, they could band together with neighboring municipalities to form an inter-municipal stormwater utility. The inter-municipal stormwater utility would be a new entity with the legal status of a municipality. Some of the proposed legislative language for the inter-municipal stormwater utilities is based on RSA 53-B, which enables the formation of regional refuse disposal districts. 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 will apply. The default will be that each such municipality will become part of a larger, watershed-based stormwater utility, by operation of law. These default statewide stormwater utilities will be administered by

a stormwater commission. 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 rules.

DES would develop and promulgate rules to administer and implement, to set 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.

Undeveloped properties that do not constitute "developed property" pursuant to the recommended definition would not be subject to a utility fee.

Although the passage of RSA 149-I in 2008 enabled municipalities to create municipal stormwater utilities, none have been created. Some municipalities are studying the possibility of forming one. However, it appears that political and other obstacles may prevent those communities from forming a stormwater utility. Thus, additional legislation at the state level is needed to create stormwater utilities. Moreover, a state-wide approach would result in both more uniformity across the State and quicker improvement of escalating stormwater problems.

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. 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 the Coastal Watershed and the Lower Merrimack. See Figure 2 (report, p. 25).

Starting in the Coastal Watershed is ideal for several reasons. First, it is chronically the most impaired watershed 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. A stormwater utility could then generate the needed revenues to implement the requirements of the NPDES permit. Third, the Coastal Watershed drains to the Great Bay estuary which has recently been reported as impaired for nitrogen pollution. Stormwater is a major source of nitrogen pollution. Fourth, the Seacoast Watershed Alliance has already been formed and would be an effective vehicle through which to organize utilities in the HUC-12 watersheds within the Coastal Watershed.

Every other year, the 305(b) report is updated. Following its being updated, the 10 most impaired HUC-12 watersheds which have not already come into 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-wide utility.

The new law should contain an "opt out" provision whereby a municipality could petition DES to opt out of the stormwater utility requirement. The conditions for opt-out

should be prescribed in concept in the enabling legislation. DES should then promulgate by rule the particular conditions which would qualify a municipality to opt out. The thrust of the criteria to opt out should be that a community has little connected impervious surface, and therefore its impact to stormwater is negligible.

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.

Additional information regarding details of the stormwater utility is provided in the funding subcommittee report.

i. Statewide Stormwater Discharge Permit

In absence of a statewide stormwater utility, the Regulatory Subcommittee recommends a statewide stormwater permit program. Permits would be required for all developed property in the state through permit by rule. 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. Properties subject to a NPDES permit for stormwater should be exempt from a statewide permit.

The Regulatory Subcommittee 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. In addition, a utility is capable of applying for and receiving federal funds. Although the Regulatory Subcommittee recommends a statewide stormwater utility, if the legislature decides not to propose a statewide stormwater utility, the Regulatory Subcommittee would recommend a statewide stormwater discharge permit.

A permit fee should be the funding mechanism for the stormwater water discharge permit system. The Regulatory Subcommittee 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 Regulatory Subcommittee 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

B. Define the term "stormwater" in State law

RSA 485-A does not contain the words "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 recommended definition of stormwater in 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, stormwater, or industrial wastes***.

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. Code Ann. §15-23-501, Sec. 3.01(n); 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). No definition of the term "runoff" is required in New Hampshire statute because its plain meaning is obvious.

C. Property Owner's Responsibility For Stormwater

The stormwater management concepts in these 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 now in RSA 485-A:12 and the Surface Water Quality Regulations Env Wq 1700:

485-A:12 Enforcement of Classification. –

I. After adoption of a given classification for a stream, lake, pond, tidal water, or section of such water, the department shall enforce such classification by appropriate action in the courts of the state, and it shall be unlawful for any person or persons to dispose of any sewage, industrial, or other wastes, either alone or in conjunction with any other person or persons, in such a manner as will lower the quality of the waters of the stream, lake, pond, tidal water, or section of such water below the minimum requirements of the adopted classification. If the department shall set a time limit for abatement of pollution under paragraph II, and it becomes apparent at any time during the compliance period that full compliance with the adopted classification will not be attained by the end of such period due to the failure of any person to take action reasonably calculated to secure abatement of the pollution within the time specified, the department shall notify such person or persons in writing. If such person or persons shall fail or neglect to take appropriate steps to comply with the classification requirements within a period of 30 days after such notice, the department shall seek appropriate action in the courts of the state.

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.

III. No activity, including construction and operation of facilities, that requires certification under section 401 of the Clean Water Act and that may result in a discharge, as that term is applied under section 401 of the Clean Water Act, to surface waters of the state may commence unless the department certifies that any such discharge complies with the state surface water quality standards applicable to the classification for the receiving surface water body. The department shall provide its response to a request for certification to the federal agency or authority responsible for issuing the license, permit, or registration that requires the certification under section 401 of the Clean Water Act. Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality standards. The department

may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22.

IV. No activity that involves surface water withdrawal or diversion of surface water that requires registration under RSA 488:3, that does not otherwise require the certification required under paragraph III, and which was not in active operation as of the effective date of this paragraph, may commence unless the department certifies that the surface water withdrawal or diversion of surface water complies with state surface water quality standards applicable to the classification for the surface water body. The certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide reasonable assurance that the proposed activity complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22."

"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."

To incorporate this concept into the statutes, RSA 485-A:12, which provides for the 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 discharging from the property. Such stormwater discharge shall not cause or contribute to a violation of water quality standards, including antidegradation.

D. Definitions To Support Proposed Legislation

Definitions for "developed property", "impervious surface", and related concepts are needed for either a stormwater utility or 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 as well. 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 from a property, but directs stormwater runoff to on-site pervious areas to infiltrate into the soil or be filtered by overland flow 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. This definition is adapted from Env-Wq 1500 Alteration of Terrain rules.

v. "Connected impervious surface" means impervious surface that is not disconnected.

E. Municipal authority to regulate stormwater

i. Federal Municipal Separate Storm Sewer System Permits

The current and newly proposed federal General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems ("MS4 Permit") requires municipalities to enact local stormwater regulations. Despite that requirement from the federal government, the Regulatory Subcommittee concluded that existing New Hampshire law does not clearly enable municipalities to generally regulate stormwater.

ii. Possible Sources of Municipal Authority in Existing State Law

To reach this conclusion, the Regulatory Subcommittee 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."

The Regulatory Subcommittee 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. (This memo discusses whether discharges of stormwater runoff that carry pollutants from areas altered by development qualify as discharges of "sewage or waste" under RSA 485-A.)

Using these two memos and the research and expertise of commissioners, the Regulatory Subcommittee identified the following statutes which it has been asserted enable municipalities to regulate stormwater:

1. "Towns may make bylaws for . . . [t]he collection, removal and destruction of garbage, snow and other waste materials" RSA 31:39, I(f);

2. "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;

3. "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]the 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;

4. "zoning ordinances shall be designed . . . to assure proper use of natural resources and other public requirements" RSA 674:17, I(h);

5. "Innovative land use controls may include . . . Environmental characteristics zoning" RSA 674:21, I(j);

6. "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;

7. "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

8. "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.

iii. New State Law Needed for Municipalities to Generally Regulate Stormwater

After consideration of these statutes, the Regulatory Subcommittee concluded that, at best, the municipalities have authority to regulate stormwater only: (a) as part of a stormwater utility if the municipality has followed the process in RSA 149-I:6-a to d; and (b) in connection with certain land use approval processes, such as subdivision, site plan and building permit approvals. But, such authority does not 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 construction activities during the development or redevelopment phase, and not activities afterwards 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 Regulatory Subcommittee believes it is desirable to clearly authorize municipalities, particularly small MS4 municipalities, to regulate stormwater in general so that they may fully comply with requirements of the MS4 Permit.

In addition, municipalities are the best situated to know about their own communities, 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 local land use. 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 municipal boundaries, including authority to set design requirements and performance standards for BMPs and to require property owners to put BMPs in place on their property and maintain them. DES 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 required to regulate stormwater.

iv. New Law Should Create Uniformity Amongst Municipal Regulations

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, municipal zoning and subdivision regulations vary widely amongst municipalities. Any legislation must fully incorporate this idea.

Based on input received during Commission deliberations from development, environmental and government representatives, the Regulatory Subcommittee 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. Consistency between municipal regulations 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 amongst municipalities, the Regulatory Subcommittee recommends that enabling legislation task DES with developing by administrative rule a model stormwater control regulation incorporating minimum state performance specifications for stormwater control. DES should do this with advice from interested stakeholders. Similar to most other environmental standards set by the State, municipalities should be able to make their regulations more stringent, but not less stringent, that the State-developed model stormwater regulation.

v. Minimum Standards of Performance

Municipalities should be required to either: (1) adopt the state model; or (2) adopt a modified state model tailored to a particular municipality which is at least as stringent as the state model. 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 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. The intention is to provide a high degree of similarity among requirements of different municipalities, similar to fire and electrical codes, rather than regulations which are unique to each municipality.

The State model stormwater regulation 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; and
9. Operations and maintenance.

LID site planning and design strategies must be used to the maximum extent practicable in order to reduce the velocity and volume of storm water for both new and redevelopment projects. The objective is to ensure that LID is considered at an early stage in the planning process such that stormwater impacts are prevented rather than mitigated.

Stormwater control based on watershed drainage patterns is the most desirable. The Regulatory Subcommittee recommends that when DES develops model stormwater control regulations it encourage, if not require, watershed drainage analysis in connection with land development.

vi. Need for Prompt Action

In light of the need for prompt action to control stormwater in the state, the Regulatory Subcommittee recommends that DES be given specific deadlines in the enabling legislation that establish a rapid pace of developing the model regulation. After some discussion, the Regulatory Subcommittee generally agreed that no more than eighteen months should be allowed to issue the model regulations given the need for prompt Statewide action. Because municipalities will also have a role should they choose to tailor the State model, they should also be given specific prompt deadlines. Regional Planning Commissions could be tasked to work with municipalities in the adoption of the State model stormwater regulation. Municipal deadlines should be based on the Town Meeting calendar. Basing municipal compliance deadlines on a set number of years subsequent to the effective date of the legislation does not typically result in municipalities being able to meet deadlines.

vii. Article 28-a of the New Hampshire Constitution

The concept of requiring municipalities to regulate stormwater will likely be alleged to be in violation of Article 28-a of the State Constitution. The Regulatory Subcommittee considered this issue. The State Supreme Court has held only very few times that a law violates Article 28-a. So, despite frequent claims that a proposed law would violate Article 28-a, very few have been invalidated on those grounds. The likelihood that this law would violate it seems very low. Plus, this law could be analogized to workforce housing requirements or primary building setbacks from certain waters, both of which the State has required of municipalities.

viii. Accommodation for Municipalities with Existing Stormwater Laws

Some municipalities have already enacted stormwater regulations. These municipalities should not be penalized by having to abandon their existing laws. The Regulatory Subcommittee 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 model. The enabling legislation should contain a provision which allows such municipalities to examine their existing regulations against the new state standard and submit a form to DES certifying that they have done such an examination and have concluded that their regulations are at least as stringent. DES should have the option to either accept the municipality's letter on its face without investigation, or to undertake its own analysis of whether the municipality's regulations are stringent enough; the latter option being a permissive right of DES and not a mandatory obligation.

ix. Undesirable Legislation Due to Probable Lack of Uniformity

One possible method to enable municipalities to regulate storm water would be to simply add such authority to RSA 31:39, which lists most of the powers of cities and towns. Doing so could result in municipalities enacting regulations that varied widely amongst each other. Plus, some municipalities would do nothing. The resultant lack of uniformity would be undesirable to the business and construction industries and possibly others. Furthermore, research clearly indicates that better statewide stormwater management is necessary, therefore prompt action is needed. Also, many of the municipalities would welcome the development of a model storm water regulation by DES because they might have difficulty in promptly developing their own. So, the Regulatory Subcommittee opted to recommend the more comprehensive approach to enabling legislation for municipalities to manage storm water in a specified timeframe which is described in this report.

x. Many Sources for State Model Stormwater Regulation Exist Already

In developing the State model stormwater regulation, DES 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.

C2 - Chart of Existing Federal and New Hampshire Laws Related to Stormwater

Program	Affects	Coverage	Entity/Enforc.	Comments	Statute	Regulations
National Pollutant Discharge Elimination System (NPDES):						
Multi-Sector General Permit 2008	Any industrial site or facility that collects stormwater in conveyances from any portion of the site associated with manufacturing, processing, or storage of materials	plant yards; certain access roads; certain rail lines; material handling sites; refuse sites; sites used for the application or disposal of process waste waters; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas for raw materials and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater; hazardous waste treatment, storage, or disposal sites under the Resource Conservation and Recovery Act; landfills under the same Act; recycling facilities; steam electric generation facilities; transportation facilities; sewage treatment facilities; and construction activities	EPA/EPA	Stormwater Pollution Prevention Plan (SWPPP) usually required	33 U.S.C. 1342(p)(3)	40 C.F.R. 122.26; Env-Wq 301*
Construction General Permit	Storm water discharge	Any construction where more than one acre is disturbed, including smaller disturbances that are part of a larger common plan of development or sale	EPA/EPA	Stormwater Pollution Prevention Plan (SWPPP) usually required	33 U.S.C. 1342(p)(3)	40 C.F.R. 122.26; Env-Wq 301*
General Permit for Construction Dewatering Activities in MA and NH	Pumped or drained discharges of groundwater or stormwater from excavations or other points of accumulation associated with construction			Stormwater Pollution Prevention Plan (SWPPP) usually required	33 U.S.C. 1342(p)(3)	40 C.F.R. 122.26; Env-Wq 301*

NPDES, cont.						
Remediation & Miscellaneous Contaminated Sites General Permit	Discharges from clean up of contaminated sites and dewatering of contaminated sites	Any construction	EPA/ EPA & DES	Stormwater Pollution Prevention Plan (SWPPP) usually required	33 U.S.C. 1342(p)(3)	40 C.F.R. 122.26; Env-Wq 301*
Small Municipal Separate Storm Sewer Systems General Permit (Small MS-4)	Storm water discharge	Amherst, Atkinson, Auburn, Bedford, Danville, Derry, Dover, Durham, Exeter, Goffstown, Greenland, Hampstead, Hampton, Hollis, Hooksett, Hudson, Kingston, Litchfield, Londonderry, Manchester, Merrimack, Milford, Milton, Nashua, New Castle, Newton, North Hampton, Pelham, Plaistow, Portsmouth, Rochester, Rollinsford, Rye, Salem, Sandown, Seabrook, Somersworth, Windham, UNH, NHDOT (Brentwood, Chester, East Kingston, Hampton Falls, Lee, Madbury, and Newington required but obtained waiver)	EPA/EPA	Stormwater Pollution Prevention Plan (SWPPP) usually required; also Municipal Stormwater Ordinances Required - but possibly no municipal authority to promulgate them	33 U.S.C. 1342(p)(3)	40 C.F.R. 122.26; Env-Wq 301*
Other Federal:						
Spill Prevention, Countermeasure and Control Plan (SPCC Plan)	Petroleum spills	Aboveground Storage Tanks	EPA & DES/ EPA & DES	A requirement of both the EPA and DES for ASTs	CWA; RSA 146-?	
Antidegradation	Discharges must not degrade water quality past certain standards	Impaired/TMDL	DES/EPA & DES		CWA 303; RSA 485-A:12	
404 Program						
Residual Designation Authority under the Clean Water Act	Stormwater discharges	Existing Development	EPA		33 U.S.C. 1342	
Section 401 Certification	Certification that the discharge will comply with the State's water quality standards	All discharges requiring a NPDES permit, including stormwater discharges, must get this	DES/DES		33 U.S.C. 1341(a)(1); RSA 485-A:12	Env-Wq 302*

State:						
Water Discharge Permits	Discharge	Sewage or waste	DES/DES	Not clear whether State jurisdiction limited to "waste"	RSA 485-A:13	Env-Wq 1700
Alteration of Terrain Permits	Land surface	New development	DES/DES	Construction/ Alteration over 2.5 acres (100,000 square feet), unless within 250' of protected shoreland, and then 50,000 square feet	RSA 485-A:17	Env-Wq 1500
Comprehensive Shoreland Protection Act	Indirect control of stormwater	Within 250' of protected shorelands	DES/DES		RSA 483-B	Env-Wq 1400
Wetlands	Indirect control of stormwater	Dredge and fill in wetlands	DES/ACE/EPA		CWA 404; RSA 482-A	Env-Wt 100-1100*
Municipal:						
Site Plan Review	Land Use	New development and redevelopment	Local/CEO	only if the town wishes to	RSA 674:44	
Subdivision Regulations	Land use	New development and redevelopment	Local/CEO	only if the town wishes to	RSA 674:36	
Municipal Ordinances (including those targeted at public health, stormwater, etc.)	Land Use	New development and redevelopment	Local/CEO	only if the town wishes to	RSA 674-676	
Stormwater Utilities	Storm water discharge	Municipalities	Local/?	Only if the town wishes to	RSA 149-I	

C3 – Questions Regarding Legal Authority to Regulate Stormwater in New Hampshire

November 2010

Questions Regarding Legal Authority to Regulate Stormwater in New Hampshire

What, if any, legal authority, do New Hampshire municipalities have to manage and regulate stormwater, and if they do have such authority, what is the source of that authority, including:

a. Municipal authority without being specifically authorized or enabled by the state.
    1. Specifically, the municipal authority to require improved stormwater controls under the federal NPDES Phase II Stormwater Program without state or local authority to do so.

b. The municipal authority to develop stormwater ordinances:
    1. Relative to "proper use of natural resources and other public requirements" under RSA 674:17-I(h).
    2. Relative to regulating subdivisions and streets under RSA 674:35.
    3. Relative to site plan regulations under RSA 674:44-II(a)(1).
    4. Relative to the "collection, removal and destruction of garbage, snow and other waste materials" under RSA 31:39-I(f).
    5. Relative to bylaws and ordinance for public health under RSA 149-I:6.

c. The municipal authority to require implementation of innovative land use controls, if adoption of such controls is not explicitly supported in a Town's master plan.

d. The potential consequences to involved parties (i.e., states or municipalities) if the state has not enabled municipalities to follow federal stormwater laws.
    1. In instances where there is a conflict between state and local regulatory mechanisms and federal requirements, how are the conflicts resolved and where does the responsibility lie.
    2. Does the fact that New Hampshire is not delegated to issue permits under the federal National Pollutant Discharge Elimination System (NPDES) Program affect the jurisdiction.
    3. Is there a conflict between land use regulation (requirements) at the local level, state guidelines (i.e., compliance is optional at local level), and compliance with the NPDES Stormwater Phase II requirements?

e. The difference, if any, that exists between the municipal authority to ***manage*** stormwater and the municipal authority to ***regulate*** stormwater.

* * * * *

Is it legal to alter the volume and direction of flow from one tract to another? Is this addressed is statute/rule or is it a matter of common law? Do developers, landowners, municipal public works departments, and state or federal highway departments have the legal right to drain stormwater over onto abutters' property, without just compensation?

* * * * *

The following statutes, with specific passages in large bold face type, were suggested to the Stormwater Legislative Commission, established under HB1285, to give the legal authority for municipalities to manage and regulate stormwater:

674:17 Purposes of Zoning Ordinances. –

I. Every zoning ordinance shall be adopted in accordance with the requirements of RSA 674:18. Zoning ordinances shall be designed:

(a) To lessen congestion in the streets;
(b) To secure safety from fires, panic and other dangers;
(c) To promote health and the general welfare;
(d) To provide adequate light and air;
(e) To prevent the overcrowding of land;
(f) To avoid undue concentration of population;
(g) To facilitate the adequate provision of transportation, solid waste facilities, water, sewerage, schools, parks, child day care;
(h) To assure proper use of natural resources and other public requirements;
(i) To encourage the preservation of agricultural lands and buildings; and
(j) To encourage the installation and use of solar, wind, or other renewable energy systems and protect access to energy sources by the regulation of orientation of streets, lots, and buildings; establishment of maximum building height, minimum set back requirements, and limitations on type, height, and placement of vegetation; and encouragement of the use of solar skyspace easements under RSA 477. Zoning ordinances may establish buffer zones or additional districts which overlap existing districts and may further regulate the planting and trimming of vegetation on public and private property to protect access to renewable energy systems.

674:21 Innovative Land Use Controls. –

I. Innovative land use controls may include, but are not limited to:

(a) Timing incentives.
(b) Phased development.
(c) Intensity and use incentive.
(d) Transfer of density and development rights.
(e) Planned unit development.
(f) Cluster development.
(g) Impact zoning.
(h) Performance standards.
(i) Flexible and discretionary zoning.
(j) Environmental characteristics zoning.
(k) Inclusionary zoning.
(l) Accessory dwelling unit standards.
(m) Impact fees.
(n) Village plan alternative subdivision.

674:35 Power to Regulate Subdivisions. –

I. A municipality may by ordinance or resolution authorize the planning board to require preliminary review of subdivisions, and to approve or disapprove, in its discretion, plats, and to approve or disapprove plans showing the extent to which and the manner in which streets within

subdivisions shall be graded and improved and to which streets water, sewer, and **other utility mains, piping, connections or other facilities** within subdivisions shall be installed.

674:44 Site Plan Review Regulations. –

I. Before the planning board exercises its powers under RSA 674:43, it shall adopt site plan review regulations according to the procedures required by RSA 675:6.

II. The site plan review regulations which the planning board adopts may:

(a) Provide for the safe and attractive development or change or expansion of use of the site and guard against such conditions as would involve danger or injury to health, safety, or prosperity by reason of:

(1) Inadequate drainage or conditions conducive to flooding of the property or that of another;

(2) Inadequate protection for the quality of groundwater;

(3) Undesirable and preventable elements of pollution such as noise, smoke, soot, particulates, or any other discharge into the environment which might prove harmful to persons, structures, or adjacent properties; and

(4) Inadequate provision for fire safety, prevention, and control.

(b) Provide for the harmonious and aesthetically pleasing development of the municipality and its environs.

(c) Provide for open spaces and green spaces of adequate proportions.

(d) Require the proper arrangement and coordination of streets within the site in relation to other existing or planned streets or with features of the official map of the municipality;

(e) Require suitably located streets of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air, and access for firefighting apparatus and equipment to buildings, and be coordinated so as to compose a convenient system;

(f) Require, in proper cases, that plats showing new streets or narrowing or widening of such streets be submitted to the planning board for approval;

(g) Require that the land indicated on plats submitted to the planning board shall be of such character that it can be used for building purposes without danger to health;

(h) Include such provisions as will tend to create conditions favorable for health, safety, convenience, and prosperity;

(i) Require innovative land use controls on lands when supported by the master plan; and

(j) Require preliminary review of site plans.

III. The site plan review regulations which the planning board adopts shall:

(a) Provide the procedures which the board shall follow in reviewing site plans;

(b) Define the purposes of site plan review;

(c) Specify the general standards and requirements with which the proposed development shall comply, including appropriate reference to accepted codes and standards for construction;

(d) Include provisions for guarantees of performance, including bonds or other security; and

(e) Include provision for waiver of any portion of the regulations in such cases where, in the opinion of the planning board, strict conformity would pose an unnecessary hardship to the applicant and waiver would not be contrary to the spirit and intent of the regulations.

IV. The site plan review regulations of the planning board may stipulate, as a condition precedent to the approval of the plat, 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.** The regulations or practice of the planning board:

(a) May provide for the conditional approval of the plat before such improvements and installations have been constructed, but any such conditional approval shall not be entered upon that plat.

(b) Shall provide that, in lieu of the completion of street work and utility installations prior to the final approval of a plat, the planning board shall accept a performance bond, irrevocable letter of credit, or other type or types of security as shall be specified in the site plan review regulations. The planning board shall have the discretion to prescribe the type and amount of the bond or other security, require satisfactory evidence of the financial ability of any surety or financial institution to pay such bond or other type of security, and specify a period for completion of the improvements and utilities to be expressed in the bond or other security, in order to secure to the municipality the actual construction and installation of such improvements and utilities. The municipality shall have the power to enforce such bonds or other securities by all appropriate legal and equitable remedies.

V. The planning board may, as part of its site plan review regulations, require an applicant to pay all costs for notification of abutters and may provide for the assessment of reasonable fees to cover the board's administrative expenses and costs of special investigation and the review of documents and other matters which may be required by particular applications.

149-I:6 Bylaws and Ordinances. –

I. 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.

II. Any person who violates any ordinance or bylaw adopted pursuant to paragraph I of this section shall be subject to a civil penalty not to exceed $10,000 per day of such violation.

III. A municipality shall give notice of the alleged violation to the department of environmental services within 10 days of commencement of any action under this section.

* * * * *

The following statute was cited by the City of Manchester in adopting its stormwater regulations:

485-A:3 Policies. – It is hereby declared, as a matter of legislative intent, 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.** To the extent not inconsistent with the foregoing nor the aims of any joint state-federal permit program that may from time to time be agreed upon and in force pursuant to this chapter and applicable federal law, the department shall adhere to the following policies:

I. Insofar as practicable, the initial objective of the control program will be to obtain the installation of primary treatment (with adequate disinfection where sewage discharges are involved) for all discharges of sewage and industrial wastes.

II. The second objective will be to require the installation of secondary treatment whenever such additional treatment is necessary to protect the uses assigned to the particular stream

classification.

III. The third objective, after all stream classification requirements throughout the state have been satisfied, will be to 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.

IV. Until such time as appropriate methodology and reasonable levels of financial assistance are made available, municipalities with combined sewer systems shall not be required to provide treatment facilities with capacity greater than that necessary to handle anticipated peak dry weather flows.

V. A further objective will be to advance the development and application of innovative/alternative waste treatment systems with guidelines, procedures, pilot projects, demonstration projects, community projects or in any other manner the department may elect.

* * * * *

The following statute addresses infringements on water rights:

498:6 Water Rights. – Any legal right, public or private, infringed by a change in the water level of a natural lake or pond, or by the casting or dropping into a watercourse of sawdust **or other waste** of a saw or lumber mill or any other material, and the water rights of riparian proprietors on a stream may be ascertained and enforced in a constitutional manner on a bill in equity without prior ascertainment of the right by an action at law; and rights of boating, fishing and navigation may be enforced on a bill in equity brought by the attorney general in the name of the state.

Source. 1885, 87:1, 2. PS 205:3. PL 317:5. RL 371:6.

C4 – Interdepartment Communication from Richard Head, Associate Attorney General Regarding Stormwater Discharges

STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: July 1, 2008

FROM: Richard W. Head
Associate Attorney General **AT (OFFICE)** Department of Justice

SUBJECT: Stormwater Discharges and Transfers of Surface Waters

TO: Michael J. Walls, Assistant Commissioner
Department of Environmental Services

QUESTIONS PRESENTED

You have asked for an opinion on the following two questions:

1. Are water transfers from a Class B water to a Class A water, for purposes of augmenting drinking water supplies, permissible under RSA 485-A:8, I?

2. Do discharges of stormwater runoff that carry pollutants from areas altered by development qualify as discharges of "sewage or waste" under RSA 485-A?

SHORT ANSWERS

The answer to question 1 is a qualified yes. While allowed, the circumstances under which such a transfer would comply with the statute and rules are severely limited. Question 2 is not specifically limited to Class A waters, so I have assumed you intended the question to include both Class A and Class B waters.[1] The answer to question 2 requires, in part, a technical analysis. Generally, however, the answer is yes, although with regard to Class B waters, disposal of sewage or waste is allowed if the source water is subjected to "adequate treatment."

I have attached as Exhibit A sections from relevant statutes and rules.

ANALYSIS

A. Transfers from a Class B water to a Class A water, for purposes of augmenting drinking water supplies, are permissible under limited circumstances

1. Analysis based on statutory interpretation

[1] In your question, you include the word "discharge", which is a term applicable only to Class A waters. I am assuming, however, that the use of the word discharge was not intended to limit your question to Class A waters.

As a matter of statutory interpretation, the Department's interpretation of the statutes it is charged with regulating will be given substantial deference. *In re Weaver*, 150 N.H. 254, 256 (2003). Nevertheless, the interpretation of a statute is to be decided ultimately by the court. *Id.* The Court will review an agency's interpretation of a statute *de novo*. *Appeal of Regenesis Corp.*, __ N.H. __ (2007).

The Department has interpreted RSA 485-A:8, I as it relates to transfers of water to public water supplies. *See* Env-Wq 1708.12 (Transfer of Water to Public Water Supplies). Specifically, the Department's rules allow transfers of water to public water supplies, subject to four conditions: (1) both the source water and the receiving water shall be "acceptable for water supply uses after treatment"; (2) the chemical and physical water quality parameters of the source water shall be at least equal to the water quality of the receiving water; (3) the biological characteristics of the source water shall be compatible with those of the receiving water and shall not contain species of aquatic life that would adversely affect the species of aquatic life in the receiving water; and (4) the transfer and withdrawal shall comply with the antidegradation provisions of the water quality rules (Env-Wq 1708).

Thus, as a general matter, the Department has already rendered an interpretation of the statute and has concluded that water transfers are allowed, as long as the four conditions are followed. In order to answer the question presented, however, a more in depth analysis of the four conditions is required. As they relate to Class A waterbodies, conditions 2 and 4 are the most relevant.

The antidegradation rules (incorporated in condition number 4 above) include the following:

- The Department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources. Env-Wq 1708.01(b).
- A proposed discharge or activity shall not eliminate any existing uses or the water quality needed to maintain and protect those uses. Env-Wq 1708.04(b).
- Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality. The department shall not approve such a discharge or activity unless the applicant demonstrates that the proposed lowering of water quality is necessary to achieve important economic or social development, in accordance with Env-Wq 1708.10, in the area where the waterbody is located. Env-Wq 1708.09(a).

The antidegradation rules also contain a specific provision addressing Class A waters. Rule Env-Wq 1708.06 (Protection of Class A Waters) states:

> (a) In accordance with RSA 485-A:8, I, discharges of sewage or waste to Class A waters shall be prohibited.
> (b) Proposed new or increased activities that the department determines do not involve the discharge of sewage or waste shall be reviewed in accordance with Env-Wq 1708.01 through Env-Wq 1708.12.

Thus, transfers of water to both Class A and Class B drinking water supplies are contemplated by the Department's rules, but discharges to Class A waters are limited by the more restrictive language of Env-Wq 1708.06. Unfortunately, Env-Wq 1708.06 does not interpret RSA 485-A:8, I as it relates to Class A waters, but simply restates it. Thus, the antidegradation rules do not assist with the interpretation of RSA 485-A:8, I.

RSA 485-A:8, I prohibits the discharge of any sewage or wastes into Class A waters. Discharge, sewage and wastes are all defined terms. In addition, the term "discharge" incorporates the term pollutant into its definition, which is itself a defined term.[2] Thus, the addition of pollutants, sewage or wastes to Class A waters are all prohibited. Using those three words as defined, the statute prohibits the following discharges to Class A waters:

- water-carried waste products from buildings, public or private, together with such groundwater infiltration and surface water as may be present (definition of sewage);
- industrial waste (definition of waste);
- 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 substance harmful to human, animal, fish or aquatic life (definition of other wastes[3]);
- dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water (definition of pollutant).

With regard to water transfers of Class B waters to Class A waters, the most relevant of these prohibitions are likely to be "any other substances other than sewage or industrial wastes" and "heat".

The Department's rules include a long list of substances that are either banned from Class A waters or cannot exceed a certain threshold. Among the criteria governing Class A waters are the following (Env-Wq 1707.01; 1703.07-18, 20):

- dissolved oxygen content of at least 75% saturation, based on a daily average, and an instantaneous minimum of at least 6 mg/l at any place or time except as naturally occurs.
- no benthic deposits, unless naturally occurring.
- no oil or grease, unless naturally occurring
- no color, unless naturally occurring.
- no turbidity, unless naturally occurring.
- no slicks, odors, or surface floating solids unless naturally occurring.
- no change in temperature in class A waters, unless naturally occurring.
- no phosphorus or nitrogen unless naturally occurring.
- gross beta radioactivity in excess of 1,000 picocuries per liter.

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[2] The addition of the defined term pollutant to the definition of discharge is by rule, not by statute.

[3] "Other wastes" is incorporated into the definition of "waste".

- strontium-90 in excess of 10 picocuries per liter.
- no radium-226 in excess of 3 picocuries per liter.
- pH of Class A waters shall be as naturally occurring
- dioxin (2, 3, 7, 8 - TCDD) in excess of 0.001 ng/l,
- Mixing zones shall be prohibited

Taking this list of criteria for defining a Class A waterbody, combined with the definition of pollutant, sewage, wastes and other wastes, I conclude that the introduction of any substance to the receiving waterbody that would result in a decrease in water quality is prohibited. This conclusion is consistent with Env-Wq 1708.12(b)[4], which says "[t]he chemical and physical water quality parameters of the source water shall be at least equal to the water quality of the receiving water." Thus, while the rules contemplate transfers of water to Class A drinking water supplies, the practical effect of the statutory language, combined with the Department's rules, is that few if any transfers would be allowed.[5]

2. Effect of EPA's new rule governing water transfers

Recently, the Environmental Protection Agency modified its rules to specifically exclude from the NPDES permit requirement discharges associated with water transfers. 40 CFR §122.3(i). When it issued this rule, EPA specifically stated that the rule was not intended to interfere with regulation of water transfers by the states.

> Based on the statute as a whole and consistent with the Agency's longstanding practice, the interpretive memorandum concluded that Congress generally expected water transfers would be subject to oversight by water resource management agencies and State non-NPDES authorities, rather than the permitting program under section 402 of the CWA.

73 Fed. Reg.33699 (June 13, 2008).

The First Circuit has considered the issue of water transfers in the case of *Dubois v. U.S. Dept. of Agriculture*, 102 F.3d 1273 (1st Cir. 1996). That decision was issued before EPA's new rule on water transfers, and was limited to whether a NPDES permit was required for a transfer of water from the East Branch of the Pemigewasset River to Loon Pond. Because New Hampshire's definition of "pollutant" is identical to that used in the federal regulation, however, the Court's decision is instructive on how a court might interpret New Hampshire's statute and rules.

In the *Dubois* case, the Forest Service did not contest the assertion that there are at least some pollutants in the East Branch that do not exist naturally in Loon Pond. The Court thought it relevant that the East Branch had been designated as a Class B waterway and Loon Pond a Class A waterbody. This distinction was sufficient for the Court to conclude that the two water bodies were not of "like quality." Even if both were Class A waters, the Court concluded that the analysis would not stop there.

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[4] Env-Wq 1708.12 contains the four conditions for transfer of water to public water supplies. *See* p. 2.

[5] To the extent the Department did not intend this result, it should amend its rules to make explicit what transfers are allowed, consistent with the prohibition of discharges of any sewage or waste.

> Even if the East Branch were rated in the same general class as Loon Pond (Class A), that would not mean the two bodies of water were identical in quality, such that an NPDES permit would be unnecessary. The East Branch contains different organisms than Loon Pond, *inter alia*, Giardia lambia. Loon Pond is also colder overall than the East Branch, and its lower depths are significantly colder. The two bodies of water also have different chemistries, especially the low level of phosphorus in Loon Pond, which affects its biological composition. Nor has the Forest Service argued that all such pollutants would be eliminated before any East Branch water would be pumped up to refill Loon Pond after depletion by Loon Corp.'s snowmaking. The Service cannot say, therefore, that the discharge of East Branch water into Loon Pond would not result in "any pollutants" being added to the Pond.

Dubois, 102 F.3d at 1298-99. The Court, however, did not rule specifically on whether a NPDES permit was required. It concluded that it is the EPA's obligation to determine whether a permit is required, and whether permit conditions would be appropriate. *Dubois*, 102 F.3rd at 1301.

It is unlikely that a court interpreting RSA 485-A would conclude that, because EPA interpreted similar language to mean that no NPDES permit is required, that New Hampshire's statute should be given a similar meaning. Application of EPA's interpretation to New Hampshire's statute would mean that New Hampshire did not intend to regulate transfers of water between waterbodies. Such an interpretation would be inconsistent with the language of 485-A, and the interpretation given to the statute by the Department. The Department's rules clearly state that some water transfers are allowed, but that authorization is highly restricted. Furthermore, only a limited right to transfer water to a Class A waterbody is contemplated by the rules. As a practical matter, the standards for Class A waters may be so restrictive that most, if not all, water transfers to Class A waterbodies would likely violate the rules.

B. Discharge or disposal of stormwater runoff that carry pollutants from areas altered by development under most circumstances will qualify as a discharge or disposal of "sewage or waste" under RSA 485-A

Your second question is not limited to Class A or Class B waters. RSA 485-A:8 has a key distinction affecting what can be released into Class A waters and Class B waters. With regard to Class A waters, the statute states that "[t]here shall be no discharge of any sewage or wastes into waters of this classification." For Class B waters, the statute states "[t]here shall be no disposal of sewage or waste into said waters except those which have received adequate treatment to prevent the lowering of the biological, physical, chemical or bacteriological characteristics below those given above, nor shall such disposal of sewage or waste be inimical to aquatic life or to the maintenance of aquatic life in said receiving waters."

The use of the word "discharge" in one, and "disposal" in the other, is important because discharge is defined in the rules to incorporate "pollutants." Disposal is an undefined word in RSA 485-A and the rules promulgated thereunder.

As noted is Section A of this memo, the following discharges are implicated by the definition of pollutant, sewage and waste[6]:

> (a) water-carried waste products from buildings, public or private, together with such groundwater infiltration and surface water as may be present (definition of sewage);
>
> (b) industrial waste (definition of waste);
>
> (c) 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 substance harmful to human, animal, fish or aquatic life (definition of other wastes[7]);
>
> (d) dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water (definition of pollutant).

Paragraphs (a)-(c) are applicable to both Class A and Class B waters, while Paragraph (d) is applicable to Class A waters only. Unlike Class A waters, disposal of sewage and waste to Class B waters is allowed when there has been adequate treatment to prevent the lowering of the biological, physical, chemical or bacteriological characteristics below those described in RSA 485-A:8, II.

The first step in the analysis is to determine whether stormwater runoff that carries pollutants from areas altered by development fall within paragraphs (a) – (d). Although this is largely a technical analysis, not a legal one, paragraphs (c) and (d) appear to be the most likely to apply. Paragraph (c) includes the general restriction on "any other substance harmful to human, animal, fish or aquatic life...." Paragraph (d) (applicable only to Class A waters) includes, among other pollutants, "chemical wastes", "biological materials", "heat", "rock", and "sand". I assume that all of these are likely to be found in stormwater runoff.

With regard to paragraph (c) (applicable to both Class A and Class B waters), the issue is a technical one as to whether the discharge or disposal is "harmful to human, animal, fish or aquatic life." Paragraph (d) (applicable only to Class A waters) does not itself have qualifying language, but is an outright prohibition. In addition, as noted above, the statute governing Class B waters allows disposal of sewage or waste if adequately treated.

The Department's rules state in relevant part that "[t]he presence of pollutants in the surface waters shall not justify further introduction of pollutants from point or nonpoint sources, alone or in any combination." The rules also require "the Department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources...."

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[6] I will refer to these four paragraphs as paragraphs (a) – (d). The paragraph designations are mine, and are not used in the statute or rules.

[7] "Other wastes" is used in the definition of "waste".

Thus, if the Department finds that stormwater runoff contains any of the prohibited substances, then, as it relates to Class A waters, the discharge is prohibited. With regard to Class B waters, the statute allows the disposal to occur, so long as the runoff is adequately treated.

CONCLUSION

Your first question was "are water transfers from a Class B water to a Class A water, for purposes of augmenting drinking water supplies, permissible under RSA 485-A:8, I?" The Department's rules do define "discharge" to include pollutants. Taking the statutory definitions of sewage and waste, combined with the definition of discharge in the rules, RSA 485-A:8, I prohibits the addition of pollutants, sewage or wastes to Class A waters. I conclude that the introduction of any substance to the receiving waterbody that would result in a decrease in water quality is prohibited. Thus, while the rules contemplate transfers of water to Class A drinking water supplies, the practical effect of the statutory language, combined with the Department's rules, is that few if any transfers would be allowed. To the extent the Department did not intend this result, it should amend its rules to make explicit what transfers are allowed, consistent with the prohibition of discharges of any sewage or waste.

Your second question asked "do discharges of stormwater runoff that carry pollutants from areas altered by development qualify as discharges of "sewage or waste" under RSA 485-A?" The answer to this question requires, in part, a technical analysis which the Department is best able to answer. Assuming the stormwater runoff contains the prohibited pollutants, then with regard to Class A waters, such stormwater runoff would not be allowed as a discharge of pollutants, sewage or wastes. With regard to Class B waters, disposal of stormwater runoff would be considered of sewage or waste. The statute does, however, allow disposal of sewage or waste into Class B waters is such sewage or waste is subjected to adequate treatment.

cc: Harry Stewart
Gretchen Hamel

Memorandum on Transfers of Water and Stormwater Discharges
Exhibit A
Sections From Relevant Statutes And Rules

RSA 485-A:8 (emphasis added):

> I. Class A waters shall be of the highest quality and shall contain not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 47 Escherichia coli per 100 milliliters, or greater than 153 Escherichia coli per 100 milliliters in any one sample; and for designated beach areas shall contain not more than a geometric mean based on at least 3 samples obtained over a 60-day period of 47 Escherichia coli per 100 milliliters, or 88 Escherichia coli per 100 milliliters in any one sample; unless naturally occurring. *There shall be no discharge of any sewage or wastes into waters of this classification.* The waters of this classification shall be considered as being potentially acceptable for water supply uses after adequate treatment.
>
> II. Class B waters shall be of the second highest quality and shall have no objectionable physical characteristics, shall contain a dissolved oxygen content of at least 75 percent of saturation, and shall contain not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 126 Escherichia coli per 100 milliliters, or greater than 406 Escherichia coli per 100 milliliters in any one sample; and for designated beach areas shall contain not more than a geometric mean based on at least 3 samples obtained over a 60-day period of 47 Escherichia coli per 100 milliliters, or 88 Escherichia coli per 100 milliliters in any one sample; unless naturally occurring. *There shall be no disposal of sewage or waste into said waters except those which have received adequate treatment to prevent the lowering of the biological, physical, chemical or bacteriological characteristics below those given above, nor shall such disposal of sewage or waste be inimical to aquatic life or to the maintenance of aquatic life in said receiving waters.* The pH range for said waters shall be 6.5 to 8.0 except when due to natural causes. Any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class. The waters of this classification shall be considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies. Where it is demonstrated to the satisfaction of the department that the class B criteria cannot reasonably be met in certain surface waters at all times as a result of combined sewer overflow events, temporary partial use areas shall be established by rules adopted under RSA 485-A:6, XI-c, which meet, as a minimum, the standards specified in paragraph III.

Sewage is defined as "the water-carried waste products from buildings, public or private, together with such groundwater infiltration and surface water as may be present." RSA 485-A:2, X.

Waste means industrial waste and *other wastes*. RSA 485-A:2, XVII.

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 substance harmful to human, animal, fish or aquatic life. RSA 485-A:2, VIII.

Discharge means (a) The addition, introduction, leaking, spilling, or emitting of a pollutant to surface waters, either directly or indirectly through the groundwater, whether done intentionally, unintentionally, negligently or otherwise; or (b) The placing of a pollutant in a location where the pollutant is likely to enter surface waters. Env-Wq 1702.18.

Pollutant means "pollutant" as defined in 40 CFR 122.2. Env-Wq 1702.39. 40 CFR 122.2 defines pollutant as:

> *Pollutant* means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:
> (a) Sewage from vessels; or
> (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

The Department of Environmental Services has also adopted revised water quality rules, Env-Wq. Those rules include:

> Env-Wq 1708.12 Transfer of Water to Public Water Supplies. The transfer of waters from rivers, streams, lakes, or ponds to waters used as a public water supply shall be subject to the following conditions:
> (a) Both the source water in the area of the withdrawal and the receiving water shall be acceptable for water supply uses after treatment;
> (b) The chemical and physical water quality parameters of the source water shall be at least equal to the water quality of the receiving water;
> (c) The biological characteristics of the source water shall be compatible with those of the receiving water and shall not contain species of aquatic life that would adversely affect the species of aquatic life in the receiving water; and
> (d) The transfer and withdrawal shall comply with the antidegradation provisions of this part.

PART Env-Wq 1708 ANTIDEGRADATION

Env-Wq 1708.01 Purpose. The purpose of these antidegradation provisions is to ensure that the following provisions of 40 CFR 131.12 are met:

(a) Existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected;
(b) For significant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the department finds, after full satisfaction of the intergovernmental coordination and public participation provisions that, in accordance with Env-Wq 1708.10, allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface waters are located. In allowing such degradation or lower water quality, the department shall assure water quality adequate to fully protect existing uses. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented;
(c) For insignificant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected. In allowing such degradation or lower water quality, the department shall assure water quality adequate to protect existing uses fully. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented;
(d) Where high quality surface waters constitute an outstanding resource waters (ORW), that water quality shall be maintained and protected; and
(e) In those cases where a potential water quality impairment is associated with a thermal discharge, the antidegradation provisions shall ensure that the requirements of section 316 of the Clean Water Act are met.

Env-Wq 1708.02 Applicability. Antidegradation shall apply to:
(a) Any proposed new or increased activity, including point source and nonpoint source discharges of pollutants, that would lower water quality or affect the existing or designated uses;
(b) Any proposed increase in loadings to a waterbody when the proposal is associated with existing activities;
(c) Any increase in flow alteration over an existing alteration; and
(d) Any hydrologic modifications, such as dam construction and water withdrawals.

Env-Wq 1708.03 Submittal of Data. The applicant shall provide all information necessary to:
(a) Identify all existing uses, including:
(1) Freshwater, estuarine, and marine aquatic life present in the affected surface waters;
(2) Other wildlife that use or are dependent on the affected surface waters;
(3) Presence of water quality and physical habitat that support, or would support, aquatic life or other animal or plant life;
(4) Presence of indigenous species and communities;
(5) Presence of a specialized use of the waterbody, such as a spawning area or as a habitat for a federally or state listed threatened or endangered species;

(6) Use of the surface waters for recreation in or on the water, such as fishing, swimming, and boating, or use of the surface waters for commercial activity; and
(7) Whether or not current conditions or uses of the surface waters conflict with achieving and maintaining goal uses of the CWA at Section 101(a)(2) and the primary CWA objective to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters;

(b) Determine the level of water quality necessary to maintain and protect those uses;
(c) Evaluate the potential impacts on existing uses due to the proposed discharge or activity by itself, and in combination with other discharges or activities presently occurring;
(d) Ensure that existing uses and the level of water quality necessary to protect those uses shall be maintained and protected.
(e) Evaluate the magnitude, duration, and upstream and downstream extent of any lowering of high quality water due to the proposed discharge or activity by itself, and in combination with other discharges or activities presently occurring;
(f) Evaluate other factors as necessary to determine whether the proposed activity would cause significant or insignificant degradation, in accordance with Env-Wq 1708.09;
(g) If the discharge or activity is determined by the department to be significant, in accordance with Env-Wq 1708.08 and Env-Wq 1708.09, determine if a proposed lowering of water quality is necessary to achieve important economic or social development in accordance with Env-Wq 1708.10; and
(h) Ensure that all water quality criteria applicable to the waterbody in question shall not be violated.

Env-Wq 1708.04 Protection of Existing Uses.

(a) This section shall apply to all surface waters.
(b) A proposed discharge or activity shall not eliminate any existing uses or the water quality needed to maintain and protect those uses.
(c) Using the information provided at Env-Wq 1708.03, the department shall determine the existing uses for the waters in question.

Env-Wq 1708.05 Protection of Water Quality in ORW.

(a) Surface waters of national forests and surface waters designated as natural under RSA 483:7-a, I, shall be considered outstanding resource waters (ORW).
(b) Water quality shall be maintained and protected in surface waters that constitute ORW, except that some limited point and nonpoint source discharges may be allowed providing that they are of limited activity which results in no more than temporary and short-term changes in water quality. "Temporary and short term" means that degradation is limited to the shortest possible time. Such activities shall not permanently degrade water quality or result at any time in water quality lower than that necessary to protect the existing and designated uses in the ORW. Such temporary and short term degradation shall only be allowed after all practical means of minimizing such degradation are implemented

Env-Wq 1708.06 Protection of Class A Waters.

(a) In accordance with RSA 485-A:8, I, discharges of sewage or waste to Class A waters shall be prohibited.
(b) Proposed new or increased activities that the department determines do not involve the discharge of sewage or waste shall be reviewed in accordance with Env-Wq 1708.01 through Env-Wq 1708.12.

Env-Wq 1708.07 Protection of Water Quality in High Quality Waters.
(a) Subject to (b), below, high quality waters shall be maintained and protected, except that insignificant changes in water quality, as determined by the department in accordance with Env-Wq 1708.09, shall be allowed.
(b) Degradation of significant increments of water quality, as determined in accordance with Env-Wq 1708.09, in high quality waters shall be allowed only if it can be demonstrated to the department, in accordance with Env-Wq 1708.10, that allowing the water quality degradation is necessary to accommodate important economic or social development in the area in which the receiving waters are located.
(c) Economic/social benefits demonstration and alternatives analysis shall not be required for authorization of an insignificant lowering of water quality. However, in allowing a lowering of water quality, significant or insignificant, all reasonable measures to minimize degradation shall be used.
(d) If the waterbody is Class A Water, the requirements of Env-Wq 1708.06 shall also apply.

Env-Wq 1708.08 Assessing Waterbodies.
(a) The applicant shall characterize the existing water quality and determine if there is remaining assimilative capacity for each parameter in question.
(b) Existing water quality shall be calculated in accordance with Env-Wq 1705.02. Existing water quality shall be established based on point sources discharging at their allowed loadings and the highest loadings anticipated from nonpoint sources.
(c) Where flow alteration is involved, establishment of existing conditions shall be based on the existing maximum allowed water withdrawals or impoundment, diversion, or fluctuation of stream flow, as appropriate.
(d) Remaining assimilative capacity shall be evaluated by comparing existing water quality, as specified in (b) and (c), above, to the state's water quality criteria.
(e) If the type and frequency of the proposed discharge or activity causes the waterbody to be impacted at flows other than those listed in Env-Wq 1705.02, the department shall require the applicant to evaluate the impact of the proposed discharge at those other flows.
(f) Subject to (h), below, if the department determines, based on the information submitted, that there is no remaining assimilative capacity, no further degradation with regard to that parameter shall be allowed.
(g) Subject to (h), below, if the department determines, based on the information submitted, that there is some remaining assimilative capacity, then the department shall proceed in accord with Env-Wq 1708.09.
(h) The above determinations shall take into account Env-Wq 1705.01 which requires the department to reserve no less than 10% of a surface water's assimilative capacity.

Env-Wq 1708.09 Significant or Insignificant Determination.
(a) Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality. The department shall not approve such a discharge or activity unless the applicant demonstrates that the proposed lowering of water quality is necessary to achieve important

economic or social development, in accordance with Env-Wq 1708.10, in the area where the waterbody is located.

(b) Subject to (d), below, those activities that cause an insignificant lowering of water quality shall not be required to demonstrate that they are necessary to provide important economic or social development.

(c) Activities under (b), above shall include, but not be limited to:

(1) Short term or intermittent discharges such as hydrostatic testing of pipelines, fire pump test water, and uncontaminated stormwater discharges or site clean-up activities;

(2) Permanent discharges such as uncontaminated noncontact or uncontaminated geothermal cooling water, uncontaminated groundwater seepage, or unchlorinated or dechlorinated swimming pool water;

(3) Facilities whose nonpoint source runoff is controlled through the use of best management practices; and

(4) Any discharge or activity that is projected to use less than 20% of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass for pollutants.

(d) If the department determines that, because of the following factors, the effect of a discharge results in a greater impact to the water quality than that normally found in insignificant discharges, it shall determine that the proposed activity or discharge is significant, regardless of the proposed consumption of the remaining assimilative capacity, and require the applicant to demonstrate, in accordance with Env-Wq 1708.10, that a lowering of water quality is necessary to achieve an important economic or social development:

(1) The magnitude, duration, and spatial extent of the proposed change in water quality;

(2) The cumulative lowering of water quality over time resulting from the proposed activity in combination with previously approved activities;

(3) The possible additive or synergistic effects of the activity in combination with existing activities;

(4) The magnitude of the mass load independent of the total assimilative capacity or change in receiving water pollutant concentration;

(5) The toxic or bioaccumulative characteristics of the pollutant(s) in question;

(6) The potential to stress sensitive biological resources such as indigenous species, rare species, and threatened or endangered species and their habitat;

(7) The potential to stress sensitive recreational uses or water supply uses; or

(8) The quality and value of the resource.

Env-Wq 1708.10 Demonstration of Economic or Social Development.

(a) Unless the department determines from documentation provided by the applicant, or other available information, that a proposed new or increased discharge or other activity would result in an insignificant impact to the existing water quality of a high quality waterbody, the department shall require that the applicant provide documentation, in accordance with the procedures delineated in "Interim Economic Guidance for Water Quality Standards" EPA- 823-B-95-002, dated March 1995, that the:

(1) Proposed project or activity will provide an important economic or social development in the area where the waterbody is located; and

(2) Lowering of water quality is necessary to accommodate the development.

(b) Where the department finds, based on the information provided in Env-Wq 1708.10(a) that a proposed project would provide an important economic or social development, it shall require that an alternatives analysis be developed, in accordance with Env-Wq 1708.10(c), to determine if it is possible to realize those benefits either without lowering water quality or with a reduced degree of degradation.

(c) To determine if the lowering of water quality is necessary to accommodate an important economic or social benefit, the department shall require the applicant to evaluate the following

alternatives and submit technically and scientifically valid information describing the benefits and impacts of each alternative on water quality and the degree to which the economic or social benefits could be realized if the alternatives were implemented:

(1) Alternative methods of production or operation;
(2) Improved process controls;
(3) Water conservation practices;
(4) Wastewater minimization technologies;
(5) Non-discharging alternatives;
(6) Improved wastewater treatment facility operation;
(7) Alternative methods of treatment, including advanced treatment beyond applicable technology requirements of the Clean Water Act; and
(8) Alternative sites, and associated water quality impacts at those sites.

(d) The department shall make a preliminary determination, based on the information provided in Env-Wq 1708.10(a) and (c), to approve or deny the applicant's request.

(e) If the department approves the applicant's request, the department shall provide the opportunity for public comment on its preliminary decision in accordance with Env-Wq 1708.11.

Env-Wq 1708.11 Public Participation and Intergovernmental Coordination.

(a) The department shall provide the opportunity for public comment on preliminary decisions to allow any lowering of water quality.

(b) The department shall issue a written notice to the public, the municipality in which the activity is located or proposed to be located and all potentially affected municipalities. The notice shall invite written comments to be submitted to the department and shall provide an opportunity to request a public hearing. For activities related to state surface water discharge permits, this public notice shall be a part of the normal public participation procedures associated with the issuance of the permit.

(c) The notice shall be published in a newspaper of general circulation in the municipality where the proposed activity will occur and shall include the following information:

(1) A description of the proposed activity;
(2) A description of the surface waters involved and their use classification;
(3) A statement of the department's antidegradation provisions;
(4) A determination that existing uses and necessary water quality will be maintained and protected;
(5) A summary of the expected impacts on high quality waters;
(6) A determination that where a lowering of water quality is allowed, all applicable water quality criteria shall be met, designated uses protected, and any higher water quality achievable by the most stringent applicable technology-based requirements shall be maintained;
(7) A discussion of any other information that is relevant to how the activity complies or does not comply with these provisions;
(8) The summary of the important economic or social development, if applicable;
(9) A summary of the alternatives analysis and a finding that the lowering of water quality is necessary; and
(10) The name, address, and telephone number of the person in the department where all written comments or requests for public hearing can be sent.

(d) To fulfill intergovernmental coordination, the department shall submit a copy of the public notice to the following agencies and request comments:

(1) NH department of resources and economic development;
(2) NH department of health and human services;
(3) NH fish and game department;
(4) NH office of energy and planning;

(5) US EPA Region I;
(6) US Army Corps of Engineers;
(7) US Fish and Wildlife Service;
(8) National Marine Fisheries Service;
(9) Local river advisory committees, if applicable;
(10) National Park Service; and
(11) Natural Resources Conservation Service.

(e) The department shall respond to all comments received as a result of public participation and intergovernmental coordination. If a request to hold a public hearing is received, the department shall hold a public hearing in accordance with the provisions of Env-C 200 that apply to non-adjudicative proceedings.

(f) Following this public participation process, the department shall, based on any further information submitted during the public hearing, make a final decision to allow or deny the proposed impact on water quality. If the application is denied, the applicant may revise the submittal to decrease or eliminate the projected impact to high quality waters and resubmit the application for consideration under the full review process.

Env-Wq 1708.12 Transfer of Water to Public Water Supplies. The transfer of waters from rivers, streams, lakes, or ponds to waters used as a public water supply shall be subject to the following conditions:

(a) Both the source water in the area of the withdrawal and the receiving water shall be acceptable for water supply uses after treatment;

(b) The chemical and physical water quality parameters of the source water shall be at least equal to the water quality of the receiving water;

(c) The biological characteristics of the source water shall be compatible with those of the receiving water and shall not contain species of aquatic life that would adversely affect the species of aquatic life in the receiving water; and

(d) The transfer and withdrawal shall comply with the antidegradation provisions of this part.

C5 - RSA 149 - I

TITLE X
PUBLIC HEALTH
CHAPTER 149-I
SEWERS

Section 149-I:1

149-I:1 Construction. – The mayor and aldermen of any city may construct and maintain all main drains or common sewers, stormwater treatment, conveyance, and discharge systems, sewage and/or waste treatment, works which they adjudge necessary for the public convenience, health or welfare. Such drains, sewers, and systems shall be substantially constructed of brick, stone, cement, or other material adapted to the purpose, and shall be the property of the city.

Source. 1870, 5:1, 6. GL 78:6, 11. PS 79:2. PL 95:3. RL 111:3. 1945, 188, part 22:4. RSA 252:4. 1961, 120:4. 1981, 87:2, eff. April 20, 1981. 2008, 295:1, eff. Aug. 26, 2008.

Section 149-I:2

149-I:2 Taking Land. – Whenever it is necessary to construct such main drains or common sewers, stormwater treatment, conveyance, and discharge systems, sewage and/or waste treatment facilities across or on the land of any person and the city cannot obtain for a reasonable price any land or easement in land required by it, the mayor and aldermen may lay out a sufficient quantity of such land for the purpose and assess the owner's damages in the same manner as in the case of taking land for highways pursuant to RSA 230 and the owner shall have the same right of appeal, with the same procedure.

Source. 1873, 29:1. GL 78:13. PS 79:3. PL 95:4. RL 111:4. 1945, 188, part 22:5. RSA 252:5. 1967, 300:3. 1981, 87:2, eff. April 20, 1981. 2008, 295:2, eff. Aug. 26, 2008.

Section 149-I:3

149-I:3 Water Pollution. – Any city which shall have received an order by the department of environmental services under the provisions of RSA 147, 485, or 485-A shall proceed forthwith to acquire whatever easements and lands as are necessary to comply with said order and may enter upon, for the purpose of survey leading to land description, any land of any person. In so proceeding the mayor and aldermen shall institute any necessary land taking in accordance with the provisions of RSA 149-I:2 and, anything contained in RSA 231 or in the statutes generally notwithstanding, the decision of the mayor and aldermen shall not be vacated and any subsequent appeal or other action by the owner or owners shall be based solely on the amount of damages assessed, and the mayor and aldermen or their duly appointed agents shall have full right of immediate entry for the purpose of detailed surveys, borings, or the conduct of any and all other actions necessary or desirable to aid the city in the implementation of the order by the department of environmental services.

Source. RSA 252:5-a. 1969, 377:4. 1981, 87:2. 1986, 202:6, I(a). 1989, 339:19. 1996, 228:108, eff. July 1, 1996.

Section 149-I:4

149-I:4 Contracts; Sewage or Waste Treatment Facilities. – The mayor and aldermen of any city may lease, enter into contracts to provide, sell, or purchase stormwater treatment, conveyance, and discharge systems, and sewage or waste treatment facilities to or from any other city, town, village district or person whenever they judge the same necessary for the public convenience, health and welfare.

Source. 1949, 77:1. RSA 252:6. 1961, 120:5. 1981, 87:2, eff. April 20, 1981. 2008, 295:3, eff. Aug. 26, 2008.

Section 149-I:5

149-I:5 Inconsistent Charter Provisions Repealed. – The provisions of any city charter inconsistent with the provisions of this chapter are hereby repealed as to the extent of such inconsistency.

Source. 1949, 77:2. RSA 252:7. 1981, 87:2, eff. April 20, 1981.

Section 149-I:6

149-I:6 Bylaws and Ordinances. –

I. 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.

II. Any person who violates any ordinance or bylaw adopted pursuant to paragraph I of this section shall be subject to a civil penalty not to exceed $10,000 per day of such violation.

III. A municipality shall give notice of the alleged violation to the department of environmental services within 10 days of commencement of any action under this section.

Source. 1941, 201:1. RL 111:5. 1945, 188, part 22:6. RSA 252:8. 1973, 531:83. 1981, 87:2. 1988, 241:1. 1994, 95:4. 1996, 228:108, eff. July 1, 1996. 2008, 295:4, eff. Aug. 26, 2008.

Stormwater Utilities

Section 149-I:6-a

149-I:6-a Definitions. – In this chapter:

I. ""Equivalent residential unit" or ""ERU" means the fee unit basis for all fees assessed by a stormwater utility.

II. ""Stormwater" means stormwater runoff from precipitation, snow melt runoff, and street wash waters related to street cleaning or maintenance, infiltration, and drainage.

III. ""Stormwater utility" means a special assessment district established to generate funding specifically for stormwater management.

IV. ""Stormwater utility Commission" means the governing body managing the activities of the stormwater utility. When the utility encompasses more than one municipality, representation on the Commission shall be proportional to the number of fee units within each jurisdiction.

Source. 2008, 295:5, eff. Aug. 26, 2008.

Section 149-I:6-b

149-I:6-b Stormwater Utility Authorized. – The formation of a stormwater utility is hereby authorized upon approval by a majority vote of the legislative body of a municipality. In the case where a stormwater utility encompasses land within more than one municipality, the utility may be authorized by majority vote of the legislative bodies within each affected jurisdiction. Inter-municipal stormwater utilities shall be governed by a stormwater utility Commission.

Source. 2008, 295:5, eff. Aug. 26, 2008.

Section 149-I:6-c

149-I:6-c Criteria for Stormwater Utilities. – The stormwater utility shall address flood and erosion control, water quality management, ecological preservation, and annual pollutant load contained in stormwater discharge.

I. Utilities may collect reasonable fees that are directly related to the cost of providing services.

II. Properties charged assessments shall have equal opportunity to receive proportional benefit from the utility.

III. The utility shall offer credits or fee abatements based on on-site management of water quality impairment or peak runoff storage, or both. The utility shall adopt design standards to determine the amount of abatement.

IV. In assessing fees, the stormwater utility district shall forecast the annual cost of each component in the district's stormwater management program. This forecast shall be the basis for annual assessments distributed equally among the number of fee units within the district.

V. A minimum assessment may be established for fee units based on single family residences. This equivalent residential unit (ERU) can serve as the fee unit basis for all fees. Government property and non-profit organizations shall be subject to the fee structure.

VI. Boundaries of the district are not required to coincide with municipal boundaries.

Source. 2008, 295:5, eff. Aug. 26, 2008.

Section 149-I:6-d

149-I:6-d System for Fee Units. – Each stormwater utility Commission shall establish a system for fee units based on at least one of the following property-specific attributes:

I. Total impervious area.

II. Calculated lot runoff.

III. Total lot area.

IV. Land use classification developed for assessment of fees.

Source. 2008, 295:5, eff. Aug. 26, 2008.

Assessment for Sewers
Section 149-I:7

149-I:7 Levying. – The mayor and aldermen may assess upon the persons whose drains enter such main drains, common sewers, stormwater treatment, conveyance, and discharge systems, or treatment facilities, or whose lands receive special benefit therefrom in any way, their just share of the expense of constructing and maintaining the same or paying off any capital debt or interest incurred in constructing and/or maintaining the same.

Source. 1870, 5:2. 1872, 25:1. GL 78:7. PS 79:4. PL 95:5. RL 111:6. 1945, 188, part 22:7. RSA 252:9. 1961, 120:6. 1973, 483:1. 1981, 87:2, eff. April 20, 1981. 2008, 295:6, eff. Aug. 26, 2008.

Section 149-I:8

149-I:8 Sewer Rentals. – For the defraying of the cost of construction, payment of the interest on any debt incurred, management, maintenance, operation, and repair of newly constructed sewer systems, including newly constructed sewage or waste treatment and disposal works, the mayor and aldermen may establish a scale of rents to be called sewer rents, and to prescribe the manner in which and the time at which such rents are to be paid and to change such scale from time to time as may be deemed advisable. Except in the case of institutional, industrial or manufacturing use, the amount of such rents shall be based upon either the consumption of water on the premises connected with the sewer system, or the number of persons served on the premises connected with the sewer system, or whether the user is on a pressure or gravity system, or upon some other equitable basis.

Source. 1933, 98:2. RL 111:7. 1945, 188, part 22:8. RSA 252:10. 1961, 120:7. 1971, 289:1. 1981, 87:2. 1987, 142:1, eff. July 6, 1987.

Section 149-I:9

149-I:9 Combined Billing Permitted. – In municipalities which assess sewer rents, or have established fees for a stormwater utility, such assessments may be combined in a bill with assessments for other municipal services.

Source. RSA 252:10-a. 1975, 299:1. 1981, 87:2, eff. April 20, 1981. 2008, 295:7, eff. Aug. 26, 2008.

Section 149-I:10

149-I:10 Sewer Funds. –

I. The funds received from the collection of sewer rentals shall be kept as a separate and distinct fund to be known as the sewer fund. Such fund shall be allowed to accumulate from year to year, shall not be commingled with town or city tax revenues, and shall not be deemed part of the municipality's general fund accumulated surplus. Such fund may be expended only for the purposes specified in RSA 149-I:8, or for the previous expansion or replacement of sewage lines or sewage treatment facilities.

II. Except when a capital reserve fund is established pursuant to paragraph III, all sewer funds shall be held in the custody of the municipal treasurer. Estimates of anticipated sewer rental revenues and anticipated expenditures from the sewer fund shall be submitted to the governing body as set forth in RSA 32:6 if applicable, and shall be included as part of the municipal budget submitted to the local legislative body for approval. If the municipality has a properly-established board of sewer Commissioners, then notwithstanding RSA 41:29 or RSA 48:16, the treasurer shall pay out amounts from the sewer fund only upon order of the board of sewer Commissioners. Expenditures shall be within amounts appropriated by the local legislative body.

III. At the option of the local governing body, or of the board of sewer Commissioners if any, all or part of any surplus in the sewer fund may be placed in one or more capital reserve funds and placed in the custody of the trustees of trust funds pursuant to RSA 35:7. If such a reserve fund is created, then the governing body, or board of sewer Commissioners if any, may expend

such funds pursuant to RSA 35:15 without prior approval or appropriation by the local legislative body, but all such expenditures shall be reported to the municipality pursuant to RSA 149-I:25. This section shall not be construed to prohibit the establishment of other capital reserve funds for any lawful purpose relating to municipal water systems.

Source. 1933, 98:2. RL 111:8. 1945, 188, part 22:9. RSA 252:11. 1973, 483:2. 1979, 492:1. 1981, 87:2. 1994, 95:5, eff. July 8, 1994.

Section 149-I:10-a

149-I:10-a Stormwater Utility Fund. –

I. The funds received from stormwater utility fees shall be kept as a separate and distinct fund to be known as the stormwater utility fund. Such fund shall be allowed to accumulate from year to year, shall not be commingled with town or city tax revenues, and shall not be deemed part of the municipality's general fund accumulated surplus. Such fund may be expended only for stormwater treatment, conveyance, and discharge systems.

II. Except when a capital reserve fund is established pursuant to paragraph III, all stormwater utility funds shall be held in the custody of the municipal treasurer. Estimates of anticipated revenues and anticipated expenditures from the stormwater utility fund shall be submitted to the governing body as set forth in RSA 32:6 if applicable, and shall be included as part of the municipal budget submitted to the local legislative body for approval. If the municipality has a properly established stormwater utility Commission, then notwithstanding RSA 41:29 or RSA 48:16, the treasurer shall pay out amounts from the stormwater utility fund only upon order of the stormwater utility Commission. Expenditures shall be within amounts appropriated by the local legislative body.

III. At the option of the local governing body, or of the stormwater utility Commission if any, all or part of any surplus in the stormwater utility fund may be placed in one or more capital reserve funds and placed in the custody of the trustees of trust funds pursuant to RSA 35:7. If such a reserve fund is created, then the governing body, or stormwater utility Commission if any, may expend such funds pursuant to RSA 35:15 without prior approval or appropriation by the local legislative body, but all such expenditures shall be reported to the municipality pursuant to RSA 149-I:25. This section shall not be construed to prohibit the establishment of other capital reserve funds for any lawful purpose relating to municipal water systems.

Source. 2008, 295:8, eff. Aug. 26, 2008.

Section 149-I:11

149-I:11 Liens and Collection of Sewer Charges. – In the collection of sewer charges or stormwater utility fees under RSA 149-I:7 and 149-I:8, municipalities shall have the same liens and use the same collection procedures as authorized by RSA 38:22. Interest on overdue charges shall be assessed in accordance with RSA 76:13.

Source. 1870, 5:3. 1872, 25:1. 1875, 36:3. GL 78:3, 8. PS 79:5. PL 95:6. 1933, 98:3. RL 119:9. 1945, 188, part 22:10. 1949, 80:1. RSA 252:12. 1981, 87:2. 1985, 110:2. 1991, 269:12, eff. July 1, 1991. 2008, 295:9, eff. Aug. 26, 2008.

Section 149-I:12

149-I:12 Collection of Assessments or Rentals. – [Repealed 1985, 110:5, I, eff. July 9, 1985.]

Section 149-I:13

149-I:13 Municipalities With Over 80,000 Population. – [Repealed 1985, 110:5, II, eff. July 9, 1985.]

Section 149-I:14

149-I:14 Correction of Assessments. –

I. If any error is made in any assessment under RSA 149-I:7 or RSA 149-I:8, it may be corrected by the mayor and aldermen by making an abatement and a new assessment, or either, as the case may require. The same lien, rights, liabilities and remedies shall attach to the new assessment as to the original.

II. If any error is made in any assessment under RSA 149-I:6-c or RSA 149-I:7, it may be corrected by the governing body by making an abatement or a new assessment, or both. The same lien, rights, liabilities, and remedies shall attach to the new assessment as to the original.

Source. PS 79:6. PL 95:9. RL 111:12. 1945, 188, part 22:13. RSA 252:15. 1981, 87:2. 1985, 110:3, eff. July 9, 1985. 2008, 295:10, eff. Aug. 26, 2008.

Section 149-I:15

149-I:15 Petition to Court. – If the mayor and aldermen neglect or refuse to correct an assessment under RSA 149-I:14, any person aggrieved may apply by petition to the superior court for relief at any time within 90 days after notice of the assessment, and not afterwards. The court shall make such order thereon as justice may require.

Source. PS 79:7. PL 95:10. RL 111:13. 1945, 188, part 22:14. RSA 252:16. 1981, 87:2. 1985, 110:4, eff. July 9, 1985.

Section 149-I:16

149-I:16 Assessment Installments. – The mayor and aldermen of any city may, in their discretion, in making any assessment under this chapter, assess the same to be paid in annual installments extending over a period not exceeding 20 years, and in such case their assessment so made shall create a lien upon the land on account of which it is made and the lien of each installment so assessed shall continue for one year from October 1 of the year such installment becomes due.

Source. 1909, 24:1. PL 95:11. 1933, 98:4. RL 111:14. 1945, 188, part 22:15. 1949, 80:2. RSA 252:17. 1981, 87:2, eff. April 20, 1981.

Section 149-I:17

149-I:17 Assessment Not Required. – Nothing herein contained shall be construed to prevent any city from providing, by ordinance or otherwise, that the whole or a part of the expense of constructing, maintaining and repairing main drains, common sewers, stormwater treatment, conveyance, and discharge system, or sewage and waste treatment facilities shall be paid by such city.

Source. 1870, 5:5. GL 78:10. PS 79:8. PL 95:12. RL 111:15. 1945, 188, part 22:16. RSA 252:18. 1961, 120:8. 1981, 87:2, eff. April 20, 1981. 2008, 295:11, eff. Aug. 26, 2008.

Section 149-I:18

149-I:18 Abatement of Assessments. – For good cause shown, the mayor and aldermen may abate any such assessment made by them or by their predecessors.

Source. PS 79:6. PL 95:8. RL 111:11. 1945, 188, part 22:12. RSA 252:14. 1981, 87:2, eff. April 20, 1981.

Sewer Commissions

Section 149-I:19

149-I:19 Establishment; Duties. – Any town or village district which adopts the provisions of this chapter may, at the time of such adoption or afterwards, vote to establish a board of sewer Commissioners, consisting of 3 members, which board shall perform all the duties and possess all the powers in the town or district otherwise hereby conferred upon the selectmen.

Source. 1923, 16:1. PL 95:13. PL 111:16. 1945, 188, part 22:17. RSA 252:19. 1981, 87:2, eff. April 20, 1981.

Section 149-I:20

149-I:20 Election. – At the annual town or district meeting when such board is established, there shall be chosen, by ballot and by major vote, 3 sewer Commissioners, to hold office for 3 years, 2 years, and one year, respectively, and thereafter, at every annual meeting, one Commissioner shall be so chosen to hold office for 3 years; provided, that such election shall be by plurality vote in towns or districts which, under existing laws, elect officers in that manner.

Source. 1923, 16:1. PL 95:14. RL 111:17. 1945, 188, part 22:18. RSA 252:20. 1981, 87:2, eff. April 20, 1981.

Section 149-I:20-a

149-I:20-a Appointment. – The Commissioners may be appointed by the mayor and board of aldermen or city council, by the selectmen of the town, by the town council, or by the Commissioners of the district if the municipality fails to elect or votes to provide for appointment.

Source. 1996, 197:2, eff. Aug. 2, 1996.

Section 149-I:21

149-I:21 Compensation. – The compensation of such sewer Commissioners shall be fixed in towns by the selectmen, and in village districts by the Commissioners of the district.

Source. 1923, 16:1. PL 95:16. RL 111:19. 1945, 188, part 22:20. RSA 252:22. 1981, 87:2, eff. April 20, 1981.

Miscellaneous Provisions

Section 149-I:22

149-I:22 Entering Without Permit. – Any person who digs or breaks up the ground in any street, highway, lane or alley in any city, for the purpose of laying, altering, repairing or entering any main drain, stormwater treatment, conveyance, and discharge system, or common sewer therein, without permission from the mayor and aldermen, shall be guilty of a violation.

Source. 1870, 5:7. GL 78:12. PS 79:9. PL 95:17. RL 111:20. 1945, 188, part 22:21. RSA 252:23. 1973, 531:84. 1981, 87:2, eff. April 20, 1981. 2008, 295:13, eff. Aug. 26, 2008.

Section 149-I:23

149-I:23 Malicious Injury; Penalty. – Any person who shall wantonly or maliciously injure any part of any sewer system, stormwater treatment, conveyance, and discharge system, or sewage disposal plant shall be liable to pay treble damages to the owner thereof, and shall be guilty of a misdemeanor if a natural person, or guilty of a felony if any other person.

Source. 1945, 188, part 22:22. RSA 252:24. 1973, 529:44. 1981, 87:2, eff. April 20, 1981. 2008, 295:14, eff. Aug. 26, 2008.

Section 149-I:24

149-I:24 Application of Chapter. – The provisions of this chapter shall be in force in such town and village districts as may adopt the same by vote of the legislative body; and the governing body shall perform all the duties and possess all the powers in the town or the district, as the case may be, conferred by this chapter upon the mayor and aldermen, and the rights of all parties interested shall be settled in the same way.

Source. 1870, 5:8. 1873, 29:1. GL 78:14. 1883, 77:1. PS 79:10. 1923, 16:1. PL 95:18. RL 111:21. 1945, 198, part 22:23. RSA 252:25. 1981, 87:2, eff. April 20, 1981. 2008, 295:12, eff. Aug. 26, 2008.

Section 149-I:25

149-I:25 Reports. – In towns and village districts adopting this chapter, the selectmen or district Commissioners, or board of sewer Commissioners if any, or stormwater utility Commission shall annually, at the time other town or district officers report, make a report to the municipality of the condition of the plant financially and otherwise, showing the funds of the department, the expenses and income thereof, and all other material facts. This report shall be published in the annual report of the municipality.

Source. 1994, 95:6, eff. July 8, 1994. 2008, 295:15, eff. Aug. 26, 2008.

Appendix D – Funding Subcommittee

Subcommittee Responsibility
The Funding Subcommittee was formed to evaluate and address the following:

- Estimate the cost of meeting the stormwater-related needs identified by the Needs Subcommittee, including the costs of implementing new legislation identified by the Regulatory Authority Subcommittee, if applicable.
- Identify existing funding sources to meet the stormwater-related needs identified by the Needs Subcommittee.
- If sufficient funding does not exist, identify opportunities for new funding sources to meet the stormwater-related needs identified by the Needs Subcommittee.
- To propose marketing approaches to promote funding sources/mechanisms.
- To research funding mechanisms used by other states and municipalities of other states for stormwater management programs and activities.
- Identify potential new and sustainable funding sources and mechanisms to implement recommendations.

Subcommittee Members and Participants:
Robert Roseen, UNH Stormwater Center;
Michael Trainque, American Council of Engineering Companies in New Hampshire
Rep. David Borden, New Hampshire House of Representatives;
Eber Currier, New Hampshire Farm Bureau;
Dave Danielson, NH Association of Regional Planning Commissions;

Subcommittee Findings and Recommendations

Subcommittee work products are listed below and included in this appendix:

D1. Funding Subcommittee Report
D2. 2008 New Hampshire Clean Water Needs Survey
D3. NHDES Extrapolated Stormwater Costs from the 2008 Clean Water Needs Survey
D4. Stormwater Utility Discussion and Examples
D5. Low Impact Development Case Studies

D1 – Funding Subcommittee Report

FUNDING SUBCOMMITEE FINAL REPORT

INTRODUCTION

The Funding Subcommittee was formed to evaluate and address the following:

- Estimate the cost of meeting the stormwater-related needs identified by the Needs Subcommittee, including the costs of implementing new legislation identified by the Regulatory Authority Subcommittee, if applicable.
- Identify existing funding sources to meet the stormwater-related needs identified by the Needs Subcommittee.
- If sufficient funding does not exist, identify opportunities for new funding sources to meet the stormwater-related needs identified by the Needs Subcommittee.
- To propose marketing approaches to promote funding sources/mechanisms.
- To research funding mechanisms used by other states and municipalities of other states for stormwater management programs and activities.
- Identify potential new and sustainable funding sources and mechanisms to implement recommendations.

FINDINGS AND RECOMMENDATIONS

- The Subcommittee has a consensus opinion that funding by means of stormwater utilities, rather than strict regulation (i.e. a statewide permit program) is the preferred approach to implementing stormwater management plans as it provides a consistent dedicated source of funding as well as incentives and flexibility. In its absence, requirements by regulation and/or permitting would be needed.
- Utilize stormwater utilities as a means of providing the revenues, as well as the incentives, needed to facilitate implementation of stormwater management programs statewide. The goal is to have the entire State of New Hampshire covered under any of the following at the discretion of individual communities: (1) a municipal stormwater utility; (2) a regional stormwater utility; (3) a statewide stormwater utility.
- Since it is not practical to start with a statewide stormwater utility initially, this would be implemented in a phased approach starting with the most impaired waters and a municipal separate storm sewer system (MS4) and expanding from there. The NPDES permit(s) issued under the EPA Stormwater Phase II Rule for the MS4 defines the required stormwater program (specific actions) and provides the incentive for taking action. A stormwater utility could then provide the needed revenues to implement the requirements of the NPDES permit as well as financial incentives for individual property owners that are proactive in implementing BMP's on their property.

- Use the NHDES 303(d) list as a basis for implementing the stormwater utilities. The program would start with the most impaired waters. Initially, the program would focus on the large developed properties within the watershed. Every 2-3 years another watershed would be brought on line (incorporated into a stormwater utility) based on receiving water impairment level. Thus, a phased approach would be taken.
- Individual municipalities would have three (3) options; (1) establish its own stormwater utility; (2) join with other municipalities in the vicinity to form a regional or watershed-wide stormwater utility consisting of multiple municipalities; or (3) be covered under a statewide stormwater utility. There would be an "opt out" provision whereby a municipality could petition the NHDES to opt out of a stormwater utility for a period of up to ten (10) years based upon certain agreed-upon conditions (such as the community is too small, the community situation, land use, water quality, financial situation, and other agreed-upon criteria to be developed).
- Revenues derived through a stormwater utility could be used to pay for administration of the utility, operation and maintenance (BMP's) costs and capital expenditures provided the costs are specifically related to stormwater activities.
- The newly-created Southeast Watershed Alliance, which encompasses 42 communities in the Great Bay Watershed, should be the starting point for the program. A stormwater utility could be established for an MS4 within the watershed based on the draft NPDES stormwater permit and the associated needs and requirements. A model stormwater utility could be developed and implemented and become the basis for setting up other stormwater utilities across the State, including the Statewide or State-administered Stormwater Utility.
- Details of the stormwater utilities will be have to be worked out but it should be flexible so as to allow for adaptation to different municipalities, different watersheds and different circumstances and needs. The basic billing unit would be an Equivalent Residential Unit (ERU) based on the square footage of impervious area (roof, driveway, walkway, etc.) of a typical single-family home (2,500 - 2,700 sq. ft.).
- The existing legislation in New Hampshire that enables the formation of stormwater utilities needs to be replaced or significantly revised since it does not adequately address all of the requirements pertaining to stormwater utilities. This was discussed by the Commission but left as a follow-up activity (action item) to be completed.
- It is the opinion of this Commission that at some point in the future a circuit rider program should be developed and implemented 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.

CONCEPT: A solid economic plan is necessary, in fact essential, for the successful implementation of new stormwater programs, without which, any new or proposed programs are likely to fail especially under the current economic conditions. Any new stormwater programs will require a consistent, sustainable and dedicated revenue stream in order to be viable and self-supporting. The current economic climate and the persistent lack of adequate funding for water, wastewater and stormwater programs in general leaves very little available funding on both the State and local level.

ASSESSMENT OF NEEDS/COSTS

Several sources of information were considered as part of this evaluation. These sources included, but were not necessarily limited to: the U.S. EPA, the New Hampshire Department of Environmental Services (NHDES), the New Hampshire Department of Transportation (NHDOT), individual municipalities, several quasi-public organizations. Unfortunately, there are no comprehensive sources of cost information and the costs are wide ranging. Furthermore, the programs and Best Management Practices (BMP's) to manage and control 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 (CWNS) 2008 report to congress indicated that the total reported water quality needs for the nation were estimated to be over $ 298 Billion as of January 1, 2008. 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:	$ 2 million
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 National Pollutant Discharge Elimination System (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 Best Management Practices to address stormwater issues before they arise.

The New Hampshire Department of Environmental Services (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 Municipal Separate Storm Sewer Systems (MS4's) as well as non MS4's. This information is included in *Appendix D2* of the Commission report. 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 Clean Water Needs Survey, for several urbanized areas and urbanized clusters and then extrapolated this information to determine what the estimated cost would be for urbanized areas and urbanized 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 the Commission report.

The New Hampshire Department of Transportation also provided cost data compiled from the stormwater controls and BMP's 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 BMP's 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's 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 Clean Water Needs Survey 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 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 Gray and Green infrastructure for stormwater management.

While individually, green infrastructure elements may add expense to a project, at the same time, 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. Of course, cost savings are not observed when compared with no stormwater management, but rather 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 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 in contrast to 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 could be realized including less drainage piping, fewer, reduction of the quantity of erosion control measures, fewer catch basins, elimination of curbing, outlet control structures, and stormwater detention ponds. The LID option resulted in higher costs for roadway and driveway construction however had an 11% reduction in the amount of land that would need to be 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 gravel wetland, as well as other advanced stormwater management. 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.

STATEWIDE STORMWATER PERMIT PROGRAM

General

One option to address the environmental goals of a stormwater program and raise revenue to meet these goals is a statewide stormwater discharge permit. The NHDES would take a permit-by-rule approach to issue permits, which could potentially be issued to every homeowner, business and government entity in the state. The permit system and fees generated could be linked to local or regional stormwater utilities which are addressed in the next part of this section.

A statewide permit program would establish statewide requirements for mitigating potential adverse impacts to water quality from stormwater and implementation of BMP's 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 (LID) ordinances and similar measures. If the town failed to act, the town would be subject to the statewide requirements. This logic would similarly apply to stormwater utilities, in that a town could opt out of a statewide or regional program if they enacted stormwater regulations in their community.

Defining Impervious Cover

Pursuant to implementation of a permit program, each permittee would be assessed a fee based on the impervious cover of their property. While it is not yet defined how imperviousness would be determined, the goal would be to assess the fee 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" based on the average impervious cover on a typical residential lot.

For maximum environmental improvement under a new stormwater law, gravel roads and parking areas would be included if they are hydrologically connected to surface waters. Similarly, lawns in the immediate shoreland zone can be a significant source of stormwater, depending on the slope of the land, which can convey constituents that are detrimental to water quality. The Center for Watershed Protection reports that turf can comprise up to half of the vegetated area in suburban areas (Schueler, 1995a). These lawns receive high inputs of fertilizers, pesticides, herbicides, and irrigation, but their surface soils are highly compacted and these pollutants become runoff in anything larger than small rainfall events. Nitrogen is much more mobile from a lawn than from a forest, in large part because lawns are fertilized, and residential forests are not. Therefore, lawns within 50 feet of surface waters in properties subject to the CSPA that are directly connected to surface waters without an intervening buffer strip would be considered impervious for purposes of assessing a stormwater fee. Note: hydrologically disconnecting a lawn to avoid the stormwater fee would be one of the simplest tasks for landowners under a stormwater law, and could result in significant environmental and aesthetic improvement to impaired water bodies.

Implicit in the definition of stormwater is that BMPs can be used to disconnect existing impervious cover by infiltrating runoff before it goes off-site. This is how landowners can reduce or eliminate their stormwater fee, and *therefore a stormwater fee system will reduce both new and existing environmental degradation.*

Drawbacks to Statewide Permit

There are several potential drawbacks to a statewide program, be it either a permit system or a stormwater utility. 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.

Phased Implementation

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 anti-degradation 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.

Local Incentives

For either a statewide permit system or stormwater utility, the Commission recommends creating incentives for local control. One approach would be to require a fee to be paid to the state, unless a town implemented a program itself in order to retain the revenue generated. A town could establish a town-based local utility or become part of a larger regional utility in order to keep the fee locally. Under a permit system, it is not clear how a town could assume the authority for such a permit.

Dedicated Revenue

For either a statewide or locally-controlled utility, public acceptance will be greater if the funds are allocated for stormwater mitigation, rather than supplementing existing budgets for operations and maintenance. The revenues derived would be managed as an enterprise fund similar to the way sewer and water user fees are managed. The revenue could only be used for stormwater-related activities which could include administration, operation and maintenance (O & M) and capital expenditures with preference being given to stormwater mitigation activities.

Exemptions

Exemptions to the Stormwater permit and/or fee would be granted to agriculture and forestry operations if those operations: (a) have a nutrient management plan in place, or (b) have a regulation buffer strip in place, or (c) already have another permit such as a harvesting permit for logging operations.

State and local governments are not exempt from a permit fee. However they may opt to not pay a fee to themselves.

STORMWATER UTILITIES

A discussion of stormwater utilities is included in *Appendix D4* of the Commission report.

The Statewide Stormwater Utility Concept

Action is needed on a state level for the creation of stormwater utilities, to assist communities at the local level to ensure the successful implementation of new stormwater programs. Without action on the state level any new or proposed programs are likely to fail especially under the current economic conditions. Any new programs will require a consistent dedicated revenue stream in order to be viable and self-supporting. The current economic climate and lack of adequate funding for water, wastewater and stormwater programs in general leaves very little available funding on both the State and local level. Action on the state level eliminates the need to be passed on local level, without which community adoption is very unlikely.

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. Individual municipalities would therefore have three options:

(1) Establish its own municipal stormwater utility;
(2) Join with other municipalities in the vicinity to form a regional or watershed-wide stormwater utility consisting of multiple municipalities;
(3) The default position, be covered under a state-administered watershed-based utility.

Following approval of legislation, municipalities would have 12 months to select one of the three options. At the end of 12 months, communities would by default be placed into a state-administered utility or establish a municipal program or join a regional program.

Exemptions could be provided whereby a municipality could petition the NHDES to opt out of a stormwater utility requirement based upon certain pre-determined conditions. Exemptions may be offered for small communities which do not operate a municipal drinking water or wastewater program, and they are not in a watershed listed with impaired waters. The exemption can be rescinded if the conditions change. Properties affected include private, state, and federal, in particular buildings, driveways, and parking lots. It does not include public linear infrastructure.

All three programs fees will be based on the usage of an Equivalent Residential Unit (ERU) determined on the average impervious cover on a typical residential lot and combined with tax records. This is commonly in the range of 2,500 to 2,700 ft^2 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.

Funds generated by the utility SW program would be used solely to fund stormwater related needs and could include staff, planning efforts, equipment, and structural improvements.

Incentives for property owners' fee abatements are based on installation and maintenance of LID BMPS. Complete fee abatement can be achieved with full effective impervious cover reduction. Reductions in the fee may be offered for practices that reduce discharges and treat for water quality. Level and duration of abatement would be based on degree of impervious cover reduction over time. Continued investment in reduction of impervious cover over time would result in continued fee abatement. These fee reductions will serve as an incentive to encourage more innovative and effective stormwater management practices.

A circuit rider for municipal staff assistance may be administered by the regional planning commissions and paid for by the stormwater mitigation fund (described below) if developed. Assistance will be prioritized to communities without dedicated planning staff. It is not expected that significant assistance will be needed and will likely be limited to the initial establishment of the program.

Option 1: <u>Municipal Stormwater Utility w/ Incentives</u>

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. Regulatory authority exists in HB 1581 for the creation of a stormwater utility. The utility funds generated would be held locally and used solely for the implementation of the program.

One incentive for adoption of a municipal program is that because it will be administered locally, no funds are sent to the state program. 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). Reductions in the fee may 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: Regional or Watershed-Wide Stormwater Utility Consisting of Multiple Municipalities

This option would involve the establishment of an inter-municipal cooperative agreement, such as a village district, analogous to the process for wastewater management. It could also be developed as a component of a regional watershed entity such as the Southeast Watershed Alliance. Advantages to Option 2 are that a watershed approach allows the flexibility of addressing stormwater management and contaminant loads where they can be most effective, and have the greatest economic benefit. Activities by a municipal utility will typically limit activities to within areas under their jurisdiction. There may however 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.

Fees generated would be distributed both to the Regional or Watershed-Wide Stormwater Utility and municipality. The Regional or Watershed-Wide Stormwater Utility would receive 25% of funds generated to cover program administration, watershed-based retrofits, and other program related activities. 75% of funds generated would 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 required to implement a stormwater utility. Option 3 similar to Option 2 however administered by the state. Similarly, 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 25% of funds generated to cover program administration, watershed-based retrofits, to fund circuit riders, and other program related activities. 75% of funds generated would remain with the municipality to administer the stormwater utility program and other program related activities.

Stormwater Mitigation Fund (SMF)

A state administered fund would be developed from an impact fee on new and redevelopment projects greater than 10,000 ft^2 which do not meet state requirements. The SMF would be structure in part, similar to the Aquatic Resource Mitigation fund. The SMF could be used to support a circuit rider program, targeted stormwater management improvements, a grant program, and other program related activities.

The fund includes incentives for developers to promote LID land use planning and development. The fund reinforces the connection between stormwater, land use, impervious coverage, and impacts. Incentives would have a fee structure based on % 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 IC 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 and having less than 40% existing impervious surface coverage, the stormwater management requirements will 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 sub watershed provided the project satisfactorily demonstrates that impervious area reduction and LID strategies and BMPs have been implemented on-site to the MEP.

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

a) 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

b) Implement other LID techniques onsite to the maximum extent practical to provide treatment for at least 50% of the redevelopment area; or
c) 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.

Public Outreach and Education

Public outreach and education must be a critical component of any stormwater utility. Public education and involvement are crucial to successful implementation of a stormwater utility. In addition, 2 of the 6 required elements of an MS4 stormwater management program, pursuant to the U.S. EPA Stormwater Phase II Final Rule as it pertains to MS4's, are *Public Education and Outreach* and *Public Participation/Involvement*. Public participation and involvement is particularly important since it gives citizens the opportunity to participate in the development and administration of the program which is crucial to successful implementation of any program. The general public can also provide feedback that can be beneficial in adapting the stormwater program to a particular community's specific circumstances and needs.

Technical Assistance

The Commission evaluated various means by which technical assistance could be provided to municipalities for managing stormwater programs and activities. One idea that has the popular support of the Commission is the establishment of a circuit rider program. Under the statewide utility concept, the circuit rider wages and expenses could be derived through the revenues generated from the stormwater utility fees. It is less clear as to how this would work under the scenario where numerous municipal and regional stormwater utilities are established to fund stormwater activities across the state.

SAMPLE STORMWATER UTILITIES

Information from some existing stormwater utilities is included in *Appendix D4* of the Commission report.

ECONOMIC CASE STUDIES of LID PRACTICES

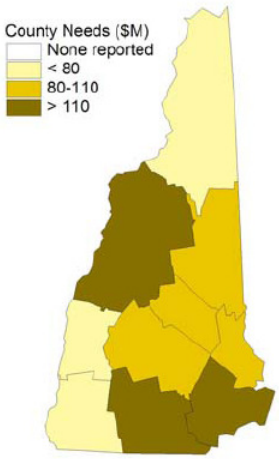
Low Impact Development (LID) represents one of the most progressive trends in the area of stormwater management and water quality protection. This approach involves utilizing strategies to control precipitation as close to its source as possible in order to reduce runoff volumes, promote infiltration, and protect water quality. While better known for its capacity to reduce pollution and manage stormwater more sustainably, LID designs are also economically beneficial and more cost-effective as compared to conventional stormwater controls. Several case studies of projects that incorporated LID practices are included in *Appendix D5* of the Commission report.

The case studies presented in *Appendix D5* of the Commission report show how incorporating a green infrastructure strategy with LID can help cities and municipalities reduce stormwater runoff volumes entering combined systems, lowering treatment costs. Also, as shown, utilizing a combination of grey and green infrastructure strategies for CSO management can be considerably more economically viable than using grey infrastructure alone.

D2 – 2008 New Hampshire Clean Water Needs Survey Summary

New Hampshire
Clean Watersheds Needs Survey 2008

The Clean Watersheds Needs Survey (CWNS) is a comprehensive assessment of needs[1] to meet the water quality and water-related public health goals of the Clean Water Act (CWA). States and the U.S. Environmental Protection Agency (EPA) conduct the CWNS every four years under CWA Section 516 (b). New Hampshire documented needs totaling $1.3 billion in 2008. This is an 82 percent increase from the $685 million in needs documented in 2004.



Documented Needs in New Hampshire

Type of Need	Needs (2008 Dollars, Millions) 2004	2008	Percent Change
Wastewater treatment	$200	$536	168%
Pipe repair and new pipes	$166	$367	121%
Recycled water distribution	nr[a]	nr	0%
Combined sewer overflow correction	$309	$281	-9%
Total Wastewater Treatment Needs	**$675**	**$1,184**	**75%**
Conveyance infrastructure	n/a	$51	n/a
Treatment systems	n/a	$10	n/a
Green infrastructure	n/a	$2	n/a
General stormwater management	nr	$2	n/a
Total Stormwater Management Needs[b]	**nr**	**$65**	**n/a**
Agriculture (cropland) best management practices (BMPs)	nr	nr	0%
Agriculture (animals) BMPs	nr	nr	0%
Silviculture (forestry) BMPs	nr	nr	0%
Ground water protection: unknown source BMPs	nr	nr	0%
Marinas BMPs	nr	nr	0%
Resource extraction BMPs	nr	nr	0%
Brownfields remediation	nr	nr	0%
Storage tank remediation	nr	nr	0%
Sanitary landfills BMPs	$9	$1	-89%
Hydromodification (Water resource restoration and protection)	nr	nr	0%
Other estuary management activities[c]	n/a	nr	n/a
Total Nonpoint Source Control Needs[b,d]	**$9**	**$1**	**-89%**
Total Decentralized Wastewater Treatment Needs[b,d]	**$1**	**nr**	**-100%**
Total Needs	**$685**	**$1,250**	**82%**

[a]Not reported; [b]Actual needs may be higher, since documenting these needs is difficult; [c]In 2004, Other Estuary Management Needs were reported under Separate State Estimates (SSEs); [d]Not included in Official Needs in the Report to Congress.

[1] Documented needs in the CWNS include the unfunded capital costs of projects as of January 1, 2008 that address a water quality or a water quality-related public health problem existing as of January 1, 2008, or expected to occur within the next 20 years; and meet the seven CWNS documentation criteria. All needs are in January 2008 dollars.

New Hampshire
Clean Watersheds Needs Survey 2008

Wastewater Treatment Facilities

The enactment of the Clean Water Act (CWA) in 1972 resulted in dramatic improvements in the:

- Number of wastewater treatment plants.
- Percentage of the population served by wastewater treatment plants.
- Quality of effluent treatment from wastewater treatment facilities.

In 2008, 49% of New Hampshire residents received centralized wastewater treatment services at the secondary, advanced, or no discharge treatment level, compared to 10% in 1972.

Number of Centralized Treatment Facilities and Population Served

	Number of Facilities			Population Served				
					%Total Population		%Total Population	
Treatment Level	1972	2008	Projected[a]	1972	1972	2008	2008	Projected[a]
Less than Secondary	14	1	0	143,000	18	20,617	2	0
Secondary	26	69	62	83,000	10	619,585	47	664,473
Advanced	5	3	11	2,000	<1	11,782	1	104,871
No Discharge	0	13	13	0	0	9,159	1	11,452
Total	**45**	**86**	**86**	**228,000**	**28**	**661,143**	**50**	**780,796**

[a] Number of facilities and population served if all needs documented in the CWNS 2008 are met.

Small Communities

In New Hampshire, small community wastewater facilities serve 20% of the population and comprise 22% of total wastewater treatment and collection needs. EPA small community support information is available at: www.epa.gov/owm/mab/smcomm

Reported Needs for Facilities in Small Communities

	Facilities		Needs (2008 Dollars, Millions)	
Population	2004	2008	2004	2008
0-999	6	12	$4	$26
1,000-3,499	8	22	$12	$126
3,500-10,000	17	14	$73	$104
Total	**31**	**48**	**$89**	**$256**

Visit www.epa.gov/cwns for more information including:

- Detailed Reports to Congress
- Other state fact sheets
- Maps, charts, and data downloads for projects, facilities, watersheds, counties, congressional districts, cities, states, and regions

Summary of Reported Costs from 2008 Clean Water Needs Survey

Facility/Project Name	Cost
Amherst MS4	$158,380
Bedford MS4	$1,016,459
Belmont Stormwater Projects	$2,114,958
Berlin Stormwater Projects	$194,679
Boscawen Stormater Projects	$73,357
Bristol Stormwater Projects	$487,006
Canaan Stormwater Projects	$104,346
Chichester Stormwater Projects	$465,537
Claremont Stormwater Projects	$1,682,987
Concord Stormwater Projects	$5,744,922
Derry MS4	$699,827
Dover Stormwater Projects	$3,953,574
Durham MS4	$97,432
Epsom Stormwater Project	$3,706,475
Exeter MS4	$420,697
Goffstown Stormwater Projects	$1,824,529
Gorham Stormwater Projects	$33,387
Greenland Stormwater Projects	$409,108
Hamton MS4	$9,610,978
Harrisville Stormwater Projects	$108,155
Holderness Stormwater Projects	$77,446
Keene Stormwater Projects	$3,446,108
Laconia Stormwater Projects	$3,358,761
Lebanon Stormwater	$122,000
Manchester MS4	$2,098,665
Merrimack MS4	$3,804,654
Milford MS4	$226,118
Nashua MS4	$697,152
Newbury Stormwater Projects	$178,315
Pelham MS4	$77,446
Pembroke Stormwater Project	$1,591,290
Peterborough Stormwater Projects	$666,014
Plaistow MS4	$356,657
Portsmouth MS4	$5,138,256
Rochester MS4	$1,118,834
Salem MS4	$2,078,801
Sanbornton Stormwater Projects	$681,695
Sandown Stormwater Project	$382,313
Seabrook Stormwater Projects	$1,058,194
Somersworth MS4	$473,844
Wakefield Stormwater Projects	$211,608
Windham MS4	$1,489,384
Wolfeboro Stormwater Projects	$2,384,115
Total	**$64,624,463**

D3 – NHDES Extrapolated Stormwater Costs from the 2008 Clean Water Needs Survey

NHDES Extrapolated Stormwater Costs from the 2008 Clean Water Needs Survey

Urbanized Areas

	Municipality	CWNS Stormwater Needs	Area in Acres	Stormwater Capital Costs per Acre	2008 Population
Urbanized Areas	Bedford	$1,016,459	14,150	$72	20,807
	Dover	$3,953,574	11,258	$351	28,706
	Hampton	$9,610,978	5,453	$1,763	15,032
	Manchester	$8,770,350	17,670	$496	108,154
	Merrimack	$3,804,654	16,973	$224	26,139
	Portsmouth	$5,138,256	9,133	$563	20,520
	Rochester	$1,118,834	10,118	$111	30,796
	Salem	$2,078,801	15,853	$131	29,549
	Windham	$1,489,384	7,558	$197	12,823
	Subtotal Urbanized Areas	$36,981,290	108,166	$434	292,526
	Extrapolated State Urbanized Areas	$116,011,960.62	267,213		
Urbanized Clusters	Berlin	$194,679	2,893	$67	10,170
	Claremont	$1,682,987	3,443	$489	12,827
	Concord	$5,744,922	13,542	$424	42,052
	Keene	$3,446,108	6,246	$552	22,653
	Laconia	$3,358,761	6,426	$523	17,233
	Pembroke	$1,591,290	2,822	$564	7,293
	Peterborough	$666,014	2,291	$291	6,172
	Subtotal Urbanized Clusters	$16,684,761	37,663	$416	118,400
	Extrapolated State Urbanized Clusters	$39,311,925	94,586		
	Total Extrapolated State Urbanized Areas	$155,323,885	361,799		
	Total Statewide Culvert Replacement Costs	$27,313,400			
	Total Statewide Stormwater Capital Needs	$182,637,285			

D4 – Stormwater Utility Discussion and Examples

Stormwater Utility Discussion and Examples

What is a Stormwater Utility?

Municipalities employ a variety of funding methods, including service charges, several types of taxes, franchises and other fees, fines, and penalties. The various funding methods have distinctive characteristics, which separate them legally, technically, and in terms of public perceptions. Four major categories of municipal revenue generation methods are taxes, service charges, exactions, and assessments.

Municipal stormwater management programs have been funded using a number of mechanisms as the primary source of funds including: property taxes, sales taxes, state revolving funds, road funding, user fees, bonding, and surcharges on other utility fees. By far the most common current funding method in New Hampshire for stormwater-related activities is property tax based. Other major revenue generators include franchise fees, income taxes, gasoline tax (for roadway related drainage), sales taxes, and stormwater user fees.

In recent years, a major source of funding for stormwater management has been in the form of a user fee system under the auspices of a stormwater utility. This form of funding has several advantages over other competing forms of funding including equitability, stability and adequacy. The user fee concept of a stormwater utility based funding method is fast growing. In the early 1970's there were only one or two true stormwater utilities in existence.

In early 1990's there were over 200. By 2000 the number had grown to 400. This number is expected to more than triple in the next decade as the financial impacts of stormwater quality legislation reach the many small municipalities.

The distinctions of the four revenue categories are very important. One of the critical issues which typically must be resolved if a utility service charge of any type is legally challenged is whether the service charge is clearly related to and incidental to the activities and improvements of the utility, or is in fact merely a means of creating revenue for all governmental purposes generally (a tax), or is it a special assessment (which is supposed to reflect a direct and special benefit). Thus a stormwater utility must be based on a stormwater program and not simply a perceived financial need or willingness to pay.

City of Milwaukee

The Storm Water Management Charge

The Storm Water Management Charge is a tool for communities to invest in reducing pollution from storm water runoff. Storm water is water from rain and melting snow that flows off roofs, driveways, parking lots, playgrounds, streets, and other hard, or impervious, surfaces. The water washes industrial chemicals, gas, oil, antifreeze, road salt, detergents, pesticides, pet waste, and other pollutants into storm drains. The storm drains dump the polluted water, without treating it, directly into Lake Michigan and local rivers. Storm water is the largest polluter of streams, rivers, and lakes. Storm Water Management monies pay for projects to prevent storm water pollution of natural waterways and to operate and maintain storm sewers.

The Storm Water Management Charge was introduced in the 2006 City of Milwaukee budget. Previously, the costs for city sewers, including storm and sanitary sewers, were covered by sewer charges based on drinking water use.

The Storm Water Management Charge distributes the cost of storm water programs to non-profit and tax-exempt organizations, and non-residential and commercial property owners with multiple buildings, parking lots, and paved surfaces. The charge applies to all properties, occupied or vacant, and empty lots.

The charge appears on the Milwaukee Municipal Services Bill administered by the Milwaukee Water Works.

The charge is based on the amount of impervious surface area of a property. A typical residential property has an average impervious surface area of 1,610 square feet. This measurement is called an Equivalent Residential Unit (ERU). The number of ERUs for non-residential, commercial developed property and vacant, improved property is calculated by dividing the impervious surface area of the property by 1,610.

Residential buildings (house, apartment, condominium) with one to four units were billed for 2009 at $8.66 the first quarter and $12.87 the remaining three quarters for an annual rate of $11.82 per quarter.

The charge for commercial property, including buildings with more than four residential units, is based on the amount of hard surface area of the property. Calculate the number of ERUs for a property by dividing the square footage of hard surface of the property by 1,610. The 2009 charge was billed at $8.66 per ERU for the first quarter and billed $12.87 per ERU for the remaining three quarters for an annualized rate of $11.82 per ERU per quarter. For commercial customers billed monthly, the 2009 charge was billed the first quarter at $2.88 per ERU per month, and billed the final three quarters at $4.29 per ERU per month for an annualized rate of $11.82 per ERU per quarter.

Condominium associations are charged based on the amount of hard surface area of the entire property. The charge is billed quarterly to the condominium association.

My residential property has more than four dwelling units. What is the charge?
Residential properties with more than four units are considered commercial developed property when calculating the charge.

How are condominium charged?
Condominium associations are charged based on the amount of impervious surface area of the entire property. Calculate the number of ERUs for the property by dividing the impervious surface area of the property by 1,610. The charge is billed quarterly to the condominium association.

What is an "improved" property?
An improved property is a parcel of land that has a building on it and/or any impervious surface, such as a paved parking area and sidewalks.

Storm Water Management Charge - p. 2

Where does the Storm Water Management Charge appear?
The charge appears on the Municipal Services Bill as a separate line item. The billing unit, ERU (Equivalent Residential Unit) is shown, along with the total charge. The city does not bill fractions of an ERU.

Why is the charge on my "water bill"?
The Municipal Services Bill includes charges for drinking water, Milwaukee Metropolitan Sewerage District (MMSD) sewerage treatment, and certain municipal services provided in the City of Milwaukee. It is more cost-effective to include all charges on one bill rather than to issue multiple bills. The Milwaukee Water Works manages the billing and forwards the collected charges to the city treasurer for distribution to city departments and the MMSD.

I never received a "Municipal Services Bill" before. Why am I receiving one now?
The City of Milwaukee now has the capability to charge properties that receive city services but no water or sewer service. Previously, only those receiving water and sewer service paid local sewerage charges and snow and ice control charges. New accounts were established for properties that previously were exempt from city service charges.

How do I appeal the Storm Water Management Charge if I believe it was incorrectly calculated or charged to my property?
City ordinance established a flat fee for residential properties, so there is no appeal process for residential properties. Appeals are available for non-residential and commercial developed property and vacant improved property. To appeal a Storm Water Management charge, telephone the Milwaukee Water Works Customer Service Center, (414) 286-2830, and leave your name, property address, telephone number, and if available, an email address. The Water Works will forward your appeal to the Department of Public Works for investigation.

If I am a tenant of the property, can I be held responsible for payment of the Storm Water Management Charge?
Your payment responsibility is determined by the terms of your lease, which is a private agreement between you and your landlord. The city is not a party to the lease, and will not become involved in a disagreement between landlord and tenant. The landlord or property owner is responsible for payment of the charge if the tenant fails to pay under terms of the lease.

What happens to unpaid Storm Water Management Charges?
If charges for this service remain unpaid for two or more billing quarters, the charges will be transferred to the property tax account in September and are a lien against the property.

Do tax-exempt properties, such as churches, non-profit organizations, and government-owned properties pay the Storm Water Management Charge?
All properties are charged for use of the city storm sewers, including properties that are otherwise exempt from paying property taxes.

I'm selling my house. How do I transfer responsibility for the Storm Water Management Charge and other charges to the new owner?
The Storm Water Management Charges billed to a property sold after July 1, 2006 are the responsibility of the new owner and are handled in the same manner as all current charges (drinking water, sewer, solid waste, snow and ice charge). If a property is sold mid-quarter, for example, the total bill is prorated according to the time of sale so seller and buyer split the cost.

Para una explicación en Español por favor llame (414) 286-2830.

MWW 11/09

Resources

Winooski Natural Resources Conservation District Rain Barrel / Garden Info
vacd.org/winooski/winooski_rainbarrels.shtml
vacd.org/winooski/winooski_raingarden.shtml

South Burlington Low Impact Development (LID) Manual
www.sburlstormwater.com/lid.pdf

Smart Water Ways - info on stormwater in Chittenden County:
http://www.smartwaterways.org/

VT DEC's Small Sites Guide For Stormwater Management
http://www.anr.state.vt.us/dec/waterq/stormwater/docs/swimpairedwatersheds/sw_rda_small_sites_guide.pdf

Mid-America Regional Council Environmental Programs Downspout Redirection Instructions
www.marc.org/Environment/Water/downspout.htm

Urban Design Tools for Low Impact Development
www.lid-stormwater.net

National Low Impact Development (LID) Atlas
http://clear.uconn.edu/tools/lidmap/

For more information

To find out more about runoff in the Lake Champlain Basin, including details on each of these featured home improvements, visit the Lake Champlain Basin website's stormwater page:

www.lcbp.org/stormwater

South Burlington Stormwater Services

About SBSS

South Burlington Stormwater Services, Vermont's first stormwater utility, provides ongoing stormwater system maintenance, upgrades, and technical support for property owners.

The Utility manages stormwater in a cost-effective way for all residential and business property owners.

For more information about South Burlington Stormwater Services please visit:

www.sburlstormwater.com

Lake Champlain Basin Program

These materials were developed in conjunction with the Lake Champlain Basin Program.

For more information, visit

LCBP.org

Reducing Stormwater Runoff From Your Home

The Lake Champlain watershed typically receives 35 inches of rain annually but we rarely think about where the rain goes and its impact on our environment.

Look inside to see some simple tips to reduce your home's impact on our lake...

The Facts:

- **One acre of developed land** typically sends as much phosphorus to the lake as **three acres of agricultural land**
- During a heavy rainfall, one downspout can drain as much as **12 gallons of water per minute**
- For **as little as $30 or less**, you can greatly reduce your home's impact on the lake

Why Runoff is a Problem

When rain falls on towns and cities, it flows off hard or "impervious" surfaces like roofs, driveways, and sidewalks into the storm drain system instead of soaking into the ground. This increased volume of runoff called "stormwater" can cause stream bank erosion and water pollution.

In the City of South Burlington, one in three homes has a downspout, or vertical pipe for carrying rainwater from a gutter to ground level, that empties into the City's storm drain system. Redirecting your downspout is an easy first step toward reducing the impact your home has on our waterways.

Some simple ways to reduce runoff from your home

Downspout Redirection

Redirecting roof runoff can be as simple as adding a downspout extension. These are plastic (PVC) or metal extensions that attach to the bottom of your existing downspout and direct runoff to your lawn. The extension should carry your roof runoff at least three to five feet away from your home to prevent any water damage to your home or foundation. Keep in mind that not all sites are well suited for simple redirection. If your lawn is small compared to your roof, or if the slope of your lawn is too steep, consider installing a rain barrel or a rain garden instead.

Top: Example of a downspout extension

Middle: Rain garden illustration courtesy RainGardens.org

Bottom: Example of a rain barrel, courtesy www.innercityfarmer.com

Rain Barrel

Installing a rain barrel or series of rain barrels at the end of your downspouts allows you to store rain water for later use. Stored water can be used for watering your lawn or garden, or washing cars and will save money on your water bill. A pre-made rain barrel can cost as little as $60 or you can make your own for less.

Rain barrels are covered with a mesh screen so they don't become mosquito habitat and are available at local hardware and garden supply stores.

Rain Garden

Rain gardens can range in size from small, simple gardens for the average homeowner to large, complex bioretention gardens. Rain gardens absorb 30% more water than the equivalent area of a typical lawn, and the root systems of the plants and layers of porous soil provide even more capacity to filter pollutants. Redirecting a downspout to a rain garden will not only help reduce flooding and pollution, but will also attract birds and pollinating insects, adding to the biodiversity in your neighborhood.

Benefits of a Utility

The Stormwater Utility will:

- Manage and upgrade the City's stormwater infrastructure, such as culverts and storm drains, so that systems continue to meet current regulations and would receive permits.
- Manage, maintain, and handle permitting for residential stormwater systems in the City, after the systems are brought up to current Vermont (2002) standards by residents or homeowners associations.
- Provide technical assistance to South Burlington property owners who need to bring their stormwater system up to current Vermont (2002) standards. A valid stormwater permit is part of the value of your home and property.

Vermont Youth Conservation Corps volunteers plant the Bartlett Brook stormwater treatment wetland.

Your Job, My Job

The City is responsible for parts of the stormwater system that are in the public right of way and located on public property. This includes storm drains, culverts, conveyance piping, catch basins and stormwater outfalls.

Property owners are responsible for everything on their property. This includes cleaning leaves out of your rain gutters and removing gravel from your driveway.

South Burlington
Stormwater Utility
www.sburl.com/stormwater

South Burlington
Stormwater Utility
www.sburl.com/stormwater

City of South Burlington
575 Dorset Street
South Burlington, VT 05403
(802) 846-4106
www.sburl.com/stormwater

South Burlington
Stormwater Utility
www.sburl.com/stormwater

An Introduction to Vermont's First Stormwater Utility

Stormwater drain

What is Stormwater?

Stormwater is water that runs off impervious surfaces such as rooftops, paved roads, driveways, and packed gravel roads.

Stormwater carries sediment and surface pollutants such as petroleum products, trash, phosphorus, and nitrogen. Stormwater is washed down storm drains. Most stormwater is not treated before it empties into our waterways and Lake Champlain.

Construction runoff

Stormwater and South Burlington

South Burlington contains all or a portion of six streams impaired by stormwater runoff, the highest number of any community in Vermont. Unmanaged stormwater is causing water pollution, erosion, flooding, and unstable streambanks in areas of South Burlington. Private stormwater systems that are not maintained have become a public problem. Expired permits and difficulty obtaining a valid stormwater permit are hindering property transfers in South Burlington.

A Stormwater Utility

The City of South Burlington is proud of its history of providing valuable public services for residents and is recognized nationally for its natural resources. Unmanaged stormwater runoff jeopardizes these assets.

There are positive steps the City can and should take at this time to address stormwater and its related problems. Establishing a utility will help the City clean up streams and improve water quality.

The Utility is an efficient way to identify and manage stormwater problems, projects, and infrastructure upgrades. The Utility will provide a stable and adequate source of revenue to complete required maintenance and manage stormwater-related activities.

The entire area of the City of South Burlington, including City-owned and state-owned and maintained roads, culverts, and parking lots, will share the cost and receive services from the Stormwater Utility.

Stormwater is everyone's responsibility. All properties with impervious surface generate stormwater runoff.

For more information visit our Web site, www.sburl.com/stormwater to learn more and view an interactive map which shows stormwater problem areas and improvement projects.

Stormwater Utility Fee

The Stormwater Utility user fee will be listed on existing sewer and water bills. Just like a water bill, the fee is based on service use.

A scientific process was used to calculate impervious surface area. The rate of $4.50 per equivalent residential unit (ERU) per month is based on the typical single-family South Burlington home having 2,700 square feet of impervious surface (rooftops, driveways, walkways).

User Fees

Every single-family home in South Burlington will be assessed a flat fee of $4.50 per month for services provided by the Utility.

Duplexes with fee simple ownership will be assessed $2.25 each per month. Triplexes with fee simple ownership will be assessed $1.50 each per month.

The fee will be billed quarterly. The annual cost is $54 for single-family homes, $27 for duplexes, and $18 for triplexes.

All other property owners (includes condominium ownership properties, businesses, institutions, and government) will be assessed a fee based on the amount of impervious surface.

D5 – Low Impact Development Case Studies

LOW IMPACT DEVELOPMENT CASE STUDIES:
The following is an excerpt from a project documenting the cost benefits of LID stormwater management. The project is titled *Forging the Link: Linking the Economic Benefits of Low Impact Development and Community Decisions.*
The project reference is:
Roseen, R. M., Houle, J. J., Janeski, T. V., Simpson, M. H., and Gunderson, J. (2010). "Forging the Link: Linking the Economic Benefits of Low Impact Development and Community Decisions--DRAFT." The UNH Stormwater Center, Durham, New Hampshire.

Economics of Low Impact Development: Case Studies

Low Impact Development (LID) represents one of the most progressive trends in the area of stormwater management and water quality. This approach involves utilizing strategies to control precipitation as close to its source as possible in order to reduce runoff volumes, promote infiltration, and protect water quality. While better known for its capacity to reduce pollution and manage stormwater more sustainably, LID designs are also economically beneficial and more cost-effective as compared to conventional stormwater controls.

In the vast majority of cases, the U.S. Environmental Protection Agency (EPA) has found that implementing well-chosen LID practices saves money for developers, property owners, and communities while also protecting and restoring water quality (USEPA, 2007). Specifically, utilizing LID designs can result in project cost savings by decreasing the amount of expensive below ground drainage infrastructure required, as well as reducing or eliminating the need for other stormwater management-related facilities including curbs, erosion control measures, catch basins, and outlet control structures.

LID designs also have space-saving advantages and can reduce the amount of land disturbance required during construction, saving money on site preparation expenses. In northern Frederick County, Maryland, a number of cost saving benefits were realized by redesigning a conventional subdivision with LID designs. This included eliminating two stormwater ponds representing a reduction in infrastructure costs of roughly $200,000; increasing the number of buildable lots from 68 to 70, which added roughly $90,000 in value; and allowing the site design to preserve approximately 50 percent of the site in undisturbed wooded condition, which reduced clearing and grubbing costs by $160,000 (Clar, 2003). Also, an infill site in northern Virginia was able to save over 50 percent in cost for infrastructure by minimizing impervious surfaces, protecting sensitive areas, reducing setback requirements, and treating stormwater at the source (VADCR, 2000).

Additional economic benefits of LID include reduced flooding costs as well as lower home cooling expenses. For example, natural vegetation and reduced pavement area in the Village Homes LID development in Davis, CA helped lower home energy bills by 33 to 50 percent as compared to surrounding neighborhoods (MacMullan, 2007). Further economic incentives to developers for LID inclusion include the potential for higher property values as well as a reduction in permitting fees – in Dane County, WI, permit fees for development are calculated

based on the amount of impervious area in a site, providing an incentive for developers to use LID. In another example, an analysis of 184 lots in one community found that conservation subdivisions were more profitable than conventional subdivisions. Lots in the conservation subdivisions cost an average of $7,000 less to produce, resulted in a 50 percent decrease in selling time, and had a value of 12 to 16 percent more as compared to lots in conventional subdivisions (Mohammed, 2006).

The following two case studies will show how utilizing an LID approach to site drainage engineering, specifically with porous asphalt installation, led to more cost-effective site and stormwater management designs.

Economic Case Studies

Boulder Hills LID Economic Case Study

In addition to more effective stormwater management, an economic benefit was achieved by utilizing an LID approach that featured porous asphalt for a residential development

OVERVIEW

Boulder Hills is a 24-unit active adult condominium community in Pelham, New Hampshire that features the State's first porous asphalt road. The development was built by Stickville LLC on 14 acres of previously undeveloped land and includes a total of 5 buildings, a community well, and a private septic system. In addition to the roadway, all driveways and sidewalks in the development are also composed of porous asphalt. Located along the sides and the backs of the buildings are fire lanes consisting of crushed stone that also serve as infiltration systems for rooftop runoff.

SFC Engineering Partnership Inc. designed the project site and development plan including all drainage. Dr. Robert Roseen of the University of New Hampshire (UNH) Stormwater Center advised the project team and worked with Pelham town officials, providing guidance and oversight with the installation and the monitoring of the porous asphalt placements.

Prior to development, the project site was an undeveloped woodland area sitting atop a large sand deposit. Soils on the parcel were characterized with a moderate infiltration rate and consisted of deep, moderately well to well drained soils. Wetland areas were located in the south and east sections of the parcel, with a portion of the site existing in a 100-year flood zone.

The benefits of implementing an LID design as compared to a conventional development and stormwater management plan included cost savings and positive exposure for the developers, improved water quality and runoff volume reduction, as well as less overall site disturbance. Over time, the porous asphalt placements are also anticipated to require less salt application for winter de-icing, resulting in additional economic and environmental benefits. By the end of the first winter 2009-2010, the project owners reported using substantially less salt for winter ice management.

DESIGN PROCESS

Initially, SFC Engineering Partnership began designing a conventional development and stormwater management plan for the project. However, according to David Jordan, P.E., L.L.S., manager of SFC Engineering Partnership's Civil Engineering Department, difficulty was encountered because of the site's layout and existing conditions. "The parcel was burdened by lowland areas while the upland areas were fragmented and limited," Jordan said. "Given these conditions, it was challenging to make a conventional drainage design work that would meet town regulations. We found ourselves squeezing stormwater mitigation measures into the site design in order to meet criteria. The parcel also did not have a large enough area that could serve as the site's single collection and treatment basin. Instead, we were forced to design two separate stormwater detention basins, which was more expensive. This approach was also cost prohibitive because of the necessity of installing lengthy underground drainage lines."

When LID and specifically, porous asphalt, emerged as a possible stormwater management option for the site, the developer, Stickville LLC, was receptive. Stickville was aware of the advantages of LID and porous pavement and was interested in utilizing these measures as a possible marketing tool which could help differentiate them as green-oriented developers. SFC Engineering Partnership advised Stickville LLC to pursue this option. Jordan had attended a seminar on porous pavement presented by The UNH Stormwater Center which covered the multiple benefits of utilizing this material, including its effectiveness for being able to meet stormwater quantity and quality requirements.

Figure 1: Comparison of Two Designs, LID Design (left) and Conventional (right) for Boulder Hills, Pelham, NH

"Per regulations, the amount of stormwater runoff from the site after development could not be any greater than what it was as an undeveloped parcel," Jordan said. "In addition to controlling runoff, stormwater mitigation measures also had to be adequate in terms of

treatment. Porous pavement allows us to do both. For a difficult site such as Boulder Hills, that represents a huge advantage."

According to Jordan, the Town of Pelham responded very favorably to the idea of incorporating LID with the project. "The planning board was on board from the very beginning," he said. "They were very supportive of utilizing porous asphalt and recognized the many benefits of this option."

ECONOMIC COMPARISONS

SFC Engineering Partnership designed two development options for the project. One option was a conventional development and drainage plan that included the construction of a traditional asphalt roadway and driveways. The other option, an LID approach, involved replacing the traditional asphalt in the roadway and driveways with porous asphalt and using subsurface infiltration for rooftop runoff, essentially eliminating a traditional pipe and pond approach.

Although porous asphalt was more costly as compared to traditional asphalt, the engineers found that by utilizing this material, cost savings in other areas could be realized. For one, installing porous asphalt significantly lowered the amount of drainage piping and infrastructure required. Using porous asphalt also reduced the quantity of temporary and permanent erosion control measures needed while cutting in half the amount of rip-rap, and lowering the number of catch basins from 11 to 3. Additionally, the LID option completely eliminated the need to install curbing, outlet control structures, as well as two large stormwater detention ponds. Another benefit was a 1.3 acre reduction in the amount of land that would need to be disturbed, resulting in less site preparation costs.

The following table shows the construction estimate cost comparisons between the conventional and the low impact development options. Detailed unit costs for materials are included in Appendix XX.

Table 1: Comparison of Unit Costs for Materials for Boulder Hills LID Subdivision

Item	Conventional Option	Low Impact Development Option	Cost Difference
SITE PREPARATION	$23,200.00	$18,000.00	($5,200.00)
TEMP. EROSION CONTROL	$5,846.50	$3,811.50	($2,035.00)
DRAINAGE	$92,398.00	$20,125.00	($72,273.00)
ROADWAY	$82,054.00	$127,972.00	$45,918.00
DRIVEWAYS	$19,722.00	$30,108.00	$10,386.00

CURBING	$6,464.00	$0.00	($6,464.00)
PERM. EROSION CONTROL	$70,070.00	$50,610.00	($19,460.00)
ADDITIONAL ITEMS	$489,700.00	$489,700.00	$0.00
BUILDINGS	$3,600,000.00	$3,600,000.00	$0.00
PROJECT TOTAL	$4,389,454.50	$4,340,326.50	($49,128.00)

As shown in the table, the LID option resulted in higher costs for roadway and driveway construction. However, considerable savings were realized for site preparation, temporary and permanent erosion control, curbing, and most noticeably, drainage. Overall, the LID option was calculated to save the developers $49,128 compared to a conventional design ($789,500 vs. LID cost of $740,300) or nearly 6 percent of the stormwater management costs as compared to the conventional option.

CONCLUSIONS

Beyond its effectiveness at reducing stormwater runoff, facilitating more groundwater infiltration, and promoting water quality benefits, porous asphalt was shown in this case study to be capable of bringing positive economic results. Primarily, cost savings were achieved in the Boulder Hills site development design through a significant reduction in the amount of drainage infrastructure and catch basins required, in addition to completely eliminating the need for curbing and stormwater detention ponds. Moreover, with considerably less site clearing needed, more economic and environmental benefits were realized. Compared to a conventional development plan, an option utilizing LID featuring porous asphalt was shown in this example to be more economically feasible.

Greenland Meadows LID Economic Case Study

Utilizing an LID approach which featured porous asphalt, a cost-effective drainage system was designed for a large retail development

OVERVIEW

Greenland Meadows is a new retail shopping center built by Newton, Mass.-based Packard Development along in Greenland, New Hampshire that features the largest porous asphalt installation in the Northeast. The development is located on a 55.95-acre parcel and includes three, one-story retail buildings (Lowe's Home Improvement, Target, and a future supermarket), paved parking areas consisting of porous asphalt and non-porous pavements, landscaping areas, a large gravel wetland, as well as advanced stormwater management facilities. The total impervious area of the development – mainly from rooftops and non-porous parking areas – is

approximately 25.6 acres, considerably more as compared to pre-development conditions. Prior to development, the project site contained an abandoned light bulb factory with a majority of the property vegetated with grass and trees.

Framingham, Mass.-based Tetra Tech Rizzo provided all site engineering services and design work for the stormwater management system, which included two porous asphalt installations covering a total of 4.5 acres along with catch basins, sub-surface crushed stone reservoir, sand filter, and underground piping and catch basins. Dr. Roseen of the UNH Stormwater Center provided guidance and oversight with the porous asphalt installations and supporting designs.

This case study will show how a combination porous asphalt and standard pavement design with a sub-surface gravel reservoir management system was more economically feasible as compared to a standard pavement design with a conventional sub-surface stormwater management detention system. Additionally, this analysis will cover some of the site-specific challenges, as well as the environmental issues with this development that mandated the installation of an advanced LID-based stormwater management design.

ENVIRONMENTAL CONCERNS

During the initial planning stage, concerns arose about potential adverse water quality impacts from the project. The development would increase the amount of impervious surface on the site resulting in a higher amount of stormwater runoff as compared to existing conditions. These concerns were especially heightened given the fact that the development is located immediately adjacent to Pickering Brook, an EPA-listed impaired waterway that connects the Great Bog to the Great Bay. One group that was particularly interested in the project's approach to managing stormwater was the Conservation Law Foundation (CLF), an environmental advocacy organization.

According to Austin Turner, a senior project civil engineer with Tetra Tech Rizzo, CLF feared that a conventional stormwater treatment system would not be sufficient for protecting water quality. "Since there was interest in this project from many environmental groups, especially CLF, permitting the project proved to be very challenging," Turner said. "We were held to very high standards in terms of stormwater quality because Pickering Brook and the Great Bay are such valuable natural resources. The CLF wanted this project to have the gold standard in terms of discharge."

In order to ensure a high level of stormwater treatment as well as gain project approval, Tetra Tech Rizzo worked closely with Packard Development, the UNH Stormwater Center, the New Hampshire Department of Environmental Services, and CLF on the design of an innovative stormwater management system with LID designs.

HYDROLOGIC CONSTRAINTS

Brian Potvin, P.E., director of land development with Tetra Tech Rizzo, said one of the main challenges in designing a stormwater management plan for the site was the very limited permeability of the soils. “The natural underlying soils are mainly clay in composition, which is very prohibitive towards infiltration,” Potvin said. “Water did not infiltrate well during site testing and the soils were determined to not be adequate for receiving runoff.” As such, Tetra Tech Rizzo focused on a stormwater management design that revolved around stormwater quantity attenuation, storage, conveyance, and treatment.

ECONOMIC COMPARISONS

Tetra Tech Rizzo prepared two site work and stormwater management design options for the Greenland Meadows development:

Conventional – this option included standard asphalt and concrete pavement along with a traditional sub-surface stormwater detention system consisting of a gravel sub-base and stone backfill, stormwater wetland, and supporting infrastructure

LID – this option included the use of porous asphalt and standard paving in addition to a sub-surface crushed stone reservoir, sand filter beneath the porous asphalt, a subsurface gravel wetland, and supporting infrastructure

The western portion of the property would receive a majority of the site’s stormwater prior to discharge into Pickering Brook. The following table compares the total construction cost estimates for the conventional and the LID option.

Table 2: Comparison of Unit Costs for Materials for Greenland Meadows Commercial Development

Item	Conventional Option	Low Impact Development Option	Cost Difference
MOBILIZATION / DEMOLITION	$555,500	$555,500	$0
SITE PREPARATION	$167,000	$167,000	$0
SEDIMENT / EROSION CONTROL	$378,000	$378,000	$0
EARTHWORK	$2,174,500	$2,103,500	($71,000)
PAVING	$1,843,500	$2,727,500	$884,000
STORMWATER MANAGEMENT	$2,751,800	$1,008,800	($1,743,000)
ADDITIONAL WORK-	$2,720,000	$2,720,000	$0

RELATED ACTIVITY (utilities, lighting, water & sanitary sewer service, fencing, landscaping, etc.)			
PROJECT TOTAL	$10,590,300	$9,660,300	($930,000)

* Costs are engineering estimates and do not represent actual contractor bids

As shown, paving costs were estimated to be considerably more expensive (by $884,000) for the LID option because of the inclusion of the porous asphalt, sand filter, and porous asphalt crushed stone reservoir layer. However, the LID option was also estimated to save $71,000 in earthwork costs as well as $1,743,000 in total stormwater management costs, primarily due to piping for storage. Overall, comparing the total site work and stormwater management cost estimates for each option, the LID alternative was estimated to save the developers a total of $930,000 compared to a conventional design, or about 26 percent of the overall total cost for stormwater management.

Tables 2 and 3 further break down the differences in stormwater management costs between the conventional and LID designs by comparing the total amount of piping required under each option.

Table 3: Conventional Option Piping

	Type	Quantity	Cost
Distribution	6 to 30-inch piping	9,680 linear feet	$298,340
Detention	36 and 48-inch piping	20,800 linear feet	$1,356,800

Table 4: Low Impact Development Option Piping

	Type	Quantity	Cost
Distribution	4 to 36-inch piping	19,970 linear feet	$457,780
Detention*	--	0	$0

*Costs associated with detention in the LID option were accounted for under “earthwork” in table 1.

Although distribution costs for the LID option were higher by $159,440, the LID option also completely removed the need to use large diameter piping for subsurface stormwater detention. The elimination of this piping amounted to a savings of $1,356,800. “The piping was replaced by the subsurface gravel reservoir beneath the porous asphalt in the LID alternative,” Potvin said. “Utilizing void spaces in the porous asphalt sub-surface crushed stone reservoir to

detain stormwater allowed us to design a system using significantly less large diameter pipe. This represented the most significant area of savings between each option."

CONSERVATIVE LID DESIGN

Although the developers were familiar with the benefits of porous asphalt, Potvin said they were still concerned about the possibility of the systems clogging or failing. "The developers didn't have similar projects they could reference," he said. "For this reason, they were tentative on relying on porous asphalt alone."

In order to resolve this uncertainty, the Tetra Tech Rizzo team equipped the porous pavement systems with relief valve designs – additional stormwater infrastructure including leaching catch basins. "This was a conservative 'belt and suspenders' approach to the porous asphalt design," Potvin said. "Although the porous pavement system is not anticipated to fail, this design and strategy provided the developers with a safety factor and insurance in the event of limited surface infiltration."

To further alleviate concerns, a combination paving approach was utilized. Porous asphalt was limited to passenger vehicle areas and installed at the far end of the front main parking area as well as in the side parking area, while standard pavement was put in near the front and more visible sections of the retail center and for the loop roads, delivery areas expected to receive truck traffic. "This way, in case there was clogging or a failure, it would be away from the front entrances and would not impair access or traffic into the stores," Potvin said.

LID SYSTEM FUNCTIONALITY

The two porous asphalt drainage systems – one in the main parking lot and one in the side parking area – serve to attenuate peak flows, while the aggregate reservoirs, installed directly below the two porous asphalt placements, serve as storage. The aggregate reservoirs are underlain by sand filters which provide an additional means of stormwater treatment. Runoff from the sand filters flows through perforated underdrain pipes that converge to a large header pipe. Peak flow attenuation is attained by controlling the rate at which runoff exits the header pipe with an outlet control structure.

After being collected in catch basins, a majority of the stormwater runoff from rooftops and nonporous pavement areas flow to particle separator units, which treat stormwater prior to discharging into the crushed stone reservoir layers below the porous asphalt.

Outlet from the smaller aggregate reservoir, located underneath the side parking area, flows to an existing wetland on the east side of the site, while outlet from the larger aggregate reservoir flows to the gravel wetland on the west side of the site. The gravel wetland is designed as a series of flow-through treatment cells providing an anaerobic system of crushed stone with

wetland soils and plants. This innovative LID design works to remove pollutants as well as mitigate the thermal impacts of stormwater.

CONCLUSIONS

Although the use of porous asphalt in large-scale commercial and residential development is still a relatively new application, this case study showed how porous asphalt systems, if designed correctly and despite significant site constraints, can bring significant water quality and economic benefits. With Greenland Meadows, an advanced LID-based stormwater design was implemented given the proximity of the development to the impaired Pickering Brook waterway. But in addition to helping alleviate water quality concerns, the LID option featuring porous asphalt systems eliminated the need to install large diameter drainage infrastructure. This was estimated to result in significant cost savings in the site and stormwater management design.

LID Retrofit Example: University of New Hampshire Parking Lot Bioretention

Retrofitting of stormwater infrastructure is commonly considered to be very costly compared to new construction. However, in certain instances using existing resources, simple retrofits can be performed at minimal expense. Typically Gray Infrastructure represents the largest expense for construction of stormwater controls, and in combination with labor and equipment, may represent the bulk of project costs. Institutions such as municipalities that have a Public Works can provide both labor and equipment for retrofitting existing infrastructure. In these instances retrofit expenses are limited to design and materials costs only, while installation expenses for labor, equipment, and some infrastructure can be avoided. Personnel training for construction of many LID structural controls such as bioretention can be simple. Training often consists of simply having qualified installation oversight to instruct and train personnel at system construction. The following example details the process and expenses associated with the installation of a bioretention system for an existing parking area on the University of New Hampshire campus.

A bioretention retrofit was performed at the University of New Hampshire (UNH) for a site consisting of a landscaped area with existing stormwater infrastructure. Existing infrastructure consisted of curbing, catch-basins, and a drainage network that directed stormwater runoff offsite. The system was designed by UNH Stormwater Center in conjunction with the Maine Department of Environmental Protection (MEDEP). The system is a conversion of an existing landscape island into a bioretention and used as a source control measure to manage water quantity and improve water quality for parking lot runoff.

PROJECT LOCATION

The bioretention system is installed in an existing commuter parking lot located on-campus in Durham, New Hampshire with routine commuter and bus traffic. The parking lot is a standard design consisting of parking stalls and landscaped islands that are raised, curbed, and vegetated. These islands are approximately 500 feet long, 9 feet wide, and are designed to shed rainwater onto the adjacent impervious surface while the curbing directs runoff to storm drains. Existing stormwater management consists of a conventional catch basin and pipe network draining to a swale. Two catch basins are located near the center of the island, one on each side, draining approximately one acre each with a 12 inch concrete pipe running under the island.

PROJECT DESCRIPTION

The bioretention was designed to treat runoff from a one-inch rainfall on 0.8 acres of pavement over a 24 hour period, and includes a filter area that is 30 feet long and 9 feet wide. The cross-sectional layout of the system from the bottom up consists of native soil; 10 inches of crushed stone; three inches of ¾-inch pea gravel; 24 inches of an engineered bioretention soil mix (BSM); and a 2-inch layer of hardwood mulch. The top layer was planted with several varieties of native perennial wild flowers. The BSM mix was based upon a design develop to meet the State of Maine regulatory requirements for bioretention areas. The system was under-drained and

includes an infiltration reservoir, and high-flow bypass. All drainage was connected to the existing drainage infrastructure by coring into the adjacent catchbasin underneath the retrofit. The sides of the system were fitted with an impermeable liner to prevent runoff from migrating under the existing pavement as well as to prevent migration of adjacent soils into the system. Bioretention construction took three working days and included a construction team consisting of two skilled contractors in addition to an engineering staff which provided oversight.

PROJECT COST:

Total project cost per acre was $14,000. With labor and install provided, and engineering oversight a one-time training event, costs are limited to materials and plantings at $5,500. Costs could be further reduced with onsite preparation of the BSM saving additional materials and trucking expenses.

ITEM	COST PER ACRE ($$)
Labor and Install	$ 8,500
Materials	$ 4,675
Plantings	$ 825
Total	$ 14,000

In addition to this example, numerous municipal projects have been implemented utilizing bioretention, dry well, tree filter, and porous pavement retrofit installations. In these instances minimal expenses were incurred by the municipal partner beyond contribution of labor and equipment. Expenses were typically limited to materials, design, and installation oversight (which doubled as training of municipal personnel and is not expected to be a recurring expense for future installs). In all instances, community partners (such as university cooperative extensions and watershed groups) contributed both expertise in plant selection and installation, and often donated materials as well.

Figure 2: Bioretention retrofit installation at the University of New Hampshire, October, 2008

Figure 3: Completed Bioretention Retrofit Installation 2008

Costs Associated With Combined Sewer Overflow

INTRODUCTION

Combined sewer overflows (CSOs) represent major water quality threats to hundreds of cities and communities in the U.S. that are served by a combined sewer system (CSS). CSO events cause the release of untreated stormwater and wastewater into receiving rivers, lakes, and estuaries, causing a host of environmental and economic-related problems. Costs associated with CSO management are expensive. The U.S. Environmental Protection Agency (EPA) estimates the costs of controlling CSOs throughout the U.S. are approximately $56 billion (MacMullan, 2007).

The traditional approach to CSO management involves the development of a separate drainage system to convey stormwater flows or the use of grey infrastructure and conventional stormwater controls for enhancing the storage and conveyance capacity of combined systems. These approaches can include the construction of large underground storage tunnels that store sewage overflows during rain events for later treatment, as well as necessary improvements and

upgrades to municipal treatment facilities in order to handle increasing volumes. Both approaches, while effective for CSO controls, are very expensive.

Integrating green infrastructure strategies and LID designs into a CSO mitigation plan can help communities achieve CSO management requirements at lower costs. In addition to many benefits including groundwater recharge, water quality improvements, and reduced treatment costs, the use of LID can help minimize the number of CSO events and the volume of contaminated flows by managing more stormwater on site and keeping volumes of runoff out of combined sewers.

Utilizing a combination approach of grey and green infrastructure strategies can be a considerably more cost-effective method for CSO management as compared to a traditional grey infrastructure approach alone. Indeed, LID methods can cost less to install, can have lower operations and maintenance (O&M) costs, and can provide more cost-effective stormwater management and water quality services than conventional stormwater controls. Some LID alternatives are also being initiated by the private sector. While municipalities may provide oversight and consultation, as is the case with the City of Portland, OR, these projects are not controlled by municipalities in regards to implementation, operation, and maintenance. The purpose of this study is to show the cost-benefits of integrating green infrastructure strategies with traditional grey infrastructure. Although communities rarely attempt to quantify and monetize the avoided treatment costs from the use of LID designs, the benefits of these practices for decreasing the need for CSO storage and conveyance systems should be factored into any economic analyses (EPA, 2007).

CASE STUDIES

The following case studies are presented to develop an economic context for the use of green infrastructure and LID designs as a strategy for CSO compliance. The case studies will also identify and contrast historical grey infrastructure approaches to CSO management using store, pump, and treat with approaches using Green Infrastructure/LID designs that focus on reduced stormwater runoff volumes.

Narragansett Bay Commission

***Baseline* grey infrastructure approach to CSO management**

BACKGROUND

The Narragansett Bay Commission (NBC) in Providence, Rhode Island, oversees the operation and maintenance of approximately 89 miles of combined sewer interceptors, including two wastewater treatment facilities. These systems serve a total of 10 different communities, including 360,000 residents, 8,000 businesses, and 160 major industrial users. According to the NBC, approximately 66 CSO events occur each year in the NBC service area, accounting for an

estimated 2.2 billion gallons of untreated combined sewage released into Narragansett Bay and its tributaries.

In order to mitigate these CSOs and protect the Narragansett Bay and the region's urban rivers from sewage overflows, the NBC initiated a three-phase Combined Sewer Overflow (CSO) Abatement Plan. Phase I of the project, which began in 2001, was completed and went on-line in November 2008. The chief component of Phase I includes a three-mile long, 30-foot diameter deep rock tunnel 250 feet below the surface. The Phase I tunnel system has a 62 million gallon capacity and is anticipated to effectively reduce overflow volumes by approximately 40 percent.

ECONOMIC CONTEXT

The total capital costs for Phase I of the NBC's CSO Abatement plan were $365 million. The associated operational and maintenance costs of Phase I, the bulk of which are attributed to electrical costs for pumping, are $1 million per every one billion gallons of stormwater and sewage flow, or $1 for every 1000 gallons (Brueckner, 2009). Phase II of the CSO abatement plan, which will begin in 2011, includes two near-surface interceptors that will convey additional flow to the Phase I tunnel. The estimated capital costs for the Phase II project are $250 million.

The NBC's regulations regarding stormwater management require developers to execute stormwater mitigation plans if required by the NBC. These plans encourage the use of LID strategies, BMPs, and other methods to eliminate or reduce storm flows. Between 2003 and 2008, a total of 67 stormwater mitigation plans were approved and implemented which accounted for 8.9 million gallons of stormwater diverted from the combined system (Zuba, 2009).

Portland, Oregon

Economic benefits of utilizing Green Infrastructure programs for CSO Management

BACKGROUND

The City of Portland, Oregon is considered a national leader in the implementation of innovative stormwater management strategies and designs. Included among the city's Sustainable Stormwater Management Programs is the Innovative Wet Weather Program, the Green Street Program, the Portland Eco-Roof Program, and individual case studies and projects that include commercial and multifamily stormwater retrofits and porous pavement placements.

With Portland receiving an average of 37 inches of precipitation annually, creating roughly 10 billion gallons of stormwater runoff per year, these programs are very important for helping reduce flooding and erosion as well as minimizing CSO events.

Innovative Wet Weather Program. This city-wide program encourages the implementation of stormwater projects that improve water quality and watershed health, reduce CSO events and

stormwater pollution, and control stormwater runoff peaks and volumes. According to the Portland Bureau of Environmental Services, the program goals include:

- Capturing and detaining stormwater runoff as close to the source as possible;
- Reducing the volume of stormwater entering the combined sewer system;
- Filtering stormwater to remove pollutants before the runoff enters groundwater, streams, or wetlands;
- Using and promoting methods that provide multiple environmental benefits; and
- Using techniques that are less costly than traditional piped solutions.

Green Streets Program. Portland's Green Street Program promotes the use of natural aboveground and vegetated stormwater controls in public and private development in order to reduce the amount of untreated stormwater entering Portland's rivers, streams, and sewers. The program is geared towards diverting stormwater from the city's overworked combined system and decreasing the amount of impervious surface so that stormwater can infiltrate and recharge groundwater systems.

The program takes a sustainable and blended approach to finding the most optimal solution for storm and sanitary sewer management. This includes overlaying and integrating green and sustainable stormwater strategies with traditional gray infrastructure to maintain or improve the city's sewer capacity (Dobson, 2008).

Green streets have been demonstrated to be effective tools for inflow control of stormwater to Portland's CSO system. Two such green street designs, the Glencoe Rain Garden and the Siskiyou Curb Extension facilities, were shown to reduce peak flows that cause basement sewer backups and aid compliance with CSO regulations by reducing runoff volumes sent to the CSO Tunnel system (Portland, 2007).The City of Portland also conducted simulated storm event modeling for basement sewer back-ups and determined that two green street project designs would reduce peak flows from their drainage areas to the combined sewer by at least 80 to 85 percent. The City of Portland also ran a simulation of a CSO design storm and found that the same two green street project designs retained at least 60 percent of the storm volume, which is believed to be a conservative estimate.

ECONOMIC BENEFIT

The following sections of this case study communicate the economic context for both the application of LID strategies in Portland, as well as the city's programs that promote the use of green infrastructure designs for stormwater management.

Green Streets Program. For the City of Portland, utilizing green streets is the preferred strategy for helping relieve sewer overflow conditions because it is the most cost-effective and

eliminates the need for expensive below-ground repairs, which often involve replacing infrastructure (Dobson, 2008). As an example, a basement flooding relief project that was under design was projected to cost 60 percent less than what would have been the cost of a traditional pipe upsize and replacement project. This is because the solution, a mix of green streets and private system disconnects, intercepts and infiltrates the water before it enters the public storm system thereby reducing the need to dig up and upsize the existing piped infrastructure.

Cost Comparisons between Grey and Green Infrastructure Strategies---Tabor to the River: The Brooklyn Creek Basin Program. In June of 2000, prior to implementation of the Green Street Program, the City of Portland was faced with the need to upgrade an undersized sewer pipe system in the Brooklyn Creek Basin, which extends from the Willamette River to Mt. Tabor between SE Hawthorne and SE Powell boulevards, and covers approximately 2.3 square miles. Upgrades were needed in order to improve the sewer system reliability, contain street flooding, stop sewer backups from occurring in basements, and help control CSOs to the Willamette River.

At that time, the city considered constructing a new separated stormwater collection system to support the existing undersize pipes in this basin. The original cost estimate for constructing this new system using traditional grey infrastructure was $144 million (2009 dollars). However, following this proposal, a second plan was developed that included a basin redesign using a combined grey and green infrastructure approach. Including a total of $11 million allocated for green solutions, the cost estimate for this integrated approach was $81 million, a savings of $63 million for the city (Portland, 2009).

The combined grey and green approach was chosen as the 2006 Recommended Plan for the Brooklyn Creek Basin, and includes project objectives of reducing CSO events, improving surface and groundwater hydrology, protecting and improving sewer infrastructure, optimizing cost-effectiveness, boosting water quality, and enhancing community livability.

The approved basin improvement plan consists of 35 public and private sector projects over the next 10-20 years. Grey infrastructure upgrades include repairing or replacing 81,000 feet of combined sewer pipes, while the green infrastructure strategies include building green roofs, retrofitting parking lots with sustainable stormwater controls, planting nearly 4,000 street trees, and adding more than 500 green streets with vegetated curb extensions and stormwater planters.

Green Infrastructure for CSO Compliance: Cost Comparisons. Portland's combined sewer system covers 26,000 acres and contains 4,548,000 linear feet (861 miles) of gravity drained, combined sewer pipe. The city's combined system also includes 42 separate basins connected via three major interceptor systems and served by three major pump stations.

The City of Portland, under federal and state requirements as well as stipulations from the Clean Water Act to comply with regulations regarding CSO management, initiated the construction of a new pump station and two CSO tunnels (West Side and East Side CSO Tunnels) which would

serve as the primary means to protect the city's receiving waters from future CSO events. However, in addition to these initiatives, more projects and programs were needed for providing additional CSO mitigation.

In December of 2005, the City of Portland's Bureau of Environmental Services prepared a report (Portland, 2005) charged with sizing of the East Side CSO Tunnel and providing recommendations for long-term operations and flow management of the Willamette CSO system. The city's final recommendations included the following for the Willamette CSO tunnels and supporting infrastructure:

Table 5: CSO Infrastructure Costs for City of Portland, OR

Project	Total Capital Costs	Annual O&M Costs
East Side CSO Tunnel	$624,892,000	$22,700
Swan Island CSO Pump Station – Phase 2	$7,500,000	$3,100,000
Portsmouth Force Main	$55,306,000	$12,000
Balch Consolidated Conduit	$22,052,000	$3,900

East Side CSO Tunnel – This storage facility will be constructed with a 22-foot diameter and will have a capacity of 83 MG. Total length is 29,145 linear feet; annual O&M costs are $0.78 per linear foot. Design life is 50 years.

Swan Island CSO Pump Station – This facility pumps approximately 500 MG per year with an annual O&M cost of $0.0002 per gallon for pump station operations and $0.006 per gallon for Columbia Boulevard Wastewater Treatment Plant treatment. Design life is 50 years.

Portsmouth Force Main – This infrastructure is 66 inches in diameter and 15,000 feet in length. Annual O&M costs are $0.80 per linear foot. Design life is 50 years.

Balch Consolidated Conduit – This infrastructure is 84 inches in diameter and 4,900 linear feet. Annual O&M costs are $0.80 per linear foot. Design life is 50 years.

Along with determining the final recommendations for the East Side CSO Tunnel and supporting infrastructure, the city considered a range of possible alternatives for additional CSO mitigation. This included 12 different stormwater separation projects as well as a number of watershed health initiatives, some of which involved green infrastructure strategies including:

Eastside Curb Extensions – involved the use of vegetated swales at a cost of $50,000 per acre and O&M costs of $2,000/year/acre.

Eastside Roof & Parking Inflow Control – parking retrofits use vegetated infiltration basins at a cost of $90,000 per acre and O&M costs of $1,100/year/acre. Rooftop stormwater controls use either stormwater planters ($40,000 per acre; O&M costs of $600/year/acre), or vegetated infiltration basins.

Green Roof Legacy Project – retrofit 20 acres of rooftop in an industrial district with eco-roofs. Project costs include $285,000/acre/year for design/construction and $935/acre/year for O&M activities.

Extended Downspout Disconnection Program (DDP) – continues the city's successful existing DDP at the cost of $22,300 per acre and O&M costs of $7/year/downspout. Depending on site conditions, this can include the use of LID strategies including rain gardens and soakage trenches built by private citizens with City of Portland consultation.

The City's goal was to determine which project/program alternatives would be the most cost-effective for long-term CSO management. The basic metric common to the projects identified for CSO control was the amount of stormwater volume that could be removed from the CSO tunnel system. The city's final evaluation was based on the relationship between project capital costs and stormwater volume that could be removed from the system. This analysis took into account cumulative capital costs, marginal costs for gallons removed, and cumulative volume removed from the system.

Table xx shows all stormwater separation and watershed health projects/programs considered by the City of Portland. The projects/programs are sorted by dollars per gallons of stormwater that can be removed (marginal cost). Project staff agreed that cost-effectiveness was determined by an inflection point, or knee-of-the-curve point, on a graph that compared costs to stormwater volume that could be diverted from the CSO system. This inflection point was determined to be approximately $4 per gallon removed the system.

Projects/programs costing at or below $4 per gallon were the ones recommended for further design and eventual implementation for long-term CSO control. These projects/programs are the first seven listed in Table XX.

Table 6: CSO Control Alternatives Costing for Portland, OR

Project/Program	Effective Imp. Acres Controlled	Est. 3-year Volume Removed (MG)	Capital Cost	Marginal Cost ($/Gallon)	Cumulative Volume Removed (MG)	Cumulative Capital Cost
Extended Downspout Disconnection Program (can include LID)	284	7.45	$6,633,000	$0.89	7.45	$6,633,000
School Disconnection*	68	1.77	$1,954,000	$1.10	9.22	$8,587,000
Church Disconnection*	32	0.96	$2,031,000	$2.12	10.18	$10,618,000
Beech-Essex Sewer Separation	37	1.40	$3,889,000	$2.78	11.58	$14,507,000
ES Curb Extensions (LID)	349	4.29	$12,323,000	$2.87	15.87	$26,830,000
Tanner Phase 3 Sewer Separation	85	3.10	$10,767,616	$3.47	18.97	$37,597,616
ES Roof & Parking IC (LID)	475	17.64	$72,047,000	$4.08	36.61	$109,644,616
NWN Pre-design – Tanner North Sewer Separation	14	0.22	$1,127,000	$5.12	36.83	$110,771,616
Carolina Stream & Storm Separation	93	1.02	$5,319,000	$5.21	37.85	$116,090,616
NWN Pre-design – Tanner South Sewer Separation	13	0.26	$1,602,000	$6.16	38.11	$117,692,616
NWN Pre-design – Tanner Central Sewer Separation	2	0.04	$269,000	$7.60	38.14	$117,961,616
NWN Pre-design – Nicolai/Outfall Sewer Separation	34	0.54	$6,321,000	$11.76	38.68	$124,282,616
NWN Pre-design – Nicolai/Outfall 13 Sewer Separation	52	0.68	$8,217,000	$12.04	39.36	$132,499,616
Green Roof Legacy Project (LID)	20	1.04	$14,179,000	$13.65	40.40	$146,678,616
NWN Pre-design – Nicolai/Outfall 15 Sewer Separation	24	0.36	$6,546,000	$17.98	40.77	$153,224,616
Holladay Sewer Separation	125	0.69	$14,360,000	$20.94	41.45	$167,584,616
NWN Pre-design – Balch Neighborhood Sewer Separation	8	0.14	$7,664,000	$55.06	41.59	$175,248,616
NWN Pre-design – Balch/Forest Park Storm Separation	5	0.13	$12,026,000	$93.82	41.72	$187,274,616

* Church and School Disconnection programs assumed downspout disconnection and drywells would remove this stormwater volume. The former is an LID method.

The projects/programs chosen on the basis of cost-effectiveness included the Eastside curb extension projects (vegetated swales), the Eastside roof & parking inflow control projects (vegetated infiltration basins & stormwater planters), three disconnection programs (which can include LID strategies) and two stormwater separation projects.

LID Avoidance Costs. The City of Portland recognizes two avoidance costs for incorporating LID strategies with combined sewer systems. One of these avoidance costs is annual O&M costs to pump and convey stormwater through the existing combined sewer system. The city measures this by applying a rate of $0.0001 per gallon treated and $0.0001 per gallon pumped. This equates to an annual O&M avoidance cost of $0.0002 per gallon.

Secondly, the City of Portland recognizes an avoidance cost that benefits the CSO system. This is based on the relationship between project capital costs and stormwater volume removed from the CSO system, which was described above. The cost-effectiveness point for projects/programs that remove stormwater volume from the CSO system ($4 per gallon) is also considered as the avoidance cost of constructing a larger CSO tunnel. In life-cycle cost analyses, this "savings" can reduce the capital costs of other LID facilities that the city builds for objectives other than CSO control (e.g. water quality improvements, basement flooding relief), but still removes stormwater from entering the CSO tunnels (Owen, 2009).

Kansas City, Missouri

Economic benefits of integrating green solutions with grey infrastructure for CSO compliance

BACKGROUND

The City of Kansas City, Missouri has committed to implementing a green design initiative that will be considered a community amenity and will work to reduce the amount of water entering the city's combined system.

Under a USEPA mandate, the City of Kansas City, Missouri is required to update its network of aging sewer infrastructure in order to address overflows from its combined and separate sewer systems. Kansas City's 318-square mile sewer system includes 58 square miles of a combined system and 260 miles of a separated system. The overall system serves 668,000 people and includes 7 wastewater treatment plants with a total capacity of 153 million gallons per day (MGD).

Overflows in the combined system amount to 6.4 billion gallons in a typical year, and on average, 12 rain events per year are responsible for 67 percent of this total overflow. This contributes to the poor water quality of Kansas City's streams, urban lakes and rivers.

The original planned improvements associated with upgrading the city's combined system include 310 MGD of additional treatment capacity, 25 million gallons (MG) of in-line storage, 10 separation areas, neighborhood sewer rehabilitations, as well as pump station and treatment plant modifications. Three storage tunnels from 16 to 26 feet in diameter are also proposed which would run between 1.4 and 3.4 miles in length and would be capable of storing 78 MG of overflow. The goals of the improvements in the combined sewer system are to capture 88 percent of flows, reduce the frequency of overflow events by 65 percent, and lower the 6.4 billion gallons of overflow per year down to 1.4 billion gallons (Kansas City, 2009).

The original estimated capital costs associated with overhauling Kansas City's total sewer system is $2.4 billion dollars, of which $1.4 billion would go towards the combined system. The yearly operations & maintenance costs (O&M) of this total upgrade are estimated at $33 million per year.

Green Solutions. In developing a plan for the combined sewer system upgrade, Kansas City began exploring the possibility of incorporating green infrastructure strategies in combination with grey infrastructure improvements. The city formed a green solutions subcommittee and later developed a green solutions position paper, which eventually resulted in a city council resolution directing city staff to develop a plan to implement green infrastructure strategies.

Green Overflow Control Plan. In May of 2008 the Kansas City Water Services Department proposed $30 million in green solutions during the first five years of the proposed $1.4 billion overflow control plan. This plan included language to allow green solutions to replace grey infrastructure. Upon review, however, the city council determined that additional green infrastructure strategies were needed in the overflow control plan and directed the water services department to request a 6-month extension for submittal of the plan. The extension was granted by the Missouri Department of Natural Resources and EPA Region 7.

The city moved ahead in developing a more green-orientated overflow control plan and conducted reviews of basins located within the combined system in order to identify areas where green solutions could replace grey infrastructure in whole or in-part. High altitude desktop analyses were performed in order to assess the potential for shifting from grey storage to green solutions for storage in three major basins. The types of green solutions considered included catch basin retrofits, curb extension swales, pervious pavement, street trees, green roofs and stormwater planters.

Two principal assumptions were included with these considerations. Firstly, storage volume in green solutions would replace an equal volume in conventional storage facilities; and secondly, each 1-MG of green storage would result in 0.5 MGD reduction in capacity of downstream pumping stations and treatment facilities due to infiltration and evaporation (KCWSD, 2009). Following revisions, the city's submitted a new plan that proposed a total of $80 million in green solutions programs.

Economic Benefit

Based on city analyses, it was determined that replacing grey infrastructure with green solutions would be cost-effective in portions of the Middle Blue River Basin (MBRB), a 744-acre region with 34 percent impervious surface. Based on calculations, the city estimated that it should be possible to completely replace two CSO storage tanks with distributed green solutions without increasing costs or reducing CSO control performance (Leeds, 2009).

The original MBRB Plan was based on a traditional grey infrastructure design with controls capable of proving 3 MG of storage. The capital costs associated with these upgrades were

estimated at $54 million, an average of $18 per gallon, and would be capable of reducing overflows in the MBRB to less than 6 per year, on average.

The revised MBRB Plan is a non-traditional design that includes grey infrastructure projects as well as green infrastructure strategies and will provide distributed storage of at least 3.5 MG. The revised plan would also eliminate the need for storage tanks while still achieving the goal of reducing the amount of overflows to less than 6 per year. The projected costs associated with this revised plan are $35 million, potentially $19 million less than the original grey infrastructure plan. However, because of uncertainties, the green solutions project budget has been set at $46 million.

Middle Blue River Basin Green Solutions Pilot Project. A large-scale study was needed to test the city's key assumptions regarding the performance of green solutions. As such, the city initiated a pilot project within a 100-acre area of the MBRB. The MBRB Green Solutions Pilot Project will help determine the effects of widespread implementation of distributed storage utilizing green solutions, infiltration, and inflow rehabilitation on combined sewer overflows and is potentially the largest green solutions-based CSO control project in the nation.

Green-based strategies in the pilot area will be installed on both residential and commercial areas and will need to provide at least 0.5 MG of distributed storage, replacing an equal amount of stormwater stored in conventional concrete tanks. Following implementation, post-construction monitoring will be conducted to determine functionality and performance.

Green solutions unit costs

In developing unit costs for green solutions, the city used a number of assumptions including:

- Green roofs have incremental costs above normal roof replacements with 3 to 4 inches of growth media providing 1 inch of storage. Incremental capital costs associated with green roofs are $14 per square foot.
- Deciduous street trees have interception storage of 0.032 inches, 20-foot crown radius, with 25 gallons per tree.
- Porous pavements would provide effective storage for an area approximately 3 times its surface area.

The following table (Leeds, 2009) presents unit costs, in dollars per gallon, used by the city for each type of green solution:

Green Solution	Unit Cost ($/Gall.)
Catch Basin Retrofits in Road & Street ROW	$2.28-$7.13 ($5 avg.)
Porous Pavement	$4.62
Street Trees (Residential)	$10.80
Street Trees (Commercial)	$23.36

Curb Extension Swales	$10.86
Replacement of Sidewalks in ROW with porous pavement	$11.62
Conversion of Roof Areas to Green Roofs	$22.68
Stormwater Planters	$26.83

The results of the pilot project will be used to guide work in the remaining 644 acres as well as other future green solutions projects.

Chicago, Illinois

Utilizing Green Infrastructure for Reducing CSS Volumes

BACKGROUND

The City of Chicago has implemented a number of innovative plans geared towards building community resiliency toward climate change, while promoting sustainability and conservation and is recognized as a worldwide leader in terms of its environmental initiatives. In addition to green building and energy efficiency, Chicago has implemented advanced city-wide programs that address water quality, water efficiency, and stormwater management.

As part of the Chicago Water Agenda, the city is committed to managing stormwater more sustainably and encourages the use of BMPs that include a range of green infrastructure designs such as green roofs, permeable paving, filter strips, rain gardens, drainage swales, naturalized detention basins, as well as the use of rain barrels and natural landscaping. These measures are important strategies for facilitating infiltration, improving water quality and minimizing the potential for basement flooding. BMP strategies which divert water away from the combined sewer system also reduce the energy demands associated with pumping and treating the combined sewage.

Chicago's gravity based combined collection system includes 4,400 miles of sewer main lines that flow to interceptor sewers that are owned and operated by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). The interceptor sewers are a pumped system which conveys dry weather flow to the MWRDGC's treatment plants. During storm events, excess flows are diverted to the MWRDGC's Tunnel and Reservoir Plan system for storage, which is intended to prevent combined sewer overflows to the city's waterways. This tunnel reservoir system is the largest in the world and includes 109 miles of 30-foot diameter pipes that is generally located 200 feet below the Chicago River system.

CSO events occur with regular frequency each year, causing untreated wastewater and stormwater to be released into the city's river systems as well as Lake Michigan. Green infrastructure controls and other BMP measures are needed in order to limit inflow stormwater volumes to the system, thus reducing the frequency and intensity of CSO events.

Chicago Green Alley Program. One of the city's more progressive green infrastructure initiatives is the Chicago Green Alley Program, which has been developed to alleviate flooding in the city's extensive alley network, which consists of approximately 1,900 miles of public alleys and roughly 3,500 acres of impervious surface. The program encourages the use of porous pavements in order to reduce the city's quantity of impervious surface, as well as filter runoff, and recharge groundwater.

In addition to facilitating infiltration and diverting stormwater from Chicago's combined system, the Green Alley Program brings environmental benefits such as heat reduction, material recycling, energy conservation, and glare reduction.

ECONOMIC BENEFIT

The City of Chicago actively records the ongoing number or coverage area of various green BMP designs that are added within city limits. This includes the year-to-date number of rain gardens and rain barrels added / downspouts disconnected, as well as the effective square footage of green roofs, green paving, turf to native grass, and Stormwater Management Ordinance (SMO) permits. Each of these BMP designs has been assigned an equivalence factor by the City of Chicago, which, when multiplied by the actual number or amount of square footage of each BMP, will calculate a more accurate shed of capture for each representative design.

The following table (Chicago, 2009) presents data that shows estimated year-to-date numbers or square footage totals (as of November, 2009) for each type of BMP measure that has been implemented.

Table 7: City of Chicago Volume Reductions and Square Footage for CSO Controls

BMP	Actual SF or number	Annual volume (gallons) diverted from combined system
Green Paving (SF)	182,400	4,832,080
Green Roofs (SF)	100,000	1,907,400
Rain Gardens (#)	5	52,983
Rain Barrels/Downspout Disconnections (#)	2,220	8,280,659
Turf to Native Grass (SF)	1,700,500	23,425,521
SMO Permits (SF)	1,868,724	31,683,593

* SMO permits can include any number of BMP designs. SMO permit data does not overlap with data from individual BMPs.

In order to calculate the volume of stormwater that is diverted from the combined system, the City of Chicago uses a conversion factor of 21.19 that is multiplied by the SF equivalence of each corresponding BMP design. Based on the above BMPs, equivalent factors, and calculations, a total of 70,182,236 gallons of stormwater is estimated to have been diverted from Chicago's combined system in 2009 through November, 2009.

CONCLUSIONS

The case studies presented in this report show how incorporating a green infrastructure strategy with LID can help cities and municipalities reduce stormwater runoff volumes entering combined systems, lowering treatment costs. Also, as shown, utilizing a combination of grey and green infrastructure strategies for CSO management can be considerably more economically viable than using grey infrastructure alone.

This was clearly demonstrated in the City of Portland's Tabor to the River plan, which showed a cost benefit of $63 million to the city by the inclusion of green strategies in combination with a grey infrastructure approach for upgrading an undersized sewer pipe system in order to help control CSOs and improve sewer system reliability. An economic benefit potentially as much as $19 million was also estimated by the City of Kansas City for incorporating green infrastructure strategies along with a traditional grey infrastructure approach for the Middle Blue River Basin Plan, a part of Kansas City's city-wide Overflow Control Program.

An economic context for the use of LID was also established for the City of Portland's overall approach for CSO management. The City of Portland determined that watershed health initiatives, which included LID and green infrastructure strategies, were cost-effective project alternatives for the city to implement as part of its approach for long-term CSO management. Additionally, the Chicago case study demonstrated the city's commitment to using green infrastructure for the purpose of CSO control. Although economically-based information depicting the future cost of construction for CSO separation was not available, the City of Chicago has shown a major reduction of stormwater volume to its combined system as a result of LID.

The projects and plans presented throughout this report establish an economical and performance-based benefit for LID and green infrastructure. Shown in the context of actual project designs, incorporating these strategies alongside grey infrastructure improvements can result in significant cost savings for cities pursuing and implementing CSO management. This study demonstrates the beneficial economic context for the implementation of green infrastructure and LID design for future CSO compliance projects.

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Appendix E – Concept Draft Legislation for Future Work

E1 – Statewide Stormwater Utility
E2 – Municipal Authority to Regulate Stormwater

E1 – Statewide Stormwater Utility Concept Draft

CHAPTER 489 NEW HAMPSHIRE STATEWIDE STORMWATER UTILITY SYSTEM

489:1 Purpose. – The general court finds that:

I. The waters of the state are a vital natural resource and essential to New Hampshire's ecological health and economic prosperity. The functions and values of the waters of the state should be protected, and impaired waters should be restored.

II. Landscape changes due to human activity and development cause changes in stormwater runoff patterns and increased pollutant discharges that are detrimental to the state's waters.

III. Stormwater runoff from the developed landscape has become the major cause of impairments to New Hampshire surface waters. Data from the 2008 305(b) report to the General Court show that 83% of the known water quality impairments in New Hampshire, including 1,524 stream miles and 23,778 lake acres, are due in whole or in part to stormwater. Impervious surfaces contribute significantly to these impairments.

IV. A comprehensive, coordinated, statewide process is needed for stormwater management to restore degraded or impaired waters and to protect high quality waters. This can be accomplished by a statewide system of stormwater utilities that ultimately will include all developed properties which are not exempted or have not opted out

V. It is desirable that municipal or inter-municipal utilities assume the responsibility for management of stormwater from the developed landscape, as enabled under RSA 149-I.

489:2 Definitions

I. "305(b) report" means the statewide surface water assessment conducted by the department every 2 years, and submitted to EPA under section 305(b) of the Clean Water Act, and to the General Court under RSA 485-A:4.XIV

II. "BMP" means structural or engineered control devices and systems to treat polluted stormwater and modify stormwater hydrographs, as well as operational or procedural practices to minimize pollutants in stormwater a(e.g. minimizing use of chemical fertilizers and pesticides).

III. "Commissioner" means the Commissioner of the department of environmental services

IV. "Connected impervious surface" means impervious surface that is not disconnected.

V. "Department" means the department of environmental services

VI. "Developed property" means a parcel of 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.

VII. " Disconnected impervious surface" means impervious surface that does not contribute directly to stormwater runoff from a property, but directs stormwater runoff to on-site 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. [adapted from Env-Wq 1500 Alteration of Terrain rules]

VIII. "HUC12" means a 12-digit hydrologic unit code watershed as developed by the U. S. Geological Survey

IX. "Local Governing Body" means Local Governing Body as defined in RSA 672:6 In addition to any other appropriate title: I. Board of selectmen in a town; II. City council or board of aldermen in a city; III. Village district Commissioners in a village district; or IV. County Commissioners in a county in which there are located unincorporated towns or unorganized places.

X. "Impervious surface'' means 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. [from RSA 483-B Comprehensive Shoreland Protection Act]

XI. "Stormwater" means stormwater as defined in RSA 485-A:2 [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.]

XII. "Unaltered state'' means unaltered state as defined in RSA 483-B:4 [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.]

489:3 Program Established; Intent. – Enable the establishment of a statewide stormwater utility program. It shall be the goal of the program

to implement a comprehensive statewide system of watershed-based stormwater utilities as a means to manage stormwater in order to attain water quality standards including antidegradation. After a phased implementation process, which would include rule making and a pilot program in at least one specific watershed, all developed properties shall either be included in a municipal or inter-municipal stormwater utility under RSA 149:I or shall be included in a watershed-based statewide utility under this chapter or shall be exempt in accordance with procedures established herein. Stormwater utilities shall complement the programs of RSA 485-A and RSA 483-B, and shall be consistent with the requirements and goals of the federal Water Pollution Control Act (Clean Water Act) as amended from time to time.

489:4 Municipal and Inter-municipal Stormwater Utilities.

I. Municipalities and groups of municipalities forming inter-municipal organizations established under RSA 53-A are encouraged to establish stormwater utilities under RSA 149:I that meet the requirements of this chapter.

II. Watershed areas included in municipal and inter-municipal stormwater utilities that meet the requirements of this chapter shall not also be included in a state watershed-based stormwater utility.

III. Watershed areas exempted in accordance with RSA 489:x shall not be included in a state watershed-based utility.

489:5 Creation of State Watershed-based Stormwater Utilities

I. State watershed-based utilities shall be created for HUC12 watersheds, by a phased process in which watersheds are prioritized by the watershed area tributary to waters that are listed in the most recent 305(b) report as impaired due to stormwater-related causes.

II. Phased process for utility creation

a. Beginning with the 2012 305(b) report, the department shall publish a list of waters impaired due to stormwater-related causes, together with tables of the tributary watershed area for each impaired water. Further, the department shall publish a list of HUC12s with the total impaired tributary watershed area within each, the total urbanized area subject to an NPDES general permit for small municipal separate storm sewers within each, and the total watershed area. The list shall be sorted by proportion of HUC12 area that is either tributary to an impaired water or within an urbanized area subject to an NPDES general stormwater permit.

b. Beginning in 2012, the municipalities within the geographic area of the Southeast Watershed Alliance and included in the list referenced in the previous section shall participate in a pilot program to form a watershed based stormwater utility. The department shall engage the Southeast Watershed Alliance and work with these municipalities through a public process to develop and implement a stormwater utility that would function on a watershed scale.

c. Beginning with the 2014 305(b) report, and for each report thereafter, the department shall notify the ten municipalities that do not have a stormwater utility and have the greatest watershed area on the list prepared in accordance with a. above. Each municipality so notified shall submit to the department within 1 year of such notice a statement as to whether the municipality intends to form its own utility, to join an inter-municipal utility, or to do nothing and be joined in the larger watershed based utility.

d. For municipalities that do not intend to create either a municipal or inter-municipal stormwater utility, the department shall create a state watershed-based stormwater utility within 2 years of the receipt of the statement submitted to the department under b. or c. above.

e. Municipalities that have notified the department of the intent to create a municipal or inter-municipal stormwater utility shall have so created a utility within 2 years of the date of such notice. Any municipality failing to create or join a utility within the specified time shall be joined to the applicable state watershed-based stormwater utility within 1 year of the end of the 2 year period.

489:6 Exemptions

I. At any time, a local governing body may request the department to exempt any watershed area within its jurisdiction from participation in a stormwater utility

II. Grounds for an exemption shall include, but not be limited to:

a. There is little or no developed property within the watershed area

b. Local land use and stormwater management regulations have been adopted that are equivalent to the criteria for stormwater utilities

III. The department shall review exemptions every ten years, and shall reissue them if the reasons for granting an exemption continue to pertain.
IV. If at any time during the exemption period the reasons for the exemption no longer pertain, an exempted municipality shall advise the department within 120 days.

489:7 Criteria for stormwater utilities

I. All developed properties within the boundaries of the utility shall be included.

II. Except as provided in VII below, each developed property shall be assessed a stormwater utility fee in proportion to the property's [discharge of stormwater] area of impervious surface. Land area in an unaltered state shall not be assessed a stormwater utility fee. Areas of disconnected impervious surface shall be assessed a reduced fee, or no fee depending on the adopted rate structure.

III. Except as provided in IV below, fees shall be sufficient to fund construction and operation by the utility of stormwater BMPs within the boundaries of the utility that will result in attainment of water quality standards for impaired waters, and attainment of antidegradation requirements for waters that are not impaired. For purposes of planning, estimating, and establishing fee schedules, the useful life for constructed BMPs shall be no greater than 50 years.

IV. If the utility adopts binding regulations and mandatory implementation schedules for BMPs on developed property, fees shall be sufficient to fund construction and operation by the utility of utility-owned BMPs and other infrastructure which, in combination with the BMPs required on developed property, will result in attainment of water quality standards for impaired waters, and attainment of antidegradation requirements for waters that are not impaired.

V. Within two years of creation, a utility shall prepare and receive public comment on a watershed plan that includes all developed properties within the utility boundaries: private; municipal; state. The plan shall include a map and description of surface waters and wetlands within the utility boundaries, a map and summary description of existing stormwater infrastructure, and a facilities plan for needed stormwater infrastructure to accomplish the purposes of III or IV above. The plan shall have sufficient detail and cost estimation to determine required revenues and set utility fees.

VI. Within three years of creation, a utility shall publish, receive public comment on, adopt, and implement utility fees based on the facilities plan of V. above.

VII. Immediately upon creation, a utility may publish, receive public comment on, adopt, and implement an interim rate structure.

489:8 Governance of Stormwater Utilities

I. Municipal and inter-municipal utilities shall be governed under RSA 149-I

II. Village Districts formed for stormwater management shall be governed under RSA Chapter 52

III. State watershed stormwater utilities created by the department under RSA 489:4 shall be administered by the department. The department shall not own or operate stormwater facilities within the utility boundaries.

489:9 Water Council Duties relative to the Statewide Stormwater Utility System

I. The Water Council established under RSA 21-O:7 shall, in addition to the duties listed there:

a. Consult with and advise the director of the division of water with respect to the policy, programs, goals, and operations of state watershed stormwater utilities.

b. Provide a forum for municipal, inter-municipal, and village district stormwater utilities to advise the director and to present concerns to the committee and director.

c. Hear and decide all appeals from department decisions relative to the operation of specific statewide stormwater utilities.

d. Hear and decide appeals of property owners relative to fees and rates for specific statewide stormwater utilities

e. If agreed by the utility and property owner, hear and decide appeals of property owners relative to fees and rates for specific municipal, inter-municipal, and village district stormwater utilities

489:10 Watershed Stormwater Utility Advisory Board

For each State watershed stormwater utility created by the department under RSA 489:4 there shall be established a watershed stormwater utility advisory board consisting of at least one member from each municipality having land area within the utility boundaries, appointed by the board of selectmen of a town or the city council of a city involved. Representation from each municipality shall be proportional to the land area of the municipality within the utility boundaries. The minimum number of members shall be three, and the maximum number of members shall be twenty one. The term of office of each member shall be three years and each member shall serve until his successor shall have been appointed. The advisory board shall annually elect a chairman by majority vote of its

members, and the board shall meet at least annually upon the call of the chairman or at least 3 members of the board in order to consider matters properly coming before it for attention. The advisory board shall meet with the department at suitable intervals to review matters of mutual concern. An annual budget and estimate of associated utility fees for developed properties within the utility boundaries shall be submitted to the advisory board by the department, for review and comment, 90 days prior to the beginning of the new fiscal year. Members of the advisory board shall receive no per diem but shall be entitled to reimbursement for expenses including mileage when in the performance of duties required under this subdivision. Each municipality **[the utility]** ***shall provide funds necessary to reimburse its members to the advisory board.***

489:11 Rulemaking. – The department, with the advice of the Water Council, shall adopt rules, pursuant to RSA 541-A, relative to the following:

I. Administration and implementation;

II. Development of a pilot program in a watershed or watersheds of priority;

III. Determination of utility rate schedules;

IV. Developing and maintaining a priority list of capital improvements;

V. Calculation of credits for disconnecting impervious surfaces;

VI. Operation and maintenance of stormwater infrastructure;

VII. Hearing appeals of decisions made under this section;

VIII. Criteria and procedures for exemptions under RSA 489:5

Any other issues deemed necessary for proper and efficient operation of a statewide stormwater utility.

Amend RSA 21-O:7, VI as follows:

VI. The Water Council shall hear and decide all appeals from department decisions relative to the functions and responsibilities of the division of water other than department decisions made under RSA 482-A relative to wetlands, ~~*and*~~ *RSA 483-B relative to shoreland protection,* ***and RSA 489 relative to stormwater utilities,*** *in accordance with RSA 21-O:14.*

E2 – Municipal Authority to Regulate Stormwater Concept Draft

31:41-f Stormwater.

I. Municipalities shall have the power to make bylaws relating to the regulation of stormwater originating from properties within the limits of the municipality. Such bylaws may apply whether or not stormwater passes through a municipally-owned drain, conveyance or treatment.

II. The definition of stormwater shall be the same as the definition in RSA 485-A.

III. Municipal bylaws relative to stormwater shall be consistent with the model municipal stormwater ordinance by the department, the current version of the New Hampshire Stormwater Manual, and any limitations on discharges to surface waters or wetlands resulting from application of water quality standards.

V. Prior to determining the final form of the stormwater ordinance or amendment the municipality shall submit the proposed ordinance to the department. The department shall review the ordinance and advise the municipality within 30 days whether it is consistent with department rules.

Appendix F - Resources

F1. Durham, New Hampshire Stormwater Regulations
F2. Manchester, New Hampshire Stormwater Ordinance
F3. South Burlington, VT Ordinance Regulating the use of Public and Private Sanitary Sewerage and Stormwater Systems.

F1 – Durham, New Hampshire Stormwater Regulations

This Appendix contains the complete Site Plan Regulations for the town of Durham, NH.

The complete Subdivision Regulations for the town of Durham have similar sections related to stormwater management and can be accessed at: http://durham.nh.us/DEPARTMENTS/planning/subdivision_regulations/2010/Final%20Subdivision%20Regs.pdf

SITE PLAN REVIEW REGULATIONS
of
DURHAM, NEW HAMPSHIRE

SECTION 1: Authority and Purpose

1.01 Authority

Pursuant to the authority vested in the Durham Planning Board, by the legislative body of the Town of Durham, in accordance with previously adopted subdivision regulations under RSA 674:36, the Durham Planning Board is empowered under RSA 674:43 to review and approve or disapprove site plans. This review authority shall be applied to the development of tracts for non-residential uses and for multi-family dwelling units which are defined as any structure containing more than two (2) dwelling units per structure, whether or not such development includes a subdivision or re-subdivision of a site.

1.02 Purpose

The purpose of the Durham Site Plan Review Regulations, as authorized by RSA 674:44-II, is to:

A. Provide for the safe and attractive development of the site and guard against such conditions as would involve danger or injury to health, safety, or prosperity by reason of:

1) Inadequate drainage or conditions conducive to flooding of the property or that of another;
2) Inadequate protection for the quality of surface and groundwater;
3) Undesirable and preventable elements of pollution such as noise, smoke, soot, particulate or any other discharge into structures or adjacent properties;
4) Inadequate provisions for fire safety, prevention and control; and
5) Inadequate pedestrian and traffic plans.

B. Provide for the harmonious and aesthetically pleasing development of the municipality and its environs;

C. Provide for open spaces and green spaces of adequate proportions;

D. Require the proper arrangement and coordination of streets within the site in relation to other existing or planned streets or with features of the official map of the municipality;

E. Require suitably located streets to be of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air and access for fire fighting apparatus and equipment to buildings and be coordinated so as to compose a convenient system;

F. Require in proper cases, that plats showing new streets or narrowing or widening of such streets be submitted to the Planning Board for approval;

G. Require that the land indicated on plats submitted to the Planning Board shall be of such character that it can be used for building purposes without danger to health;

H. Include such provisions as will tend to create conditions favorable for health, safety, convenience and prosperity; and

I. Prevent scattered and/or premature development.

SECTION 2: Title

These regulations shall be known and cited as the SITE PLAN REVIEW REGULATIONS OF DURHAM, NEW HAMPSHIRE, and supercede the Site Plan Regulations, Town of Durham, New Hampshire, Adopted December 12, 1990, as amended prior hereto, and such prior regulations are hereby rescinded.

SECTION 3: Words and Phrases

3.01 Word Usage

Words used in the present tense shall include the future; the singular includes the plural and the plural includes the singular; the word "building" shall include the word "structure", the word "shall" is mandatory; the word "may" is permissive. The word "person" includes an individual, partnership, firm, association, corporation, organization, or institution.

3.02 Definitions ***(Amended July 14, 2010)***

Best Management Practices (BMP): Methods and means that have been determined to be the most effective, practical approaches of preventing or reducing pollution and detrimental impacts from stormwater runoff.

Buffer: A vegetated area or zone separating a development from a sensitive resource or neighboring property in which proposed development is restricted or prohibited.

Development: Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations.

Disconnected Impervious Cover: The sum of the proposed areas of impervious cover and pavement that receive runoff and, by means of implementing BMPs and LID strategies, is designed to capture and filtrate the precipitation from a 1-inch 24-hour rain event.

Disturbance: Any activity that significantly alters the characteristics of the terrain in such a manner as to impede or alter the hydrology or natural runoff pattern, or creates an unnatural runoff.

Effective Impervious Area (EIA): The total impervious surface areas less the area of disconnected impervious cover.

Hydrologic Soil Group (HSG): A Natural Resource Conservation Service classification system in which soils are categorized into four runoff potential groups. The groups range from "A" soils, with high permeability and little runoff production, to "D" soils, which have low permeability rates and produce much more runoff.

Impervious Surface: A material with low permeability that impedes the natural infiltration of moisture into the ground so that the majority of the precipitation that falls on the surface runs off or is not absorbed into the ground. Common impervious surfaces include, but are not limited to, roofs, concrete or bituminous paving such as sidewalks, patios, driveways, roads, parking spaces or lots, and storage areas, compacted gravel including drives and parking areas, oiled or compacted earthen materials, stone, concrete or composite pavers, wood, and swimming pools.

Low Impact Development (LID): Site planning and design strategies intended to maintain or replicate predevelopment hydrology through the use of source control and relatively small-scale measures integrated throughout the site to disconnect impervious surfaces and enhance filtration, treatment, and management of stormwater runoff as close to its source as possible. Examples of LID strategies are pervious pavement, rain gardens, green roofs, bioretention

basins and swales, filtration trenches, and other functionally similar BMPs located near the runoff source.

Maximum Extent Practicable (MEP): To show that a proposed development has met a standard to the maximum extent practicable, the applicant must demonstrate the following: (1) all reasonable efforts have been made to meet the standard, (2) a complete evaluation of all possible management measures has been performed, and (3) if full compliance cannot be achieved, the highest practicable level of management is being implemented.

Native plants: Plants that are indigenous to the region, adapted to the local soil and rainfall conditions, and require minimal supplemental watering, fertilizer, and pesticide application.

Pavement: Areas of a site that are covered with pervious and/or impervious asphalt and concrete.

Porous Media: Material with open connected pore spaces that allows water to percolate through it such as granular soils, gravel, crushed stone, pervious pavements, and woven and non-woven geosynthetics.

Redevelopment: Any man-made change to previously improved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, and drilling operations.

Riparian: Referring to anything connected or immediately adjacent to the shoreline or bank of a stream, river, pond, lake, bay, estuary or other similar body of water.

Riparian buffer: The naturally vegetated shoreline, floodplain or upland forest adjacent to a surface water body. Riparian buffers provide stormwater control flood storage and habitat values. Wherever possible, riparian buffers should be sized to include the 100-year floodplain as well as steep banks and freshwater wetlands.

Runoff: Stormwater that does not infiltrate into the ground and flows toward a below-ground or surface discharge location.

Site: A lot, tract or parcel of land on which a development is located that includes but is not limited to the proposed area of disturbance and development activities.

Stormwater: Water that originates from precipitation events and accumulates on land.

Stormwater Management Plan: A written plan describing the proposed methods and measures to be implemented to prevent or minimize water quality and quantity impacts from stormwater associated with a development or redevelopment project both during and after construction. It identifies selected BMPs, LID source controls, and treatment practices to address those potential impacts, and contains the engineering design plans, specifications, and calculations of the management and treatment practices, and maintenance requirements for proper performance of the proposed practices.

Water Quality Treatment: the capture of sediment, nutrients, metals and hydrocarbons suspended in stormwater runoff from impervious surfaces before being conveyed to a storm sewer network or to another water quality treatment system. In most cases where no other local water body impairments exist, adequate treatment refers to documenting the treatment systems ability to remove 80% of the total suspended solids (TSS) on an annual basis. Where water quality impairments do exist adequate treatment refers to a system's ability to meet maximum load allocations or not further impair the receiving water.

Water Quality Volume (WQv): The storage volume needed to capture and treat the runoff from the 1-inch 24-hour rainstorm for a specific contributing area.WQv shall be calculated using the following equation:
WQv = (P)(Rv)(A), where: P = 0.083 ft, Rv = the unitless runoff coefficient, Rv = 0.05 + 0.9(I), where I = the percent impervious surface draining to the discharge point, in decimal form, and A = total site area in square feet draining to the discharge point

SECTION 4: Interpretation

These Site Plan Review Regulations in no way relieve the developer or his/her agent from compliance with the Zoning Ordinance, Subdivision Regulations or any other ordinance which pertains to the proposed development.

The standards contained in these regulations shall be interpreted as minimum requirements, and compliance with said minimum requirements shall in no instance obligate the Planning Board to approve any particular application solely on that basis. Only after the Planning Board is fully satisfied that a proposed application is in accordance with the Master Plan and Town Ordinances will the application be approved.

SECTION 5: Application Procedures

5.01 Preapplication Review Phases (RSA 676:4II) An applicant may elect to forego or engage in preapplication review or either phase thereof.

A. ***Preliminary Conceptual Consultation Phase***

1). The applicant may request a meeting with the Board to discuss a proposal in conceptual form and in general terms. Such preapplication consultation shall be informal and directed toward:

a. reviewing the basic concepts of the proposal,

b. reviewing the proposal with regard to the Master Plan and Zoning Ordinance,

c. explaining the local regulations that may apply to the proposal, and,

d. guiding the applicant relative to state and local requirements.

2). Preliminary conceptual consultation shall not bind the applicant or the Board. Such discussion may occur without formal public notice, but must occur only at a posted meeting of the Board.

B. ***Design Review Phase***

1). Prior to submission of a completed application for Planning Board action, an applicant may request to meet with the Board for non-binding discussions beyond the conceptual and general, involving more specific design and engineering details of the potential application.

2). The Design Review phase may proceed only after identification of and notice to abutters; holders of conservation, preservation, or agricultural restrictions; and the general public as required by RSA 676:4 I(d).
(Amended July 15, 1998)

3). Persons wishing to engage in preapplication Design Review shall submit a "Request for Preapplication Review" (Attachment 2) and associated fees not less than 20 days before the regularly scheduled meeting of the Board. The request shall include:

a. a list of abutters and their addresses from municipal records not more than five days before submission,

b. a list of all holders of conservation, preservation, or agricultural preservation restrictions on the subject property, and

c. a check or cash to cover mailing and advertising costs.

(Amended July 15, 1998)

4). All discussion in the Design Review Phase shall be informal and non-binding. Statements made by Board members shall not be the basis for disqualifying said members or invalidating any action eventually taken on the application.

5). The Board shall not accept any submissions by the applicant at this time.

5.02 Formal Application

A. A formal application shall consist of the forms and data as shown in Section's 7, 9, and 10 of these regulations. It shall also include all fees required by the Town under the provisions of RSA 676:4, I(g).

B. Upon receipt of a formal application, the Director of Planning and Community Development will review it using the Site Plan Application Checklist. Within five (5) business days of submitting a formal application, the applicant shall meet with the Director of Planning and Community Development to discuss issues related to completeness and acceptance of the application. If this review discloses that all requirements specified on the Site Plan Application Checklist have not been met, the applicant will be notified in writing what specific items are still needed. When all requirements have been met, the application will be scheduled for submission to the Planning Board by placing it on the Board's agenda. (Amended May 8, 2002)

C. A formal application shall only be submitted to the Planning Board at a regular meeting after notification has been given as required by RSA 676:4,I(d). The Planning Board shall consider the application, and act to accept, reject or table it within 30 days of receipt of the completed application by the Board or its designee. Such action shall be by a majority vote of those Board members present. (Amended July 15, 1998)

D. Prior to the next regularly scheduled meeting of the Planning Board, the applicant, at the discretion of the Director of Planning and Community Development, shall meet with the appropriate Department Heads of the Town of Durham to discuss the implications the application will have on the various Departments of the town. (Amended May 8, 2002)

5.03 Action on a Formal Application

A. Once a formal application is accepted, the Planning Board must act on it within 90 days after receipt of the completed application by the Board or its designee. The Board shall consider the application at its regular meetings, or at workshop meetings if required, and a site visit will be scheduled. Additional reports or studies may be required by the Board, including but not limited to, high intensity soil survey, traffic, school, fiscal, and environmental

impact analyses, to allow the Board to make an informed and educated decision concerning the application. (Amended July 15, 1998)

B. Prior to the approval of a site plan application, a public hearing shall be held as required by RSA 676:4 I(d) with notice given to the applicant; holders of conservation, preservation, or agricultural preservation restrictions; every engineer, architect, land surveyor, or soil scientist whose professional seal appears on the plan submitted to the Board**;** abutters, and the public.

(Amended July 15, 1998)

C. The Board may apply to the Town Council for an extension of the 90 day time period, not to exceed an additional 90 days, before acting to approve, conditionally approve, or disapprove an application. An applicant may waive the requirement for Board action within the time period specified in these regulations and consent to such an extension as may be mutually agreeable.

D. If the Board has not taken action on the formal application within 90 days after receipt of the completed application by the Board or its designee, and the Board has not obtained an extension, the applicant may obtain from the Town Council an order directing the Planning Board to act within 15 days. Failure of the Board to act on the order shall constitute grounds for the applicant to petition the Superior Court as provided in RSA 676:4,I(c).

(Amended July 15, 1998)

E. The Board shall act to approve, conditionally approve, or disapprove the formal application within 90 days of receipt of the completed application by the Board or its designee. (see Attachment 4a). A conditional approval will be stated in the form of "Findings of Fact and Conditions of Approval" (see definitions). (Amended July 15, 1998)

F. Approval of the application shall be certified by written endorsement on the plan and signed and dated by the Chair of the Board.

G. A financial surety, adequate to cover the construction of all infrastructure improvements approved as part of the site plan application, shall be posted with the Town prior to signing the plan. The following financial sureties are acceptable to the Town: cash, passbook savings account in the Town's name, letter of credit, or a bond.

H. If any application is disapproved, the grounds for such disapproval shall be adequately stated in the records of the Board and in written notice given to the applicant within 72 hours (see Attachment 4b). Applications may be disapproved by the Board without public hearing on the grounds of failure by the applicant to supply information or to pay fees as required by these regulations.

5.04 Notices

A. Notice of a Design Review, submission of a formal application, or of a public hearing, shall be given by the Board to the abutters; holders of conservation, preservation, or agricultural preservation restrictions; every engineer, architect, land surveyor, or soil scientist whose professional seal appears on the plan submitted to the Board; and the applicant. The notice shall be provided by certified mail, and mailed at least ten (10) days prior to the meeting (see Attachment 3a). (Amended July 15, 1998)

B. The public shall be given notice at the same time, by posting in two public places and in a paper of general circulation in the Town.

C. The notice shall give the date, time, and place of the Planning Board meeting at which the application or other item(s) will be formally submitted to the Board, shall include a general description of the proposal which is to be considered, and shall identify the applicant and the location of the proposal (see Attachment 3b).

D. If the notice for the public hearing was included in the notice of submission or any prior notice, additional notice of the public hearing is not required. Additional notice is not required of an adjourned session of a public hearing provided that the date, time and place of the adjourned session was made known at the prior public hearing.

SECTION 6: Fees

6.01. A formal application for site plan approval shall be accompanied by an initial filing fee.

6.02. Pursuant to RSA 676:4 I(g), it shall be the responsibility of the applicant, if the Board deems it necessary, to pay reasonable fees for special investigative studies, environmental assessments, legal review of documents, administrative expenses, and other matters which may be required to make an informed decision on a particular application.

6.03. The application submittal fees are adopted by reference as part of these regulations.

SECTION 7: Application Submission Requirements

7.01.A Formal Application shall be filed with the Planning Board or its designated agent at least twenty-one (21) calendar days prior to a regularly scheduled meeting of the Board. (Amended May 8, 2002)

7.02. Formal Application Content: A Formal Application shall be submitted using the form available from the Planning Office (Attachment 1), and shall be accompanied by:

A. a letter of intent detailing the proposal;

B. a list of the names and addresses of all the abutters, as shown in town records not more than five (5) days before the day of filing; and a listing of all holders of conservation, preservation, or agricultural preservation restrictions on the subject property; (Amended July 15, 1998)

C. additional documents, as requested by the Planning Office; and

D. five copies, 24"x 36" and ten additional copies , 8.5"x 11", ", 8.5" x 14", or 11" x 17", of the plan. However, the Planning Board or its designee may require the ten additional copies to be 24" x 36", as deemed necessary. The plan shall be prepared by a land surveyor, using a scale of 1 inch equals 100 feet or larger (i.e. 1 inch equals 50 feet, 1 inch equals 20 feet, etc) and shall include:
(Amended July 15, 1998)

1) A Title Block, including:
   a) Title of plan;
   b) Owner's name and address, and name of agent, if any
   c) The date the plan was prepared and date of subsequent revisions;
   d) Scale of the plan; and
   e) Name, address and seal of the preparer of the plan.

2) North arrow and bar scale.

3) A location plan at a minimum scale of one (l) inch equals one thousand (l,000) feet, showing:

   a) Property lines of the parcel being developed in relation to the surrounding area within a radius of two thousand (2,000) feet.
   b) Names and locations of existing town streets including the nearest intersection of said streets;
   c) Names and locations of streets within the proposed development;
   d) Names and location of watercourses and water bodies on and adjacent to the site;
   e) Area of entire parcel in acres and square feet.

4) The plan of the site itself shall show:

a) Surveyed property lines of the parcel showing their bearings;
b) Names of all abutting property owners;
c) Location and layout of existing and proposed structures and buildings;
d) Existing and proposed contours at two (2) foot intervals for the entire site. Where a change in grade is proposed, existing contours shall be dotted lines and finished elevations solid;
e) Area of entire parcel in acres and square feet;
f) Zoning and special district boundaries;
g) Deed reference and tax map number;
h) Location width, curbing and paving of access ways, egress ways and streets within the site;
i) Location and layout of all on-site parking and loading facilities;
j) Location and size of all municipal and non-municipal utilities and appurtenances including: water, sewer, electric, telephone, gas lines and fire alarm connections, indicating whether overhead or underground, and the location of wells and septic systems;
k) Type and location of solid waste disposal facilities;
l) Location, elevation and layout of catch basin and other surface drainage features;
m) Location of all physical/natural features including: water bodies, watercourses, wetlands, vegetation/foliage lines, soil types, railroads, rock outcroppings and stone walls;
n) Dimensions and area of all property to be dedicated for public use of common ownership;
o) Location of 100 year flood hazard boundaries;
p) Date and permit numbers of all required state and federal permits.
q) Location of all buildings, wells and leach fields within one hundred and fifty (l50) feet of the parcel;
r) Dimensions, area and minimum setback requirements on all existing and proposed lots;
s) Proposed landscaping plan including size and type of plant material;
t) Pedestrian walks providing circulation through the site;
u) Location and size of proposed and existing signs, walls and fences;
v) Location and type of lighting for outdoor activities; and
w) Location, widths and purposes of any easements or rights-of-way.
x) Total on-site square footage of impervious surfaces.

E. Copies of the current deed, purchase and sale agreement, and copies of all easements, deed restrictions, rights-of-ways, or other encumbrances currently affecting the property. (Amended May 8, 2002)

7.03 Additional Application Submission Requirements - All Personal Wireless Service Facilities

A. General Filing Requirements

1) Written statement signed by the landowner and carrier that the lease between the carrier and the landowner of the subject property contains the following provisions:

   a) Landowner or carrier can enter into leases with other carriers for co-location.

2) A written and signed statement from the landowner and applicant that he/she agrees that the Town may enter the subject property to obtain RFR measurements, to ensure conformance with the FCC Guidelines, and to obtain noise measurements, all at the expense of the applicant, but not necessarily accompanied by, the applicant and/or landowner.

B. Location Plan Filing Requirements

1) A town-wide map showing the other existing personal wireless service facilities in the Town and outside the Town within one (1) mile of its corporate limits.

2) A town-wide map that shows all existing and reasonably foreseen or contemplated personal wireless service facilities operated by the carrier in the Town.

3) Proof by the carrier of adequate comprehensive general public liability insurance for the proposed personal wireless service facility that provides coverage for damage or injury to persons or property caused by the carrier or its facility.

C. Site Plans for All Personal Wireless Service Facilities Shall Indicate:

1) Outlines of all existing buildings, including their purpose (e.g. residential buildings, garages, accessory structures, etc.) on the subject property and within three hundred (300) feet from the subject property boundary on adjacent properties.

2) Proposed location of antenna(s), mount(s), and equipment shelter(s).

3) Proposed security barrier, indicating type and extent as well as point of controlled entry.

4) The proposed lease area for the personal wireless service facility.

5) Location and type of electrical and telephone service. Underground service shall be provided, unless waived by the Planning Board.

6) Location of all roads, public and private, on the subject property including driveways proposed to serve the personal wireless service facility and the type of surface proposed for the driveway.

7) Distances, at grade, from the proposed personal wireless service facility to each building shown on the site plan.

8) All proposed changes to the existing property, including but not limited to grading, vegetation removal, and temporary or permanent roads and driveways.

9) Representations, dimensioned and to scale, of the proposed mount(s), antennas, equipment shelters, cable runs, parking areas and any other construction or development attendant to the personal wireless service facility. (Amended January 7, 1998)

7.04 Additional Site Plan Submission Requirements - Ground Mounted Personal Wireless Service Facilities:

Excluding the reconstruction of existing facilities, the following shall be shown on a site plan for all ground mounted personal wireless service facilities, in addition to those items listed under Sections 7.02 and 7.03 of the Site Plan Review Regulations:

A. Tree cover by forest type and approximate height on the subject property and within three hundred (300) feet from the subject property boundary on adjacent properties.

B. Average tree canopy height within a one hundred and fifty (150) foot perimeter of the mount, security barrier, or designated clear area for access to equipment, whichever is greatest.

C. Any proposed landscape easement that includes the bearings and distances of the easement and general conditions of the easement.

(Amended January 7, 1998)

7.05 Application Submission Requirements-Recreational Playing Fields, Outdoor

A. Policy

It is the policy of the Durham Planning Board to support and encourage outdoor recreation, and to facilitate the safe and reasonable use of private lands for non-commercial outdoor playing fields. It is recognized that this use may raise issues including but not limited to noise, traffic and traffic safety, parking, fertilizer, pesticide and herbicide use. It is also recognized that, unlike many other uses, this use is primarily intended to create a public benefit, and; this use does not require a long-term or irreversible commitment of land or capital.

B. Waiver

The Planning Board may, in order to implement the policy expressed in 7.05 A. above, and exercising reasonable discretion, waive or modify any or all of the provisions of Section 7.02 above, with the exception of 7.02 A. -C.; Section 8; and Section 9.

C. Unique Requirements

Given the intermittent and seasonal nature of this use, and the variability that may characterize impacts on abutters and the community at large, the Planning Board may impose conditions controlling timing (hours of use, frequency of use, start, end and duration of season), intensity (number of participants, noise restrictions, whether practice sessions, organized games, tryouts, tournaments are allowed), in addition to any design standards and required improvements that may be authorized under Section 9 and deemed necessary by the Planning Board. (Amended May 15, 2002)

SECTION 8: Construction Guarantee

8.01. The applicant shall post an acceptable financial surety prior to final Site Plan approval by the Planning Board. The financial surety shall be in an amount sufficient to ensure the completion of all roads (public or private), water service, sewage disposal, drainage, landscaping and/or any other improvements required by the Town. The financial surety shall be effective for a period mutually agreed upon by the Planning Board and the applicant. (Amended July 15, 1998)

8.02. The financial surety shall be approved by the Town as to the form and type. The Town will accept cash, pass book savings in the Town's name, letter of

credit or a construction surety bond. At its discretion, the Planning Board may require approval of the construction guarantee by the Town Attorney. A sample Construction Guarantee contract is included as attachment 5. (Amended July 15, 1998)

8.03. The construction guarantee shall be released in phases as portions of the secured improvements or installations are final in accordance with the plan approved by the Board.

SECTION 9 - Design Standards and Required Improvements

9.01 General Requirements

A. Conformance to Applicable Laws, Rules and Regulations - In addition to the requirements established herein, all developments shall comply with the applicable provisions of the Zoning Ordinance, Subdivision Regulations, and all other applicable Town ordinances.

B. Self Imposed Restrictions - If the owner places restrictions on any of the land contained in the development greater than those required by the Zoning Ordinance or these regulations, such restrictions or reference thereto may be required to be indicated on the site plan, or the Planning Board may require that restrictive covenants be recorded with the Strafford County Registry of Deeds in form to be approved by the Board.

C. Specification References -
   1) Reference to State specifications shall mean Standard Specifications for Road and Bridge Construction of the New Hampshire Department of Transportation, approved and adopted 1992 as amended.

   2) Reference to Uniform Traffic Control Devices shall mean the Manual on Uniform Traffic Control Devices for Streets and Highways, published by the U.S. Department of Commerce, Bureau of Public Roads.

9.02 Streets and Access

A. Roads and/or driveways from development abutting the following main roads shall be spaced not less than 1,200 feet apart: Routes 4, 108, 155-A, Durham Point Road, Mill Road, Bennett Road, and Packers Falls Road. Where such spacing would cause undue hardship, the Board may modify this requirement. (For the purposes of these regulations Durham Point Road shall extend to the Newmarket Town line.)

B. All other roadway related regulations are contained in: Road Construction Regulations of the Town of Durham, New Hampshire, adopted by the Durham Planning Board

9.03 Stormwater Drainage *(Amended July 14, 2010)*

A. General Requirements - All developments shall provide adequate management of stormwater runoff and prevent the discharge of stormwater runoff from creating or contributing to a water quality impairment. All applications shall be accompanied by a completed Site Plan Review Checklist (provided in Attachment 6 of these regulations) to the Planning Board prior to consideration for review. Developments that disturb 10,000 or more square feet must submit to the Planning Board for review and approval, a Stormwater Management Plan (Plan) describing all proposed stormwater management system elements, practices, and associated designs, including all calculations and analyses of said designs. However, if the applicant submits an approved Alteration of Terrain (AOT) permit, there would be no need for the town requiring a Stormwater Management Plan. The applicant must still provide an operation and maintenance plan as provided for in (C) (5) below. The Planning Board reserves the right to require any development that disturbs less than 10,000 square feet to submit and then implement an approved Stormwater Management Plan (complete as described below or abbreviated) to prevent degradation of local water resources. All elements of the Plan must be designed/prepared by a New Hampshire Registered Professional Engineer in accordance with the Design Standards below. The Plan must contain the following parts and presented in the order listed below:

B. Stormwater Management Plan - Part I

1) An Existing Conditions Site Plan showing all pre-development surface water bodies and wetlands, drainage patterns, and watershed boundaries, buffer zones, topographic contours with minimum 2-foot intervals, scale bar, north arrow, title block with project name, applicant's name, and map and parcel number, designer's stamp and wetland scientist's stamp (if applicable), legend, locus plan, benchmarks, and appropriate notes with datum and other plan references, instructions, and detail descriptions. The Existing Conditions Site Plan shall be provided in hard copy (minimum 22-inch by 34-inch) at an appropriate scale in tens of feet per inch (maximum of 100 feet per inch) such that all important site and hydrologic features are easily recognized. Existing buildings, structures, pavement, utilities, and soils information with coding as HSG-A, B, C, or D shall be included on the Existing Conditions Site Plan. High Intensity

Soil Survey (HISS) mapping may be required per request by the Planning Board.

2) A Proposed Conditions Site Plan showing all proposed post-development temporary and permanent stormwater management system elements and erosion and sediment control BMPs and all important hydrologic features. The Proposed Conditions Site Plan must be at the same scale as the Existing Conditions Site Plan with consistent title block, plan features, and descriptors including but not limited to the following:
    a. Existing and proposed topographic contours (2-foot minimum contour interval; 1-foot contour intervals may be required for sites with limited relief and/or where proposed stormwater outfalls are located adjacent to buffer zones)
    b. Proposed areas of disturbance with total area of disturbance clearly labeled in square feet
    c. Existing and proposed buildings and structures
    d. Stormwater discharge locations keyed to drainage analyses
    e. Wells and sanitary protective radii
    f. Septic systems
    g. Plan references and notes (including sequence of soil disturbance)
    h. Proposed and existing public and private utilities
    i. Proposed project components to become property of or the responsibility of the Town shall be labeled as such
    j. Existing and proposed impervious surfaces and pavements with areas used to calculate EIA clearly identified and the square footage of each type identified and labeled.

3) Details of individual design elements shown on separate plan sheets following the Proposed Conditions Site Plan.

C. Stormwater Management Plan - Part II

1) Drainage Analysis that includes calculations comparing Pre- and Post-Development stormwater runoff rates (cubic feet per minute) and volumes (cubic feet) based on a 1-inch rainstorm, and the 2-year, 10-year, and 25-year 24-hour frequency storms. Calculations shall include, but not be limited to, the sizing of all structures and BMPs including of sizing of emergency overflow structures based on assessment of the 100-year 24-hour frequency storm discharge rate. Phased applications for the original parcel apply as though the development of the entire parcel were proposed in one application at one time.

2) Drainage Analysis Results Summary tabulated for each proposed outfall or catchment outlet point including runoff rates and volumes for each storm event analyzed above.

3) An Erosion and Sediment Control Plan for all proposed construction activities in accordance with the most current New Hampshire Stormwater Manual.

4) Copies of any additional permits or plans required for compliance with Environmental Protection Agency (EPA) and/or New Hampshire Department of Environmental Services (NHDES).

5) A comprehensive Operation and Maintenance Plan for long-term maintenance of all proposed stormwater management elements and BMPs including the proposed schedule of inspections and anticipated maintenance.

9.03.1 Design Standards

A. The Stormwater Management Plans submitted to the Planning Board shall meet the following minimum requirements:

1) Where applicable, the Plan must comply with the EPA Phase II Stormwater Rules and the Town's MS4 Stormwater Discharge Permit, as amended.

2) All proposed measures shall be in accordance with the NH Stormwater Management Manual volume (December 2008 or current revision) a copy of which is available from NHDES: des.nh.gov/organization/divisions/water/stormwater/manual.htm

3) Water Quality Protection: All aspects of the application shall be designed to protect the water quality of the Town of Durham's water bodies as follows:

a. No person shall locate, store, discharge, or permit the discharge of any treated, untreated, or inadequately treated liquid, gaseous, or solid materials of such nature, quantity, noxiousness, toxicity, or temperature that may run off, seep, percolate, or wash into surface or groundwaters so as to contaminate, pollute, harm, impair or contribute to an impairment of such waters.

b. All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials shall meet the standards of the New Hampshire Department of Environmental Services (NHDES).

c. All projects under review by the Planning Board of such magnitude as to require a stormwater permit from EPA or NHDES shall comply with the standards of EPA and/or NHDES AOT program, with respect to the export of total suspended solids and other pollutants.

4) Stormwater Management For New Development: All proposed stormwater management and treatment systems shall meet the following performance standards:

a. Existing surface waters, including lakes, ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools) shall be protected by the minimum buffer setback distances specified in the Zoning Ordinance. Stormwater and erosion and sediment control BMPs shall be located outside the specified buffer zone unless otherwise approved by the Planning Board. Alternatives to stream and wetland crossings that eliminate or minimize environmental impacts shall be considered whenever possible. When necessary, as determined by the Planning Board or their representative, stream and wetland crossings shall comply with state recommended design standards to minimize impacts to flow and enhance animal passage (see University of New Hampshire Stream Crossing Guidelines May 2009, as amended http://www.unh.edu/erg/stream_restoration/nh_stream_crossing_guidelines_unh_web_rev_2.pdf).

b. LID site planning and design strategies must be used to the MEP in order to reduce the generation of the stormwater runoff volume for both new and redevelopment projects. An applicant must document why LID strategies are not appropriate if not used to manage stormwater.

c. All stormwater treatment areas shall be planted with native plantings appropriate for the site conditions: grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to promote proper treatment of the proposed runoff.

d. All areas that receive rainfall runoff must be designed to drain within a maximum of 72 hours for vector control.

e. Salt storage areas shall be covered or located such that no direct untreated discharges to receiving waters are possible from the storage site. Snow storage areas shall be located such that no direct untreated discharges to receiving waters are possible from the storage site. Runoff from snow and salt storage areas shall enter treatment areas as specified above before being discharged to receiving waters or allowed to infiltrate into the groundwater.

f. Runoff shall be directed into recessed vegetated and landscape areas designed for treatment and/or filtration to the MEP to minimize Effective Impervious Cover (EIC) and reduce the need for irrigation systems.

g. The Plan shall make provisions to retain stormwater on the site by using the natural flow patterns of the site. Effort shall be made to utilize natural filtration and/or infiltration BMPs (i.e., bioretention areas, subsurface filtration/infiltration systems, ponds, swales, etc). Proof of such effort shall be provided to the Planning Board.

h. Measures shall be taken to control the post-development peak rate runoff so that it does not exceed pre-development runoff for the 2-year, 10-year and 25-year, 24-hour storm events. Similar measure shall be taken to control the post-development runoff volume to filtrate the WQv according to the following ratios of Hydrologic Soil Group (HSG) type versus infiltration rate multiplier: HSG-A: 1.0; HSG-B: 0.75; HSG-C: 0.4; HSG-D: 0.15. For sites where infiltration is limited or not practicable, the applicant must demonstrate that the project will not create or contribute to water quality impairment. Infiltration structures shall be in locations with the highest permeability on the site. Measures shall be taken to protect against on and off-site peak flow to prevent overloading of existing downstream facilities.

i. The biological and chemical properties of the receiving waters shall not be degraded by the stormwater runoff from the development site.

j. The design of the stormwater drainage system shall provide for the disposal of stormwater without flooding or functional impairment

to streets, adjacent properties, downstream properties, soils, or vegetation.

k. The design of the stormwater management systems shall take into account upstream and upgradient runoff that flows onto, over, or through the site to be developed or re-developed and provide for this contribution of runoff.

l. Appropriate erosion and sediment control measures shall be installed prior to any soil disturbance such that the area of disturbance shall be kept to a minimum. Disturbed areas shall be stabilized within thirty (30) days.

m. Measures shall be taken to control erosion within the project area. Sediment in runoff water shall be trapped and retained within the project area using approved measures. Wetland areas and surface waters shall be protected from sediment.

n. All temporary control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized prior to removal of temporary control measures.

o. Every effort shall be made to use pervious parking surfaces as an alternative to impervious asphalt or concrete for general and overflow parking areas. Pervious pavement shall be appropriately sited and designed for traffic and vehicle loading conditions.

p. Whenever practicable, native site vegetation shall be retained, protected, or supplemented. Any stripping of vegetation shall be done in a manner that minimizes soil erosion.

q. Whenever practicable, all subsurface filtration BMPs shall include perforated underdrains positioned a minimum of 8-inches above the bottom of the filter bed to prevent extended periods of saturated conditions.

5) Redevelopment Project Requirements: Because redevelopment may present a wide range of constraints and limitations, an evaluation of options may be proposed to work in conjunction with broader state watershed goals and local initiatives. Stormwater requirements for redevelopment 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 sites meeting the definition of a redevelopment project and having less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as other new development projects with the important distinction that the applicant can meet those requirements either on-site or at an approved off-site location, within the same watershed within the Town of Durham, provided the applicant satisfactorily demonstrates that impervious area reduction and LID strategies and BMPs have been implemented on-site to the MEP.

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

a. Implement measures onsite that result in an EIA 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

b. Implement other LID techniques onsite to the MEP to provide treatment for at least 50% of the redevelopment area; or

c. 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 applicant satisfactorily demonstrates that impervious area reduction, LID strategies, and/or onsite BMPs have been implemented to the MEP. An approved off-site location must be identified, the specific management measures identified, and an implementation schedule developed in accordance with local review. The applicant 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. To comply with local watershed objectives the mitigation site should be situated in the same subwatershed as the development and impact the same receiving water.

6) Responsibility for Installation and Construction: The applicant shall bear final responsibility for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations. Site development shall not

begin before the Stormwater Management Plan receives written approval by the Planning Board. Best Management Practices shall be installed as designed and scheduled as a condition of final approval of the plan.

7) Plan Approval and Review: The Planning Board shall approve the Stormwater Management Plan if it complies with the requirements of these regulations and other requirements as provided by law. At the discretion of the Planning Board, a technical review by a third party may be required of any stormwater management and erosion control plan prepared under these regulations. The technical review shall be performed by a qualified professional consultant, as determined by the Planning Board, and the expense of which shall be the full responsibility of the applicant.

8) Maintenance and Inspection:

   a. After final Planning Board approval and as a condition precedent thereto, the owner of record of the property shall cause notice of the requirements for maintenance pursuant to the stormwater management and erosion and sediment control plans, as approved by the Planning Board, to be recorded at the Registry of Deeds sufficient to provide notice to all persons that may acquire any property subject to the stormwater management and sediment control plans. See RSA 477:3-a. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers of the requirements for maintenance pursuant to the stormwater management and erosion and sediment control plans as approved by the Planning Board. The Planning Board may require routine inspections to insure compliance with the Stormwater Management, Groundwater Protection, Impervious Surfaces, and Erosion and Sedimentation Control sections of these regulations. Such inspections shall be performed by a designated agent with appropriate certifications at reasonable times to the landowner.

   b. If permission to inspect is denied by the landowner, the designated agent shall secure an administrative inspection warrant from the district or superior court under RSA 595-B.

9.03.2 - Reimbursement

The applicant shall reimburse the Town for the Planning Board's administrative expenses and costs of special investigation and the review of documents and other matters that may be required by particular applications. This includes, but is not limited to, review by consulting engineers or other consultants to assess the environmental impact, hydrological impact, ground water quality impact, traffic impact, or any other study deemed necessary by the Planning Board in order to make an informed decision."

9.03.3 Waivers & Exceptions

For reasons heretofore well demonstrated, the Planning Board may waive one or more of these regulations. The following activities are considered exempt from preparing and submitting stormwater management plans:

1. Agricultural practices located outside the wetland and surface water buffers
2. Road and parking lot resurfacing.

9.04 Water Supply

A. General Requirements - All developments in the state of New Hampshire shall make adequate provision for a water supply of potable water for domestic consumption and for water supply for fire protection purposes. All water supply systems and facilities shall be designed and stamped by a registered engineer.

B. Required Improvements
   1) The location of individual private wells shall comply with all standards of the New Hampshire Water Supply and Pollution Control Commission.

   2) A private central water system, serving two or more lots or users, shall conform with and meet all standards set for community water services as established by the New Hampshire Water Supply and Pollution Control Commission (WSPCC) even though the WSPCC may not invoke jurisdiction in all cases.

9.05 Sewerage

A. General Requirements - All developments shall make adequate provision for sanitary sewage disposal facilities. The facilities shall be designed and stamped

by a registered engineer. Sanitary sewage disposal shall be accomplished through the provision of individual waste disposal systems or a private central sewerage system.

B. Design Standards - Sanitary waste disposal may be accomplished by either of the following methods:

1) Individual disposal systems, the design and location of which shall be approved by the State of New Hampshire Water Supply and Pollution Control Commission. The systems shall be located on private property, no closer than seventy-five (75) horizontal feet to a watercourse, a waterbody, a wetland, or a well that is being used as a source of individual water supply.
2) A private central sewerage system, the design and location of which shall be approved by the State of New Hampshire Water Supply and Pollution Control Commission. Maintenance and operating costs of the system shall be borne by the developer.

9.06 Non-Municipal Utilities

A. General Requirements - The applicant is responsible for all coordination with utility companies to assure that non-municipal utilities are installed in accordance with plans approved by the Board pursuant to these regulations.

B. Design Standards - All utility facilities, including but not limited to electric power and telephone shall be located underground throughout the development. Whenever existing utility facilities are located above ground, they shall be removed and placed underground. Existing utilities which are located within public rights-of-way are exempted from this provision. The Board shall review and approve the location of all non-municipal utility lines.

9.07 Signs

A. General Requirements - Signs are intended for the identification of the use on the site on which they are located. Signs shall not be a hazard or nuisance by virtue of their location or illumination.

B. Design Standards - Sign size, type, location, height, and illumination shall conform to the requirements of Durham Zoning and Land Use Ordinance.

9.08 Preservation of Natural Features and Amenities

A. General Requirements

1) Grading and clearing should be minimized so as to avoid creating undue erosion or interruption of natural drainage ways. Particular attention should be given to natural features suitable as buffer strips between residential subdivisions abutting commercial or industrial areas. Similar natural features that provide buffers between lots, or sections of a development should be preserved to enhance privacy and attractiveness. Provision for clearing may be made for southerly exposure for solar access to dwellings or buildings.

2) Developers shall use construction methods which cause the least disturbance to the environment possible. No cut trees, stumps, debris, junk, rubbish, or other waste materials of any kind shall be buried in any land, or left or deposited on any lot or street at the time of issuance of a certificate of occupancy, and removal of same shall be required prior to issuance of any certificate of occupancy. Nor shall any debris be left or deposited in any area of development at the time of expiration of the performance bond or dedications of public improvements, whichever is sooner.

9.09 Special Flood Hazard Areas:

All site plan proposals governed by these regulations having lands identified as Special Flood Hazard Areas in the "Flood Insurance Study for the Town of Durham, N.H." together with the associated Flood Insurance Rate Maps and Flood boundary and Floodway maps of the Town of Durham shall meet the following requirements:

A. Site Plan proposals, including their utilities and drainage, shall be located and designed to be consistent with the need to minimize flood damage.

B. All public utilities and facilities, such as sewer, electrical and water systems shall be located and constructed to minimize or eliminate flood damage.

C. Adequate drainage shall be provided to reduce exposure to flood hazards.

1) New and replacement water systems (including on-site systems) shall be located, designed and constructed to minimize infiltration and avoid impairment.

2) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

D. Within the altered or relocated portion of any watercourse, the applicant shall submit to the Planning Board certification provided by a registered professional engineer assuring that the l00 year flood carrying capacity of the watercourse has been maintained.

E. All site plan proposals shall include l00-year flood elevation data.

9.10 Design Submittal Standards - All Personal Wireless Service Facilities

A. Brochures. Equipment brochures for the proposed personal wireless service facility such as manufacturer's specifications or trade journal reprints shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.

B. Materials. Materials of the proposed personal wireless service facility specified by generic type and specific treatment (e.g., anodized aluminum, stained wood, painted fiberglass, etc.). These shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.

C. Colors. Colors of the proposed personal wireless service facility represented by a color board showing actual colors proposed. Colors shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.

D. Dimensions. Dimensions of the personal wireless service facility specified for all three directions: height, width and breadth. These shall be provided for the antennas, mounts, equipment shelters and security barrier, if any.

E. Photographs. Appearance shown by at least two (2) photographic superimpositions of the personal wireless service facility within the subject property. The photographic superimpositions shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any, for the total height, width and breadth.

F. Lighting. If lighting of the site is proposed, the applicant shall submit a manufacturers computer-generated point-to-point printout, indicating the horizontal foot-candle levels at grade, within the property to be developed

and twenty-five (25) feet beyond the property lines. The printout shall indicate the locations and types of luminaries proposed.

G. Co-location. Carriers shall share personal wireless service facilities and sites where feasible and appropriate, thereby reducing the number of personal wireless service facilities that are stand-alone facilities.

1) All applicants for site plan review for a personal wireless service facility shall demonstrate a good faith effort to co-locate with other carriers. Such good faith effort includes contact with all the other carriers for personal wireless services operating in the Town of Durham or in adjoining or nearby jurisdictions.

2) If the applicant intends to co-locate or to permit co-location, drawings and studies which show the appearance and operation of the personal wireless service facility with maximum co-location shall be provided.

3) If the Planning Board approves co-location for a personal wireless service facility site, the site plan shall indicate how many facilities and of what type shall be permitted on that site. Facilities specified in the site plan approval shall require no further zoning approval, but shall require a Building Permit. However, the addition of any facilities not specified in the approved site plan shall require a new site plan.

(Amended January 7, 1998)

9.11 Noise Standards - All Personal Wireless Service Facilities:

The applicant shall provide a statement listing the existing and maximum future projected measurements of noise from the proposed personal wireless service facilities, measured in decibels Ldn (logarithmic scale, accounting for greater sensitivity at night). Such statement shall be certified and signed by an acoustical engineer, stating that noise measurements are accurate and meet the Noise Ordinance of the Town of Durham and such statements shall include the following:

A. Existing, or ambient: the measurements of existing noise.

B. Existing plus the proposed personal wireless service facilities: maximum estimate of noise from the proposed personal wireless service facility plus the existing noise environment.

C. Existing plus the proposed personal wireless service facilities plus cumulative: maximum estimate of noise from the proposed personal wireless service facility plus the maximum estimate of noise from the total

addition of co-located personal wireless service facilities plus the existing noise environment.

9.12 Radio Frequency Radiation (RFR) - All Personal Wireless Service Facilities:

The applicant shall provide a signed and stamped certificate by an RF Engineer stating that the maximum radio frequency radiation of the personal wireless service facility and the cumulative RFR of any existing personal wireless service facilities at the site will not exceed the FCC Guidelines. The FCC Guidelines shall be incorporated as part of this certification. (Amended January 7, 1998)

9.13 Environmental Filing Requirements - All Personal Wireless Service Facilities

A. The National Environmental Policy Act (NEPA) applies to all applications for personal wireless service facilities. NEPA is administered by the FCC via procedures adopted as Subpart 1, Section 1.1301 et seq. (47 CFR Ch. I). The FCC requires that an environmental assessment (EA) be filed with the FCC prior to beginning operations for any personal wireless service facility proposed in or involving any of the following:

1) Wilderness area.

2) Wildlife preserve.

3) Threatened or endangered species.

4) Historical site.

5) Native American religious site.

6) Floodplain.

7) Wetland.

8) High intensity white lights in residential neighborhoods.

9) Excessive radio frequency radiation exposure.

B. At the time of application filing, an EA that meets FCC requirements shall be submitted to the Town for each personal wireless service facility site that requires such an EA to be submitted to the FCC. In addition, a letter of concurrence substantiating the finding of the applicant for each of the NEPA checklist items shall be provided with the site plan application.

C. The applicant shall list the location, type, and amount (including trace elements) of any materials proposed for use within the personal wireless service facility that are considered hazardous by the federal, state, or county government, or by the Town of Durham.

(Amended January 7, 1998)

9.14 Structural Report for All Ground Mounted Personal Wireless Service Facilities: The applicant shall provide a report prepared by a licensed professional civil engineer describing the facility and specifying the maximum number and types of antennas the facility is designed to accommodate. The report shall bear the seal of the engineer that prepared the report.

(Amended January 7, 1998)

9.15 Visibility Standards for Ground Mounted Personal Wireless Service Facilities, Excluding Reconstruction of Existing Facilities

A. Sight Lines. Lines representing the sight line showing the viewpoint (point from which view is taken) and visible point (point being viewed) as described below:

1) Sight line representation. A sight line representation shall be drawn from any public road within three hundred (300) feet and the closest facade of each residential building (viewpoint) within three hundred (300) feet to the highest point (visible point) of the personal wireless service facility. The three hundred (300) foot measure shall be measured from the subject property boundary. Each sight line shall be depicted in profile, drawn at one inch equals forty (40) feet. The profiles shall show all intervening trees and buildings. In the event there is only one (or more) residential building within three hundred (300) feet, there shall be at least two sight lines from the closest habitable structures or public roads, if any.

2) Existing (before condition) photographs. Each sight line shall be illustrated by one (1) four-inch by six-inch or larger color photograph of what can currently be seen from any public road or residential building identified above.

3) Proposed (after condition). Each of the existing condition photographs shall have the proposed personal wireless service facility superimposed on it to show what will be seen from public roads and residences if the proposed personal wireless service facility is built.

B. Elevations. Siting elevations, or views at-grade from the north, south, east and west for a fifty (50) foot radius around the proposed personal wireless service facility plus from all existing public and private roads that serve

the subject property. Elevations shall be at either one-quarter inch equals one foot or one-eighth inch equals one foot scale and show the following:

1) Antennas, mounts and equipment shelter(s), with total elevation dimensions and AGL of the highest point.

2) Security barrier. If the security barrier will block views of the personal wireless service facility, the barrier drawing shall be cut away to show the view behind the barrier.

3) Any and all structures on the subject property.

4) Existing trees and shrubs at current height and proposed trees and shrubs at proposed height at time of installation, with approximate elevations dimensioned.

5) Grade changes, or cuts and fills, to be shown as original grade and new grade line, with two-foot contours above mean sea level.

C. Balloon Test. Within fourteen (14) days of the acceptance of the site plan application by the Planning Board, the applicant shall arrange for a balloon or crane test at the proposed site to illustrate the height of the proposed facility. The date, time and location of such test shall be advertised in a newspaper of general circulation in the Town at least ten (10) days prior to the test. (Amended January 7, 1998)

SECTION 10: Independent Studies and Investigations

10.01. The Planning Board reserves the right to require additional studies to determine the potential impact of the proposed site development. Studies may include, but are not limited to, Traffic Impact Analysis, Fiscal Impact Analysis, and Environmental Impact Analysis.

A. All Traffic Impact Analysis shall be presented in accordance with the "Strafford Regional Planning Commission's Guidelines for Traffic Impact Analysis 1986," incorporated into these regulations by reference. The Planning board reserves the right to retain the services of an outside agency for the purposes of reviewing any traffic impact analysis submitted.

B. All Fiscal Impact Analysis shall be presented in accordance with the "Strafford Regional Planning Commission's Guidelines for Fiscal Impact Analysis 1988," incorporated into these regulations by reference. The Planning board reserves the right to retain the services of an outside agency for the purposes of reviewing any fiscal impact analysis submitted.

C. The Environmental Impact Statement specifications will be dictated on a case by case basis. (Amended January 7, 1998)

10.02. Wherever, in the opinion of the Board, traffic generated by a development will adversely impact existing public streets, the Board may require improvements to be made to such streets and intersections in an effort to mitigate such impacts. (Amended January 7, 1998)

SECTION 11: Post Construction Requirements

11.01. All deeds covering land to be used for public purposes, easements, and right-of-ways over property to remain in private ownership, and rights of drainage across private property shall be submitted in a form satisfactory to the Town Attorney. (Amended January 7, 1998)

11.02. As-built construction drawings, plan and profile, of all infrastructure improvements at a scale of 1" to 20', including, but not limited to:

A. Underground Utilities (sewer lines, storm drains, water lines, electrical, phone, cable, natural gas lines, etc.)

B. Drainage ways, ditching, impoundments, swales, etc.

C. Road construction. (Amended January 7, 1998)

11.03. Maintenance Guarantee--a financial surety to guarantee that all site work was properly done shall be posted by the applicant with the Town. Such maintenance guarantee shall be in an amount of two percent of the estimated project cost and shall remain in force for two (2) years after site improvements are completed. If such repairs are needed and are not satisfactorily installed by the developer, then such guarantee shall be used to complete and/or install such improvements. (Amended January 7, 1998)

SECTION 12: Administration and Enforcement

12.01 Administration

These regulations shall be administered by the Planning Board. The enforcement of these regulations is vested in the Town Council.

12.02 Waivers

The requirements of the foregoing regulations may be waived when, in the opinion of the Board, specific circumstances surrounding a site plan application, or a condition of the land of such application, indicate that such waivers will insure that the purpose and intent of the Master Plan and these regulations will be properly carried out.

12.03 Penalties and Fines

Any violation of these regulations may be subject to a civil fine as provided in RSA 676:16 and 676:17, as amended. The Town Council and the Code Enforcement Officer are designated as the local authorities to institute appropriate action under the provisions of RSA 676:17.

SECTION 13: Conflicting Provisions

Where these regulations are in conflict with other local, state, or federal ordinances, the more stringent shall apply.

SECTION 14: Validity

If any section or part of section or paragraph shall be declared invalid or unconstitutional, it shall not be held to invalidate or impair the validity, force, or effect of any other section or sections or part of a section or paragraph of these regulations.

SECTION 15: Amendments

These regulations may be amended by the Planning Board following a public hearing on the proposed changes. Such changes shall not take effect until a copy of said changes, as approved by a majority of the Board, are filed with the Town Clerk.

The following attachments are incorporated into these regulations:

Attachment 1: Formal Application for Site Plan Review

Attachment 2: Request for Preapplication Review (optional)

Attachment 3: Notices

a) Design Review
b) Submission of Formal Application

Attachment 4: Notice of Decision

a) Approval

b) Disapproval

Attachment 5: Sample Construction Guarantee Contract.

SECTION 16: Modifications to Personal Wireless Service Facilities

16.01 A modification of a personal wireless service facility is considered equivalent to an application for a new personal wireless service facility and requires a site plan review when any of the following events apply:

A. The applicant and/or co-applicant wants to alter the terms of the site plan by changing the personal wireless service facility in one or more of the following ways:

1) Change in the number of facilities permitted on the site; or

2) Change in technology used for the personal wireless service facility that will affect the visible elements of the facility, or that would alter the amount(s) and/or type(s) of hazardous materials used at the facility.

B. The applicant and/or co-applicant wants to add any exterior visible equipment or additional height not specified in the approved site plan.

(Amended January 7, 1998)

Attachment 1

APPLICATION FOR SITE PLAN REVIEW

Note: This form and all required information must be filed at least 21 days before the date of the meeting at which it is to be submitted to the Board. Filing is to be done at the Planning Office, Durham Town Office Building or by mail to 15 Newmarket Road, Durham NH 03824.

1. Name, mailing address and telephone number of applicant

_____
_____
_____

2. Name, mailing address and telephone number of owner of record if other than applicant

_____
_____
_____

3. Location of Proposed Project _____
_____

Tax Map _____ Lot Number _____ Zoning District _____

4. Name of Proposed Project _____

5. Number of units for which approval is sought _____

6. Name, mailing address and telephone number of surveyor and/or agent

_____
_____
_____

7. Abutters: Attach a separate sheet listing the Durham Tax Map number, Lot number, name, and mailing address of all abutters, including those across a street, brook or stream. The list of abutters must also include any holders of conservation, preservation, or agricultural preservation restrictions in accordance with RSA 676:4(I)(d). Names should be those of current owners as recorded in the tax records five (5) days prior to the submission of this application. ***Note: Names submitted on the Request for Preapplication Review may not be current. No application shall be heard unless all abutters as described herein have been notified.***

8. Items on the attached Site Plan Review Application Submission Checklist

9. Payment of all applicable fees:

submittal fees	$_____
advertising/posting costs	_____
abutter notification (each)	_____
proposed road (per foot)	_____
administrative and technical review costs	
	_____
TOTAL	$_____

10 The applicant and/or owner or agent*, certifies that this application is correctly completed with all attachments and requirements, and that any additional costs for engineering or professional services incurred by the Planning Board or the Town of Durham, in the site plan review process of this property, shall be borne by the applicant and/or owner.

11 Within five (5) business days of submitting a formal application, the applicant shall meet with the Director of Planning and Community Development to discuss issues related to completeness and acceptance of the application. If this review discloses that all requirements specified on the Site Plan Application Checklist have not been met, the applicant will be notified in writing what specific items are still needed.

12 Prior to the next regularly scheduled meeting of the Planning Board, the applicant, at the discretion of the Director of Planning and Community Development, shall meet with the appropriate Department Heads of the Town of Durham to discuss the implications the application will have on the various Departments of the town.

13 If this application is determined by the Planning Staff to be complete, it will be placed on the Planning Board agenda on _____for acceptance.

***If the applicant is an agent of the owner, a separate signed letter from the owner of record is required which clearly states the authority of the agent or representative for this application. If the agent does not have the power of attorney of the owner, all documents shall be signed by the owner.**

"I hereby authorize the Durham Planning Board and its agents to access my land for the purpose of reviewing the proposed site plan, performing road inspections and any other inspections deemed necessary by the Board or its agents, to ensure conformance of the on-site improvements with the approved plan and all Town of Durham ordinances and regulations."

Date _____ ***Applicant, Owner, or Agent*** _____

Attachment 2

REQUEST FOR PREAPPLICATION REVIEW (OPTIONAL)

1. Name, mailing address and telephone number of applicant
   _____
   _____
   _____
2. Name, mailing address and telephone number of owner of record if other than applicant
   _____
   _____
   _____
3. Location of Proposed Development_____
   _____
4. City/Town of _____Tax Map _____ Lot Number _____
5. Type of development _____
6. Is this a request for _____Conceptual Consultation _____Design Review

Note: If this is a request for Design Review, the applicant and the public must be notified. (See Site Plan Review Regulation, Section 5.04.)

7. Abutters: Attach a separate sheet listing the Durham Tax Map, Lot number, Name and Mailing Address of all abutters, including those across a street, brook or stream. The list of abutters must also include any holders of conservation, preservation, or agricultural preservation restrictions in accordance with RSA 676:4(I)(d). Names should be those of current owners as recorded in the Tax Records five (5) days prior to the submission of this application.

Advertising Costs _____

Abutter Notification (each) _____

(Including applicant and/or owner)

_____ _____

Owner/Agent **Date**

File # _____

Attachment 3a

NOTICE OF DESIGN REVIEW

Planning Board, Town of Durham

Notice to Applicant: _____

_____

_____

Notice to Abutter: _____

_____

_____

Location of Proposal: _____

_____

Signed: _____

Chairman or Secretary

Durham Planning Board

Date:

_____

NOTE: The applicant has requested preapplication discussion with the Board concerning the above proposal. The posted agenda will list the proposal when it is to be discussed. No public hearing is required. No material is submitted. No decisions are made. You will be notified when, and/or if, a formal application is submitted for review.

File # _____

Attachment 3b

ABUTTER'S /LEGAL NOTICE

SUBMISSION OF FORMAL APPLICATION FOR

SITE PLAN REVIEW

Planning Board, Town of Durham
Date _____
Notice to Applicant: _____

_____

_____

Notice to Abutter: _____

_____

_____

Location of Proposed Site: _____

_____

Description of Proposed Development: _____

_____

Public meeting Date: _____

Public Meeting Time and Place: _____

This is a meeting to decide acceptance of the application **only,** no public comment will be solicited. If the Planning Board chooses to accept the application, the Board will schedule a site walk of the property and a Public Hearing. A separate notice of the Public Hearing will be sent and public comments will be solicited during the Public Hearing.

Signed: _____

Director of Planning, Zoning, and Code Enforcement

Date:

_____

NOTE: Abutters are invited to attend for their own benefit and information. They are not required by law to attend. Planning Board meetings are scheduled for the first and third Wednesdays of each month.

File # _____

Attachment 4a

NOTICE OF DECISION - APPROVAL

Planning Board, Town of Durham

You are hereby notified that the application of _____

to develop the site located on Tax Map _____, Lot # _____; with an address of _____ in the Town of Durham has been approved by majority vote of the members of the Planning Board on _____ with the following conditions:

_____
_____
_____
_____
_____
_____
_____
_____

_____

Chairman

Date:_____

File # _____

Attachment 4b

NOTICE OF DECISION - DISAPPROVAL

Planning Board, Town of Durham

You are hereby notified that the application of _____ for a site plan, located on Tax Map _____, Lot # _____; with an address of _____ in the Town of Durham has been disapproved by majority vote of the members of the Planning Board on _____ .

As stated in the Planning Board Minutes the motion to disapprove stated that the application was disapproved for the following reasons:

_____
_____
_____
_____
_____
_____
_____
_____
_____

_____
Chairman

Date:_____

File #_____

Attachment 5

*****SAMPLE*****

CONSTRUCTION GUARANTEE

KNOW ALL MEN BY THESE PRESENT THAT _____, _____ Street, _____NH, "Developer" of _____, is held and firmly bound unto the _____ Planning Board in the sum of _____ ($_____), for the payment of which Developer binds himself, his heirs, executors, and successors in interest and assigns by these present.

The Condition of this obligation is such that, if the Developer, his assigns or successors in interest, shall in all things, well and truly and properly perform and complete the following improvements and to be constructed on a Site Plan known as "_____," Tax Map_____, Lot(s)_____, to which conditional approval was granted by the Durham Planning Board on _____, 199__, then this obligation shall be void; otherwise to remain in full force.

Bond Improvements	Required Date of Final Completion	Amount of Bond Required
1.		
2.		
3.		
		_____
	Total:	$

Final Completion Date:_____

Signature of Developer:_____ Date:_____[1]

[1] This Construction Guarantee shall not be effective until a financial surety acceptable to the Town has been posted with the Town in the amount set forth above. Additionally, the Construction Guarantee shall not expire and will be available to the Town as security for the proper performance of the Guarantee until sixty (60) days following the final completion date.

F2 – Manchester, New Hampshire Stormwater Ordinance

An Ordinance

"Amending the Code of Ordinances of the City of Manchester by adding a new Chapter 54: Storm Water to Title V: Public Works."

CHAPTER 54: STORM WATER

Section

Storm Water Ordinance City of Manchester, NH

§ 54.01 PURPOSE.
The purpose of this chapter is to:

(A) Protect, maintain, and enhance the environment of the City of Manchester, New Hampshire and the public health, safety and the general welfare of the citizens of the city, by controlling discharges of pollutants to the city's storm water system and to maintain and improve the quality of the receiving waters into which the storm water outfalls flow, including, without limitation, lakes, rivers, streams, ponds, wetlands, and groundwater of the city.

(B) Enable the City of Manchester to comply with the National Pollution Discharge Elimination System permit (NPDES) and applicable regulations, 40 CFR §122.26 for storm water discharges.

(C) Allow the City of Manchester to exercise the powers granted by the State of New Hampshire through applicable statute to:

(1) Exercise general regulation over the planning, location, construction, and operation and maintenance of storm water facilities in the City, whether or not owned and operated by the City;

(2) Adopt any regulations deemed necessary to accomplish the purposes of this ordinance, including the adoption of a system of fees for services and permits;

(3) Establish standards to regulate the quantity of storm water discharged and to regulate storm water contaminants as may be necessary to protect water quality;

(4) Review and approve plans for storm water management in proposed subdivisions or commercial developments;

(5) Issue permits for storm water discharges, or for the construction, alteration, extension, or repair of storm water facilities;

(6) Suspend or revoke permits when it is determined that the permittee has violated any applicable ordinance, or condition of the permit;

(7) Regulate and prohibit discharges into storm water facilities of sanitary, industrial, or commercial sewage or waters that have otherwise been contaminated; and

(8) Expend funds to remediate or mitigate the detrimental effects of contaminated land or other sources of storm water contamination, whether public or private.

§54.02 DEFINITIONS.

For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

BEST MANAGEMENT PRACTICES. Physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution of water, that have been approved by the City of Manchester, and that have been incorporated by reference into the Storm Water Regulations as if fully set out therein. (See Section 6A of the Storm Water Regulations for recommended Best Management Practices manuals.)

COMBINED SEWER DRAINAGE SYSTEM. A single pipe conveyance system intended to receive both sewage and storm or surface water.

CONTAMINANT. Any physical, chemical, biological, or radiological substance or matter in water.

DEPARTMENT OF HIGHWAYS. The Highway Division of the City of Manchester.

DIRECTOR OF PUBLIC WORKS. The Chief Administrator of the Department of Highways who is authorized to assign Highway staff to oversee the implementation and enforcement of the Storm Water Regulations and the City of Manchester's Storm Water Ordinance.

DISCHARGE. Dispose, deposit, spill, pour, inject, seep, dump, leak or place by any means, or that which is disposed, deposited, spilled, poured, injected, seeped, dumped, leaked or placed by any means including any direct or indirect entry of any solid or liquid matter into the Municipal Separate Storm Sewer System.

ILLICIT CONNECTIONS. Illegal and/or unauthorized connections to the municipal separate storm water system whether or not such connections result in discharges into that system. "Illegal Connection" means either of the following:

(1) Any pipe, open channel, drain or conveyance, whether on the surface or subsurface, which allows an illicit discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system, regardless of whether such pipe, open channel, drain or conveyance has been previously allowed, permitted, or approved by an authorized enforcement agency; or

(2) Any pipe, open channel, drain or conveyance connected to the municipal separate storm sewer system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

ILLICIT DISCHARGE. Any discharge to the Municipal Separate Storm Sewer System that is not composed entirely of storm water and not specifically exempted under Section 2(J) of the Storm Water Regulations.

LAND DISTURBING ACTIVITY. Any activity on property that results in a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land-disturbing activities include. but are not limited to, development, re-development, demolition, construction, reconstruction, clearing, grading, filling and excavation.

MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4). The conveyances owned or operated by the municipality for the collection and transportation of storm water, including the roads and streets and their drainage systems, catch basins, curbs, gutters, ditches, man-made channels, and storm drains.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT. A permit issued pursuant to 33 USC Section 1342(b) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

PERSON. Any and all persons, including any individual, firm or association and any city or private corporation organized or existing under the laws of this or any other state or country.

POLLUTANT. Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; petroleum hydrocarbons; automotive fluids; cooking grease; detergents (biodegradable or otherwise); degreasers; cleaning chemicals; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects and accumulations, so that same may cause or contribute to pollution; sediment; floatables; pesticides, herbicides, and fertilizers; liquid and solid wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; concrete and cement; and noxious or offensive matter of any kind.

POLLUTION. The contamination or other alteration of any water's physical, chemical or biological properties by the addition of any constituent and includes but is not limited to, a change in temperature, taste, color, turbidity, or odor of such waters, or the discharge of any liquid, gaseous, solid, radioactive, or other substance into any such waters as will or is likely to create a nuisance or render such waters harmful, detrimental or injurious to the public health, safety, welfare, or environment, or to domestic,

commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

PREMISES. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

STATE WATERS. Any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, and other bodies of surface and subsurface water, natural or artificial, lying within or forming a part of the boundaries of the State of New Hampshire which are not entirely confined and retained completely upon the property of a single person.

STORM WATER. Storm water runoff, snow melt runoff, surface runoff, street wash waters related to street cleaning or maintenance, infiltration and drainage.

STORM WATER APPEALS COMMITTEE. A three-member committee consisting of a Highway Commissioner, an engineer from a private engineering firm and an engineer from the Department of Highways.

STORM WATER MANAGEMENT. The programs to maintain quality and quantity of storm water runoff to pre-development levels.

STORM WATER MANAGEMENT FACILITIES. The drainage structures, conduits, ditches, combined sewers, sewers, and all device appurtenances by means of which storm water is collected, transported, pumped, treated or disposed of.

STORM WATER MANAGEMENT PLAN. The set of drawings and other documents that comprise all the information and specifications for the programs, drainage systems, structures, Best Management Practices, concepts and techniques intended to maintain or restore quality and quantity of storm water runoff to pre-development levels.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP). A plan that clearly describes appropriate control measures that include a description of all pollution control measures (i.e., Best Management Practices) that will be implemented as part of the construction activity to control pollutants in storm water discharges and describes the interim and permanent stabilization practices for the site.

STORM WATER REGULATIONS. A supplement to the Storm Water Ordinance that includes additional conditions and requirements. Copies are available at the Department of Highways and the Office of the City Clerk.

STORM WATER RUNOFF. Flow on the surface of the ground, resulting from precipitation and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

STORM WATER UTILITY. The Department of Highways and its duly authorized agents created by ordinance of the City to administer the Storm Water Management Ordinance, and other Storm Water Regulations adopted by the City.

STRUCTURAL BEST MANAGEMENT PRACTICES. Devices that are constructed to provide control of storm water runoff.

STRUCTURAL STORM WATER CONTROL. A structural storm water management facility or device that controls storm water runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow.

§ 54.03 ADMINISTRATION.

The Director of the Department of Highways or his designee shall administer the provisions of this ordinance and is hereby authorized to promulgate and amend such regulations as may be necessary and convenient to effectuate the purposes and enforce the requirements of this ordinance.

§ 54.04 PROHIBITED DISCHARGES.

The specific prohibited discharges outlined in the Storm Water Regulations are not inclusive of all discharges prohibited by this ordinance and the Storm Water Regulations.

§ 54.05 PERMIT PROCEDURES AND REQUIREMENTS.

(A) *Permit Required* - No land owner or land operator shall begin any site work on any building(s), grading or other land development or any land disturbance activities (as outlined in §54.06) without first submitting a Notice of Intent (NOI) to EPA Washington. Owner must also have received acknowledgement, have a Department of Highways approved Storm Water Pollution Prevention Plan and meet the requirements of this ordinance.

(B) *General Waiver Requirement.* - Every applicant shall provide for storm water management as required by this ordinance and the Department of Highways Storm Water Regulations unless a written request is filed to waive this requirement. Requests to waive the Storm Water Management Program requirements shall be submitted to the Department of Highways for approval.

(C) *Application Requirements* - Unless specifically excluded by this ordinance, any landowner or operator desiring a permit for a land disturbance activity (as described in Section 4 of the Storm Water Regulations) shall secure required approvals through the City of Manchester's Planning Board and shall submit to the Department of Highways proof of NOI submission and a copy of the Storm Water Pollution Prevention

Plan**,** as approved by the Department of Highways, for related project before beginning any site clearing or construction.

§ 54.06 GENERAL PERMIT PROVISIONS.

(A) *Land Disturbance permits when required* - Every owner/operator will be required to obtain an EPA General Permit from the EPA through a Notice of Intent in the following cases:

(1) Land disturbing activity disturbs one (1) or more acres of land;

(2) Land disturbing activity of less than one (1) acre of land if such activity is part of a larger common plan of development that affects one (1) or more acres of land;

(3) Land disturbing activity of less than one (1) acre of land, if in the discretion of City of Manchester such activity poses a unique threat to water, or public health or safety;

(4) The creation and use of borrow pits (the excavation of soils from one area to be used in another area that would meet any of the criteria of 1, 2, or 3 above).

§ 54.07 WAIVERS.

Every applicant shall provide for Storm Water Management as required by the Storm Water Regulations, unless a written request is filed to waive this requirement. Requests to waive the Storm Water Management Program requirements shall be submitted to the Director of Public Works for approval and must meet the requirements of 40 CFR §122.26(g).

§ 54.08 INDUSTRIAL ACTIVITY DISCHARGES.

All operators of landfills, hazardous waste treatment, disposal, and recovery facilities and industrial facilities are subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) 42, USC § 11023, and industrial facilities that the City determines are contributing a pollutant load to the Municipal Separate Storm Sewer System, which are sources of storm water discharges associated with industrial activity shall comply with the requirements outlined in the City's Storm Water Regulations.

§ 54.09 ACCESS AND INSPECTION OF PROPERTIES AND FACILITIES.

(A) The representative of the Department of Highways shall be permitted to

enter and inspect properties and facilities at reasonable times as often as may be necessary to determine compliance with this ordinance.

(B) If a property or facility has security measures in force, which require proper identification and clearance before entry into its premises, the owner or operator shall make the necessary arrangements to allow access to representatives of the Department of Highways.

(C) The owner or operator shall allow the representative of the Department of Highways ready access to all parts of the premises for the purposes of inspection, sampling, photography, videotaping, examination and copying of any records that are required under the conditions of a National Pollutant Discharge Elimination System Permit to discharge storm water.

(D) The Department of Highways shall have the right to set up on any property or facility such devices as are necessary in the opinion of the Department of Highways to conduct monitoring and/or sampling of flow discharges.

(E) The Department of Highways may require the owner or operator to install monitoring equipment and perform monitoring as necessary, and make the monitoring data available to the Department of Highways. This sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the owner or operator at his/her own expense. All devices used to measure flow and quality shall be calibrated to ensure their accuracy.

(F) Any temporary or permanent obstruction to safe and easy access to the property or facility to be inspected and/or sampled shall be promptly removed by the owner or operator at the written or oral request of the Department of Highways and shall not be replaced. The costs of clearing such access shall be borne by the owner or operator.

(G) Unreasonable delays in allowing the Department of Highways access to a facility shall be a violation of this ordinance.

(H) If the Department of Highways has been refused access to any part of the premises from which storm water is discharged, and the Department of Highways is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is an need to inspect and/or sample as part of a routine inspection and sampling program designated to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, environment and welfare of the community, then the Department of Highways may seek issuance of a search warrant from any court of competent jurisdiction.

§ 54.10 NOTIFICATION OF ACCIDENTAL DISCHARGES AND SPILLS.

Notwithstanding other requirements of law, as soon as any person responsible for a facility, activity or operation, or responsible for emergency response for a facility, activity or operation has information of any known or suspected release of pollutants or non-storm water discharges from that facility or operation which are resulting or may result in illicit discharges or pollutants discharging into storm water, the City of Manchester's separate storm sewer system, State Waters, or Waters of the U.S., said person shall immediately notify the Department of Highways and take all necessary steps to ensure the discovery, containment, and cleanup of such release so as to minimize the effects of the discharge.

§ 54.11 VIOLATIONS, ENFORCEMENT AND PENALTIES.

(A) It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of the City's Storm Water Ordinance or the Storm Water Regulations. Any person who has violated or continues to violate these provisions may be subject to the enforcement actions outlined in this section or may be restrained by injunction or otherwise abated in a manner provided by law. In the event the violation constitutes an immediate danger to public health or public safety, the Department of Highways is authorized to enter upon the subject private property, without giving prior notice, to take any and all measures necessary to abate the violation and/or restore the property. The Department of Highways is authorized to seek costs of the abatement as outlined in §54.11(F).

(B) Whenever the Department of Highways finds that a violation of this ordinance or the Regulations has occurred, the Public Works Director or designee may order compliance by written Notice of Violation. The Notice of Violation shall contain:

(1) The name and address of the alleged violator;

(2) The address when available or a description of the building, structure or land upon which the violation is occurring, or has occurred;

(3) A statement specifying the nature of the violation;

(4) A description of the remedial measures necessary to restore compliance with this ordinance and a time schedule for the completion of such remedial action;

(5) A statement of the penalty or penalties that may be assessed against the person to whom the notice of violation is directed; and,

(6) A statement that the determination of violation may be appealed to the Department of Highways Storm Water Appeals Committee by filing a written notice of appeal within five (5) days of service of notice of violation.

(C) Such notice may require without limitation:

(1) The performance of monitoring, analyses, and reporting;

(2) The elimination of illicit discharges and illegal connections;

(3) That violating discharges, practices, or operations shall cease and desist;

(4) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property;

(5) Payment of costs to cover administrative and abatement costs; and,

(6) The implementation of pollution prevention practices.

(D) *Appeal of Notice of Violation* - Any person receiving a Notice of Violation may appeal the determination of the Department of Highways. The appeal must be received within five (5) days from the date of the Notice of Violation. Filing of an appeal does not relieve the owner from full compliance with the remedial actions outlined in the Notice of Violation. Hearing on the appeal before the Department of Highways, Storm Water Appeals Committee shall take place within thirty (30) days from the date of receipt of the appeal. The decision of the Storm Water Appeals Committee shall be final.

(E) *Enforcement Measures After Appeal* - If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, then representatives of the Department of Highways may enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

(F) *Costs of Abatement of the Violation* - Within ten (10) days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the assessment or to the amount of the assessment within fifteen (15) days of such notice. If the amount due is not paid within thirty (30) days after receipt of the notice, or if an appeal is taken, within five (5) days after a decision on said appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. Any person violating any of the provisions of this article shall become liable to the City of Manchester by reason of such violation.

(G) *Civil Penalties* - In the event the alleged violator fails to take the remedial

measures set forth in the notice of violation or otherwise fails to cure the violations described therein within two (2) days, or such greater period as the Department of Highways shall deem appropriate, after the Director of Public Works or designee has taken one or more of the actions described above, the Public Works Director may impose a penalty not to exceed $1,000 (depending on the severity of the violation) for each day the violation remains unremedied after receipt of the notice of violation.

(H) *Criminal Penalties* - For violations of the Storm Water Ordinance or the Rules & Regulations, the Director of Public Works may issue a citation to the alleged violator requiring such person to appear in court to answer charges for such violation. Upon conviction, such person shall be punished by a fine not to exceed $1,000 for each day the violation has occurred, or imprisonment for up to sixty (60) days or both. Each act of violation and each day upon which any violation shall occur shall constitute a separate offense.

(I) *Violations Deemed a Public Nuisance* – In addition to the enforcement process and penalties provided in this ordinance any threat to public health, safety, welfare and environment and is declared and deemed a nuisance, may be abated by injunctive or other equitable relief as provided by law.

(J) *Remedies Not Exclusive* - The remedies listed in this ordinance and the Regulations are not exclusive of any other remedies available under any applicable Federal, State or local law and the City of Manchester may seek cumulative remedies. The City of Manchester may recover attorney's fees, court costs, and other expenses associated with enforcement of this ordinance, including sampling and monitoring expenses.

§ 54. 12 ELIGIBILITY.

(A) *Permit Eligibility* - Permit eligibility is limited to discharges from "large" and "small" construction activity or as otherwise designated by the EPA. This general permit contains eligibility restrictions, as well a permit conditions and requirements. Permittee may have to take certain actions to be eligible for coverage under this permit. In such cases, permittee must continue to satisfy those eligibility provisions to maintain permit authorization. If permittee does not meet the requirements that are pre-condition to eligibility, then the resulting discharges constitute unpermitted discharges. By contrast, if permittee does not comply with the requirements of the general permit, permittee may be in violation of the general permit for their otherwise eligible discharges.

(B) Combined Sewer Drainage Systems Discharges from "large" and "small" construction activity or as otherwise designated by the EPA that flow into a combined sewer system are not covered by the EPA's Phase II Storm Water Program. A Notice of Intent does not need to be submitted to the EPA nor does the owner/operator have to receive acknowledgement from the EPA prior to the start of construction activity.

Storm Water Ordinance City of Manchester, NH

The City of Manchester is requiring in these instances that all other conditions as outlined in this ordinance or the Regulations shall apply to all construction activity as defined in §54.06 with the exception of submitting the Notice of Intent to EPA Washington. The requirements for determination of no impact status as outlined in the Endangered Species Act and Historic Preservation Act along with the completion of a Storm Water Pollution Prevention Plan as outlined in the Notice of Intent submission is still a mandatory submission to the City of Manchester and must follow the conditions as outlined in the EPA's Notice of Intent.

F3 – South Burlington, VT Ordinance Regulating the Use of Public and Private Sanitary Sewerage and Stormwater Systems

City of South Burlington

Ordinance Regulating the Use of

Public and Private Sanitary Sewerage and Stormwater Systems

As Amended March 21, 2005

City of South Burlington
Ordinance Regulating the Use of
Public and Private Sanitary Sewerage and Stormwater Systems

The South Burlington City Council hereby ordains:

The South Burlington Ordinance Regulating the Use of
Public and Private Sanitary Sewerage Systems is amended as follows:

ARTICLE I - GENERAL

SECTION 1. Definitions

Unless the context specifically indicates otherwise, the meaning of terms and abbreviations used in this ordinance shall be as follows:

"Authorized Person" shall mean the City Manager, Stormwater Superintendent, Wastewater Superintendent and such other persons as they specifically appoint or authorize to perform duties for the Stormwater Services Department or Water Pollution Control Department.

"Best Management Practices (BMPs)" shall mean schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to the stormwater system or waters of the State of Vermont or the United States. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

"BOD" (denoting Biochemical Oxygen Demand) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20oC expressed in milligrams per liter.

"Building Drain" shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer. The building drain extends five feet beyond the outer face of the building wall.

"Building Sewer" shall mean that part of the sewage system which receives the sewage from the building drain and conveys it to the nearest end of the house connection unless a house connection is not available, whereby the building sewer shall be extended to the nearest available "Y" branch on the main sanitary sewer.

"Change or Alter" shall mean an act done which will result in a direct or indirect

impact on the contribution of stormwater into the public stormwater system.

"City Manager" shall mean the City Manager of the City of South Burlington, or his authorized deputy, agent, or representative.

“Clean Water Act” shall mean the federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

"Clerk" shall mean the City Clerk of the City of South Burlington.

"Combined Sewer" shall mean a sewer receiving both stormwater runoff and sewage.

“Construction Activity” shall mean activities including, but not limited to clearing and grubbing, grading, excavating, and demolition.

"Connection Fee" shall mean a fee imposed on applicants for the municipality's cost of performing, supplying materials, supervising, inspecting and administering a connection to the sewage system including any necessary sewer service extension, upgrading sewers or for any portion of these activities.

“Credit” shall mean an ongoing reduction in the stormwater user fee for certain identified and approved qualifying and ongoing private actions or activities that either reduce the potential impact of increased stormwater discharges that result from development of a property.

"Department" shall mean the Vermont Department of Environmental Conservation.

“Developed Property” shall mean any property that is altered from a natural state by construction or installation of more than five hundred (500) square feet of impervious surface.

"Developer" shall mean individual, corporation, association, or other organization engaged in land development or building construction.

"Development" shall mean the construction of improvements on a tract of land for any purpose, including, but not limited to, residential, commercial, industrial, manufacturing, farming, educational, medical, charitable, civic, recreational, and religious uses.

“Director” shall mean the Director of Planning and Zoning for the City.

"Discharge Permit" shall mean a permit issued by the Department pursuant to

authority granted in 10 V.S.A., Chapter 47.

"Garbage" shall mean solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage, and sale of produce.

"Hazardous Materials" shall mean any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

"Health Officer" shall mean the legally designated Health Officer or Deputy Health Officer of the City of South Burlington, Vermont.

"House Connection" shall mean that part of the sewage system that runs from the main sanitary sewer to the property line and includes all necessary fittings.

"Impervious Surface" shall mean those manmade surfaces, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways, sidewalks, walkways, compacted gravel and soil surfaces, and awnings and other permanent fabric or plastic coverings, from which precipitation runs off rather than infiltrates.

"Illicit Discharge" shall mean any direct or indirect non-stormwater discharge to the stormwater system.

"Industrial Activity" shall mean activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

"Industrial Wastes" shall mean the liquid wastes from an industrial manufacturing process, trade, or business. Industrial wastes do not include sanitary sewage.

"Main Sanitary Sewer" shall mean the sewers laid longitudinally along the center line or other part of the streets or other rights-of-way and which all owners or abutting properties have equal rights and which is controlled by public authority.

"National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit" shall mean a permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

"Natural Outlet" shall mean any outlet into a watercourse, pond, ditch, lake, or other body of surface or groundwater.

"Non Single Family Residence" (NSFR) shall mean all types of developed property in the City except single family residences.

"Non-Stormwater Discharge" shall mean any discharge to the stormwater system that is not composed entirely of stormwater or such other waters or materials as are specifically authorized herein. It shall also include placing or depositing any hazardous material or pollutant in the stormwater system.

"On-Site Sewage Treatment and Disposal System" means a septic tank and leaching field system utilizing natural soil to treat and disperse sewage in such a manner as to protect public health, and both groundwater and surface water from contamination.

"Owner" shall mean any person, who owns or possess any property connected to or served by the public sanitary or stormwater system or proposes to connect to the public sanitary or stormwater system.

"Person" shall means any individual, firm, company, association, society, corporation, institution, partnership, governmental entity, group or other entity.

"pH" shall mean the logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.

"Private Sewage System or Facilities" shall mean all facilities for collecting, pumping, treating, and disposing of sewage that is not under the control of nor operated by the City of South Burlington.

"Properly Shredded Garbage" shall mean the wastes from the preparation, cooking, and dispensing of food that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half (½) inch (1.27 centimeters) in any dimension.

"Public Sewage System or Facilities" shall mean all facilities for collecting, pumping, treating and disposing of sewage and is controlled and operated by the City of South Burlington.

"Public Stormwater System" shall mean all elements of the stormwater system located in the City of South Burlington that are controlled and operated by the City of South Burlington or that carry water that drains from any public property, including

street rights-of-way.

“Pollutant” shall mean any introduced substance which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

"Sanitary Sewer" shall mean a sewer which carries sewage and to which storm, surface, and groundwater are not intentionally admitted.

"Secretary" shall mean the Secretary of the Agency of Natural Resources, State of Vermont or his/her representatives.

"Sewage" (or “Wastewater”) shall mean a combination of the water-carried wastes from residences, business buildings, institutions, and industrial establishments, together with such ground, surface, and stormwater as may be present.

"Sewage and Stormwater Commissioners (or “Commissioners", or “BOARD”) shall mean members of the City Council acting as a Board of Sewage and Stormwater Commissioners under 24 V.S.A., Section 3614.

"Sewage Treatment Plant" shall mean any arrangement of devices and structures used for treating sewage.

"Sewer" shall mean a pipe, culvert, ditch, swale or other conduit for carrying sewage or stormwater.

"Shall" is mandatory; "may" is permissive.

“Single Family Residence” (SFR) shall mean detached single family homes, duplexes, and triplexes.

"Slug" shall mean any discharge of water, sewage, or industrial waste which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation.

"Storm Drain" (sometimes termed "storm sewer") shall mean a sewer intended to carry only stormwater and surface waters.

"Stormwater" shall mean excess water from rainfall and snow melt that does not evaporate or penetrate into the ground, which flows overland and is collected and transported to waters of the State of Vermont or the United States by the stormwater system, together with any material that becomes dissolved or suspended in such water during its overland flow before entering the stormwater system.

"Stormwater Appeal Board" shall be made up of the City Manager, Public Works Director, and a third person appointed by the City Council.

"Stormwater Discharge" shall mean any stormwater that is transported, naturally or otherwise, from a developed property to the public stormwater system.

"Stormwater Pollution Prevention Plan" shall mean a document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater systems, and/or waters of the State of Vermont or the United States.

"Stormwater Services Division" shall mean that City department responsible for construction, operation and maintenance of the public stormwater system.

"Stormwater System" shall include natural and man-made drainage structures, conveyances, storm drains, catch basins, and any other appurtenant device or structure where stormwater is collected, transported, pumped, treated, or disposed of.

"Stormwater Superintendent" shall mean that employee of the City of South Burlington who shall be designated from time to time by the City Manager to oversee the Stormwater Services Division.

"Subdivision" shall mean a tract of land, owned or controlled by a person as defined herein, which has been partitioned or is intended to be divided for the purpose of sale or lease into two (2) or more lots. The dividing of a parcel of land by sale, gift, lease, mortgage foreclosure, court ordered partition or filing of a plot plan on the town records where the act of division creates one or more parcels of land of less than 10 acres in area, but excluding leases subject to the provisions of Chapter 153 of Title 10 relating tomobile homes. Subdivision shall be deemed to have occurred on the conveyance of the first lot or the filing of a plot plan on the town records, whichever shall first occur; or the commencement of building development with intent to subdivide, as defined in subsection (1) of this section, such that the building development will be located upon a parcel of land less than 10 acres in size.

"Subsurface Sewage Disposal System" shall mean any sewage treatment system whereby the tank or plant effluent is leached into the ground by subsurface disposal.

"Suspended Solids" shall mean solids that either float on the surface of, or are in suspension in water, sewage, or other liquids, and which are removable by laboratory filtering or use of BMPs.

"Undeveloped Property" shall mean any property that exists in a natural state with no more than five hundred (500) square feet of impervious surface.

"Wastewater Superintendent" shall mean that employee of the City of South Burlington who shall be designated from time to time by the City Manager to oversee the Water Pollution Control Department.

"Watercourse" shall mean a channel in which a flow of water occurs, either continuously or intermittently.

"Water Pollution Control Department" shall mean that City department responsible for construction, operation and maintenance of the sewage works.

SECTION 2. Abbreviations:

ANSI shall mean American National Standards Institute.

ASME shall mean American Society of Mechanical Engineers.

ASTM shall mean American Society for Testing and Materials.

AWWA shall mean American Water Works Association.

NPC shall mean National Plumbing Code.

CS shall mean Commercial Standards.

WPCF shall mean Water Pollution Control Federation.

WEF shall mean Water Environment Federation.

ppm shall mean parts per million.

mg/l shall mean milligrams per liter.

Degrees F shall mean degrees Fahrenheit.

Degrees C shall mean degrees Centigrade.

cm. shall mean centimeter.

m. shall mean meter.

sq.m. shall mean square meters.

l. shall mean liters.

kg. shall mean kilograms.

ARTICLE II - SANITARY SEWER SYSTEM

SECTION 1. Use of Public Sanitary Sewer System Required

(a) It shall be unlawful for any person to place, deposit, or permit to be deposited on public or private property within the City of South Burlington, or in any area under the jurisdiction of said City, any human or animal excrement, garbage, or other objectionable waste.

(b) It shall be unlawful to discharge to any natural outlet within the City of South Burlington, or in any area under the jurisdiction of said City, any sewage or other polluted waters, except where suitable treatment has been provided in accordance with provisions of this Ordinance.

(c) Except as hereinafter provided, it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, leach field or other facility intended or used for the disposal of sewage.

(d) The owners of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the City and abutting on any street, alley, or right-of-way in which there is located a public sanitary or combined sewer of the City, is hereby required at his expense to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this Ordinance, within one hundred and eighty (180) days after date of official notice to do so, unless specifically exempted from this provision by the City Council.

SECTION 2. Private Sewage Disposal

(a) Where a public sanitary or combined sewer is not available under the provisions of Section 1, paragraph (d), the building sewer shall be connected to a private

sewage disposal system complying with the provisions of this Section 2.

(b) Before commencement of construction of a private sewage disposal system the owner shall first obtain a written permit signed by the City Manager. The application for such permit shall be made on a form furnished by the City, which the applicant shall supplement by any plans, specifications, and other information as are deemed necessary by the City Manager. A permit and inspection fee of $25.00 shall be paid to the City at the time the application is filed.

(c) A permit for a private sewage disposal system shall not become effective until the installation is completed to the satisfaction of the City Manager. He shall be allowed to inspect the work at any stage of construction and, in any event, the applicant for the permit shall notify the City Manager when the work is ready for final inspection and before any underground portions are covered. The inspection shall be made within 24 hours of the receipt of notice by the City Manager, excluding Saturday, Sunday, and holidays.

(d) The type, capacities, location, and layout of a private sewage disposal system shall comply with all recommendations of the Vermont Health Regulations, Chapter 5, Sanitary Engineering, Sub Chapter 10 Wastewater Treatment and Disposal, Individual on-site systems. No septic tank or cesspool shall be permitted to discharge to any natural outlet. Amended 5/5/92.

(e) At such time as a public sewer becomes available to a property served by a private sewage disposal system, as provided in Section 2, paragraph (d), a direct connection shall be made to the public sewer in compliance with this Ordinance, and any septic tanks, cesspools, and similar private sewage thoroughly and properly cleaned, disinfected, and filled in or removed according to good sanitation practice and under the inspection and direction of the City Manager or his representative.

(f) The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to the City.

(g) No statement contained in this Section 2 shall be construed to interfere with any additional requirements that may be imposed by the Health Officer.

SECTION 3. Building Sewers and Connections

(a) No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Wastewater Superintendent. Any person proposing a new discharge into the system or a substantial change in the volume or character of pollutants that are being discharged into the system, shall notify the

Wastewater Superintendent at least 45 days prior to the proposed change or connection. No such change or connection shall be made without written approval from the Wastewater Superintendent, issued in accordance with Article III of this Ordinance.

(b) There shall be three (3) classes of building sewer permits: (i) for residential, (ii) for commercial service, and (iii) for service to establishments producing industrial wastes. In each case, the owner or the owner's agent shall make application on a form furnished by the City. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Wastewater Superintendent. The City Council may establish fees for review and issuance of permits and approvals, inspections and connections.

(c) All costs and expense incident to the installation, connection, maintenance and repair of the building sewer shall be borne by the owner. The owner shall indemnify the City from any loss or damage that may directly or indirectly be occasioned by the installation, connection, maintenance, and repair of the building sewer.

(d) A separate and independent building sewer shall be provided for every building; except where one building stands at the rear of another or on an interior lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, court, yard, or driveway, in which case the building sewer from the front building may be extended to the rear building and the whole considered as one building sewer. Use of private sewers which accept and convey flow from more than one building may not be used except when found, on examination and test by the City, to be in satisfactory condition and meeting all requirements of this Ordinance. The burden of proof and all expenses incurred by the City to determine the condition and adequacy of the private sewer shall be borne by the Owner of said private sewer.

(e) The City may require the Owner of a project or developer to install a water meter so recorded flow can be used to determine the yearly wastewater charge. Water saving fixtures or equalization tanks may be required by the City for projects/buildings and developments connecting to the sewer system.

(f) Old building sewers may be used in connection with new buildings only when they are found, on examination and test by the Wastewater Superintendent, to meet all requirements of this Ordinance.

(g) The size, slope, location, alignment, materials of construction, of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing, and backfilling the trench, shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City and shall also conform to the rules and requirements of the City Water Pollution Control Department and the State of Vermont. In the absence of code provisions or in amplification thereof,

the materials and procedures set forth in appropriate specifications of the ASTM and the latest edition of the WPCF Manual of Practice No. 9 shall apply.

(h) Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. No building sewer shall be laid parallel to or within three (3) feet (91.4 cm) of any bearing wall which might thereby be weakened. The depth shall be sufficient to afford protection from frost. The building sewer shall be laid at uniform grade in the direction from the main sewer to the building and in a straight alignment insofar as possible. Change in direction shall be made only with properly curved pipe and fittings with suitable clean-outs or flush holes as described in sub-section (r) of this Article. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage to be carried by such sewer shall be lifted by an approved artificial means and discharged to the building sewer. Such lifting devices shall be located outside the building foundation and have no access or ventilation through the building.

(i) No person shall make connection of roof downspouts, exterior and interior foundation drains, areaway drains, basement sumps or other sources of surface runoff or groundwater to a building sewer or building drain which in turn is connected directly or indirectly to a public sanitary sewer. All such connections which exist shall be disconnected by the Owner, at his expense within thirty (30) days upon receipt of notification by the City.

(j) The connection of the building sewer into the public sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City and the State of Vermont, and shall also conform to the rules and requirements of the Water Pollution Control Department, or the procedures set forth in appropriate specifications of the ASTM and the latest edition of the WPCF Manual of Practice No. 9. All such connections shall be made gas tight and water tight. Any deviation from the prescribed procedures and materials must be approved by the Wastewater Superintendent before installation.

(k) Prior to any connection to the house connection "Y" or to the main sewer, the City shall be given two working days notice in order that they may supervise such work. If the City has not been properly notified, they may require the completed work to be uncovered for examination, at the Owner's expense.

(l) The diameter of the building sewer shall not be less than four (4) inches (10.2 cm). The building sewer shall be laid on a uniform grade, wherever practicable, in a straight alignment, of at least one-fourth (1/4) of an inch per foot (2%). Where, in special cases, a minimum grade of one-fourth (1/4) inch per foot cannot be maintained, a grade of one-eighth (1/8) inch per foot (1%) may be permitted, but only after the City gives their written approval for the specific connection.

(m) When installing the building sewer, the trenches shall be dug in a careful manner and properly sheathed where required. The excavated materials shall be placed in a separate pile from road materials and shall be piled in a compact heap so placed as to cause the least possible inconvenience to the public. Proper barricades and lights must be maintained around the trench to guard against accidents.

(n) In backfilling, the material under, around and for two (2) feet (61 cm) immediately over the pipe shall be selected so it contains no stones capable of damaging the installation. This must be carefully tamped, the balance of the trench to be backfilled in a workmanlike manner, tamping and filling in eight (8) inch (20.3 cm) layers so as to avoid excessive settlement. When the trench has been filled to the proper height, the road material is to be replaced and heavily tamped or rolled.

(o) Where the trench is excavated in rock, the rock must be carefully excavated to a depth of six (6) inches (15.2 cm) below the bottom of the sewer and the trench brought to the proper elevation with gravel or other material satisfactory to the City. The remainder of the trench must be backfilled with suitable material as described in sub-section (n) of this Article.

(p) Where subsurface-soil conditions warrant, special precautions must be taken as may be directed by the City. In quicksand, all pipes must be laid out on pressure treated planking two (2) inches (5.1 cm) thick by at least six (6) inches (15.2 cm) wide.

(q) The connection of the building sewer to the main sewer shall be made at the house connection at the property line or, if no house connection exists, connection shall be made at the nearest available "Y" connection on the main sewer. The City will designate the position of the end of the house connection at the property line or the "Y" connection on the main sewer, whichever is appropriate. If it becomes necessary to cut into the main sewer, when no other source of connection is available, then such connection shall be made as directed by and under the supervision of the City. The dead-ends of all pipes not immediately connected with the house plumbing system must be securely closed by a water-tight cover of imperishable material and properly marked and located.

(r) The use of clean-outs on the building sewer shall be made by installing a "Y" and one-eighth (1/8) bends. The clean-outs shall ordinarily be installed at the point of connection between the building sewer and the outside part of the house plumbing system, at all curves on the building sewer and on the straight part of the house sewer to the main sewer. The clean-out shall be brought up from the building sewer to four (4) inches (10.2 cm) below ground level and properly capped. Locations of all clean-outs shall be recorded and turned over to the City. Where the distance from the building to

the point of connection at the main sewer is less than fifty (50) feet (15.2 m), at least one (1) clean-out twenty (20) feet (6.1 m) from the house shall be provided. Clean-outs shall be of the same diameter as the building sewer.

(s) Before any portion of an existing building sewer or the house plumbing system outside of the building is connected to the main sewer, the Owner shall prove, to the satisfaction of the City, that it is clean and conforms in every respect to this Ordinance and all joints are gas tight and water tight.

(t) Where pipe is installed for building sewers, such work shall be performed by a licensed plumber.

(u) The City shall apply appropriate tests to the pipes. The plumber and contractor, at their own expense, shall furnish all necessary tools, labor, materials and assistance for such tests and shall remove or repair any defective materials when so ordered by the City.

(v) Any person performing work on public property for the purpose of installing a building sewer shall file with the City evidence of adequate insurance coverage for liability and property damage. Minimum amounts of coverage will be established by the City and posted in the Clerk's Office.

(w) All work shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, curbs, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the City and other authorities having jurisdiction.

(x) The Contractor shall not block any driveway, street or road at any time without permission of the City and other controlling agencies. Every effort shall be made to permit the movement of vehicular traffic at all times. Whenever it becomes necessary to cross or interfere with roads, walks or drives, whether public or private, the Contractor shall maintain, at his own expense and subject to the approval of the City, safe bridges or other means of egress.

(y) Maintenance of all private sewage facilities including, but not limited to, (1) house plumbing systems, (2) building sewers to the main sewer, (3) house connections, (4) sewers and (5) appurtenances shall be the responsibility of the Owner, at his or her expense. The Owner shall be solely responsible for continually maintaining such facilities in satisfactory operating condition. Maintenance shall include, but not be limited to, (1) maintaining flow, (2) clearing obstructions, (3) maintaining all joints gas and water-tight, (4) repair or replace collapsed, deteriorated or defective materials, and (5) all other work which is necessary and essential to maintaining proper operation and preserving the structural integrity and water-tightness of the system.

(z) The Owner is obligated by sewer and any other permits to construct the project/building/development to meet all specifications for which the permits/approvals were issued. The building inspector or some authorized person will inspect existing buildings and construction sites from time to time during each construction phase to assure permit specifications are being met. A final inspection shall be made prior to the connection from the building to the main sewer line by the City.

SECTION 4. Prohibited Discharges into the Public Sanitary Sewer System

(a) No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer.

(b) No person shall discharge or cause to be discharged any of the following described waters or wastes to any public sanitary sewers:

(1) Any gasoline, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid or gas.

(2) Any waters or wastes containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the sewage treatment plant.

(3) Any waters or wastes having a pH lower than 5.5, or higher than 9.5 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the public sewage facilities.

(4) Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the public sewage facilities such as, but not limited to, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, unground garbage, whole blood, paunch manure, hair and fleshings, entrails and paper dishes, cups, milk containers, etc. either whole or ground by garbage grinders.

(d) No person shall discharge or cause to be discharged the following described substances, materials, waters, or wastes if it appears likely in the opinion of the Wastewater Superintendent that such wastes can harm either the sewers, sewage treatment process, or equipment, have an adverse effect on the receiving stream, or can otherwise endanger life, limb, public property, or constitute a nuisance. In forming his

opinion as to the acceptability of these wastes, the Wastewater Superintendent will give consideration to such factors as the quantities of subject wastes in relation to flows and velocities in the sewers, materials of construction of the sewers, nature of the sewage treatment process, capacity of the sewage treatment plant, degree of treatability of wastes in the sewage treatment plant, and other pertinent factors. The substances prohibited are:

(1) Any liquid or vapor having a temperature higher than one hundred fifty (150)oF (65oC).

(2) Any water or wastes containing fats, wax grease, or oils, whether emulsified or not, in excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperatures between thirty-two (32) and one hundred fifty (150)oF and (0 and 65oC).

(3) Any garbage that has not been properly shredded. The installation and operation of any garbage grinder equipped with a motor of three-fourths (3/4) horsepower (0.76 hp metric) or greater shall be subject to the review and approval of the Wastewater Superintendent.

(4) Any waters or wastes containing strong acid iron pickling wastes, or concentrated plating solutions whether neutralized or not.

(5) Any waters or wastes containing settleable solids, iron, chromium, copper, zinc, and similar objectionable or toxic substances; or wastes exerting an excessive chlorine demand, exerting an unusual chemical oxygen demand or containing any other material or constituent in concentrations which exceed the limits established by the Wastewater Superintendent for such materials.

(6) Any waters or wastes containing phenols or other taste-or-odor-producing substances, in such concentrations exceeding limits which may be established by the Wastewater Superintendent as necessary, after treatment of the composite sewage, to meet the requirements of the State, Federal, and other public agencies of jurisdiction for such discharge to the receiving waters.

(7) Any radioactive wastes or isotopes of such half-life, or concentration as may exceed limits established by the Wastewater Superintendent in compliance with applicable State or Federal regulations.

(8) Any chemicals or chemical compounds of the following nature or characteristics or having similarly objectionable characteristics: alcohols, arsenic and arsenicals, phenols or cresols, formaldehydes, iodine, manganese, cyanide, heavy metals and other metal finishing or plant wastes, acid pickling waste, mercury and mercurials,

silver and silver compounds, sulfonamides, toxic dyes (organic or mineral), zinc, all strong oxidizing agents such as chromates, dichromates, permanganates, peroxide and the like, compounds producing hydrogen sulfide, or any other toxic, inflammable or explosive gases, either upon acidification, alkalization, oxidation or reduction, strong reducing agents such as nitrites, sulphides, sulphites, and the like, radioactive materials or isotopes, whether neutralized or not.

(9) Materials which exert or cause:

(aa) Unusual concentrations of inert suspended solids (such as, but not limited to, Fullers earth, lime slurries, and lime residues) or of the dissolved solids (such as, but not limited to, sodium chloride and sodium sulfate).

(bb) Excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).

(cc) Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage treatment works which may cause the effluent limitations of the discharge permit to be exceeded.

(dd) Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein.

(10) Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed, or are amenable to treatment only to such degree that the sewage treatment plant effluent cannot meet the requirements of its discharge permits or of other agencies having jurisdiction over discharge to the receiving waters.

(11) Any waters or wastes containing suspended solids of such character and quantity that unusual attention or expense is required to handle such materials at the wastewater treatment plant.

(12) Any noxious or malodorous gas or substance capable of creating a public nuisance.

(13) Any waters or wastes if it appears likely, in the opinion of the Wastewater Superintendent, that such waste can harm either the sewers, treatment plant process or equipment, would have an adverse effect on waters of the State of Vermont or the United States, or could otherwise endanger human or animal life, limb, public property or constitute a nuisance.

(e) The admission into the public sanitary sewers of any waters or wastes having (a) a five (5) day BOD greater than 400 mg/l or (b) containing more than 400 mg/l of suspended solids or (c) containing any quantity of substances having the characteristics described in sub-section (c) and (d) above, having an average daily flow greater than two percent (2%) of the average daily sewage flow received at the sewage treatment plant shall be subject to the review and approval of the Wastewater Superintendent. The Wastewater Superintendent may:

(1) Reject the wastes, or,

(2) Require control over the quantities and rates of discharge, and/or

(3) Require payment to the City to cover the added cost of handling, treating and disposing of the wastes not covered by sewer charges established under the provisions of Article IV of this Ordinance, or

(4) Require pretreatment to an acceptable condition for discharge to the public sewers, or

(5) Require any combination of the foregoing.

If the City Manager permits the pretreatment or equalization of waste flows, the design, plans, specifications and any other pertinent information relating to proposed equipment and facilities; shall be submitted for the approval of the City Manager and the Agency of Natural Resources and no construction of such facilities shall be commenced until said approvals are obtained in writing. Further, such pretreatment facilities must be consistent with the requirements of any state pretreatment permit issued to the industry.

(f) Grease, oil, and sand interceptors shall be provided when, in the opinion of the Wastewater Superintendent, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand, and or other harmful ingredients. Such interceptors shall not be required for private living quarters. All interceptors shall be of a type and capacity approved by the Wastewater Superintendent, and shall be located as to be readily and easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned and repaired regularly, as needed, by the user at their expense.

(g) The user shall maintain records (which are subject to review by the Wastewater Superintendent) of the dates and means of disposal of accumulated interceptor wastes. Any removal and hauling of the collected materials not performed by the user's personnel must be performed by currently licensed waste disposal firms

(h) To facilitate compliance with this section, the user shall apply for a permit and furnish as part of the permit application a plan and description of the device. Where grease, oil or sand interceptors or similar appurtenances are involved, approval must be granted from both the Wastewater Superintendent and the Public Works Director.

(i) Grease and oil interceptors shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction and equipped with easily removable covers which, when bolted in place, shall be gas-tight and water-tight.

(j) Where installed, all grease, oil, hair, and sand interceptors shall be maintained by the owner, at his/her expense, in continuously efficient operation at all time. Materials collected shall not be introduced into the public sewage system.

(k) Where preliminary treatment or flow-equalizing facilities are provided for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner at his/her expense.

(l) All industries discharging into a public sewer shall perform such monitoring of their discharges as the Wastewater Superintendent may reasonably require, including installation, use, and maintenance of monitoring equipment, keeping records and reporting the results of such monitoring to the Wastewater Superintendent. Where industrial pretreatment permits are issued by the State of Vermont, monitoring records must also be submitted to the appropriate agency in accord with such permit. Such records shall be made available upon request by the Wastewater Superintendent to the State agency or to other agencies having jurisdiction over discharges to the receiving waters. Records of any monitoring will be supplied by the Wastewater Superintendent to the Secretary on request.

(m) All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this Ordinance shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater," published by the American Public Health Association, and shall be determined at the control manhole provided, or upon suitable samples taken at said control manhole. In the event that no special manhole has been required, the control manhole shall be considered to be the nearest downstream manhole in the public sewer to the point at which the building sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewage works and to determine the existence of hazards to life, limb, and property. The particular analyses involved will determine whether a twenty-four (24) hour flow composite of all outfalls of a premise is appropriate or whether a grab sample or samples should be taken. Normally, but not always, BOD and suspended solids analyses are

obtained from 24-hr proportioned composites of all outfalls whereas pH's are determined from periodic grab samples.

(n) Any industry held in violation of the provisions of this Ordinance may have its disposal authorization terminated.

(o) When required by the Wastewater Superintendent, the Owner of any property served by a building sewer carrying industrial wastes shall install a suitably controlled manhole in the building sewer to facilitate observation, sampling and measurement of the wastes. Such manhole, when required, shall be accessible and safely located and shall be constructed in accordance with plans approved by the Wastewater Superintendent. The manhole shall be installed by the Owner, at his/her expense, and shall be maintained by the owner so as to be safe and accessible at all times.

(p) Scavenger waste consists of septage, sludge or other forms of waste brought to the wastewater facility for treatment and disposal. The waste must meet all article II requirements.

(1) The discharge of scavenger wastes at designated septage receiving areas at the City's wastewater treatment facilities may be permitted. The discharge of scavenger wastes from sources outside of the City may be permitted with approval of the Wastewater Superintendent of Water Pollution Control.

(2) There will be a fee charged each time a load of scavenger waste is discharged at the City's wastewater treatment facilities. Such fee will be determined by the City Council and will be based upon the quantity and quality of the discharged waste.

(q) No statement in this Ordinance shall be construed as preventing any special agreement or arrangement between the City and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the City for treatment, subject to payment therefore, by the industrial concern, provided that such agreements do not contravene any requirements of existing Federal laws and are compatible with any user charge and industrial cost recovery system in effect.

SECTION 5. Protection from Damage

No person shall maliciously, willfully or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the public sanitary sewage system. Any person violating this provision shall be subject to immediate arrest under the charge of unlawful mischief as set forth in Title 13, Section 3701 of the Vermont Statutes Annotated.

ARTICLE III - CAPACITY ALLOCATION

SECTION 1 - Ownership of Capacity

(a). The City of South Burlington owns and operates sewage treatment and disposal plants (PLANTS) and a sewage collection and transmission system (SEWERS) as defined in 24 V.S.A., Section 3501(6) and 3601. The PLANTS have a permitted capacity, and are operated in accord with discharge permits issued by the Vermont Department of Environmental Conservation (DEPARTMENT) under authority granted in 10 V.S.A., Chapter 47. The City is obligated by law to comply with conditions of those permits, and to operate and manage the PLANTS and SEWERS as governmental functions under and pursuant to 24 V.S.A., Chapters 97 and 101.

(b). The permitted capacity of the PLANTS and SEWERS is the property of the City of South Burlington.

SECTION 2 - Definitions

The following words will have the meanings below when used in this Article.

"Plant Wastewater Flow" is the wastewater passing through the treatment plant in gallons per day on an annual average basis (365 day average) except where flows vary significantly from seasonal development. In the latter case, plant wastewater flow is determined as the average throughout the high seasonal use period, as determined by the BOARD.

"Permitted Wastewater Flow" is the maximum plant wastewater flow authorized in the Discharge Permit on an annual average (365 day average) basis, or on the high seasonal use period as defined in the discharge permit.

"Development Wastewater Flow" is the flow resulting from full use of the development at its peak capacity, which flow shall be calculated using flow quantities, adopted as rules by the DEPARTMENT, as promulgated at the time a connection permit application is made.

"Reserve Capacity" is the permitted wastewater flow minus the actual plant wastewater flow during the preceding 12 months.

"Uncommitted Reserve Capacity" is that portion of the reserve capacity remaining after subtracting the development wastewater flow of all projects for which a final allocation has been granted but are not yet discharging to the SEWER and any capacity reserved by the City Council for allocation to development in the City Center

Sewer Service Area.

"City Center Uncommitted Reserve Capacity" shall be established as 50,000 gallons per day upon the adoption of this amendment, which amount shall be reduced from time to time upon the granting of final allocations for development within the City Center Sewer Service Area.

"Committed Reserve Capacity" is the total amount of development wastewater flow (gallons per day) from all projects/buildings for which final allocations have been granted but are not yet discharging to the SEWER .

"Sanitary Wastewater" is wastewater of the same character and range of strength as expected from homes.

"Sewer Service Area" is that area of the City that is within 200 feet horizontally from existing municipal collection lines and manholes, excluding the City Center Sewer Service Area, as shown on the Sewer Service Area Map, dated January 3, 2001, located in Map 5, Public Utilities #2, of the South Burlington Comprehensive Plan. The Sewer Service Area may be altered by adoption of an amendment to this Ordinance. If there is any conflict between the Sewer Service Area shown on the above-referenced map and the City Center Sewer Service Area, as defined herein, the area included within the City Center Sewer Service Area shall control.

"City Center Sewer Service Area" is that area of the City located in the Central District 1 zoning district, as designated by the South Burlington Zoning Regulations presently in effect or hereafter amended.

"PLANTS" - The municipal sewage treatment plants owned by the City of South Burlington.

"SEWERS" - The sewage collection and transmission system owned by the City of South Burlington.

"Development" - The construction of improvements on a tract of land for any purpose, including, but not limited to, residential, commercial, industrial activity, subdivisions and the intent to subdivide.

"Affordable Housing" shall mean either of the following:

(A) Housing that is owned by its inhabitants, whose gross annual household income does not exceed eighty percent (80%) of the county median income, as defined by the United States Department of Housing and Urban Development, and the total annual cost of the housing, including principal, interest, taxes and insurance, is not

more than thirty percent (30%) of the household's gross annual income.

(B) Housing that is rented by its inhabitants whose gross annual household income does not exceed sixty-five percent (65%) of the county median income, as defined by the United States Department of housing and Urban Development, and the total annual cost of the housing, including rent, utilities, and condominium association fees, is not more than thirty percent (30%) of the household's gross annual income.

SECTION 3 - Reserve Capacity Allocation

(a) Determination of Amount of Allocation

All allocations to projects shall be based on the development wastewater flow. Any differential between actual flows and development wastewater flows that occurs is not available to the development owner for reallotment to another project or a project expansion.

(b) Application Process

Persons seeking an allocation of uncommitted reserve capacity or City Center Uncommitted Reserve Capacity of the PLANTS and SEWERS, shall apply to the Director for a preliminary allocation on a form prescribed by the Department of Planning & Zoning. Such application shall:

(1). Be accompanied by a calculation of the development wastewater flow to be generated by the project/development;

2). Include calculations for the volume, flow rate, strength and any other characteristics determined appropriate by the Wastewater Superintendent;

3). Unless waived by the Wastewater Superintendent all calculations required in (A) and (B) above for developments generating over 1000 gpd shall be certified by a Vermont registered engineer.

SECTION 4 - Preliminary Allocation Determination

(a) Uon receipt of the application for capacity allocation and supportive documents, the Director shall, based on information and comments provided by the Water Pollution Control Department following its review of the application, make a preliminary determination regarding allocation of uncommitted reserve capacity or City Center Uncommitted Reserve Capacity. The Director shall award a preliminary allocation upon making affirmative findings that:

(1). The proposed wastewater is of domestic, sanitary origin or, the proposed wastewater is not of domestic sanitary origin and that sufficient evidence has been presented by the applicant to demonstrate that the flow and character of the wastewater is compatible with the proper operation of the PLANTS and SEWERS and that the proposed wastewater will not alone or in combination with other wastes cause a violation of the discharge permit, pass through the PLANTS without treatment, interfere with or otherwise disrupt the proper quality and disposal of PLANT sludge or be injurious in any other manner to the PLANT or SEWERS and that there is sufficient uncommitted reserve capacity to accommodate the strength and volume of the proposed development;

2). There is sufficient uncommitted reserve capacity or City Center Uncommitted Reserve Capacity as of the date of the application to accommodate the development wastewater flow of the proposed development.

b) A preliminary determination by the Director allocating capacity shall not constitute a binding commitment of capacity to the applicant and may be revoked by the Director before a final allocation of capacity is granted if uncommitted reserve capacity ceases to be available. A preliminary determination may be used by an applicant as evidence that a proposed development has sufficient sewer capacity available.

SECTION 5 - Final Capacity Allocation:

(a) An applicant who holds a preliminary allocation of capacity granted pursuant to Section 4 above, may apply for a final allocation upon occurrence of the following:

(1). Obtained site plan, conditional use and/or variance approval(s), if such approvals are the only approvals, except a zoning permit, required for the proposed development under City zoning and subdivision regulations then in effect; or

2). Obtained final approval for a subdivision, PUD or PRD if such approvals are the only approvals, except a zoning permit, required for the proposed development under City zoning and subdivision regulations then in effect; or

(3). Obtained all approvals required under sub-section 1 and 2 above, if such approvals are required for the proposed development under City zoning and subdivision regulations then in effect; or

(4). Obtained a zoning permit if that is the only approval required under City zoning and subdivision regulations then in effect; or

(5). Does not require any approvals under City zoning and subdivision

regulations then in effect.

(b) Upon receipt of an application for final allocation, the Director shall grant a final allocation upon determination that the applicant has a preliminary allocation which has not been revoked and that sufficient uncommitted reserve capacity is available for the development.

(c) A grant of final allocation shall constitute a binding commitment of sewer capacity to the applicant subject to applicant's compliance with all conditions imposed on such allocation.

SECTION 6 - Final Allocation Conditions

(a) A final allocation shall specify the allowed volume, flow rate, strength frequency and any other characteristics of the proposed discharge determined appropriate by the Director.

(b) The capacity allocation is not transferable to any other person or development, except a successor in interest of the development for which the allocation has been granted.

(c) The construction of the connection and, if necessary, the municipal SEWER extension, must be overseen to assure compliance with the plans and specifications and good construction practice in a manner acceptable to the City.

(d) A final capacity allocation shall expire on the first to occur of the following events unless prior to such date the development for which the allocation has been granted has commenced discharging into the SEWER:

(1). the date that any approval required for grant of the final allocation, as identified in Section 5 above, expires, unless prior to such date the applicant has applied for any required zoning permit(s) to construct the development;

(2). the date that any zoning permit authorizing construction of improvements for which the allocation has been granted expires;

(3). ten (10) years from the date the final allocation is granted, for any development that requires any approval under the City zoning or subdivision regulations, or two (2) years from the date the final allocation is granted, for any development that does not require approval under the City zoning or subdivision regulations.

(e) An Applicant for development involving a single use or unit shall pay one

hundred percent(100%) of all connection fees prior to grant of a final allocation. If the development involves multiple uses and/or units that will connect to the SEWER, the applicant shall pay fifty percent (50%) of all connection fees prior to grant of final allocation and the remaining fifty percent (50%) will be prorated based on the development flow for each use or unit. The prorated payment for a use or unit shall be payable upon issuance of a zoning permit for construction of improvements for the use or unit. If the development is an Affordable Housing project, one hundred percent (100%) of all connection fees will be prorated based on the number of uses and/or units. The prorated portion for a use or unit shall be payable upon issuance of a zoning permit for construction of improvements for the use or unit. If the development does not require issuance of a zoning permit, applicant shall pay one hundred percent (100%) of all connection fees prior to grant of a final allocation.

ARTICLE IV - SEWAGE DISPOSAL CHARGES, TIME OF PAYMENT THEREOF, AND PENALTIES FOR NON-PAYMENT

SECTION 1. Operation and Maintenance: An annual charge, which shall be determined by the City Council, is hereby imposed upon every person having a building or structure on their premises and who are served by the municipal public sewage system where sewage may be collected for the use of the premises by the Owners, or other users of real property within the City of South Burlington. The annual charge shall be for the purpose of the payment associated with the costs or operating, maintaining and repairing said system. The City Council may establish annual charges separately for bond payments, for fixed operating and maintenance costs not dependent on actual or estimated use and for variable operations and maintenance costs dependent on actual or estimated use.

SECTION 2 - The sewer use rates established in SECTION 1 of this ARTICLE and defined hereinafter shall be charged whether or not the property is occupied, when the property is connected to the public sewage system by the necessary building sewer as required under the terms of this ORDINANCE. The rate structure shall incorporate the requirements of 40 CFR, §35.935-13 or §35.2140, as applicable.

SECTION 3 - The annual charges stipulated in SECTION 1 of this ARTICLE shall be based upon a water meter measurement. The City Council will determine the actual charge from measurements of each user so as to yield charges which are approximately in proportion to the strength and quantity of waste discharged. If the City Council establishes annual charges separately for bond repayment and fixed operations and maintenance costs, no user will be billed less than the average single family charge for the fixed charges, plus flow related charges.

SECTION 4. Capital Costs: The design, construction and development costs of all public sewage system expansions and extensions which have been approved by the Development Review Board shall be borne by the developers and property owners

requiring, requesting or directly benefiting from such extensions and/or expansions, unless alternative funding method is approved by the City Council.

SECTION 5. Collection: Collection of the delinquent sewer use rates may be enforced by the City pursuant to 24 V.S.A., Chapter 129 water and sewer disconnection; 24V.S.A., Section 3612 charges; lien; and 24 V.S.A., Section 3615, rents; rates. In the event any sewer rent is not paid within thirty (30) days from the billing date, a late penalty charge will be added to the sewer rent together with interest charges. The amount of the late penalty charge and the interest rate on the overdue accounts shall be the same as those applied to delinquent taxes. If such payment is not made, such sewer rent shall be a lien upon such real estate and shall be collected according to the procedures allowed for in 24 V.S.A. §§ 3504 and 3612. Any payment made to the City for utility fees shall first be allocated to delinquent water, then delinquent sewer, then delinquent stormwater fees. The remaining amount of the payment shall first be allocated to current water, then current sewer, then current stormwater fees.

SECTION 6. Sinking Fund/Set-Asides for Major Expenditures: The following provides for and restricts the use of set-aside (sinking) funds to finance future major maintenance/replacement costs and plant expansion costs.

(a) A separate sinking fund may be utilized for major maintenance/ replacement expenditures and for expansion/upgrading expenses associated with the wastewater facility in the City of South Burlington. Sinking fund establishment for maintenance/ replacement expenditures shall be through written policy of the City. Any sinking fund policy shall contain at least the following in writing: major maintenance/ replacement identification, estimated expenditures, estimated year of expenditure, payment amount, type of account used to accumulate sinking fund assets, source of funding and when payments are to stop. All sinking funds shall be established and maintained in accord with 24 V.S.A., Section 3616.

(b) The City reserves the right to increase, decrease, stop and/or maintain regular deposits to a sinking fund not exceeding 15% of the normal total budgeted expenses for maintenance/ replacement in that year. The fees charged for expansion cost shall be deposited into a separate account and a record shall be kept to show payment date, person making payment and payment amount. The City Council holding office have the authority to withdraw sinking fund amounts only for the purpose of paying for major expenditures/plant expansion for which the fund was established.

(c) When sinking fund assets are not disbursed fully for major maintenance/replacement expenditures and/or plant expansion, excess money shall remain in the sinking fund for future related expenditures similar in nature. Revenues established for plant expansion dedicated funds may be generated from connection/impact fees paid by prospective users to defray and pay expansion costs.

This fund shall not exceed the estimated future expansion cost for the wastewater treatment facility. When the City so votes, the expansion/upgrade sinking fund may be used to finance major maintenance/replacement expenditures, but under no circumstances shall the major maintenance replacement sinking fund be used to finance wastewater expansion/upgrade expenses.

ARTICLE V - STORMWATER SYSTEM

SECTION 1. Purpose

The purpose of this Article is to provide for the health, safety, and general welfare of the citizens of South Burlington through the regulation of stormwater discharges to the stormwater system.

SECTION 2. Applicability

Any discharge of stormwater from developed property in the City shall be subject to the provisions of this Article.

SECTION 3. Required Approvals

(a) No owner of developed property in the City shall change or alter, or allow to be changed or altered, the discharge of stormwater from such property occurring on the effective date of this Article without first obtaining any permit or approval required under this or any other City Ordinance, state law, or federal law.

(b) No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public storm drain or appurtenance thereof without first obtaining a written permit from the Stormwater Superintendent.

SECTION 4. Compliance with Existing Permits

It shall be a violation of this Article for any owner of developed property that is subject to any local, state, or federal permit requirements regarding the discharge of stormwater to fail to comply with such permit requirements.

SECTION 5. Use of the Public Stormwater System:

(a) The following may be discharged into the public stormwater system, subject to obtaining and complying with any required permit:

(1) Stormwater;

(2) Landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wet-land flows, swimming pools (if dechlorinated - typically less than one PPM chlorine), fire fighting activities, and any other water source not containing pollutants;

(3) Discharges specified in writing by the authorized enforcement agent as being necessary to protect public health and safety;

(4) Dye testing is an allowable discharge, but requires a verbalnotification to the authorized enforcement agent prior to the time of the test;

(5) Any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

(b) It shall be a violation of this Ordinance for any person to cause or allow to occur any illicit discharge to the public stormwater system or allow any illicit discharge existing on the date this Article becomes effective to continue regardless of whether such existing discharge was permissible under law or practices applicable or prevailing at the time the discharge commenced.

Section 6. Best Management Practices

(a) The Stormwater Superintendent will adopt requirements identifying Best Management Practices for any activity, operation, or facility which may cause or contribute to an illicit discharge to the stormwater system. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from an accidental illicit discharge into the public stormwater system BMPs. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge to the public stormwater system, may be required to implement, at said person's expense, additional BMPs to prevent or discontinue the illicit discharge. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section.

(b) Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property

free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

(c) Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in an illicit discharge into the stormwater system, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the Stormwater Superintendent in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Stormwater Superintendent within three business days of the phone notice. If the illicit discharge emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 7. Protection from Damage

No person shall maliciously, willfully or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the public stormwater system. Any person violating this provision shall be subject to immediate arrest under the charge of unlawful mischief as set forth in Title 13, Section 3701 of the Vermont Statutes Annotated.

ARTICLE VI - STORMWATER SYSTEM USER FEES

SECTION 1. Establishment of Stormwater User Fees

(a) A user fee based on an Equivalent Residential Unit (ERU) shall be imposed on every owner of non-exempt developed property within the City. An ERU shall equal that square footage that represents the median of the area of impervious surface for all single family residences in the City. The City Council shall, by resolution, establish the square footage that constitutes one ERU on a periodic basis.

(b) The City Council shall have the authority to set and modify the user fee rates so that the total revenue generated by said charges, and any secondary sources of revenue, shall be sufficient to fund the City's stormwater program.

(c) The City council shall establish by resolution the monthly rate for each ERU. The monthly user fee for a specific property is determined by multiplying the rate per ERU times the number of ERUs allocated to the property.

(d) The only exempt property under this Article is that included within the limits of a railroad track right-of-way. Property on which railroad stations, maintenance buildings, or other developed land used for railroad purposes is located shall not be exempt.

SECTION 2. User Fee Credits:

(a) The Stormwater Superintendent shall prepare for the City Council's approval, a "Stormwater User Fee Credit Manual" specifying the design and performance standards of on-site stormwater systems, facilities, activities and services which qualify for application of a user fee credit and the method of calculating credits. The City Council shall have the authority to approve, modify and approve or disapprove the Credit Manual.

(b) Following approval of a Credit Manual, the Stormwater Superintendent may, at the request of a property owner, reduce the user fee established for any property by awarding a credit based on the policies and conditions set forth in the Manual. No credit shall exceed fifty percent (50%) of the applicable monthly user fee for a given property. Any property owner may appeal the Stormwater Superintendent's determination regarding an award of a credit by filing a written notice of appeal with the Stormwater Appeals Board within ten (10) business days of the Superintendent's decision. The Stormwater Appeals Board shall review such appeal at a meeting preceded by fifteen (15) calendar days written notice of the meeting date to the property owner. Following the meeting, the Stormwater Appeals Board shall issue its decision on the appeal in writing, which decision shall be final.

(c) Credits may be awarded retroactively for one (1) year from the date of initiation of the stormwater user fee. Thereafter, credits shall be applied to user fees on the next billing period after the completed credit application is approved.

(d) Any award of credit shall be conditioned on continuing compliance with the City's design and performance standards as stated in the "Stormwater User Fee Credit Manual" and/or upon continuing provision of the systems, facilities, services, and activities provided, operated, and maintained by the property owner or owners upon which the credit is based. The City Manager may revoke a credit at any time for non-compliance by providing thirty (30) days written notice of a non-complying condition and intent to revoke the credit to the property owner. If the non-compliance is not cured within the thirty (30) day period, the Manager shall eliminate the credit for user

fee bills issued to the property owner after such period. A property owner may appeal the City Manger's determination regarding credit revocation in the same manner set forth in sub-section (b), above.

SECTION 3. Establishment of ERUs:

(a) Each SFR shall be allocated one (1) ERU.

(b) The ERUs allocated NSFR properties, except City or State highways, shall be determined in the following manner:

(1) The amount of impervious surface on each parcel shall be divided by the gross area of the parcel resulting in the percent of imperviousness for the parcel.

(2) Based on the percent imperviousness, a "tier factor" shall be determined, based on the following categories:

IMPERVIOUS PERCENTAGE	TIER FACTOR
1 to 10%	* See Below
11 to 20%	0.15
21 to 30%	0.25
31 to 40%	0.35
41 to 50%	0.45
51 to 60%	0.55
61 to 70%	0.65
71 to 80%	0.75
81 to 90%	0.85
91 to 100%	0.95

*Fee will be based on actual amount of impervious surface, measured in square feet.

(3) The gross area of the parcel shall be multiplied by the tier factor, and then divided by the ERU. The resulting value is rounded up to the nearest whole

number which is be the number of ERUs for the property.

(c) The ERUs allocated properties comprised solely of public roadways shall be determined by dividing two-thirds of the total impervious surface for the property by the ERU. The resulting value is rounded up to the nearest whole number which is be the number of ERUs for the property.

SECTION 4. Billing and Collection

(a) Stormwater user fees will be billed quarterly and shall be reflected on the water and sewer bills for each property owner, where applicable. The bill shall also state the ERUs allocated to each property.

(b) A property owner may appeal an allocation of ERUs to the Stormwater Superintendent by submitting a written notice of appeal to the Stormwater Superintendent within fifteen (15) calendar days of the mailing date of the bill. The Stormwater Superintendent shall promptly meet with the property owner and issue a decision of the allocation of ERUs. A property owner may appeal the Stormwater Superintendent's determination regarding credit revocation in the same manner set forth in Section 2(b), above. The filing of an appeal shall not relieve a property owner of the obligation to pay the user fee when due.

(c) In the event any stormwater user fee is not paid within thirty (30) days from the billing date, a late penalty charge will be added to the fee together with interest charges. The amount of the late penalty charge and the interest rate on the overdue accounts shall be the same as those applied to delinquent taxes. If such payment is not made, such stormwater user fee shall be a lien upon such real estate and may be collected in the manner provided in 24 V.S.A., §§ 3504 and 3612. Any payment made to the City for utility fees shall first be allocated to delinquent water, then delinquent sewer, then delinquent stormwater fees. The remaining amount of the payment shall first be allocated to current water, then current sewer, then current stormwater fees.

SECTION 5. Expenditures.

(a) The user fees, as well as any secondary sources of revenue, shall be used to fund the City's efforts to manage stormwater. Acceptable expenditures include, but are not limited to, capital construction, maintenance and operations, engineering and planning, regulation and enforcement, water quality programs, special services, administration and management, coverage requirements, reserve funds, and miscellaneous overhead costs.

(b) Excess revenues may be placed into a sinking fund, and may be retained and expended in the manner set forth in Article IV, Section 6 of this Ordinance.

ARTICLE VII - INSPECTION AND ENFORCEMENT

SECTION 1. Power and Authority of Inspectors

(a) Any authorized person bearing proper credentials and identification shall be permitted to enter all properties subject to regulation under this Ordinance for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this Ordinance. Authorized persons shall have the right to set up such devices as are necessary to conduct monitoring and/or sampling of any regulated discharge from the property. Authorized persons may also examine and copy records required to be kept under any permit subject to this ordinance. Authorized persons shall have no authority to inquire into any processes including metallurgical, chemical, oil, refining, ceramic, paper, or other industries beyond that point having a direct bearing on the kind and source of discharge to the public sanitary and stormwater systems.

(b) Any authorized person bearing proper credentials and identification shall be permitted to enter all private properties through which the City holds an easement for the purposes of, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance or any portion of the public sewage or stormwater system lying within said easement. All entry and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the easement pertaining to the private property involved.

(c) If a property owner has security measures in force which require proper identification and clearance before entry into onto the property, the owner shall make the necessary arrangements to allow access to any authorized person.

(d) Any temporary or permanent obstruction to safe and easy access to any property to be inspected and/or sampled shall be promptly removed by the property owner at the written or oral request of any authorized person and shall not be replaced. The costs of clearing such access shall be borne by the property owner.

(e) Causing an unreasonable delay in allowing an authorized person access to a property subject to regulation under this Ordinance is a violation of this Ordinance.

(f) If an authorized person is refused access to any part of the property containing facilities, records or discharges subject to regulation under this Ordinance, and if the authorized person is able to demonstrate probable cause to believe that there may be a violation of this Ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this Ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the authorized person may seek issuance of a search warrant from any court of competent jurisdiction.

(g) While performing the necessary work on private properties referred to in this Section, authorized persons shall observe all safety rules applicable to the premises established by the property owner and the property owner shall be held harmless for injury or death to the City employees and the City shall indemnify the property owner against loss or damage to its property for personal injury or property damage asserted against the property owner and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the property owner to maintain safe conditions as required by law.

SECTION 2 - Administrative Enforcement

(a) Any condition caused or permitted to exist in violation of any of the provisions of this Ordinance is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

(b) Any person found to be violating any provision of this of this ordinance shall be served by the City with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. Such notice may require without limitation.

(1) The performance of monitoring, analyses, and reporting;
(2) The elimination of illicit discharges;
(3) The cessation of improper practices and operations and implementation of proper practices and operations;
(4) The abatement or remediation of any contamination of the public sewage or stormwater system and waters of the State of Vermont or the United States and restoration of any property impacted by such contamination;
(5) Establishment of time limits for the completion of all required work;
(6) Payment of a fine; and
(7) State that the Notice may be appealed in the manner set forth in sub-section (f), below.

(c) The City has the right to require a property owner found to be in violation of this Ordinance to install monitoring equipment and maintain such equipment in proper operating condition, including proper calibration, all at the property owner’s expense.

(d) If a violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, the City or persons retained by the City may enter upon the subject property to take any and all measures necessary to abate the violation and/or

restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the City or designated persons to enter upon the premises for the purposes set forth above.

(e) Within thirty (30) days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within fifteen (15) days. If the amount due is not paid within a timely manner as determined by the decision of the City Manager or by the expiration of the time in which to file an appeal, the charges shall constitute a lien on the property for the amount of the assessment and shall bear interest at the rate of one percent (1%) per month, or portion thereof.

(f) The City Manager may, without prior notice, suspend stormwater or sewer system discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the stormwater system, sewer system or waters of the State of Vermont or the United States. If the violator fails to comply with a suspension order issued in an emergency, the City manager may take such steps as deemed necessary to prevent or minimize damage to the stormwater system, sewer system or waters of the State of Vermont or United States, or to minimize danger to persons.

(g) Any person discharging to the stormwater or sewer system in violation of this ordinance may have their stormwater system or sewer system access terminated if such termination would abate or reduce an illicit discharge. The City Manager will notify a violator of the proposed termination of its stormwater system or sewer system access. The violator may appeal the City Manager's determination to the City Council by filing a written notice of appeal with the City Manager within ten (10) business days of the Manager's decision. The City Council shall review such appeal at a meeting of the Council preceded by fifteen (15) calendar days written notice of the meeting date to the Violator. Following the meeting, the Council shall issue its decision on the appeal in writing, which decision shall be final.

(h) A person commits an offense if the person reinstates stormwater system or sewer system access to premises terminated pursuant to sub-section (f), above, without the prior approval of the City Manager.

SECTION 3. Judicial Enforcement:

(a) This ordinance shall constitute a civil ordinance within the meaning of 24 V.S.A. Chapter 59.

(b) Any law enforcement officer or other individual designated by the City Council to enforce this ordinance may act as an issuing Municipal Official and issue and pursue before the Judicial Bureau a municipal complaint for any violation of any provision of this Ordinance.

(c) In addition to the enforcement procedures available before the Judicial Bureau, the City is authorized to commence a civil action to obtain injunctive and other appropriate relief, or to pursue any other remedy authorized by law.

SECTION 4. Penalties:

(a) Waiver Fee For Municipal Complaint: An Issuing Municipal Official is authorized to recover civil penalties in the following amounts for each violation of this ordinance:

First offense - $25.00
Second offense - $50.00
Third offense - $75.00
Fourth offense - $150.00
Fifth and subsequent offenses - $200.00
Offenses shall be counted on a calendar year basis.

(b) Civil Penalty for Municipal Complaint: An Issuing Municipal Official is authorized to recover civil penalties in the following amounts for each violation of this ordinance:

First offense - $50.00
Second offense - $100.00
Third offense - $150.00
Fourth offense - $300.00
Fifth and subsequent offenses - $400.00
Offenses shall be counted on a calendar year basis.

(c) Civil penalty for enforcement courts other than the Judicial Bureau: In addition to any other remedy provided for in this Ordinance, any person who violates any provision of this Ordinance, shall be subject to a civil penalty of up to $500.00 per day for each day that such violation continues.

This amendment shall take effect on passage.

Adopted by the City Council this ___ day of _____, 2005

South Burlington City Council

James C. Condos

Terence Sheahan

Chris Smith

Steve Magowan

Daniel O'Rourke

SON.FINAL.SEWER.ORDINANCE.2005

Appendix F - Resources

F1. Durham, New Hampshire Stormwater Regulations
F2. Manchester, New Hampshire Stormwater Ordinance
F3. South Burlington, VT Ordinance Regulating the use of Public and Private Sanitary Sewerage and Stormwater Systems.

F1 – Durham, New Hampshire Stormwater Regulations

This Appendix contains the complete Site Plan Regulations for the town of Durham, NH.

The complete Subdivision Regulations for the town of Durham have similar sections related to stormwater management and can be accessed at: http://durham.nh.us/DEPARTMENTS/planning/subdivision_regulations/2010/Final%20Subdivision%20Regs.pdf

SITE PLAN REVIEW REGULATIONS
of
DURHAM, NEW HAMPSHIRE

SECTION 1: Authority and Purpose

1.01 Authority

Pursuant to the authority vested in the Durham Planning Board, by the legislative body of the Town of Durham, in accordance with previously adopted subdivision regulations under RSA 674:36, the Durham Planning Board is empowered under RSA 674:43 to review and approve or disapprove site plans. This review authority shall be applied to the development of tracts for non-residential uses and for multi-family dwelling units which are defined as any structure containing more than two (2) dwelling units per structure, whether or not such development includes a subdivision or re-subdivision of a site.

1.02 Purpose

The purpose of the Durham Site Plan Review Regulations, as authorized by RSA 674:44-II, is to:

A. Provide for the safe and attractive development of the site and guard against such conditions as would involve danger or injury to health, safety, or prosperity by reason of:

1) Inadequate drainage or conditions conducive to flooding of the property or that of another;
2) Inadequate protection for the quality of surface and groundwater;
3) Undesirable and preventable elements of pollution such as noise, smoke, soot, particulate or any other discharge into structures or adjacent properties;
4) Inadequate provisions for fire safety, prevention and control; and
5) Inadequate pedestrian and traffic plans.

B. Provide for the harmonious and aesthetically pleasing development of the municipality and its environs;

C. Provide for open spaces and green spaces of adequate proportions;

D. Require the proper arrangement and coordination of streets within the site in relation to other existing or planned streets or with features of the official map of the municipality;

E. Require suitably located streets to be of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air and access for fire fighting apparatus and equipment to buildings and be coordinated so as to compose a convenient system;

F. Require in proper cases, that plats showing new streets or narrowing or widening of such streets be submitted to the Planning Board for approval;

G. Require that the land indicated on plats submitted to the Planning Board shall be of such character that it can be used for building purposes without danger to health;

H. Include such provisions as will tend to create conditions favorable for health, safety, convenience and prosperity; and

I. Prevent scattered and/or premature development.

SECTION 2: Title

These regulations shall be known and cited as the SITE PLAN REVIEW REGULATIONS OF DURHAM, NEW HAMPSHIRE, and supercede the Site Plan Regulations, Town of Durham, New Hampshire, Adopted December 12, 1990, as amended prior hereto, and such prior regulations are hereby rescinded.

SECTION 3: Words and Phrases

3.01 Word Usage

Words used in the present tense shall include the future; the singular includes the plural and the plural includes the singular; the word "building" shall include the word "structure", the word "shall" is mandatory; the word "may" is permissive. The word "person" includes an individual, partnership, firm, association, corporation, organization, or institution.

3.02 Definitions ***(Amended July 14, 2010)***

Best Management Practices (BMP): Methods and means that have been determined to be the most effective, practical approaches of preventing or reducing pollution and detrimental impacts from stormwater runoff.

Buffer: A vegetated area or zone separating a development from a sensitive resource or neighboring property in which proposed development is restricted or prohibited.

Development: Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations.

Disconnected Impervious Cover: The sum of the proposed areas of impervious cover and pavement that receive runoff and, by means of implementing BMPs and LID strategies, is designed to capture and filtrate the precipitation from a 1-inch 24-hour rain event.

Disturbance: Any activity that significantly alters the characteristics of the terrain in such a manner as to impede or alter the hydrology or natural runoff pattern, or creates an unnatural runoff.

Effective Impervious Area (EIA): The total impervious surface areas less the area of disconnected impervious cover.

Hydrologic Soil Group (HSG): A Natural Resource Conservation Service classification system in which soils are categorized into four runoff potential groups. The groups range from "A" soils, with high permeability and little runoff production, to "D" soils, which have low permeability rates and produce much more runoff.

Impervious Surface: A material with low permeability that impedes the natural infiltration of moisture into the ground so that the majority of the precipitation that falls on the surface runs off or is not absorbed into the ground. Common impervious surfaces include, but are not limited to, roofs, concrete or bituminous paving such as sidewalks, patios, driveways, roads, parking spaces or lots, and storage areas, compacted gravel including drives and parking areas, oiled or compacted earthen materials, stone, concrete or composite pavers, wood, and swimming pools.

Low Impact Development (LID): Site planning and design strategies intended to maintain or replicate predevelopment hydrology through the use of source control and relatively small-scale measures integrated throughout the site to disconnect impervious surfaces and enhance filtration, treatment, and management of stormwater runoff as close to its source as possible. Examples of LID strategies are pervious pavement, rain gardens, green roofs, bioretention

basins and swales, filtration trenches, and other functionally similar BMPs located near the runoff source.

Maximum Extent Practicable (MEP): To show that a proposed development has met a standard to the maximum extent practicable, the applicant must demonstrate the following: (1) all reasonable efforts have been made to meet the standard, (2) a complete evaluation of all possible management measures has been performed, and (3) if full compliance cannot be achieved, the highest practicable level of management is being implemented.

Native plants: Plants that are indigenous to the region, adapted to the local soil and rainfall conditions, and require minimal supplemental watering, fertilizer, and pesticide application.

Pavement: Areas of a site that are covered with pervious and/or impervious asphalt and concrete.

Porous Media: Material with open connected pore spaces that allows water to percolate through it such as granular soils, gravel, crushed stone, pervious pavements, and woven and non-woven geosynthetics.

Redevelopment: Any man-made change to previously improved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, and drilling operations.

Riparian: Referring to anything connected or immediately adjacent to the shoreline or bank of a stream, river, pond, lake, bay, estuary or other similar body of water.

Riparian buffer: The naturally vegetated shoreline, floodplain or upland forest adjacent to a surface water body. Riparian buffers provide stormwater control flood storage and habitat values. Wherever possible, riparian buffers should be sized to include the 100-year floodplain as well as steep banks and freshwater wetlands.

Runoff: Stormwater that does not infiltrate into the ground and flows toward a below-ground or surface discharge location.

Site: A lot, tract or parcel of land on which a development is located that includes but is not limited to the proposed area of disturbance and development activities.

Stormwater: Water that originates from precipitation events and accumulates on land.

Stormwater Management Plan: A written plan describing the proposed methods and measures to be implemented to prevent or minimize water quality and quantity impacts from stormwater associated with a development or redevelopment project both during and after construction. It identifies selected BMPs, LID source controls, and treatment practices to address those potential impacts, and contains the engineering design plans, specifications, and calculations of the management and treatment practices, and maintenance requirements for proper performance of the proposed practices.

Water Quality Treatment: the capture of sediment, nutrients, metals and hydrocarbons suspended in stormwater runoff from impervious surfaces before being conveyed to a storm sewer network or to another water quality treatment system. In most cases where no other local water body impairments exist, adequate treatment refers to documenting the treatment systems ability to remove 80% of the total suspended solids (TSS) on an annual basis. Where water quality impairments do exist adequate treatment refers to a system's ability to meet maximum load allocations or not further impair the receiving water.

Water Quality Volume (WQv): The storage volume needed to capture and treat the runoff from the 1-inch 24-hour rainstorm for a specific contributing area.WQv shall be calculated using the following equation:
WQv = (P)(Rv)(A), where: P = 0.083 ft, Rv = the unitless runoff coefficient, Rv = 0.05 + 0.9(I), where I = the percent impervious surface draining to the discharge point, in decimal form, and A = total site area in square feet draining to the discharge point

SECTION 4: Interpretation

These Site Plan Review Regulations in no way relieve the developer or his/her agent from compliance with the Zoning Ordinance, Subdivision Regulations or any other ordinance which pertains to the proposed development.

The standards contained in these regulations shall be interpreted as minimum requirements, and compliance with said minimum requirements shall in no instance obligate the Planning Board to approve any particular application solely on that basis. Only after the Planning Board is fully satisfied that a proposed application is in accordance with the Master Plan and Town Ordinances will the application be approved.

SECTION 5: Application Procedures

5.01 Preapplication Review Phases (RSA 676:4II) An applicant may elect to forego or engage in preapplication review or either phase thereof.

A. ***Preliminary Conceptual Consultation Phase***

1). The applicant may request a meeting with the Board to discuss a proposal in conceptual form and in general terms. Such preapplication consultation shall be informal and directed toward:

a. reviewing the basic concepts of the proposal,

b. reviewing the proposal with regard to the Master Plan and Zoning Ordinance,

c. explaining the local regulations that may apply to the proposal, and,

d. guiding the applicant relative to state and local requirements.

2). Preliminary conceptual consultation shall not bind the applicant or the Board. Such discussion may occur without formal public notice, but must occur only at a posted meeting of the Board.

B. ***Design Review Phase***

1). Prior to submission of a completed application for Planning Board action, an applicant may request to meet with the Board for non-binding discussions beyond the conceptual and general, involving more specific design and engineering details of the potential application.

2). The Design Review phase may proceed only after identification of and notice to abutters; holders of conservation, preservation, or agricultural restrictions; and the general public as required by RSA 676:4 I(d).
(Amended July 15, 1998)

3). Persons wishing to engage in preapplication Design Review shall submit a "Request for Preapplication Review" (Attachment 2) and associated fees not less than 20 days before the regularly scheduled meeting of the Board. The request shall include:

a. a list of abutters and their addresses from municipal records not more than five days before submission,

b. a list of all holders of conservation, preservation, or agricultural preservation restrictions on the subject property, and

c. a check or cash to cover mailing and advertising costs.

(Amended July 15, 1998)

4). All discussion in the Design Review Phase shall be informal and non-binding. Statements made by Board members shall not be the basis for disqualifying said members or invalidating any action eventually taken on the application.

5). The Board shall not accept any submissions by the applicant at this time.

5.02 Formal Application

A. A formal application shall consist of the forms and data as shown in Section's 7, 9, and 10 of these regulations. It shall also include all fees required by the Town under the provisions of RSA 676:4, I(g).

B. Upon receipt of a formal application, the Director of Planning and Community Development will review it using the Site Plan Application Checklist. Within five (5) business days of submitting a formal application, the applicant shall meet with the Director of Planning and Community Development to discuss issues related to completeness and acceptance of the application. If this review discloses that all requirements specified on the Site Plan Application Checklist have not been met, the applicant will be notified in writing what specific items are still needed. When all requirements have been met, the application will be scheduled for submission to the Planning Board by placing it on the Board's agenda. (Amended May 8, 2002)

C. A formal application shall only be submitted to the Planning Board at a regular meeting after notification has been given as required by RSA 676:4,I(d). The Planning Board shall consider the application, and act to accept, reject or table it within 30 days of receipt of the completed application by the Board or its designee. Such action shall be by a majority vote of those Board members present. (Amended July 15, 1998)

D. Prior to the next regularly scheduled meeting of the Planning Board, the applicant, at the discretion of the Director of Planning and Community Development, shall meet with the appropriate Department Heads of the Town of Durham to discuss the implications the application will have on the various Departments of the town. (Amended May 8, 2002)

5.03 Action on a Formal Application

A. Once a formal application is accepted, the Planning Board must act on it within 90 days after receipt of the completed application by the Board or its designee. The Board shall consider the application at its regular meetings, or at workshop meetings if required, and a site visit will be scheduled. Additional reports or studies may be required by the Board, including but not limited to, high intensity soil survey, traffic, school, fiscal, and environmental

impact analyses, to allow the Board to make an informed and educated decision concerning the application. (Amended July 15, 1998)

B. Prior to the approval of a site plan application, a public hearing shall be held as required by RSA 676:4 I(d) with notice given to the applicant; holders of conservation, preservation, or agricultural preservation restrictions; every engineer, architect, land surveyor, or soil scientist whose professional seal appears on the plan submitted to the Board**;** abutters, and the public.

(Amended July 15, 1998)

C. The Board may apply to the Town Council for an extension of the 90 day time period, not to exceed an additional 90 days, before acting to approve, conditionally approve, or disapprove an application. An applicant may waive the requirement for Board action within the time period specified in these regulations and consent to such an extension as may be mutually agreeable.

D. If the Board has not taken action on the formal application within 90 days after receipt of the completed application by the Board or its designee, and the Board has not obtained an extension, the applicant may obtain from the Town Council an order directing the Planning Board to act within 15 days. Failure of the Board to act on the order shall constitute grounds for the applicant to petition the Superior Court as provided in RSA 676:4,I(c).

(Amended July 15, 1998)

E. The Board shall act to approve, conditionally approve, or disapprove the formal application within 90 days of receipt of the completed application by the Board or its designee. (see Attachment 4a). A conditional approval will be stated in the form of "Findings of Fact and Conditions of Approval" (see definitions). (Amended July 15, 1998)

F. Approval of the application shall be certified by written endorsement on the plan and signed and dated by the Chair of the Board.

G. A financial surety, adequate to cover the construction of all infrastructure improvements approved as part of the site plan application, shall be posted with the Town prior to signing the plan. The following financial sureties are acceptable to the Town: cash, passbook savings account in the Town's name, letter of credit, or a bond.

H. If any application is disapproved, the grounds for such disapproval shall be adequately stated in the records of the Board and in written notice given to the applicant within 72 hours (see Attachment 4b). Applications may be disapproved by the Board without public hearing on the grounds of failure by the applicant to supply information or to pay fees as required by these regulations.

5.04 Notices

A. Notice of a Design Review, submission of a formal application, or of a public hearing, shall be given by the Board to the abutters; holders of conservation, preservation, or agricultural preservation restrictions; every engineer, architect, land surveyor, or soil scientist whose professional seal appears on the plan submitted to the Board; and the applicant. The notice shall be provided by certified mail, and mailed at least ten (10) days prior to the meeting (see Attachment 3a). (Amended July 15, 1998)

B. The public shall be given notice at the same time, by posting in two public places and in a paper of general circulation in the Town.

C. The notice shall give the date, time, and place of the Planning Board meeting at which the application or other item(s) will be formally submitted to the Board, shall include a general description of the proposal which is to be considered, and shall identify the applicant and the location of the proposal (see Attachment 3b).

D. If the notice for the public hearing was included in the notice of submission or any prior notice, additional notice of the public hearing is not required. Additional notice is not required of an adjourned session of a public hearing provided that the date, time and place of the adjourned session was made known at the prior public hearing.

SECTION 6: Fees

6.01. A formal application for site plan approval shall be accompanied by an initial filing fee.

6.02. Pursuant to RSA 676:4 I(g), it shall be the responsibility of the applicant, if the Board deems it necessary, to pay reasonable fees for special investigative studies, environmental assessments, legal review of documents, administrative expenses, and other matters which may be required to make an informed decision on a particular application.

6.03. The application submittal fees are adopted by reference as part of these regulations.

SECTION 7: Application Submission Requirements

7.01.A Formal Application shall be filed with the Planning Board or its designated agent at least twenty-one (21) calendar days prior to a regularly scheduled meeting of the Board. (Amended May 8, 2002)

7.02. Formal Application Content: A Formal Application shall be submitted using the form available from the Planning Office (Attachment 1), and shall be accompanied by:

A. a letter of intent detailing the proposal;

B. a list of the names and addresses of all the abutters, as shown in town records not more than five (5) days before the day of filing; and a listing of all holders of conservation, preservation, or agricultural preservation restrictions on the subject property; (Amended July 15, 1998)

C. additional documents, as requested by the Planning Office; and

D. five copies, 24"x 36" and ten additional copies , 8.5"x 11", ", 8.5" x 14", or 11" x 17", of the plan. However, the Planning Board or its designee may require the ten additional copies to be 24" x 36", as deemed necessary. The plan shall be prepared by a land surveyor, using a scale of 1 inch equals 100 feet or larger (i.e. 1 inch equals 50 feet, 1 inch equals 20 feet, etc) and shall include:
(Amended July 15, 1998)

1) A Title Block, including:
   a) Title of plan;
   b) Owner's name and address, and name of agent, if any
   c) The date the plan was prepared and date of subsequent revisions;
   d) Scale of the plan; and
   e) Name, address and seal of the preparer of the plan.

2) North arrow and bar scale.

3) A location plan at a minimum scale of one (l) inch equals one thousand (l,000) feet, showing:

   a) Property lines of the parcel being developed in relation to the surrounding area within a radius of two thousand (2,000) feet.
   b) Names and locations of existing town streets including the nearest intersection of said streets;
   c) Names and locations of streets within the proposed development;
   d) Names and location of watercourses and water bodies on and adjacent to the site;
   e) Area of entire parcel in acres and square feet.

4) The plan of the site itself shall show:

a) Surveyed property lines of the parcel showing their bearings;
b) Names of all abutting property owners;
c) Location and layout of existing and proposed structures and buildings;
d) Existing and proposed contours at two (2) foot intervals for the entire site. Where a change in grade is proposed, existing contours shall be dotted lines and finished elevations solid;
e) Area of entire parcel in acres and square feet;
f) Zoning and special district boundaries;
g) Deed reference and tax map number;
h) Location width, curbing and paving of access ways, egress ways and streets within the site;
i) Location and layout of all on-site parking and loading facilities;
j) Location and size of all municipal and non-municipal utilities and appurtenances including: water, sewer, electric, telephone, gas lines and fire alarm connections, indicating whether overhead or underground, and the location of wells and septic systems;
k) Type and location of solid waste disposal facilities;
l) Location, elevation and layout of catch basin and other surface drainage features;
m) Location of all physical/natural features including: water bodies, watercourses, wetlands, vegetation/foliage lines, soil types, railroads, rock outcroppings and stone walls;
n) Dimensions and area of all property to be dedicated for public use of common ownership;
o) Location of 100 year flood hazard boundaries;
p) Date and permit numbers of all required state and federal permits.
q) Location of all buildings, wells and leach fields within one hundred and fifty (l50) feet of the parcel;
r) Dimensions, area and minimum setback requirements on all existing and proposed lots;
s) Proposed landscaping plan including size and type of plant material;
t) Pedestrian walks providing circulation through the site;
u) Location and size of proposed and existing signs, walls and fences;
v) Location and type of lighting for outdoor activities; and
w) Location, widths and purposes of any easements or rights-of-way.
x) Total on-site square footage of impervious surfaces.

E. Copies of the current deed, purchase and sale agreement, and copies of all easements, deed restrictions, rights-of-ways, or other encumbrances currently affecting the property. (Amended May 8, 2002)

7.03 Additional Application Submission Requirements - All Personal Wireless Service Facilities

A. General Filing Requirements

1) Written statement signed by the landowner and carrier that the lease between the carrier and the landowner of the subject property contains the following provisions:

   a) Landowner or carrier can enter into leases with other carriers for co-location.

2) A written and signed statement from the landowner and applicant that he/she agrees that the Town may enter the subject property to obtain RFR measurements, to ensure conformance with the FCC Guidelines, and to obtain noise measurements, all at the expense of the applicant, but not necessarily accompanied by, the applicant and/or landowner.

B. Location Plan Filing Requirements

1) A town-wide map showing the other existing personal wireless service facilities in the Town and outside the Town within one (1) mile of its corporate limits.

2) A town-wide map that shows all existing and reasonably foreseen or contemplated personal wireless service facilities operated by the carrier in the Town.

3) Proof by the carrier of adequate comprehensive general public liability insurance for the proposed personal wireless service facility that provides coverage for damage or injury to persons or property caused by the carrier or its facility.

C. Site Plans for All Personal Wireless Service Facilities Shall Indicate:

1) Outlines of all existing buildings, including their purpose (e.g. residential buildings, garages, accessory structures, etc.) on the subject property and within three hundred (300) feet from the subject property boundary on adjacent properties.

2) Proposed location of antenna(s), mount(s), and equipment shelter(s).

3) Proposed security barrier, indicating type and extent as well as point of controlled entry.

4) The proposed lease area for the personal wireless service facility.

5) Location and type of electrical and telephone service. Underground service shall be provided, unless waived by the Planning Board.

6) Location of all roads, public and private, on the subject property including driveways proposed to serve the personal wireless service facility and the type of surface proposed for the driveway.

7) Distances, at grade, from the proposed personal wireless service facility to each building shown on the site plan.

8) All proposed changes to the existing property, including but not limited to grading, vegetation removal, and temporary or permanent roads and driveways.

9) Representations, dimensioned and to scale, of the proposed mount(s), antennas, equipment shelters, cable runs, parking areas and any other construction or development attendant to the personal wireless service facility. (Amended January 7, 1998)

7.04 Additional Site Plan Submission Requirements - Ground Mounted Personal Wireless Service Facilities:

Excluding the reconstruction of existing facilities, the following shall be shown on a site plan for all ground mounted personal wireless service facilities, in addition to those items listed under Sections 7.02 and 7.03 of the Site Plan Review Regulations:

A. Tree cover by forest type and approximate height on the subject property and within three hundred (300) feet from the subject property boundary on adjacent properties.

B. Average tree canopy height within a one hundred and fifty (150) foot perimeter of the mount, security barrier, or designated clear area for access to equipment, whichever is greatest.

C. Any proposed landscape easement that includes the bearings and distances of the easement and general conditions of the easement.

(Amended January 7, 1998)

7.05 Application Submission Requirements-Recreational Playing Fields, Outdoor

A. Policy

It is the policy of the Durham Planning Board to support and encourage outdoor recreation, and to facilitate the safe and reasonable use of private lands for non-commercial outdoor playing fields. It is recognized that this use may raise issues including but not limited to noise, traffic and traffic safety, parking, fertilizer, pesticide and herbicide use. It is also recognized that, unlike many other uses, this use is primarily intended to create a public benefit, and; this use does not require a long-term or irreversible commitment of land or capital.

B. Waiver

The Planning Board may, in order to implement the policy expressed in 7.05 A. above, and exercising reasonable discretion, waive or modify any or all of the provisions of Section 7.02 above, with the exception of 7.02 A. -C.; Section 8; and Section 9.

C. Unique Requirements

Given the intermittent and seasonal nature of this use, and the variability that may characterize impacts on abutters and the community at large, the Planning Board may impose conditions controlling timing (hours of use, frequency of use, start, end and duration of season), intensity (number of participants, noise restrictions, whether practice sessions, organized games, tryouts, tournaments are allowed), in addition to any design standards and required improvements that may be authorized under Section 9 and deemed necessary by the Planning Board. (Amended May 15, 2002)

SECTION 8: Construction Guarantee

8.01. The applicant shall post an acceptable financial surety prior to final Site Plan approval by the Planning Board. The financial surety shall be in an amount sufficient to ensure the completion of all roads (public or private), water service, sewage disposal, drainage, landscaping and/or any other improvements required by the Town. The financial surety shall be effective for a period mutually agreed upon by the Planning Board and the applicant. (Amended July 15, 1998)

8.02. The financial surety shall be approved by the Town as to the form and type. The Town will accept cash, pass book savings in the Town's name, letter of

credit or a construction surety bond. At its discretion, the Planning Board may require approval of the construction guarantee by the Town Attorney. A sample Construction Guarantee contract is included as attachment 5. (Amended July 15, 1998)

8.03. The construction guarantee shall be released in phases as portions of the secured improvements or installations are final in accordance with the plan approved by the Board.

SECTION 9 - Design Standards and Required Improvements

9.01 General Requirements

A. Conformance to Applicable Laws, Rules and Regulations - In addition to the requirements established herein, all developments shall comply with the applicable provisions of the Zoning Ordinance, Subdivision Regulations, and all other applicable Town ordinances.

B. Self Imposed Restrictions - If the owner places restrictions on any of the land contained in the development greater than those required by the Zoning Ordinance or these regulations, such restrictions or reference thereto may be required to be indicated on the site plan, or the Planning Board may require that restrictive covenants be recorded with the Strafford County Registry of Deeds in form to be approved by the Board.

C. Specification References -
   1) Reference to State specifications shall mean Standard Specifications for Road and Bridge Construction of the New Hampshire Department of Transportation, approved and adopted 1992 as amended.

   2) Reference to Uniform Traffic Control Devices shall mean the Manual on Uniform Traffic Control Devices for Streets and Highways, published by the U.S. Department of Commerce, Bureau of Public Roads.

9.02 Streets and Access

A. Roads and/or driveways from development abutting the following main roads shall be spaced not less than 1,200 feet apart: Routes 4, 108, 155-A, Durham Point Road, Mill Road, Bennett Road, and Packers Falls Road. Where such spacing would cause undue hardship, the Board may modify this requirement. (For the purposes of these regulations Durham Point Road shall extend to the Newmarket Town line.)

B. All other roadway related regulations are contained in: Road Construction Regulations of the Town of Durham, New Hampshire, adopted by the Durham Planning Board

9.03 Stormwater Drainage *(Amended July 14, 2010)*

A. General Requirements - All developments shall provide adequate management of stormwater runoff and prevent the discharge of stormwater runoff from creating or contributing to a water quality impairment. All applications shall be accompanied by a completed Site Plan Review Checklist (provided in Attachment 6 of these regulations) to the Planning Board prior to consideration for review. Developments that disturb 10,000 or more square feet must submit to the Planning Board for review and approval, a Stormwater Management Plan (Plan) describing all proposed stormwater management system elements, practices, and associated designs, including all calculations and analyses of said designs. However, if the applicant submits an approved Alteration of Terrain (AOT) permit, there would be no need for the town requiring a Stormwater Management Plan. The applicant must still provide an operation and maintenance plan as provided for in (C) (5) below. The Planning Board reserves the right to require any development that disturbs less than 10,000 square feet to submit and then implement an approved Stormwater Management Plan (complete as described below or abbreviated) to prevent degradation of local water resources. All elements of the Plan must be designed/prepared by a New Hampshire Registered Professional Engineer in accordance with the Design Standards below. The Plan must contain the following parts and presented in the order listed below:

B. Stormwater Management Plan - Part I

1) An Existing Conditions Site Plan showing all pre-development surface water bodies and wetlands, drainage patterns, and watershed boundaries, buffer zones, topographic contours with minimum 2-foot intervals, scale bar, north arrow, title block with project name, applicant's name, and map and parcel number, designer's stamp and wetland scientist's stamp (if applicable), legend, locus plan, benchmarks, and appropriate notes with datum and other plan references, instructions, and detail descriptions. The Existing Conditions Site Plan shall be provided in hard copy (minimum 22-inch by 34-inch) at an appropriate scale in tens of feet per inch (maximum of 100 feet per inch) such that all important site and hydrologic features are easily recognized. Existing buildings, structures, pavement, utilities, and soils information with coding as HSG-A, B, C, or D shall be included on the Existing Conditions Site Plan. High Intensity

Soil Survey (HISS) mapping may be required per request by the Planning Board.

2) A Proposed Conditions Site Plan showing all proposed post-development temporary and permanent stormwater management system elements and erosion and sediment control BMPs and all important hydrologic features. The Proposed Conditions Site Plan must be at the same scale as the Existing Conditions Site Plan with consistent title block, plan features, and descriptors including but not limited to the following:
    a. Existing and proposed topographic contours (2-foot minimum contour interval; 1-foot contour intervals may be required for sites with limited relief and/or where proposed stormwater outfalls are located adjacent to buffer zones)
    b. Proposed areas of disturbance with total area of disturbance clearly labeled in square feet
    c. Existing and proposed buildings and structures
    d. Stormwater discharge locations keyed to drainage analyses
    e. Wells and sanitary protective radii
    f. Septic systems
    g. Plan references and notes (including sequence of soil disturbance)
    h. Proposed and existing public and private utilities
    i. Proposed project components to become property of or the responsibility of the Town shall be labeled as such
    j. Existing and proposed impervious surfaces and pavements with areas used to calculate EIA clearly identified and the square footage of each type identified and labeled.

3) Details of individual design elements shown on separate plan sheets following the Proposed Conditions Site Plan.

C. Stormwater Management Plan - Part II

1) Drainage Analysis that includes calculations comparing Pre- and Post-Development stormwater runoff rates (cubic feet per minute) and volumes (cubic feet) based on a 1-inch rainstorm, and the 2-year, 10-year, and 25-year 24-hour frequency storms. Calculations shall include, but not be limited to, the sizing of all structures and BMPs including of sizing of emergency overflow structures based on assessment of the 100-year 24-hour frequency storm discharge rate. Phased applications for the original parcel apply as though the development of the entire parcel were proposed in one application at one time.

2) Drainage Analysis Results Summary tabulated for each proposed outfall or catchment outlet point including runoff rates and volumes for each storm event analyzed above.

3) An Erosion and Sediment Control Plan for all proposed construction activities in accordance with the most current New Hampshire Stormwater Manual.

4) Copies of any additional permits or plans required for compliance with Environmental Protection Agency (EPA) and/or New Hampshire Department of Environmental Services (NHDES).

5) A comprehensive Operation and Maintenance Plan for long-term maintenance of all proposed stormwater management elements and BMPs including the proposed schedule of inspections and anticipated maintenance.

9.03.1 Design Standards

A. The Stormwater Management Plans submitted to the Planning Board shall meet the following minimum requirements:

1) Where applicable, the Plan must comply with the EPA Phase II Stormwater Rules and the Town's MS4 Stormwater Discharge Permit, as amended.

2) All proposed measures shall be in accordance with the NH Stormwater Management Manual volume (December 2008 or current revision) a copy of which is available from NHDES: des.nh.gov/organization/divisions/water/stormwater/manual.htm

3) Water Quality Protection: All aspects of the application shall be designed to protect the water quality of the Town of Durham's water bodies as follows:

a. No person shall locate, store, discharge, or permit the discharge of any treated, untreated, or inadequately treated liquid, gaseous, or solid materials of such nature, quantity, noxiousness, toxicity, or temperature that may run off, seep, percolate, or wash into surface or groundwaters so as to contaminate, pollute, harm, impair or contribute to an impairment of such waters.

b. All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials shall meet the standards of the New Hampshire Department of Environmental Services (NHDES).

c. All projects under review by the Planning Board of such magnitude as to require a stormwater permit from EPA or NHDES shall comply with the standards of EPA and/or NHDES AOT program, with respect to the export of total suspended solids and other pollutants.

4) Stormwater Management For New Development: All proposed stormwater management and treatment systems shall meet the following performance standards:

a. Existing surface waters, including lakes, ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools) shall be protected by the minimum buffer setback distances specified in the Zoning Ordinance. Stormwater and erosion and sediment control BMPs shall be located outside the specified buffer zone unless otherwise approved by the Planning Board. Alternatives to stream and wetland crossings that eliminate or minimize environmental impacts shall be considered whenever possible. When necessary, as determined by the Planning Board or their representative, stream and wetland crossings shall comply with state recommended design standards to minimize impacts to flow and enhance animal passage (see University of New Hampshire Stream Crossing Guidelines May 2009, as amended http://www.unh.edu/erg/stream_restoration/nh_stream_crossing_guidelines_unh_web_rev_2.pdf).

b. LID site planning and design strategies must be used to the MEP in order to reduce the generation of the stormwater runoff volume for both new and redevelopment projects. An applicant must document why LID strategies are not appropriate if not used to manage stormwater.

c. All stormwater treatment areas shall be planted with native plantings appropriate for the site conditions: grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to promote proper treatment of the proposed runoff.

d. All areas that receive rainfall runoff must be designed to drain within a maximum of 72 hours for vector control.

e. Salt storage areas shall be covered or located such that no direct untreated discharges to receiving waters are possible from the storage site. Snow storage areas shall be located such that no direct untreated discharges to receiving waters are possible from the storage site. Runoff from snow and salt storage areas shall enter treatment areas as specified above before being discharged to receiving waters or allowed to infiltrate into the groundwater.

f. Runoff shall be directed into recessed vegetated and landscape areas designed for treatment and/or filtration to the MEP to minimize Effective Impervious Cover (EIC) and reduce the need for irrigation systems.

g. The Plan shall make provisions to retain stormwater on the site by using the natural flow patterns of the site. Effort shall be made to utilize natural filtration and/or infiltration BMPs (i.e., bioretention areas, subsurface filtration/infiltration systems, ponds, swales, etc). Proof of such effort shall be provided to the Planning Board.

h. Measures shall be taken to control the post-development peak rate runoff so that it does not exceed pre-development runoff for the 2-year, 10-year and 25-year, 24-hour storm events. Similar measure shall be taken to control the post-development runoff volume to filtrate the WQv according to the following ratios of Hydrologic Soil Group (HSG) type versus infiltration rate multiplier: HSG-A: 1.0; HSG-B: 0.75; HSG-C: 0.4; HSG-D: 0.15. For sites where infiltration is limited or not practicable, the applicant must demonstrate that the project will not create or contribute to water quality impairment. Infiltration structures shall be in locations with the highest permeability on the site. Measures shall be taken to protect against on and off-site peak flow to prevent overloading of existing downstream facilities.

i. The biological and chemical properties of the receiving waters shall not be degraded by the stormwater runoff from the development site.

j. The design of the stormwater drainage system shall provide for the disposal of stormwater without flooding or functional impairment

to streets, adjacent properties, downstream properties, soils, or vegetation.

k. The design of the stormwater management systems shall take into account upstream and upgradient runoff that flows onto, over, or through the site to be developed or re-developed and provide for this contribution of runoff.

l. Appropriate erosion and sediment control measures shall be installed prior to any soil disturbance such that the area of disturbance shall be kept to a minimum. Disturbed areas shall be stabilized within thirty (30) days.

m. Measures shall be taken to control erosion within the project area. Sediment in runoff water shall be trapped and retained within the project area using approved measures. Wetland areas and surface waters shall be protected from sediment.

n. All temporary control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized prior to removal of temporary control measures.

o. Every effort shall be made to use pervious parking surfaces as an alternative to impervious asphalt or concrete for general and overflow parking areas. Pervious pavement shall be appropriately sited and designed for traffic and vehicle loading conditions.

p. Whenever practicable, native site vegetation shall be retained, protected, or supplemented. Any stripping of vegetation shall be done in a manner that minimizes soil erosion.

q. Whenever practicable, all subsurface filtration BMPs shall include perforated underdrains positioned a minimum of 8-inches above the bottom of the filter bed to prevent extended periods of saturated conditions.

5) Redevelopment Project Requirements: Because redevelopment may present a wide range of constraints and limitations, an evaluation of options may be proposed to work in conjunction with broader state watershed goals and local initiatives. Stormwater requirements for redevelopment 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 sites meeting the definition of a redevelopment project and having less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as other new development projects with the important distinction that the applicant can meet those requirements either on-site or at an approved off-site location, within the same watershed within the Town of Durham, provided the applicant satisfactorily demonstrates that impervious area reduction and LID strategies and BMPs have been implemented on-site to the MEP.

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

a. Implement measures onsite that result in an EIA 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

b. Implement other LID techniques onsite to the MEP to provide treatment for at least 50% of the redevelopment area; or

c. 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 applicant satisfactorily demonstrates that impervious area reduction, LID strategies, and/or onsite BMPs have been implemented to the MEP. An approved off-site location must be identified, the specific management measures identified, and an implementation schedule developed in accordance with local review. The applicant 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. To comply with local watershed objectives the mitigation site should be situated in the same subwatershed as the development and impact the same receiving water.

6) Responsibility for Installation and Construction: The applicant shall bear final responsibility for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations. Site development shall not

begin before the Stormwater Management Plan receives written approval by the Planning Board. Best Management Practices shall be installed as designed and scheduled as a condition of final approval of the plan.

7) Plan Approval and Review: The Planning Board shall approve the Stormwater Management Plan if it complies with the requirements of these regulations and other requirements as provided by law. At the discretion of the Planning Board, a technical review by a third party may be required of any stormwater management and erosion control plan prepared under these regulations. The technical review shall be performed by a qualified professional consultant, as determined by the Planning Board, and the expense of which shall be the full responsibility of the applicant.

8) Maintenance and Inspection:

   a. After final Planning Board approval and as a condition precedent thereto, the owner of record of the property shall cause notice of the requirements for maintenance pursuant to the stormwater management and erosion and sediment control plans, as approved by the Planning Board, to be recorded at the Registry of Deeds sufficient to provide notice to all persons that may acquire any property subject to the stormwater management and sediment control plans. See RSA 477:3-a. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers of the requirements for maintenance pursuant to the stormwater management and erosion and sediment control plans as approved by the Planning Board. The Planning Board may require routine inspections to insure compliance with the Stormwater Management, Groundwater Protection, Impervious Surfaces, and Erosion and Sedimentation Control sections of these regulations. Such inspections shall be performed by a designated agent with appropriate certifications at reasonable times to the landowner.

   b. If permission to inspect is denied by the landowner, the designated agent shall secure an administrative inspection warrant from the district or superior court under RSA 595-B.

9.03.2 - Reimbursement

The applicant shall reimburse the Town for the Planning Board's administrative expenses and costs of special investigation and the review of documents and other matters that may be required by particular applications. This includes, but is not limited to, review by consulting engineers or other consultants to assess the environmental impact, hydrological impact, ground water quality impact, traffic impact, or any other study deemed necessary by the Planning Board in order to make an informed decision."

9.03.3 Waivers & Exceptions

For reasons heretofore well demonstrated, the Planning Board may waive one or more of these regulations. The following activities are considered exempt from preparing and submitting stormwater management plans:

1. Agricultural practices located outside the wetland and surface water buffers
2. Road and parking lot resurfacing.

9.04 Water Supply

A. General Requirements - All developments in the state of New Hampshire shall make adequate provision for a water supply of potable water for domestic consumption and for water supply for fire protection purposes. All water supply systems and facilities shall be designed and stamped by a registered engineer.

B. Required Improvements
   1) The location of individual private wells shall comply with all standards of the New Hampshire Water Supply and Pollution Control Commission.

   2) A private central water system, serving two or more lots or users, shall conform with and meet all standards set for community water services as established by the New Hampshire Water Supply and Pollution Control Commission (WSPCC) even though the WSPCC may not invoke jurisdiction in all cases.

9.05 Sewerage

A. General Requirements - All developments shall make adequate provision for sanitary sewage disposal facilities. The facilities shall be designed and stamped

by a registered engineer. Sanitary sewage disposal shall be accomplished through the provision of individual waste disposal systems or a private central sewerage system.

B. Design Standards - Sanitary waste disposal may be accomplished by either of the following methods:

1) Individual disposal systems, the design and location of which shall be approved by the State of New Hampshire Water Supply and Pollution Control Commission. The systems shall be located on private property, no closer than seventy-five (75) horizontal feet to a watercourse, a waterbody, a wetland, or a well that is being used as a source of individual water supply.
2) A private central sewerage system, the design and location of which shall be approved by the State of New Hampshire Water Supply and Pollution Control Commission. Maintenance and operating costs of the system shall be borne by the developer.

9.06 Non-Municipal Utilities

A. General Requirements - The applicant is responsible for all coordination with utility companies to assure that non-municipal utilities are installed in accordance with plans approved by the Board pursuant to these regulations.

B. Design Standards - All utility facilities, including but not limited to electric power and telephone shall be located underground throughout the development. Whenever existing utility facilities are located above ground, they shall be removed and placed underground. Existing utilities which are located within public rights-of-way are exempted from this provision. The Board shall review and approve the location of all non-municipal utility lines.

9.07 Signs

A. General Requirements - Signs are intended for the identification of the use on the site on which they are located. Signs shall not be a hazard or nuisance by virtue of their location or illumination.

B. Design Standards - Sign size, type, location, height, and illumination shall conform to the requirements of Durham Zoning and Land Use Ordinance.

9.08 Preservation of Natural Features and Amenities

A. General Requirements

1) Grading and clearing should be minimized so as to avoid creating undue erosion or interruption of natural drainage ways. Particular attention should be given to natural features suitable as buffer strips between residential subdivisions abutting commercial or industrial areas. Similar natural features that provide buffers between lots, or sections of a development should be preserved to enhance privacy and attractiveness. Provision for clearing may be made for southerly exposure for solar access to dwellings or buildings.

2) Developers shall use construction methods which cause the least disturbance to the environment possible. No cut trees, stumps, debris, junk, rubbish, or other waste materials of any kind shall be buried in any land, or left or deposited on any lot or street at the time of issuance of a certificate of occupancy, and removal of same shall be required prior to issuance of any certificate of occupancy. Nor shall any debris be left or deposited in any area of development at the time of expiration of the performance bond or dedications of public improvements, whichever is sooner.

9.09 Special Flood Hazard Areas:

All site plan proposals governed by these regulations having lands identified as Special Flood Hazard Areas in the "Flood Insurance Study for the Town of Durham, N.H." together with the associated Flood Insurance Rate Maps and Flood boundary and Floodway maps of the Town of Durham shall meet the following requirements:

A. Site Plan proposals, including their utilities and drainage, shall be located and designed to be consistent with the need to minimize flood damage.

B. All public utilities and facilities, such as sewer, electrical and water systems shall be located and constructed to minimize or eliminate flood damage.

C. Adequate drainage shall be provided to reduce exposure to flood hazards.

1) New and replacement water systems (including on-site systems) shall be located, designed and constructed to minimize infiltration and avoid impairment.

2) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

D. Within the altered or relocated portion of any watercourse, the applicant shall submit to the Planning Board certification provided by a registered professional engineer assuring that the l00 year flood carrying capacity of the watercourse has been maintained.

E. All site plan proposals shall include l00-year flood elevation data.

9.10 Design Submittal Standards - All Personal Wireless Service Facilities

A. Brochures. Equipment brochures for the proposed personal wireless service facility such as manufacturer's specifications or trade journal reprints shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.

B. Materials. Materials of the proposed personal wireless service facility specified by generic type and specific treatment (e.g., anodized aluminum, stained wood, painted fiberglass, etc.). These shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.

C. Colors. Colors of the proposed personal wireless service facility represented by a color board showing actual colors proposed. Colors shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.

D. Dimensions. Dimensions of the personal wireless service facility specified for all three directions: height, width and breadth. These shall be provided for the antennas, mounts, equipment shelters and security barrier, if any.

E. Photographs. Appearance shown by at least two (2) photographic superimpositions of the personal wireless service facility within the subject property. The photographic superimpositions shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any, for the total height, width and breadth.

F. Lighting. If lighting of the site is proposed, the applicant shall submit a manufacturers computer-generated point-to-point printout, indicating the horizontal foot-candle levels at grade, within the property to be developed

and twenty-five (25) feet beyond the property lines. The printout shall indicate the locations and types of luminaries proposed.

G. Co-location. Carriers shall share personal wireless service facilities and sites where feasible and appropriate, thereby reducing the number of personal wireless service facilities that are stand-alone facilities.

1) All applicants for site plan review for a personal wireless service facility shall demonstrate a good faith effort to co-locate with other carriers. Such good faith effort includes contact with all the other carriers for personal wireless services operating in the Town of Durham or in adjoining or nearby jurisdictions.

2) If the applicant intends to co-locate or to permit co-location, drawings and studies which show the appearance and operation of the personal wireless service facility with maximum co-location shall be provided.

3) If the Planning Board approves co-location for a personal wireless service facility site, the site plan shall indicate how many facilities and of what type shall be permitted on that site. Facilities specified in the site plan approval shall require no further zoning approval, but shall require a Building Permit. However, the addition of any facilities not specified in the approved site plan shall require a new site plan.

(Amended January 7, 1998)

9.11 Noise Standards - All Personal Wireless Service Facilities:

The applicant shall provide a statement listing the existing and maximum future projected measurements of noise from the proposed personal wireless service facilities, measured in decibels Ldn (logarithmic scale, accounting for greater sensitivity at night). Such statement shall be certified and signed by an acoustical engineer, stating that noise measurements are accurate and meet the Noise Ordinance of the Town of Durham and such statements shall include the following:

A. Existing, or ambient: the measurements of existing noise.

B. Existing plus the proposed personal wireless service facilities: maximum estimate of noise from the proposed personal wireless service facility plus the existing noise environment.

C. Existing plus the proposed personal wireless service facilities plus cumulative: maximum estimate of noise from the proposed personal wireless service facility plus the maximum estimate of noise from the total

addition of co-located personal wireless service facilities plus the existing noise environment.

9.12 Radio Frequency Radiation (RFR) - All Personal Wireless Service Facilities:

The applicant shall provide a signed and stamped certificate by an RF Engineer stating that the maximum radio frequency radiation of the personal wireless service facility and the cumulative RFR of any existing personal wireless service facilities at the site will not exceed the FCC Guidelines. The FCC Guidelines shall be incorporated as part of this certification. (Amended January 7, 1998)

9.13 Environmental Filing Requirements - All Personal Wireless Service Facilities

A. The National Environmental Policy Act (NEPA) applies to all applications for personal wireless service facilities. NEPA is administered by the FCC via procedures adopted as Subpart 1, Section 1.1301 et seq. (47 CFR Ch. I). The FCC requires that an environmental assessment (EA) be filed with the FCC prior to beginning operations for any personal wireless service facility proposed in or involving any of the following:

1) Wilderness area.

2) Wildlife preserve.

3) Threatened or endangered species.

4) Historical site.

5) Native American religious site.

6) Floodplain.

7) Wetland.

8) High intensity white lights in residential neighborhoods.

9) Excessive radio frequency radiation exposure.

B. At the time of application filing, an EA that meets FCC requirements shall be submitted to the Town for each personal wireless service facility site that requires such an EA to be submitted to the FCC. In addition, a letter of concurrence substantiating the finding of the applicant for each of the NEPA checklist items shall be provided with the site plan application.

C. The applicant shall list the location, type, and amount (including trace elements) of any materials proposed for use within the personal wireless service facility that are considered hazardous by the federal, state, or county government, or by the Town of Durham.

(Amended January 7, 1998)

9.14 Structural Report for All Ground Mounted Personal Wireless Service Facilities: The applicant shall provide a report prepared by a licensed professional civil engineer describing the facility and specifying the maximum number and types of antennas the facility is designed to accommodate. The report shall bear the seal of the engineer that prepared the report.

(Amended January 7, 1998)

9.15 Visibility Standards for Ground Mounted Personal Wireless Service Facilities, Excluding Reconstruction of Existing Facilities

A. Sight Lines. Lines representing the sight line showing the viewpoint (point from which view is taken) and visible point (point being viewed) as described below:

1) Sight line representation. A sight line representation shall be drawn from any public road within three hundred (300) feet and the closest facade of each residential building (viewpoint) within three hundred (300) feet to the highest point (visible point) of the personal wireless service facility. The three hundred (300) foot measure shall be measured from the subject property boundary. Each sight line shall be depicted in profile, drawn at one inch equals forty (40) feet. The profiles shall show all intervening trees and buildings. In the event there is only one (or more) residential building within three hundred (300) feet, there shall be at least two sight lines from the closest habitable structures or public roads, if any.

2) Existing (before condition) photographs. Each sight line shall be illustrated by one (1) four-inch by six-inch or larger color photograph of what can currently be seen from any public road or residential building identified above.

3) Proposed (after condition). Each of the existing condition photographs shall have the proposed personal wireless service facility superimposed on it to show what will be seen from public roads and residences if the proposed personal wireless service facility is built.

B. Elevations. Siting elevations, or views at-grade from the north, south, east and west for a fifty (50) foot radius around the proposed personal wireless service facility plus from all existing public and private roads that serve

the subject property. Elevations shall be at either one-quarter inch equals one foot or one-eighth inch equals one foot scale and show the following:

1) Antennas, mounts and equipment shelter(s), with total elevation dimensions and AGL of the highest point.

2) Security barrier. If the security barrier will block views of the personal wireless service facility, the barrier drawing shall be cut away to show the view behind the barrier.

3) Any and all structures on the subject property.

4) Existing trees and shrubs at current height and proposed trees and shrubs at proposed height at time of installation, with approximate elevations dimensioned.

5) Grade changes, or cuts and fills, to be shown as original grade and new grade line, with two-foot contours above mean sea level.

C. Balloon Test. Within fourteen (14) days of the acceptance of the site plan application by the Planning Board, the applicant shall arrange for a balloon or crane test at the proposed site to illustrate the height of the proposed facility. The date, time and location of such test shall be advertised in a newspaper of general circulation in the Town at least ten (10) days prior to the test. (Amended January 7, 1998)

SECTION 10: Independent Studies and Investigations

10.01. The Planning Board reserves the right to require additional studies to determine the potential impact of the proposed site development. Studies may include, but are not limited to, Traffic Impact Analysis, Fiscal Impact Analysis, and Environmental Impact Analysis.

A. All Traffic Impact Analysis shall be presented in accordance with the "Strafford Regional Planning Commission's Guidelines for Traffic Impact Analysis 1986," incorporated into these regulations by reference. The Planning board reserves the right to retain the services of an outside agency for the purposes of reviewing any traffic impact analysis submitted.

B. All Fiscal Impact Analysis shall be presented in accordance with the "Strafford Regional Planning Commission's Guidelines for Fiscal Impact Analysis 1988," incorporated into these regulations by reference. The Planning board reserves the right to retain the services of an outside agency for the purposes of reviewing any fiscal impact analysis submitted.

C. The Environmental Impact Statement specifications will be dictated on a case by case basis. (Amended January 7, 1998)

10.02. Wherever, in the opinion of the Board, traffic generated by a development will adversely impact existing public streets, the Board may require improvements to be made to such streets and intersections in an effort to mitigate such impacts. (Amended January 7, 1998)

SECTION 11: Post Construction Requirements

11.01. All deeds covering land to be used for public purposes, easements, and right-of-ways over property to remain in private ownership, and rights of drainage across private property shall be submitted in a form satisfactory to the Town Attorney. (Amended January 7, 1998)

11.02. As-built construction drawings, plan and profile, of all infrastructure improvements at a scale of 1" to 20', including, but not limited to:

A. Underground Utilities (sewer lines, storm drains, water lines, electrical, phone, cable, natural gas lines, etc.)

B. Drainage ways, ditching, impoundments, swales, etc.

C. Road construction. (Amended January 7, 1998)

11.03. Maintenance Guarantee--a financial surety to guarantee that all site work was properly done shall be posted by the applicant with the Town. Such maintenance guarantee shall be in an amount of two percent of the estimated project cost and shall remain in force for two (2) years after site improvements are completed. If such repairs are needed and are not satisfactorily installed by the developer, then such guarantee shall be used to complete and/or install such improvements. (Amended January 7, 1998)

SECTION 12: Administration and Enforcement

12.01 Administration

These regulations shall be administered by the Planning Board. The enforcement of these regulations is vested in the Town Council.

12.02 Waivers

The requirements of the foregoing regulations may be waived when, in the opinion of the Board, specific circumstances surrounding a site plan application, or a condition of the land of such application, indicate that such waivers will insure that the purpose and intent of the Master Plan and these regulations will be properly carried out.

12.03 Penalties and Fines

Any violation of these regulations may be subject to a civil fine as provided in RSA 676:16 and 676:17, as amended. The Town Council and the Code Enforcement Officer are designated as the local authorities to institute appropriate action under the provisions of RSA 676:17.

SECTION 13: Conflicting Provisions

Where these regulations are in conflict with other local, state, or federal ordinances, the more stringent shall apply.

SECTION 14: Validity

If any section or part of section or paragraph shall be declared invalid or unconstitutional, it shall not be held to invalidate or impair the validity, force, or effect of any other section or sections or part of a section or paragraph of these regulations.

SECTION 15: Amendments

These regulations may be amended by the Planning Board following a public hearing on the proposed changes. Such changes shall not take effect until a copy of said changes, as approved by a majority of the Board, are filed with the Town Clerk.

The following attachments are incorporated into these regulations:

Attachment 1: Formal Application for Site Plan Review

Attachment 2: Request for Preapplication Review (optional)

Attachment 3: Notices

a) Design Review
b) Submission of Formal Application

Attachment 4: Notice of Decision

a) Approval

b) Disapproval

Attachment 5: Sample Construction Guarantee Contract.

SECTION 16: Modifications to Personal Wireless Service Facilities

16.01 A modification of a personal wireless service facility is considered equivalent to an application for a new personal wireless service facility and requires a site plan review when any of the following events apply:

A. The applicant and/or co-applicant wants to alter the terms of the site plan by changing the personal wireless service facility in one or more of the following ways:

1) Change in the number of facilities permitted on the site; or

2) Change in technology used for the personal wireless service facility that will affect the visible elements of the facility, or that would alter the amount(s) and/or type(s) of hazardous materials used at the facility.

B. The applicant and/or co-applicant wants to add any exterior visible equipment or additional height not specified in the approved site plan.

(Amended January 7, 1998)

Attachment 1

APPLICATION FOR SITE PLAN REVIEW

Note: This form and all required information must be filed at least 21 days before the date of the meeting at which it is to be submitted to the Board. Filing is to be done at the Planning Office, Durham Town Office Building or by mail to 15 Newmarket Road, Durham NH 03824.

1. Name, mailing address and telephone number of applicant

_____
_____
_____

2. Name, mailing address and telephone number of owner of record if other than applicant

_____
_____
_____

3. Location of Proposed Project _____
_____

Tax Map _____ Lot Number _____ Zoning District _____

4. Name of Proposed Project _____

5. Number of units for which approval is sought _____

6. Name, mailing address and telephone number of surveyor and/or agent

_____
_____
_____

7. Abutters: Attach a separate sheet listing the Durham Tax Map number, Lot number, name, and mailing address of all abutters, including those across a street, brook or stream. The list of abutters must also include any holders of conservation, preservation, or agricultural preservation restrictions in accordance with RSA 676:4(I)(d). Names should be those of current owners as recorded in the tax records five (5) days prior to the submission of this application. ***Note: Names submitted on the Request for Preapplication Review may not be current. No application shall be heard unless all abutters as described herein have been notified.***

8. Items on the attached Site Plan Review Application Submission Checklist

9. Payment of all applicable fees:

submittal fees	$_____
advertising/posting costs	_____
abutter notification (each)	_____
proposed road (per foot)	_____
administrative and technical review costs	
	_____
TOTAL	$_____

10 The applicant and/or owner or agent*, certifies that this application is correctly completed with all attachments and requirements, and that any additional costs for engineering or professional services incurred by the Planning Board or the Town of Durham, in the site plan review process of this property, shall be borne by the applicant and/or owner.

11 Within five (5) business days of submitting a formal application, the applicant shall meet with the Director of Planning and Community Development to discuss issues related to completeness and acceptance of the application. If this review discloses that all requirements specified on the Site Plan Application Checklist have not been met, the applicant will be notified in writing what specific items are still needed.

12 Prior to the next regularly scheduled meeting of the Planning Board, the applicant, at the discretion of the Director of Planning and Community Development, shall meet with the appropriate Department Heads of the Town of Durham to discuss the implications the application will have on the various Departments of the town.

13 If this application is determined by the Planning Staff to be complete, it will be placed on the Planning Board agenda on _____for acceptance.

***If the applicant is an agent of the owner, a separate signed letter from the owner of record is required which clearly states the authority of the agent or representative for this application. If the agent does not have the power of attorney of the owner, all documents shall be signed by the owner.**

"I hereby authorize the Durham Planning Board and its agents to access my land for the purpose of reviewing the proposed site plan, performing road inspections and any other inspections deemed necessary by the Board or its agents, to ensure conformance of the on-site improvements with the approved plan and all Town of Durham ordinances and regulations."

Date _____ ***Applicant, Owner, or Agent*** _____

Attachment 2

REQUEST FOR PREAPPLICATION REVIEW (OPTIONAL)

1. Name, mailing address and telephone number of applicant
   _____
   _____
   _____
2. Name, mailing address and telephone number of owner of record if other than applicant
   _____
   _____
   _____
3. Location of Proposed Development_____
   _____
4. City/Town of _____Tax Map _____ Lot Number _____
5. Type of development _____
6. Is this a request for _____Conceptual Consultation _____Design Review

Note: If this is a request for Design Review, the applicant and the public must be notified. (See Site Plan Review Regulation, Section 5.04.)

7. Abutters: Attach a separate sheet listing the Durham Tax Map, Lot number, Name and Mailing Address of all abutters, including those across a street, brook or stream. The list of abutters must also include any holders of conservation, preservation, or agricultural preservation restrictions in accordance with RSA 676:4(I)(d). Names should be those of current owners as recorded in the Tax Records five (5) days prior to the submission of this application.

Advertising Costs _____

Abutter Notification (each) _____

(Including applicant and/or owner)

_____ _____

Owner/Agent **Date**

File # _____

Attachment 3a

NOTICE OF DESIGN REVIEW

Planning Board, Town of Durham

Notice to Applicant: _____

_____

_____

Notice to Abutter: _____

_____

_____

Location of Proposal: _____

_____

Signed: _____

Chairman or Secretary

Durham Planning Board

Date:

_____

NOTE: The applicant has requested preapplication discussion with the Board concerning the above proposal. The posted agenda will list the proposal when it is to be discussed. No public hearing is required. No material is submitted. No decisions are made. You will be notified when, and/or if, a formal application is submitted for review.

File # _____

Attachment 3b

ABUTTER'S /LEGAL NOTICE

SUBMISSION OF FORMAL APPLICATION FOR

SITE PLAN REVIEW

Planning Board, Town of Durham
Date _____
Notice to Applicant: _____

_____

_____

Notice to Abutter: _____

_____

_____

Location of Proposed Site: _____

_____

Description of Proposed Development: _____

_____

Public meeting Date: _____

Public Meeting Time and Place: _____

This is a meeting to decide acceptance of the application **only,** no public comment will be solicited. If the Planning Board chooses to accept the application, the Board will schedule a site walk of the property and a Public Hearing. A separate notice of the Public Hearing will be sent and public comments will be solicited during the Public Hearing.

Signed: _____

Director of Planning, Zoning, and Code Enforcement

Date:

_____

NOTE: Abutters are invited to attend for their own benefit and information. They are not required by law to attend. Planning Board meetings are scheduled for the first and third Wednesdays of each month.

File # _____

Attachment 4a

NOTICE OF DECISION - APPROVAL

Planning Board, Town of Durham

You are hereby notified that the application of _____

to develop the site located on Tax Map _____, Lot # _____; with an address of _____ in the Town of Durham has been approved by majority vote of the members of the Planning Board on _____ with the following conditions:

_____
_____
_____
_____
_____
_____
_____
_____

_____

Chairman

Date:_____

File # _____

Attachment 4b

NOTICE OF DECISION - DISAPPROVAL

Planning Board, Town of Durham

You are hereby notified that the application of _____ for a site plan, located on Tax Map _____, Lot # _____; with an address of _____ in the Town of Durham has been disapproved by majority vote of the members of the Planning Board on _____ .

As stated in the Planning Board Minutes the motion to disapprove stated that the application was disapproved for the following reasons:

_____
_____
_____
_____
_____
_____
_____
_____
_____

_____
Chairman

Date:_____

File #_____

Attachment 5

*****SAMPLE*****

CONSTRUCTION GUARANTEE

KNOW ALL MEN BY THESE PRESENT THAT _____, _____ Street, _____NH, "Developer" of _____, is held and firmly bound unto the _____ Planning Board in the sum of _____ ($_____), for the payment of which Developer binds himself, his heirs, executors, and successors in interest and assigns by these present.

The Condition of this obligation is such that, if the Developer, his assigns or successors in interest, shall in all things, well and truly and properly perform and complete the following improvements and to be constructed on a Site Plan known as "_____," Tax Map_____, Lot(s)_____, to which conditional approval was granted by the Durham Planning Board on _____, 199__, then this obligation shall be void; otherwise to remain in full force.

Bond Improvements	Required Date of Final Completion	Amount of Bond Required
1.		
2.		
3.		
		_____
	Total:	$

Final Completion Date:_____

Signature of Developer:_____ Date:_____[1]

[1] This Construction Guarantee shall not be effective until a financial surety acceptable to the Town has been posted with the Town in the amount set forth above. Additionally, the Construction Guarantee shall not expire and will be available to the Town as security for the proper performance of the Guarantee until sixty (60) days following the final completion date.

F2 – Manchester, New Hampshire Stormwater Ordinance

An Ordinance

"Amending the Code of Ordinances of the City of Manchester by adding a new Chapter 54: Storm Water to Title V: Public Works."

CHAPTER 54: STORM WATER

Section

Storm Water Ordinance City of Manchester, NH

§ 54.01 PURPOSE.
The purpose of this chapter is to:

(A) Protect, maintain, and enhance the environment of the City of Manchester, New Hampshire and the public health, safety and the general welfare of the citizens of the city, by controlling discharges of pollutants to the city's storm water system and to maintain and improve the quality of the receiving waters into which the storm water outfalls flow, including, without limitation, lakes, rivers, streams, ponds, wetlands, and groundwater of the city.

(B) Enable the City of Manchester to comply with the National Pollution Discharge Elimination System permit (NPDES) and applicable regulations, 40 CFR §122.26 for storm water discharges.

(C) Allow the City of Manchester to exercise the powers granted by the State of New Hampshire through applicable statute to:

(1) Exercise general regulation over the planning, location, construction, and operation and maintenance of storm water facilities in the City, whether or not owned and operated by the City;

(2) Adopt any regulations deemed necessary to accomplish the purposes of this ordinance, including the adoption of a system of fees for services and permits;

(3) Establish standards to regulate the quantity of storm water discharged and to regulate storm water contaminants as may be necessary to protect water quality;

(4) Review and approve plans for storm water management in proposed subdivisions or commercial developments;

(5) Issue permits for storm water discharges, or for the construction, alteration, extension, or repair of storm water facilities;

(6) Suspend or revoke permits when it is determined that the permittee has violated any applicable ordinance, or condition of the permit;

(7) Regulate and prohibit discharges into storm water facilities of sanitary, industrial, or commercial sewage or waters that have otherwise been contaminated; and

(8) Expend funds to remediate or mitigate the detrimental effects of contaminated land or other sources of storm water contamination, whether public or private.

§54.02 DEFINITIONS.

For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

BEST MANAGEMENT PRACTICES. Physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution of water, that have been approved by the City of Manchester, and that have been incorporated by reference into the Storm Water Regulations as if fully set out therein. (See Section 6A of the Storm Water Regulations for recommended Best Management Practices manuals.)

COMBINED SEWER DRAINAGE SYSTEM. A single pipe conveyance system intended to receive both sewage and storm or surface water.

CONTAMINANT. Any physical, chemical, biological, or radiological substance or matter in water.

DEPARTMENT OF HIGHWAYS. The Highway Division of the City of Manchester.

DIRECTOR OF PUBLIC WORKS. The Chief Administrator of the Department of Highways who is authorized to assign Highway staff to oversee the implementation and enforcement of the Storm Water Regulations and the City of Manchester's Storm Water Ordinance.

DISCHARGE. Dispose, deposit, spill, pour, inject, seep, dump, leak or place by any means, or that which is disposed, deposited, spilled, poured, injected, seeped, dumped, leaked or placed by any means including any direct or indirect entry of any solid or liquid matter into the Municipal Separate Storm Sewer System.

ILLICIT CONNECTIONS. Illegal and/or unauthorized connections to the municipal separate storm water system whether or not such connections result in discharges into that system. "Illegal Connection" means either of the following:

(1) Any pipe, open channel, drain or conveyance, whether on the surface or subsurface, which allows an illicit discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system, regardless of whether such pipe, open channel, drain or conveyance has been previously allowed, permitted, or approved by an authorized enforcement agency; or

(2) Any pipe, open channel, drain or conveyance connected to the municipal separate storm sewer system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

ILLICIT DISCHARGE. Any discharge to the Municipal Separate Storm Sewer System that is not composed entirely of storm water and not specifically exempted under Section 2(J) of the Storm Water Regulations.

LAND DISTURBING ACTIVITY. Any activity on property that results in a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land-disturbing activities include. but are not limited to, development, re-development, demolition, construction, reconstruction, clearing, grading, filling and excavation.

MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4). The conveyances owned or operated by the municipality for the collection and transportation of storm water, including the roads and streets and their drainage systems, catch basins, curbs, gutters, ditches, man-made channels, and storm drains.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT. A permit issued pursuant to 33 USC Section 1342(b) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

PERSON. Any and all persons, including any individual, firm or association and any city or private corporation organized or existing under the laws of this or any other state or country.

POLLUTANT. Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; petroleum hydrocarbons; automotive fluids; cooking grease; detergents (biodegradable or otherwise); degreasers; cleaning chemicals; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects and accumulations, so that same may cause or contribute to pollution; sediment; floatables; pesticides, herbicides, and fertilizers; liquid and solid wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; concrete and cement; and noxious or offensive matter of any kind.

POLLUTION. The contamination or other alteration of any water's physical, chemical or biological properties by the addition of any constituent and includes but is not limited to, a change in temperature, taste, color, turbidity, or odor of such waters, or the discharge of any liquid, gaseous, solid, radioactive, or other substance into any such waters as will or is likely to create a nuisance or render such waters harmful, detrimental or injurious to the public health, safety, welfare, or environment, or to domestic,

commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

PREMISES. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

STATE WATERS. Any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, and other bodies of surface and subsurface water, natural or artificial, lying within or forming a part of the boundaries of the State of New Hampshire which are not entirely confined and retained completely upon the property of a single person.

STORM WATER. Storm water runoff, snow melt runoff, surface runoff, street wash waters related to street cleaning or maintenance, infiltration and drainage.

STORM WATER APPEALS COMMITTEE. A three-member committee consisting of a Highway Commissioner, an engineer from a private engineering firm and an engineer from the Department of Highways.

STORM WATER MANAGEMENT. The programs to maintain quality and quantity of storm water runoff to pre-development levels.

STORM WATER MANAGEMENT FACILITIES. The drainage structures, conduits, ditches, combined sewers, sewers, and all device appurtenances by means of which storm water is collected, transported, pumped, treated or disposed of.

STORM WATER MANAGEMENT PLAN. The set of drawings and other documents that comprise all the information and specifications for the programs, drainage systems, structures, Best Management Practices, concepts and techniques intended to maintain or restore quality and quantity of storm water runoff to pre-development levels.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP). A plan that clearly describes appropriate control measures that include a description of all pollution control measures (i.e., Best Management Practices) that will be implemented as part of the construction activity to control pollutants in storm water discharges and describes the interim and permanent stabilization practices for the site.

STORM WATER REGULATIONS. A supplement to the Storm Water Ordinance that includes additional conditions and requirements. Copies are available at the Department of Highways and the Office of the City Clerk.

STORM WATER RUNOFF. Flow on the surface of the ground, resulting from precipitation and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

STORM WATER UTILITY. The Department of Highways and its duly authorized agents created by ordinance of the City to administer the Storm Water Management Ordinance, and other Storm Water Regulations adopted by the City.

STRUCTURAL BEST MANAGEMENT PRACTICES. Devices that are constructed to provide control of storm water runoff.

STRUCTURAL STORM WATER CONTROL. A structural storm water management facility or device that controls storm water runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow.

§ 54.03 ADMINISTRATION.

The Director of the Department of Highways or his designee shall administer the provisions of this ordinance and is hereby authorized to promulgate and amend such regulations as may be necessary and convenient to effectuate the purposes and enforce the requirements of this ordinance.

§ 54.04 PROHIBITED DISCHARGES.

The specific prohibited discharges outlined in the Storm Water Regulations are not inclusive of all discharges prohibited by this ordinance and the Storm Water Regulations.

§ 54.05 PERMIT PROCEDURES AND REQUIREMENTS.

(A) *Permit Required* - No land owner or land operator shall begin any site work on any building(s), grading or other land development or any land disturbance activities (as outlined in §54.06) without first submitting a Notice of Intent (NOI) to EPA Washington. Owner must also have received acknowledgement, have a Department of Highways approved Storm Water Pollution Prevention Plan and meet the requirements of this ordinance.

(B) *General Waiver Requirement.* - Every applicant shall provide for storm water management as required by this ordinance and the Department of Highways Storm Water Regulations unless a written request is filed to waive this requirement. Requests to waive the Storm Water Management Program requirements shall be submitted to the Department of Highways for approval.

(C) *Application Requirements* - Unless specifically excluded by this ordinance, any landowner or operator desiring a permit for a land disturbance activity (as described in Section 4 of the Storm Water Regulations) shall secure required approvals through the City of Manchester's Planning Board and shall submit to the Department of Highways proof of NOI submission and a copy of the Storm Water Pollution Prevention

Plan**,** as approved by the Department of Highways, for related project before beginning any site clearing or construction.

§ 54.06 GENERAL PERMIT PROVISIONS.

(A) *Land Disturbance permits when required* - Every owner/operator will be required to obtain an EPA General Permit from the EPA through a Notice of Intent in the following cases:

(1) Land disturbing activity disturbs one (1) or more acres of land;

(2) Land disturbing activity of less than one (1) acre of land if such activity is part of a larger common plan of development that affects one (1) or more acres of land;

(3) Land disturbing activity of less than one (1) acre of land, if in the discretion of City of Manchester such activity poses a unique threat to water, or public health or safety;

(4) The creation and use of borrow pits (the excavation of soils from one area to be used in another area that would meet any of the criteria of 1, 2, or 3 above).

§ 54.07 WAIVERS.

Every applicant shall provide for Storm Water Management as required by the Storm Water Regulations, unless a written request is filed to waive this requirement. Requests to waive the Storm Water Management Program requirements shall be submitted to the Director of Public Works for approval and must meet the requirements of 40 CFR §122.26(g).

§ 54.08 INDUSTRIAL ACTIVITY DISCHARGES.

All operators of landfills, hazardous waste treatment, disposal, and recovery facilities and industrial facilities are subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) 42, USC § 11023, and industrial facilities that the City determines are contributing a pollutant load to the Municipal Separate Storm Sewer System, which are sources of storm water discharges associated with industrial activity shall comply with the requirements outlined in the City's Storm Water Regulations.

§ 54.09 ACCESS AND INSPECTION OF PROPERTIES AND FACILITIES.

(A) The representative of the Department of Highways shall be permitted to

enter and inspect properties and facilities at reasonable times as often as may be necessary to determine compliance with this ordinance.

(B) If a property or facility has security measures in force, which require proper identification and clearance before entry into its premises, the owner or operator shall make the necessary arrangements to allow access to representatives of the Department of Highways.

(C) The owner or operator shall allow the representative of the Department of Highways ready access to all parts of the premises for the purposes of inspection, sampling, photography, videotaping, examination and copying of any records that are required under the conditions of a National Pollutant Discharge Elimination System Permit to discharge storm water.

(D) The Department of Highways shall have the right to set up on any property or facility such devices as are necessary in the opinion of the Department of Highways to conduct monitoring and/or sampling of flow discharges.

(E) The Department of Highways may require the owner or operator to install monitoring equipment and perform monitoring as necessary, and make the monitoring data available to the Department of Highways. This sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the owner or operator at his/her own expense. All devices used to measure flow and quality shall be calibrated to ensure their accuracy.

(F) Any temporary or permanent obstruction to safe and easy access to the property or facility to be inspected and/or sampled shall be promptly removed by the owner or operator at the written or oral request of the Department of Highways and shall not be replaced. The costs of clearing such access shall be borne by the owner or operator.

(G) Unreasonable delays in allowing the Department of Highways access to a facility shall be a violation of this ordinance.

(H) If the Department of Highways has been refused access to any part of the premises from which storm water is discharged, and the Department of Highways is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is an need to inspect and/or sample as part of a routine inspection and sampling program designated to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, environment and welfare of the community, then the Department of Highways may seek issuance of a search warrant from any court of competent jurisdiction.

§ 54.10 NOTIFICATION OF ACCIDENTAL DISCHARGES AND SPILLS.

Notwithstanding other requirements of law, as soon as any person responsible for a facility, activity or operation, or responsible for emergency response for a facility, activity or operation has information of any known or suspected release of pollutants or non-storm water discharges from that facility or operation which are resulting or may result in illicit discharges or pollutants discharging into storm water, the City of Manchester's separate storm sewer system, State Waters, or Waters of the U.S., said person shall immediately notify the Department of Highways and take all necessary steps to ensure the discovery, containment, and cleanup of such release so as to minimize the effects of the discharge.

§ 54.11 VIOLATIONS, ENFORCEMENT AND PENALTIES.

(A) It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of the City's Storm Water Ordinance or the Storm Water Regulations. Any person who has violated or continues to violate these provisions may be subject to the enforcement actions outlined in this section or may be restrained by injunction or otherwise abated in a manner provided by law. In the event the violation constitutes an immediate danger to public health or public safety, the Department of Highways is authorized to enter upon the subject private property, without giving prior notice, to take any and all measures necessary to abate the violation and/or restore the property. The Department of Highways is authorized to seek costs of the abatement as outlined in §54.11(F).

(B) Whenever the Department of Highways finds that a violation of this ordinance or the Regulations has occurred, the Public Works Director or designee may order compliance by written Notice of Violation. The Notice of Violation shall contain:

(1) The name and address of the alleged violator;

(2) The address when available or a description of the building, structure or land upon which the violation is occurring, or has occurred;

(3) A statement specifying the nature of the violation;

(4) A description of the remedial measures necessary to restore compliance with this ordinance and a time schedule for the completion of such remedial action;

(5) A statement of the penalty or penalties that may be assessed against the person to whom the notice of violation is directed; and,

(6) A statement that the determination of violation may be appealed to the Department of Highways Storm Water Appeals Committee by filing a written notice of appeal within five (5) days of service of notice of violation.

(C) Such notice may require without limitation:

(1) The performance of monitoring, analyses, and reporting;

(2) The elimination of illicit discharges and illegal connections;

(3) That violating discharges, practices, or operations shall cease and desist;

(4) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property;

(5) Payment of costs to cover administrative and abatement costs; and,

(6) The implementation of pollution prevention practices.

(D) *Appeal of Notice of Violation* - Any person receiving a Notice of Violation may appeal the determination of the Department of Highways. The appeal must be received within five (5) days from the date of the Notice of Violation. Filing of an appeal does not relieve the owner from full compliance with the remedial actions outlined in the Notice of Violation. Hearing on the appeal before the Department of Highways, Storm Water Appeals Committee shall take place within thirty (30) days from the date of receipt of the appeal. The decision of the Storm Water Appeals Committee shall be final.

(E) *Enforcement Measures After Appeal* - If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, then representatives of the Department of Highways may enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

(F) *Costs of Abatement of the Violation* - Within ten (10) days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the assessment or to the amount of the assessment within fifteen (15) days of such notice. If the amount due is not paid within thirty (30) days after receipt of the notice, or if an appeal is taken, within five (5) days after a decision on said appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. Any person violating any of the provisions of this article shall become liable to the City of Manchester by reason of such violation.

(G) *Civil Penalties* - In the event the alleged violator fails to take the remedial

measures set forth in the notice of violation or otherwise fails to cure the violations described therein within two (2) days, or such greater period as the Department of Highways shall deem appropriate, after the Director of Public Works or designee has taken one or more of the actions described above, the Public Works Director may impose a penalty not to exceed $1,000 (depending on the severity of the violation) for each day the violation remains unremedied after receipt of the notice of violation.

(H) *Criminal Penalties* - For violations of the Storm Water Ordinance or the Rules & Regulations, the Director of Public Works may issue a citation to the alleged violator requiring such person to appear in court to answer charges for such violation. Upon conviction, such person shall be punished by a fine not to exceed $1,000 for each day the violation has occurred, or imprisonment for up to sixty (60) days or both. Each act of violation and each day upon which any violation shall occur shall constitute a separate offense.

(I) *Violations Deemed a Public Nuisance* – In addition to the enforcement process and penalties provided in this ordinance any threat to public health, safety, welfare and environment and is declared and deemed a nuisance, may be abated by injunctive or other equitable relief as provided by law.

(J) *Remedies Not Exclusive* - The remedies listed in this ordinance and the Regulations are not exclusive of any other remedies available under any applicable Federal, State or local law and the City of Manchester may seek cumulative remedies. The City of Manchester may recover attorney's fees, court costs, and other expenses associated with enforcement of this ordinance, including sampling and monitoring expenses.

§ 54. 12 ELIGIBILITY.

(A) *Permit Eligibility* - Permit eligibility is limited to discharges from "large" and "small" construction activity or as otherwise designated by the EPA. This general permit contains eligibility restrictions, as well a permit conditions and requirements. Permittee may have to take certain actions to be eligible for coverage under this permit. In such cases, permittee must continue to satisfy those eligibility provisions to maintain permit authorization. If permittee does not meet the requirements that are pre-condition to eligibility, then the resulting discharges constitute unpermitted discharges. By contrast, if permittee does not comply with the requirements of the general permit, permittee may be in violation of the general permit for their otherwise eligible discharges.

(B) Combined Sewer Drainage Systems Discharges from "large" and "small" construction activity or as otherwise designated by the EPA that flow into a combined sewer system are not covered by the EPA's Phase II Storm Water Program. A Notice of Intent does not need to be submitted to the EPA nor does the owner/operator have to receive acknowledgement from the EPA prior to the start of construction activity.

Storm Water Ordinance City of Manchester, NH

The City of Manchester is requiring in these instances that all other conditions as outlined in this ordinance or the Regulations shall apply to all construction activity as defined in §54.06 with the exception of submitting the Notice of Intent to EPA Washington. The requirements for determination of no impact status as outlined in the Endangered Species Act and Historic Preservation Act along with the completion of a Storm Water Pollution Prevention Plan as outlined in the Notice of Intent submission is still a mandatory submission to the City of Manchester and must follow the conditions as outlined in the EPA's Notice of Intent.

F3 – South Burlington, VT Ordinance Regulating the Use of Public and Private Sanitary Sewerage and Stormwater Systems

City of South Burlington

Ordinance Regulating the Use of

Public and Private Sanitary Sewerage and Stormwater Systems

As Amended March 21, 2005

City of South Burlington
Ordinance Regulating the Use of
Public and Private Sanitary Sewerage and Stormwater Systems

The South Burlington City Council hereby ordains:

The South Burlington Ordinance Regulating the Use of
Public and Private Sanitary Sewerage Systems is amended as follows:

ARTICLE I - GENERAL

SECTION 1. Definitions

Unless the context specifically indicates otherwise, the meaning of terms and abbreviations used in this ordinance shall be as follows:

"Authorized Person" shall mean the City Manager, Stormwater Superintendent, Wastewater Superintendent and such other persons as they specifically appoint or authorize to perform duties for the Stormwater Services Department or Water Pollution Control Department.

"Best Management Practices (BMPs)" shall mean schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to the stormwater system or waters of the State of Vermont or the United States. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

"BOD" (denoting Biochemical Oxygen Demand) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20oC expressed in milligrams per liter.

"Building Drain" shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer. The building drain extends five feet beyond the outer face of the building wall.

"Building Sewer" shall mean that part of the sewage system which receives the sewage from the building drain and conveys it to the nearest end of the house connection unless a house connection is not available, whereby the building sewer shall be extended to the nearest available "Y" branch on the main sanitary sewer.

"Change or Alter" shall mean an act done which will result in a direct or indirect

impact on the contribution of stormwater into the public stormwater system.

"City Manager" shall mean the City Manager of the City of South Burlington, or his authorized deputy, agent, or representative.

“Clean Water Act” shall mean the federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

"Clerk" shall mean the City Clerk of the City of South Burlington.

"Combined Sewer" shall mean a sewer receiving both stormwater runoff and sewage.

“Construction Activity” shall mean activities including, but not limited to clearing and grubbing, grading, excavating, and demolition.

"Connection Fee" shall mean a fee imposed on applicants for the municipality's cost of performing, supplying materials, supervising, inspecting and administering a connection to the sewage system including any necessary sewer service extension, upgrading sewers or for any portion of these activities.

“Credit” shall mean an ongoing reduction in the stormwater user fee for certain identified and approved qualifying and ongoing private actions or activities that either reduce the potential impact of increased stormwater discharges that result from development of a property.

"Department" shall mean the Vermont Department of Environmental Conservation.

“Developed Property” shall mean any property that is altered from a natural state by construction or installation of more than five hundred (500) square feet of impervious surface.

"Developer" shall mean individual, corporation, association, or other organization engaged in land development or building construction.

"Development" shall mean the construction of improvements on a tract of land for any purpose, including, but not limited to, residential, commercial, industrial, manufacturing, farming, educational, medical, charitable, civic, recreational, and religious uses.

“Director” shall mean the Director of Planning and Zoning for the City.

"Discharge Permit" shall mean a permit issued by the Department pursuant to

authority granted in 10 V.S.A., Chapter 47.

"Garbage" shall mean solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage, and sale of produce.

"Hazardous Materials" shall mean any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

"Health Officer" shall mean the legally designated Health Officer or Deputy Health Officer of the City of South Burlington, Vermont.

"House Connection" shall mean that part of the sewage system that runs from the main sanitary sewer to the property line and includes all necessary fittings.

"Impervious Surface" shall mean those manmade surfaces, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways, sidewalks, walkways, compacted gravel and soil surfaces, and awnings and other permanent fabric or plastic coverings, from which precipitation runs off rather than infiltrates.

"Illicit Discharge" shall mean any direct or indirect non-stormwater discharge to the stormwater system.

"Industrial Activity" shall mean activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

"Industrial Wastes" shall mean the liquid wastes from an industrial manufacturing process, trade, or business. Industrial wastes do not include sanitary sewage.

"Main Sanitary Sewer" shall mean the sewers laid longitudinally along the center line or other part of the streets or other rights-of-way and which all owners or abutting properties have equal rights and which is controlled by public authority.

"National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit" shall mean a permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

"Natural Outlet" shall mean any outlet into a watercourse, pond, ditch, lake, or other body of surface or groundwater.

"Non Single Family Residence" (NSFR) shall mean all types of developed property in the City except single family residences.

"Non-Stormwater Discharge" shall mean any discharge to the stormwater system that is not composed entirely of stormwater or such other waters or materials as are specifically authorized herein. It shall also include placing or depositing any hazardous material or pollutant in the stormwater system.

"On-Site Sewage Treatment and Disposal System" means a septic tank and leaching field system utilizing natural soil to treat and disperse sewage in such a manner as to protect public health, and both groundwater and surface water from contamination.

"Owner" shall mean any person, who owns or possess any property connected to or served by the public sanitary or stormwater system or proposes to connect to the public sanitary or stormwater system.

"Person" shall means any individual, firm, company, association, society, corporation, institution, partnership, governmental entity, group or other entity.

"pH" shall mean the logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.

"Private Sewage System or Facilities" shall mean all facilities for collecting, pumping, treating, and disposing of sewage that is not under the control of nor operated by the City of South Burlington.

"Properly Shredded Garbage" shall mean the wastes from the preparation, cooking, and dispensing of food that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half (½) inch (1.27 centimeters) in any dimension.

"Public Sewage System or Facilities" shall mean all facilities for collecting, pumping, treating and disposing of sewage and is controlled and operated by the City of South Burlington.

"Public Stormwater System" shall mean all elements of the stormwater system located in the City of South Burlington that are controlled and operated by the City of South Burlington or that carry water that drains from any public property, including

street rights-of-way.

“Pollutant” shall mean any introduced substance which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

"Sanitary Sewer" shall mean a sewer which carries sewage and to which storm, surface, and groundwater are not intentionally admitted.

"Secretary" shall mean the Secretary of the Agency of Natural Resources, State of Vermont or his/her representatives.

"Sewage" (or “Wastewater”) shall mean a combination of the water-carried wastes from residences, business buildings, institutions, and industrial establishments, together with such ground, surface, and stormwater as may be present.

"Sewage and Stormwater Commissioners (or “Commissioners", or “BOARD”) shall mean members of the City Council acting as a Board of Sewage and Stormwater Commissioners under 24 V.S.A., Section 3614.

"Sewage Treatment Plant" shall mean any arrangement of devices and structures used for treating sewage.

"Sewer" shall mean a pipe, culvert, ditch, swale or other conduit for carrying sewage or stormwater.

"Shall" is mandatory; "may" is permissive.

“Single Family Residence” (SFR) shall mean detached single family homes, duplexes, and triplexes.

"Slug" shall mean any discharge of water, sewage, or industrial waste which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation.

"Storm Drain" (sometimes termed "storm sewer") shall mean a sewer intended to carry only stormwater and surface waters.

"Stormwater" shall mean excess water from rainfall and snow melt that does not evaporate or penetrate into the ground, which flows overland and is collected and transported to waters of the State of Vermont or the United States by the stormwater system, together with any material that becomes dissolved or suspended in such water during its overland flow before entering the stormwater system.

"Stormwater Appeal Board" shall be made up of the City Manager, Public Works Director, and a third person appointed by the City Council.

"Stormwater Discharge" shall mean any stormwater that is transported, naturally or otherwise, from a developed property to the public stormwater system.

"Stormwater Pollution Prevention Plan" shall mean a document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater systems, and/or waters of the State of Vermont or the United States.

"Stormwater Services Division" shall mean that City department responsible for construction, operation and maintenance of the public stormwater system.

"Stormwater System" shall include natural and man-made drainage structures, conveyances, storm drains, catch basins, and any other appurtenant device or structure where stormwater is collected, transported, pumped, treated, or disposed of.

"Stormwater Superintendent" shall mean that employee of the City of South Burlington who shall be designated from time to time by the City Manager to oversee the Stormwater Services Division.

"Subdivision" shall mean a tract of land, owned or controlled by a person as defined herein, which has been partitioned or is intended to be divided for the purpose of sale or lease into two (2) or more lots. The dividing of a parcel of land by sale, gift, lease, mortgage foreclosure, court ordered partition or filing of a plot plan on the town records where the act of division creates one or more parcels of land of less than 10 acres in area, but excluding leases subject to the provisions of Chapter 153 of Title 10 relating tomobile homes. Subdivision shall be deemed to have occurred on the conveyance of the first lot or the filing of a plot plan on the town records, whichever shall first occur; or the commencement of building development with intent to subdivide, as defined in subsection (1) of this section, such that the building development will be located upon a parcel of land less than 10 acres in size.

"Subsurface Sewage Disposal System" shall mean any sewage treatment system whereby the tank or plant effluent is leached into the ground by subsurface disposal.

"Suspended Solids" shall mean solids that either float on the surface of, or are in suspension in water, sewage, or other liquids, and which are removable by laboratory filtering or use of BMPs.

"Undeveloped Property" shall mean any property that exists in a natural state with no more than five hundred (500) square feet of impervious surface.

"Wastewater Superintendent" shall mean that employee of the City of South Burlington who shall be designated from time to time by the City Manager to oversee the Water Pollution Control Department.

"Watercourse" shall mean a channel in which a flow of water occurs, either continuously or intermittently.

"Water Pollution Control Department" shall mean that City department responsible for construction, operation and maintenance of the sewage works.

SECTION 2. Abbreviations:

ANSI shall mean American National Standards Institute.

ASME shall mean American Society of Mechanical Engineers.

ASTM shall mean American Society for Testing and Materials.

AWWA shall mean American Water Works Association.

NPC shall mean National Plumbing Code.

CS shall mean Commercial Standards.

WPCF shall mean Water Pollution Control Federation.

WEF shall mean Water Environment Federation.

ppm shall mean parts per million.

mg/l shall mean milligrams per liter.

Degrees F shall mean degrees Fahrenheit.

Degrees C shall mean degrees Centigrade.

cm. shall mean centimeter.

m. shall mean meter.

sq.m. shall mean square meters.

l. shall mean liters.

kg. shall mean kilograms.

ARTICLE II - SANITARY SEWER SYSTEM

SECTION 1. Use of Public Sanitary Sewer System Required

(a) It shall be unlawful for any person to place, deposit, or permit to be deposited on public or private property within the City of South Burlington, or in any area under the jurisdiction of said City, any human or animal excrement, garbage, or other objectionable waste.

(b) It shall be unlawful to discharge to any natural outlet within the City of South Burlington, or in any area under the jurisdiction of said City, any sewage or other polluted waters, except where suitable treatment has been provided in accordance with provisions of this Ordinance.

(c) Except as hereinafter provided, it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, leach field or other facility intended or used for the disposal of sewage.

(d) The owners of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the City and abutting on any street, alley, or right-of-way in which there is located a public sanitary or combined sewer of the City, is hereby required at his expense to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this Ordinance, within one hundred and eighty (180) days after date of official notice to do so, unless specifically exempted from this provision by the City Council.

SECTION 2. Private Sewage Disposal

(a) Where a public sanitary or combined sewer is not available under the provisions of Section 1, paragraph (d), the building sewer shall be connected to a private

sewage disposal system complying with the provisions of this Section 2.

(b) Before commencement of construction of a private sewage disposal system the owner shall first obtain a written permit signed by the City Manager. The application for such permit shall be made on a form furnished by the City, which the applicant shall supplement by any plans, specifications, and other information as are deemed necessary by the City Manager. A permit and inspection fee of $25.00 shall be paid to the City at the time the application is filed.

(c) A permit for a private sewage disposal system shall not become effective until the installation is completed to the satisfaction of the City Manager. He shall be allowed to inspect the work at any stage of construction and, in any event, the applicant for the permit shall notify the City Manager when the work is ready for final inspection and before any underground portions are covered. The inspection shall be made within 24 hours of the receipt of notice by the City Manager, excluding Saturday, Sunday, and holidays.

(d) The type, capacities, location, and layout of a private sewage disposal system shall comply with all recommendations of the Vermont Health Regulations, Chapter 5, Sanitary Engineering, Sub Chapter 10 Wastewater Treatment and Disposal, Individual on-site systems. No septic tank or cesspool shall be permitted to discharge to any natural outlet. Amended 5/5/92.

(e) At such time as a public sewer becomes available to a property served by a private sewage disposal system, as provided in Section 2, paragraph (d), a direct connection shall be made to the public sewer in compliance with this Ordinance, and any septic tanks, cesspools, and similar private sewage thoroughly and properly cleaned, disinfected, and filled in or removed according to good sanitation practice and under the inspection and direction of the City Manager or his representative.

(f) The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to the City.

(g) No statement contained in this Section 2 shall be construed to interfere with any additional requirements that may be imposed by the Health Officer.

SECTION 3. Building Sewers and Connections

(a) No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Wastewater Superintendent. Any person proposing a new discharge into the system or a substantial change in the volume or character of pollutants that are being discharged into the system, shall notify the

Wastewater Superintendent at least 45 days prior to the proposed change or connection. No such change or connection shall be made without written approval from the Wastewater Superintendent, issued in accordance with Article III of this Ordinance.

(b) There shall be three (3) classes of building sewer permits: (i) for residential, (ii) for commercial service, and (iii) for service to establishments producing industrial wastes. In each case, the owner or the owner's agent shall make application on a form furnished by the City. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Wastewater Superintendent. The City Council may establish fees for review and issuance of permits and approvals, inspections and connections.

(c) All costs and expense incident to the installation, connection, maintenance and repair of the building sewer shall be borne by the owner. The owner shall indemnify the City from any loss or damage that may directly or indirectly be occasioned by the installation, connection, maintenance, and repair of the building sewer.

(d) A separate and independent building sewer shall be provided for every building; except where one building stands at the rear of another or on an interior lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, court, yard, or driveway, in which case the building sewer from the front building may be extended to the rear building and the whole considered as one building sewer. Use of private sewers which accept and convey flow from more than one building may not be used except when found, on examination and test by the City, to be in satisfactory condition and meeting all requirements of this Ordinance. The burden of proof and all expenses incurred by the City to determine the condition and adequacy of the private sewer shall be borne by the Owner of said private sewer.

(e) The City may require the Owner of a project or developer to install a water meter so recorded flow can be used to determine the yearly wastewater charge. Water saving fixtures or equalization tanks may be required by the City for projects/buildings and developments connecting to the sewer system.

(f) Old building sewers may be used in connection with new buildings only when they are found, on examination and test by the Wastewater Superintendent, to meet all requirements of this Ordinance.

(g) The size, slope, location, alignment, materials of construction, of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing, and backfilling the trench, shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City and shall also conform to the rules and requirements of the City Water Pollution Control Department and the State of Vermont. In the absence of code provisions or in amplification thereof,

the materials and procedures set forth in appropriate specifications of the ASTM and the latest edition of the WPCF Manual of Practice No. 9 shall apply.

(h) Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. No building sewer shall be laid parallel to or within three (3) feet (91.4 cm) of any bearing wall which might thereby be weakened. The depth shall be sufficient to afford protection from frost. The building sewer shall be laid at uniform grade in the direction from the main sewer to the building and in a straight alignment insofar as possible. Change in direction shall be made only with properly curved pipe and fittings with suitable clean-outs or flush holes as described in sub-section (r) of this Article. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage to be carried by such sewer shall be lifted by an approved artificial means and discharged to the building sewer. Such lifting devices shall be located outside the building foundation and have no access or ventilation through the building.

(i) No person shall make connection of roof downspouts, exterior and interior foundation drains, areaway drains, basement sumps or other sources of surface runoff or groundwater to a building sewer or building drain which in turn is connected directly or indirectly to a public sanitary sewer. All such connections which exist shall be disconnected by the Owner, at his expense within thirty (30) days upon receipt of notification by the City.

(j) The connection of the building sewer into the public sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City and the State of Vermont, and shall also conform to the rules and requirements of the Water Pollution Control Department, or the procedures set forth in appropriate specifications of the ASTM and the latest edition of the WPCF Manual of Practice No. 9. All such connections shall be made gas tight and water tight. Any deviation from the prescribed procedures and materials must be approved by the Wastewater Superintendent before installation.

(k) Prior to any connection to the house connection "Y" or to the main sewer, the City shall be given two working days notice in order that they may supervise such work. If the City has not been properly notified, they may require the completed work to be uncovered for examination, at the Owner's expense.

(l) The diameter of the building sewer shall not be less than four (4) inches (10.2 cm). The building sewer shall be laid on a uniform grade, wherever practicable, in a straight alignment, of at least one-fourth (1/4) of an inch per foot (2%). Where, in special cases, a minimum grade of one-fourth (1/4) inch per foot cannot be maintained, a grade of one-eighth (1/8) inch per foot (1%) may be permitted, but only after the City gives their written approval for the specific connection.

(m) When installing the building sewer, the trenches shall be dug in a careful manner and properly sheathed where required. The excavated materials shall be placed in a separate pile from road materials and shall be piled in a compact heap so placed as to cause the least possible inconvenience to the public. Proper barricades and lights must be maintained around the trench to guard against accidents.

(n) In backfilling, the material under, around and for two (2) feet (61 cm) immediately over the pipe shall be selected so it contains no stones capable of damaging the installation. This must be carefully tamped, the balance of the trench to be backfilled in a workmanlike manner, tamping and filling in eight (8) inch (20.3 cm) layers so as to avoid excessive settlement. When the trench has been filled to the proper height, the road material is to be replaced and heavily tamped or rolled.

(o) Where the trench is excavated in rock, the rock must be carefully excavated to a depth of six (6) inches (15.2 cm) below the bottom of the sewer and the trench brought to the proper elevation with gravel or other material satisfactory to the City. The remainder of the trench must be backfilled with suitable material as described in sub-section (n) of this Article.

(p) Where subsurface-soil conditions warrant, special precautions must be taken as may be directed by the City. In quicksand, all pipes must be laid out on pressure treated planking two (2) inches (5.1 cm) thick by at least six (6) inches (15.2 cm) wide.

(q) The connection of the building sewer to the main sewer shall be made at the house connection at the property line or, if no house connection exists, connection shall be made at the nearest available "Y" connection on the main sewer. The City will designate the position of the end of the house connection at the property line or the "Y" connection on the main sewer, whichever is appropriate. If it becomes necessary to cut into the main sewer, when no other source of connection is available, then such connection shall be made as directed by and under the supervision of the City. The dead-ends of all pipes not immediately connected with the house plumbing system must be securely closed by a water-tight cover of imperishable material and properly marked and located.

(r) The use of clean-outs on the building sewer shall be made by installing a "Y" and one-eighth (1/8) bends. The clean-outs shall ordinarily be installed at the point of connection between the building sewer and the outside part of the house plumbing system, at all curves on the building sewer and on the straight part of the house sewer to the main sewer. The clean-out shall be brought up from the building sewer to four (4) inches (10.2 cm) below ground level and properly capped. Locations of all clean-outs shall be recorded and turned over to the City. Where the distance from the building to

the point of connection at the main sewer is less than fifty (50) feet (15.2 m), at least one (1) clean-out twenty (20) feet (6.1 m) from the house shall be provided. Clean-outs shall be of the same diameter as the building sewer.

(s) Before any portion of an existing building sewer or the house plumbing system outside of the building is connected to the main sewer, the Owner shall prove, to the satisfaction of the City, that it is clean and conforms in every respect to this Ordinance and all joints are gas tight and water tight.

(t) Where pipe is installed for building sewers, such work shall be performed by a licensed plumber.

(u) The City shall apply appropriate tests to the pipes. The plumber and contractor, at their own expense, shall furnish all necessary tools, labor, materials and assistance for such tests and shall remove or repair any defective materials when so ordered by the City.

(v) Any person performing work on public property for the purpose of installing a building sewer shall file with the City evidence of adequate insurance coverage for liability and property damage. Minimum amounts of coverage will be established by the City and posted in the Clerk's Office.

(w) All work shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, curbs, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the City and other authorities having jurisdiction.

(x) The Contractor shall not block any driveway, street or road at any time without permission of the City and other controlling agencies. Every effort shall be made to permit the movement of vehicular traffic at all times. Whenever it becomes necessary to cross or interfere with roads, walks or drives, whether public or private, the Contractor shall maintain, at his own expense and subject to the approval of the City, safe bridges or other means of egress.

(y) Maintenance of all private sewage facilities including, but not limited to, (1) house plumbing systems, (2) building sewers to the main sewer, (3) house connections, (4) sewers and (5) appurtenances shall be the responsibility of the Owner, at his or her expense. The Owner shall be solely responsible for continually maintaining such facilities in satisfactory operating condition. Maintenance shall include, but not be limited to, (1) maintaining flow, (2) clearing obstructions, (3) maintaining all joints gas and water-tight, (4) repair or replace collapsed, deteriorated or defective materials, and (5) all other work which is necessary and essential to maintaining proper operation and preserving the structural integrity and water-tightness of the system.

(z) The Owner is obligated by sewer and any other permits to construct the project/building/development to meet all specifications for which the permits/approvals were issued. The building inspector or some authorized person will inspect existing buildings and construction sites from time to time during each construction phase to assure permit specifications are being met. A final inspection shall be made prior to the connection from the building to the main sewer line by the City.

SECTION 4. Prohibited Discharges into the Public Sanitary Sewer System

(a) No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer.

(b) No person shall discharge or cause to be discharged any of the following described waters or wastes to any public sanitary sewers:

(1) Any gasoline, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid or gas.

(2) Any waters or wastes containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the sewage treatment plant.

(3) Any waters or wastes having a pH lower than 5.5, or higher than 9.5 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the public sewage facilities.

(4) Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the public sewage facilities such as, but not limited to, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, unground garbage, whole blood, paunch manure, hair and fleshings, entrails and paper dishes, cups, milk containers, etc. either whole or ground by garbage grinders.

(d) No person shall discharge or cause to be discharged the following described substances, materials, waters, or wastes if it appears likely in the opinion of the Wastewater Superintendent that such wastes can harm either the sewers, sewage treatment process, or equipment, have an adverse effect on the receiving stream, or can otherwise endanger life, limb, public property, or constitute a nuisance. In forming his

opinion as to the acceptability of these wastes, the Wastewater Superintendent will give consideration to such factors as the quantities of subject wastes in relation to flows and velocities in the sewers, materials of construction of the sewers, nature of the sewage treatment process, capacity of the sewage treatment plant, degree of treatability of wastes in the sewage treatment plant, and other pertinent factors. The substances prohibited are:

(1) Any liquid or vapor having a temperature higher than one hundred fifty (150)oF (65oC).

(2) Any water or wastes containing fats, wax grease, or oils, whether emulsified or not, in excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperatures between thirty-two (32) and one hundred fifty (150)oF and (0 and 65oC).

(3) Any garbage that has not been properly shredded. The installation and operation of any garbage grinder equipped with a motor of three-fourths (3/4) horsepower (0.76 hp metric) or greater shall be subject to the review and approval of the Wastewater Superintendent.

(4) Any waters or wastes containing strong acid iron pickling wastes, or concentrated plating solutions whether neutralized or not.

(5) Any waters or wastes containing settleable solids, iron, chromium, copper, zinc, and similar objectionable or toxic substances; or wastes exerting an excessive chlorine demand, exerting an unusual chemical oxygen demand or containing any other material or constituent in concentrations which exceed the limits established by the Wastewater Superintendent for such materials.

(6) Any waters or wastes containing phenols or other taste-or-odor-producing substances, in such concentrations exceeding limits which may be established by the Wastewater Superintendent as necessary, after treatment of the composite sewage, to meet the requirements of the State, Federal, and other public agencies of jurisdiction for such discharge to the receiving waters.

(7) Any radioactive wastes or isotopes of such half-life, or concentration as may exceed limits established by the Wastewater Superintendent in compliance with applicable State or Federal regulations.

(8) Any chemicals or chemical compounds of the following nature or characteristics or having similarly objectionable characteristics: alcohols, arsenic and arsenicals, phenols or cresols, formaldehydes, iodine, manganese, cyanide, heavy metals and other metal finishing or plant wastes, acid pickling waste, mercury and mercurials,

silver and silver compounds, sulfonamides, toxic dyes (organic or mineral), zinc, all strong oxidizing agents such as chromates, dichromates, permanganates, peroxide and the like, compounds producing hydrogen sulfide, or any other toxic, inflammable or explosive gases, either upon acidification, alkalization, oxidation or reduction, strong reducing agents such as nitrites, sulphides, sulphites, and the like, radioactive materials or isotopes, whether neutralized or not.

(9) Materials which exert or cause:

(aa) Unusual concentrations of inert suspended solids (such as, but not limited to, Fullers earth, lime slurries, and lime residues) or of the dissolved solids (such as, but not limited to, sodium chloride and sodium sulfate).

(bb) Excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).

(cc) Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage treatment works which may cause the effluent limitations of the discharge permit to be exceeded.

(dd) Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein.

(10) Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed, or are amenable to treatment only to such degree that the sewage treatment plant effluent cannot meet the requirements of its discharge permits or of other agencies having jurisdiction over discharge to the receiving waters.

(11) Any waters or wastes containing suspended solids of such character and quantity that unusual attention or expense is required to handle such materials at the wastewater treatment plant.

(12) Any noxious or malodorous gas or substance capable of creating a public nuisance.

(13) Any waters or wastes if it appears likely, in the opinion of the Wastewater Superintendent, that such waste can harm either the sewers, treatment plant process or equipment, would have an adverse effect on waters of the State of Vermont or the United States, or could otherwise endanger human or animal life, limb, public property or constitute a nuisance.

(e) The admission into the public sanitary sewers of any waters or wastes having (a) a five (5) day BOD greater than 400 mg/l or (b) containing more than 400 mg/l of suspended solids or (c) containing any quantity of substances having the characteristics described in sub-section (c) and (d) above, having an average daily flow greater than two percent (2%) of the average daily sewage flow received at the sewage treatment plant shall be subject to the review and approval of the Wastewater Superintendent. The Wastewater Superintendent may:

(1) Reject the wastes, or,

(2) Require control over the quantities and rates of discharge, and/or

(3) Require payment to the City to cover the added cost of handling, treating and disposing of the wastes not covered by sewer charges established under the provisions of Article IV of this Ordinance, or

(4) Require pretreatment to an acceptable condition for discharge to the public sewers, or

(5) Require any combination of the foregoing.

If the City Manager permits the pretreatment or equalization of waste flows, the design, plans, specifications and any other pertinent information relating to proposed equipment and facilities; shall be submitted for the approval of the City Manager and the Agency of Natural Resources and no construction of such facilities shall be commenced until said approvals are obtained in writing. Further, such pretreatment facilities must be consistent with the requirements of any state pretreatment permit issued to the industry.

(f) Grease, oil, and sand interceptors shall be provided when, in the opinion of the Wastewater Superintendent, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand, and or other harmful ingredients. Such interceptors shall not be required for private living quarters. All interceptors shall be of a type and capacity approved by the Wastewater Superintendent, and shall be located as to be readily and easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned and repaired regularly, as needed, by the user at their expense.

(g) The user shall maintain records (which are subject to review by the Wastewater Superintendent) of the dates and means of disposal of accumulated interceptor wastes. Any removal and hauling of the collected materials not performed by the user's personnel must be performed by currently licensed waste disposal firms

(h) To facilitate compliance with this section, the user shall apply for a permit and furnish as part of the permit application a plan and description of the device. Where grease, oil or sand interceptors or similar appurtenances are involved, approval must be granted from both the Wastewater Superintendent and the Public Works Director.

(i) Grease and oil interceptors shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction and equipped with easily removable covers which, when bolted in place, shall be gas-tight and water-tight.

(j) Where installed, all grease, oil, hair, and sand interceptors shall be maintained by the owner, at his/her expense, in continuously efficient operation at all time. Materials collected shall not be introduced into the public sewage system.

(k) Where preliminary treatment or flow-equalizing facilities are provided for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner at his/her expense.

(l) All industries discharging into a public sewer shall perform such monitoring of their discharges as the Wastewater Superintendent may reasonably require, including installation, use, and maintenance of monitoring equipment, keeping records and reporting the results of such monitoring to the Wastewater Superintendent. Where industrial pretreatment permits are issued by the State of Vermont, monitoring records must also be submitted to the appropriate agency in accord with such permit. Such records shall be made available upon request by the Wastewater Superintendent to the State agency or to other agencies having jurisdiction over discharges to the receiving waters. Records of any monitoring will be supplied by the Wastewater Superintendent to the Secretary on request.

(m) All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this Ordinance shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater," published by the American Public Health Association, and shall be determined at the control manhole provided, or upon suitable samples taken at said control manhole. In the event that no special manhole has been required, the control manhole shall be considered to be the nearest downstream manhole in the public sewer to the point at which the building sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewage works and to determine the existence of hazards to life, limb, and property. The particular analyses involved will determine whether a twenty-four (24) hour flow composite of all outfalls of a premise is appropriate or whether a grab sample or samples should be taken. Normally, but not always, BOD and suspended solids analyses are

obtained from 24-hr proportioned composites of all outfalls whereas pH's are determined from periodic grab samples.

(n) Any industry held in violation of the provisions of this Ordinance may have its disposal authorization terminated.

(o) When required by the Wastewater Superintendent, the Owner of any property served by a building sewer carrying industrial wastes shall install a suitably controlled manhole in the building sewer to facilitate observation, sampling and measurement of the wastes. Such manhole, when required, shall be accessible and safely located and shall be constructed in accordance with plans approved by the Wastewater Superintendent. The manhole shall be installed by the Owner, at his/her expense, and shall be maintained by the owner so as to be safe and accessible at all times.

(p) Scavenger waste consists of septage, sludge or other forms of waste brought to the wastewater facility for treatment and disposal. The waste must meet all article II requirements.

(1) The discharge of scavenger wastes at designated septage receiving areas at the City's wastewater treatment facilities may be permitted. The discharge of scavenger wastes from sources outside of the City may be permitted with approval of the Wastewater Superintendent of Water Pollution Control.

(2) There will be a fee charged each time a load of scavenger waste is discharged at the City's wastewater treatment facilities. Such fee will be determined by the City Council and will be based upon the quantity and quality of the discharged waste.

(q) No statement in this Ordinance shall be construed as preventing any special agreement or arrangement between the City and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the City for treatment, subject to payment therefore, by the industrial concern, provided that such agreements do not contravene any requirements of existing Federal laws and are compatible with any user charge and industrial cost recovery system in effect.

SECTION 5. Protection from Damage

No person shall maliciously, willfully or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the public sanitary sewage system. Any person violating this provision shall be subject to immediate arrest under the charge of unlawful mischief as set forth in Title 13, Section 3701 of the Vermont Statutes Annotated.

ARTICLE III - CAPACITY ALLOCATION

SECTION 1 - Ownership of Capacity

(a). The City of South Burlington owns and operates sewage treatment and disposal plants (PLANTS) and a sewage collection and transmission system (SEWERS) as defined in 24 V.S.A., Section 3501(6) and 3601. The PLANTS have a permitted capacity, and are operated in accord with discharge permits issued by the Vermont Department of Environmental Conservation (DEPARTMENT) under authority granted in 10 V.S.A., Chapter 47. The City is obligated by law to comply with conditions of those permits, and to operate and manage the PLANTS and SEWERS as governmental functions under and pursuant to 24 V.S.A., Chapters 97 and 101.

(b). The permitted capacity of the PLANTS and SEWERS is the property of the City of South Burlington.

SECTION 2 - Definitions

The following words will have the meanings below when used in this Article.

"Plant Wastewater Flow" is the wastewater passing through the treatment plant in gallons per day on an annual average basis (365 day average) except where flows vary significantly from seasonal development. In the latter case, plant wastewater flow is determined as the average throughout the high seasonal use period, as determined by the BOARD.

"Permitted Wastewater Flow" is the maximum plant wastewater flow authorized in the Discharge Permit on an annual average (365 day average) basis, or on the high seasonal use period as defined in the discharge permit.

"Development Wastewater Flow" is the flow resulting from full use of the development at its peak capacity, which flow shall be calculated using flow quantities, adopted as rules by the DEPARTMENT, as promulgated at the time a connection permit application is made.

"Reserve Capacity" is the permitted wastewater flow minus the actual plant wastewater flow during the preceding 12 months.

"Uncommitted Reserve Capacity" is that portion of the reserve capacity remaining after subtracting the development wastewater flow of all projects for which a final allocation has been granted but are not yet discharging to the SEWER and any capacity reserved by the City Council for allocation to development in the City Center

Sewer Service Area.

"City Center Uncommitted Reserve Capacity" shall be established as 50,000 gallons per day upon the adoption of this amendment, which amount shall be reduced from time to time upon the granting of final allocations for development within the City Center Sewer Service Area.

"Committed Reserve Capacity" is the total amount of development wastewater flow (gallons per day) from all projects/buildings for which final allocations have been granted but are not yet discharging to the SEWER .

"Sanitary Wastewater" is wastewater of the same character and range of strength as expected from homes.

"Sewer Service Area" is that area of the City that is within 200 feet horizontally from existing municipal collection lines and manholes, excluding the City Center Sewer Service Area, as shown on the Sewer Service Area Map, dated January 3, 2001, located in Map 5, Public Utilities #2, of the South Burlington Comprehensive Plan. The Sewer Service Area may be altered by adoption of an amendment to this Ordinance. If there is any conflict between the Sewer Service Area shown on the above-referenced map and the City Center Sewer Service Area, as defined herein, the area included within the City Center Sewer Service Area shall control.

"City Center Sewer Service Area" is that area of the City located in the Central District 1 zoning district, as designated by the South Burlington Zoning Regulations presently in effect or hereafter amended.

"PLANTS" - The municipal sewage treatment plants owned by the City of South Burlington.

"SEWERS" - The sewage collection and transmission system owned by the City of South Burlington.

"Development" - The construction of improvements on a tract of land for any purpose, including, but not limited to, residential, commercial, industrial activity, subdivisions and the intent to subdivide.

"Affordable Housing" shall mean either of the following:

(A) Housing that is owned by its inhabitants, whose gross annual household income does not exceed eighty percent (80%) of the county median income, as defined by the United States Department of Housing and Urban Development, and the total annual cost of the housing, including principal, interest, taxes and insurance, is not

more than thirty percent (30%) of the household's gross annual income.

(B) Housing that is rented by its inhabitants whose gross annual household income does not exceed sixty-five percent (65%) of the county median income, as defined by the United States Department of housing and Urban Development, and the total annual cost of the housing, including rent, utilities, and condominium association fees, is not more than thirty percent (30%) of the household's gross annual income.

SECTION 3 - Reserve Capacity Allocation

(a) Determination of Amount of Allocation

All allocations to projects shall be based on the development wastewater flow. Any differential between actual flows and development wastewater flows that occurs is not available to the development owner for reallotment to another project or a project expansion.

(b) Application Process

Persons seeking an allocation of uncommitted reserve capacity or City Center Uncommitted Reserve Capacity of the PLANTS and SEWERS, shall apply to the Director for a preliminary allocation on a form prescribed by the Department of Planning & Zoning. Such application shall:

(1). Be accompanied by a calculation of the development wastewater flow to be generated by the project/development;

2). Include calculations for the volume, flow rate, strength and any other characteristics determined appropriate by the Wastewater Superintendent;

3). Unless waived by the Wastewater Superintendent all calculations required in (A) and (B) above for developments generating over 1000 gpd shall be certified by a Vermont registered engineer.

SECTION 4 - Preliminary Allocation Determination

(a) Uon receipt of the application for capacity allocation and supportive documents, the Director shall, based on information and comments provided by the Water Pollution Control Department following its review of the application, make a preliminary determination regarding allocation of uncommitted reserve capacity or City Center Uncommitted Reserve Capacity. The Director shall award a preliminary allocation upon making affirmative findings that:

(1). The proposed wastewater is of domestic, sanitary origin or, the proposed wastewater is not of domestic sanitary origin and that sufficient evidence has been presented by the applicant to demonstrate that the flow and character of the wastewater is compatible with the proper operation of the PLANTS and SEWERS and that the proposed wastewater will not alone or in combination with other wastes cause a violation of the discharge permit, pass through the PLANTS without treatment, interfere with or otherwise disrupt the proper quality and disposal of PLANT sludge or be injurious in any other manner to the PLANT or SEWERS and that there is sufficient uncommitted reserve capacity to accommodate the strength and volume of the proposed development;

2). There is sufficient uncommitted reserve capacity or City Center Uncommitted Reserve Capacity as of the date of the application to accommodate the development wastewater flow of the proposed development.

b) A preliminary determination by the Director allocating capacity shall not constitute a binding commitment of capacity to the applicant and may be revoked by the Director before a final allocation of capacity is granted if uncommitted reserve capacity ceases to be available. A preliminary determination may be used by an applicant as evidence that a proposed development has sufficient sewer capacity available.

SECTION 5 - Final Capacity Allocation:

(a) An applicant who holds a preliminary allocation of capacity granted pursuant to Section 4 above, may apply for a final allocation upon occurrence of the following:

(1). Obtained site plan, conditional use and/or variance approval(s), if such approvals are the only approvals, except a zoning permit, required for the proposed development under City zoning and subdivision regulations then in effect; or

2). Obtained final approval for a subdivision, PUD or PRD if such approvals are the only approvals, except a zoning permit, required for the proposed development under City zoning and subdivision regulations then in effect; or

(3). Obtained all approvals required under sub-section 1 and 2 above, if such approvals are required for the proposed development under City zoning and subdivision regulations then in effect; or

(4). Obtained a zoning permit if that is the only approval required under City zoning and subdivision regulations then in effect; or

(5). Does not require any approvals under City zoning and subdivision

regulations then in effect.

(b) Upon receipt of an application for final allocation, the Director shall grant a final allocation upon determination that the applicant has a preliminary allocation which has not been revoked and that sufficient uncommitted reserve capacity is available for the development.

(c) A grant of final allocation shall constitute a binding commitment of sewer capacity to the applicant subject to applicant's compliance with all conditions imposed on such allocation.

SECTION 6 - Final Allocation Conditions

(a) A final allocation shall specify the allowed volume, flow rate, strength frequency and any other characteristics of the proposed discharge determined appropriate by the Director.

(b) The capacity allocation is not transferable to any other person or development, except a successor in interest of the development for which the allocation has been granted.

(c) The construction of the connection and, if necessary, the municipal SEWER extension, must be overseen to assure compliance with the plans and specifications and good construction practice in a manner acceptable to the City.

(d) A final capacity allocation shall expire on the first to occur of the following events unless prior to such date the development for which the allocation has been granted has commenced discharging into the SEWER:

(1). the date that any approval required for grant of the final allocation, as identified in Section 5 above, expires, unless prior to such date the applicant has applied for any required zoning permit(s) to construct the development;

(2). the date that any zoning permit authorizing construction of improvements for which the allocation has been granted expires;

(3). ten (10) years from the date the final allocation is granted, for any development that requires any approval under the City zoning or subdivision regulations, or two (2) years from the date the final allocation is granted, for any development that does not require approval under the City zoning or subdivision regulations.

(e) An Applicant for development involving a single use or unit shall pay one

hundred percent(100%) of all connection fees prior to grant of a final allocation. If the development involves multiple uses and/or units that will connect to the SEWER, the applicant shall pay fifty percent (50%) of all connection fees prior to grant of final allocation and the remaining fifty percent (50%) will be prorated based on the development flow for each use or unit. The prorated payment for a use or unit shall be payable upon issuance of a zoning permit for construction of improvements for the use or unit. If the development is an Affordable Housing project, one hundred percent (100%) of all connection fees will be prorated based on the number of uses and/or units. The prorated portion for a use or unit shall be payable upon issuance of a zoning permit for construction of improvements for the use or unit. If the development does not require issuance of a zoning permit, applicant shall pay one hundred percent (100%) of all connection fees prior to grant of a final allocation.

ARTICLE IV - SEWAGE DISPOSAL CHARGES, TIME OF PAYMENT THEREOF, AND PENALTIES FOR NON-PAYMENT

SECTION 1. Operation and Maintenance: An annual charge, which shall be determined by the City Council, is hereby imposed upon every person having a building or structure on their premises and who are served by the municipal public sewage system where sewage may be collected for the use of the premises by the Owners, or other users of real property within the City of South Burlington. The annual charge shall be for the purpose of the payment associated with the costs or operating, maintaining and repairing said system. The City Council may establish annual charges separately for bond payments, for fixed operating and maintenance costs not dependent on actual or estimated use and for variable operations and maintenance costs dependent on actual or estimated use.

SECTION 2 - The sewer use rates established in SECTION 1 of this ARTICLE and defined hereinafter shall be charged whether or not the property is occupied, when the property is connected to the public sewage system by the necessary building sewer as required under the terms of this ORDINANCE. The rate structure shall incorporate the requirements of 40 CFR, §35.935-13 or §35.2140, as applicable.

SECTION 3 - The annual charges stipulated in SECTION 1 of this ARTICLE shall be based upon a water meter measurement. The City Council will determine the actual charge from measurements of each user so as to yield charges which are approximately in proportion to the strength and quantity of waste discharged. If the City Council establishes annual charges separately for bond repayment and fixed operations and maintenance costs, no user will be billed less than the average single family charge for the fixed charges, plus flow related charges.

SECTION 4. Capital Costs: The design, construction and development costs of all public sewage system expansions and extensions which have been approved by the Development Review Board shall be borne by the developers and property owners

requiring, requesting or directly benefiting from such extensions and/or expansions, unless alternative funding method is approved by the City Council.

SECTION 5. Collection: Collection of the delinquent sewer use rates may be enforced by the City pursuant to 24 V.S.A., Chapter 129 water and sewer disconnection; 24V.S.A., Section 3612 charges; lien; and 24 V.S.A., Section 3615, rents; rates. In the event any sewer rent is not paid within thirty (30) days from the billing date, a late penalty charge will be added to the sewer rent together with interest charges. The amount of the late penalty charge and the interest rate on the overdue accounts shall be the same as those applied to delinquent taxes. If such payment is not made, such sewer rent shall be a lien upon such real estate and shall be collected according to the procedures allowed for in 24 V.S.A. §§ 3504 and 3612. Any payment made to the City for utility fees shall first be allocated to delinquent water, then delinquent sewer, then delinquent stormwater fees. The remaining amount of the payment shall first be allocated to current water, then current sewer, then current stormwater fees.

SECTION 6. Sinking Fund/Set-Asides for Major Expenditures: The following provides for and restricts the use of set-aside (sinking) funds to finance future major maintenance/replacement costs and plant expansion costs.

(a) A separate sinking fund may be utilized for major maintenance/ replacement expenditures and for expansion/upgrading expenses associated with the wastewater facility in the City of South Burlington. Sinking fund establishment for maintenance/ replacement expenditures shall be through written policy of the City. Any sinking fund policy shall contain at least the following in writing: major maintenance/ replacement identification, estimated expenditures, estimated year of expenditure, payment amount, type of account used to accumulate sinking fund assets, source of funding and when payments are to stop. All sinking funds shall be established and maintained in accord with 24 V.S.A., Section 3616.

(b) The City reserves the right to increase, decrease, stop and/or maintain regular deposits to a sinking fund not exceeding 15% of the normal total budgeted expenses for maintenance/ replacement in that year. The fees charged for expansion cost shall be deposited into a separate account and a record shall be kept to show payment date, person making payment and payment amount. The City Council holding office have the authority to withdraw sinking fund amounts only for the purpose of paying for major expenditures/plant expansion for which the fund was established.

(c) When sinking fund assets are not disbursed fully for major maintenance/replacement expenditures and/or plant expansion, excess money shall remain in the sinking fund for future related expenditures similar in nature. Revenues established for plant expansion dedicated funds may be generated from connection/impact fees paid by prospective users to defray and pay expansion costs.

This fund shall not exceed the estimated future expansion cost for the wastewater treatment facility. When the City so votes, the expansion/upgrade sinking fund may be used to finance major maintenance/replacement expenditures, but under no circumstances shall the major maintenance replacement sinking fund be used to finance wastewater expansion/upgrade expenses.

ARTICLE V - STORMWATER SYSTEM

SECTION 1. Purpose

The purpose of this Article is to provide for the health, safety, and general welfare of the citizens of South Burlington through the regulation of stormwater discharges to the stormwater system.

SECTION 2. Applicability

Any discharge of stormwater from developed property in the City shall be subject to the provisions of this Article.

SECTION 3. Required Approvals

(a) No owner of developed property in the City shall change or alter, or allow to be changed or altered, the discharge of stormwater from such property occurring on the effective date of this Article without first obtaining any permit or approval required under this or any other City Ordinance, state law, or federal law.

(b) No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public storm drain or appurtenance thereof without first obtaining a written permit from the Stormwater Superintendent.

SECTION 4. Compliance with Existing Permits

It shall be a violation of this Article for any owner of developed property that is subject to any local, state, or federal permit requirements regarding the discharge of stormwater to fail to comply with such permit requirements.

SECTION 5. Use of the Public Stormwater System:

(a) The following may be discharged into the public stormwater system, subject to obtaining and complying with any required permit:

(1) Stormwater;

(2) Landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wet-land flows, swimming pools (if dechlorinated - typically less than one PPM chlorine), fire fighting activities, and any other water source not containing pollutants;

(3) Discharges specified in writing by the authorized enforcement agent as being necessary to protect public health and safety;

(4) Dye testing is an allowable discharge, but requires a verbalnotification to the authorized enforcement agent prior to the time of the test;

(5) Any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

(b) It shall be a violation of this Ordinance for any person to cause or allow to occur any illicit discharge to the public stormwater system or allow any illicit discharge existing on the date this Article becomes effective to continue regardless of whether such existing discharge was permissible under law or practices applicable or prevailing at the time the discharge commenced.

Section 6. Best Management Practices

(a) The Stormwater Superintendent will adopt requirements identifying Best Management Practices for any activity, operation, or facility which may cause or contribute to an illicit discharge to the stormwater system. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from an accidental illicit discharge into the public stormwater system BMPs. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge to the public stormwater system, may be required to implement, at said person's expense, additional BMPs to prevent or discontinue the illicit discharge. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section.

(b) Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property

free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

(c) Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in an illicit discharge into the stormwater system, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the Stormwater Superintendent in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Stormwater Superintendent within three business days of the phone notice. If the illicit discharge emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 7. Protection from Damage

No person shall maliciously, willfully or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the public stormwater system. Any person violating this provision shall be subject to immediate arrest under the charge of unlawful mischief as set forth in Title 13, Section 3701 of the Vermont Statutes Annotated.

ARTICLE VI - STORMWATER SYSTEM USER FEES

SECTION 1. Establishment of Stormwater User Fees

(a) A user fee based on an Equivalent Residential Unit (ERU) shall be imposed on every owner of non-exempt developed property within the City. An ERU shall equal that square footage that represents the median of the area of impervious surface for all single family residences in the City. The City Council shall, by resolution, establish the square footage that constitutes one ERU on a periodic basis.

(b) The City Council shall have the authority to set and modify the user fee rates so that the total revenue generated by said charges, and any secondary sources of revenue, shall be sufficient to fund the City's stormwater program.

(c) The City council shall establish by resolution the monthly rate for each ERU. The monthly user fee for a specific property is determined by multiplying the rate per ERU times the number of ERUs allocated to the property.

(d) The only exempt property under this Article is that included within the limits of a railroad track right-of-way. Property on which railroad stations, maintenance buildings, or other developed land used for railroad purposes is located shall not be exempt.

SECTION 2. User Fee Credits:

(a) The Stormwater Superintendent shall prepare for the City Council's approval, a "Stormwater User Fee Credit Manual" specifying the design and performance standards of on-site stormwater systems, facilities, activities and services which qualify for application of a user fee credit and the method of calculating credits. The City Council shall have the authority to approve, modify and approve or disapprove the Credit Manual.

(b) Following approval of a Credit Manual, the Stormwater Superintendent may, at the request of a property owner, reduce the user fee established for any property by awarding a credit based on the policies and conditions set forth in the Manual. No credit shall exceed fifty percent (50%) of the applicable monthly user fee for a given property. Any property owner may appeal the Stormwater Superintendent's determination regarding an award of a credit by filing a written notice of appeal with the Stormwater Appeals Board within ten (10) business days of the Superintendent's decision. The Stormwater Appeals Board shall review such appeal at a meeting preceded by fifteen (15) calendar days written notice of the meeting date to the property owner. Following the meeting, the Stormwater Appeals Board shall issue its decision on the appeal in writing, which decision shall be final.

(c) Credits may be awarded retroactively for one (1) year from the date of initiation of the stormwater user fee. Thereafter, credits shall be applied to user fees on the next billing period after the completed credit application is approved.

(d) Any award of credit shall be conditioned on continuing compliance with the City's design and performance standards as stated in the "Stormwater User Fee Credit Manual" and/or upon continuing provision of the systems, facilities, services, and activities provided, operated, and maintained by the property owner or owners upon which the credit is based. The City Manager may revoke a credit at any time for non-compliance by providing thirty (30) days written notice of a non-complying condition and intent to revoke the credit to the property owner. If the non-compliance is not cured within the thirty (30) day period, the Manager shall eliminate the credit for user

fee bills issued to the property owner after such period. A property owner may appeal the City Manger's determination regarding credit revocation in the same manner set forth in sub-section (b), above.

SECTION 3. Establishment of ERUs:

(a) Each SFR shall be allocated one (1) ERU.

(b) The ERUs allocated NSFR properties, except City or State highways, shall be determined in the following manner:

(1) The amount of impervious surface on each parcel shall be divided by the gross area of the parcel resulting in the percent of imperviousness for the parcel.

(2) Based on the percent imperviousness, a "tier factor" shall be determined, based on the following categories:

IMPERVIOUS PERCENTAGE	TIER FACTOR
1 to 10%	* See Below
11 to 20%	0.15
21 to 30%	0.25
31 to 40%	0.35
41 to 50%	0.45
51 to 60%	0.55
61 to 70%	0.65
71 to 80%	0.75
81 to 90%	0.85
91 to 100%	0.95

*Fee will be based on actual amount of impervious surface, measured in square feet.

(3) The gross area of the parcel shall be multiplied by the tier factor, and then divided by the ERU. The resulting value is rounded up to the nearest whole

number which is be the number of ERUs for the property.

(c) The ERUs allocated properties comprised solely of public roadways shall be determined by dividing two-thirds of the total impervious surface for the property by the ERU. The resulting value is rounded up to the nearest whole number which is be the number of ERUs for the property.

SECTION 4. Billing and Collection

(a) Stormwater user fees will be billed quarterly and shall be reflected on the water and sewer bills for each property owner, where applicable. The bill shall also state the ERUs allocated to each property.

(b) A property owner may appeal an allocation of ERUs to the Stormwater Superintendent by submitting a written notice of appeal to the Stormwater Superintendent within fifteen (15) calendar days of the mailing date of the bill. The Stormwater Superintendent shall promptly meet with the property owner and issue a decision of the allocation of ERUs. A property owner may appeal the Stormwater Superintendent's determination regarding credit revocation in the same manner set forth in Section 2(b), above. The filing of an appeal shall not relieve a property owner of the obligation to pay the user fee when due.

(c) In the event any stormwater user fee is not paid within thirty (30) days from the billing date, a late penalty charge will be added to the fee together with interest charges. The amount of the late penalty charge and the interest rate on the overdue accounts shall be the same as those applied to delinquent taxes. If such payment is not made, such stormwater user fee shall be a lien upon such real estate and may be collected in the manner provided in 24 V.S.A., §§ 3504 and 3612. Any payment made to the City for utility fees shall first be allocated to delinquent water, then delinquent sewer, then delinquent stormwater fees. The remaining amount of the payment shall first be allocated to current water, then current sewer, then current stormwater fees.

SECTION 5. Expenditures.

(a) The user fees, as well as any secondary sources of revenue, shall be used to fund the City's efforts to manage stormwater. Acceptable expenditures include, but are not limited to, capital construction, maintenance and operations, engineering and planning, regulation and enforcement, water quality programs, special services, administration and management, coverage requirements, reserve funds, and miscellaneous overhead costs.

(b) Excess revenues may be placed into a sinking fund, and may be retained and expended in the manner set forth in Article IV, Section 6 of this Ordinance.

ARTICLE VII - INSPECTION AND ENFORCEMENT

SECTION 1. Power and Authority of Inspectors

(a) Any authorized person bearing proper credentials and identification shall be permitted to enter all properties subject to regulation under this Ordinance for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this Ordinance. Authorized persons shall have the right to set up such devices as are necessary to conduct monitoring and/or sampling of any regulated discharge from the property. Authorized persons may also examine and copy records required to be kept under any permit subject to this ordinance. Authorized persons shall have no authority to inquire into any processes including metallurgical, chemical, oil, refining, ceramic, paper, or other industries beyond that point having a direct bearing on the kind and source of discharge to the public sanitary and stormwater systems.

(b) Any authorized person bearing proper credentials and identification shall be permitted to enter all private properties through which the City holds an easement for the purposes of, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance or any portion of the public sewage or stormwater system lying within said easement. All entry and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the easement pertaining to the private property involved.

(c) If a property owner has security measures in force which require proper identification and clearance before entry into onto the property, the owner shall make the necessary arrangements to allow access to any authorized person.

(d) Any temporary or permanent obstruction to safe and easy access to any property to be inspected and/or sampled shall be promptly removed by the property owner at the written or oral request of any authorized person and shall not be replaced. The costs of clearing such access shall be borne by the property owner.

(e) Causing an unreasonable delay in allowing an authorized person access to a property subject to regulation under this Ordinance is a violation of this Ordinance.

(f) If an authorized person is refused access to any part of the property containing facilities, records or discharges subject to regulation under this Ordinance, and if the authorized person is able to demonstrate probable cause to believe that there may be a violation of this Ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this Ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the authorized person may seek issuance of a search warrant from any court of competent jurisdiction.

(g) While performing the necessary work on private properties referred to in this Section, authorized persons shall observe all safety rules applicable to the premises established by the property owner and the property owner shall be held harmless for injury or death to the City employees and the City shall indemnify the property owner against loss or damage to its property for personal injury or property damage asserted against the property owner and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the property owner to maintain safe conditions as required by law.

SECTION 2 - Administrative Enforcement

(a) Any condition caused or permitted to exist in violation of any of the provisions of this Ordinance is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

(b) Any person found to be violating any provision of this of this ordinance shall be served by the City with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. Such notice may require without limitation.

(1) The performance of monitoring, analyses, and reporting;
(2) The elimination of illicit discharges;
(3) The cessation of improper practices and operations and implementation of proper practices and operations;
(4) The abatement or remediation of any contamination of the public sewage or stormwater system and waters of the State of Vermont or the United States and restoration of any property impacted by such contamination;
(5) Establishment of time limits for the completion of all required work;
(6) Payment of a fine; and
(7) State that the Notice may be appealed in the manner set forth in sub-section (f), below.

(c) The City has the right to require a property owner found to be in violation of this Ordinance to install monitoring equipment and maintain such equipment in proper operating condition, including proper calibration, all at the property owner’s expense.

(d) If a violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, the City or persons retained by the City may enter upon the subject property to take any and all measures necessary to abate the violation and/or

restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the City or designated persons to enter upon the premises for the purposes set forth above.

(e) Within thirty (30) days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within fifteen (15) days. If the amount due is not paid within a timely manner as determined by the decision of the City Manager or by the expiration of the time in which to file an appeal, the charges shall constitute a lien on the property for the amount of the assessment and shall bear interest at the rate of one percent (1%) per month, or portion thereof.

(f) The City Manager may, without prior notice, suspend stormwater or sewer system discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the stormwater system, sewer system or waters of the State of Vermont or the United States. If the violator fails to comply with a suspension order issued in an emergency, the City manager may take such steps as deemed necessary to prevent or minimize damage to the stormwater system, sewer system or waters of the State of Vermont or United States, or to minimize danger to persons.

(g) Any person discharging to the stormwater or sewer system in violation of this ordinance may have their stormwater system or sewer system access terminated if such termination would abate or reduce an illicit discharge. The City Manager will notify a violator of the proposed termination of its stormwater system or sewer system access. The violator may appeal the City Manager's determination to the City Council by filing a written notice of appeal with the City Manager within ten (10) business days of the Manager's decision. The City Council shall review such appeal at a meeting of the Council preceded by fifteen (15) calendar days written notice of the meeting date to the Violator. Following the meeting, the Council shall issue its decision on the appeal in writing, which decision shall be final.

(h) A person commits an offense if the person reinstates stormwater system or sewer system access to premises terminated pursuant to sub-section (f), above, without the prior approval of the City Manager.

SECTION 3. Judicial Enforcement:

(a) This ordinance shall constitute a civil ordinance within the meaning of 24 V.S.A. Chapter 59.

(b) Any law enforcement officer or other individual designated by the City Council to enforce this ordinance may act as an issuing Municipal Official and issue and pursue before the Judicial Bureau a municipal complaint for any violation of any provision of this Ordinance.

(c) In addition to the enforcement procedures available before the Judicial Bureau, the City is authorized to commence a civil action to obtain injunctive and other appropriate relief, or to pursue any other remedy authorized by law.

SECTION 4. Penalties:

(a) Waiver Fee For Municipal Complaint: An Issuing Municipal Official is authorized to recover civil penalties in the following amounts for each violation of this ordinance:

First offense - $25.00
Second offense - $50.00
Third offense - $75.00
Fourth offense - $150.00
Fifth and subsequent offenses - $200.00
Offenses shall be counted on a calendar year basis.

(b) Civil Penalty for Municipal Complaint: An Issuing Municipal Official is authorized to recover civil penalties in the following amounts for each violation of this ordinance:

First offense - $50.00
Second offense - $100.00
Third offense - $150.00
Fourth offense - $300.00
Fifth and subsequent offenses - $400.00
Offenses shall be counted on a calendar year basis.

(c) Civil penalty for enforcement courts other than the Judicial Bureau: In addition to any other remedy provided for in this Ordinance, any person who violates any provision of this Ordinance, shall be subject to a civil penalty of up to $500.00 per day for each day that such violation continues.

This amendment shall take effect on passage.

Adopted by the City Council this ___ day of _____, 2005

South Burlington City Council

James C. Condos

Terence Sheahan

Chris Smith

Steve Magowan

Daniel O'Rourke

SON.FINAL.SEWER.ORDINANCE.2005

Appendix G - HB 1295 Interim Reports

(November 2008 and November 2009)

MEMORANDUM

DATE: **November 1, 2008**

TO: **Honorable John H. Lynch, Governor**
Honorable Terie Norelli, Speaker of the House
Honorable Sylvia B. Larsen, President of the Senate
Honorable Karen O. Wadsworth, House Clerk
Tammy L. Wright, Senate Clerk
Michael York, State Librarian

FROM: **Dari Sassan, Chair**

SUBJECT: **Interim Report on HB 1295, Chapter 71, Laws of 2008**

Please find the enclosed Interim Report of the Commission to Study the Issue of Stormwater Management, submitted in compliance with HB 1295, Chapter 71:5, Laws of 2008.

If you have any questions or comments regarding this report or the work of the Commission, please do not hesitate to contact me at (603) 271-1765 or dari.sassan@nh.gov.

DAS:jem

Enclosures

HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT INTERIM REPORT

November 1, 2008

Duties

As dictated by Chapter 71:3, the Commission shall study:

a. The effects 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.

f. The effects of climate change on stormwater and stormwater management.

Commission Members

Dari Sassan, Chair	New Hampshire Office of Energy & Planning
Judith Spang, Vice Chair	New Hampshire House of Representatives, Chair, Resources, Recreation and Development Committee
David Borden	New Hampshire House of Representatives
David Cedarholm	New Hampshire Public Works Association
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
Charlie Hood	New Hampshire Department of Transportation
Steve Kahl	New Hampshire Lakes Association
Newb LeRoy	Associated General Contractors of New Hampshire
Amy Manzelli	Business and Industry Association of New Hampshire
Carl Paulsen	New Hampshire Rivers Council
Joe Robertie	New Hampshire Timberland Owners Association
Robert Roseen	University of New Hampshire Stormwater Center
Donald H. Sienkiewicz	Home Builders & Remodelers Association of New Hampshire
Eric Stohl	New Hampshire House of Representatives
Mike Trainque	American Council of Engineering Companies of New Hampshire

Duties in Progress

In response to duty (a), the Commission reports the following:

- Water quality impacts from stormwater include increased nutrient and bacteria loading, accelerated eutrophication (aging) of surface waters, low dissolved oxygen (the form of oxygen available for aquatic life), and high turbidity (low clarity). *(Currier & McCarthy, 9/4/08)*
- Hydrology impacts from stormwater include increased total and peak runoff volumes, increased velocity of runoff, and decreased groundwater recharge, which result in a greater frequency of flooding and increased potential for erosion and sedimentation. *(Currier & McCarthy, 9/4/08)*
- The Draft 2008 303(d) and 305(b) Surface Water Quality Assessment prepared by DES shows ~83% of impairments are due, at least in part, to stormwater. *(Currier & McCarthy, 9/4/08)*

In response to duty (b), the Commission reports the following:

- Some parts of New Hampshire have experienced 20-25% population growth over last 10 years. *(Roseen, 10/6/08)*
- Impervious surfaces associated with development can increase peak runoff volumes, total runoff volumes, and the velocity of runoff, increase loading of pollutants to surface waters, decrease groundwater recharge, and change natural hydrology.(*Currier & McCarthy, 9/4/08)*
- The majority of land use decisions are made by local governments on small-scale (< 1 acre) developments. Local governments have varying resources, budgets, and capabilities, which create inconsistency in municipal stormwater management programs and requirements across the state. *(Currier & McCarthy, 9/4/08, Roseen, 10/6/08)*

In response to duty (f), the Commission reports the following:

- Storms in New Hampshire are roughly 30-60% larger than they were when design criteria for infrastructure was developed, thus the design storms used over the last 50 to 100 years are out of date and the infrastructure, e.g., culverts, pipes, may be under capacity by as much as 35%. *(Roseen, 10/6/08)*
- Stormwater management strategies used to reduce runoff volumes associated with land use changes can also be used to manage the increases in storm depth from climate change. *(Roseen, 10/6/08)*

To complete duties (a), (b), and (f), the following presentations are scheduled:

- Ted Diers, NH Department of Environmental Services, Topic: The NH Water Resources Primer and state and federal regulations pertaining to stormwater management.
- Speaker TBD, NH Fish and Game Department, Topic: The impacts of stormwater on terrestrial and aquatic habitat.
- Michael Simpson, Antioch College, Topic: The impacts of climate change on stormwater management

Duties to be Addressed:

To address the remaining duties, the Commission has decided to conduct the following process:

A. The Commission has divided the state's landscape into the following sectors. These sectors partition the state's landscape into units of relatively similar regulatory and land use implications, yet, between the five sectors, the entire land area of the state is covered.
    1. Urbanized areas subject to municipal separate storm sewer systems (MS4) permitting
    2. Activities subject to the NH Alteration of Terrain Permit (>100,000 ft_2 of disturbance)
    3. Activities subject to the federal Construction General Permit
    4. Activities subject to the federal Multi-Sector General Permit
    5. Activities < 1 acre that is not subject to state or federal stormwater permitting

B. Within each of these scenarios the Commission will ask the following questions:
    1. What current programs, land development practices, management practices, and other activities are working to avoid, minimize, or mitigate the impacts of stormwater?
    2. What problems are being experienced at ground level for new development, redevelopment, and existing development?
    3. What is the current regulatory environment?
    4. What are the current deficiencies? What are the technologies, land development techniques and management practices associated with these deficiencies (at federal, state, local and private levels)?
    5. What are the potential solutions to these problems?

-Education?	-Economic mechanisms (e.g. impact fees)?
-Funding?	-Regional Planning Commission involvement?
-Incentives?	-Offsets (i.e. cap & trade)?
-Legislation?	-Other?
-Stormwater Utilities?	

C. Compare and contrast the findings of analysis within each sector and finalize the Commission's research and recommendations.

Meetings:

The Commission has met twice (September 4, 2008 and October 6, 2008) with regularly scheduled meetings planned for the first Monday of each month at 1:00 pm. Attached to this report are the minutes from the first two Commission meetings as well as the agenda for the upcoming November 3, 2008 meeting to be held at 1:00 PM in room 305 of the Legislative Office Building in Concord. Minutes, agendas, handouts, and presentations can be accessed online by visiting:

http://www.nh.gov/oep/legislation/2008/hb1295/index.htm

Respectfully submitted on behalf of the Commission,

_____

Dari Sassan, Chair

References:

Currier, Paul, P.E., and Jillian McCarthy. *Stormwater in New Hampshire*, HB1295 Stormwater Legislative Commission Meeting. Legislative Office Building, Concord, NH. 4 September 2008.

Roseen, Robert, P.E. *Stormwater Management, Community Resiliency, and Climate Change*. HB1295 Stormwater Legislative Commission Meeting. Legislative Office Building, Concord, NH. 6 October 2008.

MEMORANDUM

DATE: **November 1, 2009**

TO: **Honorable John H. Lynch, Governor**
Honorable Terie Norelli, Speaker of the House
Honorable Sylvia B. Larsen, President of the Senate
Honorable Karen O. Wadsworth, House Clerk
Tammy L. Wright, Senate Clerk
Michael York, State Librarian

FROM: **David Cedarholm, Chair**

SUBJECT: Interim Report on HB 1295, Chapter 71, Laws of 2008

Please find the enclosed Interim Report of the Commission to Study the Issue of Stormwater Management, Submitted in compliance with HB 1295, Chapter 71:5, Laws of 2008.

If you have any questions or comments regarding this report or the work of the Commission, please do not hesitate to contact me at 603-868-5578 or dcedarholm@ci.durham.nh.us.

DC: jem
Enclosures

HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT INTERIM REPORT

November 1, 2009

Duties

As dictated by Chapter 71:3, the Commission shall study:

a. The effects 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.

f. The effects of climate change on stormwater and stormwater management.

Commission Members

Dari Sassan, Chair	New Hampshire Office of Energy & Planning
Judith Spang, Vice Chair	New Hampshire House of Representatives, Chair, Resources, Recreation and Development Committee
David Borden	New Hampshire House of Representatives
David Cedarholm	New Hampshire Public Works Association
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
Newb LeRoy	Associated General Contractors of New Hampshire
Amy Manzelli	Business and Industry Association of New Hampshire
Josh Cline (replacing Carl Paulsen)	New Hampshire Rivers Council
Joe Robertie	New Hampshire Timberland Owners Association
Robert Roseen	University of New Hampshire Stormwater Center
Donald H. Sienkiewicz	Home Builders & Remodelers Association of New Hampshire
David Borden (replacing Eric Stohl)	New Hampshire House of Representatives
Mike Trainque	American Council of Engineering Companies of New Hampshire

Duties in Progress
In response to duties a – f listed in Chapter 71:3, the Commission reports the following:

Presentations and Guest Speakers as informational background for the Commission

9/4/08	"Stormwater in New Hampshire" Paul Currier, PE, PG, Jillian McCarthy, NH Department of Environmental Services
10/6/08	"Stormwater Management, Community Resiliency and Climate Change" Robert Roseen, Ph.D, P.E., Director of the UNH Stormwater Center
11/3/08	"The NH Water Primer and Stormwater Permitting at NHDES" Ted Diers, NH Department of Environmental Services
	"Water from the Hills: Preparing Our Communities for Change" Michael Simpson, Antioch University – New England
12/1/08	"Small MS4 General Permit" Barbara McMillan, NH Department of Environmental Services
1/5/09	"Stormwater Implications of the September 2008 Flood Commission Report" Steve Couture, NH HB648 Flood Commission
	"Summary of the Effects of Land Use on Water Quality" John Magee, NH Fish and Game Department
2/2/09	Discussion of Municipal Authority to Regulate Stormwater Eric Williams, NH Department of Environmental Services Allen Brooks, NH Attorney General's Office Paul Sanderson, NH Local Government Center
4/6/09	"Event Mean Concentrations and Land Use" Paul Currier, PE, PG, DES Watershed Management Bureau Administrator
7/7/09	"Stormwater Utilities" Eugene Forbes, PE, Hoyle, Tanner & Associates, Inc.
8/3/09	Land Use Development Commission Update Rep. Susan Gottling, Land Use Development Commission Chair

Draft Work Products

- "Draft Summary of Needs for Improved Stormwater Management in New Hampshire" — Attachment A
- "Draft Complete Summary of Stormwater Law" — Upon request
- "Draft Funding Mechanisms for Stormwater Management" — Upon request

Meetings
The Commission has met monthly since September 2008 with regularly scheduled meetings on the first Monday of each month at 1:00 PM in room 305 of the Legislative Office Building in Concord. Minutes, agendas, handouts, and presentations can be accessed online by visiting:

http://www.nh.gov/oep/legislation/2008/hb1295/index.htm

Sub-Committees
To more efficiently address the duties of the Commission, three sub-committees were formed to address key topics, identified by the Commission, requiring further consideration:

NEEDS SUBCOMMITTEE
Purpose:
- To compile a list of pertinent findings from Commission discussions, presentations, and guest speakers including regulatory gaps, areas for improvement, and other stormwater related "needs" for improved stormwater management, in accordance with the statutory duties of the Commission.
- To propose potential solutions/opportunities to achieve the identified stormwater related needs.

REGULATORY AUTHORITY SUBCOMMITTEE
Purpose:
- To identify existing regulatory authority for federal, state, and local governments.
- To determine whether sufficient authority sufficiently exists to implement potential solutions to stormwater-related needs identified by the Needs Subcommittee.
- If regulatory authority does not exist, to propose legislative changes needed to create appropriate authority
- Based on feedback from the full Commission, to draft recommendations for amended or new legislation to create appropriate authority.

FUNDING SUBCOMMITTEE
Purpose:
- To estimate the cost of meeting the stormwater-related needs identified by the
- Needs Subcommittee, including costs of implementing new legislation identified by the Regulatory Authority Subcommittee, if applicable.
- To identify existing funding sources to meet the stormwater-related needs identified by the Needs Subcommittee.
- If sufficient funding does not exist, to identify opportunities for new funding sources to meet the stormwater-related needs identified by the Needs Subcommittee
- To propose marketing approaches to promote funding sources/mechanisms
- To research funding mechanisms used by other states and municipalities of other states for stormwater programs and activities

Future Actions
The following actions are anticipated to be completed by the Commission to fully address the duties set forth in Chapter 71:3:
1. Prioritize the stormwater-related needs identified by the Needs Subcommittee. This will be accomplished through discussion of the full Commission as well as input from public participation at the 2009 New Hampshire Joint Water and Watershed Conference.

2. Propose solutions/recommendations to address the stormwater-related needs, or a sub-set of these needs as determined by prioritization.
3. Determine potential legislative changes necessary, if any, to better enable implementing the proposed solutions/recommendations.
4. Propose new legislation or amendments to existing legislation, as determined in task 3.
5. Identify potential new and continued funding sources and mechanisms to implement recommendations.
6. Provide a final report of Commission findings and any recommendations for proposed legislation on or before November 1, 2010.

Respectfully submitted on behalf of the Commission,

_____

David, Cedarholm, Chair

Appendix H – Meeting Minutes

H1. Full Commission Minutes
H2. Regulatory Authority Subcommittee Meeting Notes

H1 – Full Commission Meeting Minutes

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

Meeting Dates
September 4, 2008
October 6, 2008
November 3, 2008
December 1, 2008
January 5, 2009
February 2, 2009
April 6, 2009
May 4, 2009
June 1, 2009
July 6, 2009August 3, 2009
September 14, 2009
October 5, 2009
November 2, 2009
December 7, 2009
January 4, 2010
February 1, 2010
March 1, 2010
April 5, 2010
May 3, 2010
June 7, 2010
June 28, 2010
August 30, 2010
October 4, 2010

FINAL MINUTES
HB 1295 COMMISSION TO STUDY ISSUES RELATING TO STORMWATER

September 4, 2008 – 1:00 pm
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Charlie Hood	NH Department of Transportation
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Joe Robertie	NH Timber Owners Association
Donald Sienkiewicz	Home Builders and Remodelers Association
Newb LeRoy	Association of General Contractors of NH
Eric Stohl	NH House of Representatives
David Borden	NH House of Representatives
Dave Danielson	NH Association of Regional Planning Commissions
Steve Kahl	NH Lakes Association
Paul Currier	NH Department of Environmental Services

Others Present:

Derek Durbin	NH Lakes Association
Timothy Fortier	McLane Law Firm
Dana Bisbee	Pierce Atwood LLP
Ted Diers	NH Department of Environmental Services
Greg Stratis	Northeast Concrete Products Association
Jamey Robichaud	Northeast Concrete Products Association
Jennifer Czysz	NH Office of Energy and Planning

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services
Joel Anderson	NH House of Representatives Staff

I. REVIEW OF COMMISSION DUTIES

Rep. Judith Spang reminded everyone to sign in and then read the duties of the Stormwater Commission as they appear in the HB1295:

71:3 Duties. The Commission shall study:

(a) The effects 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.
(f) The effects of climate change on stormwater and stormwater management.

Rep. Spang gave a general overview of the Commission's responsibility:
- to investigate the issues and concerns related to stormwater;
- to come up with solutions by looking at what is already in place and asking if it is doing what we need; and,
- to look at existing and future resources for further addressing the problem.

II. INTRODUCTIONS

Commissioners, staff, and attendees introduced themselves by name and representation.

III. DESIGNATION OF CHAIR AND VICE CHAIR

Rep. Spang informed the Commission that it needed to elect a Chair and a Vice Chair and requested nominations.

Nomination of Mr. Dari Sassan for Commission Chair was brought forward by **Rep. Borden** and seconded by **Rep. Spang. All approved and none opposed.**

Nomination of Judith Spang for Commission Vice Chair was brought forward by **Mr. Kahl** and seconded by **Rep. Borden. All approved and none opposed.**

IV. STORMWATER PRESENTATION

Mr. P. Currier and **Ms. McCarthy** presented a slideshow giving an overview of the impact stormwater has on water quality and hydrology, and describe potential solutions to address stormwater problems as a starting point for discussion. (see attached pdf presentation 20080904_Stormwater Legislative Committee Overview).

V. QUESTIONS AND DISCUSSION

Mr. E. Currier asked about the type of calculations that engineers use to determine the amount of runoff that will be generated from a development activity because some developers, engineers calculate stormwater runoff coefficient to be the same for pre-development as for post-development. He stated that retention ponds are constructed that are supposed to treat the water, but that there seem to be problems with them in some cases. **Mr. P. Currier** responded that engineers use fairly standard methods, such as HydroCAD or other software programs, which use the NRCS (formerly SCS) Curve Numbers. He described the general concept of the NRCS Curve Number Method.

Mr. Danielson stated that there seem to be numerous different audiences for this issue. For example the small MS4 communities [communities with "urbanized areas" as defined by the 2000 Census that are regulated by the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit], are facing permit requirements and need to come up with funding to meet them.

Mr. E. Currier stated that farmers are concerned with development because when development comes in their stormwater usually ends up on farm land, often adjacent to parcels under agricultural use. This decreases the value of the adjacent property, especially if drainage problems impact farm crops. He gave the example that apples like dry conditions. If a development increases the runoff to an apple orchard, it could affect the crop.

Mr. Danielson stated that the impact of stormwater management on economic development needs to be considered.

Mr. Kahl stated that MS4 communities are in a reactive mode. He would like to see public outreach or social marketing for other municipalities not regulated under the MS4 permit to be proactive.

Mr. Kahl states that while typical stormwater pollutants such as sediment, nutrients, and bacteria were discussed in the presentation, chlorides were not. He asked if the impacts and management of chlorides me be something the Commission should discuss. **Mr. Hood** said that he represents DOT on the Commission and that he would like to discuss chlorides because it is an issue they face regularly. **Mr. Danielson** added that DOT is pressuring towns to cut back on salt use because there is pressure on DOT to reduce salt use. **Ms. Ebel** said that in her town, the town was pressuring DOT to use less salt.

Ms. Ebel described the process that her town (New London) went through to develop subdivision regulations to incorporate low impact development (LID) techniques. It took a considerable amount of money and they discovered that many engineers are resistant and more concerned with peak stormwater runoff than with total runoff volumes. She gave two examples of a hospital and Colby Sawyer College (both in New London) wanting to install porous asphalt in parking lots. The asphalt contractor didn't want to bond their porous asphalt work so they ended up not being able to use it. They used porous concrete instead.

Mr. LeRoy questioned if changes in regulations could impact existing facilities and asked the Commission members to consider the potential impact to existing facilities. He stated that new development and existing facilities are different things. Existing facilities are covered by the EPA through it's MSGP – 2000 stormwater permitting process. **Mr. Danielson** responded by describing how the new utility law (HB 1581, An act relative to the formation of stormwater utility districts) allows municipalities to design their own local regulations.

Rep. Spang described another issue she is involved with related to Great Bay. She stated that Great Bay is in a dangerous condition and that the ecosystem is in dire straights: the eelgrass is dying back, shellfish are suffering, and the tributaries to bay are no longer navigable. In large part, said **Rep**. **Spang**, it is related directly to stormwater, sediment, and nutrients coming off of the land. It is an example of what happens on a watershed basis if we don't address the stormwater problem.

VI. FUTURE STRUCTURE/ACTIVITIES OF COMMISSION

Chairperson Sassan started a discussion on the approach of the Commission and setting meeting topics and dates. He suggested a case study on local ordinances from New London. **Rep. Spang** agreed that Karen Ebel is in a unique position to talk about what a planning board goes through when working with a developer to implement LID.

Mr. Danielson suggested looking at the action items that are listed in the bill text and see if the Commission can address those items. He suggested that the Commission use the time between meetings to think about prioritizing the action items.

Mr. P. Currier suggested an overview presentation of the existing regulatory framework of state, federal and local regulation. The Commission would then consider whether it is adequate. Are there weak spots? Are there places for improvements?

Mr. Kahl asked if a website could be created for meeting materials. Chairperson Sassan and Ms. McCarthy will look into it.

Ms. Ebel asked if Mr. Robert Roseen from the UNH Stormwater Center would be speaking to the Commission. She suggested that for non-engineers, a general presentation on peak flows, calculating drainage, and other stormwater topics could be given. She mentioned that Michael Simpson from Antioch is working on adapting to the existing impacts of climate change and that it might be worthwhile for the Commission to hear him speak.

Mr. Pelletier stated to the Commission that the MS4 permit work is a done deal. It is something the Commission can't change. Instead, he continued, the Commission should think about 1). How to help municipalities? and 2).How to retrofit existing development? He added, the Commission should think about where NH goes from here. NH is continuing to grow. How do we want to grow? Stormwater is going to be an issue. There has been a significant increase in peak and shorter durations of storm events. At the end of the day, we know that there is an increase in the number of storms and an increase in flows. How does NH want to change from this point on? A big issue is redevelopment. Mr. Pelletier

gave an example of all of the big box stores being torn down. He went on to state that the State regulations aren't all that far reaching. Even the Alteration of Terrain Program doesn't regulate stormwater on individual lots.

Chairperson Sassan suggested that the next meeting be used to get organized and go through the duties of the Commission and how to address the duties, meeting by meeting. He also states that he would contact Mr. Rob Roseen to try and schedule a presentation providing an overview of the principles and applications of Low Impact Development (LID).

Chairperson Sassan asked that everyone look at their schedules to see if this meeting day of the month and time worked so the Commission could schedule regular meetings. He also explained the time frame that the Commission is under. An interim report (progress report) is due November 1, 2008 with a final report due November 1, 2009. He stated that he will communicate to the Commission through email and requested that the Commission members include their email on the sign in sheet if they didn't already. Meeting attendees who want to be notified of future meetings should put a check mark next to their name.

Ms. Ebel asked if it is OK to send a representative if a Commission member is unable to attend. **Chairperson Sassan** responded that the representative wouldn't count toward a quorum, but that sending a representative is fine.

VII. FUTURE MEETING DATE

Date	Time	Location
October 6, 2008	10:00am	LOB* room 305

*NH Legislative Office Building, 33 North State Street, Concord, NH

VIII. ADJOURNMENT

At 2:45pm, **Rep. Spang** brought motion to adjourn forward. **Ms. Ebel** seconded. **All voted in favor.**

FINAL MINUTES
HB 1295 COMMISSION TO STUDY ISSUES RELATING TO STORMWATER

October 6, 2008 10:00am
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Joe Robertie	NH Timber Owners Association
Donald Sienkiewicz	Home Builders and Remodelers Association
Newb LeRoy	Association of General Contractors of NH
Dave Danielson	NH Association of Regional Planning Commissions
Steve Kahl	NH Lakes Association
Paul Currier	NH Department of Environmental Services
Chris Devine	NH Local Government Center
Rob Roseen	University of New Hampshire Stormwater Center
Amy Manzelli	Business and Industry Association of NH
Carl Paulsen	NH Rivers Council
David Cedarholm	NH Public Works Association

Others Present:

Mark Hemmerlein (for Charlie Hood)	NH Department of Transportation
Kevin Nyhan	NH Department of Transportation
Cordell Johnston	NH Municipal Association
Jamey Robichaud	Northeast Concrete Products Association
Jennifer Czysz	NH Office of Energy and Planning

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services
Joel Anderson	NH House of Representatives Staff

I. ROLL CALL AND INTRODUCTIONS

Chairperson Sassan called the meeting to order at 10:05am. Commissioners, staff, and attendees introduced themselves by name and representation.

II. APPROVAL OF MINUTES FROM SEPTEMBER 4, 2008 MEETING

Mr. LeRoy brought the motion forward to accept the minutes from the September 4, 2008 meeting. **Ms. Ebel** seconded the motion. **All approved and none opposed.**

III. PRESENTATION

Mr. Rob Roseen, Commission member and director of the UNH Stormwater Center, presented a slideshow titled "Stormwater Management, Community Resiliency, and Climate Change" (http://www.nh.gov/oep/legislation/2008/hb1295/documents/stormwater_management_community_resiliency_and_climate_change.pdf). The presentation focused on redefining low impact development practices beyond water quality and small storm management. Stormwater management strategies used to reduce runoff volumes associations with land use changes can also be used to manage the increases in storm depth from climate change. **Mr. Roseen** stated that there are parts of the state that have experienced 20-25% population growth in the last 10 years. Storms in New Hampshire are roughly 30-60% larger, so the design storms used for the last 50 to 100 years are now out of date. This means that much of the infrastructure is under capacity by as much as 35%. To resize the infrastructure would essentially require all of the infrastructure to be replaced, similar to combined sewer overflow (CSO) separation, which is not practical. Instead, focus should be on decreasing the burden on existing infrastructure through stormwater management that reduces runoff volume.

Mr. Roseen explained that conventional stormwater management practices such as retention and detention ponds and other conveyance practices focus on peak runoff control. There is little focus on volume control, achieved by getting water back into the ground. Low impact development designs treat the first inch of runoff, reduce runoff volumes through infiltration, and provide extended detention for smaller storms. Peak runoff control is still done for the larger storms.

Ms. Manzelli asked what is meant by a "1-inch rainfall event". **Mr. Roseen** explained that 92% of the storms over the last 100 years have been 1-inch or smaller. Stormwater management systems that are sized for a 1-inch storm will capture roughly 90% of the storm flows. The first inch of runoff is the dirtiest so when designing for stormwater treatment, the 1-inch storm is used. From a flooding and public safety perspective, the 25-year storm is still used for peak control.

Mr. Cedarholm asked what Mr. Roseen meant earlier when he mentioned municipal resiliency. **Mr. Roseen** explained that lack of resiliency is the inability to adapt to an extreme event. If a municipal infrastructure is at capacity, there is very little resiliency.

Mr. Roseen stated that most stormwater treatment devices fail two-thirds of the time for some water quality constituent. This means the stormwater management strategies used over the last 30 years, which focused primarily on water quantity and flood control, are actually contributing to water quality problems. This has resulted in stormwater management practices degrading water quality. Roughly 66% of the time, the water quality coming out of the system is worse than the water quality going in for some water quality parameter.

The LID subdivision project at Jordan Cove in Connecticut that compared a conventional vs. a LID subdivision was presented. The data from the LID subdivision shows that an increase in impervious surface resulted in no change in runoff volume. There was actually less runoff in the post-development in the LID subdivision. This is what the UNH Stormwater Center has been seeing in their models. This is because sites with existing poor soils are actually creating more storage on site than existed previously.

This means that development can occur while still maintaining watershed health and protecting aquatic habitat.

Mr. Sienkiewicz asked how it is possible to increase impervious surfaces and not increase runoff. **Mr. Roseen** explained that this happens by implementing Low Impact Development (LID) techniques that reduce the impact of the impervious surfaces. He also described the difference between the runoff from a conventional parking lot and a porous parking lot and showed the corresponding data from the UNH Stormwater center.

The Commission members discussed porous pavements and posed questions to Mr. Roseen. Concerns were raised on the issue of maintenance, quality control, and cold climate performance. **Mr. Roseen** explained that at the UNH Stormwater Center they expected to see reduced infiltration rates for the porous asphalt parking lot in the winter. Instead the rainfall thawed the frozen media and the pores in the pavement remained open and still had hydraulic capacity. In addition, most vegetated LID systems provide excellent removal in the winter months. The UNH Stormwater Center also observed a tremendous amount of excess salt on their porous asphalt parking lot. They studied the comparison of salt application on conventional versus porous asphalt parking lots and found that less salt, up to 75% less, is needed on porous asphalt parking lots than conventional parking lots. They also found that the braking capability in cold climates is better on unsalted porous asphalt than on salted conventional pavement. **Mr. Roseen** explained that porous pavement installation has an additional cost due to the greater depth of sub-base, but that this additional cost is offset by the reduced cost of catch basins, pipes, and other infrastructure not required in a porous system. Cost savings range from 15-80% for LID versus conventional systems.

Mr. E. Currier asked if porous concrete has the same benefits. **Mr. Roseen** replied that they are similar. Concrete has added structural benefits, but they don't have the cold climate benefit because they are lighter in color than porous asphalt. They can perform better in cold climates if they are tinted. **Mr. E. Currier** asked if the cost factor is the same. **Mr. Roseen** explained that asphalt has been more competitive than concrete, but asphalt prices are high right now. Concrete is now getting more competitive.

Mr. Paulsen asked if there are options for LID chloride controls. **Mr. Roseen** explained that nothing treats chlorides. Chloride remediation won't be a technology solution. The solution could be an alternative deicer or source control or a switch back to sanding the roads. Management practices can remove sand, but they can't remove chlorides.

Ms. Ebel asked if porous pavements clog with sand. **Mr. Roseen** answered yes and explained that transition areas clog more frequently. **Mr. Cedarholm** asked about porous pavement performance with ice storms. **Mr. Roseen** said that porous lots will ice up too.

Rep. Spang asked about the cost and availability of the pavement itself. **Mr. Roseen** stated that it is approximately 15% higher than conventional. The availability is getting better. Concrete is easier to get.

Mr. Sienkiewicz asked about the use of porous pavement on slopes. **Mr. Roseen** said that he doesn't have good data on slopes, but that it can be designed with "steps" underneath it. There is going to be some point where the infiltration rate, combined with slope, is going to create runoff.

Mr. LeRoy presented the Commission with a document produced by the National Asphalt Pavement Association titled "Porous Asphalt Pavements" and requested that the Commission staff copy the document and send it to the membership.

IV. DISCUSSION OF FUTURE MEETING TOPICS AND DATES

Chairperson Sassan passed around a handout titled "HB1295 Stormwater Commission Action Plan" and proposed a process to complete the duties of the Commission. He proposed that duties a, b, and f are in progress as a result of the presentations and discussion from the September 4, 2008 meeting as well as from recommendations for future presentations. The proposed action plan document outlines a process to complete the remaining duties c, d, and e. **Chairperson Sassan** described the proposed process to the Commission and stated that developing a goal statement could be a first objective and an item to complete during this meeting.

Rep. Spang asked if it would be possible for a copy of the stormwater chapter from the draft Water Resources Primer to be emailed to the Commission members. **Mr. P. Currier** said that he would check, but that it is out to a volunteer review committee right now. After review comments are incorporated he may be able get it to the Commission. **Rep. Spang** would like to see if there is relevant information in the introductory chapters as well.

Mr. E. Currier asked the Commission to consider looking at the impacts on farmland. **Chairperson Sassan** asked if Mr. E Currier had a proposal to best address that. **Mr. E. Currier** explained that his experience has been with stormwater that goes onto farmland from adjacent development and when the development creates wetlands in places where wetlands are not wanted. **Chairperson Sassan** asked if there is existing research that could be referenced in our interim or final reports. **Mr. E. Currier** said he doesn't have research, but that it is something they are seeing more of, in particular along the Massachusetts border. The farmers in southern New Hampshire have more of a concern than those in the northern part of the state. **Chairpseron Sassan** informed Mr. E. Currier that his feedback would be requested on the draft reports to insure that his concerns were represented. **Mr. Cedarholm** suggested that the Commission look at the opposing viewpoint of the impact that agriculture has on stormwater, and suggested looking at the two issues together. **Mr. Roseen** stated that agricultural issues should be looked at in duty b. **Mr. P. Currier** stated that there is existing literature on the impacts of development on agriculture and the impact of agriculture on stormwater because it is a big issue in other parts of the country.

Mr. LeRoy asked if there is anything Mr. P. Currier can do to assist those who need to comply with the MSGP-2008 (Multi-Sector General Permit – 2008). **Mr. P. Currier** said he'll see what he can do.

Chairperson Sassan suggested working on a goal statement for the Commission. **Mr. Danielson** said that he isn't sure of the intent of the legislature, but he has gone over the duties of the Commission and doesn't see an outcome that is requested. All he sees is a study that gets presented. **Chairperson Sassan** proposed that a thorough study includes sound, implementable recommendations. As a starting point for discussion, he suggested a stated goal of bringing to the purview of every landowner, the responsibility for the management of stormwater. On a parcel-by-parcel basis there is no net increase in stormwater from the pre-developed to the post-developed condition or, participation in a stormwater community system, such as a stormwater utility. **Mr. Danielson** said that a similar statement was brought up in the town of Bedford and the residents saw it as a taking of land. He suggested that when structuring language like this, public perception needs to be considered.

Ms. Manzelli asked about the owners that are already regulated and how those regulations interact with other regulations. She would like to see how all of the regulations fit together. **Mr. Danielson** suggested that DES could look at and interpret the federal and state regulations fairly easily. The local regulations also need to be looked at, but that is a much more difficult task because they are great different between the municipalities.

Rep. Spang suggested that the Commission be pragmatic and start from the bottom up to identify the problems, find solutions, and look at the regulations. **Mr. E. Currier** agreed that it is excellent to start from the ground up, but it is a problem when engineers are using the same runoff coefficient for pre-development as for post-development.

Chairperson Sassan suggested that the Commission recognize the different land use and regulatory situations that exist in the state. These include both urban and rural areas, MS4 communities, and development that requires Alteration of Terrain permitting. The Commission could research each situation one by one and ask the questions that Rep. Spang suggested. What are the problems on the ground? What's in place now that is working? What is not working? **Mr. P. Currier** agreed with the approach and added the MSGP-2008 and all other permits that are regulated under EPA's National Pollutant Discharge Elimination System (NPDES) program. He suggested that the Commission consider each of these situations in two parts. 1.) regulations when the landscape changes and 2.) appropriate actions for the built out landscaping as it is – re-development.

Mr. Roseen stated that the Commission needs to address the variability in local government stormwater programs because local control is essential. The state and federal authority represent a fairly small amount of the stormwater management in the state. There needs to be emphasis on producing resources and recommendations for local municipalities. **Chairperson Sassan** mentioned the Innovative Land Use Guidance document with model ordinances for municipalities and suggested that there might be other resources that could be

pulled together. **Mr. P. Currier** stated that he thinks that the major issue, especially with small municipalities, is not the availability of resources, but the ability or capacity of the some municipalities to actually use the resources. **Mr. Danielson** stated that the Regional Planning Commissions are a resource for those municipalities. Technical assistance and ordinance development are items that the RPC's could assist with. **Ms. Ebel** added that there is very little going on in rural areas. They are using old methods and she sees a need for model ordinances as well as education at the local level.

Chairperson Sassan directed the members back to setting a goal of the Commission and suggested the goal of bringing the responsibility of stormwater management to every property owner in New Hampshire.

Mr. Sienkiewicz stated that the Commission has talked a lot of recommending model ordinances and increasing education and outreach resources for municipalities, but that local governments have high turnover, are often understaffed, and often have volunteer planning boards. They need more than ordinances and education. He explained that homebuilders [who work in more than one municipality] have a difficult time with widely varying municipal regulations, and where, as in the stormwater/water quality arena, there is a strong basis in science for uniform regulations across the state, and little justification for regulations which vary from municipality to municipality, a uniform state regulatory scheme makes sense because it provides predictability in permitting and uniformity in results, and is not dependent on the technical competence or vigilance of a given planning board. Stormwater quality and quantity management is science-based and he feels there is potential for state level regulation. He added that would not see the Commission as a success if education and model ordinances are the only recommendations of the Commission. The Commission members agreed that there need to be recommendations beyond education and resources. **Mr. Roseen** stated that the Commission needs to understand the difficulty with the local government volunteer boards and other municipal government challenges because the bulk of stormwater management occurs at the municipal planning board and zoning board level.

Mr. Kahl made special emphasis that ecology does not acknowledge town borders.

Mr. P. Currier said that he feels the topic is very productive one for the Commission to work on. The state septic system program is a successful example of a statewide program that interacts with municipalities. Those relationships already exist and the Commission should talk about the merits of the process with stormwater.

Mr. Danielson told the Commission that there is more technical ability in the RPC's than people realize. He stated that the public works directors and road agents are very concerned about more regulations coming their way. They are the

ones who have to deal with the budget impacts. If the responsibility is moved further away from the towns' authorities, they may become more suspicious. The support should be close to the towns.

Mr. Cedarholm has worked with the city of Durham to develop and ordinance using the DES model ordinance. He had great success bringing it to the planning board, but the ordinance had to be approved by the town council. The town council saw the ordinance as having potential to slow down economic development, which the council doesn't want to do. The council asked if the city could have an ordinance that tells people to develop stormwater management systems that meet state and federal regulations.

Mr. Hemmerlien stated that if regulatory authority is moved from the local to state level, there are some differences that need to be recognized between site development and linear transportation development. There is a big difference in those situations. It is difficult to take site development regulations and apply them to linear projects. Linear project constraints need to be incorporated into the regulations.

Mr. E. Currier suggested the Commission consider that the impact of stormwater in different areas of the state have different value. For example, the impact of stormwater on farms up north may not as great as the impact on a farm closer to the Massachusetts border. He thinks the towns should be the regulatory authority.

Rep. Spang asked the Commission if they want to start at the level of the regulations or if they want to start where the largest amount of stormwater problems are and then focus on what needs to be done there. **Chairperson Sassan** asked the Commission to look at the situations (e.g., MS4, urban, rural, Alteration of Terrain, MSGP) and tackle each one on a meeting-by-meeting basis to investigate the problems, the barriers, determine what is in place, determine any overlaps in state, federal, and local regulations, and then come up with recommendations for each of those scenarios.

Ms. Manzelli asked if there is room in the proposed process for land uses that aren't listed or don't fit into these categories. **Chairperson Sassan** responded the he hopes the categories will be named in such a way that everything is included.

Mr. Danielson asked if Mr. Roseen were looking at it, wouldn't the problem areas be thought of as those with the most impervious cover and wouldn't those be mostly MS4? **Mr. Roseen** said in most cases that is right, but not always.

Mr. P. Currier suggested going back to the idea of a goal statement and repeated what Chairperson Sassan had proposed to have no net addition of volume or pollutants on a parcel-by-parcel basis. If the Commission could agree on a goal statement, they could then focus on how to accomplish the goal. **Mr. Sienkiewicz**

suggested that parcel-by-parcel language may not work. **Chairperson Sassan** agreed that there is a potential for "parcel-by-parcel" to be misunderstood. In a dense village center, you may not need or want to retain the stormwater at that site, but there still is a responsibility of the property owners to participate in a cooperative system such as a stormwater utility. **Mr. P. Currier** agreed and said that this brings up the idea of trading. **Mr. Roseen** suggested the clarification that it is parcel-by-parcel on a watershed basis.

Chairperson Sassan asked the members to go back to the idea of generating a goal statement. **Mr. Kahl** repeated the idea of no net addition in stormwater volume or pollutants for new development and asked what would be the requirement for existing development. Would it require net reductions?

Rep. Spang said that she would like to go for a softer goal such as "work toward approaches for reducing impacts". **Chairperson Sassan** suggested the goal statement, "To bring the responsibility of stormwater management to every landowner in the state of New Hampshire. The net impact of new development will result in no increase in volume or quality from pre-developed conditions." And then a third sentence dealing with existing development.

Mr. Sienkiewicz asked if it is necessary to establish a goal statement. He thinks it may be too early. **Mr. Paulsen** agreed.

Mr. Hemmerlien said that ultimately, the goal of the Commission is to make recommendations to the legislature and to look at existing regulations.

Chairperson Sassan asked the Commission members if they want to go forward with addressing each situation (MS4, urban, rural, Alteration of Terrain (AoT), MSGP) and begin discussions from the ground up, as previously described. The proposed situations would fall under six categories: urban MS4, urban non-MS4, rural AoT, rural non-AoT, MSGP-2008, construction general permit (CGP).

Mr. P. Currier suggested not spending a lot of time on construction phase controls and to focus on post-construction. **Mr. Roseen** agreed. **Mr. LeRoy** disagreed, saying there is some overlap. **Rep. Spang** stated that the failure of federal regulations is a big problem and cited lack of inspections. **Mr. Cedarholm** explained that, from a local ordinance perspective, the construction phase controls are more acceptable than post-construction controls.

Chairperson Sassan asked the Commission to agree to looking at each situation one-by-one and asking the questions outlined in the handout. **Ms. Manzelli** asked to add a question on the regulatory framework for each of the situations according to duty c. of the Commission. All agreed.

Rep. Spang reminded the Commission members that the charge of the Commission is not only to look at and make recommendations on regulations.

Chairperson Sassan agreed that regulations shouldn't be the only focus and stated that, in addition to regulations, the Commission members have discussed education, cap and trade (offset) programs, incentives, seeking funding, Regional Planning Commission involvement, economics, and stormwater utilities, which makes it apparent that the Commission is not focused solely on regulation.

Mr. Danielson stated that the idea of a "rain tax" must be addressed. Some people think that the government has no right to regulate stormwater. There needs to be education. **Rep. Spang** agreed that education should be one of the Commission's recommendations. **Mr. Roseen** asked to add to the list of recommendation the idea of redefining the issue in terms of cost. Cost is the bottom line. If there was a document that shows the economic incentives for early adoption and talks about it in terms of costs and economic incentives there could be greater support. **Rep. Spang** also added that local governments not wanting to limit development and see stormwater management and local controls as limiting need to be addressed. **Mr. Cedarholm** explained that he sees innovative development come forward in Durham without ordinances. If people were only doing what state and federal regulations require (as was suggested by the town council), it would be a big step backward. Innovative design hasn't been a deterrent to development in Durham. It isn't a big cost in the big scheme.

Chairperson Sassan asked for informal agreement to make the topic of future meetings these situations as a way to pull out information in these environments. All agreed. **Rep. Spang** asked to make sure that each land use type is represented. **Chairperson Sassan** suggested that at the end of each meeting, the Commission agrees on each land use will be covered at the next meeting. He asked if the Commission would like to invite Michael Simpson from Antioch for the next meeting. **Mr. P. Currier** asked if the Commission should spend time at the next meeting to go over the existing regulatory framework and the interaction between regulations for each land use. **Mr. Kahl** suggested that DES put together a presentation on regulation for the next meeting. The Commission also agreed to invite NH Fish and Game to present on the wildlife and habitat impacts at the next meeting.

FUTURE MEETING DATE

Chairperson Sassan asked if the first Monday of the month at 1pm works for Commission members to schedule regular meetings. All agreed to this day and time.

Date	Time	Location
November 3	1:00pm	LOB 305
December 1	1:00pm	LOB 305

Chairperson Sassan informed the Commission of the next Land Use Commission meeting date and agenda, which is on October 21 at 9:00 am in room 305 of the Legislative Office Building.

V. DISCUSSION OF INTERIM REPORT

Chairperson Sassan informed the Commission members that he and Jillian McCarthy will work on the interim report, which is due before the Commission meets again. His understanding is that it doesn't need to be lengthy and that if the report clearly describes what has been done so far and lays out a road map for future work the reporting requirements should be fulfilled. He asked the Commission members if it would be OK to submit a draft of the report to the Commission members for their review a week before the report is due. The Commission members gave an informal approval.

VI. ADJOURNMENT

At 12:15pm, **Rep. Spang** brought motion to adjourn forward. **Mr. P. Currier** seconded. **All voted in favor.**

DRAFT MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

November 3, 2008 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Newb LeRoy	Associated General Contractors of NH
Dave Danielson	NH Association of Regional Planning Commissions
Steve Kahl	NH Lakes Association
Chris Devine	NH Local Government Center
Rob Roseen	University of New Hampshire Stormwater Center
Carl Paulsen	NH Rivers Council
David Cedarholm	NH Public Works Association
David Borden	NH House of Representatives
Charlie Hood	NH Department of Transportation

Others Present:

Ted Diers (for Paul Currier)	NH Department of Environmental Services
Jamey Robichaud	Northeast Concrete Products Association
Ari Pollack	Gallagher, Callahan & Gartrell
Doug Bechtel	The Nature Conservancy
Kathryn Fox	Environment NH
Michael Simpson	Antioch University New England

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

I. ROLL CALL AND INTRODUCTIONS

Chairperson Sassan called the meeting to order at 1:09 PM.

II. APPROVAL OF MINUTES FROM OCTOBER 6, 2008 MEETING

Ms. McCarthy reviewed the following recommended changes to the draft minutes:

- The addition of a website link on page 2 to Mr. Robert Roseen's presentation at the October 6th, 2008 Stormwater Commission meeting.

- A clarification of Mr. Sienkiewicz's statement on page 6.

Mr. Danielson brought the motion forward to accept the minutes from the October 6, 2008 meeting. **Rep. Spang** seconded the motion. **All approved and none opposed.**

III. PRESENTATION 1

Mr. Ted Diers, from the Department of Environmental Services, presented a slideshow titled "NH Water Primer and Stormwater Permitting at NHDES."

http://www.nh.gov/oep/legislation/2008/hb1295/documents/stormwater_permitting_at_nhdes.pdf

The presentation focused on the draft NH Water Primer being developed by DES as well as the existing state and federal permitting structure related to land disturbance activities and stormwater discharges.

Mr. Diers explained that the NH Water Primer is the first attempt at a statewide water resources plan. The introductory chapter provides overarching information on how each of the individual chapters fit together. The individual chapters then go into greater detail on each topic. **Ms. McCarthy** informed the Commission members that a draft of the Stormwater Chapter was provided in their meeting materials and that a final version will be available at the end of November. **Mr. Roseen** questioned if the stormwater chapter should contain more information on the Multi-Sector General Permit (MSGP) 2008 and Total Maximum Daily Loads (TMDLs). **Mr Cedarholm** stated that the Municipal Separate Storm Sewer System (MS4) permits may also be linked to TMDLs and that this could have a big impact on the permits.

Mr. Diers continued his presentation and moved to the topic of state and federal permits related to stormwater. He presented summary information on the NH Alteration of Terrain (AoT) Permit, the National Pollutant Discharge and Elimination System (NPDES) MS4 permit, the NPDES Construction General Permit (CGP), and the Multi-Sector General Permit.

Mr. Sienkiewicz pointed out that both the AoT permit and the CGP involve construction site runoff and post-construction runoff controls and questioned if this is overlap. **Mr. Diers** responded that communities subject to the MS4 permit need to develop regulations for post-construction and construction-phase runoff controls and stated that this is particularly important where no other state, federal, or local regulations apply. **Mr. Cedarholm** added that MS4 communities must adopt rules for sites greater than one acre as a minimum. **Mr. Sienkiewicz** stated that this requirement closes the gap between the MS4 permit and the AoT permit.

Mr. Diers explained that, because New Hampshire is not a delegated state, the NPDES CGP is administered by EPA. DES issues a general 401 Water Quality Certification for the overall general permit and that individual projects could be

pulled out of the general permit or could require an individual 401 Certification under certain circumstances. He gave the example that the state may want to look more closely at projects near impaired waters or outstanding resource waters. **Mr. Diers** further explained that if a project does not trigger one of the state permits, the state would not necessarily be notified of a project. The Commission members offered examples of projects that may be subject to the CGP, but would not trigger a state permit including installation of a tennis court. **Mr. LeRoy** suggested the possibility of requiring applicants to file a copy of their Notice of Intent (NOI) to the state at the same time it is submitted to EPA. **Mr. Danielson** asked if DES has considered administering the NPDES CGP. **Mr. Diers** said that it had been discussed, but it is not something DES wants to do. It would require more resources than DES currently has and would be costly.

Mr. Diers then discussed the Multi-Sector General Permit (MSGP) and said that he doesn't know a lot about the permit. **Mr. LeRoy** told the Commission that the 2008 MSGP was just issued, which requires a new NOI to be filed by January 5, 2009 and a new Stormwater Pollution Prevention Plan (SWPPP). The sampling requirements are the same. He stated that it is going to be more difficult to obtain coverage under the 2008 MSGP. Unlike other permits, this deals with existing development. He gave examples of companies that currently require coverage under the MSGP including Pike Industries, Audley, and Precision Lumber. **Mr. Danielson** asked if it also includes commercial development. **Mr. LeRoy** responded that it can include some commercial depending on the situation. He said that it excludes shopping plazas and malls, but includes airports. Parking lots are typically not brought into the permit unless the parking lots are used for vehicle storage. **Mr. Cedarholm** added that it also includes some municipal operations. **Mr. LeRoy** explained that monitoring and inspection requirements typically result from a complaint. **Mr. Roseen** added that the permit requires self-monitoring and stated that the big change between the previous MSGP and the 2008 MSGP is that the 2008 MSGP links to TMDL.

Mr. Diers then moved to a discussion on permitting context. He stated that DES only permits what comes in the door. DES has jurisdiction based on what people want to do. He also said that where to locate a project is decided before DES gets a permit. He explained that state permits can happen before, at the same time, or after the local permit decisions; this is different for each town and that permit decisions are based solely on statutes and rules. DES has guidance and policy, but ultimately, decisions are based on statues and rules. He stated that some permits are formulaic and some are interpretive, and some have a federal component. **Rep. Spang** asked if permit applicants need to show the least impacting alternative. **Mr. Michael Simpson** responded that this is needed to wetland permits. **Ms. McCarthy** added that the draft Alteration of Terrain rules incorporate the Antidegradation provisions of the NH Surface Water Quality Standards, which includes an alternatives analysis for proposed water quality degradation.

Mr. Diers explained that there are a lot of places within the existing permitting process where projects can be adjusted, through providing comment, setting conditions to a permit, appeals, and inspection for compliance. He concluded by saying that although these regulations and permits exist, there are many ways outside of regulations to address stormwater management concerns.

Mr. Danielson stated that most Regional Planning Commissions (RPCs) have master plans for their regions. These plans could be considered for answering the question of where development should go.

IV. INTRODUCTIONS

Chairperson Sassan requested that Commissioners, staff and attendees introduce themselves to Mr. Simpson by name and representation.

V. PRESENTATION 2

Mr. Michael Simpson from Antioch University New England gave a presentation titled "Water from the Hills."

http://www.nh.gov/oep/legislation/2008/hb1295/documents/water_from_the_hills-_preparing_our_communities_for_change.pdf

The presentation focused on research he has conducted on culvert sizing. He stated that, historically, stormwater management structures, including culverts, were sized for the 24 hour, 25-year storm event. New Hampshire has seen many 100-year storm events in the last few years that have resulted in bridge washouts and loss of life. He described the multi-tiered research analysis. The first step was a build-out analysis for the White Brook watershed using a build-out model and based on city and town zoning density. He and his research team studied flow characteristics at each culvert and the relationship and influence of culverts upstream. He noted that they found in flooding events, sediment could have a greater economic impact than water. As part of the build-out analysis, they measured all of the culverts and slopes and reversed engineered the culverts to determine what level of storm events they were designed for and went further to determine what size the culverts should be. They recognized three reasons for a culvert being undersized: 1) the culvert was very old and there was no design used for sizing; 2) the culvert was designed based on the "Green Book" [Rockingham County Conservation District. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*. August, 1992.]; or 3) the landscape had changed to include more development and increased impervious cover since the culvert was designed.

Phase 2 and the multi-tiered analysis looked at climate impacts. They used the A2 model, which **Mr. Simpson** identified as being slightly pessimistic, that is based on carbon dioxide loading. He stated that climate change induced increases in rainfall amounts would disproportionately increase the frequency of the most intense storms. He explained that we are seeing an increase in storm frequency

by about 30% and that in the future, between 2046 and 2076, the 250-year storm event will come with a frequency of the historic 25-year storm event.

Mr. Simpsons discussed the tools for adapting to these changes. He stated that many people believe that anthropogenic climate change is not real. Regardless of the cause, even the most conservative carbon dioxide model shows that by mid-century, around 2040, there will be an increase in carbon dioxide in the atmosphere. **Mr. Simpson** stated his concern that at the municipal planning board level, where land use decisions are made, there is a failure to see how the incremental, small decisions have a cumulative impact over time.

Mr. Simpson closed with future research needs explaining that the analysis to date has been done in rural areas because the data is based on the best data available from Granite. To do an analysis in an urban environment they need much more refined elevation data.

Rep. Borden asked if the model they developed can be used more quickly and cost effectively for each town. **Mr. Simpson** responded that the model is almost there, but in order to determine a culverts capability, it needs to be reverse designed. He explained that the methodology can be used anywhere, but the numbers can't be used everywhere because rainfall is different in different regions.

Mr. Cedarholm explained when he and his crew replace culverts they need to decide which to replace first. In some situations he is happy that he has some small upstream culverts because they hold back some water. They need to replace the downstream culverts first in order to have them handle the higher flows when upstream culverts are replaced. **Mr. Simpson** responded that culverts are not designed to be dams, adding that a failure could be catastrophic.

Mr. Danielson asked how to get local planners to begin to think on a macro scale and to plan regionally. **Mr. Simpson** agreed that a regional perspective is necessary because stormwater is not contained within municipal boundaries.

Ms. Ebel stated that just putting in a bigger culvert is not the only issue; a lot of education needs to be done to teach public works. **Mr. Simpson** said that there are different "lenses" to look through for each culvert. There are many objectives including geomorphology, wildlife, etc. **Ms. Ebel** added that municipalities sometimes use the Regional Planning Commissions (RPC)s and sometimes do not. Some towns pay dues, other do not. She asked how RPCs can be strengthened to help deal with these issues. **Mr. Danielson** responded that RPCs allow towns access to a tremendous amount of information and that the RPCs depend on each other. **Ms. Ebel** said that some states require RPCs to be involved. **Mr. Danielson** informed the Commissioners that there has been no increase in RPC funding since 1988.

Mr. Kahl stated that replacing culverts is a reactive process. The Commission needs to look at a proactive approach such as increasing buffers and other incentives for people to reduce the amount of lawn and pavement. **Mr. Simpson** responded that they have looked at proactive approaches, such as low impact development (LID), but that the presentation focused on culverts because it is something that people can understand. **Mr. Roseen** added that the land use and proactive approach is the next logical step. He stated that economic incentives for proper land use planning and LID approaches, as well as cost-based incentives for communities are needed so they still see economic incentives for moving forward.

Mr. Danielson told the Commission that, at the time, the planning boards thought they were doing great things. They thought they were on the cutting edge, although he can recognize now that some of the decisions they made were not right. The things that are being discussed now were not even on the map. The Commission needs to also look into the future and ask what will be the best decisions twenty years down the road.

Mr. Doug Bechtel informed the Commission that he has been involved in a culvert assessment in the Ashuelot River watershed and that they will begin meetings with watershed towns and the RPC. He asked Mr. Simpson what he would ask a local road agent about fixing a failure. **Mr. Simpson** responded that he would first ask the road agent what happened. He encourages "train the trainer" programs for DPW staff to train each other. The Technology Transfer program at UNH was mentioned as a training option as well.

Mr. Simpson said that his research will continue and that he is most interested in dams and floodplains. He explained that anytime water moves, sediment moves, and when sediment moves, phosphorus moves. Controlling water quantity is driving erosion control and ultimately control of nutrients. **Rep. Spang** asked him more about the issue of dams and floodplains. **Mr. Simpson** explained that he is talking about small dams that act similar to culverts.

Mr. Diers asked him if, and where, he sees places in which the permitting structure limits the ability to do what needs to be done to address culverts or other stormwater issues. He gave the example that road agents can replace the same size culvert without having to deal with DES. **Mr. Simpson** responded that he has concerns that the draft Alteration of Terrain rules uses the historic 10-year storm event, based on old data. He also mentioned that the draft rules have a 10% effective impervious cover (EIC) requirement, which is very good and important, but none of the rules are looking at the future.

Mr. Sienkiewicz stated that he is impressed in a bad way about how much influence the fire department and road agents have on subdivision regulations. He stated a take-home point from Mr. Roseen's presentation at a previous meeting, that the land use side has to be pushed. The landscape needs to be made more resilient. **Mr. Roseen** added that the cost needs to be put more equally on

developers and owners and not only on municipalities. Many of the approaches for stormwater management add value to a property. **Mr. Sienkiewicz** responded that upping the regulations for new construction only puts unfair burden on new construction. **Mr. Danielson** stated that is where stormwater utilities come into play.

VI. DISCUSSION OF FUTURE MEETING TOPICS AND DATES

Chairperson Sassan asked the Commissioners to confirm that the first Monday of the month at 1pm works to schedule regular meetings. All agreed to this day and time.

Date	Time	Location
December 1, 2008	1:00pm	LOB 305*
January 5, 2009	1:00pm	LOB 305*
February 2, 2009	1:00pm	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VII. POTENTIAL INVOLVEMENT OF REGIONAL PLANNING COMMISSIONS

Chairperson Sassan read the following excerpt from an October 17, 2008 email from Mr. Sienkiewicz to the Commission:

> *Dave Danielson followed up my comment with a comment which the minutes reflect as "Mr. Danielson told the Commission that there is more technical ability in the RPC's than people realize. He stated that the public works directors and road agents are very concerned about more regulations coming their way. They are the ones who have to deal with the budget impacts. If the responsibility is moved further away from the towns' authorities, they may become more suspicious. The support should be close to the towns."*
>
> *I agree that there is quite a bit of technical ability in the RPCs. I am glad to be reminded that there is - potentially - both a useful resource and a potential intermediate level of permitting authority between the State and the localities.*
>
> *I would, and I believe builders generally would, like to see the RPCs have more influence in the permitting process - IF it replaced, and didn't simply add to, areas to which the municipalities are already attending. On something like stormwater, uniform state regulations can be digested by professionals at the RPCs and explained to their constituent municipal boards and road agents. The fundamental hindrance to RPCs, as I understand it, is that they are largely funded by their member municipalities, whose participation is more or less voluntary. The municipal board members can choose to listen to (or ignore) the professionals at the RPC just like they can with the State, wherever there are no laws that supersede local permitting authority. I think the "technical assistance" model that our RPCs work under would only get good, uniform results across the State if the RPCs had significant funding, independent of the towns, AND the*

towns all had board members who stayed in their positions a long time AND were open to receiving the advice of and training from the RPCs. Might only work if each municipality had a staff planner, too.

I welcome Commissioners' thoughts.

Mr. Sienkiewicz told the Commission that he still stands by his statement and welcomed discussion. **Ms. Ebel** stated that she thinks it would be good to strengthen the hand of the RPCs. Towns are not currently required to be a member of **an**~~d~~ RPC and some towns do not have planners. She felt it would be beneficial to get a situation where there is a required linkage between the towns and the RPCs. **Mr. Danielson** stated that the RPCs would support that added responsibility, but they would need more funding. He also stated that funding is not consistent between the RPCs. **Ms. Ebel** explained that if a town is a member of an RPC, they are supposed to send two representatives, but sometimes this doesn't happen. **Mr. Paulsen** noted that this isn't a specific duty of the Commission, but asked if the Commission will look at possible funding mechanisms. **Ms. Ebel** added that this issue gets to the fact that water doesn't adhere to municipal boundaries**,** and more stormwater planning should be done regionally.

Rep. Spang stated that RPCs cannot provide as many services as they would like to with the current dues. Towns are afraid to ask for assistance from the RPCs because they are afraid of increasing the fee. **Mr. Danielson** responded that everyone would like to get services for free. **Ms. Ebel** asked how fees are calculated. **Mr. Danielson** answered that dues are calculated differently for each RPC. Manchester's fee for example, has been $0.67 per person for the last fifteen years. **Ms. Ebel** answered that, that for example, New London pays $5,000 per year for its dues, but is charged separately for RPC services. **Rep. Spang** suggested that this could be a better conversation when and if the Commission determines that there is something they want the RPCs to do. **Chairperson Sassan** noted that the RPC issue would be readdressed and asked if there is a good model in place where RPCs have a clearly stated role in permitting in New Hampshire. **Mr. Danielson** said no, the RPCs have no authority, but that he will try to find and example outside of New Hampshire. **Ms. Ebel** asked if the Commission can look at regional stormwater planning, but noted that although the RPC's work on a larger, regional level than the town, the RPCs do not follow watershed boundaries. She opined that stormwater planning should be done on a watershed basis to the extent possible.

VIII. FUTURE SCHEDULE

Chairperson Sassan informed the Commission that there are eleven more meetings. He proposed a work schedule, which would allot one meeting for each of the five permitting scenarios, four meetings to make hypotheses, recommendations, and discussions, and the last two meetings for the final report. He asked if the Commission agreed with this approach. **Mr. Cedarholm** asked if the interim report had been submitted. **Chairperson Sassan** stated that the

interim report had been submitted and that he was going to sign it after the meeting. **Mr. Cedarholm** explained that, based on the email correspondence, it not clear that stormwater may not be under municipal authority. **Chairperson Sassan** responded that it is obviously a topic of interest that should be addressed in future meetings, but that it had not been discussed at a previous Commission meeting and was therefore not included in the interim report. **Mr. Danielson** asked Rep. Spang, because of her experience with other study Commissions, if the interim report is consistent with others. **Rep. Spang** answered that it is consistent and meatier then most interim reports.

Mr. Danielson brought forward a motion to approve the interim report. **Mr. Paulsen** seconded. **All approved and none opposed.**

Chairperson Sassan asked the Commissioners to go back to the process of the meeting schedule. **Ms. Ebel** questioned if each topic needs a full meeting. **Chairperson Sassan** said that he thinks that each topic will need a full meeting and thinks that meetings may need to be longer to provide sufficient time. **Ms. Ebel** stated that the five scenarios agreed upon at an earlier meeting really focus only on permits, and expressed concern that other important aspects of stormwater treatment, such as dames and the placement and replacement of road culvert, especially on town roads, might be overlooked. **Chairperson Sassan** asked the Commissioners to keep in mind that the five scenarios approach is simply a way to break up the landscape. He added that the Commission is fortunate to have appointees from a broad, all-encompassing range of stakeholders and that the Commission will rely on that broad knowledge base to ensure that issues, which do not fall neatly within one scenario or another, are also brought forward. He added that if the Commission gets through the nine questions established to study each of the scenarios and realize that information is missing or there are additional questions, there will be opportunity to address it further.

ADJOURNMENT

At 3:34 PM, **Rep. Spang** brought motion to adjourn forward. **Mr. Sienkiewicz** seconded. **All voted in favor.**

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

December 1, 2008 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Newb LeRoy	Associated General Contractors of NH
Dave Danielson	NH Association of Regional Planning Commissions
Chris Devine	NH Local Government Center
Rob Roseen	University of New Hampshire Stormwater Center
Carl Paulsen	NH Rivers Council
David Cedarholm	NH Public Works Association
David Borden	NH House of Representatives
Charlie Hood	NH Department of Transportation
Michael Trainque	American Council of Engineering Companies
Paul Currier	NH Department of Environmental Services
Joe Robertie	NH Timber Owners Association
Amy Manzelli	Business and Industry Association of NH

Members Absent:

Jacalyn Cilley	NH Senate
Steve Kahl	NH Lakes Association
Eric Stohl	NH House of Representatives

Others Present:

Barbara McMillan	NH Department of Environmental Services
Jeff Andrews	NH Department of Environmental Services
Peter Abdelmaseh	Northeast Concrete Products Association
Joel Anderson	NH House of Representative Staff

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

I. ROLL CALL AND INTRODUCTIONS

Chairperson Sassan called the meeting to order at 1:08 PM. Chairperson Sassan summarized the meeting agenda. Noting new members and attendees, he

requested that Commissioners, staff and attendees introduce themselves by name and representation. Introductions were made around the room.

II. APPROVAL OF MINUTES FROM NOVEMBER 3, 2008 MEETING

Ms. McCarthy reviewed the following recommended changes to the draft minutes:

- Corrections to the section numbering.
- The addition of Ms. Ebel's edits to clarify her statements on page 8 and 9 of the draft minutes.

Rep. Spang brought the motion forward to accept the minutes as amended as per Ms. Ebel's comments from the November 3, 2008. **Mr. Danielson** seconded the motion. **All approved and none opposed.**

III. PRESENTATION 1

Ms. Barbara McMillan, from the Department of Environmental Services, presented a slideshow titled "Small MS4 General Permit". Ms. McMillan works in the Watershed Management Bureau doing watershed outreach and education in the Watershed Assistance Section. Over the last four years, she has been involved with the stormwater coalitions on outreach and education.

http://www.nh.gov/oep/legislation/2008/hb1295/documents/small_ms4_general_permit.pdf

The presentation focused on federal stormwater permits, primarily the Municipal Separate Storm Sewer System (MS4) permit, and included information on the New Hampshire Stormwater Coalitions, which formed as a result of the MS4 permit.

Ms. McMillan provided a summary on the federal Phase I Stormwater Regulations, which included industrial activities associated with stormwater discharges, large municipal separate storm sewer systems (defined as ≥ 250,000 people), and medium municipal separate storm sewer systems (defined as between 100,000 – 250,000 people). New Hampshire didn't fall under Phase I due to the smaller size of the municipalities. **Ms. McMillan** then provided background on the federal Phase II stormwater permits, which began in 2003 with 3 five-year permits. All permits in New Hampshire are issued and overseen by the US Environmental Protection Agency (EPA) because New Hampshire is not a designated state. There are about five states in the country that are not delegated. Massachusetts is also not a delegated state. New Hampshire does not oversee the permit, but does keep track of what is going on some level.

The Phase II Stormwater Program includes the Construction General Permit (CGP), the Multi-Sector General Permit (MSGP), and the MS4 permit. The CGP is required for construction activities with a disturbance of one acre or greater and requires that the owner/operator develop a stormwater pollution prevention plan

(SWPPP). The MSGP is required for municipal industrial facilities, such as municipal transfer stations or recycling stations or vehicle maintenance facilities. In 2008, the MSGP will also be required to do a SWPPP, similar to the CGP. For construction activities, the SWPPP identifies the type of pollutants potentially discharged from the site and involves coming up with BMPs to manage the pollutants coming off of the site. **Ms. McMillan** introduced Mr. Jeff Andrews of the NHDES Waste Management Bureau, who reviews the permits that come in and is the point of contact for the permits she is discussing in her presentation.

Mr. Sienkiewicz asked if the MSGP applies to only industrial activities conducted by a municipality or if private industrial activities are subject to the permit as well. **Ms. McMillan** deferred the question to Mr. Andrews. **Mr. Andrews** explained that Phase I is the original part that included heavy manufacturing, light manufacturing, and a few other things that EPA defined as having stormwater associated with industrial activity. This includes vehicle salvage yards and recycling facilities, for example. Phase II is when municipalities were brought in and currently, only the transfer stations that do recycling, are included.

Ms. McMillan continued her presentation with a more detailed discussion of the MS4 or small MS4 permit. There are 45 municipalities that fall under the small MS4 permit (handout, available online at http://www.nh.gov/oep/legislation/2008/hb1295/documents/phase_II_handout.pdf). These are municipalities that have "urbanized areas" as defined by the 2000 census. Seven towns received waivers. 38 towns are involved in the permit and 4 non-traditional municipalities such as DOT and UNH. The original MS4 permit was a fiver-year permit and expired on May 1, 2008. Municipalities are still following their old permit until the new permit is issued. **Ms. McMillan** pointed out that there are many municipalities that fall under the permit that are not what is typically considered urban. Many of them are actually fairly rural. In addition, some urbanized municipalities, such as Concord and Franklin, are not included under the permit. EPA has recognized this and plans on redoing the census data in , changing the configuration to include the larger municipalities. **Mr. Sienkiewicz** asked if the more urbanized municipalities were not part of the permit because of they had lower densities. **Ms. McMillan** answered yes and explained that some of the coalition members were not happy about it because they are large cities and have many of the same stormwater issues that the other members have.

Ms. McMillan explained that, under the MS4 permit, municipalities must develop a stormwater management program, which includes the submittal of a notice of intent (NOI) to EPA and describes how they intend on meeting the requirements of the permit. The permit requirements include six minimum control measures and a timeline for reporting. The six minimum control measures include:

1) Public education and outreach;
2) Public involvement and participation;

3) Illicit discharge detection and elimination;
4) Construction site storm water runoff control;
5) Post-construction management; and
6) Pollution prevention and good housekeeping.

Annual reporting is required to EPA.

Ms. McMillan then discussed the stormwater coalitions in New Hampshire. There are three coalitions, Nashua, Seacoast, and Manchester. The coalitions are made up of municipal representatives who coordinate stormwater within the municipality. This could be a town stormwater coordinator if they have one, the DPW director, or recycling coordination. The coalitions meet approximately once a month. The primary focus of the coalitions is meeting the permit requirements. The coalitions allow for opportunities for networking, collaboration and coordination. They also are able to vent and bond over the permit requirements. Initially the coalition members got together and complained about the permit, calling it an unfunded mandate and saying that there was no support in the communities to do it. It slowly transformed at later meetings into a couple of towns saying that they had submitted their NOIs. Then it became an opportunity to report on success stories on what they were accomplishing. **Ms. Ebel** asked if the coalitions are created by state **statute**. **Ms. McMillan** answered that they are not. There is no jurisdiction. Originally, NH DOT took the lead on forming these groups to help meet their permit requirements by facilitating these groups, but there is no formal jurisdiction. Towns appoint representatives and are then able to check off on their permit that they participated in these coalition meetings. **Ms. McMillan** explained that there are no other venues for these municipalities to get together to discuss this particular issue. Coalitions have worked on collaborative projects, conferences, presentations, roundtables, and legislation, including the recent stormwater utility legislation.

Ms. McMillan went through each of the minimum control measures to better get the point across that the MS4 permit is more than just a permit that is issued; it is a program. An important note is that Section 319 Nonpoint Source funding to address nonpoint source pollution problems is no longer available for MS4 communities to implement components of their permit. The public education and outreach component of the new permit will require a more targeted, local message specific to the municipality, such as a particular pollutant of concern in that area and they must have a method to evaluate the effectiveness of their education and outreach efforts. The new permit may also require wet weather monitoring in addition to dry weather illicit discharge investigations. This requires much more time, work, and expertise and will be challenging for the municipalities to achieve. **Ms. McMillan** described the requirements for the construction site runoff control and post-construction runoff control and stated that they are similar to the requirements of the CGP. They have been advised by EPA to do this through regulation and ordinances as well as training to local contractors. A major barrier to the two construction-related control measures has been presenting

to the community that an ordinance or regulation is needed to control stormwater. The support from decision makers has been lacking.

Ms. Manzelli asked how this requirement fits into the CGP or the state Alteration of Terrain permit. She asked if there is overlap. **Ms. McMillan** explained that these two construction-related control measures are a local control for the **construction** general ~~construction~~ permit. There has been coordination between the MS4 permit construction-related controls and the alteration of terrain permit showing how the permits work together. **Mr. Andrews** added that he believes EPA's long term goal with this is to have the MS4 communities have their own erosion and sediment control programs to mirror the construction general permit so that projects in those communities will only need to do what the municipality requires and won't need to do anything more than file and NOI for the federal permit. The towns can regulate smaller than the one-acre size as well. **Mr. Sienkiewicz** asked for clarification that the towns can regulate a smaller disturbance than one acre, but that the CGP only regulates down to one acre. He asked if there is an upper limit. **Mr. Andrews** confirmed that towns can regulate smaller than one acre and that there is not an upper limit. For the CGP, if a project disturbs more than one acre, it requires a permit. **Ms. Manzelli** asked if the towns, regardless of the size of a construction project, could regulate projects more stringently, but not more lax than the federal regulations require. **Mr. Andrews** confirmed this. **Rep. Spang** asked what would happen if a town refused to comply with implementing the construction and post-construction ordinances. **Ms. McMillan** responded that this question is often the first asked by the City Council. If a town did not comply with one of the control measures, it would mean that they weren't meeting the permit requirements. To date, EPA has sent out letters indicating that the town is not meeting the permit requirements and directing them to meet the requirements and they have issued one fine to the town of Atkinson due to failing to file their annual reports. It is uncertain if additional enforcement will come.

Dr. Roseen asked that since New Hampshire is not a delegated state, if the towns meet the federal requirements, they don't have to develop a construction site runoff control program. **Ms. McMillan** confirmed. **Dr. Roseen** then asked how many MS4 towns have complied with this part of the permit. **Ms. McMillan** said that she polled the stormwater coalitions to get rough numbers and estimated that about 50-70% have something going on toward addressing the erosion and sediment control requirement. She mentioned that this requirement and the post-construction requirement seem to be the most difficult for municipalities. She added that around 20% actually have ordinances adopted. **Dr. Roseen** asked if the estimates for the MS4 towns was reflective of what municipalities are doing statewide. **Ms. McMillan** stated that she thinks non-MS4 communities are doing less than MS4 communities. There is a lack of awareness and the lack of requirements for municipalities that are not MS4 communities. In her outreach and working with municipalities on the seacoast, she has experienced that there is a lot less awareness in communities that are not MS4-communities.

Chairperson Sassan asked for clarification that there is only a percentage of MS4 towns that have erosion and sediment control programs in place currently. **Ms. McMillan** answered that many MS4 towns have programs in place, but may not have ordinances adopted. She explained that if they don't have an ordinance in place, they are automatically out of compliance with the permit. **Mr. Cedarholm** clarified that it doesn't necessarily have to be an ordinance; it could be regulation to satisfy the permit requirement. **Ms. McMillan** added that some municipalities went through their existing regulations to determine where there may be holes to fill to meet this requirement. She has a list of what EPA is looking for in the ordinance or regulation to meet the permit requirement.

Mr. Danielson explained that he is troubled by the lack of enforcement if a town does not meet a permit requirement. He said that it sounds like, with the exception of the Atkinson example, very little is done. **Ms. McMillan** stated that there have been other notifications to towns, but she only knows of one other letter to Seabrook. **Dr. Roseen** stated that it sounds like 80% of the permits are potentially out of compliance. **Ms. McMillan** explained that, technically, they are out of compliance, but if they are able to report to EPA and describe how they are working toward compliance, EPA is satisfied. **Mr. Danielson** stated that the MS4 permit seems to use moral tools for their enforcement as opposed to punishment. The moral tactic is that the permit requirements are good things to do. If you don't do it, there is no punishment. **Ms. McMillan** responded that there is still a fear that EPA will do enforcement and **Mr. Danielson** responded that it is only an implied threat. He asked what if Atkinson tells EPA that they are not going to pay the fine. This is important to understand as the Commission goes forward and tries to determine how to deal with this. **Dr. Roseen** mentioned that this discussion is about compliance with the first permit, which was much easier than what the new permit is going to be. **Mr. Cedarholm** added that with the first permit, EPA didn't really have enforcement in place. It has been made clear by EPA that the second permit will have increased enforcement actions. **Mr. Danielson** added that in Worcester, MA has estimated that in order to come into compliance with the new regulation they will have to spend over one billion dollars. The Public Works Director said that there is something wrong and that they can't do this. He asked to come up with a more holistic look at what they're doing instead of a regulation type approach.

Ms. McMillan continued her presentation explaining the post-construction requirements of the MS4 permit. She stated that around 20-30% of the towns have adopted ordinances and recognize that they need to look at low impact development (LID). She stated that the barriers to this requirement are a lack of support from communities, lack of enforcement from EPA, and lack of on-the-ground examples of LID. One barrier that seems to be going away is that the science of LID is new. There is more information out there and the work that the UNH Stormwater Center is doing is filling that need.

Ms. McMillan summarized her general observations and comments and stated that the needs of municipalities are diverse. There is a different level of knowledge between towns, planning boards, and councils. The coordinators lack support from the state and from EPA. The municipal priorities for water are often first comes drinking water, second comes wastewater, and last comes stormwater. The MS4 permit falls short because it does not require controls for construction activities under one acre. In order to regulate less than one acre, municipalities have to develop their own programs. She also stated that MS4 communities are just a small part of the state. There are many towns that contribute to stormwater problems, but they aren't regulated under the MS4 permit. When listing ideas that may help support municipalities meet the MS4 permit requirements, stormwater utilities were discussed. She mentioned that although this is listed as an idea that may help, many towns might oppose stormwater utilities because they feel it discourages development. **Ms. McMillan** also explained that there is a question of the authority of municipalities to regulate stormwater.

Dr. Roseen mentioned that the Commission has previously discussed the issue of authority and asked how that can be resolved. He asked if we need a formal interpretation of the Rules or a clarification of the Rules. **Ms. McMillan** responded that the authority issue has been a problem all along. The Local Government Center (LGC) was the first group to say that they didn't see the legal authority for municipalities adopting these ordinances. She stated that she isn't sure if it is just education that needs to be done, or if actual changes to the Rules need to be made to give municipalities the authority. **Dr. Roseen** asked if the federal Phase II stormwater program gives the authority for municipalities to regulate stormwater through ordinance. **Ms. McMillan** responded that state authority is needed as well. **Mr. P. Currier** explained that municipalities only have the authority given to them by the legislature and it is not clear that there is any authority for stormwater that meshes with the Phase II requirements. **Mr. Danielson** mentioned that the comment that was made previously about stormwater utilities makes it clear that some do not understand what the stormwater utility legislation was. It was an enabling act, which means that they can establish a utility if they choose, but do not have to. The legislature has to understand who is going to pay for stormwater. Is it going to be that everyone pays equally or that everyone pays proportionally to the amount that they contribute? That is what the stormwater utility does, but it is voluntary.

Mr. P. Currier stated that independent of a utility, the issue is whether a municipality, in the absence of a utility, has the authority to adopt ordinances. **Chairperson Sassan** added that the most comprehensive answers on authority came from Eric Williams from NH DES, who assisted with the development of the Innovative Land Use Techniques Handbook, which includes model ordinances for stormwater. Mr. Williams listed in his email the legislation that he believes enables municipalities to manage stormwater. **Chairperson Sassan** suggested that the Commission might want to invite him to the next meeting. He questioned if the Commission is dealing with two issues. The first being the issue of local

stormwater ordinance separate from the Phase II Program and the second being whether EPA has given municipalities the authority to create ordinances. **Mr. Danielson** clarified that EPA cannot give that authority. **Chairperson Sassan** gave the example that if EPA stated municipalities of a certain population density in the United States may regulate road salt application rates so as not to degrade public waters, would it still require the NH legislature's okay for towns to do this? **Mr. P. Currier** answered that in virtually all cases, the state legislature needs to take appropriate action to be able to implement the federal regulation. This involves the creation of enabling legislation at the state level. **Mr. Danielson** added that the Commission is talking about ordinances and his understanding is that the planning board can adopt regulations, not necessarily ordinances, and can waive or not waive. And ordinance is something that a planning board cannot adjust unless it goes to the zoning board of adjustments. **Mr. P. Currier** explained that there are two things, the land use and subdivision regulations, which the planning board has authority to adopt, involve development and change of the landscape. Regulation of stormwater on the existing landscape in the absence of a planning board action or a site plan review, the mechanism for the authority is much less clear. **Ms. Ebel** agreed with Mr. P. Currier and added that in New London, they passed LID regulations pursuant to the authority given to municipalities by the state to regulate developments, which includes drainage. The LID regulations were an extension of the drainage regulations. She revisited the statute regarding site plan regulations and found very specific language about drainage. **Rep. Spang** stated that an LSR was filed for fluvial erosion hazard zoning that came out of the flood Commission. There is an opportunity to expand to be more general to cover stormwater. **Mr. P. Currier** asked if it would be appropriate for the Commission to ask the Attorney General's office to give assistance in understanding the authority. **Mr. Anderson** responded that the Attorney General has gone before other Commissions. They may not provide a formal opinion, but instead would present to the Commission. **Ms. Ebel** asked what Commissions do in this situation when there is a legal question. **Rep. Spang** explained that the Groundwater Commission has had the Attorney General speak. They have also contacted a few different attorneys to give their differing opinions about specific groundwater regulations. The Stormwater Commission can do what they want to get a legal opinion. **Dr. Roseen** stated that the topic of authority is a very important one and that he doesn't know if the Commission can go forward with studying and making recommendations until authority is determined.

Chairperson Sassan recommended that authority be the topic of the next Commission meeting. He added that he feels like there are two issues. The first being the authority issue being discussed and the other being that EPA has not clearly sent the message to the state legislature as to what it should be enabling. **Mr. P. Currier** responded that EPA assumes that municipalities have the ability to do what the federal law requires. **Chairperson Sassan** asked if that is the case in most states. **Mr. P. Currier** responded that he believes that is the case in most states. **Mr. Sienkiewicz** added that the cheat sheet for the Phase II permit,

provided by Ms. McMillan, says an ordinance or other regulatory mechanism to require erosion and sediment control as well as sanctions to ensure compliance to the extent allowable under state, tribal, or local law. EPA assumes that municipalities have state authority to do what the federal law requires, but maybe the state doesn't want municipalities to have that authority. This is an interesting potential tug of war. **Mr. P. Currier** explained that the Town of Milford is regulating stormwater under the authority of public health statutes. The Milford Public Health Officer thought this was a stretch to take sewers, drains, and sewage to regulating stormwater, where there is no sewage involved.

Ms. Ebel stated that the issue of authority is important, but there is also a lot of work to do to understand what happens with stormwater in the state that she hopes the Commission will spend most of their time on that and not too much on the authority issue. **Mr. Danielson** responded that the MS4's under EPA are what people are focusing on, but what Ms. McMillan pointed out in her presentation is that a lot of the problems are in municipalities that are not included in the MS4 areas. If the Commission agrees that stormwater is important, it shouldn't be confined to just the MS4 area, but the entire state. Then the next issue is the authority. It comes back to the moral issue. Stormwater management should be done because it is good to do, but who is going to pay for it. There is going to have to be a balance between studying stormwater and understanding authority. **Ms. Ebel** clarified that of the remaining Commission meetings, she would like to see one meeting spent on the issue of authority and the rest of the meetings using the agreed upon approach to meet the duties of the Commission. **Rep. Spang** notified the Commission that she put in a bill to extent to Commission another year. **Ms. Manzelli** stated that the Commissioners have had an opportunity to express their opinions on the authority issue and that additional discussion on the topic by the Commission without outside guidance. She recommended getting in touch with the Attorney General's office, DES, and towns who have been through this issue. **Chairperson Sassan** agreed and noted that the Attorney General, Eric Williams from DES, and the Local Government Center will be conferred with. **Ms. Manzelli** added that she feels the question to be asked is "What, if any, authority do New Hampshire municipalities have to regulate stormwater." **Mr. Roseen** added, "…and what do we need to ensure that", stating that the comment in the earlier email dialog was that it might not yet understand what needs to be done to move forward for enabling legislation. **Chairperson Sassan** asked the Commission if EPA has given clear enough information for the state legislature to allow towns to comply with the Phase II program. **Mr. Cedarholm** stated that EPA has given information to the MS4's. **Dr. Roseen** added that there is a disparity on the state element versus the federal element. Even though the state doesn't implement regulations or ordinances, it does not mean that the federal government can't come and enforce it. There is still a federal enforcement component even if the towns don't have the authority to enact a stormwater ordinance it doesn't obviate the requirement for Phase II compliance.

Ms. McMillan continued her presentation and described the potential availability of funds from the Section 319 program to award to four municipalities to conduct a feasibility study for the development of a stormwater utility in each of those municipalities. Manchester and Franklin have done feasibility studies and there is a great need for such studies in other towns, but the cost can be $20,000 to $30,000. In addition, Manchester spent another $225,000 to put the utility in place. **Ms. McMillan** explained that she is currently involved with the Clean Watershed Needs Survey, which typically comes every four years from EPA and has to do with the state revolving loan fund and other legislative activities. The needs and the costs for NH communities for wastewater treatment are assessed. EPA encourages the inclusion of stormwater in these assessments and to also allow the state revolving loan funds to go toward stormwater capital needs. She is working with the stormwater coalitions to determine what the needs are. She believes a Rule change will need to be made. In addition, there may be an increase in funding to the Department of Public Works and an opportunity to pass through funds and the Clean Water Needs Survey may be used to allocate the funds.

Ms. McMillan moved to the topic of enforcement of the MS4 permit and explained that it is her understanding that with the new permit, there will be more enforcement. She added that there might be an increase in the number of New Hampshire regulated communities in the future. She emphasized that although this is called a permit, it is not as simple as getting a one time permit and being done. It is an ongoing process. It is a five-year permit with annual reporting. **Rep. Spang** asked Ms. McMillan to clarify her statement that the number of New Hampshire regulated communities will increase, did she mean the number of communities subject to the MS4 permit. **Ms. McMillan** responded yes, that EPA will use the new census in 2012 or 2013 and they will change the definition. **Dr. Roseen** asked if Ms. McMillan has a feel for what the substantive changes are with the new permit. **Ms. McMillan** responded that Thelma Murphy from EPA has been good at getting the information out to the communities. There is a continuation of what communities are doing under the old permit, completion of their illicit discharge program with the addition of wet weather monitoring, and they need to be a lot more targeted with their outreach. One that she didn't mention is that communities need to consider including any approved total maximum daily load studies (TMDLs) into their permit. **Mr. Roseen** asked if there is a water quality monitoring component in the post-construction runoff controls for the new permit. **Ms. McMillan** and **Mr. Andrews** indicated that the wet weather monitoring was the only monitoring that they new would be included, but that Thelma Murphy is available to ask questions. **Chairperson Sassan** asked if the same issue of authority come up in regard to TMDLs. If a TMDL calls for a reduction in a certain pollutant do the towns have their hands tied by what is enabled. **Mr. P. Currier** stated that he believes the answer is yes, and explained that DES has always held the position that if you own a pipe, you own what comes out of that pipe. State law requires that discharges comply with state water quality standards. Therefore, if a municipality owns a drainage

system, they are responsible for meeting water quality standards where that system discharges to a surface water. He explained that there are, however, many places in a municipality where there is no community owned drainage system, but nevertheless there is stormwater that is discharged to surface waters that should be managed. That is where the gray area is. **Chairperson Sassan** asked for clarification that if a community owns a pipe, there is clear authority for a municipality to regulate land use. **Mr. P. Currier** stated that DES's position is that the municipality can do whatever they need to do to ensure that the discharge from the pipe complies with water quality standards. **Mr. Cedarholm** asked if that also applies to culverts. **Mr. P. Currier** responded yes and then clarified that culverts are a gray area.

Chairperson Sassan asked the Commissioners to refer to the questions listed on the agenda and asked that the Commission run through the questions regarding the MS4 permit. He recognized that the authority issue is obvious and the Commission can plan to address that at the next meeting. He asked, based on the presentation by Ms. McMillan and the discussion, what is working and what is not working with the MS4 program related to stormwater management. **Dr. Roseen** suggested that the current programs are really at the beginning in some ways even after the first five-year permit. There is still no real water quality monitoring, which is a basic element of Clean Water Act compliance, and he is waiting to see if any water quality monitoring will be required with the next permit, particularly related to TMDLs. Currently, compliance is based on whether communities are, for example, stenciling storm drains and doing their outreach and education. Compliance is not based on whether water quality is better, which is ultimately the purpose. He feels there is a long way to go still. **Mr. Sienkiewicz** responded that he doesn't disagree with Dr. Roseen. He mentioned Dr. Roseen's earlier comment that regardless of the authority issues, municipalities are still subject to federal law and federal enforcement of the law. As a practical matter, the Stormwater Commission has to determine the most effective and most efficient way to get the water cleaned up as it relates to stormwater. EPA may never have enough funding or staff to do clean water enforcement here. The law might be the law, but it just sits on the books. **Mr. P. Currier** brought two points. The first is the regimen that EPA calls for in the MS4 notice of intent is somewhat artificially constraining to urban compact areas; the same regimen is good for everyone. The second is related to TMDLs. He offered to circulate a map of NH surface water from the 2008 assessment that were determined to be impaired by stormwater and subject to a no additional loading requirement. There are a substantial number of waters that do not meet water quality standards, primarily concentrated in the southern tier and the seacoast, and the reason is directly related to stormwater. He explained that the issue can be separated into two pieces 1) how do we keep the waters that are not on the impaired waters list from getting on the impaired waters list, and 2) how do we reduce the impact of stormwater on areas already impaired by stormwater. The first is easier to deal with and the Commission already discussed the idea of putting requirements on landscape change, regulated by town boards, to the effect

that when the landscape changes there is to be no additional loading, no increase in volume, and no increase in peak. The second is a more difficult question because the areas with existing impairments are already built areas. **Rep. Spang** asked how we can assure communities that by enacting some of the no impact regulations that we're suggesting that it won't kill development and their tax base. **Mr. P. Currier** responded that, at least for state Alteration of Terrain regulated projects, there are provisions which implemented the no additional loading, no increase in volume and peak runoff, and ended up removing them for further work based on feedback DES received during development of the regulations. DES's experience has been that it is perfectly possible to develop the landscape and meet those requirements. It does result in less dense development in the landscape. This may mean that in order to level the playing field, it would be highly desirable to have some statewide standardization of landscape change so that a community who decides to implement that is not placing themselves at a disadvantage for development. **Rep. Spang** asked if the AoT Rules would provide that statewide level playing field when it is resolved in the Rules. **Mr. P. Currier** said that when the issue is resolved and added back into the AoT Rules, there would be a level playing field for projects subject to the AoT permit, projects that disturb greater than 100,000 square feet or 50,000 square feet in the protected shoreland. There are many projects that go before the local boards that are much smaller than 100,000 square feet. The impact on stormwater is cumulative. If there are a lot of smaller projects that are under the state radar, there will be deterioration of surface water quality. **Rep. Spang** formally identified two barriers being:

1) There is a myriad of small projects that are not consistently regulated, and
2) There is a potential impact on the economy from bringing in stormwater controls and specifically,

There needs to be a level the playing field among the communities. The broader context of this is that people will say that NH is driving business out of the state. **Dr. Roseen** commented that the Commission needs to educate itself on some of these issues and stated that there is a lot of good information out there. He added that New Hampshire is slow to implement some of this, but it is being done in a lot of other areas. He explained that he was in the Pacific Northwest last week and the city of Portland was estimating that 35% of their development is done using this type of development strategies. They use these strategies as cost effective approaches for combined sewer overflow (CSO) controls, and many other things. The Commission needs to frame the argument that this can be done in ways that can benefit all. These strategies will allow for development and maintained water quality, and give developers increased value to their properties. **Ms. Ebel** explained they have not had much resistance from developers in response to the LID regulations in New London. She stated that developers are actually embracing the regulations. They have not found LID to be more expensive than what they would have to do otherwise. In New London they have seen an increase in the density of development because developers have been able to use the LID regulations to keep more drainage on site than they would have been able to otherwise. This was a surprising result and developers have not argued against LID. **Ms. Ebel** explained that she revisited the pervious

concrete parking lot at the New London Hospital and had an opportunity to ask about cost. It was more expensive to install, but they avoided detention ponds and other practices that they would have had to use. She asked about salt, maintenance costs, and other things and it turned out that overall, it was not that much more costly to install. She isn't sure that economically, the push for LID and other regulations it will be that bad. The Commissioners agreed that this information, and examples like it, needs to be readily available. **Dr. Roseen** stated that cost is the number one question that people ask about LID. **Mr. P. Currier** added that there is a difference between residential projects and commercial projects and it depends a lot on the value of the land. **Ms. Ebel** stated that it couldn't be assumed that LID will invariably have a greater cost over conventional treatment. **Mr. Sienkiewicz** commented that the Commission should be wary of having environmental protection be the only land use driver. For example, it isn't always going to be the case that LID is cheaper. If that was the case, LID would have been done all along, but it is cheaper to pipe the water off onto a neighbor's site. He stated that he is a residential developer and in residential development, if environmental quality is the primary driver, it will result in less density. He explained that he is developing a hilltop site and has found that LID is very difficult. He has run numbers and found that using 100% LID compared to piping it off site is dramatically more expensive, primarily because it is a hilltop site. In terms of land use planning, there are a lot of good reasons to put people densely together in places that might be difficult or impossible to mitigate up to perfect water quality. The Alteration of Terrain Rules that said basically there would be no water quality deterioration, which the homebuilders pushed back hard, was basically saying that some lots are developable and some lots are not, depending on the density. In his opinion, that is not the way to do land use planning. Existing infrastructure needs to be considered along with other existing benefits to guide development. Preserving or improving water quality in those locations is a very important consideration, but not the only consideration. He is concerned that the Commission is at risk of letting the environmental quality consideration be the only driver and stated that we are too cowardly to do land use planning otherwise. **Mr. P. Currier** responded that, within the context of water quality, there is a mechanism to work through situations like that. The federal Clean Water Act allows degradation of high quality waters as long as there is a good reason to do it. There is also a possibility of trading within a watershed where there is a site that makes sense to develop for a number of reasons, none of which have to do with water quality. If you look at the watershed as a whole, you can figure out where some tradeoffs would allow certain localized degradation while preserving something else. He thinks that it can work within the current mechanisms, but stated that there is a need for a standardized process to make it work at the local level.

Mr. Cedarholm stated that a program that does work is the land development practices and involving land use planning boards and land use regulations. There are intelligent people on planning boards really thinking about how to manage and plan the community, but management of existing infrastructure falls short.

Without that site plan review and the opportunity to involve the planning board, there is a limited opportunity to improve water quality. As a follow up to what Mr. Sienkiewicz was saying about putting development where it makes sense, encouraging redevelopment is a way to bring areas back to life and at the same time incorporates LID and the opportunity to improve water quality.

Chairperson Sassan asked how the Commission could integrate this concept with its work. **Mr. Roseen** responded that the Commission needs to put stormwater in the context of the larger land use decisions. Stormwater is one small piece. He has heard LID described as candy for developers because it does exactly what Mr. Cedarholm and Mr. Sienkiewicz described. It enables projects to go forward that would otherwise have been limited for other reasons in many cases. It is a tool for developers. His opinion is stormwater needs to be kept in the context of the larger land use planning. It is not going to replace other elements such a land conservation or good infrastructure planning for example. **Rep. Spang** asked Mr. P. Currier if he would explain "residual designation authority". **Mr. P. Currier** explained that there are a number of projects in New England where impairments exist and therefore the existing, developed landscape needs to be retrofitted with BMPs. It is happening around Lake Champlain and in the upper Charles River watershed, and in South Portland, Maine in the Long Creek watershed. There is a provision of the federal Clean Water Act that allows EPA or the delegated NPDES permit authority to permit stormwater lot by lot in areas where there are water quality violations. EPA is doing that in Massachusetts in the Upper Charles River watershed for phosphorus. EPA is the permitting authority in Massachusetts and they are issuing a general permit that gives a phosphorus allocation for each commercial lot over two acres and leaves it up to the owner of the lot how they retrofit BMPs in order to achieve the loading reductions. **Rep. Spang** stated that the astonishing thing is that it is existing uses. It is not a permit for new uses. **Mr. P. Currier** added that the Great Bay watershed is going to be identified as impaired for nitrogen, which is a stormwater component. This will basically put the entire Great Bay watershed in the same situation as the Upper Charles. Half of the loading of nitrogen into Great Bay comes from nonpoint sources from the existing landscape. Much of the Great Bay watershed does not have a lot of development currently. There is going to be a push in the watershed for reduction in loading from stormwater. **Rep. Spang** asked how this would be pushed. **Mr. P. Currier** responded that potential residual designation could be used, but he thinks a better idea is to figure a way to enhance the education and outreach component and create a mechanism that levels the playing field so municipalities can administer their land use regulations for nitrogen reduction with technical assistance and specifications provided at the state level. He stated that the first thing to do is implement a no additional loading requirement to not make the situation worse while determining what to do to reduce the impact from existing development. The next step is to find mechanisms to actually reduce those loadings as projects come up for redevelopment and have to go before the planning board. **Mr. Paulsen** stated that holding the loading is not just a good thing to do; it is required by the Clean

Water Act. A project may contribute a pollutant that is causing an impairment to an impaired waterbody. He added that one of the issues Mr. Sienkiewicz alluded to is that if there is an impairment, there is no permitting of any new activities that involve those pollutants. That is a problem from a development standpoint. If you clean up the waterbody or prevent the pollution in the first place, then you maintain the ability to develop there. If it is impaired, the ability to develop there is lost. **Mr. Sienkiewicz** asked if it is possible to impair a non-impaired waterbody if there is a good economic reason to do so and what the mechanism is to do that. **Mr. P. Currier** responded that the mechanism for all of this is the Antidegradation policy, but that a non-impaired water is not allowed to be impaired. The New Hampshire regulations require a 10% reserve. You can use up the assimilative capacity of a waterbody to the 10% reserve.

Ms. Ebel asked Ms. McMillan if EPA uses a watershed approach to implementing the MS4 permit or is it municipality by municipality. **Ms. McMillan** stated that they are trying to by incorporating TMDLs into their permits. She thinks they would like to approach it for a watershed point of view. Their outreach is encouraging more of a watershed approach, but this is difficult since they are regulating the individual municipalities. **Mr. Andrews** added that EPA can issue general NPDES permits based on political boundaries or geographic areas of states. If they wanted to, they could issue a permit based on a watershed and they might get there in future permits. There was a recent National Resource Council report that came reporting that there are a lot of flaws in the current federal stormwater program. One of their recommendations was to have a watershed-based NPDES permit in the future. **Ms. Ebel** explained that she feels a watershed approach would be better to manage stormwater instead of municipality by municipality. She would like the Commission to keep the idea of watershed planning in mind. **Mr. P. Currier** agreed that it is a great idea and stated that the problem is the political boundaries getting in the way. **Ms. Manzelli** added that it would be easier if there were a level regulatory playing field at the state level with uniform regulations. **Mr. P. Currier** elaborated on his earlier suggestion that if the state could provide technical specifications and, possibly for smaller municipalities that don't have a planning staff or engineering staff, could provide some circuit rider assistance, it would level the playing field. It would also allow facilitate watershed-level perspective because a circuit rider would have the ability to look across municipalities. **Ms. Ebel** added that the Commission had previously discussed using the RPCs to help with that. **Rep. Spang** asked if 319 money could be used to test the idea of a circuit rider. **Ms. McMillan** responded that the 319 program has become very strict in how funds can be spent and that it isn't likely. **Mr. P. Currier** suggested that maybe Coastal Program funding could be used if the Great Bay watershed was used as a pilot.

Chairperson Sassan brought the Commission back to the list of questions to be answered and recognized that they have moved through the first two. He requested feedback from the Commission as to whether they should continue going through the questions today or at a future meeting. **Mr. LeRoy** offered his

opinion to hear from the Attorney General's office before going on to discussing possible solution. **Dr. Roseen** recommended also hearing from a representative of the Flood Commission and the Land Use Commission. **Rep. Spang** said that the Land Use Commission is also requesting an extension.

Chairperson Sassan informed the Commission that it has been difficult to coordinate a presentation from NH Fish and Game. John Magee of Fish and Game sent a few scientific journal articles to Ms. McCarthy and asked if the Commission would be comfortable with having those circulated and reviewed to serve as the education on stormwater impacts to fish and wildlife. **Ms. Ebel** asked if they could review the articles first and then decide if they were sufficient. **Chairperson Sassan** will have the articles distributed to the Commission members. **Chairperson Sassan** requested the opinion of the Commission on having a dam and road construction and maintenance sub-committee. He explained that Ms. Ebel had pointed out that there are some gaps in the land use scenario the Commission is using and this sub-committee would serve to fill that gap. He added that roads area a huge source stormwater and the Commission currently doesn't have a meeting topic designated for that. **Mr. Sienkiewicz** clarified what Ms. Ebel stated earlier in the meeting about studying stormwater, that she meant investigating what is really happening and what activities are contributing to the problem the most. He asked if the stormwater impact from various activities on water quality degradation is known. **Dr. Roseen** and **Mr. P. Currier** answered yes, there is good information on that. It is land use specific and there is a decent understanding of what the pollutant loadings are by land use type. **Mr. Sienkiewicz** stated that he would feel more comfortable making a decision on the need for sub-committees if he was presented more information on what activities should be looked at more closely and what activities should possibly be let off the hook. **Mr. P. Currier** responded that it would be a fairly simple presentation to put together. **Chairperson Sassan** asked if roads were a big enough issue to form a sub-committee. **Dr. Roseen** proposed that the Commission keep the discussion of roads in the full Commission because of the time extension. Response was favorable.

Ms. Manzelli recalled that the five scenarios to look at are MS4 permits, Alteration of Terrain permits, the Construction General Permit, the Multi-sector General Permit, and activities less than one acre that are not subject to state or federal stormwater regulations. Even though roads do not exactly fit less than one acre, it could be discussed there. In the interest of filling the gaps, **Ms. Manzelli** asked if there are other topics that should be discussed. **Chairperson Sassan** agreed that the fifth scenario was intended to be a catch all and that the expertise of the Commission would be used to make sure there are no gaps.

Rep. Borden expanded on Ms. Ebel's comment regarding things that the Commission still needs to know. He stated that the situation is not static. The Commission is not trying to learn everything possible about the existing state of stormwater, and noted that we are living in a world where the amount of carbon in

the atmosphere is accelerating. He stated that problem is not on a straight line. What might be perfectly acceptable to build in a place right now, might be a very unwise place to have put development in ten years. The Commission needs to be thinking about the world we are emerging into where the flood-drought patterns are likely to change or increase over time. The flood-drought pattern is new now, but it's not static and it's likely to get worse. The Commission needs to be thinking about "what-if" scenarios for rougher times.

Chairperson Sassan stated that he has received emails with good information on what is going on in other states. He asked the Commission how the activities going on in other states should be addressed. **Ms. Ebel** asked if DES monitors other states. **Mr. P. Currier** offered for Ms. McCarthy to put together a summary of what other states are doing. **Chairperson Sassan** mentioned that Jen Cysz, the OEP Representative to the Land Use Commission has discussed doing a similar project for the Land Use Commission and possibly having representatives from those states present. **Mr. LeRoy** asked if those emails could be forwarded to the committee. **Mr. P. Currier** said that they would organize the emails and send them out.

IV. DISCUSSION OF FUTURE MEETING TOPICS AND DATES

Chairperson Sassan asked the Commissioners to confirm that the first Monday of the month at 1:00 PM works to schedule regular meetings. All agreed to this day and time. He notified the Commission that if the Concord School District is closed due to inclement weather that the Commission will not meet.

Mr. P. Currier asked if the lawyers would be coming to the next meeting. **Chairperson Sassan** asked if the Commission wants a presentation or if a written response would be sufficient. The Commission agreed that getting a written response from the AG's office is unlikely, and that a list of specific questions should be provided. **Chairperson Sassan** said that we would request that a representative from the Flood Commission also come to the next meeting. **Ms. Ebel** asked why John Magee from Fish and Game is not coming. **Chairperson Sassan** responded that it was in part due to a scheduling issue, but also that the topic isn't something that Fish and Game feels they have addressed head on. He added that Mr. Magee was willing to present and is willing to present in the future. **Rep. Spang** mentioned an article on the impact of sediment on eel grass and aquatic life that might be useful. She feels that it covers the topic very well and doesn't feel that a separate presentation would be necessary. **Mr. Cedarholm** added that Phil Trowbridge of DES wrote a report on nutrient loading in Great Bay that he will send to Ms. McCarthy and Chairperson Sassan.

Date	Time	Location
January 5, 2009	1:00pm	LOB 305*
February 2, 2009	1:00pm	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

V. ADJOURNMENT

Representative Spang made a motion to adjourn. And **Mr. Sienkiewicz** seconded. All approved.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

January 5, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Dave Danielson	NH Association of Regional Planning Commissions
Chris Devine	NH Local Government Center
Rob Roseen	University of New Hampshire Stormwater Center
Carl Paulsen	NH Rivers Council
David Cedarholm	NH Public Works Association
Charlie Hood	NH Department of Transportation
Michael Trainque	American Council of Engineering Companies
Paul Currier	NH Department of Environmental Services
Amy Manzelli	Business and Industry Association of NH
Steve Kahl	NH Lakes Association

Members Absent:

Jacalyn Cilley	NH Senate
Eric Stohl	NH House of Representatives
Newb LeRoy	Associated General Contractors of NH
David Borden	NH House of Representatives
Joe Robertie	NH Timber Owners Association

Others Present:

Doug Bechtel	The Nature Conservancy
Jennifer Gilbert	NH Office of Energy and Planning
Collis Adams	NH Department of Environmental Services
Lori Sommer	NH Department of Environmental Services
Steve Couture	NH Department of Environmental Services
Ted Diers	NH Department of Environmental Services
Joel Anderson	NH House of Representative Staff
John Magee	NH Fish and Game Department
Harold Janeway	NH Senate

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

I. ROLL CALL AND INTRODUCTIONS

Chairperson Sassan called the meeting to order at 1:06 PM. Chairperson Sassan requested that Commissioners, staff and attendees introduce themselves by name and representation. Introductions were made around the room.

II. APPROVAL OF MINUTES FROM DECEMBER 1, 2008 MEETING

Ms. McCarthy recorded changes noted by the Commission.

1. Page 4, First full paragraph: change "statue" to "statue" in the sentence, "**Ms. Ebel** asked if the coalitions were created by state statute".
2. Page 5, first full paragraph, third sentence change the order of wording from "general construction permit" to "construction general permit".
3. Page 5, last paragraph, first sentence: change "Mr. Roseen" to "Dr. Roseen".

Dr. Kahl brought the motion forward to accept the minutes as amended as per Commissioners' comments from the December 1, 2008. **Ms. Ebel** seconded the motion. **All approved and none opposed.**

III. DISCUSSION OF NEXT MEETING

Mr. Danielson asked if there would be follow up on the question of municipal authority as discussed at the December 1, 2008 meeting. **Chairperson Sassan** responded that the next meeting would have representatives from the Attorney General's [AG] Office, the Local Government Center [LGC], and Eric Williams from NH Department of Environmental Services. **Rep. Spang** added that all of the Commissions questions related to authority were compiled and emailed to the AG's Office and the LGC. The AG's Office responded that they are not responsible for implementing municipal regulations, but that they will attend the meeting and join the discussion.

IV. PRESENTATION ON THE FLOOD COMMISSION FINAL REPORT – STEVE COUTURE, NHDES

Mr. Steve Couture, from the Department of Environmental Services, presented a slideshow titled "Presentation to: HB 1295 Commission to Study the Issue of Stormwater Management", which described the work and outcome of the Flood Commission established under HB 648. Mr. Couture manages the Rivers Management Program at DES, but he presented to the Commission as a representative of the Flood Commission. **Mr. Couture** explained that the Flood Commission formed as a result of the flooding in 2005 and 2006. The Flood Commission held one meeting that was specifically focused on stormwater. **Mr. Couture** presented the Key Findings related to stormwater that were included in

the Flood Commission's final report. Key Findings included the following identified needs related to stormwater:

- Limit the new construction of critical or state facilities in fluvial hazard zones.
- Establish a state-level regulatory approach for floodplain management.
- Increase ability for the state and municipalities to manage stormwater.
- Ensure that bridges and culverts are adequately sized.
- Increase education and outreach to communities regarding floodplain management and insurance options.

During the presentation **Mr. Couture** explained that the Flood Commission recommended that any new state facility exceeding 5,000 square feet in size would need to implement low impact development practice to meet stormwater volume and flow limits. He stated that this has not yet been implemented at the state level, but it is at the federal level and the Stormwater Commission might want to consider this item to move forward.

Mr. Couture described the Flood Commission's recommendation of a state-level regulatory approach for floodplain management. He stated that FEMA recommended that the state develop watershed-specific HEC-RAS models across the state to assist in understanding flood flow characteristics and how land use and climate changes are affecting flood prone areas. This type of modeling could also determine critical flood storage areas needed for protection from development. The State could use it as a basis for build-out analysis. This would also allow the cumulative impacts of stormwater over time to be incorporated into the state regulatory mechanism, possibly through the Alteration of Terrain program. **Rep. Spang** stated that this seems like such a large item that it might not be possible to implement. **Mr. Couture** responded that it might not be possible, but because FEMA made the recommendation and the US Geological Survey expressed interest, they included it. He stated that many more details would be needed before it could be implemented. **Rep. Spang** asked if the Flood Commission discussed doing this on a site-specific basis. **Mr. Couture** responded that there was discussion about Alteration of Terrain projects needed to run an individual HEC-RAS. **Mr. P. Currier** stated that HEC-RAS needs to be run river-by-river and added that there is a lot of information out there already from the HEC-RAS analysis done by FEMA in the 1970's. **Rep. Spang** asked if the flood plain has changed since the 1970's. **Mr. Cedarholm** responded that if USGS moves forward with new topographic maps, the 1970's FEMA HEC-RAS data could be easily updated.

Mr. Couture stated that the Flood Commission defaulted many issues to the Stormwater Commission including: limitations on impervious cover, state facility requirements, and climate change impacts. He also stated that some of the recommendations from the Flood Commission are in place, such as the enabling legislation for stormwater utilities. Additional recommendation, yet to be implemented include:

- DES and OEP should provide technical assistance program for communities.
- Continue support for DES and Regional Planning Commissions Innovative Land Use Controls stormwater ordinance.
- Encourage municipalities to submit stormwater infrastructure needs to DES as part of the 2008 Clean Water Needs Survey.
    - Fund stormwater infrastructure improvements through the State Revolving Fund and State Aid Grant programs.
- Develop a multidisciplinary team to assist communities who request help to improve floodplain management, possibly based on the Natural Resources Outreach Coalition [NROC] model.
- Department of Transportation [DOT] should address climate change and impervious surface effects when updating its *Manual on Drainage Design for Highways*.

Mr. Couture described the NROC model of community assistance to the Commission. It is a process for municipalities to get planning technical assistance. If they successfully apply, the assistance is committed to that community for a guaranteed amount of time. The NROC model is very goal oriented and stays focused on the established goals. There may be an opportunity to create that type of NROC model to provide technical assistance to communities. **Rep. Spang** asked if "opportunities" means funding opportunities. **Mr. P. Currier** explained that small pots of money from sources such as UNH Cooperative Extension and NHDES Section 319 Nonpoint Source Funding could be used to leverage larger pots of money. **Mr. Diers** of the NHDES Coastal Program explained that a third party assessment of the NROC program was conducted and it was determined that it costs approximately $160,000 per year to run it. This sum includes in-kind contributions and funding for a coordinator position, as well as trying to allow between $5,000 and $10,000 for each community to be used toward funding a project after they complete the program. He stated that NROC is a very intensive program that contracts with only three communities per year. The small number per year is reflective of the intensity of the program and the resources available. **Mr. Couture** added that the National Park Services has a similar program to provide assistance on a focused effort, but it is not tied to funding. Instead, applicants apply for services such as assistance with trails or grant writing. He stated that only a few people at the state level in New Hampshire provide technical services and the best way to get those services out to the public needs to be determined.

Mr. Couture described the implementation of Flood Commission recommendation to date, including:

- LSR 207 to include fluvial erosion hazard ordinance into the Innovative Land Use Controls statute.
- LSR 743 to authorize lieu of fee option for wetlands for projects that impact floodplains and stream channels.
- Inventorying state land in 100 & 500-year floodplains.

- Inclusion of 100-year floodplains in new AoT rules. In Zone A the applicant will have to model the floodplain.
- Commission findings/ recommendations included in OEP *Floodlines,* DES newsletter, and Dept. of Safety's electronic newsletter.
- Report to be referenced in Climate Change Task Force Report, Adaptation Chapter and findings/recommendation to be considered in Climate Change Adaptation plan.

Rep. Spang asked what would need to be done for the Alteration of Terrain modeling in the 100-year floodplain. **Mr. Couture** explained that the model is to make sure that there is no increase in flood elevations upstream or downstream of the site, that all culverts in the 100-year flood plain must be sized to pass the 100-year event, and that an erosion analysis must be performed. **Chairperson Sassan** asked if the recommendation was considered in the recently adopted Alteration of Terrain rules. **Mr. Couture** responded that it was not considered because the timing was off. He added that changes to the Alteration of Terrain Rules are anticipated for early 2010 at which time this addition could be made.

Ms. Manzelli stated that the executive summary of the Flood Commission Report states that the current 100 and 500-year floodplains are incorrect because climate change. Steve stated that DES is trying to obtain funding for statewide LiDAR (Light Detection and Ranging) for all communities to use to update their flood plain maps. That request has been scaled back, however; in an attempt to receive funding for LiDAR acquisition in the Coastal Watershed. **Dr. Roseen** stated that changes in rainfall depth would not require change in modeling and asked if DES is considering adopting new rainfall data. **Mr. Couture** responded that adopting new rainfall data was discussed early on in the Commissions efforts, but it fell under the radar screen.

Mr. Danielson asked who has the responsibility in determining the downstream impact of development. **Mr. Couture** explained that the developer must submit data for DES to review. **Mr. P. Currier** added that there are also secondary impacts that are reviewed under the wetlands statute. **Mr. Danielson** stated that the current development of regional impact legislation would give planning Commissions the authority to review development for specific regional impacts and would include a fee. It is currently procedural legislation and doesn't include stormwater. The Commission discussed that stormwater should be included in the regional impact review. **Rep. Spang** added that a municipality, other than the municipality involved, should be given an opportunity to assess for regional impacts and that possibly an amendment should be made to include that. **Mr. Sienkiewicz** asked if the Development of Regional Impact (DRI) has a definition of "impact". **Mr. Danielson** responded that "impact" is not defined. It could be education or it could be economic. **Mr. Danielson** informed the Commission that he will look into it and stated that if a project has a downstream impact, it should be studied more clearly. **Ms. Ebel** stated that this gets back to a watershed scale and added that the regional impact needs to be reviewed on a regional basis.

Mr. Sienkiewicz stated that if a project triggers an Alteration of Terrain permit, it will be reviewed and he is not sure that adding a regional review is necessary. He added that a regional impact statement is not a way to regulate. **Dr. Roseen** stated that the trigger for an Alteration of Terrain permit is 100,000 square feet of disturbance and gave a 50 foot wide and 200 foot long road as an example stating that roads can go in without a permit review if no houses are proposed. He suggested that the state might want to lower the 100,000 square foot trigger and propose a change to the Alteration of Terrain rules. He stated that this would increase the number of projects getting reviewed, and added that the smaller projects should be reviewed by EPA. **Mr. P. Currier** suggested having municipalities use the same performance requirements as the Alteration of Terrain permit, but for municipalities to receive technical assistance to allow them to conduct their own reviews. **Mr. Sienkiewicz** stated that the homebuilders' preference would be to not have overlapping or filling of Alteration of Terrain loopholes with municipal authority. He suggested having the Alteration of Terrain program regulate the smaller scale development projects as well. He added that an NROC style of technical assistance would take an extremely long time to cover all of the municipalities in the state. Municipalities already pay for third party review of plans. **Dr. Roseen** asked if there is another way to regulate stormwater than at the municipal level. **Mr. P. Currier** suggested that the state could provide performance specifications that can be adopted by municipalities and encourage municipalities to adopt them. **Chairperson Sassan** asked if the performance specifications would come with incentives for adoption. **Mr. P. Currier** responded yes. **Mr. Sienkiewicz** stated that state incentives would require state money to give.

Rep. Spang suggested that the Commission watch a documentary about water infrastructure done by Penn State University called "Liquid Assets" that discusses how 80% of the nation's water infrastructure will soon be obsolete and need replacement. She asked if the impacts on existing infrastructure and the burden on it are being looked at in new development, and if there is a role the state could play in making sure infrastructure doesn't decline. **Dr. Roseen** stated that this is a big discussion beyond water quality. He added that climate change issues are clearly not being addressed and there is no consensus on how to deal with it. He explained that municipalities that are regulating the amount of stormwater added to municipal storm sewer systems that are using old rainfall depths are underestimating the impact. He stated that new rainfall depth data needs to be used. **Mr. P. Currier** stated that performance criteria should be to maintain the existing condition for runoff volume and to maintain the hydrograph, but the impact of climate change needs to be considered since it will put more water in those pipes anyway. **Mr. Cedarholm** offered a response to Rep. Spang's question regarding infrastructure. He stated that the municipal perspective is if it's not broken, don't fix it. The new Municipal Separate Storm Sewer System [MS4] permit that was just issued will require inspection of existing infrastructure, which is a step in the right direction. **Mr. Cedarholm** stated that

the new permit also requires that is a project proposed to discharge to an impaired water, the developer will need to show that the project will have no impact on the impairment. **Dr. Kahl** stated that if the responsibility is on the developer to prove there is no water quality impact and they're using old rainfall data and old floodplain elevations, the impact will be underestimated. **Mr. P. Currier** responded that a state framework to be able to update the data is needed. **Mr. Couture** added that a Climate Change Task Force, headed by DES, was established and that it is finishing its final report. He added that it will be developing a post-report adaptation plan and that the Stormwater Commission may want to be involved with it.

Rep. Spang stated that the Commission has not discussed the role of dam management on managing stormwater. **Mr. Couture** responded that when it came to floodplain management, the Flood Commission decided the existing dams will be maintained, but in the future, dams should not be used for flood management. Most dams are designed for water resources management and recreation.

Dr. Roseen asked whom the Commission should contact on climate change and the timeframe for the adaptation plan. **Mr. Couture** recommended contacting Sherry Godlewski at DES. **Mr. Diers** stated that the "plan" is more of a list of recommendations at this point and that four or five out of approximately 20 recommendations involve stormwater.

Dr. Kahl stated that when a development is proposed in a floodplain, it almost always meets the 100-year floodplain requirements. He added that municipalities have to adopt minimum requirements set by FEMA. **Mr. P. Currier** stated that FEMA's minimum requirements are that the lowest livable floor has to be above the 100-year floodplain, which is very different from restricting development in the floodplain. **Dr. Kahl** added that the floodplain maps are outdated and stated that if a development has a significant increase in impervious cover and an increase in runoff, it could cause downstream communities to not meet the 100-year floodplain requirements. **Mr. Couture** responded that there is currently no requirement to maintain volume and peak flows. **Ms. Gilbert** of the NH Office of Energy and Planning explained that "freeboard" is the most common requirement and typically two to three feet of freeboard above the floodplain is required. **Rep. Spang** asked if municipalities can opt out of those requirements. **Ms. Gilbert** responded that some communities do not want to participate. This means that homeowners in those communities cannot get flood insurance. **Rep. Spang** asked for clarification the type of impact Mr. Couture was referring to in his comment that development cannot have an impact upstream or downstream of a project. **Mr. Couture** responded that there cannot be an increase in flood elevation. This is accomplished through flood storage and erosion potential needs to be considered. A development project may be able to meet the elevation, but the erosion potential of the area shouldn't allow it.

Mr. Couture informed the Commission that the Flood Commission is no longer active, but if there are general questions, the Commission can contact the most appropriate member of the Flood Commission. If a more formal interaction is necessary, the Flood Commission Chair, Rep. Anderson, should be contacted.

Ms. Manzelli asked if states that have had debilitating floods have requirements that are more stringent than the minimum. **Ms. Gilbert** responded that states mostly have freeboard requirements and added that the Association of Floodplain Managers (www.floods.org) has information on what states are doing beyond the minimum. **Mr. Couture** added that Vermont had major flooding in the 1990's and started a flood Commission, which began their fluvial morphology program. After ten years, they now have a law that the state has to be used to advise the municipality when the municipality adopts ordinances.

Chairperson Sassan asked if anyone had thoughts on Rep. Spang's question about the ability of existing infrastructure to handle increasing loads. He suggested that some of the data gathering that would go along with the formation of a stormwater utility could serve to answer some of those questions.

VI. DISCUSSION OF THE EFFECTS OF LAND USE ON WATER QUALITY, AQUATIC HABITAT, AND BIOTA – JOHN MAGEE, NH FISH & GAME

Mr. Magee of the New Hampshire Fish and Game Department submitted a draft paper to the Commission titled *Summary of the Effects of Land Use on Water Quality, Aquatic Habitat and Biota*.

insert web link

Mr. Magee informed the Commission that he also submitted the draft paper to the Land Use Commission. He explained that he used impervious surface as a surrogate for stormwater throughout the paper. **Mr. Magee** presented a summary of his paper to the Commission. He explained that there is a lot of information on the topic. Mr. Magee said that there are hundreds of peer-reviewed literature sources that all conclude that an increase in impervious cover directly correlates to a decrease in water quality, habitat, and aquatic life. He stated that this correlation is extremely well document, but what isn't well documented it the threshold of impervious cover in a watershed that begins to impact water quality. A study in Maryland shows impacts at four percent. Ten percent is often cited as the threshold and newer studies indicate that impacts are seen at less than ten percent. **Dr. Roseen** added that a study conducted by USGS in the New Hampshire seacoast showed similar results of 4% and then a big line indicating impacts. **Mr. Magee** continued to discuss the impacts and explained that changes in hydrology from development can lower the water table and decrease the availability of groundwater to maintain base stream flows and supply drinking water. He stated that not all activities are currently regulated, particularly small-scale disturbances. He gave the example that nothing prevents him from building

a shed at his house and that nothing in the current regulations require the 12 to 13 homes in his neighborhood to manage stormwater.

Mr. Magee informed the Commission that he could provide additional information on the impact of stormwater on habitat if given more time. **Chairperson Sassan** responded that Mr. Magee had covered the basic duty to study the impact of stormwater on aquatic and terrestrial habitat, and asked the Commission if there were additional questions they would like Mr. Magee to respond to. **Rep. Spang** asked about a presentation on siltation. **Dr. Roseen** asked if Mr. Magee had come across recommendations for the width of riparian buffers to protect aquatic habitat. **Mr. Magee** responded that in general, the greater the buffer width, the less the impact. **Dr. Roseen** asked if it could be as simple as saying that if a buffer is restored it would restore aquatic life or if there are certain buffer widths or a certain percentage of impervious cover that related to a certain reduction in impact. **Mr. P. Currier** stated that there is a difference between connected and disconnected impervious cover. **Dr. Kahl** stated that first order steams need buffers and that impacts are coming from currently unregulated first order streams. He added that this is a regulatory problem. **Rep. Spang** stated that the Comprehensive Shoreland Protection Act [CSPA] put some requirements on impervious cover. **Mr. P. Currier** added that the impervious cover requirements are only within the buffer. **Rep. Spang** stated that there is a flip side because some species require floods. **Mr. Magee** agreed and gave the example that the Silver Maple requires flooding to bring nutrients. **Mr. Magee** stated that there is a problem where floodplains are no longer connected to the stream and gave Nash Stream as an example. They are seeing impacts to native brook trout. The water quality and habitat are okay, but changes to the stream channel and stream dynamics have changed so much that it isn't supporting the brook trout. In response to Dr. Roseen's question, **Mr. Magee** answered that it may be difficult to determine that X% impervious cover requires X width of buffer to mitigate the impacts of the impervious cover because land uses have such different impacts. **Mr. Cedarholm** added that he is wary of when a certain buffer width is specified. He stated that stormwater can find a way to channelize through a buffer and that municipalities rarely go out to see if the buffer is working or if there is channelized flow. **Dr. Roseen** responded that it's important to say that buffers can help where they work, but they aren't the only solution. **Ms. Manzelli** stated that the conversation is getting circular and is going back to the issue of engineering for the 100-year floodplain elevation or the old rainfall data.

Mr. Paulsen asked Mr. Magee if he has come across low flow impacts and studies looking at the impact of low flow on habitat such as reduced base flows in dry weather and the ability to support aquatic life. **Mr. Magee** responded that Dr. Tom Ballestero at UNH might have information on that. **Dr. Roseen** added that a good example is in the state of Vermont where they are using hydrology as a basis for Total Maximum Daily Load [TMDL] studies. Hydrology is being used as a surrogate contaminate instead of impervious cover. They establish a boundary of

low flows and high flows. He asked if there is one contaminant that could be used as a surrogate and posed the question, what needs to be regulated to manage stormwater. **Mr. P. Currier** responded that the focus should be on nutrients and total suspended solids [TSS]. **Mr. Paulsen** added that salt is another important contaminant to look at and that the worst violations for salt were in low flow conditions because there was no dilution factor. **Dr. Kahl** gave two local examples of impervious cover thresholds in southern Maine and in literature review. He explained that some studies show 15% impervious cover is the threshold for impacts to water quality, but those higher percentages are in areas like Washington D.C. and New Jersey that are highly urbanized areas where it is very difficult to get into detail. It is more likely that there are impacts to water quality between 4% and 6%. This is from looking primarily at water quality and biota. There is an advantage to looking at impervious cover as a surrogate because it is visible and measurable. **Dr. Roseen** added that effective impervious cover has to be considered and defined. **Mr. P. Currier** stated that effective impervious cover is currently defined by techniques that, if implemented, are considered to "disconnect" a specific area of impervious cover from the drainage network. He added that impervious cover is something that people can understand. **Chairperson Sassan** asked if impervious cover can be assigned a value, he gave the example of a roof being 100% impervious. **Dr. Roseen** and **Mr. P. Currier** explained that it what curve numbers use. **Dr. Kahl** added that lawn may not be impervious cover, but that is isn't included in a buffer strip.

Chairperson Sassan told Mr. Magee that the Commission would take him up on his offer to present more information and requested that the Commission members submit their questions for Mr. Magee to Ms. McCarthy or Chairperson Sassan. **Ms. Manzelli** asked if Mr. Magee could look into greater ecosystem impacts because of habitat impacts, such as less diversity or more species with lower quality. **Dr. Kahl** asked about the smaller scale changes in macroinvertabrates and the impact on fish. **Mr. Magee** responded that there is a general link between a change in macroinvertabrate populations and a change in fish, but there is a possibility that the fish species are changing from the same environmental stressor that is changing the macroinvertebrate population and so a direct cause and effect relationship may not be possible to determine. **Ms. Ebel** stated that in journal articles, researchers had a difficult time knowing what the original state of the stream was. She asked if an urban stream gets a new buffer, will the stream come back and is that the goal. **Mr. Magee** responded that urban stream and rivers are pretty resilient and very site specific. **Mr. P. Currier** added that EPA has been encouraging states to create biological indices to rank rivers and streams and define best condition or "undisturbed condition". He stated that a point can be set for different land uses to be the best condition.

Mr. E. Currier asked if engineers are required to calculate and consider the impact of the change in land use. **Mr. P. Currier** responded that empirical coefficients were developed by USDA. **Mr. E. Currier** added that a study was

done by DES in Great Bay on the runoff of nutrients into streams and that agriculture was far less of a source of nutrients than urban runoff.

VII. DISCUSSION OF FUTURE MEETING TOPICS AND DATES

Chairperson Sassan informed the Commission that the next meeting is on February 2m 2009 at 1:00pm in room 305 of the Legislative Office Building. Representatives from the AG's Office, the Local Government Center, and Eric Williams from DES will attend the meeting to discuss the issue of municipal authority to manage stormwater with the Commission.

Date	Time	Location
February 2, 2009	1:00pm	LOB 305*
March 2, 2009	1:00 PM	LOB 305*
April 6, 2009	1:00 PM	LOB 305*
May 4, 2009	1:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VIII. ADJOURNMENT

Ms. Manzelli made a motion to adjourn. **Mr. P. Currier** seconded. All approved.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

February 2, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Dave Danielson	NH Association of Regional Planning Commissions
Chris Devine	NH Local Government Center
Rob Roseen	University of New Hampshire Stormwater Center
David Cedarholm	NH Public Works Association
Charlie Hood	NH Department of Transportation
Michael Trainque	American Council of Engineering Companies
Paul Currier	NH Department of Environmental Services
Amy Manzelli	Business and Industry Association of NH
Steve Kahl	NH Lakes Association
Newb LeRoy	Associated General Contractors of NH

Members Absent:

Jacalyn Cilley	NH Senate
Eric Stohl	NH House of Representatives
David Borden	NH House of Representatives
Joe Robertie	NH Timber Owners Association
Carl Paulsen	NH Rivers Council

Others Present:

Mark Hemmerlein	NH Dept. of Transportation
Eric Williams	NH Dept. of Environmental Services
Paul Sanderson	NH Local Government Center
Bill Hounsell	Hounsell Consulting
Allen Brooks	NH Dept. of Justice, Attorney General's Office

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

I. ROLL CALL AND INTRODUCTIONS

Chairperson Sassan called the meeting to order at 1:02 PM. He informed the Commission that the topic of the meeting's agenda is the issue of municipal authority to manage stormwater. Chairperson Sassan requested that Commissioners, staff and attendees introduce themselves by name and representation. Introductions were made around the room.

II. APPROVAL OF MINUTES FROM JANUARY 5, 2008 MEETING

Mr. Danielson made motion to approve the minutes from the January 5, 2008 meeting. **Rep. Spang** seconded the motion. **All approved and none opposed.**

III. DISCUSSION OF MUNICIPAL AUTHORITY

Chairperson Sassan introduced Mr. Eric Williams, from the NH Department of Environmental Services, Mr. Paul Sanderson from the Local Government Center, and Mr. Allen Brooks from the Attorney General's Office and stated that they agreed to attend the meeting to assist the Commission in answering the set of questions that the Commission put together regarding municipal authority to manage stormwater. **Chairperson Sassan** explained that the questions on the handout would be used to guide the discussion.

See Handout:

Mr. Eric Williams began the discussion by going through the handout and explaining the pertinent statues that were used by DES and the Local Planning Commissions when they developed the new Innovative Land Use Guide.

Mr. Williams explained that the first statute is under the basic zoning enabling legislation (RSA 674:17). He specifically mentioned sub-sections (c) and (h), which are *to promote health and general welfare* and *to assure proper use of natural resources and other public requirements.* He explained that the issues related to stormwater, such as flooding, are issues of health and general wellbeing. **Mr. Williams** then discussed RSA 674:21 Innovative Land Use Controls. Under sub-section (h) it states that *Innovative land use controls may include, but are not limited to performance standards.* He explained that a municipality can establish an ordinance based on an end condition, but not how that end condition is met and gave the example that development projects must infiltrate the first inch of rainfall. He specified that any ordinance must be in the municipality's Master Plan. **Dr. Roseen** asked how well defined "performance standards" is in the statute. **Mr. Williams** answered that none of the innovative land use controls are very well defined with the exception of sub-section (k), *Inclusionary Zoning.*

Mr. Williams then explained there are clear references to stormwater under RSA 674:35 Power to Regulate Subdivisions and RSA 674:44 Site Plan Review

Regulations, which describe the municipal authority to approve or disapprove installation of *other utility mains, piping, connections or other facilities within subdivisions…* and municipal authority to *guard against such conditions as would involve danger or injury to health, safety, or prosperity by reason of (1) Inadequate drainage or conditions conducive to flooding of the property or that of another.* **Mr. Williams** explained that the municipal authority to require maintenance is not as clear in the statute. He gave the example of a commercial mall that required the development and implementation of an operation and maintenance plan as part of the permit approval. He asked if it would be a violation of their approval if they did not follow the plan.

Mr. Williams then discussed RSA 149-I:6 Bylaws and Ordinances, which enables municipalities to establish utilities for proper maintenance and operation of stormwater systems. He stated that he is uncertain if a municipality does not have a utility established, if they can still use this statute as authority to adopt ordinance and bylaws for stormwater management. He stated that is has been referenced in this way without a municipality having an established utility.

Mr. Williams then discussed RSA 485-A:3 Policies, which the city of Manchester cited when adopting its stormwater regulations. It specifies that *the department shall, in the administration and enforcement of this chapter, strive to provide that all sources of pollution with 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.* **Rep. Spang** asked if this only applies to communities subject to the EPA Municipal Separate Storm Sewer System (MS4) permit. **Mr. Williams** responded that, according to Manchester's reasoning, yes, it would only apply to MS4 communities because they are required to meet the more stringent federal permit requirements.

In regard to the final question posed by the Commission, *is it legal to alter the volume and direction of flow from one tract to another*, **Mr. Williams** said that he is often asked what the state can do help a property owner who's land is being flooded by a neighbor that has changed their drainage on an adjacent lot. The only answer he has been able to find in statute is under RSA 498:6 Water Rights, which dates back to 1885. It states that it is a civil issue and must be addressed in court. **Mr. E. Currier** asked if a municipal or state road can direct drainage to private property. **Mr. Williams** restated that RSA 498:6 is the only statute he has been able to find and it basically says that the parties involved need to go to the supreme court.

Mr. Williams said that he saw a questions asking where overlap exists in local, state, and federal regulations and explained that there is overlap and there are gaps. He gave the example of the EPA Construction General Permit (CGP) with its one acre disturbance threshold and the NH Alteration of Terrain (AoT) Permit with its 100,000 square feet of disturbance limit. He stated that municipalities

sometimes feel that even the 1 acre threshold is too big and they want to adopt local regulations or ordinances to regulate at a smaller scale.

Mr. Paul Sanderson introduced himself to the Commission as a staff attorney at the Local Government Center. He also explained that he is a selectman in Greenland, NH, which is a small MS4 community and was previously a hearing examiner for the NH Department of Transportation. In response to the first question on the handout regarding municipal authority, **Mr. Sanderson** reminded the Commission that New Hampshire is not a home rule state. He explained that municipalities only have the authority that is given to them from the state legislature in statute or that can be found in case law. He stated that he agrees with the materials that Mr. Williams provided. He explained that municipal zoning regulations do not govern over government uses such as town hall, public schools, public works and roads. He further explained that they do not cover pre-existing, non-conforming uses such as roads, buildings, or other development completed prior to establishment of zoning regulations. He stated that these are gap areas that existing regulations do not cover.

Mr. Sanderson informed the Commission that the duty of town selectmen is to regulate the road systems under RSA 4111 and 4717 and that the planning board does not see or have authority to regulate road projects. He explained that the road system includes the actual road and the right of way containing signs, bridges, and other road structures. He stated that 80% of the roads were created by "prescription" and explained that prescription means that the roads were created long ago because they were simply being used. He explained that the right of way for these roads is often not clearly defined. **Mr. Sanderson** also explained that RSA 236:13 is the driveway statute. Section IV states that driveways are under the jurisdiction of the planning board. At the state level, driveway drainage is dealt with by the DOT.

Mr. Sanderson explained that for small MS4 communities, water either comes from private property to an MS4 or goes from roads onto private property. He explained that for hundreds of years there has been a law in place to safely drain runoff onto abutting lands, but the drainage has not always been mapped because of limited resources. He explained that there is an issue with municipal or state government entering private property without permission. If drainage from a private property is suspected of contributing pollutants to a small MS4, the municipality cannot simply go out onto the property and take a sample without permission because of the fourth amendment rights.

Mr. E. Currier asked if farmland would be subject to land use restrictions, including wetland rules and regulations, if drainage from a roadway creates a wetland on the farm. **Mr. Sanderson** responded that roads are allowed to drain onto private lands as long as the drainage does not diminish the value and use of the land or unless the loss of value or use is compensated.

Dr. Roseen asked Mr. Sanderson to expand on the selectmen's right to regulate roadways, and if it is specific to drainage. **Mr. Sanderson** responded that the language is very general to regulate highways, which is interpreted to mean that they can regulate drainage. He emphasized that the highway is not only the pavement, but also the right of way as well as all three dimensions of the highway including the soil under it. **Dr. Roseen** asked if it is broad enough to cover water quality. **Mr. Sanderson** responded that it covers water quality as far as what is on the impervious cover. **Ms. Ebel** asked if there is case law supporting this and **Mr. Sanderson** responded that there is no case law.

Mr. P. Currier stated that if a municipality is regulated under the federal MS4 permit, and drainage from private property is entering the municipal drainage system, it is an illicit discharge and needs to be detected. **Chairperson Sassan** asked if all cases of "dirty water" into an MS4 are considered and illicit discharge. **Mr. Sanderson** responded that there are intentional and unintentional discharges. He gave the example of the trees that were cut after the recent ice storm and the debris from the cutting that ends up in the municipal drainage. He stated that the material will likely block culverts, but it is not an intentional or negligent act. **Chairperson Sassan** then asked if illicit discharges are defined to be intentional. **Mr. Sanderson** responded that it is EPA's authority.

Mr. P. Currier stated that illicit discharge may be the wrong term. He always though that the owner of the pipe was the responsible party. He explained the scenario of a parking lot draining polluted runoff a municipal storm drainage system, which then flows into the state drainage system. If a water quality issue was identified, DES would go to DOT and tell them to fix it. DOT could then go to the municipality and tell them to fix it. The municipality could then go to the parking lot owner and tell them to fix it. **Mr. LeRoy** asked if the municipality can require the property owner to fix it if the parking lot has been there for a long time. **Mr. P. Currier** explained that DOT has the option of treating the polluted water at the end of the pipe or having the municipality clean it up before it reaches the state's drainage system.

Mr. Danielson stated that if a municipality adopts a stormwater utility, existing parking lots, as well as other types of development, would need to contribute to the utility in relation to their impact. **Mr. Cedarholm** stated that he does not believe that if a municipality establishes a stormwater utility that they have the authority to force parking lots to clean up. **Mr. Williams** responded that establishing a utility gives a municipality the authority to adopt ordinances. He gave an example that an ordinance could require that every property owner with a catch basin must clean parking lots every six months. **Mr. Cedarholm** stated that it depends on the municipality passing the utility.

Mr. Mark Hemmerlien asked what happens in the situation where there is private property draining to a roadway and what authority the DOT has. **Mr. Sanderson** responded that it is addressed case-by-case and investigated up the

drainage line to identify the polluter. DOT would need to investigate the property they have control of and would need permission through an administrative inspection warrant to investigate private property. **Dr. Roseen** added that if DOT is able to monitor where the drainage enters their property and identify that it contains pollutants, they can put the onus on the property owner to identify the source and there is no need to enter private property. **Mr. P. Currier** added that the state or a municipality does not have to allow everyone's drainage to enter their pipe or, if they do allow private drainage, they can specify the water quality of the drainage. **Mr. Sanderson** stated that it is not always possible to find a point of discharge onto a property. He gave the example of drainage from an entire subdivision that may still require an administrative inspection warrant to access the private property.

Mr. Cedarholm stated that the Stormwater Utility legislation in 149-I:6 applies to municipalities where sewage or stormwater is pumped or treated. He asked if someone could argue that a utility could not be established because stormwater is neither pumped nor treated in typical municipal drainage systems. **Mr. Williams** responded that even a grass-lined swale or a catch basin has the ability to settle large particles from stormwater and could be considered a form of treatment. **Mr. Cedarholm** continued by suggesting that the majority of references to drainage in the existing statutes are related to providing adequate drainage for the purpose of preventing flooding and providing a sufficiently large component to moving flood water away quickly. He stated that these statutes are not necessarily geared toward the concepts that the Commission is concerned with related to water quality and groundwater recharge. **Mr. Williams** responded that source control is a part of reducing flooding and is therefore part of achieving adequate drainage. He stated that if drainage is contributing to pollution, it is inadequate.

Dr. Kahl stated that a grassed ditch is considered treating stormwater and asked if untreating stormwater would be allowed by removing the grass ditch and replacing it with curbing. **Mr. Williams** responded that it would still be treated even though curbing and gutters are not preferred methods of treatment. **Dr. Kahl** asked about combined sewer overflows (CSOs) that stormwater flows into treatment plants. **Mr. Williams** responded that CSOs are regulated through EPA federal stormwater program and that separations are worked out municipality-by-municipality under their specific approaches. **Mr. P. Currier** added that the standard thought is that CSOs should be separated, but separation is not currently required. He gave the city of Nashua as an example of still having a CSO in the downtown area. He also emphasized the point made by Mr. Sanderson earlier that pre-existing conditions are not regulated and present a large gap. **Chairperson Sassan** asked if having a stormwater utility closes the gap of pre-existing conditions. **Mr. Williams** responded that he doesn't think the law is as clear as it could be, but that he believes it addresses pre-existing conditions. **Chairperson Sassan** then asked if a utility can be defined by the drainage divide and gave the example that native soils provide treatment. **Dr. Roseen** asked if a utility is more than a fee structure. **Mr. Williams** responded that a utility is more

than a fee structure because it allows a municipality to create ordinances. He stated that proper operation and maintenance of stormwater structure could be included under the ordinances.

Mr. Hemmerlien stated that a municipal sewer system and a storm drainage system are different. He explained that the flow of water cannot just be stopped because there are pollutants in it and added that upstream activities in the watershed cannot be controlled by the owner at the end of the drainage system. He asked how DOT can manage the quality of the drainage when they are not able to control any activities outside of the right of way. **Mr. P. Currier** stated that EPA thinks a municipality can regulate the drainage in an urban compact area and expects them to do so. He added that by not regulating drainage in urban compact areas, municipalities are violating federal law, however; New Hampshire does not have specific legislation enabling municipalities to do so. **Chairperson Sassan** stated that municipalities can choose to either break federal law or meet federal law by going beyond the enabling authority. **Mr. Williams** responded that the city of Manchester does not believe that they went beyond the enabling authority because of RSA 485-A:3.

Mr. Brooks, from the New Hampshire Attorney General's Office, added that in the situation where a municipality was not meeting a federal law because the state has not passed enabling legislation would fall back on the state. He stated that the state would have to deal with is. He believes that using RSA 485-A:3 could be legally challenged and stated that the actual sections of the rule, not only the purpose statement should be reviewed to determine the intent.

Chairperson Sassan reminded the Commissioners of another legal question they had asked regarding the authority of a municipality to manage stormwater versus to regulate stormwater. **Mr. Cedarholm** clarified that this question was in regard to the difference between stormwater management and drainage and regulating stormwater on existing sites. **Mr. Sanderson** explained a situation with a big box store in Greenland, New Hampshire. He said that the development was possible to design so the stormwater would be managed with the post-development having the same volume of stormwater as the pre-developed condition, but the design did not address water quality. He stated that managing for quantity and regulating for quality are done under site review and conditions subsequent to construction.

Mr. Cedarholm stated that it is easy to point out the authority of the various references included in the handout, but that there are always members of the town that will find the loopholes to say that the authority doesn't exist and they are able to convince others that the authority doesn't exist. All of the different pieces of authority scattered throughout the state statutes are not clear enough to convince municipalities. **Rep. Spang** added that a person should not have to go all over the statutes for answers and suggested that the Commission may want to consider writing a single, good statute to make it clear. **Chairperson Sassan** added that the statute could bring New Hampshire municipalities into compliance with the

federal regulations for MS4s. **Rep. Spang** added that this relates to the indirect impact of wetlands. She said she is interested in what Mr. Sanderson said about conditions subsequent to construction because she was lead to believe that conditions subsequent to construction were not allowed. **Mr. P. Currier** responded that at the state level, the 401 Water Quality Certification can be used to require subsequent conditions by putting limits or requirements on pollutant loading from activities from construction activities as well as post-construction operation. He added that the 401 Certification is issued by DES, but it is triggered by a federal permit.

Dr. Kahl asked about the advantage of a new statute for stormwater and asked if Mr. Sanderson or Mr. Brooks were aware of similar statutes in other states that the Commission could model. **Mr. Trainque** responded that Vermont might be a good example. **Mr. Sanderson** cautioned against using Maine because they are a home rule state.

Ms. Manzelli clarified the subsequent condition issue by explaining that during municipal site plan review or state permit review a permitting agency can impose a condition subsequent to construction meaning that, at the time the permit is evaluated the conditions are issued. She emphasized that this does not mean that conditions can be added subsequent to the permit being issued. **Mr. P. Currier** stated that the 401 Water Quality Certification says a certification can be modified after it is issued if, for example, the water quality standards change. **Ms. Manzelli** responded that the same is not true for municipal site plan review.

Dr. Roseen requested the opinion of the legal representatives on the state authority to impose stormwater requirements on the local level. He stated that the biggest challenge with stormwater management is that each municipality has its own regulations. He asked if there is any potential mechanism to enable a state to trickle down to the local level. He also asked how the state and federal regulations can better mesh. **Mr. Sanderson** responded that the state can set a floor that municipalities are required to meet, but he stressed that if a municipality does not have the resources to meet it, the responsibility would fall on the state. He added that the state would need to come forward with resources and assistance for municipalities. **Mr. Sienkiewicz** stated that the homebuilders to not want to see each municipality given the authority to set and interpret their own regulations and develop their own ordinances. He said they would rather see an extension of the state's Alteration of Terrain program. He added that he does not understand why water quality is something that each municipality should be able to decide. **Mr. Brooks** responded that he does not see anything legally wrong with the state setting a water quality floor, but agreed with Mr. Sanderson that it would come down to resources at the municipal level to comply with the state requirement.

Ms Ebel referenced the Comprehensive Shoreland Protection Act (CSPA) as an example of a statute that DES is supposed to be enforcing and stated that the town of New London put the CSPA in their local regulations, but that other towns have

not. She added that if the state had the authority to make a town adopt it, they should. **Mr. P. Currier** responded that it is a constitutional issue.

Mr. Trainque stated that the MS4 permit requirements are difficult to meet and they should not be used for a state "floor". He added that resources are so different for each municipality. **Ms. Manzelli** agreed that the NPDES permits including the MS4 permit are getting tighter and suggested that the floor could be set as an either/or scenario. She elaborated that if a municipality is subject to the MS4 permit, it needs to meet the MS4 requirements and if a municipality is not subject to the MS4 permit, they need to, at a minimum, meet other uniform regulations set by the state. She added that at least the other municipalities would have uniform requirements even if they are less stringent than the MS4 permit requirements. **Mr. Cedarholm** suggested that if there is an impaired water within a municipality, that the municipality should be given additional authority to regulate. **Ms. Manzelli** stated that it should depend on the impairment because all waters are impaired for mercury in the state. **Mr. Cedarholm** recommended that the focus be on nutrient and chloride impairments. He stated that the draft 2008 MS4 permit has different requirements if a discharge is made to an impaired water. He gave the example that tracking and reporting of road salt use is required where there are chloride impairments.

Rep. Spang asked if there is a link to the problem of pre-existing condition. **Dr. Roseen** responded that the draft MS4 permit deals with pre-existing in terms of watershed loading. **Rep. Spang** asked if this is what EPA is using in the Charles River watershed. **Mr. P. Currier** explained that EPA is using residual designation authority in the Charles River watershed in Massachusetts. EPA is delegated to issue NPDES permits in several states including Massachusetts and New Hampshire. He explained that EPA has the authority in these states to issue permits to individual land owners through a general permit. Individuals submit notices of intent (NOIs) under the general permit. **Dr. Roseen** added that this is happening in in South Portland, Maine, in the Charles River watershed in Massachusetts, and in Vermont. He explained that EPA uses residual designation authority when water quality goals are still not being met because of existing conditions and they base is on impervious cover analysis. He added that mapping impervious cover is another requirements of the draft 2008 MS4 permit.

Mr. Sienkiewicz asked if the draft MS4 permit requires municipalities to adopt ordinances to the maximum extent under the law.

Dr. Kahl asked if Mr. Sanderson, Mr. Brooks, or Mr. Williams have any recommendations for the Commission to consider. **Mr. Williams** stated that it appears the current statutes are too vague. **Mr. Brooks** added that from the discussion, it sounds like the statute language may need to be more specific depending on the Commission's objectives. He offered to look at the language once drafted. **Mr. Sanderson** stated that stormwater utilities are still new and that cities will have an easier time than smaller towns with adopting them. He

recommended focusing on incentives and education and outreach to municipalities as well as building partnerships. **Mr. Hounsell,** a member of the audience, recommended that the Commission follow the new stimulus bill. He said that CSO separation is a starting point, but that the real catalyst for action is money. He added that people want to clean up the water, but they just can't afford to do it.

Dr. Roseen proposed that the Commission dedicate an entire meeting to the issue of municipal assistance and funding for stormwater utilities so that municipalities do not only see money. He added that the Commission should work on ideas for incentives as well as increasing understanding that utilities help share the cost between new and existing development. **Ms. Manzelli** added that in regard to residual designation authority, she recommends New Hampshire try to improve water quality and address stormwater issues on its own before EPA steps in. **Rep. Spang** responded that it would be helpful if EPA came to explain it. **Mr. P. Currier** said that he agrees with Ms. Manzelli and that stormwater management is not about command and control, it's about education and offering carrots, technical assistance and funding. **Rep. Spang** recommended that the Commission establish objectives and determine which are mandatory and which are permissive. She added the objectives should be consistent with federal regulations.

Mr. Hemmerlien suggested that each Commissioner read through the draft 2008 MS4 permit.

Mr. Roseen said that there are federal requirements, but that he is still not clear on the issue of state authority. **Ms. Manzelli** summarized that the Clean Water act requires NPDES permits and requires states to set water quality standards. If the water quality standards are not met, it can be considered when a permit is issued. One type of permit is the MS4 permit under the NPDES stormwater program. Under the MS4 permit, municipalities are required to adopt an ordinance or regulation to address stormwater. The authority to adopt the ordinance or regulation is what is in question. **Mr. Sanderson** reminded the Commission to consider pre-emption. He stated that the federal standard is the floor and that the state can choose to be "cleaner" than the federal standards. **Mr. P. Currier** stated that DES reports to congress every two years with the 305(b)/303(d) surface water quality report.

IV. DISCUSSION OF FUTURE MEETING TOPICS AND DATES

Chairperson Sassan recommended that the Commission consider the formation of subcommittees to address the issues discussed. He stated that the Commission had mentioned at previous meetings that desire to stay in full Commission, but in order to divide the work and to move forward in an efficient manner, he recommends subcommittees. **Ms. Manzelli** agreed with Chairperson Sassan and suggested that the subcommittees report to the full committee. **Chairperson**

Sassan recommended that the subcommittees report to the full Commission at each meeting. He suggested that a subcommittee be formed for roads, municipal authority, and state uniformity standards and asked for the Commissioner's opinions. **Dr. Kahl** asked if municipal authority and uniformity are the same thing. **Mr. P. Currier** responded that municipal authority is what Ms. Manzelli described, the enabling authority for municipalities to manage stormwater and that the issue of uniformity is developing technical standards. He explained that there are two pieces to authority and added that there is authority under planning, which is more urgent because landscape change is happening now.

Mr. Sienkiewicz responded that he opposes enabling municipal authority to develop individual stormwater ordinances. He does not think there is authority to establish ordinances outside of a stormwater utility and suggested enacting legislation to administer or enforce MS4 requirements. He suggested then filling in the regulation gaps relative to existing development and roads. He added that the question of whether or not the Commission is going to recommend that municipalities be given authority to develop freestanding ordinances needs to be hashed out. He restated that he disagrees with municipalities having that authority because he things that is duplicates and overlaps other existing regulations and that the state may have to deal with those overlaps later. **Mr. P. Currier** stated that there are other ways to give authority and that the Commission needs to decide how.

Ms. Manzelli suggested that the Commission look at Dr. Roseen funding issue and asked if it should be discussed in the full Commission or in subcommittee.

Chairperson Sassan mentioned that the concept of stormwater polluters and the type and amount of pollutants that come from various activities has been brought up and requested as a presentation. **Rep. Spang** suggested using subcommittee to do homework so Chairperson Sassan and Ms. McCarthy do not have to do it all. **Mr. P. Currier** asked if the Commission had agreed on a subcommittee for municipal authority, a second for state uniformity standards, a third for funding issues, and a fourth for roads. **Chairperson Sassan** stated that he would put together a draft terms of reference for the subcommittees.

Ms. Manzelli suggested that roads might fit under the uniformity subcommittee. **Rep. Spang** stated that she thinks there will be very little to discuss for the funding subcommittee because there is very little funding available. **Mr. Trainque** responded that the Clean Water Act says that stormwater can be funded the same was as wastewater and now stormwater projects are able to be funded under the State Revolving Fund (SRF) loan program. **Mr. P. Currier** added that there will be money going in to SRF now and stated that the issue is technical assistance. **Chairperson Sassan** clarified that the funding subcommittee is not only money, but also looking at how to market utilities to municipalities.

Ms. Ebel asked if municipal authority legislation would only going to cover MS4 communities or if other municipalities would be given authority as well. **Dr. Roseen** responded that the authority would be for all municipalities and the uniformity may only be for non-MS4 communities. **Mr. Sienkiewicz** restated that he sees a problem with municipalities being enabled. **Ms. Ebel** explained that some towns get frustrated because the state works so slowly and that the towns would like to be enabled.

Dr. Kahl asked about new development versus existing development and if the Commission should focus on uniformity for new development. **Mr. Sienkiewicz** responded that many waterbodies are already not meeting federal water quality standards. He added that the water quality is not going to get better by regulating only new development.

Mr. Trainque stated that municipalities already spend money on stormwater in some way. He explained that a stormwater utility would benefit municipalities because it focuses resources on stormwater activities and funding. He informed the Commission that DES hosted meetings on the stimulus package where Harry Stewart, the Director of the DES Water Division, said that he wants to set up a work group for stormwater issues. He told the Commission that he asked Mr. Stewart to join one of the Commission meetings.

Chairperson Sassan informed the Commission that he and Ms. McCarthy would circulate proposals for the subcommittees as well as arrange for a presenter for the March meeting on the topic of stormwater pollution by land use. He reminded the Commission that he arranged to show the documentary titled "Liquid Assets" at 11:30am in room 305 of the Legislative Office Building on March 2n, prior to the next Commission meeting. **Chairperson Sassan** also mentioned that Mr. Trainque had sent several emails to the Commission and that he would consolidate those emails and distribute them for the Commission to discuss.

Date	Time	Location
March 2, 2009	1:00 PM	LOB 305*
April 6, 2009	1:00 PM	LOB 305*
May 4, 2009	1:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

V. ADJOURNMENT

Ms. Manzelli made a motion to adjourn. **Mr. P. Currier** seconded. All approved.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

April 6, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Dave Danielson	NH Association of Regional Planning Commissions
Chris Devine	NH Local Government Center
David Cedarholm	NH Public Works Association
Michael Trainque	American Council of Engineering Companies
Paul Currier	NH Department of Environmental Services
Steve Kahl	NH Lakes Association
Newb LeRoy	Associated General Contractors of NH
Carl Paulsen	NH Rivers Council
Joe Robertie	NH Timber Owners Association
L. Mike Kappler	NH House of Representatives
David Borden	NH House of Representatives

Members Absent:

Jacalyn Cilley	NH Senate
Rob Roseen	University of New Hampshire Stormwater Center
Charlie Hood	NH Department of Transportation
Amy Manzelli	Business and Industry Association of NH

Others Present:

Mark Hemmerlein (for Charlie Hood)	NH Dept. of Transportation
Joel Anderson	NH House of Representatives Staff

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

I. ROLL CALL AND INTRODUCTIONS

Chairperson Sassan called the meeting to order at 1:04 PM and requested that Commissioners, staff and attendees introduce themselves by name and representation. Introductions were made around the room. It was noted that Rep. Mike Kappler was assigned to the Commission to replace Rep. Eric Stohl.

II. APPROVAL OF MINUTES FROM FEBRUARY 2, 2009 MEETING

Mr. Danielson made motion to approve the minutes from the February 2, 2009 meeting. **Rep. Spang** seconded the motion. **All approved and none opposed; Mr. Paulsen and Rep. Kappler abstained due to their absence at the February 2, 2009 meeting.**

III. PRESENTATION ON EVENT MEAN CONCENRATIONS AND LAND USE

Mr. P. Currier presented to the Commission on the event mean concentrations of various land uses. He explained that event mean concentration (EMC) is defined by EPA as the total pollutant mass discharge divided by the total runoff volume. EMCs were developed by the EPA's Nationwide Urban Runoff Program (NURP) in the 1980's to serve as a national measure of the magnitude of urban runoff, specifically pollutant loadings. He explained that EMCs exist for all pollutants, but in regard to stormwater sediment, nutrients, bacteria, and metals are the pollutants of concern. EMCs vary depending on geography and from storm to storm. They can be used to generalize and estimate pollutant values per land use over time. He explained that the landscape type influences the EMC and in general as impervious cover increases, the event mean concentration increases.

Mr. P. Currier continued to explain that EMCs are used in modeling pollutants loads. He explained that there are many different pollutant loading models available and that NHDES is currently recommending that people use the Simple Method, which can estimate the change in pollutant loading between the pre-developed landscape and the post-developed landscape by breaking the landscape down into different types such as residential, commercial, highway and so on. He explained that the Simple Method uses annual loads for the pre-developed condition based on existing land use and post-development loads based on the proposed level of imperviousness and the proposed land use. To protect water quality, he explained that the desired condition is for post-development pollutant loading to be less than or equal to the pre-development loading. If meeting or exceeding the pre-development pollutant loading is not possible, and a waterbody is not an impaired water or an outstanding resource water, then the antidegradation policy applies. He explained that the draft Alteration of Terrain Program regulations did not require a pollutant loading analysis if a project proposed less than 10% effective impervious cover (impervious cover that contributes to runoff) and greater than 65% undisturbed cover. Meeting the "1065 Rule" would assume that the increase in loading would be minor and would not harm aquatic life.

IV. PRESENTATION DISCUSSION AND QUESTIONS

Mr. Sienkiewicz asked if antidegradation is in the federal Clean Water Act. **Mr. P. Currier** responded that antidegradation is in the clean water act and that EPA requires states to adopt an antidegradation policy. He explained that antidegradation is implemented through the state water quality standards. He explained that antidegradation has not been well implemented. The primary mechanism for implementation is through the 401 Water Quality Certification**,** which applies to any application for a federal permit, including Army Corp permits and general permits. It was proposed in the draft Alteration of Terrain program administrative rules, but was removed prior to adoption. **Mr. P. Currier** explained that the NPDES Construction General Permit requires a 401 Certification from the state, but that a general 401 Certification gets issued for the general permit and individual projects do not get certified. **Mr. Sienkiewicz** stated that we the exact impact of a project isn't known because a pollutant loading analysis is not required. **Mr. P. Currier** agreed.

Dr. Kahl stated that 10% of a site can be impervious and 65% needs to be undisturbed and noted that there is 25% of the property remaining. **Mr. P. Currier** responded that 25% of the property can be developed, but cannot be impervious. **Mr. Paulsen** asked for the definition of effective impervious cover. **Mr. P. Currier** responded that effective impervious cover is impervious cover that contributes to site runoff and that disconnected impervious cover does not contribute to site runoff because it is infiltrated. **Rep. Spang** asked if it takes into account the proximity of the impervious cover to a waterbody. **Mr. P. Currier** responded that the simple method does not take location into account necessarily, although buffer strips are included in the model as a best management practice [BMP]. **Rep. Spang** asked if a pollutant loading analysis is required under the Alteration of Terrain program if the 10% effective impervious cover and the 65% undisturbed cover requirements are met. **Ms. McCarthy** responded that if the antidegradation sections had been adopted as part of the Alteration of Terrain Rules, meeting the 10% and 65% requirements would excuse an applicant from conducting a loading analysis. However, because those sections were removed from the rules before adoption, there is currently no requirement for effective impervious cover and undisturbed cover, or for a pollutant loading analysis under the Alteration of Terrain program.

Mr. Paulsen asked if the state would require a 401 Certification on Alteration of Terrain projects. **Mr. P. Currier** responded that because the Alteration of Terrain permit is not a federal permit, it does not need a 401 Certification. **Mr. Cedarholm** asked Mr. P. Currier where else he would like to see antidegradation implemented. **Mr. P. Currier** responded that he would like to see it implemented at the state and local level with requirements on maintaining the hydrograph by not increasing the intensity of runoff and also not increasing pollutant loading. **Dr. Kahl** clarified that using buffer strips as a BMP is not intended to reduce the amount of effective impervious cover, but to provide treatment to reduce the pollutant loading.

V. PROPOSED WORK PLAN

Chairperson Sassan stated that the focus of the Commission to date has been information gathering, and suggested that the Commission now put together a work plan and establish subcommittees to fulfill its duties. He explained that Dr. Roseen drafted a work plan and proposed subcommittees in a handout given out with the meeting documents. He stated that some Commission members expressed an eagerness in moving forward to make recommendations. He asked for recommendations on the number and type of subcommittees to be formed.

Rep. Spang stated that there will be a resources study committee established to study infrastructure and funding and asked if the Stormwater Commission should start the work on funding and hand it over to the committee when it begins work in November. **Chairperson Sassan** responded that Dr. Roseen was the lead on the finding topic and suggested that he might be chair of a funding subcommittee. **Mr. Cedarholm** stated that Mr. Roseen had agreed to chair a funding subcommittee if one were formed. **Dr. Kahl** asked if it is premature to find funding mechanisms without having recommendations to be funded. **Mr. Danielson** responded that part of the funding subcommittee purpose is to see what other states are going for funding. **Rep. Spang** agreed with Dr. Kahl that the needs should be identified before funding and planning can be done. **Mr. P. Currier** stated that there are two parts to stormwater, the existing development retrofits that require funding for infrastructure and new technology, and the new development that requires technical assistance to municipalities to ensure that development is designed to reduce stormwater impacts. He stated that Mr. Sienkiewicz recommended that a state level performance standard be established to assist municipalities. **Rep. Spang** stated that deciding what should be done should be the central subcommittee. **Mr. P. Currier** stated that DES says there can be no increase in loading from development projects, but there are actually no state permits in place to implement it. If a permit were to be developed, it would require substantial funding to administer it. **Rep Spang** asked about the problems with old pipes and infrastructure, which she thinks if more of a regulatory issue and not a funding issue. **Mr. P. Currier** responded that failing infrastructure is not necessarily due to being old, but because it was not designed for treatment.

Mr. E. Currier stated that the total phosphorus and total nitrogen EMCs listed in Mr. P. Currier's presentation showed agriculture to be one of the highest sources and asked if funding is available for agricultural activities. **Rep. Spang** asked if the nutrient loading is high because BMPs are not in place or because there is a lack of education and outreach or a lack of enforcement. **Mr. E. Currier** responded that education and outreach would benefit the farm community. **Chairperson Sassan** asked if there are BMP requirements for agricultural operations. **Mr. E. Currier** responded that there are requirements and farmers are trying to comply, but the requirements are dependent on the type of farming being done. **Chairperson Sassan** asked if the EMCs presented are reflective of agricultural land uses with BMPs or without. **Mr. P. Currier** responded that the EMCs are without BMPs being implemented.

Mr. Hemmerlein stated that there are requirements for retrofitting and for new development and that DOT does both. He explained that there are active DOT projects that were approved a long time ago. Some road and highway projects can take a long time and although they were approved several years ago, they are required to meet new regulations. He explained that sometimes there is not enough land available in road rights of way to meet the head requirements or for treatments areas. He also explained that for retrofits, they cannot simply change the grade of existing roads. He stated that funding needs serious consideration. He added that there is a lot of regulatory uncertainty right now and it makes it difficult to work. **Chairperson Sassan** stated that the funding subcommittee will look at both existing and new development.

Chairperson Sassan stated that a subcommittee for municipal authority had been suggested at previous meetings. **Mr. Hemmerlein** suggested that the subcommittee look at both state and municipal authority. He explained that authority varies greatly by municipality and municipal authority may not be the best approach. Municipalities that adopt lax regulations will have an unfair advantage over municipalities with strict regulations in attracting business. **Mr. Danielson** asked the Commission to keep in mind that planning boards should be involved. He suggested looking at a proposal to EPA from Region 1 to look at regulations and planning from a watershed perspective. **Mr. P. Currier** added that the work in the Great Bay watershed has included three regional planning Commissions because there are three regions in the watershed. **Mr. Hemmerlein** suggested looking at Maryland and Lake Tahoe as examples of regional efforts.

Chairperson Sassan summarized that there are to be three subcommittees, a funding subcommittee to look at existing and new infrastructure, a regulatory authority subcommittee, and a uniform performance standards subcommittee and questioned if the uniform standards should fall under the regulatory authority subcommittee. **Mr. P. Currier** suggested that the uniform standards subcommittee should be separate if the task is to suggest what the uniform standards ought to be. **Chairperson Sassan** stated that the uniform standards subcommittee would be science-based to develop recommendations for standards.

Mr. Sienkiewicz stated that it is difficult to separate what actually is to be done in regard to replacing infrastructure and how we regulate going forward. He suggested there are two distinct parts, the existing infrastructure and development, and the new, proposed development.

Chairperson Sassan stated that roads, chloride, and climate change had all been suggested as subcommittees previously and asked if they were still important to people. **Dr. Kahl** asked what other states are going and suggested that the Commission should not duplicate efforts. He mentioned that the climate change task force could address part of it. **Rep. Spang** asked how not addressing climate change would impact the Commission fulfilling its duties. **Chairperson Sassan**

stated that he thinks the duties have been addressed and that the Commission can pull information from the Task Force's report. **Mr. Paulsen** added that climate change clearly cannot be ignored, but that it can be woven into their recommendations. He also mentioned that there are non-regulatory barriers to stormwater management at the local level. He added that the state cannot simple create uniform standards and hand them over to the municipalities because it could be a 28A [unfunded mandate] issue. He explained that a big concern is that communities do not want to be the first on the block to implement regulations. **Rep. Spang** responded that aside from the subcommittees, the Commission needs to pull everything together and make recommendations, including addressing barriers. **Chairperson Sassan** recommended an outreach subcommittee. **Mr. Danielson** stated that the recommendations need to be made before they can conduct outreach.

Mr. Sienkiewicz asked if it is better to retrofit existing infrastructure or focus on new development, and suggested a subcommittee look at that if the answer isn't known. **Mr. P. Currier** responded that in general, the problem is the existing development, but that the current structure puts the burden on new development to maintain pollutant loading. He gave the Great Bay watershed as an example that 50% of the total nitrogen loading comes from stormwater and stated that studies in the Connecticut River watershed and the Merrimack River watershed show the same thing. The issues are due to the developed landscape. **Rep. Spang** added that there are also septic system issues in Great Bay and atmospheric deposition makes up a big part. She stated that Bill McDowall at UNH has been studying nitrogen loading in the Lamprey River watershed.

Chairperson Sassan stated that the funding subcommittee will be charged with determining how funds should be spent. **Mr. P. Currier** suggested that it might be possible to obtain estimated costs for new regulations, state technical assistance to municipalities, and retrofits for BMPs. **Chairperson Sassan** agreed that the cost information would be useful, but asked if cost would help prioritize actions. **Dr. Kahl** stated that if there are to be new regulations for existing development, new standards for new development cannot be ignored. **Rep. Spang** asked what the issue was with the new development standards being an unfunded mandate. **Mr. Sienkiewicz** explained that if every municipality has to implement the Alteration of Terrain program, they will put the review burden on the developer, which will draw out the permitting process. **Mr. P. Currier** suggested that unless funding is provided along with uniform standards, municipalities will resist. If uniform standards are going to work either the state will need to develop it and implement it, or the state will need to develop it and provide funding for municipalities. **Mr. Danielson** added that an additional option would be for municipalities to adopt stormwater utilities that can fund it.

Rep. Spang suggested that the subcommittees meet in succession and stated that she is concerned that the subcommittees are discussing funding and regulating things that haven't been identified yet. **Rep. Borden** suggested that a

subcommittee focus on defining the problem. **Rep. Spang** suggested that the NH Water Primer may be a good start. **Chairperson Sassan** suggested that a needs subcommittee be a one-meeting subcommittee to pull together all the needs identified to this point. **Mr. Cedarholm** asked that the Commissioners send their thoughts on what is needed to Chairperson Sassan or Ms. McCarthy.

Rep. Kappler suggested that the authority subcommittee look at the stimulus package on land and roads.

Rep. Spang suggested that everyone pick a subcommittee to join that would like to be engaged with. The Commissioners went around the room and selected a subcommittee to join. Chairs were nominated.

VI. OTHER BUSINESS

Ms. McCarthy provided a handout to the Commissioners that summarized the comments from municipalities, planning Commissions, and other organizations that DES received at the outreach events for the NH Water Resources Primer.

Ms. Ebel asked if the Commission was granted the one-year extension. **Rep. Spang** responded that she believes it passed the House.

Mr. Danielson informed the Commission that he will not attend the June 1, 2009 meeting.

VII. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
May 4, 2009	1:00 PM	LOB 305*
June 1, 2009	1:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VIII. ADJOURNMENT

Dr. Kahl made a motion to adjourn. **Mr. Cedarholm** seconded. All approved.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

May 4, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Dave Danielson	NH Association of Regional Planning Commissions
Chris Devine	NH Local Government Center
David Cedarholm	NH Public Works Association
Michael Trainque	American Council of Engineering Companies
Steve Kahl	NH Lakes Association
Newb LeRoy	Associated General Contractors of NH
Carl Paulsen	NH Rivers Council
Joe Robertie	NH Timber Owners Association
L. Mike Kappler	NH House of Representatives
David Borden	NH House of Representatives
Rob Roseen	University of New Hampshire Stormwater Center
Amy Manzelli	Business and Industry Association of NH
Jacalyn Cilley	NH Senate
Mark Hemmerlein (for Charlie Hood)	NH Dept. of Transportation

Members Absent:

Charlie Hood*	NH Department of Transportation
Paul Currier	NH Department of Environmental Services

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

*Representative sent in place.

I. ROLL CALL AND INTRODUCTIONS

Chairperson Sassan called the meeting to order at 1:08 PM. Commissioners and attendees introduced themselves by name and affiliation. It was noted that Rep. Mike Kappler was assigned to the Commission to replace Rep. Eric Stohl.

II. APPROVAL OF MINUTES FROM APRIL 6, 2009 MEETING

Rep. Spang made motion to approve the minutes from the April 6, 2009 meeting. **Dr. Kahl** seconded the motion. **All approved and none opposed.**

III. SUBCOMMITTEE REPORTS

Ms. Manzelli reported that five of the twelve members of the Regulatory Authority subcommittee held a meeting, which focused primarily on the objective of the subcommittee. She stated that the outcome proposed by the subcommittee is to provide a concise and thorough written report of all the authority that exists today in regard to stormwater and to identify and briefly describe programs and source law. She added that they would default to the Needs subcommittee to analyze whether the laws are effective or ineffective. **Chairperson Sassan** responded that he thought the Regulatory Authority subcommittee responsibility would include identification of regulatory needs. **Rep. Spang** added that several of the Needs subcommittee submissions pointed to the Regulatory Authority subcommittee to identify the regulatory gaps. **Ms. Manzelli** responded that the Needs subcommittee could use the list of existing regulations, prepared by the Regulatory Authority subcommittee. The Needs subcommittee can then inform the Regulatory Authority subcommittee of the needs identified, and the Regulatory Authority subcommittee can assess whether the needs can be met through existing regulations or if there are gaps where additional regulation should be proposed. **Mr. Paulsen** added that the Regulatory Authority subcommittee will also look at wetland permitting to assess whether it adequately addresses stormwater, and clarified that regulations and permits will be evaluated to some extent in that subcommittee.

Chairperson Sassan stated that it was originally proposed that the Needs subcommittee would meet first to identify the stormwater needs and then go the Regulatory Authority subcommittee to build on the gaps identified. **Dr. Roseen** responded that he thought the Regulatory Authority subcommittee was going to identify the gaps and determine if there was a need for more comprehensive regulation. **Ms. Ebel** added that the Regulatory Authority subcommittee was also going to determine the extent of existing municipal authority to manage stormwater.

Ms. Manzelli explained that it is important to have a comprehensive statement identifying the programs that currently exist. She reminded the Commission that during the presentations on municipal authority, Mr. Eric Williams of DES distributed a handout that explained the existing regulatory authority, but then the Attorney General's office representative stated that the authority might not be as clear as it could be.

Chairperson Sassan stated that the Regulatory Authority subcommittee should first compile a list of existing regulation related to stormwater, and then determine the gaps where additional regulation could be proposed.

Rep. Spang stated that the Needs subcommittee was originally proposed to meet quickly, but that it appears the subcommittee has more to tackle than originally thought. She added that if the Needs subcommittee does end earlier than the other subcommittees, that members should join the remaining subcommittees.

Senator Cilley suggested that the Commission also look at other New England state regulations, to which **Chairperson Sassan concurred Dr. Roseen** responded that he has experienced difficulty getting other states to respond, and mentioned Massachusetts in particular, because they are in the middle of figuring it out. **Senator Cilley** offered to request that the Senate Research Committee would research other state stormwater regulations. **Mr. Cedarholm** suggested that the state of New York would also be good to research. **Mr. Trainque** reminded the Commission that he sent around an email summarizing what a few other states in New England are doing.

Mr. LeRoy asked for Ms. McCarthy to send out an email with the descriptions and responsibilities of each subcommittee clearly identified. **Ms. McCarthy** read the subcommittee member lists.

Dr. Roseen reported that only he and Mr. Danielson attended the meeting of the Funding subcommittee. He explained that they discussed the responsibility of the subcommittee as identifying economic mechanisms, such as impact fees and stormwater utilities, that could be pursued at the state level. **Ms. Manzelli** asked if being pursued at the state level means that it is state funding or if it also includes funding from sources other than the state. She added that there seems to be federal money potentially available. **Dr. Roseen** clarified that currently, funding to manage stormwater does not exist in most cases. The Funding subcommittee would look at ways to generate new money for funding.

Mr. Danielson informed the Commission that there is currently a bill to amend the Water Pollution Control Act and the Safe Drinking Water Act, called the Water Infrastructure Financing Act. He explained that the purpose is to increase funding to implement the federal Clean Water Act over the next four years. He added that it is going into committee next week and has implications for funding stormwater with a number of different grant programs. He explained that he could not find stormwater explicitly mentioned in the bill text, but that it does mention combined sewer overflows (CSO's) and pollution control, and relates to waste water and drinking water. He will keep the Commission informed on this bill.

Mr. Trainque informed the Commission that the original Clean Water Act made allowances for funding in the SRF (state revolving fund) for both waste water and stormwater, but New Hampshire never added stormwater. He explained that a recent change, partly driven by the economic stimulus, now makes stormwater eligible for funding under the SRF. He added that the stormwater utility

legislation is very narrow and it may need modification to enable it as a funding mechanism.

Senator Cilley asked Mr. Danielson if there is a distinction made between waste water and stormwater in the new legislation with a separate fund for each. **Mr. Danielson** responded that he could not find stormwater specifically mentioned in the bill text, but that is does mention grants.

Mr. Sienkiewicz reported that the Needs subcommittee met once, but did not have a quorum. At the meeting, subcommittee members discussed putting together a needs statement based on the nine questions outlined in the Commission's Interim Report. He stated that he received responses from some members and he would like to gather more responses before the subcommittee meets again.

IV. OTHER BUSINESS

Mr. Cedarholm informed the Commission of a Frontline special titled "Poisoned Waters". He explained that it builds on the Penn State documentary, "Liquid Assets", that the Commission watched at the April meeting, by describing sources of stormwater pollution. **Dr. Roseen** added that it can be viewed online at PBS.org under the program Frontline.

V. SUBCOMMITTEE BREAK-OUT SESSIONS & REPORTING

The Commission members broke into their respective subcommittees and held work sessions for approximated 45 minutes. The full Commission re-grouped and gave reports on subcommittee work sessions.

Mr. Sienkiewicz reported that the Needs subcommittee needs to schedule the next meeting and subcommittee members will be responsible for brainstorming needs to bring to the meeting for discussion. **Ms. Manzelli** reported that the Regulatory Authority subcommittee will meet immediately prior to the next full Commission meeting. She stated that they will work to complete the spreadsheet of applicable programs and permits, including a description of the programs and when it applies. She explained that after the Needs subcommittee provides a list of proposed needs, the Regulatory Authority subcommittee will respond to the identified needs to determine if they are covered under existing authority.

Chairperson Sassan reminded the Commission that there needs to be a balance between making sure that all of the issues are being captured and making sure that the subcommittees are not taking on too much.

Dr. Roseen reported that the Funding subcommittee compiled a list of categories to look at including, developer incentives, such as a fee structure based on the degree of compliance with stormwater regulations, stormwater utility incentives with a state level stormwater utility fee that municipalities can opt out of. He explained that a municipal incentive could be funding that would go toward local

compliance with the MS4 permit and state stormwater mitigation fund to target locations in need of restoration. **Senator Cilley** stated that identifying the funding before identifying the needs is premature. **Dr. Roseen** responded that many of the funding ideas were based on needs identified in previous meetings and presentations and that the Funding subcommittee will make sure they match up with the identified needs that come out of the Needs subcommittee.

Ms. Manzelli requested that all email for subcommittees be send to the full Commission.

Mr. Cedarholm stated that Dr. Roseen only mentioned MS4 communities and asked if the Funding subcommittee will consider incentives for municipalities that are not MS4s. **Dr. Roseen** agreed that an incentive for non-MS4 communities would need to be identified. **Mr. Hemmerlein** stated that the Commission needs to consider that the MS4 program is a federal program.

Mr. Cedarholm stated that the stormwater utility legislation allows for intermunicipal stormwater utilities.

Dr. Roseen continued that a third category to consider is municipal stormwater utilities with an incentive to help them move forward such as technical assistance to help administer the program possible from the Regional Planning Commissions or paid for by the stormwater mitigation fund. **Mr. Danielson** added that redevelopment improvements would also be considered. **Rep. Spang** responded that redevelopment projects may not trigger an Alteration of Terrain permit, but that they are a great opportunity to mitigate for stormwater. She added that state money toward stormwater retrofits could be an incentive. **Mr. Sienkiewicz** asked if a permit would be required if someone renovated a mill yard, but did not disturb an acre. **Mr. Hemmerlein** responded that a permit would not be needed. **Mr. LeRoy** added that there is an exemption for redevelopment in shoreland. **Mr. Sienkiewicz** then stated that existing development is the primary problem with stormwater, yet there is a lot of redevelopment that is not required to get a permit.

Mr. Danielson responded that if a community has a stormwater utility fee based on impervious cover, a redevelopment activity that removed impervious cover would see a reduction in their utility fee, which is an incentive. He added that they only discussed incentives, and that most developers want to do the right thing. He stated that the Commission needs to identify ways to help them do the right thing. **Mr. Trainque** added that most stormwater utilities are structured to incorporate credits, which decreases the fee. **Mr. Cedarholm** stated that there might be incentives in land use and zoning. **Mr. LeRoy** added that zoning requires more parking spots than necessary and takes up space that could be used for stormwater treatment. **Mr. Cedarholm** responded that underground parking or buildings over parking areas can be used.

Mr. Paulsen stated that antidegradation requires no additional discharge of pollutants into an impaired waterbody. He explained that there is a workgroup talking about trading to allow a project to decrease loading in one area in order to increase loading in another. He asked what incentives there are to keep areas that aren't impaired clean.

Mr. Hemmerlein asked how smaller development projects that are below permit thresholds can be brought into the regulatory loop other than municipal authority. **Ms. Ebel** responded that site plan amendments gives opportunities for municipalities to ask for drainage improvements, but municipalities are afraid to ask for too much. She added that if there were funding available to help developers upgrade their drainage, they would be more willing and it would be easier for municipalities to request it.

Mr. Danielson asked if the number of parking spaces required in zoning is really needed. **Mr. LeRoy** responded that parking is determined based on the square footage of the business space it is serving and a study showed that there is much more parking required in zoning than is actually needed. **Dr. Kahl** added that the requirements for parking in zoning could be developed to provide an incentive for pervious pavements. He explained that Dr. Roseen stated in earlier meetings that a major barrier for pervious pavement is that there is not a big enough market for it, and that incentives to decrease imperviousness under new NH stormwater law could help develop the market for pervious paving options. **Ms. Ebel** explained that the town of New London negotiated with the hospital when they expended to include a section of pervious pavement. **Chairperson Sassan** stated that parking is currently the responsibility of each individual business owner, but that parking should be a community issue addressed in a municipal parking plan. **Rep. Spang** added that planning boards could request businesses to contribute to a community parking lot or garage. She explained that this would alleviate the concern about using up so much land for parking and added that even pervious pavement consumes natural land. She also stated that she is concerned with all of the abandoned shopping centers and thinks that there should be bonds to tear the parking out.

Mr. Hemmerlein stated that it sounds like the Commission is trying to give assistance to community planners and suggested that municipal planning boards could be a mechanism to increase education and awareness. **Mr. Danielson** added that planners have trainings and courses that they are required to take and that it would be beneficial to get this topic onto an agenda for technical training. **Ms. Ebel** reminded the Commission that not all towns hire planners.

VI. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
June 1, 2009	1:00 PM	LOB 305*
July 6, 2009	1:00 PM	LOB 305*
August 3, 2009	1:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VII. ADJOURNMENT

The motion was made to adjourn at 3:12pm, and was seconded. All approved.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

June 1, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: Dari Sassan	NH Office of Energy and Planning
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Chris Devine	NH Local Government Center
David Cedarholm	NH Public Works Association
Michael Trainque	American Council of Engineering Companies
Steve Kahl	NH Lakes Association
Newb LeRoy	Associated General Contractors of NH
L. Mike Kappler	NH House of Representatives
David Borden	NH House of Representatives
Rob Roseen	University of New Hampshire Stormwater Center
Amy Manzelli	Business and Industry Association of NH
Mark Hemmerlein (for Charlie Hood)	NH Dept. of Transportation
Paul Currier	NH Department of Environmental Services

Members Absent:

Charlie Hood*	NH Department of Transportation
Dave Danielson	NH Association of Regional Planning Commissions
Carl Paulsen	NH Rivers Council
Joe Robertie	NH Timber Owners Association
Jacalyn Cilley	NH Senate

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

*Representative sent in place.

I. ROLL CALL AND INTRODUCTIONS

Chairperson Sassan called the meeting to order at 1:12 PM. .

II. APPROVAL OF MINUTES FROM MAY 4, 2009 MEETING

Rep. Spang gave grammatical changes to Ms. McCarthy. **Rep.** Borden made motion to approve the minutes from the May 4, 2009 meeting with Rep. Spang's amendments. **Ms. Ebel** seconded the motion. **All approved and none opposed.**

III. OTHER BUSINESS

Chairperson Sassan explained to the Commission that he was recently given a new program to manage under the stimulus package in his position at the Office of Energy and Planning and that the time requirements for managing that program are requiring him to step down as chair of the Commission. He requested nominations for a new chairperson.

Rep. Spang nominated Mr. David Cedarholm. **Dr. Kahl** seconded the nomination. **Ms. Manzelli** suggested that Mr. Cedarholm be given the opportunity to confirm his ability to meet the time commitment of being Commission Chair. **Mr. Cedarholm** responded that he is honored to be nominated, and explained that his workload is more than it has ever been. He explained that it may be difficult to take on chairing another group and asked for clarification of the duties of the Chair. **Chairperson Sassan** responded that the majority of the Chair's work is in organizing and facilitating meetings, as well as overseeing drafting the final report. He explained that the majority of the work remaining for the Commission to do is happening in the subcommittees. **Mr. P. Currier** added that the subcommittees' work, when completed, should be in a format that can easily be incorporated into the final report.

Dr. Kahl suggested that Ms. McCarthy could have an increased role in the Commission beyond taking the minutes. The Commission asked for Ms. McCarthy's opinion. **Ms. McCarthy** responded that DES is already representation on the Commission and that she does not feel it is up to her to expand her role beyond that of Commission staff. **Rep. Spang** responded that she, Chairperson Sassan, Mr. Cedarholm, Ms. McCarthy and the subcommittee chairs should meet and make sure that the work the subcommittee are doing are not duplicating efforts. **Mr. Cedarholm** indicated that he would accepted the role of Chairperson if there was an understanding that the subcommittee Chairs would share equally in the responsibility of preparing the Commission's final report. The subcommittee chairpersons indicated agreement with the condition and Mr. Cedarholm accepted the role of Chairperson. **Chairperson Sassan** made motion to accept Mr. Cedarholm as Commission Chair. **All approved.**

Rep. Spang made motion to formally recognize and appreciate Mr. Sassan for his work as chair.

IV. SUBCOMMITTEE REPORTS

Mr. Sienkiewicz informed the Commission that the Needs Subcommittee developed a spreadsheet documenting the needs that had been identified through presentations, discussion, and other Commission materials. He stated that the spreadsheet will be sent out to the full Commission after the meeting.

Dr. Roseen reported that the Funding Subcommittee has a draft final product to circulate, which was sent out in an email to the Commission prior to the meeting.

He explained that the product represents a range of funding option to explore. He walked the Commission through the document, and explained each option. He explained that the purpose of the subcommittee is to identify primary funding mechanisms that can be used to fund the recommendation that come out of the Needs Subcommittee and added that these are option.

He explained that the first option is a state-wide stormwater fee. The Subcommittee proposes that this be administered on a municipal level, similar to the licensing fee for motor vehicles. He explained that the reason for a statewide fee is because there are significant political issues with passage of a local utility and a statewide stormwater fee would enable funding to go to both the state – in a stormwater mitigation fund – and the municipality to support their municipal stormwater program. He explained that there needs to be an element added for non-MS4 communities and added that most of the municipalities currently exploring utilities are MS4 communities.

Ms. Manzelli asked if the municipal component would not go toward MS4 communities. **Dr. Roseen** responded that the municipal component would go to all communities, as the stormwater fee would apply to everyone, but that there could potentially be a waiver for non-impaired watersheds. **Mr. LeRoy** asked what the acronyms "IC" and "EIC" stand for on the subcommittee's handout. **Dr. Roseen** responded that they stand for impervious cover and effective impervious and explained that utilities often base their fees on impervious cover. He gave an example of a rooftop that drains directly to a storm sewer system as being effective impervious cover and disconnected impervious cover would be a roof that had a gutter downspout to an infiltration practice or other management practice so the stormwater generated does not enter the storm sewer system.

Rep. Spang asked if the state uses a model and not site specific information for the statewide fee if there will be pushback. **Mr. P. Currier** responded that utility fees are lot specific and use the actual square footage of impervious cover on a lot. **Rep. Spang** asked who is responsible for the impervious cover data. **Dr. Roseen** responded that it could be based on the tax record maintained by the municipality or if could be on a per lot basis using a GIS analysis, which involves photo interpretation. **Rep. Spang** suggested that obtaining the data could be difficult for small towns. **Mr. Sienkiewicz** stated that the impervious cover per lot is based on the footprint not the square footage of the building. **Mr. P. Currier** added that there is a built-in incentive for homeowners to accurately report on their properties. **Dr. Roseen** added that fee abatement could come into plat by disconnecting areas of impervious cover.

Mr. Sassan asked if it would be better to IC and EIC as standard components of the property assessment process instead of having individual property owners prove what is on their site. He added that a portion of the stormwater fee generated could go toward this addition to the assessment. **Dr. Kahl** asked if there would be a threshold, and gave the example of 10% IC on a lot, that would

require no fee. **Dr. Roseen** responded that an IC threshold might be a good incentive to minimizing impervious cover and that it would be in line with how DES proposes to implement antidegradation. **Mr. E. Currier** asked if the stormwater fee would apply to agricultural activities. **Dr. Roseen** responded that there may need to be land use exemptions and agriculture might be one of them. **Mr. LeRoy** pointed out that a barn would not likely be connected to a storm drain system. **Mr. Sienkiewicz** responded that a barn could still be a problem**. Mr. P. Currier** added that if a barn drains to a stream it should be included. **Mr. Sienkiewicz** reminded the Commission that the intention is to try to spread out the responsibility of managing stormwater equally.

Chairperson Cedarholm stated that the distinction between impaired and non-impaired watersheds and the potential for a fee waiver for non-impaired watersheds is important. **Ms. Manzelli** cautioned the Commission to be careful with using the term "impairment" and gave the example of the entire state being impaired for mercury as an example. **Dr. Roseen** stated that stormwater impaired should be specified. **Mr. P. Currier** added that DES has a list of stormwater impaired waters of the state that is a subset of the 303(d) list of impaired waters.

Mr. Hemmerlien stated that the statewide stormwater fee discussion has focused on private property and asked how it would apply to roads, government and non-governmental organization properties. **Dr. Roseen** responded that roads may need to be addressed separately, but that government buildings would be included. He added that Augusta, Maine created a stormwater utility that included federal buildings because it is not a tax. It is a fee. **Mr. Sassan** asked if private roads would be included. **Dr. Roseen** responded that he is unsure as they have not discussed roads yet. **Ms. Ebel** asked if any other states have done this. **Dr. Roseen** responded that there are no states that he knows of that have implemented a statewide stormwater fee. **Chairperson Cedarholm** asked what this fee system is being modeled after. **Dr. Roseen** responded that it is being modeled after a stormwater utility model.

Ms. Manzelli asked what would happen to the stormwater utility legislation if a statewide stormwater fee passed. **Dr. Roseen** responded that the subcommittee did not discuss that, but if a municipality had its own utility, there could be an option for them to get a waiver or some other option to get out of the state program. **Dr. Kahl** added that this could be an incentive to municipalities to adopt their own utilities because the municipality would keep all of the funds generated by the fee instead of having to give the state a portion.

Mr. Sienkiewicz asked about implementing a watershed utility. **Mr. Sassan** stated that a watershed utility is fully enabled. **Mr. P. Currier** clarified that it is only fully enabled in the Coastal Watershed.

Ms. Manzelli stated that the statewide stormwater fee sounds like education funding where everyone pays into a state fund and then the state decides where

the money goes. **Dr. Roseen** responded that the subcommittee tried to address that concern by assigning ratios of the funds. He described that an option could be a one-time fee, such as an impact fee, that is paid with a building permit and explained that the fee could be abated if the project meets all state requirements and recommendations. He further explained that 25% of the fee would go to the state and 75% to the municipality. **Ms. Manzelli** asked if the 25:75 ratio would apply to the statewide utility as well. **Dr. Roseen** responded that it could. **Rep. Spang** asked if the funds generated by the fee could be used for infrastructure improvements. **Dr. Roseen** responded yes, that it could be used for infrastructure improvements in the same way that a municipality would use the funds from a municipal stormwater utility.

Mr. Sassan stated that there is a still a problem that 25% of the funds generated by a municipality go to the state and will be used in other municipalities. **Ms. Manzelli** added that there are some areas that are stormwater problem areas. **Mr. Sienkiewicz** added that inevitable funds generated in rural areas will most likely go to urban areas. **Mr. P. Currier** suggested that the state portion of the fund be managed by watershed, similar to the Wetland Mitigation Fund. **Mr. Hemmerlien** stated that stormwater practices and maintenance are the real funding concerns. **Mr. Sienkiewicz** explained that charging people first creates revenue and secondly it discourages people from doing the things that they're being charged for. He added that it would be great if people changed their land use practices so the fee would end up being small. **Dr. Roseen** added that an effective incentive would be to use a large fee, but that would likely prevent it from being approved. **Mr. Sienkiewicz** stated that the Needs Subcommittee is not able to identify hard numbers that are needed to fund actions. **Ms. Manzelli** responded that the duty of the Commission is to make suggestions that will help manage stormwater in the state. She added to the extent that the suggestions require funding, anything beyond making recommendations for funding mechanisms, should be the responsibility of the legislature.

Mr. Hemmerlien stated that the federal government model is just to give money for incentives, but the state doesn't have a funding source.

Rep. Borden stated that if legislation is needed, is should be crafted this summer. He added that it needs careful work, but there are great ideas. **Rep. Spang** stated that all the stakeholders need to be involved if and when the legislation is crafted.

Mr. LeRoy asked if there could be an exemption if a property was below a certain impervious cover threshold. **Mr. P. Currier** added that it would be an incentive for property owners to disconnect their impervious cover. **Ms. Manzelli** asked if there is literature on the correlation between water quality and impervious cover. **Mr. P. Currier** responded that there is extensive literature on the topic.

Mr. Hemmerlien asked if it was reasonable to charge everyone $5.00 regardless of the amount of impervious cover they have, and let them do improvements to reduce or opt out of the fee. He suggested that an incentive could be a free rain garden or rain barrel. **Ms. McCarthy** responded that in a stormwater utility there are two common credit methods. She explained that one is to lower the fee based on reductions in impervious cover, and the other is similar to what Mr. Hemmerlien suggested, to give a one time credit of a rain barrel or similar practice. **Mr. Hemmerlien** added that by charging all properties the same fee, it would avoid the need for costly data gathering. **Dr. Roseen** responded that the data gathering part is important to be equitable and to build incentives. **Mr. Sassan** stated that he thinks a generous fee would not pass. **Mr. P. Currier** agreed and recommended having IC and IEC phased in with property assessment.

Rep. Spang stated that acceptance of a stormwater fee depends on the way it is worded and asked if people want to pay for necessary infrastructure repairs through an increase in property taxes or through a proactive way to adapt to increased stormwater management needs.

Dr. Roseen explained that he believes there are more incentives for commercial properties because redevelopment and improvements on existing development could reduce fees.

Mr. Sassan asked if there is a recommendation that the Commission could put forward that gets at Rep. Spang's comment on acceptance of a stormwater fee depending on how it is worded. **Rep. Spang** stated that DES is doing a good job and that the Local Government Center could be more involved. **Chairperson Cedarholm** stated that a major part of the new MS4 permit is education and outreach and that in the future, MS4 communities will have to evaluate the effectiveness of their education and outreach programs. He suggested that part of the recommendation could be to educate people on stormwater issues before implementing the fee.

Ms. Ebel stated that the Funding Subcommittee seems to have focused on the idea of utilities, she thought that they would also consider funding for technical assistance and other activities. She asked if the Funding Subcommittee envisions that every municipality will have a stormwater utility. **Dr. Roseen** responded that it does envision every municipality having a utility unless they see a waiver because there is no impairment. **Mr. P. Currier** stated that there are impairments on the Connecticut River, Great Bay, and the Merrimack River and that the watersheds for those systems all contribute to impairments. He explained that those watersheds essentially make up the entire, leaving very few municipalities eligible for waivers. **Ms. Ebel** asked if other Commissioners agree that the Funding Subcommittee should look at other funding sources and mechanisms other than stormwater utilities for technical assistance, outreach and education, and enforcement and inspection. The Commissioners all agreed that the subcommittee should look at other funding options in addition to utilities. **Dr.**

Roseen responded that they could add a section on all of these things with the same funding mechanism.

Mr. Trainque stated that when talking about utilities, they look at all of the things being discussed when they determine the fee. He explained that they need to decide the components that they want in their stormwater program and then determine the level of funding they need to implement the desired program. **Ms. Ebel** responded that her town would need technical assistance to go through the municipal regulations before they would be able to go forward with a utility.

Mr. P. Currier stated that there is some cost information from the Connecticut River TMDL project for Long Island Sounds and for the Merrimack River Combined Sewer Overflow Study that might be useful in preparing the final report. **Ms. McCarthy** informed the Commission that there are four municipalities in New Hampshire that were just awarded funding from DES to conduct feasibility studies including Manchester, Dover, Portsmouth, and Nashua. She added that Manchester has already conducted their feasibility study and this funding will go toward development of their implementation plan and outreach. **Mr. Trainque** added that he worked with Manchester and South Burlington in their stormwater utilities and he would be willing to present at it. **Mr. Sassan** suggested he present at the July Stormwater Commission meeting.

Dr. Roseen reviewed the rest of the handout including a Stormwater Mitigation Fund. **Mr. P. Currier** added that it could be an antidegradation buy-out program where a developer could use up some of the assimilative capacity and pay for it. **Dr. Kahl** stated that there is a problem with a one time fee that the wealthy can afford it and do what they want. He suggested that a regular fee should be used instead of a one time fee. **Dr. Roseen** stated that there needs to be a big fee as a disincentive and a regular fee would still be in place. **Mr. P. Currier** added that for impaired waters, there needs to be an accounting system in place, not only to verify that water quality is not getting worse, but that it's getting better.

Mr. Sienkiewicz stated that the stormwater mitigation fee option does not address existing development. **Chairperson Cedarholm** responded that the stormwater mitigation fee could be in addition to a stormwater utility. **Dr. Kahl** suggested that it all be lumped together under item #1 on the handout.

Mr. Hemmerlien stated that the Alteration of Terrain Program already regulates larger projects and suggested that lowering the threshold and tracking water quality could take a lot of staff and money.

Dr. Roseen explained that the final item would add an incentive to the Stormwater Utility enabling legislation (HB 1581) to include assistance from the state, likely a circuit rider for staff assistance to municipalities. **Ms. Ebel** volunteered to go to the assessor in her town to see how difficult it would be to add an impervious cover assessment to the standard assessment procedure.

Chairperson Cedarholm stated that it should not be difficult for municipalities who have impervious cover GIS layers. **Mr. Hemmerlien** responded that most municipalities do not have GIS. **Dr. Roseen** stated that the idea was to base this on municipal taxes.

Ms. Manzelli reported that the Regulatory Authority Subcommittee met before the full Commission meeting and that they will have a final chart of existing regulatory authority related to stormwater that includes federal, state, and general local authority. She invited the full Commission to provide input on the chart. She explained that once the Needs Subcommittee completes its work, the Regulatory Authority Subcommittee will look at what amendments or new legislation may be necessary and move toward drafting new or amending existing legislation.

Mr. Sassan informed the Commission that Ms. McCarthy will not attend the next meeting. **Rep. Borden** and **Rep. Spang** offered to take minutes at the next meeting.

Dr. Kahl stated that he feels the Commission recommendations should go for the big picture and then fine tune ideas to cover the majority of the identified needs. **Ms. Ebel** responded that the Needs Subcommittee identified and compiled a lot of needs, but that one solution may respond to multiple needs. **Dr. Roseen** added that the job of the next chair will be to limit the scope of the Commission and combine the ideas into a few good recommendations.

V. FUTURE MEETING DATES AND TOPICS

Mr. Trainque confirmed that he will present on the topic of stormwater utilities at the July 6, 2009 meeting.

Date	Time	Location
July 6, 2009	1:00 PM	LOB 305*
August 3, 2009	1:00 PM	LOB 305*
September 7, 2009	1:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VI. ADJOURNMENT

Ms. Manzelli made motion to adjourn. **Mr. Sienkiewicz** seconded. All approved. Meeting adjourned at 2:51pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

July 6, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH
Rep. Judith Spang, scribe

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Michael Trainque	American Council of Engineering Companies
Newb LeRoy	Associated General Contractors of NH
Rep. David Borden	NH House of Representatives
Mark Hemmerlein (for Charlie Hood)	NH Dept. of Transportation
Paul Currier	NH Department of Environmental Services
Dave Danielson	NH Association of Regional Planning Commissions
Sen. Jacalyn Cilley	NH Senate
Joe Robertie	NH Timber Owners Association

Members Absent:

Dari Sassan	NH Office of Energy and Planning
Charlie Hood*	NH Department of Transportation
Carl Paulsen	NH Rivers Council
Jacalyn Cilley	NH Senate
Eber Currier	NH Farm Bureau
Chris Devine	NH Local Government Center
Steve Kahl	NH Lakes Association
L. Mike Kappler	NH House of Representatives
Rob Roseen	University of New Hampshire Stormwater Center
Amy Manzelli	Business and Industry Association of NH

Commission Staff Absent:

Jillian McCarthy	NH Department of Environmental Services

*Representative sent in place.

Non-Members Present:

Gene Forbes	Hoyle, Tanner and Associates (presenter)
Beth Sargent	Pennachuck Water Works
Joel Anderson	House staff

I. APPROVAL OF MINUTES FROM MAY 4, 2009 MEETING

Minutes of Previous Meeting: Approval Postponed, lacking a quorum. (It was later established that a quorum consists of half plus one of the appointed, filled seats.)

II. PRESENTATION – GENE FORBES, HOYLE, TANNER and ASSOCIATES

Presentation, Gene Forbes, Hoyle, Tanner and Associates on Stormwater Utilities, featuring work done in Vermont and planning for the Manchester, NH utility. (The Powerpoint presentation is available on-line)

Questions and Comments during the presentation:

M. Hemmerlein: Should the utility be municipal? Private? Regional? Or a statewide utility? There are advantages to having the community as a whole hooked into the utility, even those that are outside the utility service boundary, or the municipal boundary.

G. Forbes: The legislation passed last year needs to provide clarity on whether the utility is to be project specific, or municipality-wide. It is a responsibility of the community to pass clean water downstream to the rest of the watershed, whether financed through a tax or a utility. In general, NH's legislation needs work to improve clarity.

J.Spang: the bill was deliberately general and municipality-driven to avoid political opposition.

J. Spang: Should a developer pay a high "impact fee" for installing impervious surfaces to begin with (with subsequent owners paying an ongoing fee)? This would discourage the use of impervious in the first place.

G. Forbes: Subsequent owners of a property are still responsible for their runoff, whether they installed the impervious originally or not. Private roads should always be charged for. Some communities charge for public roads, some do not.

D. Cedarholm: Agriculture?

G. Forbes: In Vermont, farmers get credit against the fees for good BMP's and the program can provide for a rate modification if they are managing waste poorly.

K. Ebel: Is there a need to provide more detailed guidance in the statute to help the smaller communities that lack knowledgeable staff?

G. Forbes: Maine developed such models. But a cookbook approach prevents communities from wrestling with some important decisions. It is essential to start with a public understanding of the need (flood or pollution control) and then have the public decide how to fund it. It should never be asserted that state or federal regulations are forcing the utility onto the community, because these agencies in

fact do not dictate how the pollution prevention is to be paid for (taxes or utility fees).

P.Currier: The Section 319 program is giving money to Rochester, Portsmouth and Nashua to study the feasibility of a utility, and Manchester is receiving money to implement.

D. Borden: The Charles River Watershed group is advocating a giant "rain barrel" approach. How would this play into a utility?

G.Forbes: The model does not favor major technological solutions, since these require maintenance and ignore dealing with the sources of the problem.

D. Cedarholm: Rural areas don't need the large sums of money that a utility provides, because of the scale and lack of infrastructure.

Mike Trainque will provide Jillian with the powerpoint for the web site, including the link to the Vermont enabling legislation.

III. INTERIM REPORT DUE NOV. 1, 2009

Interim Report due Nov. 1, 2009 although the final report has been extended until 2010. The report could support a general legislative initiative. The Commission should have a rough draft of the final report finished by Nov/Dec. of '09 and finished in April/May.

J. Spang: One of the Commission's legislative members can draft wording for legislation, and if the Commission members, with their wide experience and perspective can vet it, the bill would be much better. Any legislation for the 2010 session is due in September, but (Joel Anderson confirmed) legislation coming from a Commission can be submitted later than this deadline.

One of the initiatives from the Commission might be to amend the Stormwater Utility legislation, as well as other issues coming forth in the next few months.

IV. LAND USE DEVELOPMENT COMMISSION

What is its relationship with the Stormwater Commission? Overlap?

P. Currier: No, the LUD Commission is now just dealing with buffers and secondary impacts around surface water bodies, not stormwater *yet.*

J. Spang will contact the Chair, Rep. Gottling, to report to us on the Aug. 3rd meeting.

V. SUBSEQUENT MEETINGS

We need to meet more. It was decided that we would meet for 4 hours once a month, for better continuity, rather than twice a month.

VI. FUTURE MEETING DATES

The next meetings will be Aug. 3rd from 12:00-4:00 and Sept. 14th from 12:00 to 4:00. Members are invited to bring their lunches.

VII. NEEDS MATRIX

A very brief discussion took place on the needs matrix. **Members are urged to review the matrix before the next meeting** and provide D. Sienkiewicz with three things:

a. Identify elements missing
b. Identify elements that should be taken out
c. Comment on which needs should be emphasized.

Comments should be put on the original, with suggestions italicized with the author's initials.

The meeting adjourned at 3:10

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

August 3, 2009 12:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Michael Trainque	American Council of Engineering Companies
Newb LeRoy	Associated General Contractors of NH
Paul Currier	NH Department of Environmental Services
Joe Robertie	NH Timber Owners Association
Rob Roseen	University of New Hampshire Stormwater Center
Amy Manzelli	Business and Industry Association of NH
Eber Currier	NH Farm Bureau

Members Absent:

Dari Sassan	NH Office of Energy and Planning
Charlie Hood	NH Department of Transportation
Carl Paulsen	NH Rivers Council
Chris Devine	NH Local Government Center
Steve Kahl	NH Lakes Association
L. Mike Kappler	NH House of Representatives
Rep. David Borden	NH House of Representatives
Sen. Jacalyn Cilley	NH Senate
Dave Danielson	NH Association of Regional Planning Commissions

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Non-Members Present:

Beth Sargent	Pennachuck Water Works
Susan Gottling	NH House of Representatives
Matthew Deane	NH Department of Environmental Services Intern

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 12:10pm and announced a change in the order of the agenda.

II. DEFINITION OF STORMWATER

Mr. Leroy: requested that the Commission define stormwater.

Mr. P. Currier: Stormwater is not defined in legislation.

Chairperson Cedarholm: The definition of stormwater from the DES *Innovative Land Use Planning Techniques Handbook* (Oct. 2008), is *Stormwater runoff is water from rain or melting snow that does not soak into the ground.*

The Commissioners agreed to remove the word "runoff" from the definition and to research a federal definition of stormwater that could be used.

III. NEEDS MATRIX DISCUSSION

Chairperson Cedarholm explained that he inserted an additional section in the Needs Matrix to identify infrastructure needs and read his additions. He agreed to resend the Needs Matrix to the Commissioners with his additions. The Commission went through the Needs Matrix line-by-line for comments.

Ms. Manzelli: The Regulatory Authority subcommittee is working on researching all of the stormwater regulations that will address some of the regulatory needs identified in the matrix. The second task of the subcommittee will be to draft any new or revised legislation once the Commission decides on recommendations.

Rep. Spang: Where do TMDLs fit into regulating existing development.

Mr. P. Currier: TMDLs have broad authority, but it is an arduous process to implement.

Ms. Manzelli: Is there authority to go to properties that already have a permit?

Mr. LeRoy: If a property is not polluting, there is no authority.

Mr. P. Currier: TMDLs apply to properties that have existing permits and hydrology is also a factor in impairments, along with pollutants.

Rep. Spang: What about the authority to regulate large parking lots?

Mr. P. Currier: EPA extends authority through Residual Designation Authority (RDA), and gave the Charles River Watershed in Massachusetts as an example.

Ms. Manzelli: Does the RDA exclude residential subdivisions?

Dr. Roseen: The Charles River RDA is based on impervious cover and there are some exclusions.

Chairperson Cedarholm: Is RDA is a solution?

Mr. P. Currier: It is a solution only if we want EPA to regulate it. EPA Region 1 is the only region implementing RDA and the recent change in Region 1 administration may mean changes in how frequently RDA is used in the future.

Ms. Manzelli: When RDA came up before, the Commission decided that it would be better to come up with a New Hampshire specific solution.

Mr. P. Currier: EPA may not be able to handle the workload associated with RDAs.

Chairperson Cedarholm: The state regulates the 401 Water Quality Certification Program. Can RDA be similarly incorporated into state law?

Mr. P. Currier: A lot of authority already exists to regulate impaired waters. Antidegradation can always be used, but that it is difficult to implement.

Rep. Spang: Implementation is more likely if there is an active association like in the Charles River Watershed.

Mr. P. Currier: DES is funding a project in the Newfound Lake watershed to designate the lake as high quality with exceptional significant. This would require an antidegradation review and alternatives analysis for every development project, and social and economic justification if degradation was proposed. The Water Quality Standards Advisory Committee is working on Social and Economic Justification guidance. DES is currently using the EPA guidance, but that probably isn't what we want to use.

Ms. Manzelli: Would RDA only apply to impaired waters and do the measures have to be related to the impairment.

Mr. P. Currier: Yes, it would only apply to impaired waters, but there is a process for high quality waters that could work for other waterbodies.

Dr. Roseen: Are you [Mr. P. Currier] confident that RSA 485 a:12 gives sufficient authority to use the high quality water approach?

Mr. P. Currier: Would be happy to talk about impaired waters protection and high quality water protection at a later meeting.

IV. INTRODUCTIONS

Introductions were made around the room.

V. APPROVAL OF MINUTES

Chairperson Cedarholm explained that the minutes from the 6/09 meeting were not approved at the last meeting.

Mr. Trainque motioned to accept the minutes from the 6/1/09 meeting. **Mr. P. Currier** seconded. **All approved, none opposed.**

Ms. Ebel made motion to accept the minutes from the 7/6/09 meeting. **Mr. LeRoy** seconded. **All approved, none opposed.**

VI. LAND USE COMMISSION UPDATE

Rep. Gottling presented an update of the Land Use Commission Progress to the Commission.

The first task was getting all Commission members up to speed with the issues. They heard from three developers for different scales of development. They found gaps and overlap in local, state, and federal permitting.

The Land Use Commission has two focus areas:

1). Wetland setbacks – wetlands have sporadic setbacks and there may be a need to a state setback system.
2). Habitat fragmentation for wildlife – mid-level development found that local regulations stood in the way of developing.

They had presentations by:
- Tom Irwin & Will Abbott – Greenland decision, which they felt impacted DES jurisdiction over wetlands.
- DES
- DOT
- Jeff Taylor (EPA)
- OEP
- The Jordan Institute
- North Country field trip to Mt. Washington – this showed the Commission a lot more than was interpreted from paper and presentation and caused a few members to change their minds.

The Land Use Commission broke into three sub-committees:
1.) To report on on-going legislation
2.) To research other state and federal programs and policies in 10 areas (overall environmental policy, wetland regulations, smart growth, etc.) This is proving to be a monumental task and they may pare down to the areas that are most crucial to the issue.
3.) To work with HB 222 to determine wetland jurisdiction setbacks. They are looking at secondary effects and are struggling to come up with a way to look at any development within a to-be-determined proximity to a wetland and determine the potential to impact the wetland. They are hoping to use the update of the NH Method so that wetlands are consistently assessed.

Mr. P. Currier: The NH Method was developed by UNH Cooperative Extension as a way to rank categories of wetlands. It looks at the function and values of wetlands and sets thresholds for the values that come out of it to rank each wetland as low, mid, and high. Certain requirements may be triggered depending on the value.

Rep. Gottling: Many municipal maps showing wetlands are outdated. There are significant changes in hydrology and permits being issued for development in wetlands because the maps did not show wetlands in the project location. Not knowing where the wetlands are and having outdated wetland maps is a big problem.

Chairperson Cedarholm: Municipal planning boards have the authority to require wetland delineation by the applicant during site plan review.

Rep. Spang: What triggers a secondary impact review? Would they only do a secondary impact review on a certain value of wetland?

Rep. Gottling: No, a proximity to the wetland would have to be determined and if a project was within that proximity, a secondary impact review would be triggered. Depending in the value and ranking of the wetland, the development may need to meet certain requirements.

Mr. LeRoy: Is it anticipated that recommendations that come out of the Land Use Commission will require an increase in DES staff and if so how will this be funded?

Rep. Gottling: That needs to be answered, but the burden would most likely fall on the developer. The Commission has not focused on the funding issue yet. They have focused on how to determine appropriate buffers.

Ms. Ebel: How does the NH Method ranking work?

Mr. P. Currier: It's a scoring system of 1 through 10 in each category and then the score is aggregated.

Ms. Ebel: Some wetlands have long fingers and there may be a single wetland system with high value sections and low value sections. Buffers may need to be adjusted on the same wetland system.

Chairperson Cedarholm: It is anticipated that BMP requirements will be incorporated, including LID.

Rep. **Gottling:** It depends on how much detail goes into the legislation and how much goes into the rules. The CSPA [shoreland protection act] has been faulted because it was considered too specific, which has resulted in frequent amendments.

Ms. Manzelli: One reason the Stormwater Commission wanted an updated from the Land Use Commission was to see how the two are working in relation to each other. How many of the secondary impacts to wetlands are related to stormwater?

Rep. Gottling: Many of them are related to stormwater, but the focus of the Land Use Commission has been how development will trigger requirements.

Mr. P. Currier: A hope of the NH Method is to also quantify what might be lost of buffers are not protected.

Rep. Gottling: It would be helpful if the Stormwater Commission came up with buffers or restrictions that might cover a gap the Land Use Commission is not filling and send it to the Land Use Commission.

Ms. Ebel: Will the Land Use Commission determine what activities can be done within the buffer?

Rep. Gottling: There will need to be a balance between the state law and the rules.

Dr. Roseen: Will the buffers be limited to wetlands or apply to other surface waters as well?

Rep. Gottling: They will not apply to first, second, or third order streams.

Dr. Roseen: Maybe the Stormwater Commission could look at the gap between the Land Use Commission buffer recommendations and the CSPA.

Mr. P. Currier: The NH Method can be applied to all surface waters including vernal pools. The Surface Water Quality Standards apply to vernal pools, intermittent and ephemeral streams and wetlands.

Rep. Gottling: The Land Use Commission does not know where the funding will come from, but if we do not know where the wetlands are, the outcome of the Land Use Commission's work will not be effective.

Chairperson Cedarholm: Are prime agricultural wetlands included under the Land Use Commission?

Rep. Gottling: They were not specifically mentioned. The list of duties was enormous, so the Commission prioritized. In reality, the Land Use Commission should be integrated with the Stormwater Commission and environmental policy development like is being done in other states.

VII. NEEDS MATRIX DISCUSSION

Dr. Roseen: If 485 A:12 is an arduous process, is there something less arduous?

Mr. LeRoy: Is this where a utility would come up?

Chairperson Cedarholm: If a municipality sets up a utility can it be used to regulate?

Mr. P. Currier: Not everyone's stormwater system is attached to the municipal stormwater system.

Rep. Spang: Isn't a utility a funding system with funding incentives?

Chairperson Cedarholm: There need to be special provisions for re-development and infill development because the trigger is often lower than 100,000 square feet. It is easy to make improvements to urban areas that are already 100% impervious. For example, roof runoff can be piped directly to a brook instead of running over a parking lot, picking up pollutants and then entering the brook. It doesn't get at the hydrology issue, but it does get at pollutants. Re-development might be to be separate from new development.

Dr. Roseen: What is the re-development threshold? They are facing this challenge in Massachusetts. Something is considered re-development if there is a certain percentage of increase in property value or if there is a reconfiguration of 5,000 square feet or more. This is in the Massachusetts and the Rhode Island statutes.

Ms. **Manzelli:** Projects are still limited to the one acre threshold.

Dr. Roseen: There might be a lower threshold for re-development.

Ms. Manzelli: Lowering the AoT threshold does not matter if it is new or re-development.

Dr. Roseen: We need some time to think about the re-development issue.

Mr. LeRoy: What about a situation like re-doing the Wal-mart parking lot or another activity that doesn't need an AoT permit?

Ms. Ebel: What about situations when there is the potential for drainage improvements to be made when re-doing parking lots, but there is no permit. It would be good for municipalities to have some authority to request improvements.

Mr. P. Currier: There needs to be incentives to owners for improving drainage.

Ms. Manzelli: It would be nearly impossible to pass legislation for impervious cover limitations in state law.

Mr. Sienkiewicz: It would be good to get the correlation between impervious cover and water quality.

Rep. Spang: Even if the Stormwater Commission doesn't draft impervious cover legislation as a recommendation, it would still be good for other groups and Commissions to see this information as a finding and be able to use it. It would be very difficult to limit impervious cover on a watershed basis, but there might be a better change on a site basis.

Mr. P. Currier: Impervious cover is included in Antidegradation. Tier 1 waters are required to have a 10%. Percent impervious cover can be derived from aerial photography. A project in a watershed that the aerial photography analysis shows to have greater than 10% impervious cover would require an analysis showing no additional loading for development activities.

Ms. Manzelli: This doesn't impact re-development.

Mr. P. Currier: Re-development wouldn't be difficult, but it gets more difficult with new development.

Chairperson Cedarholm: Instead of requiring limits on impervious cover, there should be incentives to lower impervious cover.

Mr. P. Currier: Impervious cover is a rough estimate. What we should really care about is connected impervious cover. The 10% analysis could be used to see where the impervious cover is.

Dr. Roseen: Who would do the assimilative capacity analysis?

Mr. P. Currier: If there is only 10% undisturbed cover left, it would assume that the assimilative capacity is used up and an analysis would not be necessary.

Ms. Manzelli: This could introduce cap and trade. If someone needs to pave on their own property, they need to remediate elsewhere in the watershed.

Ms. Ebel: The overall goal is to facilitate watershed level stormwater planning. Impervious cover is only one component of it.

Ms. McCarthy: The country of New Zealand re-zoned all of their political boundaries to coincide with watershed boundaries in the early 1990's.

Ms. Ebel: We can't do that, but it does stress the importance of watershed scale management.

Chairperson Cedarholm: This is similar to the Southeast Watershed Alliance, which serves the purpose of getting all municipalities in a watershed together.

Ms. Ebel: It is consensus to say that we want to encourage watershed level planning.

Mr. P. Currier: RSA 483 envisions watershed planning. The statute was expanded from corridor plans to watershed plans. It has not worked very well because the local advisory committees haven't been able to lobby the planning boards.

Mr. Sienkiewicz: What do the counties do? Some states have abolished county level government. It is good to knot forget that there is another level of government in the state.

Mr. Trainque: Watershed-based management is not unprecedented in this country. There are numerous examples out west and in Massachusetts with its inter-basin transfer program.

Ms. Ebel: Is there a regulatory need to encourage or require watershed planning?

Chairperson Cedarholm: There was some pretty innovative language in the original Southeast Watershed Alliance that included a scoring mechanism. A high score made a municipality eligible for additional funding, but it was removed.

Mr. Sienkiewicz: The Needs Matrix lists re-delineation of RPC boundaries to watershed boundaries, but RPCs don't have much authority.

Rep. Spang: Some RPCs have circuit riders. What about a stormwater circuit rider?

Ms. Ebel: But municipalities have to choose to use a circuit rider.

Dr. Roseen: A circuit rider is a good idea, but the qualifications would need to be specified to get the right people for the job.

Rep. Spang: There is a general problem that municipalities do not understand the importance of LID.

Ms. Ebel: DES should develop LID guidance.

Mr. P. Currier: The REPP [Regional Environmental Planning Program] is funded through DES and was set up to provide assistance to municipalities. Assistance could be provided through REPP.

Ms. Manzelli: The REPP program could be used for outreach for the *Innovative Land Use Techniques Handbook*.

Ms. Ebel: The problem is always funding at the local level. We can throw model ordinances at municipalities, but if they don't adopt and implement the ordinance is doesn't work.

Mr. P. Currier: Antidegradation could be incorporated into local ordinances, but it would still require finding.

Ms. Ebel: If you make people adopt a local ordinance, it doesn't cost anything except to enforce it.

Chairperson Cedarholm: If DOT does the 6" aerial photography, it wouldn't take much to do a hydrologic analysis from that data.

Mr. P. Currier: The concept with Great Bay is to produce a model for nitrogen and determine how much an individual parcel contributes to the bay given its land use and placement in the watershed.

Mr. Sienkiewicz: Does it make sense to recommend that the state develop watershed-based hydrology models based on DOT aerials?

Mr. P Currier: It sounds like with a little more money to post-process the aerial photos and do an impervious cover analysis would be very beneficial.

Chairperson Cedarholm: Mr. Hemmerlen might not have meant 6" topography. Usually LiDAR is used for topography.

Mr. P. Currier: The NH Geological Survey would like to do LiDAR for the entire state.

Chairperson Cedarholm: Is the Residual Designation Authority [RDA] based on the federal Clean Water Act?

Mr. P. Currier: Yes, it goes EPA authority to implement NPDES permitting where there are impairments.

Dr. Roseen: The 401 Certification applies to federal permitted activities. RDA has the authority to over unpermitted activities.

Dr. Roseen: The Massachusetts re-development trigger is an increase of 50% in fair market value or if pavement is rehabbed, reconstructed, repaired, or improved, and is greater than 5,000 square feet or 5% paved surface. This is in the Mass general stormwater permit.

Rep. Spang: The first page of the Needs Matrix includes maintenance of stormwater LID practices.

Mr. LeRoy: DES enforcement personnel need more training.

Mr. P. Currier: We need a framework for contractors & other parties involved.

Chairperson Cedarholm: The MS4 permit requires training.

Mr. P. Currier: The federal Antidegradation rules could be made into state law. This would raise the profile and make NH consistent with the federal language. He will circulate the federal rule language.

Mr. P. Currier: AoT could review projects in flood plains up to a half acre foot.

Mr. Sienkiewicz: How is AoT the correct mechanism? Is it practical to replace storage capacity when the floodplain is developed?

Dr. Roseen: You can increase the ability of the soil to store with below surface storage.

Mr. P. Currier: The Flood Commission report deals with a lot of this. They identify a bandwidth around a stream and prohibit development within the bandwidth for state owned buildings. We could scratch the words "state owned".

Mr. Sienkiewicz: We should tell the legislature to keep people out of the floodplains.

Mr. E. Currier: Floodplains are seasonal. Farms use them while they are inactive.

Mr. Sienkiewicz: There are no performance standards for best management practices. The stormwater manual contains guidelines, not mandates. There needs to be clean performance standards that are checked after implementation.

Chairperson Cedarholm: Specifications are different than performance criteria.

Ms. Manzelli: We should put off this point and determine clear terminology and more specific wording in a later meeting.

Mr. P. Currier: This point includes existing and proposed development. Existing development is less clear.

Mr. Sienkiewicz: It's fine for municipalities to have a role in a state scheme, but municipalities shouldn't be making their own rules.

Ms. Manzelli: The new MS4 permit requires municipalities to do something they may not have the power to do.

Chairperson Cedarholm: Municipal authority doesn't exist to manage stormwater, but is required when referring to impaired waterbodies without a TMDL.

Chairperson Cedarholm: In regard to the need to reduce the stormwater impacts from road construction and maintenance activities, road crews remove vegetation, but do not replace it. Post-construction BMP maintenance should be applied to road crew operations.

Mr. Sienkiewicz: AoT has exemptions for roadwork. DOT is exempt from AoT.

Mr. P. Currier: There have been improvements, but the main issue is the incentive to work despite rain. An erosion control certification program might help DOT and public works. Contractors can hire erosion control experts.

Mr. LeRoy: Contractors hire erosion control experts because the state doesn't want to do it.

Chairperson Cedarholm: Can minimum performance criteria be adopted through legislation or amending existing legislation? The real solution would be enabling municipalities to incorporate innovative land use planning as alternatives.

Mr. Sienkiewicz: Performance standards need greater uniformity and to be outcome-based.

Chairperson Cedarholm: Performance standards are more important with high quality water. Durham was re-zoned haphazardly and now some sections are light industrial. They are trying to incorporate performance standards for the newly zoned area and are struggling. Is there an existing mechanism to require performance standards?

Mr. P. Currier: There are eight criteria that DES can use their discretion to determine if a waterbody is high quality.

Dr. Roseen: Certain BMPs on the list of acceptable BMPs should be eliminated based on performance standards.

Rep. Spang: Is there research on problem streams?

Mr. P. Currier: There is a 3-5 year report that combines all the data that is being made more user friendly.

Rep. Spang: Can Antidegradation be used to go after communities that are failing to enact measure to improve water quality?

Mr. P. Currier: Not really. Generally, Antidegradation is applied on a project-specific basis. The town has no responsibility to implement it.

Dr. Roseen: Towns have an opportunity to impose it, but the authority issues need to be addressed.

Rep. Spang: It's not really useful to research the extent of LID. Why are municipalities resistant?

Dr. Roseen: We know why they are resistant, but we don't necessarily know how to overcome the resistance.

Chairperson Cedarholm: I'm afraid that requirements for LID may discourage development within municipalities.

VII. FUTURE MEETING DATES AND TOPICS

Revisions to the Needs Matrix will be made for the next meeting.

Date	Time	Location
September 14, 2009	12:00 PM – 4:00 PM	LOB 305*
October 5, 2009	12:00 PM – 4:00 PM	LOB 305*
November 2, 2009	12:00 PM – 4:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VIII. ADJOURNMENT

The meeting adjourned at 4:00pm

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

September 14, 2009 12:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
Karen Ebel	The Nature Conservancy
Donald Sienkiewicz	Home Builders and Remodelers Association
Michael Trainque	American Council of Engineering Companies
Newb LeRoy	Associated General Contractors of NH
Paul Currier	NH Department of Environmental Services
Rob Roseen	University of New Hampshire Stormwater Center
Amy Manzelli	Business and Industry Association of NH
Mark Hemmerlein	NH Department of Transportation
Chris Devine	NH Local Government Center
Steve Kahl	NH Lakes Association
Rep. David Borden	NH House of Representatives
Sen. Jacalyn Cilley	NH Senate

Members Absent:

Dari Sassan	NH Office of Energy and Planning
Charlie Hood	NH Department of Transportation
Carl Paulsen	NH Rivers Council **(resigned)**
L. Mike Kappler	NH House of Representatives
Dave Danielson	NH Association of Regional Planning Commissions
Joe Robertie	NH Timber Owners Association
Eber Currier	NH Farm Bureau

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Non-Members Present:

Elizabeth Sargent	Sheehan Phinney Capitol Group

I. APPROVAL OF MINUTES

Approval of minutes was postponed until later in the meeting when a quorum was present.

II. FEDERAL DEFINITION OF STORMWATER

Ms. Manzelli reported that the federal definition of stormwater from 40CFR122.26(b)(13) is *Stormwater means stormwater runoff, snowmelt runoff and surface runoff and drainage.*

Dr. Kahl stated that this definition would not include irrigation runoff.

Mr. Hemmerlein added that the federal definition includes the term drainage where the state definition does not. He suggested that the state use the federal definition of stormwater for consistency.

Rep. Spang stated that drainage would include irrigation.

Ms. McCarthy added that the term "drainage" may need a definition.

III. SUBCOMMITTEE REPORTS

Dr. Roseen reported that the Funding Subcommittee is waiting for the final product from the Needs Subcommittee before proceeding.

Rep. Spang responded that the Needs Subcommittee is waiting for comments from the full Commission before they complete their product.

Ms. Manzelli reported that the Regulatory Authority Subcommittee completed a list of stormwater regulations that captures what law exists today at the state, federal, and municipal levels that directly or indirectly effects stormwater. She invited the full Commission to comment.

Ms. Manzelli stated that there is an issue of whether or not stormwater is considered sewer or water under RSA 485 A:13, Water Discharge Permits. She recapped a memo from Richard Head explaining that stormwater is essentially sewer or waste.

Ms. Manzelli presented on the issue of municipal authority to regulate stormwater. She explained that under the new MS4 permit, there are additional requirements for regulating stormwater. She stated that municipalities likely do not have the authority to enact the kind of ordinances that the federal permit is going to require. She explained that in NH, municipalities can only do what the state gives them the authority to do. She agreed that the authority for municipalities to regulate stormwater under state law is probably, but that it is not clear enough.

To address the authority concern, the Regulatory Authority Subcommittee went through the memo provided by Eric Williams of NHDES that summarized the RSA's that give municipal authority. She explained that the Regulatory Authority Subcommittee concluded that one can gather that municipalities can regulate stormwater under these statutes, but it is not clear in any one statute and all together they still do not cover it clearly. She further explained that the opinion of the Subcommittee is that municipalities do not currently have broad based authority from the state to manage stormwater clearly enough to meet the requirements of the existing and new MS4 permit.

Dr. Roseen asked which municipalities in NH have adopted stormwater ordinances.

Chairperson Cedarholm responded that Dover, Exeter, Portsmouth, Somersworth and Durham [draft] have stormwater ordinances and he is not sure about municipalities outside of the Coastal Watershed.

Ms. Manzelli asked for Commission consensus for the Regulatory Authority Subcommittee to develop a state statute to give municipalities the authority to meet the MS4 permit and asked for suggestions on how it be done. She asked if they should add the language "manage stormwater" onto RSA 3139(I)(f).

Mr. Hemmerlein stated that he thought adding that language to RSA 3139(I)(f) was attempted previously and failed.

Ms. Manzelli presented three options for new legislation to enable municipalities to manage stormwater:

1.) Legislation that gives municipalities authority to do whatever they need to in order to meet the MS4 permit. She asked what happens to municipalities who are not regulated under the NPDES MS4 in this situation.
2.) Legislation that gives all municipalities authority to manage stormwater regardless of whether they are required to do so under the MS4 permit.
3.) Legislation following the Maine example, which would enact a statewide law for municipalities to adopt a model stormwater ordinance, with some flexibility to address town-specific needs. She asked if the format of that statute should include a model stormwater ordinance.

Ms. Ebel stated that in Maine, the DEP drafted the model ordinance, not the legislature.

Ms. Manzelli responded that, using Maine as an example, the statute would enable DES to propose a model ordinance for municipalities to adopt.

Mr. Hemmerlein stated that the only reason municipalities are adopting stormwater ordinances is because they are required to do so under the NPDES program.

Ms. Manzelli responded that regardless of why they are adopting ordinances, NH has a stormwater problem.

Dr. Roseen stated that option 3 would get at:

1.) Giving municipal authority to implement the MS4 permit, and:
2.) Creating uniformity in the model ordinance by requiring municipal adoption. He added that the Commission keeps coming back to the idea of needing uniformity in managing stormwater across the state.

Ms. Manzelli explained that the types of authority given under RSA 3139 are those that you do not want to encourage uniformity, such as the right to enter into contracts.

Rep. Spang stated that by adding it to the list in RSA 3139 it is saying to manage stormwater however a municipality wishes and provides no guidance.

Mr. Trainque stated that in RSA 149(I) addresses waste water and has provisions to allow ordinances. He suggested that it could be added there. He explained that the federal Clean Water Act has provisions for funding waste water

and stormwater projects and that NH has just recently stated to do that under that ARRA stimulus program.

Mr. LeRoy asked if it goes in RSA 149(I) if it focuses more at new development and not existing development.

Mr. Hemmerlein reminded the Commission that Maine is a NPDES delegated state and they have a more streamlined process because they have control over the NPDES permits. He added that in NH, NPDES is administered by EPA and that it is more difficult to go through the permitting process in NH because a permit applicant has to work with both EPA and DES.

Mr. P. Currier added that NH is never likely to request NPDES delegation without staff or funding.

Mr. Trainque responded to Mr. LeRoy's comment and stated that he doesn't think 149I) specifies new or re-development.

Ms. Ebel suggested finding out how the approach is working in the state of Maine.

Ms. Manzelli stated that the Regulatory Authority Subcommittee needs to think about the 149(I) idea and see if there is an existing model stormwater ordinance that could be used. She asked for other ideas to tackle the municipal authority issue.

Dr. Roseen suggested a two-pronged approach to first quickly address the issue of giving municipalities authority and then to develop the ordinance. He explained that the quick version would give authority to comply with MS4 permits and give authority to other municipalities who want it.

Ms. Manzelli stated that this would give them the authority to adopt different ordinances.

Ms. Ebel suggested that if the Maine example is followed there would need to be a date identified for DES to develop the model ordinances and a date for municipalities to adopt it.

Mr. Hemmerlein asked if the model ordinance would be a regulation.

Ms. Manzelli responded that the regulation would reference the model ordinance and that DES would review municipal ordinances.

Mr. Devine stated that many towns are concerned with steep slopes and are looking for guidance in limitations and requirements for developing on steep slopes. He stated that the Innovative Land Use Guide has developed a model ordinance for steep slopes.

Ms. Manzelli stated that the Regulatory Authority Subcommittee will meet and present at a future meeting.

Rep. Spang asked if the Subcommittee identified any other gaps when looking at all of the regulations.

Ms. Manzelli deferred to the Needs Subcommittee work, which identified several gaps.

Mr. P. Currier stated that he will check with Maine to see how this approach is working.

Rep. Spang added that it is easier to get an ordinance through town meeting if it is backed by the state.

Sen. Cilley asked at what point the Commission will discuss the issue of unfunded mandates.

Ms. Manzelli responded that the Funding Subcommittee is waiting for the Regulatory Authority Subcommittee and the Needs Subcommittee work before they consider the issue of unfunded mandates. She added that the Regulatory Authority Subcommittee will look further into the definition.

IV. APPROVAL OF MINUTES

Corrections to the minutes were recorded by Ms. McCarthy
Mr. LeRoy motioned to accept the minutes with corrections from the 8/3/09 meeting. **Ms. Ebel** seconded. **All approved, none opposed.**

V. NEEDS MATRIX DISCUSSION

The Commission provided comments on the Needs Matrix developed by the Needs Subcommittee. Ms. McCarthy recorded the comments and incorporated them into the matrix.
Ms. McCarthy offered to consolidate the information contained in the Needs Matrix and distribute it to the full Commission for future discussion.

VI. FUTURE MEETING DATES AND TOPICS

Consolidation of the Needs Matrix will be done for the next meeting. The Commission decided the October meeting will be a two hour meeting.

Date	Time	Location
October 5, 2009	1:00 PM – 3:00 PM	LOB 305*
November 2, 2009	1:00 PM – 3:00 PM	LOB 305*
December 7, 2009	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VII. ADJOURNMENT

The meeting adjourned at 4:02pm

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

October 5, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Dave Danielson	NH Association of Regional Planning Commissions
Joe Robertie	NH Timber Owners Association
Karen Ebel	The Nature Conservancy
Michael Trainque	American Council of Engineering Companies
Newb LeRoy	Associated General Contractors of NH
Robert Roseen	University of New Hampshire Stormwater Center
Mark Hemmerlein	NH Department of Transportation
Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate

Members Absent:

Dari Sassan	NH Office of Energy and Planning
Charlie Hood	NH Department of Transportation
Carl Paulsen	NH Rivers Council **(resigned)**
L. Mike Kappler	NH House of Representatives
Eber Currier	NH Farm Bureau
Vice Chair: Judith Spang	NH House of Representatives
Donald Sienkiewicz	Home Builders and Remodelers Association
Paul Currier	NH Department of Environmental Services
Amy Manzelli	Business and Industry Association of NH
Steve Kahl	NH Lakes Association
Rep. David Borden	NH House of Representatives

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

I. APPROVAL OF MINUTES

Approval of minutes was postponed due to lack of a quorum.

II. SUBCOMMITTEE REPORTS

Dr. Roseen reported that the Funding Subcommittee is waiting for the final product from the Needs Subcommittee.

Ms. Ebel reported that the Stormwater Needs Summary that Ms. McCarthy distributed to the Commission is the Subcommittee's work product and that the Subcommittee is waiting for comments from the full Commission.

Mr. Danielson stated that the Stormwater Needs Summary is very helpful and that that legislation could come out of it, but more direction is needed. He asked how the Commission is to make recommendations.

Ms. McCarthy explained that the purpose of the Stormwater Needs Summary document is to consolidate the list of needs identified by the Commission from presentations, guest speakers, and meeting discussions. She added that potential next steps would be to prioritize the needs listed and determine recommendations for legislation to address them.

Dr. Roseen stated that the list was generated by the Commission and discussed at previous meeting and should therefore not require much discussion.

Mr. Hemmerlein stated his concern for how many items are listed and how the Commission could address all of them.

Dr. Roseen recommended that the Commission not submit a long list, but instead work on crafting language to prioritize and move forward with recommendations.

Mr. Danielson recommended looking at funding and audiences to help prioritize the list of stormwater needs and emphasized the importance of watershed level planning.

Mr. Hemmerlein agreed that watershed level planning is important and potentially allows for trading. He added that his work on the chloride issue on the I-93 project has brought source control to his mind. He asked if the Stormwater Needs Summary addresses source control.

Dr. Roseen responded that source control is wrapped in with Low Impact Development (LID), buffer protection, and local ordinances.

Chairperson Cedarholm added that there needs to be an incentive for municipalities to adopt ordinances and cited the Southeast Watershed Alliance (SWA) as an example. He explained that the majority of municipalities interested in the SWA were there about sewer issues. He added that in Connecticut, they have taken total nitrogen out of the general permit and now have a separate permit specifically for nitrogen that allows for trading between communities. He explained that Connecticut focuses 100% on waste water treatment facility (WWTF) discharges, but that in New Hampshire, WWTF's contribute only about 19% of the total nitrogen problem to Great Bay with 60 – 70% from nonpoint sources. He explained that 25 or more communities in the coastal watershed are unsewered and need to realize that they still contribute to the nitrogen problem in Great Bay. He added that there will be nitrogen loading limits for the watershed.

Dr. Roseen asked how the loading limits for the watershed differ from a TMDL [total maximum daily load study].

Chairperson Cedarholm responded that DES does not want to do a TMDL because the level of detail required would take ten years or more. He added that DES is doing a modeling exercise.

Dr. Roseen commented that there is a difference between chloride and nitrogen because there is no reasonable treatment for chloride like there is for nitrogen. He reiterated Chairperson Cedarholm's point that 50% of the communities in the

SWA do not have WWTFs, but can still use structural source controls to reduce nitrogen loading from nonpoint source pollution.

Mr. Hemmerlein stated that the cost per pound per acre of impervious cover would be good to know. He explained that treatment plant upgrades are very costly, but so are structural stormwater best management practices.

Dr. Roseen responded that not all stormwater BMPs are costly and gave the example of vegetated buffers. He suggested that the Stormwater Needs Summary list and recommendations be presented to the SWA. He added that the SWA was originally identified as having potential to be a regional stormwater utility.

Chairperson Cedarholm stated that almost all of the WWTFs in the watershed are ready to sign off on 8mg/L discharge limits.

Mr. Danielson pointed out that the conversation is focused on the seacoast and that the problem is not localized to southeastern New Hampshire. He suggested that the Commission look at the various markets and audiences and determine who they want to address first. He added that a comprehensive approach is needed.

Chairperson Cedarholm responded that he agrees with a watershed-wide stormwater utility approach and pointed out that this is enabled in the SWA legislation. He explained that the Alliance has not yet established bylaws.

Mr. LeRoy asked if it would be better for municipalities to be the authority with Regional Planning Commissions overseeing it.

Chairperson Cedarholm stated that the SWA could be a funding source and that they would need to determine where the money would go and how it would go back to the municipalities. He added that there would need to be incentives for developers to use low impact development or other preferred methods of stormwater management.

Mr. Danielson stated that the Regional Infrastructure Improvement Zone is intended to encourage developers to participate in infrastructure improvements by offering a tax incentive.

Mr. Hemmerlein stated that states and EPA are already at the point of enforcing the federal Clean Water Act. He added that third parties, like the Conservation Law Foundation, will sue if projects are out of compliance.

Dr. Roseen responded that implementing stormwater utilities would be working toward compliance. He added that he will resend the Funding Subcommittee's work product which incorporated the ideas of incentives.

Mr. Hemmerlein stated that the BMP approach is not what works today and explained that for 401 Certifications, a pound for pound analysis is required.

Dr. Roseen suggested going back to Mr. Danielson's idea of looking at the various audiences and suggested looking at state and federal regulatory compliance and not worrying about the non-governmental organizations.

Mr. Danielson suggested looking back at the duties of the Commission as stated in the legislation and make recommendations based on the duties. He suggested

that the Commission take the list in the Stormwater Needs Summary and massage it to fit the duties and goals of the Commission.

Sen. Cilley stated that she would like to make sure there are no conflicting bills with the Land Use Commission.

Ms. Ebel responded that the Stormwater Commission decided to let the Land Use Commission take the land use topic identified in the Stormwater Commission duties. She added that she heard a stormwater bill went forward.

Sen. Cilley responded that she is working with a group to look at all of the Commissions, committees, and other groups to be able to better coordinate legislation going through. She added that there is not enough coordination going on.

Sen. Cilley recommended that time also be considered as an incentive in addition to money. She stated that time is almost as important as money and if a developer can get things moving quickly, through expedited permitting, they may be willing to do LID or other improvements. She added that there should be incentives and rewards for good corporate citizens. She suggested asking Tom Burack, the DES Commissioner, about the possibility of expedited permitting and if a piece of legislation would help DES to move that forward.

Chairperson Cedarholm responded that incentives are essential and suggested having the incentives spelled out up front so a developer can take incentives into consideration when planning. He explained that if a developer documents a water quality improvement in the city of Durham, the planning board approves the project.

Mr. Hemmerlein responded that approving a project only because a water quality improvement is documented is not consistent with the Clean Water Act because you cannot increase loading. He added that there is always the threat of not getting a permit and a developer is not going to risk not getting a permit.

Mr. Danielson stated that he gets frustrated that the managers are not making decisions. He explained that when he was working in Bedford a developer said that the whole thing comes down to attitude and that people have to stop looking at developers as the enemy.

Chairperson Cedarholm suggested that the Stormwater Needs Summary document is missing some real life examples to relate to each one of the items and present the problem more clearly.

Ms. Ebel suggested including the example from Durham that Chairperson Cedarholm explained at a previous meeting. She added that zoning boards have very strict rules that they have to follow and perhaps they can find a way to adjust or soften their requirements.

Mr. LeRoy responded that zoning board exceptions are based on demonstration of a hardship and if there is not a hardship, an exception is not granted.

Dr. Roseen suggested going through the Stormwater Needs Summary document.

Ms. Ebel asked Sen. Cilley for her opinion on the state of Maine's approach that would create a statewide model stormwater ordinance and require municipal adoption. She explained that the model ordinance would have minimum requirements and restrictions that municipalities could choose to strengthen.

Sen. Cilley responded that she agreed with the idea. She added that stormwater and water quality do not know political boundaries and if consistency throughout the state is desired, a statewide ordinance would make sense. She also added that developers and managers would benefit from having consistent, uniform standards to meet throughout the state. She stated that people get uncomfortable about the concentration of power with DES and the removal of their decision making power. She added that this could be approaching the CSPA [Comprehensive Shoreland Protection Act], which has been very difficult even though there were many stakeholders involved.

Mr. Danielson suggested that instead of DES developing the model ordinance that it should be a task of the Regional Planning Commissions who may be more likely to understand municipal concerns than DES.

Ms. McCarthy reminded the Commission that the Regional Environmental Planning Program, in cooperation with DES, put together a post-construction model stormwater ordinance as part of the *Innovative Land Use Handbook*, that could be used or at least be a starting point.

Dr. Roseen asked Sen. Cilley if she thinks this approach could work in New Hampshire.

Sen. Cilley responded that, for the sake of consistency, it could work if municipalities were able to tweak the language slightly for creativity and ownership of the ordinance. She stated that in her opinion, the best approach for New Hampshire is the approach Maine's took, which required municipal adoption of a statewide ordinance that allows for municipalities to make small adjustments. She added that we do not do a good job of quantifying the benefit of good environmental policy. She explained that environmental policy is often not expressed in economic terms. She stated that if the Commission and DES really support this idea, it will go through easier.

Ms. Ebel added that, in Maine, the RPCs helped the municipalities customize the ordinance language.

Dr. Roseen reminded the Commission that there has been significant discussion and tremendous support for uniformity thus far in the Commission's work. He suggested that the topic of uniformity in stormwater management across the state be captured as an action item and that the Commission move forward with the idea of uniformity in municipal ordinances. He added that the Commission has been told that any proposed legislation will likely fail without suggestions on municipal funding.

Sen. Cilley asked is stormwater improvement will affect the waste stream and reduce the burden on WWTFs.

Dr. Roseen responded that there could be a reduced burden on WWTFs, but only in a small number of municipalities that have combined sewer overflow

(CSO) systems. He stated that there could be a big economic reduction. He explained that the city of Portsmouth is reconsidering WWTF upgrades and is instead considering nonpoint source management.

Mr. Trainque added that the original federal Clean Water Act addressed wastewater and stormwater and that many states incorporated both into their State Revolving Fund (SRF), but that New Hampshire had only included wastewater until recently. He explained that funding is now available through the SRF program for stormwater.

Sen. Cilley explained that with the constrained state budget, municipalities already have less money from the state. She stated that municipalities are not yet able to set their tax rates and that they are already feeling burdened and would be resistant to the state asking them to do more. She added that a stormwater utility would be the way to go to generate funding.

Dr. Roseen responded that municipalities being burdened and needing a funding source is the reason why the Commission discussed implementing a utility at the state level with a sliding scale that allowed for exemptions.

Sen. Cilley stated that if stormwater is a real problem, it can be quantified and if it can be quantified, we can talk dollars and cents. She suggested telling the story of what stormwater is doing to the state in economic terms and added that flooding is an important part of the story.

Chairperson Cedarholm asked the Commissioners to review the Stormwater Needs Summary.

Dr. Roseen reiterated Sen. Cilley's points that any recommendation that the Commission crafts needs to address the economic impact, water quality, and flooding.

III. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
November 2, 2009	1:00 PM – 3:00 PM	LOB 305*
December 7, 2009	1:00 PM – 3:00 PM	LOB 305*
January 4, 2009	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

IV. ADJOURNMENT

The meeting adjourned at 3:10pm

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

November 2, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Karen Ebel	The Nature Conservancy
Michael Trainque	American Council of Engineering Companies
Newb LeRoy	Associated General Contractors of NH
Robert Roseen	University of New Hampshire Stormwater Center
L. Mike Kappler	NH House of Representatives
Amy Manzelli	Business and Industry Association of NH
Steve Kahl	NH Lakes Association
Dari Sassan	NH Office of Energy and Planning
Donald Sienkiewicz	Home Builders and Remodelers Association
Rep. David Borden	NH House of Representatives
Eber Currier	NH Farm Bureau

Members Absent:

Charlie Hood	NH Department of Transportation
Josh Cline	NH Rivers Council
Vice Chair: Judith Spang	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Mark Hemmerlein	NH Department of Transportation
Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Dave Danielson	NH Association of Regional Planning Commissions
Joe Robertie	NH Timber Owners Association

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:05pm and announced that Rep. L. Mike Kappler was re-appointed to the Commission.

II. APPROVAL OF MINUTES

Ms. Manzelli made a motion to approve the minutes from October 5, 2009 meeting. **Mr. LeRoy** seconded the motion. **All approved and none opposed.**

Dr. Kahl made a motion to approve the minutes from the September 7, 2009 meeting. **Ms. Ebel** seconded the motion. **All approved and none opposed.**

III. INTERIM REPORT

Chairperson Cedarholm informed the Commission that the Commission's interim report was completed and submitted prior to the November 1, 2009 deadline. He thanked Ms. McCarthy for her work on the report.

IV. OTHER BUSINESS

Ms. Manzelli explained that the work products of the Regulatory Authority Subcommittee are considered final. She asked if they should draft a description of the work products.

Chairperson Cedarholm responded that the work products from the Regulatory Authority Subcommittee have not been discussed as a group and suggested that it be on the agenda for the next meeting.

Ms. Ebel asked for an explanation of the Regulatory Authority Subcommittee's scope of work.

Ms. Manzelli explained that the Subcommittee work includes two things:

i. Identifying the existing regulations that currently apply to manage stormwater, and;
ii. Based on the outcome of the Needs Subcommittee, drafting legislation to address the priority stormwater needs.

She explained that the first item has been completed and she will send it out to the Commission, and they are waiting until the full Commission prioritizes the stormwater needs before beginning to address the second item.

Rep. Kappler informed the Commission that he had been reading the Commission correspondence while he was out and he was surprised to see that the Commission had not discussed fluvial erosion hazards related to stormwater or the new fluvial erosion program. He explained that the town of Raymond is moving toward passing a fluvial erosion hazard ordinance.

Mr. Sassan responded that the Commission had decided earlier in the year, that the Flood Commission had addressed the issue of fluvial erosion.

Rep. Kappler suggested that the Commission review the work of the Flood Commission to see where they are in agreement. He agreed to contact the managers of the Fluvial Erosion Program at DES and provide information to the Commission.

V. STORMWATER COMMISSION VOLUNTEERS AT THE NH WATER AND WATERSHED CONFERENCE

Ms. McCarthy informed the Commission that she will be presenting a session on stormwater at the New Hampshire Water and Watershed Conference on November 20th and 21st. She explained that there is a hands-on portion of the session when the participants will review the list of stormwater needs identified by the Commission and prioritize them. She suggested that this would be a good opportunity to obtain input from stakeholders, outside of the Commission, and may assist the Commissioners in moving forward with recommendations. She asked for Commission members to contact her if they were willing to participate in the session and be available to respond to questions.

Chairperson Cedarholm responded that the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit was discussed at a recent Seacoast Stormwater Coalition meeting. He explained that the NH permit has not been issued yet, but that the Massachusetts permit is going to be watershed-based.

Dr. Roseen explained that the MA permit is going to be less stringent than originally thought and that it is watershed-based because it is all tied to TMDLs and the residual designation authority in three watersheds.

Mr. Trainque asked if the Interbasin Transfer Act played into the permit. He stated that the it affects drinking water and waste waters and would likely affect stormwater as well.

Dr. Roseen responded that he did not know if the Interbasin Transfer Act played into the permit.

Dr. Kahl asked how EPA deals with the differences between municipalities in a watershed and communication between communities.

Dr. Roseen responded that he does not know and explained that when the stormwater permit was originally reviewed, it scored poorly because it was not a watershed approach.

Chairperson Cedarholm added that the non-structural requirements of the MS4 permit should be done by all municipalities as good practice, not only those municipalities regulated under the MS4 permit.

VI. PRIORITIZING STORMWATER NEEDS DISCUSSION

Ms. Manzelli suggested that the list of stormwater needs be ranked numerically by each Commission member and be discussed at the next meeting.

Dr. Roseen added that everyone could rank the categories and then the sub-categories. He stated that each item on the list is important and that none should drop out completely, but that the Commission needs to prioritize and narrow the list. He offered to put together an electronic survey on Survey Monkey and send it out to the Commissioners.

Mr. Sassan suggested that the ranking be based on importance and legislative worthiness.

Dr. Kahl suggested that they be ruthless with ranking to avoid everything being top priority.

Rep. Kappler told the Commissioners that they should not worry about the number of bills that they recommend. He suggested having more bills with less content. He explained that one bad apple in a single bill addressing many categories will kill the whole thing.

Ms. Ebel asked if the Commission needs to have recommendations that touch on all of the Commission duties.

Mr. Sassan responded that he thinks it is fair to say that the Commission studies all of the topics specified in the legislation establishing the Commission and that they are moving forward with those that were determined to be priority.

Ms. McCarthy added that the final report can discuss all of the findings related to the duties and get into greater detail with the Commission's recommendations.

VII. REDEVELOPMENT EXAMPLE

Chairperson Cedarholm asked Ms. McCarthy to explain the photos of the redevelopment project adjacent to the Winnipesaukee River in Laconia, NH.

Ms. McCarthy explained that the project was brought to her attention because the parking lot had been paved to the edge of the river bank. She explained that she contacted Laconia DPW to get a better understanding of the city review and approval process for this re-development project and if there were missed opportunities to improve stormwater management at this site. She explained that the Assistance DPW Director for the city responded, explaining that the project had gone through significant review at the city level and required the creation of a green space with stormwater treatment where there had previously been pavement. He further explained that there had been no increase in the amount of pavement on the site; it was simply re-paved over existing pavement.

Chairperson Cedarholm stated that he looked at the stormwater regulations for Laconia and thought they were very similar to Durham's regulations.

Ms. Manzelli stated that if the was the attorney for the city, she would say that it was a grandfathered project.

Mr. E. Currier suggested that if funding were made available to the developer that could have been put toward a buffer, pervious pavement, or other stormwater improvements that they may have been more willing to make the improvements.

Dr. Roseen responded that developers do not always want to do better stormwater management because they might be asked to do it in other places.

Ms. Ebel informed the Commission that a survey of the Oyster River Watershed was just completed and that it may be useful in addressing the topic of adapting to climate change.

Dr. Roseen explained that the project was a vulnerability assessment of culverts, crossings, and land use change and offered to send the report out to the Commissioners once it is complete.

Chairperson Cedarholm stated that the project did not evaluate the closed system in downtown Durham.

VIII. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
December 7, 2009	1:00 PM – 3:00 PM	LOB 305*
January 4, 2009	1:00 PM – 3:00 PM	LOB 305*
February 1, 2009	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

IX. ADJOURNMENT

The meeting adjourned at 3:10pm

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

December 7, 2009 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
Michael Trainque	American Council of Engineering Companies
Newb LeRoy	Associated General Contractors of NH
Robert Roseen	University of New Hampshire Stormwater Center
L. Mike Kappler	NH House of Representatives
Steve Kahl	NH Lakes Association
Dari Sassan	NH Office of Energy and Planning
Donald Sienkiewicz	Home Builders and Remodelers Association
Eber Currier	NH Farm Bureau
Joe Robertie	NH Timber Owners Association
Mark Hemmerlein	NH Department of Transportation
Dave Danielson	NH Association of Regional Planning Commissions
Paul Currier	NH Department of Environmental Services

Members Absent:

Josh Cline	NH Rivers Council
Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Karen Ebel	The Nature Conservancy
Amy Manzelli	Business and Industry Association of NH
Rep. David Borden	NH House of Representatives

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees

Sally Soule	NH Department of Environmental Services
Shane Csiki	NH Department of Environmental Services

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:07pm and introductions were made around the room.

II. APPROVAL OF MINUTES

Mr. LeRoy made a motion to approve the minutes from November 2, 2009 meeting. **Dr. Kahl** seconded the motion. **All approved and none opposed.**

III. FLUVIAL EROSION HAZARD PRESENTATION – SALLY SOULE AND SHANE CSIKI, NHDES

Ms. Soule, of the NHDES Watershed Assistance Section, and **Mr. Csiki**, of the NH Geological Survey, gave a presentation titled, *Reducing Fluvial Erosion Hazards through Improved Stormwater Management.* The presentation discussed the impact of watershed development on stream channels.

Ms. Soule explained that there needs to be stream channel equilibrium which is achieved when there is a balance between the volume of water and the sediment load in a river system. She explained that as development increases in a watershed, the volume of water in the river increases, which makes the river sediment-hungry and causes bank erosion as the river tries to increase its sediment load. She explained that in the opposite situation, there is aggradation, where sediment builds up because there is not enough water to move it.

Ms. Soule explained that the relationship between impervious cover and water quality are often discussed, but that changes in stream geomorphology in response to development and increases in impervious cover are rarely talked about. She explained that stream channels are always evolving and moving in response to environmental conditions, but when conditions become unnatural, such as after an increase in watershed development, stream channels become out of equilibrium. **Ms. Soule** presented slides showing increasing levels of imperviousness the resulting stream condition. She explained that at 5% imperviousness, streams have relatively stable banks, decent habitat, and overhanging vegetation, but that when a watershed has 30% imperviousness, streams have down-cutting, active erosion, lateral stream channel movement, and exposed roots on vegetation.

Mr. Csiki discussed the Fluvial Erosion Hazard (FEH) Program in New Hampshire. He explained that after the floods in 2005, 2006, and 2007, which resulted in over $75 million in damages, the FEH program was initiated to identify areas that are potentially sensitive to fluvial erosion in the state to better plan and minimize impacts from future events.

He explained that the program is based on the Vermont Rivers Management Program, which began fifteen years ago and includes protocols for assessing how prone a river is to movement. During a river assessment, ~~he explained that~~ the river is broken down into reaches and, within each reach, ~~they access~~ various physical characteristics such as the amount of erosion, constriction by bedrock, and the presence of unconsolidated material are assessed. He explained that a reach is assigned a sensitivity rating based on the assessment, which can then be mapped.

He added that a model ordinance for fluvial erosion hazard areas has also been developed and will soon be adopted by the town of Raymond. The model ordinance restricts and manages how development happens in the FEH corridor. To date, he stated that a Fluvial Erosion Hazard Assessment has been completed

on the Exeter River and that they are finalizing the assessments on the Ammonoosuc and the Isinglass Rivers. He said that the next assessments will be done on the Cocheco and Lamprey rivers in 2010 and the Piscataquog and Souhegan rivers in 2011 and 2012. He explained at this point that they are scheduling assessments by request.

Rep. Kappler asked is volunteers could be used to complete the assessments.

Mr. Csiki responded that there are components of the assessment that could be done by volunteers, but that knowledge of fluvial geomorphology is necessary to complete the full assessment.

Mr. Hemmerlein asked if a time scale for erosion potential is predicted as part of the assessment. He explained that in order to be able to use the assessment as a management tool, it would be helpful to have some sort of probability for occurrence.

Mr. Csiki responded that it the assessment protocols being used do not predict the likelihood or timetable of occurrence. He added that there is a different protocol called the Bank Erosion Hazard Index protocol that can give a better prediction of that, but the NH protocols are not that in-depth.

Mr. Danielson asked if there is information on the actual and potential costs of erosion in New Hampshire and stated that the related costs are important to people.

Mr. Csiki responded that the only cost information they have is the estimated costs from the flooding events between 2005 and 2007.

Dr. Roseen asked if the assessment and mapping are done with the legal floodplain or the geomorphic floodplain.

Mr. Csiki responded that the geomorphic floodplain is used. **Ms. Soule** added that the FEH zone is what is used for the model ordinance, which references the assessment sensitivity maps.

Dr. Roseen asked how similar the FEH ordinance is to a stormwater ordinance and if there are volume limitations.

Ms. Soule responded that the FEH ordinance is not volume-based, but instead guides the location and placement of stormwater practices within the FEH corridor. She added that the FEH ordinance identifies the river corridor and portions that should avoid development.

Mr. Hemmerlein asked if the relationship between impervious cover and fluvial erosion hazard potential has been studied and if so, if there is a strong relationship.

Ms. Soule responded that the relationship has been looked at. **Mr. Csiki** added that so far, the assessments in NH have not been in highly urbanized areas. He stated that if an urban area has unconsolidated materials, it is likely to be sensitive.

Mr. Danielson stated that some people might think of the FEH zone and ordinance as a taking and asked if there was a saleable point to counter that argument.

Dr. Roseen suggested plotting the occurrence of the FEH zone with the 100 year floodplain and potentially it is already covered.

Mr. P. Currier responded that flood insurance only covers inundation, not erosion.

Dr. Kahl thanked them for not mentioning climate change because invoking climate change ~~it~~ implies that nothing can be done locally to control flooding which is largely an over-development issue.

Chairperson Cedarholm asked, aside from an ordinance or land use controls, what could be done in the river.

Mr. Csiki responded that there are additional uses for the assessment data stream restoration projects to identify what is happening up and downstream of a project site and for projects requiring wetland review to determine how a river system might respond to landscape changes.

Mr. E. Currier suggested that agricultural lands adjacent to rivers be maintained so the land is not lost to development.

Dr. Kahl emphasized that the agricultural lands should have riparian buffers.

Mr. Trainque asked if the protocol looks at sediment transport and deposition.

Mr. Csiki responded that the protocol requires photo documentation of location and extent, but there is not enough data collected to run sediment transport modeling.

Mr. Danielson stated that he envisions a situation where a downstream town has an ordinance, but an upstream town does not and there are adverse impacts to the downstream town due to development in the upstream town.

Mr. Csiki responded that it is a complex topic and a political one. He added that the best thing that can be done right now is education to get people to factor erosion hazards and downstream impacts into their decision making.

Rep. Spang asked if this could be wrapped into Regional Impacts and if the assessment information had ever been used that way.

Ms. Soule responded that the assessment data had never been used that way, but that it could be.

Mr. Danielson stated that there would need to be regional coordination.

Rep. Spang stated that there is a provision in regulation that identifies when a project has a regional impact.

Mr. P. Currier responded that there is a provision for regional impacts, but that other towns can only provide comment. He added that there is legislation this session to identify fluvial geomorphology as a designated use under the water quality standards.

Dr. Kahl added that when Lowe's proposed building in the floodplain in Plymouth, 'regional impact' was interpreted to mean economic impact, not environmental.

Chairperson Cedarholm asked if there is a way to prioritize the order of river assessments and how quickly a river can be assessed.

Mr. P. Currier responded that there 319 Program provided funding to do some of the assessments. **Ms. Soule** added that the 319 Program contributed funding for the Exeter River assessment and stated that being able to use 319 funding for assessments will be a cleaner process when the legislation on geomorphic integrity foes through.

Chairperson Cedarholm suggested that the Southeast Watershed Alliance could be a vehicle to have a regional approach.

Mr. Danielson suggested that the Regional Planning Agencies could be used as well.

Dr. Kahl asked if they could send the draft model FEH ordinance to the Commission.

IV. STORMWATER NEEDS SURVEY RESULTS

Chairperson Cedarholm announced that Ms. Manzelli is on maternity leave and will be absent from the Commission through February. He asked if a member of the Regulatory Authority Sub-Committee would be willing to fill in as subcommittee chair to keep it moving along.

Mr. P. Currier responded that the sub-committee reached a conclusion that there is no clear legal authority for municipalities to manage stormwater and that clarification is needed.

Chairperson Cedarholm asked Dr. Roseen to present the results of the Stormwater Needs Survey.

Dr. Roseen explained that municipal stormwater ordinances and regulations ranked first, followed by stormwater management practices. He listed the highest ranking needs for each category. **Ms. McCarthy** explained the results from the survey given to attendees at the 2009 Joint Water and Watershed Conference.

Dr. Kahl stated that the desire for consistency in managing stormwater statewide ~~is interesting~~ provides an opportunity for the Commission to act to provide such consistency.

Mr. P. Currier stated that the results can help shape to focus of Commission recommendations.

Chairperson Cedarholm suggested that the survey results be tightened up and sent out to a broader audience.

Rep. Spang asked what benefit there would be to having more people complete the survey.

Chairperson Cedarholm responded that it could direct the Commission's focus. **Mr. Danielson** added that it could tell the Commission what is not important.
Mr. P. Currier suggested tightening it up and then coming up with concise questions.
Chairperson Cedarholm agreed and suggested that it be on next moth's meeting agenda.
Dr. Roseen suggested that the Commission take a step back and look at the timeline and products.
Chairperson Cedarholm asked if the Commission will hold a public hearing.
Mr. P. Currier responded that after the final report is submitted it typically when a public hearing is held. He added that the Commission is almost ready to start writing the report. He asked if the Commission should look more at the Maine model and work over and discuss the Maine language. He also added that any recommendations the Commission makes need to have funding to go along with them.
Mr. LeRoy asked if the Commission is responsible for drafting legislation as part of the final report.
Mr. P. Currier responded that it is best to include legislative language with the report so that the Commission recommendations are not misinterpreted.
Dr. Roseen suggested that the funding subcommittee meet again.
Mr. P. Currier responded that he has a brainstorm list of funding options that he will send to Dr. Roseen.

V. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
January 4, 2010	1:00 PM – 3:00 PM	LOB 305*
February 1, 2010	1:00 PM – 3:00 PM	LOB 305*
March 1, 2010	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VI. ADJOURNMENT

The meeting adjourned at 3:15pm

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

January 4, 2010 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
Newb LeRoy	Associated General Contractors of NH
L. Mike Kappler	NH House of Representatives
Dari Sassan	NH Office of Energy and Planning
Donald Sienkiewicz	Home Builders and Remodelers Association
Eber Currier	NH Farm Bureau
Mark Hemmerlein	NH Department of Transportation
Dave Danielson	NH Association of Regional Planning Commissions

Members Absent:

Josh Cline	NH Rivers Council
Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Karen Ebel	The Nature Conservancy
Amy Manzelli	Business and Industry Association of NH
Rep. David Borden	NH House of Representatives
Michael Trainque	American Council of Engineering Companies
Robert Roseen	University of New Hampshire Stormwater Center
Steve Kahl	NH Lakes Association
Joe Robertie	NH Timber Owners Association
Paul Currier	NH Department of Environmental Services

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:10pm.

II. APPROVAL OF MINUTES

The minutes from the December 7, 2009 meeting were not approved due to lack of quorum.

III. STORMWATER NEEDS PRIORITIZATION DISCUSSION

Chairperson Cedarholm asked Ms. McCarthy to explain the updated Needs Survey provided by Dr. Roseen.

Ms. McCarthy explained that Dr. Roseen could not attend the meeting and that he asked her to share the following points:

- The survey results list the stormwater needs according to their rank.
- The top three ranking stormwater needs, municipal stormwater ordinances and regulations, stormwater management practices, and cost sharing and stormwater utilities, all fit well with the discussion of uniformity in managing stormwater across the state.
- The Commission may want to research the current status of each stormwater need including pending legislation.
- In order to move forward with recommendations, the Commission may want to look at what is needed financially, programmatically, and any new or amended legislation.
- Dr. Roseen anticipates starting up regular meetings of the Funding Subcommittee again before the next full Commission meeting.

Chairperson Cedarholm asked for questions or comments on the Stormwater Needs Survey summary prepared by Dr. Roseen.

Mr. LeRoy stated that the Commission needs get started on the final report and get everything in writing.

Rep. Spang agreed and stated that the Commission spent a lot of time on the Needs spreadsheet and that an executive decision needs to be made to move forward.

Chairperson Cedarholm explained that there was not a big spread in the ranking of stormwater needs and suggested that the survey be sent out to a broader audience of 50 to 100 people.

Rep. Spang responded that sending out the survey to a broader audience would be time intensive and the results would only be meaningful if people were knowledgeable on the subject. She asked if everyone felt confident in the Commission's understanding of the needs for managing stormwater or if they feel that they need to gather more information to move forward.

Ms. Ebel responded that she has mixed feelings about surveying a broader audience. She added that the Commission has done a year and a half of research and does not know that Commission needs to gather the opinions of more people in order to make recommendations.

Mr. Sassan responded that the Commission has gathered the data and has fulfilled the goal of examining the issue of stormwater. He added that they have looked at the topic broadly and he thinks that the ranked list of stormwater needs is accurate and that the Commission should begin tackling the identified needs beginning with the top ranked stormwater need of developing a statewide model stormwater ordinance.

Chairperson Cedarholm stated that his only concern with this type of ranking is if the Commission only focuses on the top three that the rest of the needs would look like they are not important.

Rep. Spang agreed with Mr. Sassan and stated that if the Commission focuses on the model stormwater ordinance, the Commission would be a success. She added that they should forget about legislation at this point and focus on doing a good job analyzing the issue and developing a good model ordinance to be shaped with DES and OEP in the fall.

Ms. Ebel added that the Commission may want to review Maine's approach to implementing a statewide model ordinance where the ordinance was developed by the state and the towns were required to adopt it and were given the opportunity to make it more stringent.

Mr. Danielson responded he thinks there will be a problem with funding.

Mr. LeRoy stated that the Commission needs to provide a final report to the legislature and that the report could include legislation.

Ms. Ebel stated that the model ordinance would not need to be as in-depth as the shoreland program.

Chairperson Cedarholm reminded the Commission that there is already a DES-written model stormwater ordinance that would be a good starting point. He asked if revising it is something for the Commission to do. He also asked if requiring adoption of an ordinance is something the Commission can do and if it is realistic.

Rep. Kappler stated that he thinks the Commission needs to stay at the state level and away from municipalities. He explained that it does not matter how much outreach is done because the public does not care and the local governments of surrounding towns do not care. He added that if a recommendation goes into statute, it needs to be at the state level with state enforcement and then let the municipalities run with it.

Mr. Danielson stated that was does not know political boundaries and that he feels very strongly about regional protection.

Rep. Kappler responded that it is very difficult to get regional cooperation. He stated that out of the 42 coastal municipalities that could join the Southeast Watershed Alliance (SWA), only 12 towns went to the first meeting. He added that the towns do not care.

Mr. Danielson responded that outreach makes a difference and that the municipalities must be familiar with each other in order to work together.

Mr. Hemmerlein stated that there needs to be a big ticket item and asked if the model ordinance needs to address volume, peak flow, and water quality. He stated that the smallest unit of development is the site level and that the mechanism is already in place for new development with site plan and subdivision review.

Mr. Danielson added that it needs to happen at the planning board review level.

Rep. Spang responded that it could be considered an unfunded mandate. She suggested that instead of telling municipalities and developers how they have to develop, to tell them what the end result should be, similar to Antidegradation.

Mr. LeRoy stated that, within that framework, municipalities would need authority to manage stormwater.

Mr. Hemmerlein asked how state-level Antidegradation can be applied to the municipal level. He asked where the line is drawn for compliance and stated

that right now, all you need is a building permit. He asked if it would be a component of the building permit.

Mr. Sienkiewicz responded that this approach sounds like if someone wanted to build a shed, they would need to hire a consultant to verify that they are not going to decrease water quality.

Ms. McCarthy explained that they are looking at this same issue at DES with high quality surface waters where municipalities want to maintain the existing high quality of their surface waters by potentially limiting pollutant runoff from individual properties. She explained that DES was concerned about the need for homeowners to hire consultants in order to verify that they were not degrading water quality by added a shed or doing some other type of home improvement. As a result, she explained, DES is exploring the development of a "Low Impact Development Cookbook" for homeowners that would include fact sheets for stormwater best management practices that homeowners can install themselves along with a simple model that can be used to quantify their pollutant loading.

Rep. Spang stated that the Alteration of Terrain (AoT) program works by managing disturbances of over 100,000 square feet.

Mr. LeRoy added that the permit has big gaps.

Mr. Sienkiewicz stated that Massachusetts has a state clean water act that the conservation Commissions enforce.

Chairperson Cedarholm responded that the AoT program permit trigger of 100,000 square feet of disturbance really only applies to subdivisions with ten lots of greater.

Rep. Spang added that it also applies to large parking lots.

Ms. Ebel stated that the Commission has been trying to get at the issue of uniformity in managing stormwater across the state. She explained that the idea of municipalities implementing antidegradation and being able to determine how they want to meet it does not promote uniformity. She added that towns could spend more time and money trying to figure out how to implement it. She suggested that DES has the scientific background to help municipalities figure out how to implement it.

Mr. Danielson responded that giving more to the state does not seem like the best way to go.

Mr. Sassan stated that to achieve uniformity, the state could feed legislation to the towns, but that the town can make it more stringent and once the ordinance is adopted, the town is responsible for enforcing it.

Ms. Ebel stated that if the Commission wants it to have teeth, it needs to come from the state level.

Rep. Spang stated that, at a public hearing, the Local Government Center would call it statewide zoning. She asked, if surface water is a statewide resource, why the state cannot protect it. She added that she was shocked when she learned that there were no statewide wetland setbacks.

Ms. Ebel suggested that the political concerns and scientific concerns related to stormwater be separated. She added that a lot of towns would welcome specific guidance because it would save them time and money on figuring out how to implement regulations.

Chairperson Cedarholm explained that, in Durham, they ended up abandoning the model ordinance and instead put all of the requirements from the model ordinance in the site plan review regulations.

Mr. LeRoy asked if everything in town is required to go through site plan review.

Chairperson Cedarholm responded that essentially everything needs to go through site plan review with the exception of single family homes. He added that towns can incorporate performance standards into their regulations.

Ms. Ebel responded that they can incorporate performance standards into their regulations, but they don't.

Mr. Danielson stated that the larger municipalities have more interest in state controls and that as you move farther away and into other counties, they might not want state control. He added that, in terms of water quality, it does not matter where they live because it is a common resource.

Rep. Spang explained that is why she thought a solution would be to regulate the affect or the end result instead of prescribing how it should be done.

Mr. E. Currier asked how changing the use of an agricultural activity to a different agricultural activity would be handled.

Chairperson Cedarholm responded that in Durham, it would be exempt because it would still be an agricultural use.

Mr. Hemmerlein stated that regulating the end result and saying that you cannot degrade water quality is very challenging.

Mr. Sassan asked Ms. McCarthy to explain Antidegradation and if it is too difficult to implement at the municipal level.

Ms. McCarthy explained that DES is has established an Antidegradation Rules Workgroup to incorporate the requirements of Antidegradation into the AoT program rules. She explained that they are in the middle of figuring out how it should be implemented and how permit applicants can provide verification that they are meeting Antidegradation. She added that once the Workgroup and DES complete their work, they will have a better idea on how it can be implemented at the municipal level. She stated that the Workgroup has been progressing very slowly and that there is a big learning curve with Antidegradation because it is such a complex topic.

Chairperson Cedarholm asked if the new MSGP restricts discharges to impaired waters unless there is proof that the discharge will not contribute to the impairment.

Rep. Spang stated that the expertise of DES should be used in determining if there is water quality degradation or the potential for it.

Mr. Sienkiewicz asked who is responsible for making the decision on building the shed on a single house lot. He stated that the municipal building inspector, not DES, is looking at that scale of development. He added that the discussion on implementing antidegradation and how it is in progress is a good reason to move forward with a model ordinance. He stated that there will be unfunded mandate problems with requiring municipalities to implement Antidegradation too.

Mr. Danielson stated that he think DPW directors will agree to do anything as long as they are given money to do it.

Ms. Ebel asked what municipalities will be asked to do and stated that most of the cost associated with the ordinance will call on the developer and planning boards. She added that they have been trying to promote gentler engineering practices and asked if Antidegradation promotes low impact development and other gentler engineering practices.

Mr. Hemmerlein stated that the NEPA (National Environmental Policy Act) says that you have to ask questions, but doesn't necessarily require you to control it, but to address it. He stated that we do not have the information at the next scale of development down from the AoT threshold.

Mr. Sienkiewicz stated that if the Commission says every municipality has to adopt an ordinance that addresses peak, total volume, and water quality, it still doesn't get at the issue of uniformity.

Ms. Ebel responded that most towns that have zoning already have regulations with peak flow and drainage requirements.

Chairperson Cedarholm stated that there are differences in how each town interprets their regulations. He explained that he was amazed when he looked at the Laconia regulations because they were nearly identical to Durham's. The only difference is that Durham's regulations have an additional paragraph that specifies that the DPW director makes the final decision.

Mr. LeRoy added that some municipalities do not have a DPW director and instead they have Road Agents.

Chairperson Cedarholm stated that he agrees with Rep. Kappler that something needs to be done at the state level, but that municipalities need to be able to decide whether or not to adopt an ordinance. He added that outreach needs to be done to promote better engineering and low impact development. He stated that there need to be more examples showing that LID works and is not a big added cost. He explained that his experience with the Southeast Watershed Alliance has shown him that outreach works. He explained that there are now 21 out of 42 communities who have participated in meetings when they anticipated only getting 8 communities to join in the first year. He stated that DES did the outreach for the SWA and it has worked. He asked what more can you do than encourage municipalities to adopt ordinances.

Mr. Sienkiewicz responded that you can require it.

Chairperson Cedarholm stated that he thinks requiring municipal adoption of an ordinance will not work.

Mr. Sienkiewicz responded that they will not know if it will work if they don't try. He stated that there needs to be uniformity and there needs to be a mandate. He explained that outreach can be done in a way that to build political support. He stated that outreach needs to inform the municipalities, developers, and other stakeholder that there is a new state law and it needs to lay out the reasons why, for example, the homebuilders and other stakeholder should support it and not fight it.

Chairperson Cedarholm suggested potentially lowering the threshold for the AoT permit.

Rep. Spang responded that this is beginning to converge with the Land Use Commission.

Mr. Danielson stated that the Water Infrastructure Finance Commission chair informed that Commission that they should be aware of the recommendations that come out of the Stormwater Commission.

Rep. Spang responded that if the Stormwater Commission is going to require municipalities to upgrade their water infrastructure, the Water Infrastructure Finance Commission should know.

Mr. Danielson stated that he feels the discussion has been focused on the southern part of the state and asked about the northern part of the state.

Ms. Ebel responded that she is more in tune with the northern municipalities and asked what Vermont does.

Mr. LeRoy responded that almost everything in Vermont goes through Act 250[?], which works well in Vermont, but it is overly regulatory and burdensome. He added that the regional review is like a mini-NEPA.

Mr. Hemmerlein added that Vermont looks at everything from wildlife to traffic flow questions.

Mr. Danielson asked what the Commission's final product is supposed to be.

Ms. McCarthy responded that the Commission is required to submit a final report by November 2010. She explained that she has put together a draft of the final report to provide a template for filling in the gaps.

Mr. Sienkiewicz asked if the Commission should work on writing the final report or work on ordinance writing.

Ms. Ebel responded that she was struck by what Mr. Sienkiewicz said about political views and support and thinks that the Commission needs to put together the findings and not worry so much about the politics.

Rep. Spang asked if they should also be looking at stormwater need two in the summary prepared by Dr. Roseen.

Chairperson Cedarholm asked which of the nine categories of stormwater needs requires significant funding. He stated that they are all associated with regulations and outreach, but there are not many that require a lot of money. He added that the biggest costs are likely to be administrative costs.

Rep. Spang asked where the nine categories came from.

Ms. McCarthy explained that when the Needs Subcommittee developed the spreadsheet of findings, she grouped the findings into broader categories. She explained that the titles of the categories or even the structure of the categories can be changed. She added that the top three ranking categories seem to stand on their own, but the remaining categories could be woven into the first three.

Ms. Ebel added that the summary of findings and the categories can all be tracked back to the original needs spreadsheet.

Mr. Sienkiewicz stated that he would like to have a work session to look at the existing DES model ordinance.

Ms. Ebel added that they should also look at the Maine statute and that she thinks it is a greater unfunded mandate to not have specific language in a model ordinance.

Rep. Spang stated that there cannot be both the option for municipalities to decide whether or not to adopt an ordinance and still achieve the goal. She added that they cannot give up on what is logical just because of political concerns.

Mr. Sienkiewicz added that there can be a careful political process to gain support.

Rep. Spang stated that there is much to be learned from the SWA and how, after DES explained the benefit of joining, more municipalities joined.

Rep. Kappler asked if municipalities have authority to manage stormwater.

Ms. Ebel responded that the opinions of the representatives from the Attorney General's Office and the Local Government Center were that clear authority did not currently exist.

Mr. Sienkiewicz stated that they need to be given authority.

Mr. Hemmerlein stated that the Commission is talking about three different levels; 'you may do it', 'you must do it', and 'here is how you have to do it'. He asked where the Commission is going to go with the recommendation.

Mr. LeRoy responded that instead of saying 'you must', they could say 'you should'.

Ms. Ebel responded that saying 'you should' is what is in place now and nothing is being done.

Mr. Sienkiewicz responded that he thinks they can argue against statewide zoning and unfunded mandates and that the regulations should say 'you may, you must, and here is how'.

Mr. Hemmerlein asked if the ordinance will get into the numbers.

Mr. Sienkiewicz responded that he would like to look at the model ordinance and the Maine statute before answering that question.

Rep. Spang explained that with SB222, which involved managing uplands, the more specific it got, the more opposition there was. She explained that they ended up with one sentence that said DES can look at upland impacts and there was still opposition. She suggested that they make the language as specific as possible and let the legislative process decide.

Mr. Sassan stated that the Commission can tackle both the stormwater needs of 1A *(Creating a statewide model stormwater ordinance and requiring municipal adoption, but allowing municipalities to adopt stricter and/or non-substantive provisions, subject to state approval with guidance of municipality's RPC)* and 1C *(Creating legislation that clearly enables municipalities to impose stormwater management regulations, including stormwater management improvements to existing development in hydrologically- or quality-impaired watersheds).* He stated that 1C will accomplish the 'you may and you must' and then the Commission can take their time on addressing 1A.

Rep. Spang stated that is the Commission feels that 'you must' is what needs to happen, then they should say 'you must'.

Chairperson Cedarholm responded that 'you must' is a possibility if there is an impairment.

Mr. Danielson suggested that the Commission provide an optimal piece of legislation and let the legislature work it over.

Rep. Kappler stated that he would say 'you must'.

Rep. Spang asked what else the Commission would like to work on besides the model ordinance.

Chairperson Cedarholm recommended they work on lowering the AoT threshold.

Rep. Spang asked about setting watershed impervious cover limits.

Chairperson Cedarholm stated that he thinks the SWA member communities will have a big influence on the other communities in the watershed.

Ms. McCarthy asked why the legislation that established the Southeast Watershed Alliance only included the coastal watershed. She asked if it would be beneficial for other watersheds to have alliances to promote regional stormwater management.

Rep. Spang responded that the SWA could be a good model for other watersheds if it is successful.

Rep. Spang suggested that the Commission also look at reducing the burden of existing infrastructure and spreading the cost of stormwater management and that they work with the Water Infrastructure Finance Commission to do so.

IV. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
February 1, 2010	1:00 PM – 3:00 PM	LOB 305*
March 1, 2010	1:00 PM – 3:00 PM	LOB 305*
April 5, 2010	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

V. ADJOURNMENT

The meeting adjourned at 3:15pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

February 1, 2010 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
L. Mike Kappler	NH House of Representatives
Donald Sienkiewicz	Home Builders and Remodelers Association
Eber Currier	NH Farm Bureau
Dave Danielson	NH Association of Regional Planning Commissions
Paul Currier	NH Department of Environmental Services
Karen Ebel	The Nature Conservancy
Rep. David Borden	NH House of Representatives
Robert Roseen	University of New Hampshire Stormwater Center
Steve Kahl	NH Lakes Association
Michael Trainque	American Council of Engineering Companies

Members Absent:

Josh Cline	NH Rivers Council
Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Amy Manzelli	Business and Industry Association of NH
Joe Robertie	NH Timber Owners Association
Newb LeRoy	Associated General Contractors of NH
Dari Sassan	NH Office of Energy and Planning
Mark Hemmerlein	NH Department of Transportation

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:

Thomas Burack	Commissioner, NH DES
John Boisvert	Pennichuck Water Works
Paul Roberson	General Public

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:10pm.

II. COMMISSIONER BURACK'S REMARKS

Commissioner Burack thanked the Commission members for participating in the Stormwater Commission. He explained that he intends to roll up his sleeves and personally engage in both the Stormwater and the Land Use Commissions. He explained that addressing the stormwater issue is critical for New Hampshire's

water quality and for shaping what the state will look like in the long term. He stated that he has attended high level meetings with other states and EPA and nonpoint source pollution is considered a national threat of high priority. He expects there will be growing attention at the national level. He added that he hopes the Commission can guide the development of a clear and strong regulatory framework for the state to address stormwater. He stated that DES will do internal brainstorming of ideas to bring to the Commission for consideration. He stated that he hopes to build consensus on the issues related to stormwater and nonpoint source pollution and that they can come out with constructive recommendations for the next legislative session to address the issues. He added that he hopes the Commission can answer the questions; why does stormwater need to be managed? What do we need to do? And How do we need to do it?

Rep. Borden stated that, in the Commissions deliberations, if has been difficult to understand the dynamics of the situation. He stated that the problem is evolving and that we know about floods, droughts, and sea level rising, but that the Commission s shooting at a moving target and the problem is accelerating. He added that the Commission needs all the help it can get to understand the dynamics of the problem.

Chairperson Cedarholm responded that the Commission doesn't necessarily know what the target is. He explained that the needs are all over the place and it has been difficult to narrow the focus because everything is equally important. He stated that the Commission needs to be cautious about too narrowly focusing their recommendations.

Rep. Spang added that the Commission needs to look at where the responsibility lies and stated that municipalities need to be included.

Mr. Danielson stated that all of the Commission's potential recommendations do not have to go forward in one session and suggested that they might be more acceptable if there was some leniency in the amount of time given to comply with any new legislation.

Dr. Roseen stated that even though there has been a wide range of issues discussed, there has been basic agreement on the issues and that the Commission can make big strides to improve the current situation. He added that the biggest challenge is going to be the political bravery necessary to get this through, in particular he emphasized the need for uniformity in managing stormwater will be challenging, but that there seems to be a common understanding of this need. He added that the current economic climate will be a challenge as well and that any recommendations will need to be coupled with a funding piece.

Rep. Kappler added that the push for better stormwater management needs to come from the state level. He explained that he sees towns working to abolish the conservation Commissions, avoid joining the Southeast Watershed Alliance, and other actions that are moving away from managing stormwater.

Dr. Kahl stated that imperviousness needs to be better understood as a tool for estimating water quality. He added that, from a technical perspective, a lot of ground can be covered by dealing with impervious surfaces.

III. APPROVAL OF MINUTES

Mr. Danielson made a motion to approve the minutes from December 7, 2009 meeting. **Rep. Spang** seconded the motion. **All approved and none opposed.**

Mr. Danielson made a motion to approve the minutes from January 4, 2010 meeting. **Rep. Spang** seconded the motion. **All approved and none opposed.**

IV. MODEL STORMWATER ORDINANCE DISCUSSION

Mr. Sienkiewicz stated that the model post-construction stormwater ordinance from the Innovative Land Use Guide addresses the three things that Mr. Hemmerlein said needed to address; peak flow, total volume, and water quality.

Dr. Roseen responded that the model is a good start, but that is does not go far enough. He specified that it is general and weak in terms of the trigger conditions and re-development. He explained that he chose the Nashua Regional Planning Commissions site plan review regulations instead, but that neither of them contain enough on redevelopment and suggested looking at Rhode Island and Massachusetts MS4 language for redevelopment. He added that he thinks the best approach is to go forward with strict ordinance language and let the process loosen it up.

Mr. Danielson suggested that the regional planning Commissions (RPCs) could review and promote a draft ordinance if the Commission developed one. He explained that this would first get feedback from the RPCs and second, it could be a way to get feedback from municipalities, address their concerns, and gain political support. He added that come RPCs would be amenable and other may push back hard, but it would be a good way to get immediate feedback.

Dr. Kahl stated that the ordinance could use a hint of seasoning from the Shoreland Protection Act, for example the ordinance says lawns and grass are pervious and does not mention buffer strips.

Rep. Spang stated that the RPCs reactions might not be representative and she asked if there was a way to get out to the communities themselves. She asked if there were ways to reach out to communities, possibly through the Department of Public Works directors.

Chairperson Cedarholm responded that it is hard to get the DPW directors attention and that it might be a different person for each town. He explained that he spent years working with the model ordinance and had one drafted for the city of Durham that went through and attorney, had planning board support, but when he brought it to the council it was 28 pages and they asked him if it could be simplified to say that state and federal regulations must be met.

He went on to explain that he has had success in Durham with using the regulations that state "All development must have adequate drainage in regard to stormwater". He stated that if development only had to comply with state or federal regulations, it would be going backward. He explained that instead of

moving forward with the model ordinance, they have been updating the stormwater portion of the site plan review regulations, based on the regulations for the Newington that the UNH Stormwater Center assisted with.
Chairperson Cedarholm stated that developers and planning board members want guidance and checklists to know what they are supposed to do and to give them a list of submittal requirements. He stated that the model ordinance does not provide specify submittal requirements. He explained that the draft site plan review regulations specify the submittal requirements, design standards, and distinguish between new development and redevelopment, with specific requirements for redevelopment. He explained that a stormwater management plan be submitted for any development with 10,000 square feet of disturbance and any development in an area that drains to an impaired water. He stated that they don't want to put up a roadblock to redevelopment and so they are questioning if a drainage analysis needs to be done if the redevelopment project proposes no significant changes. He stated that he will be sending the draft site plan review regulations to engineers for review.
Rep. Spang asked if Chairperson Cedarholm is expecting push back on the 10,000 square feet trigger.
Chairperson Cedarholm responded yes.
Dr. Roseen added that it is a matter of scale. He explained that Newington's disturbance trigger is 20,000 square feet, but they are looking at development like the Fox Run Mall, where Durham is looking at the Durham Market Place.
Mr. Danielson added that they have to think about the tax structure and look at it from an economic development standpoint.
Dr. Roseen responded that it can be address in a second step with a stormwater utility and incentives. He asked Chairperson Cedarholm if the draft regulations contained exemptions for activities like replacing a roof or repaving a parking lot.
Chairperson Cedarholm replied that if an activity requires site plan review, the rules would apply and added that if the activity was over 10,000 square feet of disturbance, it would apply. He added that he would like to go over four different development scenarios to make sure projects would not be prohibited if the draft site plan review regulations are adopted.
Commissioner Burack stated that he likes the idea of using best management practices as a substitute in place of a drainage analysis. He stated that he didn't see a definition of impaired waters and asked if you would want to have BMPs in place regardless of impairment status. In response to people in Durham asking why the ordinance can't simply require compliance with state and federal regulations, he replied that there are not strong state and federal requirements. He asked if the Commission had discussed developing state level stormwater regulations.

Ms. Ebel explained that she has been wrestling with the uniformity issue and asked if the Commission could discuss concepts on to how implement it with the Commissioner. She explained that the Commission initially looked into municipal authority to implement stormwater regulations and the conclusion was

that there is not clear regulatory authority for municipalities to manage stormwater. She explained that the Commission thought it municipalities should be enabled to manage stormwater and that they came across the Maine approach of the state drafting a model ordinance and requiring municipal adoption. She explained that municipalities had the option of tweaking the model ordinance and adopting it by a certain date, or if they missed the deadline, the state ordinance would go into effect. She added that the Regional Planning Commissions worked with the towns to develop their own versions. She explained that the Commission had a lot of discussion on how municipalities in New Hampshire would respond and thought that some would welcome it and some would be opposed. She thinks that if the towns were given a clear model, the municipalities would save money because they don't have to pay engineers and lawyers to figure out how to implement it, but she doesn't know how well the approach would work in New Hampshire.

Commissioner Burack responded that he has a lot to learn about the approach that Maine took and that he can talk to his counterpart in Maine.

Ms. Ebel specified that the approach in Maine was for municipalities to enforce the ordinance.

Dr. Kahl pointed out a difference between Maine and New Hampshire that in Maine, towns take ownership willingly; where in New Hampshire towns tend to say stormwater is a state issue.

Commissioner Burack suggested that the Commission start with answering the question of why is it so important to manage stormwater and added that if municipalities can agree on why, the state and municipalities can work together to address the what and the how. He stated that the issue of stormwater is at the convergence of land use law and environmental law. He explained that the Maine example used land use law to achieve an environmental standard and that New Hampshire has always used the approach of setting an environmental standard and saying that everyone has to meet it. He asked if the state can set a statewide environmental standard. He stated that he does not know what the right approach is to ultimately bring success in getting uniformity and quality new and redevelopment. He stated that Maine has statewide stormwater regulations, but New Hampshire does not we might want to ask why not and would they be appropriate. He added that Maine is a home rule state and that may play a part in the approach they took with the model ordinance.

Rep. Spang explained that New Hampshire is in an interesting position with municipalities because municipalities do not have authority to do everything and the issue of statewide zoning is always brought up.

Dr. Roseen added that municipalities are not enabled to meet some of the federal requirements for stormwater.

Rep. Spang continued that some municipalities do not trust selectmen and want state regulations.

Ms. Ebel added that when the Comprehensive Shoreland Protection Act came out, her town was very happy. She explained that they adopted it so they could enforce it at the municipal level instead of waiting for state enforcement.

Commissioner Burack responded that the easiest statutes to work with are those that are broadly worded, but with clear intent. He explained that the CSPA is a prescriptive way to enforce regulations and that he is not sure it is the best way to do it.

Chairperson Cedarholm suggested that this is a great subject for the Southeast Watershed Alliance to take a hold of. He explained that the Alliance could promote standard site plan review regulations. He added that a consistent zoning ordinance is being proposed with three towns in the Lakes Region and that they need to be able to show that, after the regulations are adopted, development is still happening and it is better development as a result of the regulations. He stressed that those examples are needed.

Rep. Spang added that there was the same conversation about the three towns in a groundwater meeting she attended earlier in the day. She asked how much of this discussion should go to the land use Commission.

Commissioner Burack suggested a joint meeting of the land use and stormwater Commissions. He added that the land use and stormwater pieces are interconnected and should fit together.

Chairperson Cedarholm agreed that the two Commissions should have a joint meeting and suggested that the sustainable funding subcommittee also be involved.

Rep. Spang suggested the joint meeting be held at DES where there is space to divide into separate tracks.

Commissioner Burack responded that DES will investigate the option for hosting a joint meeting.

Chairperson Cedarholm stated that it would be nice if a model ordinance also identified a suggested threshold and a place for the community to decide what is appropriate. He added that it would be helpful if it spelled out the areas a community would need to develop their own language.

Dr. Roseen added that it is difficult to create a one size fits all ordinance and explained that a town might want high density in some areas, but not in others. He suggested that multiple ordinances or sections within an ordinance for different land uses might be appropriate.

Mr. P. Currier explained that municipalities need to draft good ordinances and property owners need to take responsibility for what comes off of their properties regarding hydrology and water quality. He suggested the development of enabling legislation for municipal enforcement. He added that RSA 485:A implies the authority, but if the statute was clear that if you own the land, you own the stormwater, it would help.

Chairperson Cedarholm said that he has been looking at private parking lots and how often they have inadequate infrastructure. He asked about the potential for municipalities to update the infrastructure of private lots and if the town could take ownership of the infrastructure to make upgrades.

Mr. P. Currier responded that State Revolving Funds (SRF) are not available for those types of projects if a town took ownership of infrastructure.

Dr. Kahl stated that the model ordinance that was circulated from the Innovative Land Use Controls Handbook was command and control, but didn't include some of the incentives the Commission has discussed such as waiving a drainage analysis if pervious pavement is used or if a municipality has a stormwater utility that puts a fee on properties with greater than 10% impervious cover.

Ms. Ebel explained that since the development of the LID regulations in New London, people are finding that they can do more with their properties because there is less water to have to deal with.

Mr. Trainque added that stormwater utilities have built-in incentives.

Dr. Roseen informed the Commission that he is looking for additional members to join the funding subcommittee and that he hoped to meet in the next week.

Ms. Ebel asked what is happening with the regulatory authority subcommittee.

Mr. Sienkiewicz stated that the big question is what legislation needs to be drafted.

Mr. P. Currier responded that he has some ideas and explained that right now there is a question of whether stormwater is sewer or waste. He explained that he thinks it should be separate from sewer or waste. He added that another question is if a permit is needed to discharge stormwater, as well as property owner responsibility to manage stormwater.

Rep. Spang asked why stormwater discharges should not be permitted.

Mr. P. Currier responded that a permit would be command and control and managing stormwater is more about behavior change.

Rep. Spang asked if the Alteration of Terrain (AoT) Program permits stormwater.

Mr. P. Currier responded that the AoT program is basically a site plan review and does not focus as much on post-construction.

Chairperson Cedarholm added that if you say that someone owns the stormwater coming off their property, it includes everyone and all development, which covers much more than the AoT program.

Mr. P. Currier responded that EPA's Residual Designation Authority is basically doing that in every state around New Hampshire.

Rep. Spang asked what is wrong with command and control. She added that surface waters and their quality are a statewide resource and asked why there shouldn't be a statewide approach.

Dr. Kahl suggested that it might be best to have a voluntary approach with incentives and a back-up command and control approach.

Mr. P. Currier responded that there need to be both approaches on the table for the Commission to work over.

Dr. Roseen explained that the need for uniformity is such that builder and developers can do low impact development and better development practices, if the requirements to do so apply to everyone. He stated that he attends a major conference each year with around 12,000 attendees and only one to two sessions

are on water quality. He added that high end stormwater management is only done when it is required.

Mr. P. Currier responded that a state general stormwater permit could achieve that.

Chairperson Cedarholm responded that the state of New York issues a state pollutant discharge elimination permit (SPDES) that is a state general permit in certain watersheds. He thinks that the Southeast Watershed Alliance could do something similar.

Ms. Ebel stated that the Commission has discussed the problems of stormwater for the last 17 months and asked what they are going to do, what approach are they going to take and how are they going to decide.

Mr. P. Currier suggested that the regulatory authority subcommittee put together draft regulation and bring it back for the Commission to work over.

Dr. Kahl responded that the Commissioner asked why managing stormwater is important and asked if the Commission should put together an answer.

Rep. Spang suggested listing the pros and cons for each approach

Mr. Sienkiewicz agreed.

Ms. Ebel and **Dr. Roseen** stated that they feel the why is covered in the needs summary.

Mr. Trainque suggested looking at the federal Clean Water Act to answer the why.

Chairperson Cedarholm stated that, from a legislative perspective, there is the Clean Water Act and the 401 Water Quality Certification.

Mr. P. Currier added that there could also be a state process to discharge.

Chairperson Cedarholm added that there is the AoT program for bigger projects.

Mr. P. Currier emphasized that the AoT permit and the 401 Certification are not discharge permits.

Rep. Spang responded that, despite not being a discharge permit, the AoT program goes a long way toward regulating stormwater.

Mr. P. Currier agreed and added that there are ongoing discussions to include antidegradation in the AoT program.

Rep. Borden explained that he thinks the Commission needs to keep up with the hydrology science including dams and flooding. He asked if there is more for the Commission to study related to hydrology.

Mr. P. Currier responded that DES is in the process of writing stream crossing rules for geomorphology including performance standards and storm magnitude and he feels hydrology is being dealt with in that forum.

Dr. Roseen responded that storm magnitude might be something the Commission should look at.

Ms. Ebel stated that the Commission needs to decide how much they are going to look at the political piece as opposed to the stormwater piece. She explained that

the charge of the Commission was to look at the stormwater piece and make recommendations to feed the politicians and let them deal with the political piece.

Rep. Spang agreed.

Dr. Kahl asked if they Commission should vote on pursuing a statewide approach.

Rep. Spang responded that it is nice to offer options and explain the options and how they would work.

Mr. P. Currier responded that a statewide option for using a stormwater permit to regulate and enforce a standard is not a radical concept. He suggested pursuing a process that enables municipalities to manage stormwater and develop utilities and, if they choose not to, having a statewide process to regulate and manage stormwater.

Chairperson Cedarholm asked if it would be possible to do something like the New York SPDES permit.

Mr. P. Currier responded that it would be possible and they could adopt the federal permit as the state permit.

Rep. Spang asked who should write up the pros and cons list.

Chairperson Cedarholm asked Mr. P. Currier where the state permit would be done within DES and if there would be overlap with some part of the AoT program such as the drainage analysis.

Mr. P. Currier responded that from the Clean Water Act, EPA issues permits to everyone who has a straight pipe discharge and then requires and implementation scheme. He explained that there could be a similar state process for stormwater. He suggested consulting with the regulatory authority subcommittee to draft straw man legislation and have the Commission Review it for the next meeting.

Rep. Borden responded that the language doesn't need to be too specific, just rough concepts.

Mr. Sienkiewicz offered to write up a pros and cons list of the different approaches.

V. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
March 1, 2010	1:00 PM – 3:00 PM	LOB 305*
April 5, 2010	1:00 PM – 3:00 PM	LOB 305*
May 3, 2010	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VI. ADJOURNMENT

The meeting adjourned at 3:10pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

March 1, 2010 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
L. Mike Kappler	NH House of Representatives
Donald Sienkiewicz	Home Builders and Remodelers Association
Paul Currier	NH Department of Environmental Services
Rep. David Borden	NH House of Representatives
Robert Roseen	University of New Hampshire Stormwater Center
Michael Trainque	American Council of Engineering Companies
Amy Manzelli	Business and Industry Association of NH
Joe Robertie	NH Timber Owners Association
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Department of Transportation

Members Absent:

Josh Cline	NH Rivers Council
Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Dari Sassan	NH Office of Energy and Planning
Eber Currier	NH Farm Bureau
Dave Danielson	NH Association of Regional Planning Commissions
Karen Ebel	The Nature Conservancy
Steve Kahl	NH Lakes Association

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:

Thomas Burack	Commissioner, NH DES
Joel Anderson	NH House Staff

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:14pm.

II. APPROVAL OF MINUTES

Ms. Manzelli made a motion to approve the minutes from February 1, 2010 meeting. **Mr. P. Currier** seconded the motion. **All approved and none opposed.**

III. DRAFT LEGISLATIVE LANGUAGE FOR STORMWATER COMMISSION DISCUSSIONS

Mr. P. Currier reviewed the draft legislative language document that was sent to the Commission. He explained that it is a collection of ideas for legislation that have come out of the Commission's work and includes:

iii. Developing a statutory definition of stormwater that is separate from sewage or waste;
iv. Specifying that owners of developed property are responsible for the stormwater runoff from that property;
v. Enabling municipalities to regulate stormwater and develop bylaws;
vi. Developing a statewide framework for managing stormwater through a statewide stormwater permit; and,
vii. Developing a statewide stormwater utility with a local utility option.

Commissioner Burack asked if a statewide stormwater permit is different than a statewide stormwater standard.

Mr. P. Currier responded that a stormwater permit would be designed to meet water quality standards and that the water quality standards would be the performance specification for receiving waters. He added that the state or municipalities would administer the permit.

Rep. Spang responded that only relating stormwater to surface waters leaves out the potential impact to groundwater as well as changes in hydrology on neighboring properties. She gave the example of a new development that now floods adjacent property and stated that it would be nice to have a way to address this issue without the two parties having to go to court.

Mr. P. Currier responded that there are groundwater standards. He explained that RSA 485A covers both surface water and groundwater and added that 485C is the Groundwater Protection Act.

Rep. Spang asked how the groundwater statutes relate to stormwater.

Mr. P. Currier stated that they used to think it was bad to infiltrate stormwater because it would contaminate groundwater, but this opinion has flip-flopped. He stated that now they say to infiltrate as much as possible. He added that the focus on groundwater protection has been more on material storage and avoiding materials such as salts and hydrocarbons from soaking into the ground.

Rep. Spang asked about water sheeting off of a parking lot into an infiltration area.

Dr. Roseen responded that parking lot runoff is currently not regulated unless it is a 'hotspot' area, such as a gas station or material storage area. He added that it is under review in the I-93 expansion in particular because of the chloride issue.

Mr. P. Currier added that the data seems to be showing that the chance of groundwater pollution is lot. He stated that the same suite of pollutants is a concern with surface waters and groundwater and specified nutrients, metals, hydrocarbons, and chlorides. He added that the data shows increases in chloride in surface waters during low flow, which means that the chloride is coming from groundwater.

Mr. LeRoy stated that other states are requiring infiltration permits, but they are primarily for industrial facilities. He stated that the intent of the legislation looks like there would be no grandfathering.
Mr. P. Currier verified that the intention is that there would be no grandfathering.

Chairperson Cedarholm stated that the New Hampshire Stormwater Manual offers best management practices to address stormwater.
Rep. Spang asked if the best management practices need to go into statute.
Mr. P. Currier and **Dr. Roseen** responded that the best management practices can be specified in Rule, not in the statute.

Rep. Spang asked about the change in hydrology to a neighboring property as a result of development.
Mr. P. Currier responded that this piece of legislation could address that.
Dr. Roseen stated that the Alteration of Terrain (AoT) program currently has ½ acre-foot requirement for flooding, but that an appropriate trigger would need to be determined.
Mr. P. Currier stated that the 100,000 square foot trigger for an AoT permit is only in Rule, not in statute.
Mr. Sienkiewicz added that neither the statute not the Rule say that DES cannot regulate below 100,000 square feet.
Commission Burack suggested that Amy Clark or Ridge Mauck of the DES AoT Program come in to discuss the changes that were made to the AoT Program Rules. He explained that the Rules were expanded to include more development, but did not require a paper permit. He added that he frequently gets calls about neighbors causing flooding and right now he has to tell them that it is a civil issue and DES cannot to anything about it.
Rep. Spang suggested that if a model ordinance is developed, that it addresses the issue of hydrology changes on adjacent property. She asked if someone can tell beforehand if a development will cause a problem on neighboring property.
Chairperson Cedarholm suggested a watershed model could be used to help predict if there would be an issue.
Dr. Roseen responded that you would not want to have to run a watershed model for every driveway. He added that the AoT program does this, but for bigger projects.

Ms. Manzelli stated that she is concerned with how the idea of enabling municipalities to regulate stormwater is presented. She stated that Commissioner Burack asked if the intent was to permit compliance with a standard, but the draft language does not include a requirement to address stormwater and it doesn't reference a standard that would need to be maintained.
Mr. P. Currier responded that the legislation is intended to be enabling legislation with a list of options for bylaws. He explained that it doesn't include a mechanism for uniformity and that the municipal ordinance and the statewide stormwater permit are two separate ideas that need to be blended together. He

added that enabling municipalities to regulate stormwater will allow them to comply with the federal stormwater requirements.

Mr. Hemmerlein stated that this idea seems to be taking a huge step toward delegation of the federal stormwater permit, but that it adds a potential third permit for someone to be able to develop.

Mr. P. Currier responded that the wastewater program has a separate state permit in statute, but adopted the federal permit as the state permit. He thinks the same could be done for stormwater. He added that a statewide permit could cover more because the federal permit only covers urbanized areas.

Mr. Hemmerlein stated that EPA is going to do away with 'urbanized areas' because it is too difficult to determine the boundary line. He added that EPA is looking at changing their stormwater program and is sending out a questionnaire to permit holders.

Dr. Roseen responded that it is very likely EPA will go to a watershed-based permit because a review of the federal stormwater program found that the permit was weak because it was not watershed-based. He explained that EPA could go to a watershed-based permit by connecting the permit to impairments.

Ms. Manzelli suggested that a state permit program be structured to require a state permit unless a federal permit has already been issued.

Dr. Roseen responded that a state permit could require the most stringent conditions of the state and federal permit be met.

Mr. P. Currier responded that they could issue a general permit for the entire state and then they could have separate general permits for watersheds, for example Great Bay.

Dr. Roseen stated that in Massachusetts, the intention was that the state permit would be inclusive enough to act as a state and federal permit, but there was a lot of push back. He added that if a state permit were good enough, it could be accepted as a federal permit.

Rep. Spang asked if New Hampshire is happy with the federal permit.

Mr. P. Currier responded that the federal permit might not be strict enough.

Rep. Kappler stated that under the proposed enabling legislation for municipalities to regulate stormwater, the language reads "…municipalities shall have the power…" and that "Bylaws may include…" He explained that if adoption of stormwater bylaws is not mandated, it is not going to work. He added that it needs to say that municipalities shall do something, otherwise it is the same as what we already have and the municipalities will choose to do nothing.

Dr. Roseen agreed that there are already voluntary standards.

Ms. Manzelli stated that under the draft 31:41-f, towns could be confused about what they are supposed to do. She suggested adding that the intention is to allow municipalities to comply with federal permits and that projects shall comply with surface water quality standards. She added that the legislation could be limited to only municipalities that are subject to the federal permit.

Mr. P. Currier stated that they could run into 28:A issues if municipalities are required to adopt bylaws.

Commission Burack responded that this legislation would create a statewide stormwater standard and towns could decide if they want to adopt, apply and enforce it. He stated that it should be clear that this would give MS4 communities the authority to comply with the federal permit.
Mr. Hemmerlein responded that they can get around the 28:A issue because the requirements for MS4s communities are federal requirement. He added that other communities could adopt it if they choose to.

Rep. Spang asked Mr. P. Currier to explain what a general permit is.
Mr. P. Currier explained that a general permit is a single permit that lists general conditions.
Mr. Hemmerlein added that the MS4 general permit lists conditions that all MS4 communities must comply with and report on to EPA each year.
Rep. Spang asked if the general permit would be issued at a watershed scale.
Chairperson Cedarholm stated that a municipality could adopt a bylaw that says the state permit must be met.
Rep. Spang asked how difficult would it be for the state to write a general permit and how specific would the permits need to be.
Mr. P. Currier explained that DES is already working with EPA on writing permits, so it would be an expansion of that hierarchy.
Commissioner Burack added that some tailoring might need to be done for the general permits, but most requirements would be generic. He stated that there should be the ability to have waterbody specific general permits.
Mr. LeRoy suggested it be done like fishing permits and specify waters where different requirements apply.
Mr. Hemmerlein stated that the 303(d) list of impaired waters could be a basis for making specific permit requirements on a watershed basis.
Commissioner Burack responded that the 303(d) list could become a subset of waters with special requirements. He stated that the state would need authority to adjust permit conditions to address changes in water quality.

IV. PROS AND CONS OF VARIOUS STORMWATER MANAGEMENT APPROACHES

Mr. Sienkiewicz stated that it would be helpful to go over the full menu of options and suggested that he present the list of pros and cons that he put together. He explained the table of options that he put together and read 28:A aloud to the Commission.

N.H. Constitution [Art.] 28-a. [Mandated Programs.] "The state shall not mandate or assign any new, expanded or modified programs or responsibilities to any political subdivision in such a way as to necessitate additional local expenditures by the political subdivision unless such programs or responsibilities are fully funded by the state or unless such programs or responsibilities are approved for funding by a vote of the local legislative body of the political subdivision." November 28, 1984

He explained that he asked Ben Frost why the New Hampshire Workforce Housing Statute was not a 28:A issue and Mr. Frost responded that the towns already had approved zoning by vote of the local legislative body. Mr. Sienkiewicz stated that there are many municipalities that are already regulating land use and stormwater and it might be a possibility to say that those municipalities are already choosing to regulate stormwater according to a state standard. He added that he thinks there is a benefit to keeping municipalities involved in the process because there needs to be buy-in and understanding at the local level. He stated that the Comprehensive Shoreland Protection Act (CSPA) cut out the municipalities and has the state directly regulate property owners. He asked Commissioner Burack if there is a sense of what the CSPA costs to administer.

Commissioner Burack responded that there are a lot of variables, but that DES can try to put numbers together for the cost to administer a general permit. He added that DES would need to know how much the municipalities would be involved and state staffing requirements.

Mr. P. Currier added that there are some significant differences between the CSPA and how a general stormwater permit would work. He explained that the CSPA only applies if someone wants to make changes to a property, but the stormwater permit would apply to all property owners. He stated that it might be possible to obtain federal funding for start-up costs for the first year or two.

Mr. Hemmerlein asked if a the fees collected from a statewide stormwater utility would go to municipalities or the state.

Mr. Sienkiewicz suggested that the state could administer the beginning stages including the GIS, then a portion of the funding could go to the towns or administration and stormwater infrastructure improvements.

Mr. P. Currier stated that if municipalities adopt their own stormwater utilities, they would keep the fees, which keeps them involved and keeps the money local.

Dr. Roseen stated that stormwater utility fees are generally between $15.00 and $40.00 annually per household, depending on the amount of impervious cover.

Mr. LeRoy stated that the money generated from fees needs to be kept local.

Mr. P. Currier responded that a dedicated fund could be set up.

Mr. Trainque added that two things determine the stormwater utility fee: 1.) what they want to include in their stormwater program, ad 2.) the size of the property. He added that the fee for a residential site is usually between $3.00 to $5.00 per month.

Dr. Roseen stated that to date, utilities have been more focused on MS4 compliance than on infrastructure fixes.

Chairperson Cedarholm stated that in MS4 communities, if a property owner is out of compliance, the municipality can correct the problem and charge the property owner.

Mr. Trainque asked how requirements on private property owners are factored into a utility.

Ms. Manzelli stated that the property owner would be responsible for both paying into the utility and personally paying for stormwater management on their private property.
Mr. Robertie asked how many utilities would be created.
Mr. P. Currier responded that municipal-level utilities make sense, but that there are options for watershed, county, or other-level utilities as well.
Chairperson Cedarholm suggested that the Southeast Watershed Alliance could potentially form a utility.

Mr. Sienkiewicz stated that he agrees with Ms. Manzelli's thought. He explained that if a property owner needs a $10,000 stormwater system, and the utility gives $5,000 toward the system, there may still be a takings issue, but there will be less of an issue if the property owners are receiving money toward the improvements.
Dr. Roseen suggested that a property owner would have to pay the monthly utility fee unless they are meeting some type of stormwater improvement. He explained that the Long Creek residual designation authority is looking at costs around $3000/acre/year and that the mall would be around $300,000. He explained that they had the choice to spend the money to make improvements on their own property.

Mr. Sienkiewicz explained that the Massachusetts Wetland Protection Act uses state statute and rule as the guide, but municipalities are the first line of enforcement. He explained that in Maine, the municipality is required to do the enforcement. He added that he thinks New Hampshire needs a statewide standard that is uniform, but that the municipalities need to be involved.
Mr. P. Currier stated that approach in Maine does not generate funds.
Rep. Spang asked what municipal enforcement would require. She stated that some smaller municipalities may have a problem with implementation. She added that they may want to manage stormwater, but they may not have sophisticated enough staff to do so.
Mr. Sienkiewicz responded that the biggest back for the buck with municipal enforcement is the smaller projects that fall under the AoT threshold and for redevelopment projects. He stated that Dr. Kahl brought up not wanting someone to have to do a drainage analysis to be able to build a shed, and explained that a general permit that phases in requirements might be the best approach. He added that the 2009 residential building code applies to all buildings, even if the municipality has no building inspector. He suggested a way for homeowners to complete a checklist to report that they installed rain gutters or cisterns, or other management practice.
Mr. Hemmerlein responded that even if inspections of stormwater practices do not happen, the possibility that they could happen is a powerful tool for compliance.

Ms. Manzelli suggested that it would be good if municipalities who want to manage stormwater, but don't have the capacity, could have the option for the state to regulate and enforce it for them.

Mr. P. Currier responded that the state could do it for them and it would be good to have a program for municipalities to help them build capacity to do it in the future.
Mr. Hemmerlein suggested different tariffs that are lower for municipalities who administer and enforce the program themselves, and higher if the state does it for them.
Mr. P. Currier stated that he thought the Winnipesaukee River Basin would be a good ~~entity~~ ***conceptual model*** to administer the utility. He added that municipalities would need to feel represented.
Rep. Borden asked if there could be representation from each of the major watersheds and specified the Winnipesaukee, the Connecticut, the Androscoggin, and the Saco.
Mr. Hemmerlein responded that the fee would have to be collected by the municipality.
Mr. P. Currier stated that the state would have to do the GIS analysis so that it was consistent throughout the state.
Mr. Sienkiewicz stated that there would need to be an appeals process. He explained that if the municipality is collecting the money, a homeowner could go to the town and appeal an error and then have communication between the town and DES.

Rep. Spang stated that the Commission is discussing two things: 1.) developing regulations to reduce the impact of stormwater and 2.) developing a utility to obtain funding to deal with the stormwater problem. She asked if the utility would issue the permits.
Mr. Sienkiewicz asked if it would make sense for the local permitting body be the utility.
Rep. Spang suggested that the permit for building would pay for the administration of the permit, and the utility would pay for the infrastructure.

Mr. Hemmerlein suggested that they can get municipal buy-in by having the option of property owners paying a utility fee to the state or paying a smaller fee to the municipality if the municipality has a utility.
Mr. P. Currier stated that the utility would collect fees based on what's on the ground.
Dr. Roseen added that the utility does not enforce standards directly.
Mr. Sienkiewicz responded that it is probably a bad idea then for the utility to issue the permits. He added that some municipalities may want to start their own utilities right away.

Rep. Spang stated that she wonders if the Commission should focus energy on the utility or on the ordinance idea and is afraid that the utility is a far reach.
Chairperson Cedarholm responded that he thinks both things need to happen. He explained that a utility is needed to pay for the improvements and an ordinance is needed to know what improvements should be made and how.
Dr. Roseen added that a utility gets around the 28"A issue.

Mr. Sienkiewicz suggested that the Commission inform that legislature of the regulatory gaps from the document that Mr. P. Currier put together, and present the utility as a funding source.
Rep. Spang asked if the smaller towns will see the benefit of a utility.
Chairperson Cedarholm responded that a stormwater utility in the smaller towns would have very minimal utility fees because there is very little infrastructure. He asked what if a private parking lot discharged directly to a brook.
Mr. P. Currier responded that the town could develop bylaws if they were enabled to do so and they could regulate the parking lot.
Chairperson Cedarholm asked how the town would work with property owners to correct the problem.
Mr. P. Currier responded that the town would collect a fee unless the property owner fixed it themselves or the town could use money generated by the utility to fix it.

Ms. Manzelli offered assistance to Mr. P. Currier in drafting legislation.

Dr. Roseen suggested that the Commission look at a calendar and assign hard and fast deadlines for the remainder of the work.
Chairperson Cedarholm suggested that the next meeting be scheduled to go until 4:00pm.
Dr. Roseen asked if the Commission can work by email in between meetings to develop a schedule.
Mr. Sienkiewicz asked if he Commission was planning on holding a joint meeting with the Land Use Commission.
Mr. P. Currier responded that he thinks a joint meeting is necessary. He explained that they are working on a statewide plan for where development should go on the landscape and where it should be avoided.
Rep. Spang responded that it sounds like statewide zoning.
Mr. P. Currier explained that the intent is to allow for planning before people buy a property
Rep. Spang stated that the next Land Use Commission meeting in on Monday, March 15. She explained that she talked with Commissioner Burack about having a joint meeting with the Land Use, Stormwater and Groundwater Commissions and have small discussions by topic. She added that the Groundwater Commission is working on ordinances.
Mr. Sienkiewicz suggested that, as a first step, representatives for each Commission meet to update each other and get each other up to speed.
Rep. Spang agreed to ask the Land Use Commission chair for 15 minutes of time at their next meeting for Chairperson Cedarholm to give them an update on the Stormwater Commission.

V. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
April 5, 2010	1:00 PM – 3:00 PM	LOB 305*
May 3, 2010	1:00 PM – 3:00 PM	LOB 305*
June 7, 2010	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VI. ADJOURNMENT

The meeting adjourned at 3:17pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

April 5, 2010 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
L. Mike Kappler	NH House of Representatives
Donald Sienkiewicz	Home Builders and Remodelers Association
Paul Currier	NH Department of Environmental Services
Robert Roseen	University of New Hampshire Stormwater Center
Michael Trainque	American Council of Engineering Companies
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Department of Transportation
Josh Cline	NH Rivers Council
Dari Sassan	NH Office of Energy and Planning
Eber Currier	NH Farm Bureau
Dave Danielson	NH Association of Regional Planning Commissions
Karen Ebel	The Nature Conservancy
Steve Kahl	NH Lakes Association

Members Absent:

Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Rep. David Borden	NH House of Representatives
Amy Manzelli	Business and Industry Association of NH
Joe Robertie	NH Timber Owners Association

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:

Thomas Burack	Commissioner, NH DES
Erin Hass	Dennehy and Bouley
Susan Olsen	NH Municipal Association
Ridgely Mauck	NH DES Alteration of Terrain Program

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:06pm. Introductions were made around the room.

II. APPROVAL OF MINUTES

Mr. P. Currier made a correction to his statement on page 8 of the March 1, 2010 minutes to clarify that the Winnipesaukee River Basin would be a good conceptual model for how to administer the statewide utility.
Mr. LeRoy made a motion to approve the minutes with amendments from March 1, 2010 meeting. **Rep. Spang** seconded the motion. **All approved and none opposed.**

III. LAND USE COMMISSION UPDATE – REP. SPANG

Rep. Spang presented an update of the Stormwater Commission to the Land Use Commission at their last meeting. She reported that the Land Use Commission is looking at land use regulations in other states and has a definitions subcommittee that is looking at controlling indirect impacts to wetlands. She stated that the Land Use Commission members agreed that a joint meeting of the Commissions is needed.

Mr. P. Currier stated that he was hoping that they would be looking at a statewide framework that would identify the best and worst places for development.
Rep. Spang responded that they discussed that, but it is a big issue to tackle and would require more time.
Chairperson Cedarholm asked if they are looking at stormwater as a component of wetland setbacks.
Rep. Spang responded that they are looking at soils and other wetland indicators for setbacks and that they are referring to the Stormwater Commission for the stormwater pieces. She stated that they are having a hard time with determining how to inventory the biological component of wetland assessments.
Rep. Kappler asked when the Land Use Commission reports
Rep. Spang responded that they have the same timeline as the Stormwater Commission and will report by November 2010. She added that she has been looking at the report from the Great Bay Sediment Commission and that nonpoint source pollution has been identified as a major problem.
Dr. Roseen responded that the Stormwater Commission has been focusing on post-construction and not much on construction activities where erosion and sediment can be more of a problem.

IV. PROPOSED LEGISLATIVE LANGUAGE DISCUSSION – CONTIUATION FROM MARCH 1, 2010 MEETING

Chairperson Cedarholm introduced Ridgely Mauck from the NH Department of Environmental Services Alteration of Terrain (AoT) Program and explained that he is available to answer questions during this discussion.

Mr. P. Currier reminded the Commission that there are currently two ideas to work through; stormwater discharge permits and a statewide stormwater utility with a local option. He stated that he thinks both are necessary, but asked the

Commission their opinion. He explained that a utility might be possible without a permit, but that a permit would likely need a utility to administer it. He stated that the Winnipesaukee River Basin program framework could be used as an example to have a separation between the permitting authority and the utility.

Chairperson Cedarholm asked if a utility would apply to everyone in a town or only those within the MS4 area. He stated that, in most cases, the MS4 is only a portion of the town.

Mr. P. Currier responded that he thinks the utility would apply to everyone.

Dr. Roseen responded that there are examples of both. The utility in Augusta, Maine includes only the MS4 portions of the town and the utility in South Burlington, Vermont include the entire city. He added that any impervious cover, whether it is within or outside of the MS4 area, contributes runoff.

Chairperson Cedarholm responded that if the stormwater utility is only for the MS4 area, that a permit may be needed for outside of the MS4 area.

Mr. P. Currier stated that there is a difference between the MS4 permit and the stormwater permit that the Commission is discussing. He explained that the EPA MS4 general permit regulates stormwater that goes through conveyance, but in New Hampshire, there is often stormwater that does not go through municipal conveyance and this would also be regulated under the stormwater permit they are discussing.

Dr. Kahl asked if a town could set their own utility fee if they adopted a local utility and opted out of the state utility.

Mr. P. Currier responded yes, and that the state would encourage local utilities.

Dr. Kahl stated that the town would get the fee and they could set the fee to zero if they wanted.

Mr. P. Currier responded that there would likely be requirements for stormwater fixes and that the fees would need to go to aid or grants to implement the fixes.

Mr. Sienkiewicz asked if the fees collected by the state utility would be set aside for stormwater aid. He stated that, at the last meeting, they discussed that the GIS analysis of impervious cover was best done by the state, but that administration of the utility be done by the municipalities.

Rep. Spang responded that municipalities would not do it without getting money and asked if a town did not do it, if the state would.

Mr. P. Currier responded that the state would do the GIS on a unified statewide basis or municipalities would gather it with requirements for data.

Rep. Spang asked if anything would be grandfathered.

Mr. P. Currier responded that the water quality standards apply to everything and there is no grandfathering. He explained that if the water quality standards change, everyone must comply with the changes. He stated that the purpose of the permit and the utility is to meet water quality standards.

Chairperson Cedarholm asked if the stormwater permit would only apply to new development or if existing and re-development would also be included.

Mr. P. Currier responded that all development would be included and that the owner of every property would be responsible for the runoff coming from their property. He added that if a property is undeveloped, which would need to be defined, there would be no requirements.
Rep. Kappler asked if EPA has been talking about better regulating stormwater as a result of the recent storms.
Mr. P. Currier replied that EPA is maxed out and that the new stormwater general permit will have additional requirements beyond the existing permit.
Dr. Roseen added that the Massachusetts stormwater general permit public comment period closed and it will likely be a while longer until it is in effect.

Mr. Hemmerlein asked if there would be a cost benefit analysis for the state stormwater permit if the performance standard is to meet water quality standards.
Mr. P. Currier responded that he hopes a best management practices (BMP) approach could work where, if the new AoT framework and stormwater manual were followed, it could be assumed that water quality standards would be met.

Chairperson Cedarholm asked if the stormwater permit would require everyone in a town to get a permit and to determine where and what they discharge.
Mr. P. Currier responded that it could be a phased approach that could potentially start with a general permit for the entire state.
Chairperson Cedarholm asked if it is feasible.
Mr. P. Currier stated that he thinks it is feasibly, but implementation should not start until the legislature asks DES to produce recommendations for implementation. He added that the DES recommendations for implementation would need to be much more detailed that what the Stormwater Commission report will contain.
Mr. Sienkiewicz stated that is feels like it is not politically viable or a good idea to do a stormwater general permit because it will appear that people need a state permit to let the rain run off of their roofs. He explained that they want property owners and municipalities to take responsibility and understand that brown, polluted water is a problem. He stated that he thinks municipalities need to administer the permit.
Mr. P. Currier responded that the Commission could decide not pursue the permit idea and focus on the utility. He stated that the Commission could recommend that property owners be required to take responsibility for their runoff and municipalities have authority to comply with the water quality standards. He added that municipalities could develop utilities and, if they choose not to, the statewide utility applied.
Mr. Sienkiewicz asked where the stick is, and stated that a stormwater permit might be necessary, but should be administered at the local level.
Rep. Spang asked if it would be appropriate to start with a size threshold and phase in development. She explained that they are doing this with groundwater withdrawals starting with the large withdrawals and now moving to small withdrawals. She added that they could start with the larger commercial properties.

Mr. LeRoy stated that the existing, grandfathered properties are causing the problem. He suggested asking the AoT Program if they could reduce their area of disturbance threshold to capture smaller-scale development.

Mr. Mauck of the DES AoT Program responded that the AoT Program is entirely fee-based and that lowering the threshold would generate more permit fees and allow them to hire more staff. He explained that residential subdivisions contribute to flooding and other water quality problem, but that the road size for a subdivision is the only thing that triggers a residential AoT permit. He added that there are many 10 to 15-lot cul-de-sacs that are built without reaching the permit threshold and therefore never get a state review.

Chairperson Cedarholm asked how many applications the AoT Program currently reviews.

Mr. Mauck replied that the application numbers have been down about 50% over the last year and a half due to the economy. He explained that there was a spike in applications in December 2008 because a rule-change went into effect January 2009.

Chairperson Cedarholm asked what the basis is for the permit threshold of 100,000 square feet of disturbance.

Mr. Mauck replied that the permit threshold was established prior to his involvement in the program, but that he does not believe there was science behind the threshold and guesses that it was a number that was thought would catch the larger projects, but was not unreasonable to manage.

Mr. Sienkiewicz stated that he is surprised by how much you can develop without triggering a permit. He added that there has been a lot of discussion on polluters, but that they have not seen numbers to quantify the worst polluting land uses.

Dr. Roseen responded that the reason the Commission began discussing the idea of every property needing a permit was to get at uniformity in managing stormwater. He suggested that the permit could be for the municipality.

Mr. P. Currier responded that having a permit for municipalities would be a 28-A issue.

Mr. Sienkiewicz responded that he does not think there would be a 28-A issue if the permit requires municipalities to be responsible for the quality of rivers flowing out of their municipal boundaries.

Mr. P. Currier responded that municipalities have only been responsible for their drainage and have not been responsible for surface water quality leaving their town boundaries.

Rep. Spang stated that it might not be the larger commercial developments that they want to target, it might be all the smaller development.

Mr. P. Currier responded that stormwater is death by 1000 cuts and it is directly related to population. He added that the problem is where the people are.

Dr. Roseen responded to Mr. Sienkiewicz that they can easily pull existing data to determine the median pollutant loading values for each land use and put them in order from lowest to highest loading.
Mr. Hemmerlein added that there is an area component that should be considered and that highways take up very little area in a watershed.
Rep. Spang asked if stormwater volume data by land use is available.
Dr. Roseen responded that it is not readily available, but that they could do it.

Mr. Sienkiewicz stated that he thinks there needs to be a stormwater permitting mechanism because there needs to be a bigger stick than just a utility fee. He explained that, at the last meeting, Dr. Kahl stated that they do not want people to have to submit an engineering design to build a shed. He thinks that there needs to be a selection of BMPs for people to choose from to meet the requirement. He added that having the state tell a property owner to do something is not as palatable as if the municipality tells them to do something and he believes a good legal argument could be made for municipalities who have site plan review that it is not a new state requirement, but they would need to decide if it is an expanded requirement.

Rep. Spang explained that it has been an ugly couple of weeks related to stream crossings because of the cost to properly size culverts. She explained that municipalities were saying it was a 28-A issue even though there were very good public safety and ecological reasons for improved culverts. She asked how that can be avoided with the stormwater issue.
Dr. Roseen responded that it needs to be partnered with funding and that a statewide stormwater utility might make it more palatable.
Rep. Spang asked if a utility would be able to fund all of the fixes.
Mr. Trainque responded that stormwater utilities typically look at the current activities a municipality is doing to manage stormwater, such as catch basin cleaning and then look at the additional activities that they would like to do and what additional funding would be necessary to conduct all existing and future stormwater activities. He explained that over time, the revenue stream becomes more stable and the general fund money that had been used for stormwater activities can be used for other activities once the utility takes over. He added that this is a good argument for making sure that all properties are included in the utility.
Mr. P. Currier stated that the statewide utility concept is a slightly different situation because the state does not have current costs for stormwater. He explained that at the state level, there needs to be an enterprise fund and that they need to figure out a source of start-up money.
Dr. Roseen stated that he circulated a copy of a Maryland Senate Bill with a statewide utility component and remediation funds for targeted efforts. He explained that if it passes, all municipalities in the state must create a stormwater utility by July 2011 or be part of the state utility.
Mr. Hemmerlein responded that Maryland is a delegated state that administers the EPA stormwater permit, which means that the requirement is coming from

the federal government, not the state. He explained that the costs of maintaining stormwater structures add up quickly. He said that people often mention that street sweeping and catch basin cleaning are low-hanging fruit, but sweeping costs around $10.00 per mile and catch basin cleaning is around $50 per catch basin. He stated that some neighborhoods have more catch basins than houses and the costs add up quickly. He said he is not sure that the $20.00 or $30.00 per year per household for stormwater utility fees would be enough.

Rep. Spang asked if municipalities should be compensated for cleaning catch basins and other stormwater management activities.

Chairperson Cedarholm responded that it would be nice to have a dedicated fund for those types of activities.

Rep. Spang agreed, but asked if state money should go to more exotic stormwater management, not routine maintenance.

Dr. Roseen stated that capital costs to repair everything at once will not be achieved with $15.00 per year per household, but it is the start of a dedicated fund with built-in incentives for people to manage their stormwater better.

Mr. Trainque added that the benefit of a stormwater utility is that there are dedicated funds for stormwater management instead of coming out of the municipal general fund. He explained that stormwater activities are often overlooked because of more pressing budget issues. He added that every community is unique and will have different stormwater needs.

Chairperson Cedarholm stated that the statewide stormwater utility is exciting, but that the problem areas still need to be identified.

Dr. Roseen responded that the problem areas have already been identified with the MS4 permit.

Chairperson Cedarholm stated that MS4s only cover a small portion of the state.

Dr. Roseen agreed, but recommended focusing on MS4s because that is where the driver is.

Mr. Hemmerlein stated that the MS4 areas might change.

Dr. Roseen agreed that the details of the new MS4 permit still need to be developed, but that the cost of administering MS4s is not going to decrease with the next permit round.

Rep. Spang explained that the challenge of a statewide stormwater utility is going to be getting enough flexibility and that she is worried communities are not going to be able to implement a local utility because it goes to the voters.

Dr. Roseen explained that this is the reason why a statewide utility is necessary and that the flexibility of the statewide utility is that there is a local option.

Rep. Kappler responded that there needs to be a statewide program that requires towns to do something or else they will not do anything.

Dr. Kahl added that an incentive for municipalities to develop their own utilities is that they get to keep the money generated from the fees.

Rep. Spang asked how many of the key needs that the Commission originally drafted, are addressed by the statewide stormwater utility.

Dr. Roseen responded that this is only the economic piece and it does not get at the uniformity piece.
Rep. Spang asked if it would get at the uniformity piece if they specified standards that need to be met.
Mr. Trainque responded that a stormwater utility is not only a funding mechanism and that it can also be a program.

Mr. Hemmerlein stated that he is worried about compliance and asked how it will be determined that each property owner is in compliance and that the funds are being used correctly.
Mr. P. Currier suggested that there could be a self-certification program done by the property owner or that the local building inspector could be trained.
Mr. Hemmerlein asked how the best use of the funds would be determined.
Rep. Spang responded that at the municipal level, there could be CIP developed in advance of the utility to plan phased improvements. She asked who would decide what municipalities spend money on if it is a statewide utility.
Dr. Roseen responded that with the state utility a large portion of the funds generated would go back to municipalities.
Mr. Hemmerlein stated that there will need to be very tight restrictions on what the money can be spent on.
Dr. Kahl asked if the desire is for municipal stormwater utilities or a statewide stormwater utility because there seems to be no municipal incentive.
Dr. Roseen explained that the municipal incentive would be lower fees for the property owners and dedicated municipal funds to do things that they already do like catch basin cleaning. He suggested that they build on the momentum of the MS4 draft permit.

Mr. Danielson suggested taking the idea of CIP and to phase in compliance. He suggested the first phase include MS4 communities and that the legislation to include a large outreach component. He asked if legislation can be structured to phase in requirements.
Rep. Spang answered affirmatively.
Dr. Roseen responded that MS4s are based on census data, which changes.
Chairperson Cedarholm stated that MS4s are strange and that Newmarket and Concord are not MS4s but that they might be in the next round.
Mr. P. Currier stated that he agreed with Mr. Danielson that there needs to be phased implementation that starts with the MS4 communities.
Mr. Danielson added that education needs to start immediately.

Chairperson Cedarholm asked Mr. Mauck to what degree a stormwater permit or a statewide stormwater utility would work with or conflict with the AoT Program.
Mr. Mauck responded that he does not think they would conflict.
Mr. P. Currier responded that the permits during construction (AoT) would be different than an operation permit.

Mr. Mauck added that another benefit to the stormwater utility is maintenance. He explained that there had been no operation and maintenance requirements in the AoT Program until 2009. He explained that there are now operation and maintenance plan requirements that include keeping records available to DES upon request. He explained that the state of Maine has a re-certification program for showing compliance with their operation and maintenance plan that requires the permit holder to apply for recertification. He added that this is the first year permit holders will need recertification and that his Maine counterparts are interested to see how people comply and to determine what the stick would be if people do not comply.
Rep. Spang asked if during busier times, the AoT Program has a hard time keeping up and how many years do you keep looking at maintenance.
Mr. P. Currier responded that a property assessor could be trained to look at how BMPs are being maintained.
Dr. Roseen responded that training the property assessors is what was proposed in Massachusetts.
Mr. Mauck stated that the focus of the AoT Program has been on the front end and that they may need to look at these systems after construction to see how well they are operating. He added that it would be a big program change.

Chairperson Cedarholm stated that, for the most part, the MS4 permit to date has been a paper exercise with no feedback from EPA.

Mr. P. Currier suggested that homework for the next meeting be to focus on a phased approach starting with MS4 communities with performance standards. He stated that he is stuck on how the process gets started and asked if that can be the homework for next time. He added that if they start with municipalities, they might be able to get funding from EPA. He explained that the issue they need to deal with is planning for the rest of the state and branching out from the MS4s. He stated that until they look at what the stormwater performance standards are, they are talking in the abstract. He suggested the Commission might want to ask DES to put performance specifications together.
Rep. Spang stated that the MS4s are already pretty well education and asked if they are missing an opportunity to work with non-MS4 communities.
Dr. Roseen responded that MS4s are informed, but not necessarily savvy or educated and could do and know more.
Mr. P. Currier stated that sooner or later they are going to need to start thinking about getting start-up money.
Rep. Spang suggested starting with MS4s and setting a larger impervious cover threshold.

Chairperson Cedarholm asked if Mr. P. Currier was going to take on the homework assignment.
Mr. P. Currier responded that he was hoping for ideas.

Dr. Roseen suggested that they look at what stormwater needs are covered under the stormwater utility and stated that the rest need to fall under the stormwater permit idea.
Mr. P. Currier asked if they should spend more time on the stormwater permit concept.
Mr. Sienkiewicz responded no, that the utility could set up a permit structure.
Chairperson Cedarholm asked if they could learn something from the four stormwater utility feasibility studies that are ongoing or from the city of Manchester such as the biggest hurdles or lessons learned.
Ms. McCarthy explained that the feasibility studies are just getting started and will not be completed until December 2010.
Dr. Roseen responded that the biggest hurdle we can learn from Manchester is that when a municipality takes on a stormwater utility it takes 7 years.
Mr. Trainque responded that South Burlington is farther into the process and could be a good speaker.
Mr. Hemmerlein stated that the South Burlington utility is a flood-based utility.

Rep. Spang asked how far the AoT permit goes and if there would be overlap between the AoT permit and a stormwater permit.
Mr. Mauck responded that the AoT permits have operation and maintenance conditions that go for the length of the operation.
Rep. Spang asked what the stormwater permit would cover that the AoT permit does not.
Mr. P. Currier responded that an operational permit is very different than a construction permit. He stated that the statute could say you cannot discharge stormwater to surface waters with operational requirements. He explained that with the AoT program, someone gets a permit, builds what needs to be built, and then is basically done with the program because there is no long term mechanism in place for operation and maintenance.
Rep. Spang asked if the permit would be only to surface waters or if it would also include to neighboring properties.
Mr. P. Currier responded that it would likely only be to surface waters.
Dr. Kahl stated that a stormwater discharge permit seems crazy if the statute says there should be no discharge.
Mr. P. Currier responded that there would need to be performance specifications. He recapped the discussion that the utility would have phased implementation starting with MS4s and that ultimately; implementation would cover every developed property of the state.
Dr. Roseen stated that a phased approach is good for the permit, but he thinks the utility should all start at the same time.
Chairperson Cedarholm stated that there should be a waiver for the utility if performance specifications are met.
Dr. Kahl added that performance specifications could be impervious cover based.

Rep. Spang asked if the performance specifications will deal with only volume or quality and asked how quality is being addressed. She stated that it does not seem right that people who discharge dirty water are charged the same fee as those who discharge clean water.

Dr. Roseen responded that it gets at both volume and quality because quality is assumed depending on the amount of impervious cover and implementation of certain BMPs.

Rep. Spang asked if monitoring would be required as part of the permit.

Dr. Roseen and **Mr. P. Currier** responded that no monitoring would be required.

Mr. P. Currier stated that compliance could be based on performance standards and the ability of BMPs to meet performance standards. He added that if they are going to phase in the permit, he thinks the second phase should be impaired watersheds.

Ms. Ebel suggested a change to the wording in the definition of stormwater from "does not infiltrate" to "has not infiltrated".

Mr. P. Currier agreed.

Mr. P. Currier asked if the permit should be modeled after the waste permits.

Mr. Danielson responded that consistency would be good.

Mr. Hemmerlein asked if a property is exempt from the utility, if they are then exempt from the permit.

Mr. P. Currier responded no, but if they comply with the permit, they might not have a fee.

Mr. Mauck explained that the AoT Program currently has a general permit-by-rule for all development regardless of the size of disturbance that went into effect with the 2009 rule change. He explained that they felt authority was lacking before and so they included it in the rule change.

Commissioner Burack added that the AoT program has not always been looking at smaller development, but it does not mean that they won't in the future. He added that the Land Resources Management Bureau has been cross-trained for inspections and enforcement.

Dr. Kahl stated that they need a definition of impervious cover and suggested that lawns should be considered impervious when they are within 100 feet of surface waters.

Dr. Roseen suggested putting together a calendar and deadlines.

Mr. Hemmerlein asked how the permit works with the utility. He asked if people with waivers or who are in compliance with the permit still have to pay the fee.

Rep. Spang asked if everyone would have to pay an administration fee.

Chairperson Cedarholm responded that there are always pieces of infrastructure whether you live in the village or in the outskirts.
Dr. Kahl suggested that people are given full credit and are assigned no fee if they are doing the right thing. He asked if it is a straight fee or a tiered fee.
Mr. Trainque responded that utilities typically determine an equivalent residential unit (ERU) and assign a fee per ERU. He explained that the more impervious surface, the more ERUs and the larger the fee.
Rep. Spang asked if the utility cover everything or only properties in town.
Dr. Roseen answered everything is covered.
Rep. Spang stated that under that scenario her little house on 100 acres would have a fee.
Dr. Kahl stated that water quality impacts from impervious cover are not typically seen until 6 – 10% and there could be an impervious cover threshold.
Mr. P. Currier stated that antidegradation says no degradation unless there is social or economic justification. He explained that the criteria is that the social and economic justification must outweigh the environmental impact.

Commissioner Burack asked about the possibility of holding a joint meeting between the Land Use and the Stormwater Commissions and asked Ms. McCarthy to coordinate the joint meeting.
Chairperson Cedarholm responded that it would be beneficial and suggested that the meeting be held at a separate time from the regular meetings.
Rep. Spang suggested inviting the Infrastructure Commission.

Rep. Spang informed the Commission that Bob Zimmerman of the Charles River Watershed has offered to speak to the Commission on residual impacts.

V. FUTURE MEETING DATES AND TOPICS

Date	Time	Location
May 3, 2010	1:00 PM – 3:00 PM	LOB 305*
June 7, 2010	1:00 PM – 3:00 PM	LOB 305*
July TBD		

*NH Legislative Office Building, 33 North State Street, Concord, NH

VI. ADJOURNMENT

The meeting adjourned at 4:02pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

May 3, 2010 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
L. Mike Kappler	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Robert Roseen	University of New Hampshire Stormwater Center
Michael Trainque	American Council of Engineering Companies
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Department of Transportation
Dari Sassan	NH Office of Energy and Planning
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Steve Kahl	NH Lakes Association
Rep. David Borden	NH House of Representatives
Amy Manzelli	Business and Industry Association of NH

Members Absent:

Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Joe Robertie	NH Timber Owners Association
Donald Sienkiewicz	Home Builders and Remodelers Association
Josh Cline	NH Rivers Council
Dave Danielson	NH Association of Regional Planning Commissions

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:

Thomas Burack	Commissioner, NH DES
Bob Zimmerman	Charles River Watershed Association

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:08pm. Introductions were made around the room.

II. APPROVAL OF MINUTES

Rep. Spang made a motion to approve the minutes with amendments from the April 5, 2010 meeting. **Rep. Borden** seconded the motion. **All approved and none opposed.**

III. CHARLES RIVER STORMWATER PRESENTATION – BOB ZIMMERMAN, CHARLES RIVER WATERSHED ASSOCIATION

Mr. Zimmerman explained that the Charles River Watershed Association (CRWA) started in 1965 when the Charles River was the most polluted river in the United States. He became executive director in 1990 and explained that, as a result of the misconception that it was okay to discharge polluted water to the Charles River because the river had always been polluted, the CRWA began an extensive monitoring program to identify the sources of pollution in the river and prove that the pollution was not natural. He explained that since then, the CRWA has been a science and engineering directed organization with their single client being the environment of the Charles River and eastern Massachusetts.

Mr. Zimmerman explained the following points in his presentation:

- In order to restore surface waterbodies and sustain ourselves, we need to mimic nature in our stormwater, drinking water, and wastewater operations. Decentralization of water is critical and we are still using a 19th century approach and technologies for our water infrastructure that includes getting water from somewhere clean, using it, and getting rid of it far away. Current regulation favors large centralized treatment systems, and that in order to fundamentally change, the regulations need to change to enable decentralization.
- We often make conclusions and assumption to build things and create more environmental problems. For example, Boston Harbor was cleaned up when Deer Island wastewater treatment facility (WWTF) of developed to stop direct wastewater discharges to the harbor. The WWTF discharged the wastewater miles out to see. This ended up dewatering the towns serviced by the WWTF because 60% of the water going to Deer Island is potable water from groundwater seepages. The WWTF wastes the equivalent of one entire Charles River Annually. In addition, the stormwater that falls and enters the drainage network and into rivers is lost within 24 hours out to sea. We are not running out of water in New England, we are throwing it away because of outdated practices and regulations that require the use of outdated practices.
- A land use based TMDL for the Charles River showed that 73% of the loading comes from less than 23% of the land area and this is pretty standard across the United States.
- Impervious cover was the single largest contributor of pollution because 100% of the rain on impervious cover is lost.
- In 2004 the CRWA began work with the Conservation Law Foundation, EPA Region 1, and MA DEP to get EPA to extend their regulatory authority to include stormwater through residual designation under Section 402 of the federal Clean Water Act to capture industrial, commercial, and high density residential areas of 2 acres or greater. They extended the NPDES permits to existing development and require that they remediate their stormwater runoff

by 65%. This is being piloted in three towns in the headwaters of the Charles River Watershed, Franklin, Bellingham, and Milford.

- The best way to remediate stormwater runoff is to mimic nature using infiltration and vegetated practices to slow runoff down. We need to go after what is already built because we are never going to get the water quality improvement that is needed by only going after new development and redevelopment.
- They have developed software that informs the planning process as to where stormwater improvements could be made and at what cost. This eliminates costly upfront consultant and engineering fees. The process will involve trading for properties that cannot achieve the treatment that they need, they can "buy" treatment on an offsite property.
- There is a notion that we haven't spent money on water and stormwater before, but this is wrong. In Massachusetts, the state revolving fund alone spends millions. The money needs to be spent in a way that fixes things permanently instead of expanding on the system that is already in the ground.
- 30% of the energy in the United States is used to pump water around. If we can keep water local, it has enormous energy implications. Cambridge drinking water plan has more energy use than all of Harvard and all of MIT combined.
- The town of Franklin, MA has five water supply wells and they cannot meet the demand of residents. They want to add two more wells. If they reused the water (re-circulate, treat, and infiltrate to groundwater) and capture 30% of the stormwater on existing impervious cover, the flow from the brook would go back to near historic flows. We need to change the regulations to allow us to move in this direction.
- If we use anaerobic digestion in WWTFs, it creates methane and can generate for energy. Methane is 23 times better at tratpping heat than carbon.

Dr. Roseen asked if there is anywhere else in the United States where there is credit trading for stormwater.

Mr. Zimmerman responded that there is nitrogen trading for WWTFs, but not for stormwater.

Rep. Spang asked once the trade has happened, how it is known that the requirements are being met on the other side.

Mr. Zimmerman stated that their must be some legal instrument such as a note in the deed to enforce it. He added that who allows the trade to work and who oversees the trading process still needs to be determined.

Dr. Roseen asked how the trading is offsetting costs by both parties.

Mr. Zimmerman responded that the person installing the additional BMP to offset pollutant loading elsewhere in the watershed would have to charge a fee to do so, over and above the cost of additional BMP installation. He added that it will be important to look at zoning requirements to see how much land can be used for stormwater treatment. He also added that commercial zoning often

requires much more parking than necessary and limits the amount of the property that could be use for stormwater treatment.

Rep. Borden asked if there is a problem with over-mimicking nature
Mr. Zimmerman responded that it is possible, and it would mean that they would be generating water.

Chairperson Cedarholm stated that trading could potentially be done through a stormwater utility.
Mr. Zimmerman responded that the residual designation authority allows for trading in the three municipalities and stated that the trading will probably be handled by EPA under the general permits. He added that New Hampshire not being a delegated state for the federal stormwater permit is an opportunity to allow EPA to do the same thing in New Hampshire.
Rep. Spang asked if there is any difference with the use of RDA's now that Bob Varney has left Region 1.
Mr. Zimmerman explained that RDA was adopted by the Bush administration and that EPA Headquarters is watching the RDA in the Charles River Watershed very closely.

Dr. Roseen asked if any of the involved communities have stormwater utilities and does Mr. Zimmerman know of any utilities that are particularly effective.
Mr. Zimmerman responded that he doesn't know of any truly effective utilities in New England, but referred to Portland, OR and Seattle, WA as good examples. He added that we need to look at stormwater more broadly and how we make water mimic nature including drinking water, groundwater and wastewater. He stated that we cannot overcome losses of existing water supply and water treatment systems. He explained that remediating impervious cover can improve the situation but cannot overcome the loss.
Dr. Roseen asked if they had considered flood skimming.
Mr. Zimmerman responded that conservation-based withdrawal permits reduce the demand and that anyone is Massachusetts who withdraws greater than 100,000 gallons per day are required to get a withdrawal permit.

Dr. Kahl asked if it would be a distraction for the Commission to think of trading right now since it is only a pilot in Massachusetts.
Mr. Zimmerman responded that he thinks trading is worth considering because it hasn't really worked in the United States and EPA is very interested in it.
Dr. Roseen stated that the option for trading exists if we look at the potential for recharge. He explained that part of the pilot project looked at cost association with various BMP options and it showed that the most cost-effective BMPs to implement are community-based, not site level.

Rep. Borden asked if it makes sense to go bigger than a regional scale.
Mr. Zimmerman responded that they need to get through the pilot first, but that the same code could be applied to the state of New Hampshire.

Mr. Trainque asked if the pilot is going to meet the requirements of the inter-basin transfer act.

Mr. Zimmerman responded that it is all watershed based so they cannot trade from one watershed to another.

Mr. Hemmerlein asked Mr. Zimmerman to elaborate on wastewater being the biggest problem.

Mr. Zimmerman responded that the water problem with water quality is stormwater, but the major problem with water quantity is the losses from withdrawals. He explained that we need to be aware of wastewater, drinking water, stormwater and groundwater and we can't think in silos anymore.

Mr. Hemmerlein asked, from a public investment point of view, where is the cost benefit. He explained there are irreducible concentrations and magnitudes of difference between stormwater and wastewater. He asked how we can craft regulations to overcome the problem.

Mr. Zimmerman responded that the only way we're going to change anything is to show that it works economically. He gave an example of a town that gets its water from three wells that are very far from where people live. The entire town is on septic systems and the town is having budget problems. They are looking at doing "smart sewering" where instead of sewering the entire town, they only sewer the downtown. The WWTF is sized for two times the sewered area and the property taxes on those properties go up. They are able to use federal district incremental financing to sewer the downtown area.

Commissioner Burack asked if Mr. Zimmerman thinks this approach is better than directly addressing stormwater.

Mr. Zimmerman responded no, that he thinks this approach goes together with addressing stormwater.

Dr. Roseen asked what portion of the pollution in the Charles River Watershed is from point sources and what portion is due to nonpoint sources.

Mr. Zimmerman responded that 17% are due to point sources and the rest are due to nonpoint sources.

Dr. Roseen asked Mr. Zimmerman if he thought they would have made such progress without the RDA or TMDL. He stated that New Hampshire doesn't have either and that the Commission needs to identify motivation factors for improving stormwater.

Mr. Zimmerman responded that TMDLs are very useful if they address the cause of the problem and if the TMDL asks the right questions. He explained that TMDLs often ask the wrong questions. He stated that he is confident about the Charles River Watershed TMDL because it is watershed based. He stated that TMDLs need to look at all the sources. He also explained that a TMDL does not require EPA of DES to do anything to implement it, although the new MA NPDES permit does link to TMDLs.

Mr. Zimmerman explained that he wants to look at the potential of using impervious cover as a surrogate.

Dr. Kahl agreed that impervious cover could be used as a surrogate.

Chairperson Cedarholm asked how many of the communities involved in the RDA are not MS4 communities or have a WWTF.

Mr. Zimmerman responded that Bellingham is the only community that is not an MS4, but it still has a large urbanized area.

Chairperson Cedarholm stated that there are only 28 MS4 communities in New Hampshire and that it is difficult for communities that are not subject to the MS4 permit or that do not have a WWTF to understand the RDA.

Mr. Zimmerman explained that there was a major break in a water line over the weekend in Boston and 2.5 million people in the area were on boil order. He explained that he was in Cape Cod, an area not affected by the pipe break or the boil order, yet the bottled water was gone from all the grocery stores. He stated that people do not know where water comes from or where it goes. He added that you need to state that case and make the link between water and the environment.

Rep. Spang explained that the Commission has been discussing a statewide stormwater utility, but that she heard him say that utilities do not work.

Mr. Zimmerman clarified that they can work, but they need to be impervious cover based. He stated that a municipality alone will not be able to remediate stormwater and he thinks that a stormwater utility would be more successful if it were run by something larger than a municipality. He explained that a utility could be used as the regional trading association that oversees the software, trading, and acts as a knowledge and data manager to get the right BMPs in place.

Rep. Spang stated that she is skeptical about stormwater utilities because people would perceive it as a property tax. She asked how to get around that.

Mr. Zimmerman responded that he does not have an answer, but stated that in the end, taxes pay for things and people like clean water. He added that we do not have a choice because we are in an environmental transition and we need to do something now. He suggested hiring an on-staff economist to understand what we're already spending on water and stormwater.

Mr. P. Currier suggested that if New Hampshire had a statewide stormwater permitting process in place, they might not need and RDA.

Mr. Zimmerman agreed and stated that Massachusetts had looked at a statewide process but got cold feet. He suggested that watersheds could be used as a trading level for a statewide program and added that a statewide law on a watershed basis sets up watershed-based issues. He stated that a statewide process would be a lot more effective than town to town.

Dr. Kahl stated that this would allow New Hampshire to beat the TMDL and hopefully prevent the state from needing one. He added that it might be perceived as a property tax, but there are incentives to reduce the fee.

Mr. Hemmerlein asked what the unintended consequences are.

Mr. Zimmerman stated that he does not know what the consequences are, but he does know that if we do not make changes, it will only get worse.

Dr. Roseen asked what Mr. Zimmerman thinks the business implications will be because of the more stringent requirements in the three pilot towns.

Mr. Zimmerman responded that some of the people will leave, depending on the business, but some of the flight will be avoided by telling them that in 18 months the requirements will be on everyone.

IV. PROPOSED LEGISLATIVE LANGUAGE DISCUSSION – CONTIUATION FROM MARCH 1, 2010 MEETING

Postponed to June 2010 meeting.

Mr. P. Currier suggested putting together an outline on how a statewide stormwater permit process and utility might work. He explained that he does not want to work on legislative language until they work these concepts out more. He offered to send out what he has put together to the Commission.

Dr. Kahl asked if the Commission is looking for a statewide applicable law that establishes districts to administer it.

Mr. Hemmerlein asked where the new law would go.

Mr. P. Currier responded that the permit could go with the wastewater statutes and that the utility could go in RSA 485-A instead of requiring a new chapter and could build on the existing stormwater utility statute.

Dr. Roseen asked if they could wrap in the use of the Southeast Watershed Alliance as a regional utility.

V. FUTURE MEETING DATES AND TOPICS

Rep. Spang mentioned the joint meeting of the Stormwater, Land Use, and Infrastructure Commissions to be held at DES on May 24th. She explained that each Commission will be reporting on how they are progressing and will outline key topics, followed by conversation to share ideas among the Commissions. She asked for ideas on what to present.

Commissioner Burack explained that the Infrastructure Sustainability Funding Commission has not been able to put a dollar amount on stormwater. He explained that the meeting should focus on what each Commission has learned, what the key elements are that they are working on, and how does it fit together with the other Commissions. He added that we need to think about how the pieces fit together.

Dr. Kahl suggested that impervious cover is a potential integrating factor between all of the Commissions. He added that impervious cover is measurable and that it ties in with the climate change piece.

Rep. Spang stated that representatives from the Groundwater Commission and the Great Bay Sediment Commission will also attend the joint meeting. She

suggested that the Commission Chairs, Commissioner Burack, Mr. P. Currier, and Ms. McCarthy meet to plan the agenda for the joint meeting.

Ms. Manzelli asked for an update on the Commission of Commissions.
Rep. Spang responded that that the Stormwater Commission expires and the Commission on Commissions is deciding what other Commissions should be terminated.

Date	Time	Location
May 24, 2010	9:00 AM – 1:00 PM	DES 111-114
June 7, 2010	1:00 PM – 3:00 PM	LOB 305*
June 28, 2010(tentative)	1:00 PM – 3:00 PM	LOB 305*
August 2, 2010	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VI. ADJOURNMENT

The meeting adjourned at 3:26pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

June 7, 2010 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
L. Mike Kappler	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Robert Roseen	University of New Hampshire Stormwater Center
Michael Trainque	American Council of Engineering Companies
Mark Hemmerlein	NH Department of Transportation
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Steve Kahl	NH Lakes Association
Amy Manzelli	Business and Industry Association of NH
Donald Sienkiewicz	Home Builders and Remodelers Association

Members Absent:

Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Joe Robertie	NH Timber Owners Association
Josh Cline	NH Rivers Council
Dave Danielson	NH Association of Regional Planning Commissions
Newb LeRoy	Associated General Contractors of NH
Dari Sassan	NH Office of Energy and Planning
Rep. David Borden	NH House of Representatives

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:

Thomas Burack	Commissioner, NH DES
Susan Olsen	NH Local Government Center
Eric Williams	NH Dept. of Environmental Services
Rene Pelletier	NHDES Dept. of Environmental Services

I. CALL TO ORDER

Rep. Spang called the meeting to order at 1:08pm.

II. APPROVAL OF MINUTES

Rep. Kappler made a motion to approve the minutes from the May 3, 2010 meeting. **Mr. Trainque** seconded the motion. **All approved and none opposed.**

III. SUMMARY OF JOINT COMMISSIONS MEETING – MAY 24, 2010

Commissioners who attended the joint meeting stated that it was very useful and there were a handful of common themes between all of the Commissions including the need to explore a regional or watershed approach and the need for funding options outside of the state general fund. The Infrastructure Funding Commission requested that the Stormwater Commission come up with an estimate of the cost to manage stormwater.

Rep. Spang read through the list of gaps that were identified at the joint meeting including:

- *The link between infrastructure and land use patterns, and smart growth and sprawl* -. **Dr. Kahl** suggested that the Commissions review the Climate Change Action Plan.
- *Wildlife* - **Dr. Roseen** suggested the UNH Stormwater Center's thermal impacts to coldwater fisheries research could provide useful information. **Ms. Manzelli** suggested that the Commission addressed wildlife implicitly by addressing water quality and quantity concerns.
- *Baseline Statewide Minimums* – **Rep. Spang** informed the Commission that she, Eric Williams, and Rene Pelletier will be meeting with the Regional Planning Commission directors later in the week to and asked the Commission for good ideas to present to the directors.

  The Commission discussed how a regional or watershed approach to stormwater management is an equitable approach that captures both urban and rural properties and levels the playing field. It was suggested that it regardless of whether someone lives in the city or the country, the majority of people still work, travel, contribute to, and benefit from these economic centers.

  Dr. Roseen stated that the watershed approach is a unifying theme between all of the Commissions and added that the principal failing of the National Pollutant Discharge Elimination System (NPDES) permitting program was that it was not at a watershed scale. He stated that Watershed Management Districts, similar to the Southeast Watershed Alliance (SWA) include everyone in the watershed. **Ms. Manzelli** suggested that the Commission persist in their plan to link fees with impervious cover because it is equitable for urban and rural properties.

  Mr. Hemmerlein stated that every new house lot adds a car to the road. He stated that roads are very sensitive to sprawl and explained that a 20% - 25% increase in impervious cover really impacts transportation infrastructure. He stated that there is a conflict between rural highways and mass transit and statewide regulations. He asked how a highway can be expanded without increasing impervious cover. **Dr. Roseen** asked if it's possible to have traffic congestion without creating a safety problem.

The Commission discussed the issue of sprawl and the lack of a rural economy in NH, which contributes to sprawl, as well as how smart growth is in conflict with "rural New Hampshire". The Commission suggested that the issues of sprawl and smart growth should be addressed by the Land Use Commission and that they should make sure not to make any recommendations or draft legislation that would encourage sprawl.

Chairperson Cedarholm suggested looking at baseline statewide minimums for stormwater management through a model ordinance at the next meeting and reviewing Durham's draft regulations and New London's stormwater ordinance as starting points.

- *Funding* – The Commission discussed the idea of a statewide stormwater utility and how it could meet the stormwater funding needs.
- *Stormwater Impacts on Groundwater Quality* – The Commission decided not to address groundwater because there is a state Source Water Protection Program with tools in place to address groundwater issues.
- *Smart Growth/Sprawl* –The Commission suggested that this is a topic for the Land Use Commission. **Mr. Pelletier** explained that the Land Use Commission has been looking at wetland setbacks and sprawl issues related to development in NH uplands. He stated that NH has decided, through the Shoreland Protection Act, that you need a 50 foot Shoreland buffer and that impervious cover should be limited to 30%, but there is not control over the big picture issues such as the type and location of development on the landscape. He added that there needs to be a paradigm shift and that most people come to NH specifically to sprawl.

Commissioner Burack suggested tying together the concepts of buffers, BMPs, impervious cover, and managing stormwater to fit all of the different pieces together. He stated that there is a need to define the water quality BMPs associated with a potential stormwater utility or ordinance. He requested that the Commission consider a flexible structure that will consider the varying issues between watersheds, in particular rural and urban watersheds. He also asked the Commission to research the costs associated with managing stormwater in New Hampshire to provide to the Infrastructure Commission and suggested using the Clean Water Needs Assessment as a starting point.

Dr. Roseen responded that within the context of the statewide stormwater utility concept, the case needs to be made for the benefits of municipal utilities. He suggested making the case on a site-by-site basis to get passed the argument that it is too expensive. **Ms. Manzelli** asked if there is information on avoided costs, such as flood repair and water quality restoration, with better stormwater management.

Mr. Williams explained the rubber ducky campaign done in the state of Maine to raise public awareness on stormwater and nonpoint source pollution that gathered

data on public behavior. **Dr. Roseen** suggested that New Hampshire will need an information/education campaign.

Dr. Roseen suggested reconvening the funding subcommittee. **Commissioner Burack** offered DES's assistance. **Mr. Trainque** stated that there may be complications with developing a statewide or watershed wide stormwater utility without knowing the associated costs. He explained that municipal costs are much better defined in order to set a fee and that a bigger area would be very difficult to establish a fee. **Mr. Hemmerlein** suggested using the cost analysis from the EPA draft MS4 permit to help estimate costs.

Rep. Spang stated that the Commission has not discussed the municipal and statewide practices such as the frequency of catch basin cleaning. She stated that roadway maintenance may have a big impact on stormwater and asked if municipalities should be let off the hook. **Rep. Kappler** responded that if the towns are not required to do something, they will not do it. **Mr. Hemmerlein** responded that at the state level, there would have to be funds available. He added that the state is not regulated to conduct stormwater maintenance. **Chairperson Cedarholm** suggested that a watershed approach would work well with established minimum BMPs. **Ms. Ebel** stated that it needs to be clear that municipalities are subject to the stormwater requirements.

Dr. Roseen stated that the recommendations the Commission is discussing achieve creating greater uniformity in stormwater management. **Ms. Ebel** stated that ordinances do not apply to municipalities because they are exempt from their own zoning laws. **Dr. Roseen** suggested that the Commission recommend updating the rainfall runoff data.

IV. PROPOSED LEGISLATIVE LANGUAGE DISCUSSION – CONTIUATION FROM APRIL 5, 2010 MEETING

Postponed until June meeting.

V. OTHER BUSINESS/FUTURE MEETING DATES AND TOPICS

The next meeting was scheduled for June 29th at 1:00 PM

Date	Time	Location
June 28, 2010	1:00 PM – 3:00 PM	LOB 305*
July TBD	1:00 PM – 3:00 PM	LOB 305*
August 2, 2010	1:00 PM – 3:00 PM	LOB 305*
September 6, 2010	1:00 PM – 3:00 PM	LOB 305*
October 4, 2010	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VI. ADJOURNMENT

The meeting adjourned at 2:59pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

June 28, 2010 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
L. Mike Kappler	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Robert Roseen	University of New Hampshire Stormwater Center
Michael Trainque	American Council of Engineering Companies
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Steve Kahl	NH Lakes Association
Dave Danielson	NH Association of Regional Planning Commissions
Dari Sassan	NH Office of Energy and Planning
Newb LeRoy	Associated General Contractors of NH

Members Absent:

Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Joe Robertie	NH Timber Owners Association
Josh Cline	NH Rivers Council
David Borden	NH House of Representatives
Amy Manzelli	Business and Industry Association of NH
Donald Sienkiewicz	Home Builders and Remodelers Association
Mark Hemmerlein	NH Department of Transportation

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:

Thomas Burack	Commissioner, NH DES
Eric Williams	NH Dept. of Environmental Services
Rene Pelletier	NHDES Dept. of Environmental Services

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:10pm.

II. APPROVAL OF MINUTES

Rep. Kappler made a motion to approve the minutes from the June 7, 2010 meeting. **Mr. Trainque** seconded the motion. **All approved and none opposed.**

III. BASELINE STATEWIDE MINIMUM STORMWATER REQUIREMENTS

The Commission discussed the Durham site plan review regulations that incorporate many of the components of the DES Innovative Land Use Guide's Post Construction Stormwater Model Ordinance.

Chairperson Cedarholm explained that Durham used performance standards as minimum requirements in order to give flexibility to designers. He stated that developments are required to maintain stormwater practices with a third party review or they can file an annual report. He explained that if a party fails to maintain the practices, the town can step in, make repairs, and charge the owner for it.

Ms. Ebel explained that the town of New London incorporated LID provisions into their site plan review regulations and subdivision regulations. She explained that, as an incentive, a developer using LID on their site may be allowed to do things they normally would not. She explained that the subdivision and site plan review regulations were adopted by the planning board and so they never went before the town. She added that they still do not have the authority under these regulations to regulate individual lots. She also explained that they tried to incorporate a 10% effective impervious cover limit, but there was resistance to that on individual lots.

The Commissioners agreed to still consider a statewide model ordinance.

Chairperson Cedarholm suggested that the DES model ordinance in the Innovative Land Use Guide be used as a starting point to propose updates. He also suggested looking at Durham, New London, and New Durham to see how the language from the model ordinance has actually been used by the towns. He added that the Commission needs to decide if this is to be a Commission work product or if they will recommend that DES or OEP update the model ordinance.

Mr. P. Currier asked if it is possible to put performance standards into municipal regulations to get at existing development. He then asked if a municipal ordinance included a performance specification that said do not dump snow on a neighbor's property, if that could be enforced through a zoning ordinance on an existing property.

Chairperson Cedarholm responded that performance standards for existing development cannot be implemented through municipal regulations and that it might be possible to send a code officer out to enforce a zoning ordinance.

Mr. P. Currier agreed to put together an outline for the statewide stormwater ordinance and the statewide stormwater permit for the August meeting.

IV. WATERSHED APPROACH

The Commission discussed the need for a watershed approach to implementing a statewide stormwater discharge permit. They suggested dividing the state into six or seven large watershed areas and having the Southeast Watershed Alliance be a platform to pilot the approach. It was suggested that legislation for the statewide stormwater discharge permit could be written similar to instream flow to provide

a pilot and have a review after the pilot period. The legislation would including making rules for the stormwater discharge permit. They also discussed the possibility of the discharge permit being phased in over time and could start with the issuance of a general permit. It was suggested that implementation begin with the small MS4 communities to assist meeting their permit requiremetns and watersheds that are impaired due to stormwater. The general permit could then be refined by watershed or categories of properties. It was suggested that the Commission review the three pilot TMDLs that were developed under EPA's residual designation authority for the Charles River Watershed to determine if there are applicable elements.

They discussed the challenge of getting all of the towns in the watershed to participate because the SWA is currently voluntary. It was suggested that each town get a load allocation that, as an incentive, they would be able to trade if they participated. It was proposed that the discharge permit would be separate from the Alteration of Terrain permit and would go out to individual property owners, unless a utility was formed, in order to achieve the purpose of each property owner being responsible for their own runoff. It was suggested that the permits could be based on impervious cover and best management practices with the option for trading and could specify performance standards to be achieved through implementation of best management practices with instructions for homeowners to construct BMPs without having to hire a consultant. They briefly discussed ways that the regional planning Commissions could be involved.

The Commission discussed the challenges of homeowners having to pay to install BMPs or paying stormwater utility fees, particularly on a fixed income. The possibility of having a discharge permit without the stormwater utility was discussed and the Commission agreed that a stormwater discharge permit could exist without a stormwater utility, but in order for a stormwater program to be effective, the stormwater utility funding piece is necessary. The Commission agreed that in addition to the stormwater utility funding option, they should brainstorm other funding options such as a bottle tax.

They discussed that 28A would not be an issue because the burden is on the property owners and not the municipality; however, the municipality may choose to form a utility. It was noted that 28A does not apply if the state is passing through a federal regulation.

The Commission discussed the idea of the legislature creating watershed districts. **Mr. Joel Anderson** offered to research the possibility. **Ms. McCarthy** offered to distribute a recent document describing the watershed management districts in Florida for the Commission to review.

The Commission recapped that they would focus on the recommendations for a statewide stormwater utility, a statewide stormwater discharge permit, and a

statewide stormwater ordinance. They agreed to look at the existing DES model ordinance and examples of ordinances that municipalities have adopted.

V. OTHER BUSINESS/FUTURE MEETING DATES AND TOPICS

Chairperson Cedarholm stated that he will not be attending the August meeting and that Rep. Spang act as chair.

The Commission discussed the final report and agreed that a report from each subcommittee will be a chapter in the draft final report. **Rep. Spang** reminded the Commission that everything does not have to result in a recommendation. The final report can include the good ideas that the Commission has discussed and simply recommend that the state should consider it further. **Mr. P. Currier** added that the Commission would be successful if it resulted in legislation stating that property owners are responsible for their stormwater. He stated that it would be even more successful if the legislation directed DES to develop a statewide stormwater permit because it would be clear that the legislature wanted stormwater to be regulated and wanted DES involved.

The next meeting may be hosted at the Office of Energy and Planning conference room. **Mr. Sassan** will check room availability and confirm.

Date	Time	Location
August 2, 2010	1:00 PM – 3:00 PM	TBD
September 6, 2010	1:00 PM – 3:00 PM	LOB 305*
October 4, 2010	1:00 PM – 3:00 PM	LOB 305*

*NH Legislative Office Building, 33 North State Street, Concord, NH

VI. ADJOURNMENT

The meeting adjourned at 2:58pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

August 30, 2010 1:00 PM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
L. Mike Kappler	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Michael Trainque	American Council of Engineering Companies
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Steve Kahl	NH Lakes Association
Dave Danielson	NH Association of Regional Planning Commissions
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Department of Transportation
Amy Manzelli	Business and Industry Association of NH

Members Absent:

Chris Devine	NH Local Government Center
Sen. Jacalyn Cilley	NH Senate
Joe Robertie	NH Timber Owners Association
Josh Cline	NH Rivers Council
David Borden	NH House of Representatives
Donald Sienkiewicz	Home Builders and Remodelers Association
Robert Roseen	University of New Hampshire Stormwater Center
Dari Sassan	NH Office of Energy and Planning

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:
Others present, but did not sign in.

I. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:08pm. Introductions were made around the room.

II. SUBCOMMITTEE REPORTS

Regulatory Authority Subcommittee

Ms. Manzelli, chair of the Regulatory Authority Subcommittee reported on the progress of the subcommittee and referred the Commission to Paul Currier's memo dated August 30, 2010. **Ms. Manzelli** and **Mr. P. Currier** walked the Commission through the memo.

Ms. Manzelli stated that the subcommittee recommends that the Commission put forward the statewide stormwater utility option over the statewide permit option. The subcommittee suggested putting forward both recommendations, but stating in the report why they feel the utility option is superior.

The Commission discussed possible forestry and agriculture exemptions for the statewide utility and statewide permit options. **Ms. Manzelli** suggested that the final report outline the different options for exemptions and let the legislature decide.

The Commission discussed the need for public participation and provisions for a public review process with the statewide stormwater permit option. They also discussed the need for an appeals process with the stormwater utility option, as well as boundaries and restrictions on the way the money generated from utility and permit fees can be spent. **Ms. Manzelli** suggested that the Funding Subcommittee investigate the utility fee.

Mr. P. Currier stated that DES would want responsibility to develop minimum standards for either the utility or the permit option. He also stated that there would be a greater likelihood of obtaining federal funding to support the utility concept than the permit concept.

Mr. LeRoy recommended that the report should be very clear that the Commission recommends the utility concept over the permit concept. There was general agreeance by the Commissioners to present both the utility and the permit concepts, but to emphasize the Commissions recommendation for the utility concept over the permit concept.

Needs Subcommittee
Ms. McCarthy distributed the last work product of the Needs Subcommittee, which summarized all of the stormwater needs that had been identified by the Commission. She suggested that this be used as a basis for the needs chapter in the final report and that the Commissioners go through the document to determine if any of the needs have not been addressed by the recommendations presented by the Regulatory Authority Subcommittee. **Rep. Spang** suggested that if certain identified needs have not been met, it is simply stated that they were not met in the report, but that they are still needs that should be considered in the future.

Funding Subcommittee
Mr. Trainque gave a summary of the Funding Subcommittee's working document including the basis for utility fees and incentives for municipal utilities. The Commission discussed the need for revisions to the existing stormwater utility enabling legislation as well as the possibility of creating a stormwater mitigation fund, similar to wetlands mitigation, for new and redevelopment projects that do not meeting state regulations. **Mr. P. Currier** explained that

DES hit resistance in implementing antidegradation through the Alteration of Terrain program, but it might have a better chance if there was an in-lieu-fee that someone could pay if they could not comply.

The Commission discussed potential property owner resistance to paying a new stormwater utility fee to do the same thing they have always done. **Ms. Manzelli** stated that property owners may be eligible for pollution prevention tax credits for improved stormwater management.

III. FUTURE MEETING DATES

Date	Time	Location
Regulatory Authority Subcommittee September 15, 2010	9:30 AM – 11:30 AM	Gallery at Sulloway & Hollis, 29 School Street, Concord
Joint Regulatory Authority & Funding Subcommittees September 22, 2010	9:30 AM – 11:30 AM	LOB 305*
Full Commission October 4, 2010	9:30 AM – 12:30 PM	LOB 305*
Full Commission October 20, 2010	1:00 PM – 3:00 PM	LOB 305

*NH Legislative Office Building, 33 North State Street, Concord, NH

IV. ADJOURNMENT

The meeting adjourned at 3:04pm.

FINAL MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

October 4, 2010 9:30AM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
Michael Trainque	American Council of Engineering Companies
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Steve Kahl	NH Lakes Association
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Department of Transportation
Amy Manzelli	Business and Industry Association of NH
Robert Roseen	University of New Hampshire Stormwater Center
Chris Devine	NH Local Government Center

Members Absent:

Sen. Jacalyn Cilley	NH Senate
Joe Robertie	NH Timber Owners Association
Josh Cline	NH Rivers Council
David Borden	NH House of Representatives
Donald Sienkiewicz	Home Builders and Remodelers Association
Dari Sassan	NH Office of Energy and Planning
L. Mike Kappler	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Dave Danielson	NH Association of Regional Planning Commissions

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:
Others present, but did not sign in.

II. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:08pm. Introductions were made around the room.

III. APPROVAL OF MEETING MINUTES

Dr. Kahl made a motion to approve the minutes from the June 28, 2010 meeting. **Ms. Ebel** seconded the motion. **All approved and none opposed.**

Ms. Ebel noted that she was marked as present at the August 30, 2020 meeting, but was absent.**Dr. Kahl** made a motion to approve the minutes as amended from

the August 30, 2010 meeting. **Mr. Trainque** seconded the motion. **All approved and none opposed.**

IV. SUBCOMMITTEE REPORTS

Regulatory Authority Subcommittee

Ms. Manzelli, subcommittee chair, summarized the recommendations covered at the last full Commission meeting and presented the remaining two recommendations that the subcommittee is putting forward; enabling municipal authority to manage stormwater and amending the existing stormwater utility legislation in RSA 149-I.

Ms. Manzelli explained that the subcommittee recommends legislation to specify that municipalities may choose whether or not to regulate stormwater. If they choose to regulate stormwater, they must do so in accordance with a model ordinance to be developed by the Department of Environmental Services. The subcommittee specified that the enabling legislation should identify areas where the model is flexible and provide guidance on those areas. They also discussed the idea of having minimum and maximum standards to achieve better uniformity.

It was discussed that, while this approach allows for communities regulated under the federal stormwater program to comply with their permit and is a good step toward a statewide requirement, it does not achieve the end goal that the Commission is looking for and it would still allow other municipalities to do nothing. It was proposed that municipalities be required to regulate stormwater instead of having the choice to. They then discussed the 28-A issue associated with requiring municipalities to regulate stormwater in accordance with minimum standards. They discussed how some municipalities put their guard up when the state tells them they have to do something, but others welcome such specific guidance from the state because it means they do not have to spend their limited budget and time on figuring out how to comply with a less specific state regulation.

Ms. Ebel reminded the Commission that they have been studying this for two years and that they know what needs to be recommended in order to improve the stormwater problem. She suggested that the Commission make the recommendations that they believe will make a difference and let the legislative process work through it.

It was suggested, at a minimum and to avoid the 28-A issue, that municipalities be enabled to regulate stormwater. Representatives from the business community stated that they would be opposed to a recommendation that would give authority with no guidelines or specifications because it would not achieve the uniformity they are looking for.

The Commission discussed the possibility of including an exemption to the requirement for municipalities that already have good stormwater regulations that are consistent with the minimum standards developed by DES.

Chairperson Cedarholm asked if there were examples in statute that say if a municipality chooses to regulate something, they must meet minimum standards. The Commission generally agreed that the fire code, building code, energy code, and even wetland and shoreland regulations are examples. It was suggested that instead of developing a model ordinance, that a stormwater code be developed by DES and a group of stakeholders. Along with the code, it was suggested that example ordinances and regulations be developed to show municipalities how they might incorporate the stormwater code into their regulations.

Mr. Trainque stated that the states of Florida, Delaware, and Maryland already have minimum standards established for stormwater. It was also suggested that standards in Rhode Island and Vermont be reviewed.

There was not consensus, but the majority of the Commissioners generally agreed that the recommendation should be to require municipalities to adopt a minimum stormwater code, to be developed by DES and stakeholders, with example ordinances, and that the legislature would specify the elements that the minimum code needs to include, such as groundwater recharge, minimum standards for water quality, conveyance and channel protection, flood protection, and others.

The Commission discussed the need to amend the existing stormwater utility legislation in RSA 149-I, but generally agreed that there is no time remaining to make specific recommendations beyond those made by Mike Trainque and submitted to the Commission for consideration. It was generally agreed that the subcommittee would include amendments to RSA 149-I in their subcommittee recommendations, identify that they did not have sufficient time to make specific recommendations, and include Mr. Trainque's comments.

Ms. Manzelli stated that she will be putting together the Regulatory Authority Subcommittee's draft final report section and sending it out to the Commission for comment by mid-week and a final vote on the recommendations will be taken by the Commission at the October 20th meeting.

Funding Subcommittee
Mr. Trainque summarized the work of the Funding Subcommittee. He explained that, using the 2008 Clean Water Needs Survey and the work of Mr. Eric Williams from DES, they have an estimate of the costs associated with managing stormwater in the state, but they feel the estimate is low at $181 million. **Mr. Hemmerlein** stated that DOT has cost data that shows costs at roughly $50,000 per acre and will get the data to the Funding Subcommittee to include in the report. **Dr. Roseen** added that UNH is wrapping up a study with

seven case studies of retrofits and municipal projects with actual costs and savings for innovative stormwater management that he will get for the subcommittee.

The Commission discussed that the report needs to explain that the costs of managing stormwater is enormous and that an additional source of funding, such as the utility concept being recommended, is necessary. **Chairperson Cedarholm** suggested that the Commission needs to see the outcome of the stormwater utility feasibility studies occurring in Dover, Portsmouth, and Nashua. **Ms. McCarthy** informed the Commission that the feasibility studies are not scheduled to be completed until December 2011 and that they are having some difficulties. She explained that the purpose of the feasibility studies are not to determine whether or not stormwater utilities will work, because there are hundreds of working utilities around the country that prove that they work. She stated that right now, the biggest lesson that can be learned from the feasibility studies going on in New Hampshire is that it can take a very long time and there are many barriers to a municipality trying to adopt a stormwater utility on their own. She explained that the current feasibility studies are looking at the existing municipal stormwater program and costs to run it, the ideal, future stormwater program and costs to run it, the fee that would be necessary per acre impervious or per equivalent residential unit, possible incentives, and whether or not the fee and incentives are feasible to the public.

The chairs of the funding and regulatory authority subcommittees agreed to get their final report sections to Ms. McCarthy by Wednesday October 13th in order to compile the report and send it to the full Commission for review on October 15th.

V. OTHER BUSINESS

The Commission discussed preparing for the Joint Commission meeting at DES on October 6th. The Chairs of the funding and regulatory authority subcommittees agreed to send bulleted summaries of their findings and recommendations to Ms. McCarthy to include in a summary document for the meeting.

VI. FUTURE MEETING DATES

Date	Time	Location
Full Commission October 20, 2010	1:00 PM – 3:00 PM	LOB 305

*NH Legislative Office Building, 33 North State Street, Concord, NH

VII. ADJOURNMENT

The meeting adjourned at 12:25pm.

DRAFT MINUTESHB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

October 20, 2010 9:30AM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:	
Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
Michael Trainque	American Council of Engineering Companies
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Newb LeRoy	Associated General Contractors of NH
Amy Manzelli	Business and Industry Association of NH
Robert Roseen	University of New Hampshire Stormwater Center
L. Mike Kappler	NH House of Representatives
Dari Sassan	NH Office of Energy and Planning
Paul Currier	NH Department of Environmental Services

Members Absent:	
Sen. Jacalyn Cilley	NH Senate
Joe Robertie	NH Timber Owners Association
Josh Cline	NH Rivers Council
David Borden	NH House of Representatives
Donald Sienkiewicz	Home Builders and Remodelers Association
Dave Danielson	NH Association of Regional Planning Commissions
Steve Kahl	NH Lakes Association
Mark Hemmerlein	NH Department of Transportation
Chris Devine	NH Local Government Center

Commission Staff Present:	
Jillian McCarthy	NH Department of Environmental Services
Attendees:	
Susan Olsen	New Hampshire Municipal Association
Henry Veilleux	SPCG

VIII. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:05pm. Introductions were made around the room.

IX. APPROVAL OF MEETING MINUTES

Rep. Spang made a motion to approve the minutes from the October 4, 2010 meeting. **Dr. Roseen** seconded the motion. **Chairperson Cedarholm** requested that the word "agreed" throughout the text of the minutes be replaced with "generally agreed" because "agreed" gives the impression that a vote was taken.

All approved the minutes as amended, none opposed, and Rep. Kappler abstained.

X. FINAL REPORT DISCUSSION

Regulatory Authority Subcommittee

Ms. Manzelli, subcommittee chair, explained that she would be putting together the subcommittee final report from the two working documents of the Subcommittee, the draft subcommittee final report and the October 14, 2010 memo from Paul Currier. She stated that there were no updates from what was reported at the October 4th meeting. **Mr. P. Currier** noted that he had additional work to go on the proposed legislation to enable or require municipalities to regulate stormwater.

The Commission discussed how the Subcommittee reports are accepted by the Full Commission.

The Commission generally agreed that they would like to put the recommendations in a clearly visible place in the final report, but that there should not be redundancy between the Funding Subcommittee and Regulatory Subcommittee sections. It was decided that the Subcommittee reports would be included as appendices and that the Commission would decide which components of the Subcommittee reports to include in the final report.

The Commission discussed the sections, order of sections, and what each of the sections within the final report should contain.

Rep. Spang explained that there had been emails back and forth about possible extending the Commission, but that most members seemed opposed to the idea. She explained that she spoke to the Clerk of the House and was told that there was no reason that the formal Commission couldn't continue working on an ad-hoc basis, informally. She suggested that members of the Commission should form an ad-hoc group to work specifically on legislation.

The Commission generally agreed that they did not want to extend the Commission, but some members expressed willingness to continue working on legislation after the final report is submitted.

The Commission discussed scheduling and deadlines for drafting and commenting on the final report draft.

XI. FUTURE MEETING DATES

Date	Time	Location
Full Commission November 1, 2010	1:00 PM – 4:00 PM	LOB 305

*NH Legislative Office Building, 33 North State Street, Concord, NH

XII. ADJOURNMENT

The meeting adjourned at 3:15pm.

DRAFT MINUTES
HB 1295 COMMISSION TO STUDY THE ISSUE OF
STORMWATER MANAGEMENT

November 1, 2010 9:30AM
NH Legislative Office Building, Room 305, Concord, NH

Members Present:

Chair: David Cedarholm	NH Public Works Association
Vice Chair: Judith Spang	NH House of Representatives
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Newb LeRoy	Associated General Contractors of NH
Amy Manzelli	Business and Industry Association of NH
Robert Roseen	University of New Hampshire Stormwater Center
L. Mike Kappler	NH House of Representatives
Dari Sassan	NH Office of Energy and Planning
Paul Currier	NH Department of Environmental Services
Steve Kahl	NH Lakes Association
Mark Hemmerlein	NH Department of Transportation

Members Absent:

Sen. Jacalyn Cilley	NH Senate
Joe Robertie	NH Timber Owners Association
Josh Cline	NH Rivers Council
David Borden	NH House of Representatives
Donald Sienkiewicz	Home Builders and Remodelers Association
Dave Danielson	NH Association of Regional Planning Commissions
Chris Devine	NH Local Government Center
Michael Trainque	American Council of Engineering Companies

Commission Staff Present:

Jillian McCarthy	NH Department of Environmental Services

Attendees:

Susan Olsen	New Hampshire Municipal Association

XIII. CALL TO ORDER

Chairperson Cedarholm called the meeting to order at 1:03pm. Introductions were made around the room.

XIV. MEETING MINUTES

Chairperson Cedarholm explained that Ms. McCarthy will send out draft minutes from the October 20, 2010 meeting and today's meeting and that they will go into the final report appendices as "draft" documents.

XV. FINAL REPORT DISCUSSION

Chaiperson Cedarholm asked what would happen if the Commission did not address all of the comments at today's meeting. **Rep. Spang** responded that as long as they vote to approve the report at today's meeting, the report can be submitted later in the week.

The Commission generally agreed to work through the "hot" or "contested items" at today's meeting and to leave the editorial changes to Ms. McCarthy to address.

The Commission went through each outstanding issue in the final report draft and came to resolution. It was generally agreed that the Commission members approved of all of the concepts in the final report, but that they had not had sufficient time to thoroughly review the specific proposed legislative language for the Statewide Stormwater Utility Concept or the Municipal Authority to Regulate Stormwater concept. The Commission decided to move the proposed legislative language for both of these concepts from the main body of the report to appendices and to include clarification in the report that while they support the concepts, the language should be considered "concept draft legislation" and should be a starting point for development of legislation in the future.

Ms. Manzelli made motion to approve the final report but not the specifics of the draft legislative language contained in the appendices regarding stormwater utilities and enabling municipalities to regulate stormwater. **Mr. P. Currier** seconded the motion. **All approved and none opposed.**

XVI. ADJOURNMENT

The meeting adjourned at 3:45pm.

H2 – Regulatory Authority Subcommittee Meeting Notes

Meeting Dates
April 28, 2009
August 24, 2009
July 28, 2010
August 2, 2010
August 16, 2010
September 15, 2010

Stormwater Commission: Regulatory Authority Subcommittee Meeting Minutes
4/28/09, 3:30-4:30pm
In Attendance: Amy Manzelli, Newb Leroy, Donald Sienkiewicz, Paul Currier, Carl Paulsen
Meeting began with Carl Paulsen volunteering to act as secretary for the subcommittee. Chair Amy Manzelli opened discussion about subcommittee's goals. All agreed that the primary goal is to document current status of laws and policies relevant to stormwater at all levels of government, whether direct or indirect. These policies would then be overlain with the findings of the Needs Subcommittee to identify gaps in current policy. Subcommittee discussed some examples, such as the state authority to issue discharge permits under RSA 485-A:13. Paul Currier noted that his reading of this section suggests the state may not have authority to issue stormwater permits other than where they are considered point sources. Similarly, Alteration of Terrain permits address construction runoff issues but don't address longer-term stormwater runoff and maintenance of stormwater controls. Subcommittee also discussed the Multi-Sector General Permit. Subcommittee then conducted a brainstorm of policies as members understand them. Programs discussed include:

- MSGP (Multi-Sector General Permits)
- MS4 (Municipal Separate Storm Sewer System Permits)
- Site Plan Review, Subdivision Regulations, Public Health Ordinances
- Stormwater Utilities
- CGP (Construction General Permit)
- SWPPP (Stormwater Pollution Prevention Plans)
- SPCC (Spill Prevention Countermeasure and Control)
- §401 Certification
- Water Quality Standards/Antidegradation
- RSA 485-A:13 (Water Discharge Permits)
- Residual Designation Authority under Clean Water Act
- CSPA (Comprehensive Shoreland Protection Act, RSA 483-B)
- State Wetlands Laws (RSA 482-A) and Greenland Case, AG opinion, etc.
  - No authority to address runoff related fill or pollution under wetlands law
- Real Estate transfer disclosures – e.g. of site plan conditions related to stormwater such as maintenance of control measures

Additional Notes:

- Need to look at enforcement issues for each of these (e.g. what enforcement authority exists, and how well is it implemented?)
- Read Water Primer section on stormwater
- Take a look at Maryland and Lake Tahoe cases as regional stormwater model

Subcommittee agreed on the following work plan:

Amy Manzelli will link up specific materials that have been provided or referenced in the course of the Commission with each of the programs listed above. Then, for each of the programs listed above, she will solicit volunteers from the subcommittee to prepare a thorough and concise statement of the regulatory authority that exists for that program. (Of course, in the absence of volunteers, Amy Manzelli will designate members.) Those subcommittee members will then submit their write up to Amy Manzelli, who will

synthesize them all into one written document Amy Manzelli will circulate to the subcommittee for review and approval.

No further meetings have been set pending the subcommittee work session planned for 4 May 2009.

MINUTES
August 24, 2009
Regulatory Authority Subcommittee of the Stormwater Commission

PRESENT:
Amy Manzelli
Paul Currier
David Borden

AGENDA:
I. Complete summary of stormwater law
II. Discuss municipal authority to regulate stormwater

NOTES:

I. Complete summary of stormwater law

Reviewed, revised, and supplemented summary of stormwater law (updated copy attached and supporting documents forthcoming).

Agreed it was complete, subject to: (1) input from a subcommittee member; and (2) review and comment of full commission.

II. Discuss municipal authority to regulate stormwater

Discussed our understanding that the new federal General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems ("MS4 Permit") requires municipalities to enact local ordinance regulating stormwater.

Agreed that no clear authority under existing NH law for municipalities to do so.

Looked at 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" ("Williams Memo").

The Williams Memo lists the possible sources for such authority as follows:

A. "Towns may make bylaws for . . . [t]he collection, removal and destruction of garbage, snow and other waste materials" RSA 31:39, I(f);

B. "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;

C. "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]the 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;

D. "zoning ordinances shall be designed . . . to assure proper use of natural resources and other public requirements" RSA 674:17, I(h);

E. "Innovative land use controls may include . . . Environmental characteristics zoning" RSA 674:21, I(j);

F. "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;

G. "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

H. "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.

Discussed that municipalities have no authority to enact stormwater regulations, which is what they need to do to comply with MS4 Permit, without state enabling law.

Agreed we think that there is consensus among the Commission to propose such state enabling law.

Discussed whether best way to do so is to add another power in RSA 31:39, which lists the powers of cities and towns.

Discussed issue of authorizing all municipalities (not just those subject to new MS4 Permit) to regulate stormwater.

Agreed it would be too problematic to simply grant a blanket authorization to the municipalities for at least two reasons: (1) municipalities could do nothing, which would not help solve the stormwater problem; and (2) it would not create uniformity of regulation amongst the municipalities (i.e. some would enact while some would not, and those enacting would likely enact very different ordinances).

Discussed Maine approach to regulating shoreland (Maine enacted a statewide law that required municipalities to enact local ordinances regulating use of shoreland. Municipalities had a bit of flexibility in what they enacted. If they enacted nothing, they would get stuck with the model ordinance proposed in the state law.)

Agreed Maine approach may make sense in the context of stormwater in NH because it would achieve relative uniformity and ensure action, but do not feel there is consensus amongst the Commission on this point.

Somewhat of a model exists in NH law, which a member of the subcommittee will provide shortly.

To make such legislation palatable, suggested: (1) that the Maine approach would be better if Regional Planning Commissions got some money to help municipalities implement it; and (2) it should have a long lead time until when municipalities have to comply.

NEXT SUBCOMMITTEE MEETING:

We will set a date and time at the full commission meeting. We need more participation. We will continue discussion of regulating stormwater, including what ways other than the Maine approach we should consider, and discuss funding.

Meeting Notes

HB 1295 REGULATORY SUBCOMMMITTEE

July 28, 2010 9:30 – 11:30 AM
Sulloway & Hollis, Concord, NH

Members Present:

Amy Manzelli	Business and Industry Association of NH (Subcommittee Chair)
David Cedarholm	NH Public Works Association (Commission Chair)
Vice Chair: Judith Spang	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Robert Roseen	University of New Hampshire Stormwater Center
Karen Ebel	The Nature Conservancy
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Dpartment of Transportation
Jillian McCarthy	NH Department of Environmental Services (STAFF)

LEGISLATIVE CONCEPTS FOR STORWMATER PERMITS AND STATEWIDE STORMWATER UTILITY
The group discussed the first two items in the memo sent via email by Paul Currier to all Commission members on July 27, 2010.

I. DEFINITION OF STORMWATER
The group discussed whether the definition of stormwater proposed in the memo is too narrow, and if the last sentence, "Stormwater is not sewage, industrial waste, or other wastes" should be revised to include that stormwater could contain these things. It was decided that the sentence should remain as proposed because sewage, industrial waste, and other wastes are regulated under other programs. It was noted that with respect to some "other wastes", although DES is authorized to regulate it, it does not actually do so, for example, rainwater flowing over a parking lot and becoming contaminated with PCBs.

It was decided that the definition should be revised to be more consistent with the federal definition in 40 CFR 122.26(b)(13), and the following new definition was proposed:

"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 sewage, industrial waste, or other wastes.

Ms. Manzelli stated that New Hampshire is in a defensive position and trying to avoid EPA using residual designation authority (RDA) in the state. Being as consistent as possible with the federal language will show that New Hampshire is going in the right direction and may help avoid RDA.

II. PROPERTY OWNER'S RESPONSIBILITY FOR STORMWATER
The group discussed the ambiguity of the new language proposed under this section, specifically the wording, "significantly altered in such a manner as to impede the natural runoff or create an unnatural runoff".

It was decided that the ambiguous language could be removed and the following new language was proposed:

III-a. [or V.]An owner of property shall be responsible for the stormwater emanating from the property, and such stormwater shall not cause or contribute to a violation of surface water quality standards, including antidegradation.

The group discussed exemptions for agricultural operation and timber harvesting. They agreed that exemptions are not appropriate because, while agriculture and timber operations may have permit and other regulatory exemptions, it is still the intent of the proposed legislation that all property owners, including owners of agricultural and timber lands, are responsible for the runoff coming from their properties.

Ms. Manzelli suggested phasing in this piece of legislation to coincide with the development of the statewide stormwater utility or the statewide stormwater discharge permit to avoid the possibility of CLF or other groups suing DES for not enforcing the law. The group agreed to consider this.

WRAP-UP
Mr. P. Currier stated that there needs to be money for any of these ideas to work. He explained that the idea of the statewide stormwater permit will likely be a tough sell and so he suggested different options for that topic that were described in the memo.

Rep. Spang suggested that the subcommittee look at how all of the pieces relate to each other and determine which are inter-related. She stated that the primary objective of the Commission is to present what they know is the right thing in terms of protecting water quality and managing stormwater, but that they also have to craft recommendation and legislation that will be strong and allow the pieces to stand alone.

Ms. Manzelli recommended to Mr. Cedarholm [Commission chair] and Rep. Spang [Commission co-chair], that the full Commission meeting scheduled for Monday August 2, 2010 be used for subcommittee meetings for the Funding and the Regulatory Authority subcommittees. They agreed and Rep. Spang offered to send out a notice to all of the Commissioners notifying them of the change.

Ms. Manzelli suggested that the subcommittee pick up with the remaining items from the memo at the subcommittee meeting to replace the full Commission meeting on August 2nd.

MEETING ADJOURNED AT 11:30 AM

Meeting Notes

HB 1295 REGULATORY AUTHORITY SUBCOMMMITTEE

August 2, 2010 1:00 – 3:00PM
NH Office of Energy and Planning, Conference Room, Concord, NH

Members Present:

Amy Manzelli	Business and Industry Association of NH (Subcommittee Chair)
Rep. Judith Spang	NH House of Representatives
Rep. L. Mike Kappler	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Eber Currier	NH Farm Bureau
Michael Trainque	American Council of Engineering Companies
Dave Danielson	Association of Regional Planning Commissions
Karen Ebel	The Nature Conservancy
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Department of Transportation
Donald Sienkiewicz	NH Homebuilders and Remodelers Association.
Jillian McCarthy	NH Department of Environmental Services (STAFF)

The subcommittee discussed the following items from the memo sent via email by Paul Currier to all Commission members on July 27, 2010.

I. DEFINITION OF STORMWATER

The subcommittee briefly discussed the federal definition of stormwater and how it was incorporated into the proposed definition at the last subcommittee meeting. They decided to revise the proposed stormwater definition as follows:

"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 ***any substance that is regulated under*** *sewage, industrial waste, or other wastes.*

They also decided to remove the word "stormwater" from the definition of "other wastes" because stormwater is just something that happened whereas sewage and waste are things that are thrown out.

II. PROPERTY OWNER'S RESPONSIBILITY FOR STORMWATER

The subcommittee decided to remove the word "surface" from "surface water quality standards" in the proposed language. They discussed that there are some wetlands that are not surface waters and they want the proposed legislation to apply to those wetlands as well. **Mr. P. Currier** explained that there is an interim study Commission working on

HB 1305 that is looking at the definition of surface waters, waters of the state, and wetlands. They agreed to delete the word "surface" from the proposed language that that regardless of the outcome of HB 1305, the proposed legislation would still capture everything they intended.

The proposed language was changed as follows:

III-a. [or V.]An owner of property shall be responsible for the stormwater emanating from the property, and such stormwater shall not cause or contribute to a violation of ~~***surface***~~ *water quality standards, including antidegradation.*

III. & IV. STATEWIDE STORMWATER UTILITY/STATEWIDE STORMWATER DISCHARGE PERMIT

The subcommittee discussed the pros and cons of each the statewide stormwater utility and the stormwater discharge permit.

They discussed that a stormwater discharge permit would provide a parallel mechanism to sewage or waste (and the federal clean water act) that it is unlawful to discharge without a permit, however; there is currently no permit fee for sewage or waste discharge permits. There is also no state money being used to fund those permit programs. A statewide stormwater discharge permit would need start-up money and would likely need to have an associated fee otherwise the permit would not raise funds to support the program. The subcommittee discussed how permit applicants might see a stormwater permit as having to pay twice.

The subcommittee discussed that the statewide stormwater utility concept is based on the idea that everyone is responsible for the stormwater from their property with an incentive process for better stormwater management. Everyone would either pay a stormwater fee to the state or to a local utility for capital costs and the costs of operation and maintenance. They discussed that a utility would generate money where a stormwater permit might not. **Mr. P. Currier** suggested that the stormwater utility approach would allow the state to use existing enforcement authority of the water quality standards that an activity cannot cause or contribute to an impairment. They discussed that property owners may oppose the fee, but that they would have a choice of paying the fee or implementing best management practices on their property to reduce the fee.

Mr. P. Currier reminded everyone that without money, neither of the ideas is viable. **Ms. Manzelli** asked if federal money would be available and where the programs would be housed at the state. **Mr. P. Currier** responded that a stormwater discharge permit could be housed at DES, but the stormwater utility could be housed elsewhere. He brought up the possibility of a stormwater utility Commission to run it. He stated that there is no new federal funding, but that federal funding is a possibility. He added that municipalities can give SRF money to residents if they act as a broker.

Ms. Ebel asked why a property owner would install a $2,000 BMP on their property when their utility fee is only $100 per year. The subcommittee discussed that the incentive would have to be great enough to make it worthwhile.

Ms. Manzelli suggested the subcommittee focus on the details of the utility for the remainder of the meeting.

The subcommittee went through the general concepts of the utility:

- The purpose is that property owners are responsible for the stormwater that comes off of their properties.
- If there is no municipal or regional utility, a property owner would pay into the state utility.
- Municipalities could partner however they want, alone, two or more municipalities, or all municipalities in a watershed.
- A stormwater utility Commission could be established to oversee the utility and it could be based loosely on the structure of the Winnipesaukee River Basin Program.
- The 28A issue can be avoided because anyone can own property and the utility will apply to all property owners.

They agreed that there should be an option for a watershed utility and that the watershed scale should be defined. It was suggested that the existing enabling legislation for municipalities to work together be used to form watershed utilities. The subcommittee discussed whether it was appropriate for only municipalities within the same watershed to work together. When discussed municipalities that cross watershed boundaries, it was decided that the municipal boundary will likely trump the watershed boundary. They also discussed phasing utility in by watershed with language specifying that if the municipalities within a certain watershed have not formed a utility by a set date, they are subject to the state utility.

Mr. Danielson suggested looking at section 208 of the federal clean water act to see what it says about watershed management.

The subcommittee discussed start-up money. **Mr. P. Currier** suggested that it could take $250,000 per year (equivalent to two full time positions) to run the program. The subcommittee discussed the possibility of using the fees generated for start up costs and writing the legislation so that the funds could be used for staff and program administration. **Mr. P. Currier** responded that before fees can be collected, the properties need to be assessed in order to know what fee to charge, and they need to have a process in place to collect the fees. He added that the utility would need to be phased in, but they would need start up money first. He suggested that a smaller fee could be used for start up. **Ms. Ebel** stated that she spoke with the assessor in her town and they didn't think that it would be difficult to get the impervious surface of each property from the existing assessment data.

Ms. Manzelli suggested asking the funding subcommittee to research federal funding opportunities that might be available for start-up and what the start up costs for the program might be.

Mr. Danielson stated that it needs to be made clear to people that clean water is the ultimate goal. He explained that many people do not understand how their paved driveway contributes to a water quality problem and that connection needs to be made for them. **Mr. P. Currier** responded that DES has mapped the areas in the state that are contributing to water quality impairments and this could be a tool to help make the connection.

The subcommittee further discussed phasing in the utility and suggested beginning in watersheds with impaired waters and possibly the seacoast watershed because the southeast watershed alliance is already formed and because there is already a watershed wide requirements to limit nitrogen loading. **Mr. LeRoy** asked if the subcommittee also wants to focus on preventing new development from creating new impairments. The group agreed that this could be a future phase. **Rep. Spang** suggested that if there are municipalities in other parts of the state that want to form a utility, but that have not yet been phased into the program, they should be allowed to do so. **Mr. P. Currier** added that if there are private residents or developers who want to implement best management practices and better manage stormwater on their properties, they could get a certificate that says they improved their properties and will get a reduced fee when the fee comes.

The subcommittee agreed that the legislation should include the phase in concept, and the specifics could be worked out in rulemaking.

Ms. Manzelli asked what watershed would come after the seacoast if the seacoast is the first to be phased in. **Mr. P. Currier** suggested that they use the 305(b) water quality report to develop a priority list.

The subcommittee discussed the need for a large outreach program to go along with the utility concept and it was suggested that the RLAC's, the SWA, and other groups that already work on outreach activities be pulled in to help with outreach.

WRAP-UP
Because the LOB is unavailable for August, the subcommittee suggested that the next full committee meeting be on August 30th at 1:00PM at the Sulloway & Hollis School Street Office (29 School St. in Concord) and that the next subcommittee meeting by on August 16th at 9:00AM at the Sulloway & Hollis Capital Street building. The next subcommittee meeting will pick up with the utility conversation and the remainder of Mr. P. Currier's memo.

MEETING ADJOURNED AT 11:30 AM

Meeting Notes

HB 1295 REGULATORY AUTHORITY SUBCOMMMITTEE

August 16, 2010 9:00 – 11:00AM
Sulloway & Hollis, Conference Room, Concord, NH

ATTENDEES

Newb LeRoy	Associated General Contractors of NH
Eber Currier	NH Farm Bureau
Karen Ebel	The Nature Conservancy
Rep. Judith Spang	NH House of Representatives
Amy Manzelli – Subcommittee Chair	Business and Industry Association of NH
Paul Currier	NH DES
Donald Sienkiewicz	Home Builders and Remodelers Association
Jillian McCarthy	NH DES

Mr. P. Currier presented an updated version of his memo and explained that Gretchen Hamel from the DES legal office had reviewed it and commented on the language.

STATEWIDE STORMWATER UTILITY
The subcommittee recapped the stormwater utility concept. They discussed the following key components of the utility:

- Phasing in sections of the state in a way that makes sense, based on impairments or other quantifiable measure.
- Establishing watershed-based stormwater utility Commissions
    - To include all municipalities within the HUC 8 watershed – even municipalities that have their own stormwater utilities.
    - To set fees, collect and distribute funds for municipalities that do not have their own utility.
    - To allow for collaboration of all municipalities within the watershed.
    - Commissions could be given municipal status, which would allow them more power to receive grants, enter into contracts, levee taxes, and set fees, etc.
    - Allows for local control
- Distribution of funds would be within a HUC 8 watershed.

The subcommittee discussed whether agriculture and timber operations would be exempt. They decided to discuss the Nonpoint source pollutant loading from these land uses with Dr. Roseen and others to determine how much they contribute to water quality problems before deciding on exemptions. **Ms. Manzelli** suggested drafting the legislation with and without the exemptions and flagging it in the report for the legislature to decide on.

STATEWIDE STORMWATER PERMIT
The subcommittee reviewed the changes that Gretchen Hamel proposed to the draft language and decided to go with their original definition of stormwater and to remove the term "developed property".
The subcommittee noted that the language had been changed to exclude private residential properties from being responsible for the stormwater coming from their

properties. They decided it was not the intent of the Commission to exclude these properties and the decided to strike that language.

Mr. P. Currier explained that the permit concept could be phased in similar to the utility concept. The subcommittee discussed the idea of a permit fee and how the fee would be established. **Mr. P. Currier** explained that fees are usually established in statute, but that he thinks a fee for permits is a show stopper, unlike a utility where there is an option to do better stormwater management and reduce the fee.

Ms. Manzelli suggested including a fee provision in the final report, knowing that it could be a show stopper, and include an explanation that without a fee, the permitting concept will not work.

ENABLE MUNICIPALITIES TO REGULATE STORMWATER
The subcommittee discussed the need for municipalities to regulate stormwater and, in particular, for MS4 communities to be able to comply with their federal permit requirements. **Mr. Sienkiewicz** suggested that the draft legislation should specify that only MS4 communities can regulate stormwater. He emphasized that allowing all municipalities to regulate stormwater could lead to each municipality creating their own stormwater regulations and get away from the uniformity that the Commission was trying to achieve. **Ms. Ebel** responded that rural municipalities need to be enabled to regulate stormwater and they also need very good guidance on how to do so. The subcommittee discussed allowing MS4 communities the ability to manage stormwater to meet their permit requirements, and non-MS4 communities to regulate stormwater through adoption of an ordinance with minimum requirements to be set by the state. They also discussed a need to create incentives for non-MS4 municipalities to adopt ordinances. They agreed that this idea needs further discussion.

NEXT REGULATORY AUTHORITY SUBCOMMITTEE MEETING
The Subcommittee set the next meeting for Wednesday September 15, 2010 at 9:30AM at Sulloway and Hollis on Capital Street in Concord.

Meeting Notes

HB 1295 REGULATORY AUTHORITY SUBCOMMMITTEE

September 15, 2010 9:30 AM – 11:30 AM
NH Office of Energy and Planning, Conference Room, Concord, NH

Members Present:

Amy Manzelli	Business and Industry Association of NH (Subcommittee Chair)
Rep. Judith Spang	NH House of Representatives
Paul Currier	NH Department of Environmental Services
Karen Ebel	The Nature Conservancy
Newb LeRoy	Associated General Contractors of NH
Mark Hemmerlein	NH Department of Transportation
Donald Sienkiewicz	NH Homebuilders and Remodelers Association.
Dave Cedarholm	NH Public Works Association
Robert Roseen	University of New Hampshire Stormwater Center
Jillian McCarthy	NH Department of Environmental Services (STAFF)
Henry Velleux	Public

The subcommittee discussed the following items from the draft memo developed by Paul Currier and revised on 8/30/2010.

I. ENABLE MUNICIPALITIES TO MANAGE STORMWATER WITH OR WITHOUT A UTILITY (Item V. of the draft memo).

The subcommittee discussed the need for clear authority for MS4 communities to regulate stormwater and the need for other communities to be able to regulate stormwater while maintaining uniformity in the way that stormwater is regulated from town to town. They discussed that the language, as drafted in the memo, would not promote uniformity and would likely result in large variability in municipal stormwater regulations. They discussed the option of specifically enabling municipalities to regulate stormwater and if they choose to, they would have to meet minimum, and potentially maximum, requirements to be established by DES. This would put a floor and a ceiling on potential requirements and improve uniformity. The subcommittee generally agreed that DES would be charged with developing the standards. It was suggested that they look at the federal requirements of EISA 438 as a starting point.

The subcommittee discussed whether the standards would be presented in a model ordinance or in elements to be adopted for site plan and subdivision review regulations. They discussed that an ordinance would capture smaller scales of development in addition to larger ones, as well as apply to existing development. It was recognized that ordinances are not one size fits all, but that they can identify the elements that are flexible and provide advice on them. It was also suggested that roads be included in the ordinance and that a timetable be given to DES to develop the standards, possibly within two years.

The subcommittee discussed the idea of requiring a stormwater audit upon the sale of a property, similar to MA title 5 requirements that at the sale of a house, property improvements must be made.

II. MODIFYING MUNICIPAL STORMWATER UTILITY LEGISLATION TO INTERFACE WITH STATEWIDE STORMWATER UTILITY (Item VI. Of the draft memo)

The subcommittee discussed Mike Trainque's recommendation for general improvements and how to blend the existing stormwater utility language in RSA 149:I with the new stormwater utility concept. It was suggested that his recommendation be included in the final report, but that there was no additional time to work this over further.

III. COMMENTS FROM FULL COMMISSION MEETING

The subcommittee addressed the following comments on the 8/3/2010 memo from the full Commission:

- They agreed that the stormwater permit option needs to include public participation and an appeals process. They will work this into the final language.
- They will recommend including maintaining or re-establishing buffers as a type of credit for the stormwater utility concept in order to encourage and provide an incentive for better buffers.
- The agreed that they need to define how the money generated from the stormwater utility fees should be used and suggested looking at hoe the solid waste funds are protected. They agreed that the state portion of the funds need to be protected from the general fund and that the municipal portions need to be protected from the municipal general funds.
- They agreed to further discuss how a state permit would interact with a federal permit and if both permits would be necessary.

Rep. Spang noted that the definition of stormwater needs to be made consistent throughout the memo.

Ms. Manzelli requested that there be no cross-referencing of the other proposed statutes in the memo so that each piece of proposed legislation stands alone.

Ms. Ebel requested that the final report include the recommendation that all municipalities develop and adopt bylaws to regulate stormwater pursuant to the DES model.

Dr. Roseen informed the subcommittee that, while significant progress has been made, he feels that the Commission is not where it needs to be and that they could have more specific recommendations.

Rep. Spang replied that DES could set up a group similar to the water quality standards advisory committee to work out more of the details or, the Commission could

bring forward legislation that would be retained over the summer and they could continue to work on it through RR&D.

Ms. Manzelli stated that she will send out the draft report chapter for the subcommittee and asked that comments be submitted prior to the October 4th Full Commission meeting.

MEETING ADJOURNED AT 11:30 AM

Appendix I – Presentations to HB 1295 Commission

COMPLETE LIST

Date	Presentation/Presenter
09/04/08	*Stormwater in New Hampshire* Paul Currier, PE, PG, and Jillian McCarthy, NH Department of Environmental Services
10/06/08	*Stormwater Management, Community Resiliency and Climate Change* Robert Roseen, Ph.D, P.E., Director of the UNH Stormwater Center
11/03/08	1. *The NH Water Primer and Stormwater Permitting at NHDES* Ted Diers, NH Department of Environmental Services
	2. *Water from the Hills: Preparing Our Communities for Change* Michael Simpson, Antioch University – New England
12/01/08	*Small MS4 General Permit* Barbara McMillan, NH Department of Environmental Services
01/05/09	1. *Stormwater Implications of the September 2008 Flood Commission Report* Steve Couture, NH HB648 Flood Commission
	2. *Summary of the Effects of Land Use on Water Quality, Aquatic Habitat and Biota* John Magee, NH Fish and Game Department
04/06/09	*Event Mean Concentrations and Land Use* Paul Currier, PE, PG, DES Watershed Management Bureau Administrator
07/07/09	*Stormwater Utilities* Eugene Forbes, PE, Hoyle, Tanner & Associates, Inc.
12/07/09	*Reducing Fluvial Erosion Hazards through Improved Stormwater Management* Shane Csiki, NH Geological Survey and Sally Soule, NH Department of Environmental Services

71:3 Duties. The commission shall study:

(a) The effects of stormwater and stormwater management on water quality, water supply and quantity, terrestrial and aquatic habitat, flooding, and drought hazards. [THIS PRESENTATION]

(b) The relationship between land use change and stormwater. [THIS PRESENTATION]

(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.

(f) The effects of climate change on stormwater and stormwater management.

Stormwater in New Hampshire

HB1295 Stormwater Commission Meeting
September 4, 2008
Concord, NH

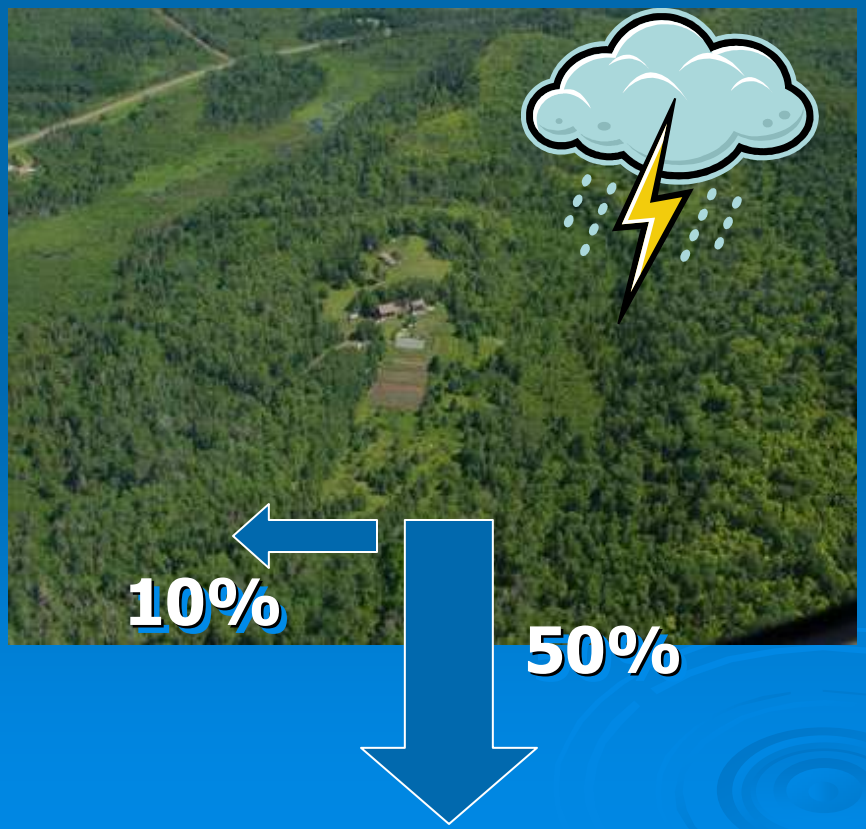
Thomas Burack
Commissioner
NH Dept of Environmental Services

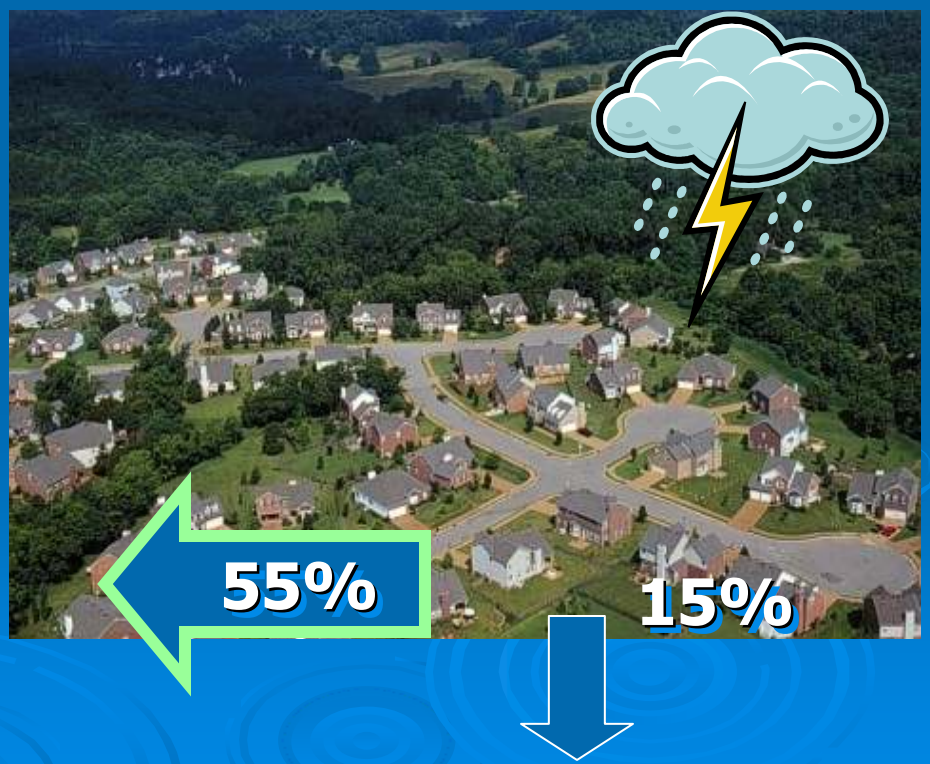
What is stormwater?

Stormwater is rainfall or snowmelt that runs over the land surface (runoff) to a surface water and does not infiltrate into the ground or return to the atmosphere.

Land development has a BIG impact on stormwater quantity and quality

More runoff & less infiltration
More pollutants in the runoff





Short Term vs. Long Term Stormwater Concerns

- Short Term – Construction Phase
  - Erosion & sediment control
  - Pollutants associated with sediment, construction debris
- Long Term – Post-Construction
  - Peak runoff & total volume controls
  - Pollutants associated with change in land use
    - Bacteria, Nitrogen, Phosphorus, Sediment, Copper, Lead, Zinc….

Impacts water quality and hydrology

- INCREASE in peak runoff volumes
- INCREASE in volume & velocity of runoff
- INCREASE in pollutants reaching surface waters
- DECREASE in groundwater recharge
- CHANGE in hydrology

Impact on Water Quality

- Increased nutrient loading
  - Nuisance and toxic algae b
  - Rapid eutrophication (agin
  - Low Dissolved Oxygen
- High turbidity
- Increased bacteria loading
  - Public beach advisories
  - Shellfish bed closures

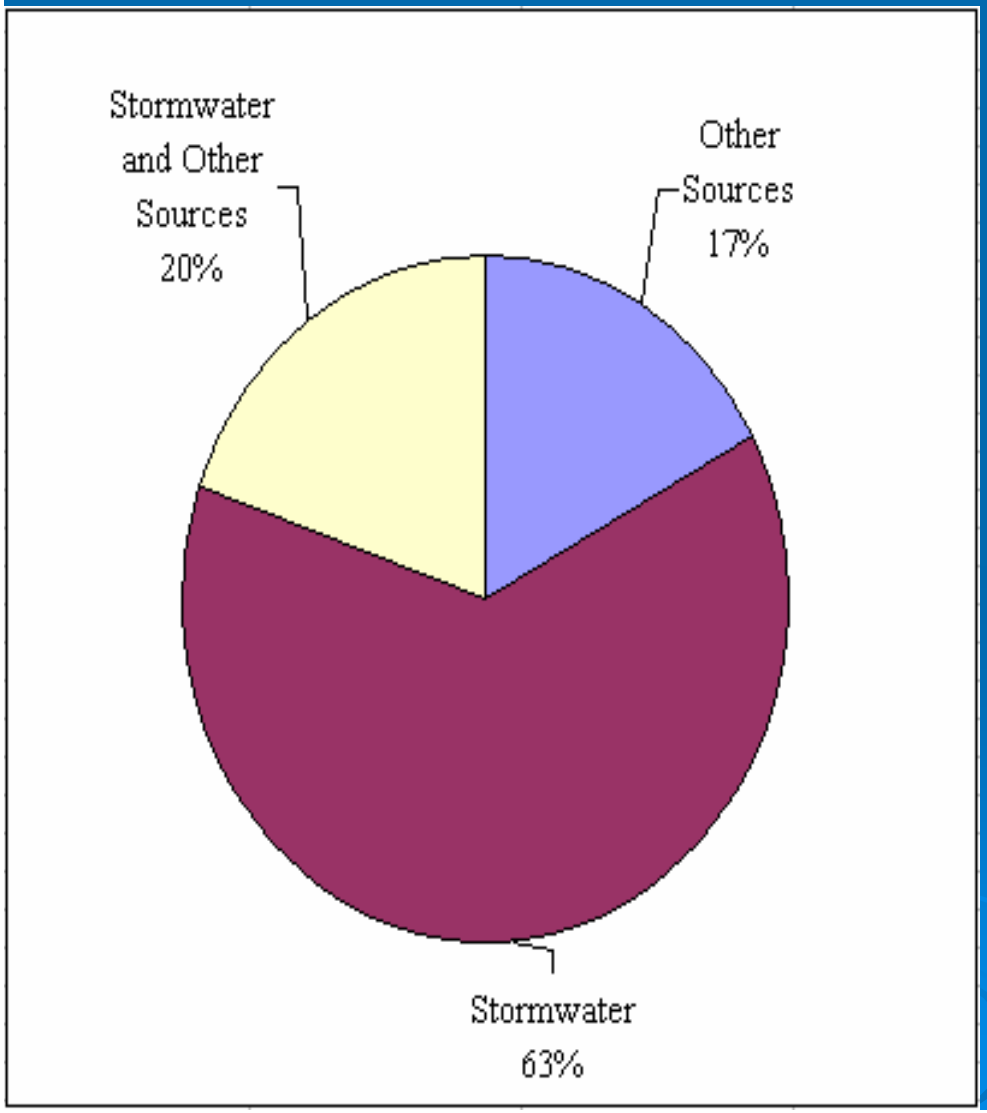
Hodgson Brook, Portsmouth, NH

Impact on Hydrology

- Increased flooding
  - Major events: October 2005, May 2006, April 2007
  - Property & infrastructure damages ($75.6 Million)
- Reduced groundwater recharge
  - Less water available for drinking water
  - Reduced base flows for streams
    - Increased water temp & pollution levels
    - Ecosystem habitat changes & stress on aquatic life
- Increased erosion & sedimentation
  - Suncook River avulsion, Epsom, NH
  - Altered stream channels
  - Turbid water & smothered habitat

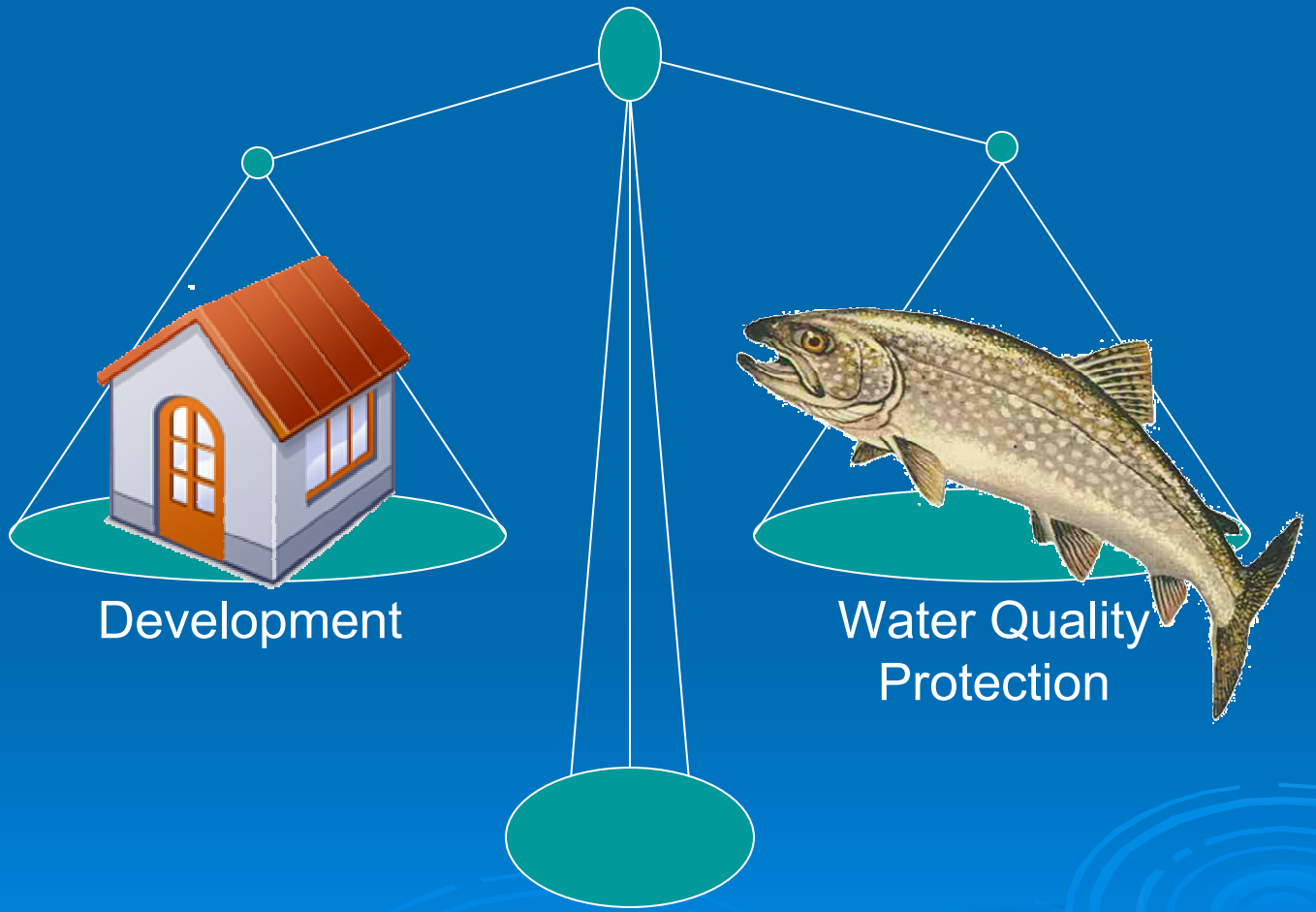
Commercial parking lot runoff, Concord, NH

2008 Assessment Results



	Count of AUIDs for Impairment Source			
Basin	Other	Storm Water	Storm Water and Other	Grand Total
Androscoggin	9	6	12	27
Coastal	25	120	65	210
Connecticut	20	119	24	163
Merrimack	67	256	46	369
Ocean	11		14	25
Saco	12	24	2	38
Grand Total	144	525	163	832

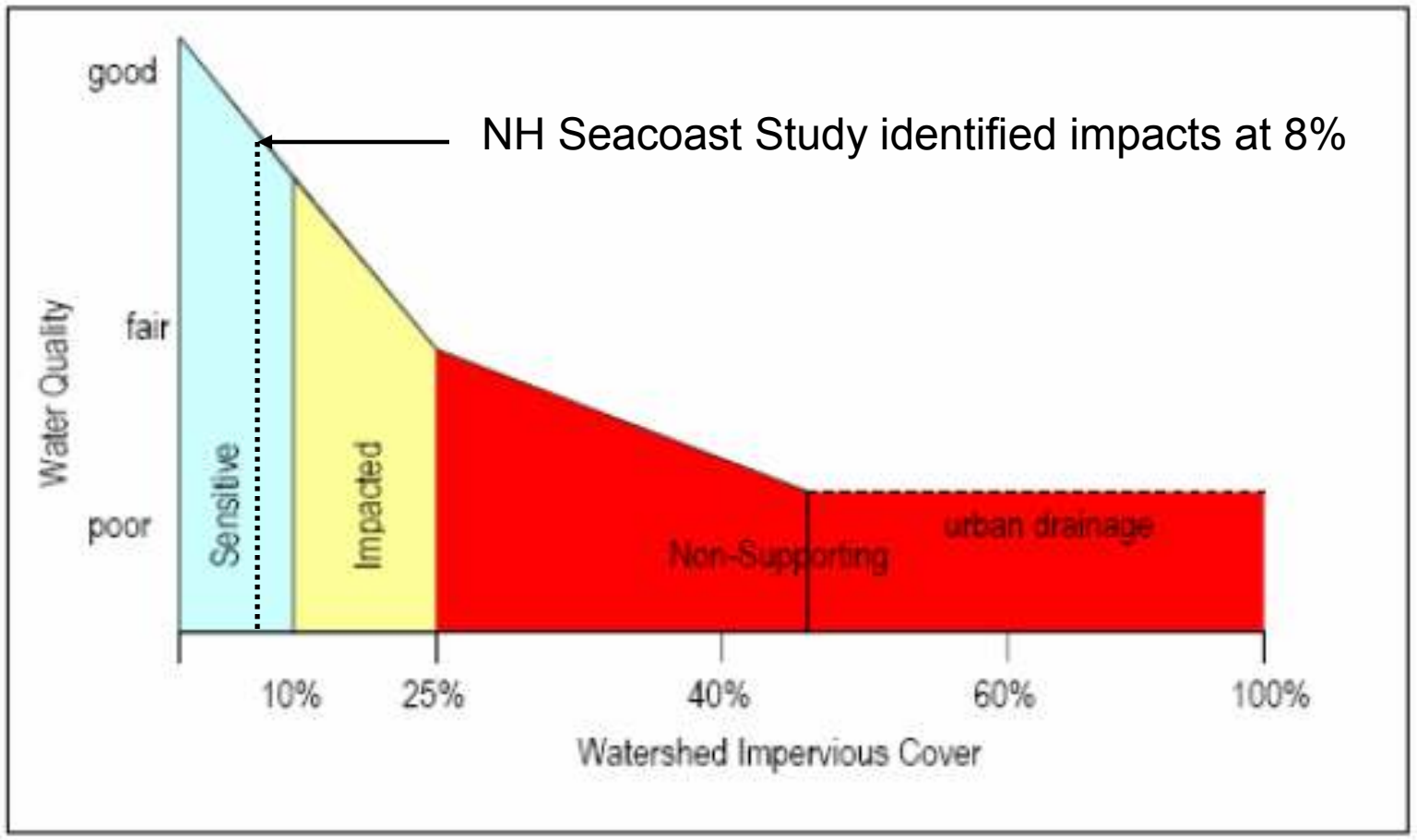
How do we strike a balance?



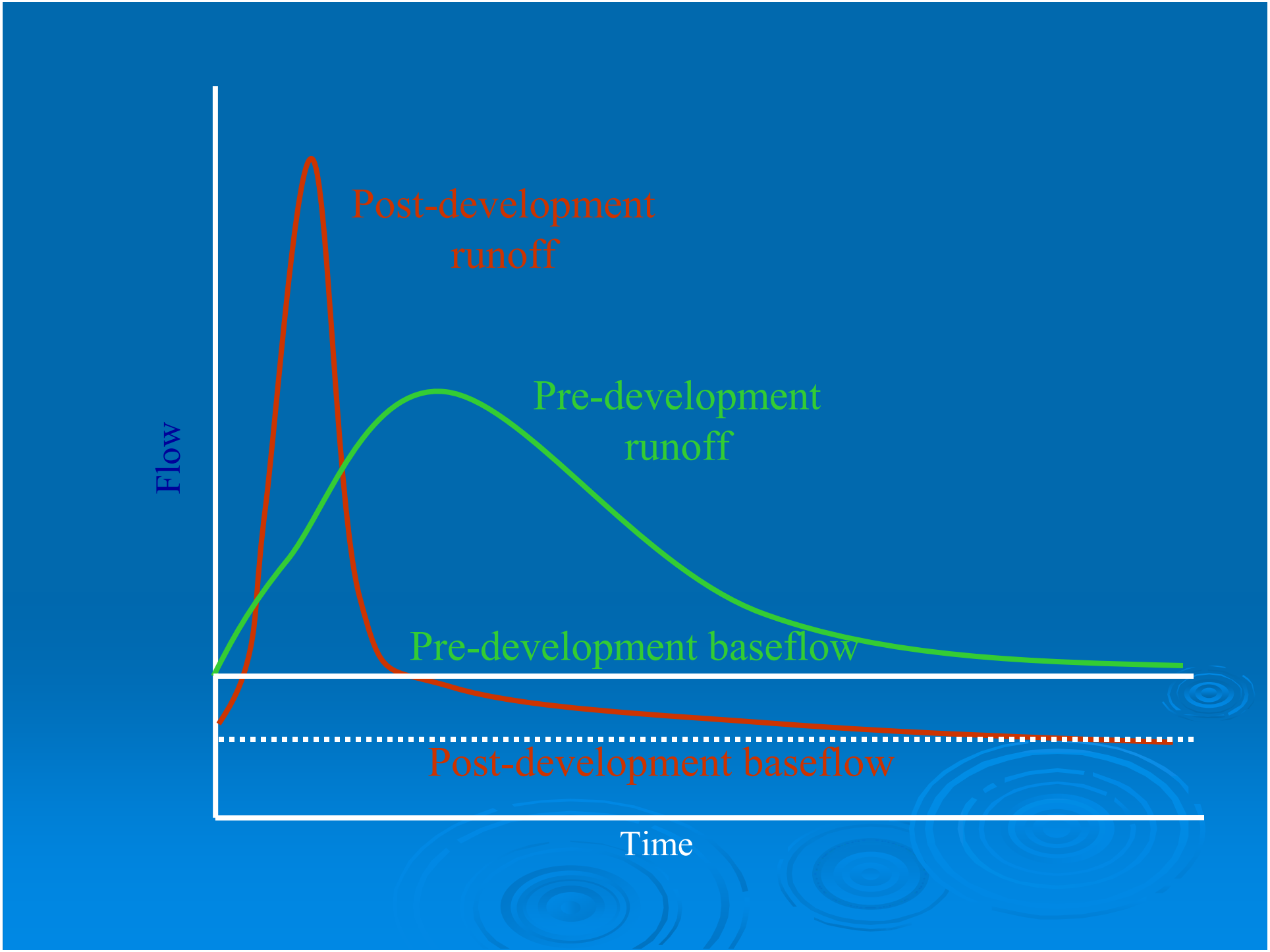
Bottom Line

- Traditional stormwater management practices alone are not working
  - Insufficient pollutant removal
  - Insufficient cooling
  - Insufficient stream channel protection
  - No volume control
- Low Impact Development (LID) should be put into standard practice
  - Stormwater volume reduction through infiltration
  - Water quality treatment through filtering
- The majority of land use decisions are made at the local level
  - State & federal guidance and assurance to municipalities

Impact of Impervious Cover on Aquatic Life and Habitat



Center for Watershed Protection


Post-development
runoff
Pre-development
runoff
Flow
Pre-development baseflow
Post-development baseflow
Time

Stormwater Management Goals

- ✓ Maintain Natural Hydrology
  - ✓ Maintain peak runoff
  - ✓ Hold total runoff volumes
- ✓ No Increase in Pollutant Loading

How do we get there?

- Improved Treatment Technologies & Strategies?
  - Decentralize Stormwater Treatment
  - Targeted Treatment of Pollutants
- Policy Changes?
  - Protect Critical Areas
  - Minimize Disturbed Areas
  - Minimize Impervious Cover
  - Disconnect Impervious Cover

Decentralize Stormwater Treatment

- Smaller, separate treatment practices

Targeted Treatment of Pollutants

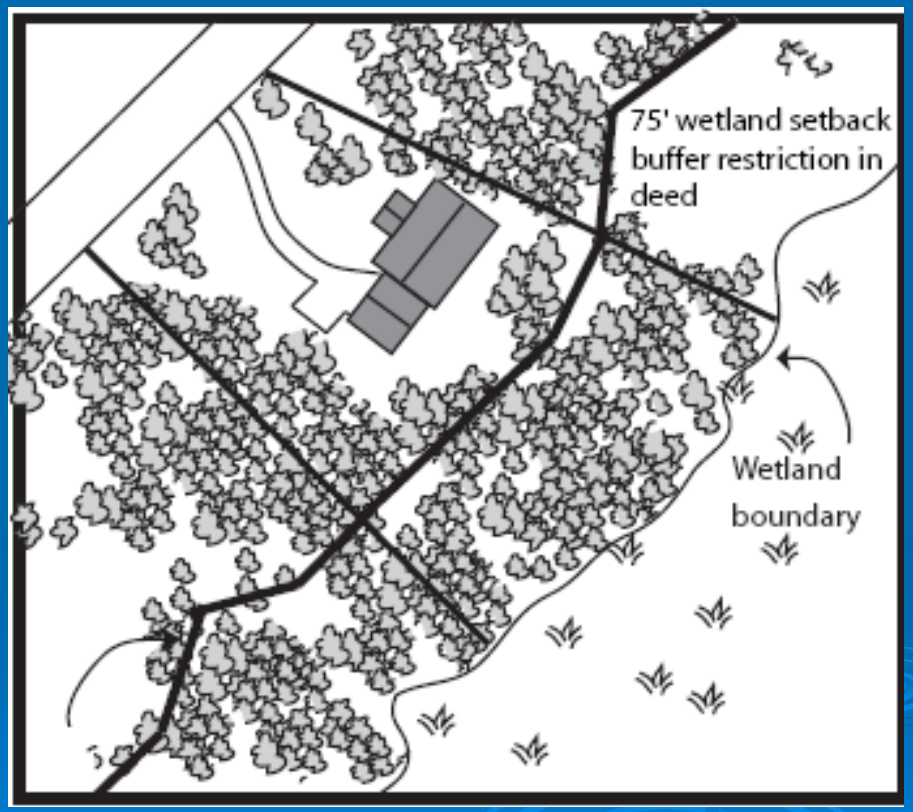
- Design treatment practices for target pollutants
  - Infiltration
  - Filtration

Gravel wetland, UNH Stormwater Center

Rain garden

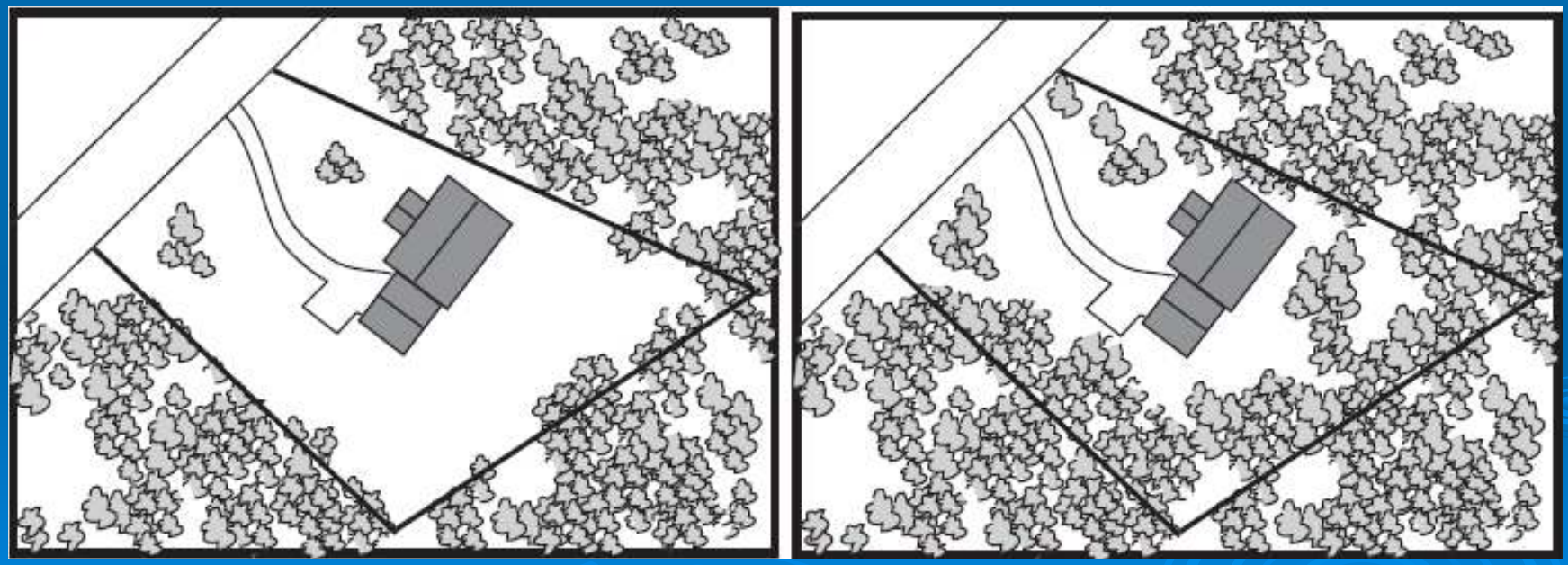
Protect Critical Areas

- Natural Features:
  - Steep slopes, good infiltrating soils, wetlands/small streams, aquifers, floodplains
- Maintain buffers & setbacks
  - Evapotranspiration
  - Uptake of pollutants by vegetation
  - Protect wildlife habitat features



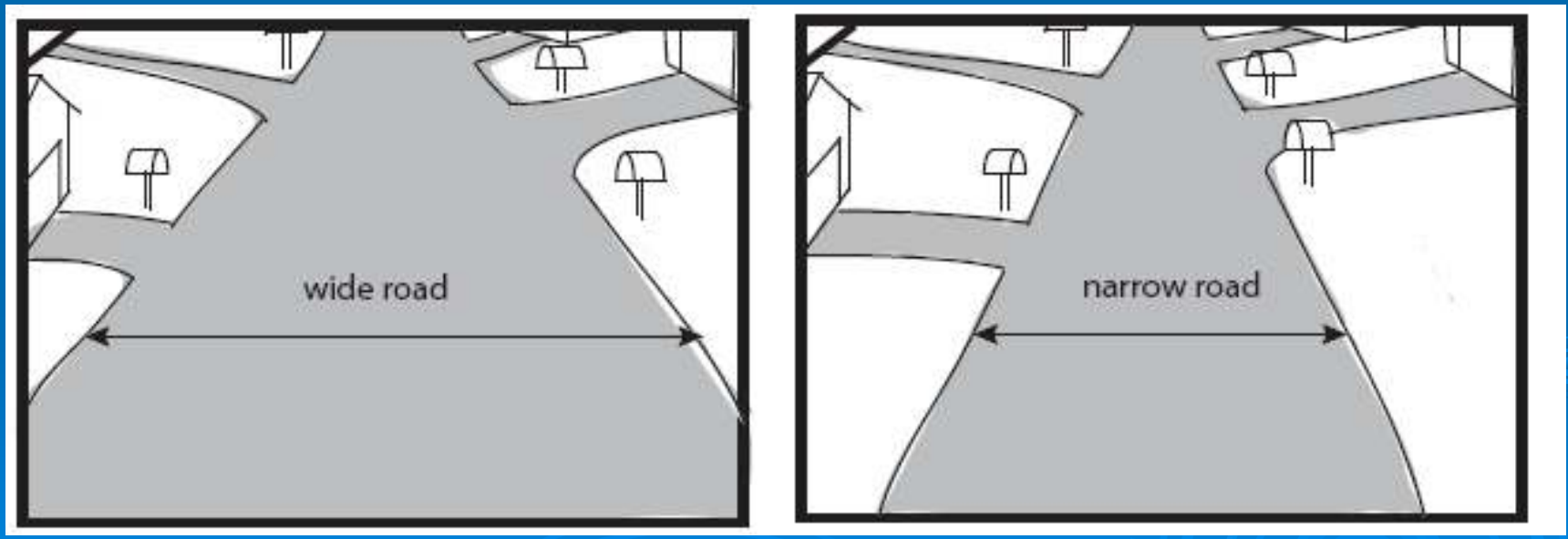
Minimize Disturbed Area

- Limit Clearing & Grading
- Cluster development



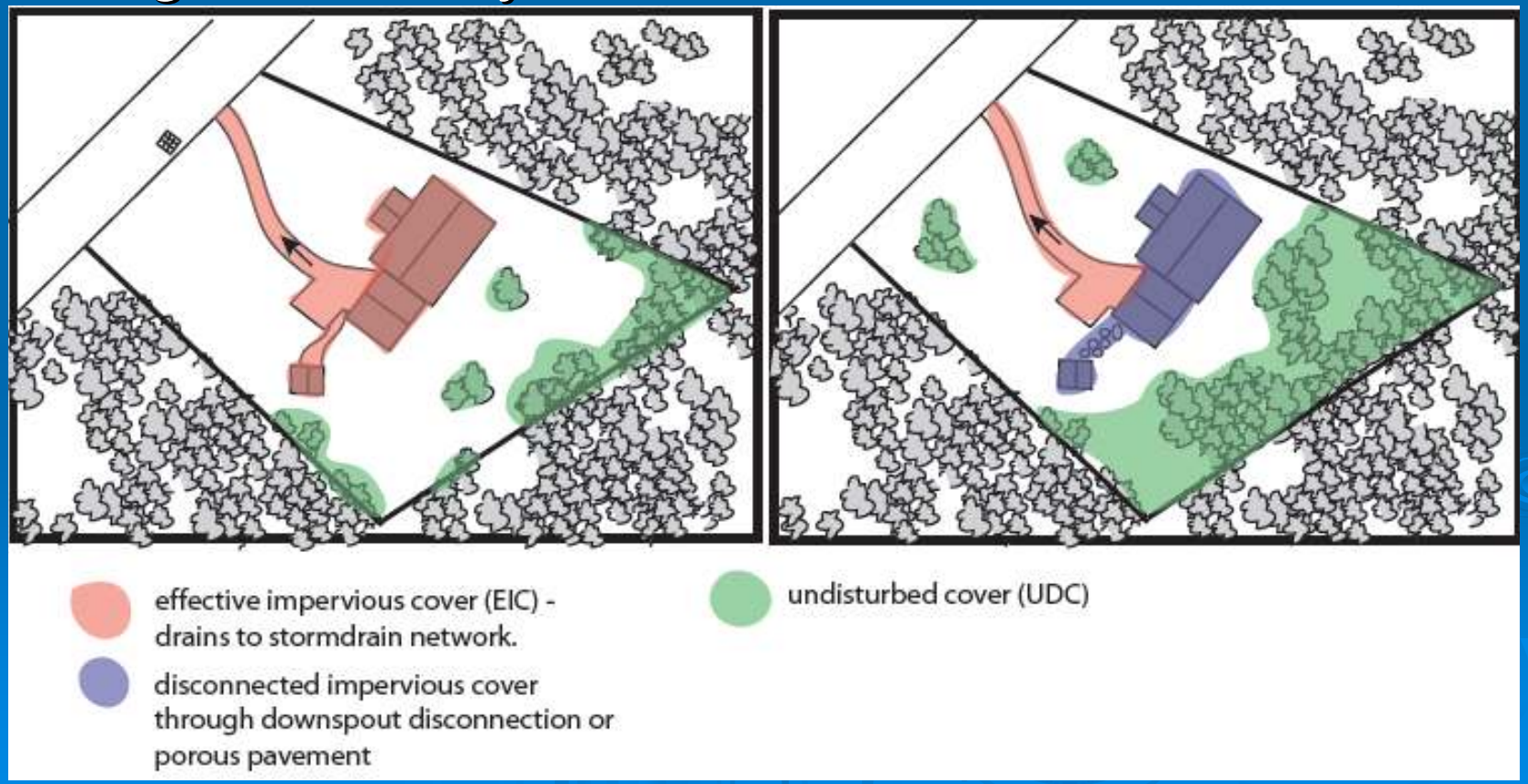
Minimize Impervious Cover

- Reduce roadway widths, driveway lengths, use shared driveways, porous pavements



Disconnect Impervious Cover

- Connect gutters to pervious areas, raingardens, dry wells, or rain barrels



Existing Tools

- Improved State Permitting
- Municipal Assistance & Activities
- Low Impact Development and Improved Stormwater Treatment Techniques

Improved State Permitting

- Revised Comprehensive Shoreland Protection Act
  - State Shoreland Permit
- Alteration of Terrain Program (draft Env-Wq 1500)
  - Updated design standards for treatment practices
  - Implements Antidegradation (Env-Wq 1708)
  - Improved Interdepartmental Communication

Residential construction, NH Seacoast

Municipal Assistance & Activities

- HB1581: Municipal authority to establish stormwater utilities
- Regional Environmental Planning Program (REPP)
  - *Innovative Land Use Planning Techniques: A Handbook for Sustainable Development*
- NH Stormwater Management Manual Series (draft)
- NH Municipal Stormwater Coalitions
  - 3 regional coalitions representing the 38 Phase II municipalities
  - Networking, coordinating projects, training and resources
- Natural Resources Outreach Coalition (NROC)
  - Coordinated assistance to communities to protect natural resources while accommodating growth.
  - Focus on coastal communities.

Low Impact Development & Improved Treatment Techniques

- Better site planning to mimic natural hydrology
- Source controls
- Better treatment practices
  - Gravel Wetlands
  - Bioretention
  - Porous pavement
  - Resource: UNH Stormwater Center

Rain garden

Opportunities & Future Needs

- Additional Assistance for Municipalities
  - Watershed management planning
  - NROC style assistance statewide
  - Support for municipal stormwater coalitions
  - Guidance for stormwater utilities
  - Design guidance for LID techniques

Opportunities & Future Needs

- State Resources
  - "Accounting system" to tracking development projects & pollutant load allocations to know cumulative impacts of development
  - More consistent, organized communication between state programs and projects related to stormwater.

Opportunities & Future Needs

- Public Outreach
  - Social marketing campaign to link land use, behavior, and water quality
  - Increased accessibility of stormwater-related information and guidance for homeowners and developers

TOPICS FOR NEXT MEETINGS?

(c) The relationships among and adequacy of federal, state, and local regulations and practices that pertain to stormwater management. (PRESENTATION FOR NEXT TIME?)

(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.

(f) The effects of climate change on stormwater and stormwater management.

Questions?

Condo construction, Concord, NH

STORMWATER MANAGEMENT, COMMUNITY RESILIENCY, AND CLIMATE CHANGE

Robert Roseen, PE, PhD, Thomas Ballestero, PE, PhD, James Houle, CPSWQ
Environmental Research Group, Department of Civil Engineering
University of New Hampshire

Mill Pond Rd after dam failure at Nottingham Lake, 4/18/2007

UNIVERSITY OF NEW HAMPSHIRE STORMWATER CENTER

The UNH Stormwater Center

Dedicated to the protection of water resources through effective stormwater management

- Research and development of stormwater treatment systems
- To provide resources to stormwater communities currently involved in design and implementation of Phase II requirements

Objective

1. *To Redefine LID beyond WQ and small storm management*
2. *To understand that stormwater management strategies used to reduce runoff volumes associated with land use change can be used similarly to manage increases in storm depth from climate change*

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The New Orleans Hurricane Protection System: What Went Wrong and Why-- 1**0 Lessons Learned from Katrina** by the ASCE Hurricane Katrina External Review Panel and the USACE Interagency Performance Evaluation Task Force

1. Failure to think globally and act locally-We must account for climate change
2. Failure to absorb new knowledge
3. Failure to understand, manage, and communicate risk-Need to take rigorous risk based approach,
4. Failure to build quality in
5. Failure to build in resilience
6. Failure to provide redundancy
7. Failure to see that the sum of many parts does not equal a system
8. The buck couldn't find a place to stop--Poor organization, lack of accountability
9. Beware of interfaces: materials and jurisdiction
10. Follow the money-People responsible for design and construction had no control of the monies.

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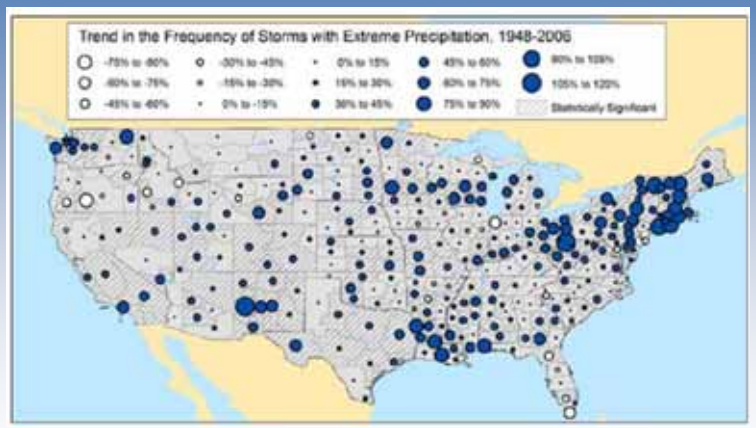
Why Stormwater and Flooding

1. Many issues with regards to flooding that we have no control over: storm depth and impacts within floodplain
2. Some issues are with respect to storage:
    1. Flood plain management
    2. Dams and reservoirs with storage capacity (not to be confused with instream dams with no storage)
3. However we do have control over land use and subsequent impacts on runoff volume
4. Many parts of the state are experiencing tremendous population growth-20-25%
5. In need of tools for managing growth while maintaining public safety and watershed health

Changing Trends

Increases in storm frequency and depth



When It Rains It Pours, Environment America, 2007

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- Research examining impacts of climate change on rainfall depths (28-60% increase) demonstrated existing urban infrastructure (culverts) will be under-capacity by 35% (Guo, 2006)
- This in addition to stressed stormwater infrastructure from land use change

CSO Solutions???

- NBC RI has begun construction of six miles of underground storage tunnels at a projected cost of $467 million (1992 dollars).
- Tunnels will contain the sewage overflows during rain events for treatment later
- Alternatively, volume reduction and peak flow controls from LID can reduce storage and TX requirements

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Conventional Stormwater Management

- Retention/Detention---peak flow control
- Conveyance----swales, catch basins, gutters
- No recharge or volume control or water quality components

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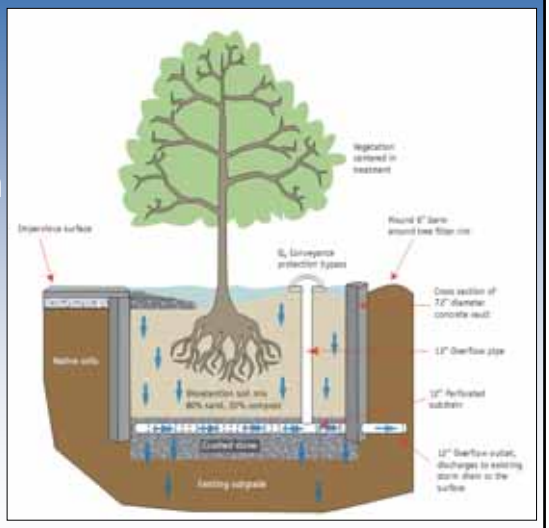
Solution: Low Impact Development (Source Control and Infiltration)

- Treat 1" Rainfall
- Reduce runoff volume--infiltrate
- Extended detention of smaller storms
- 2-yr, 10-yr and 25-yr peak matching still necessary for some projects



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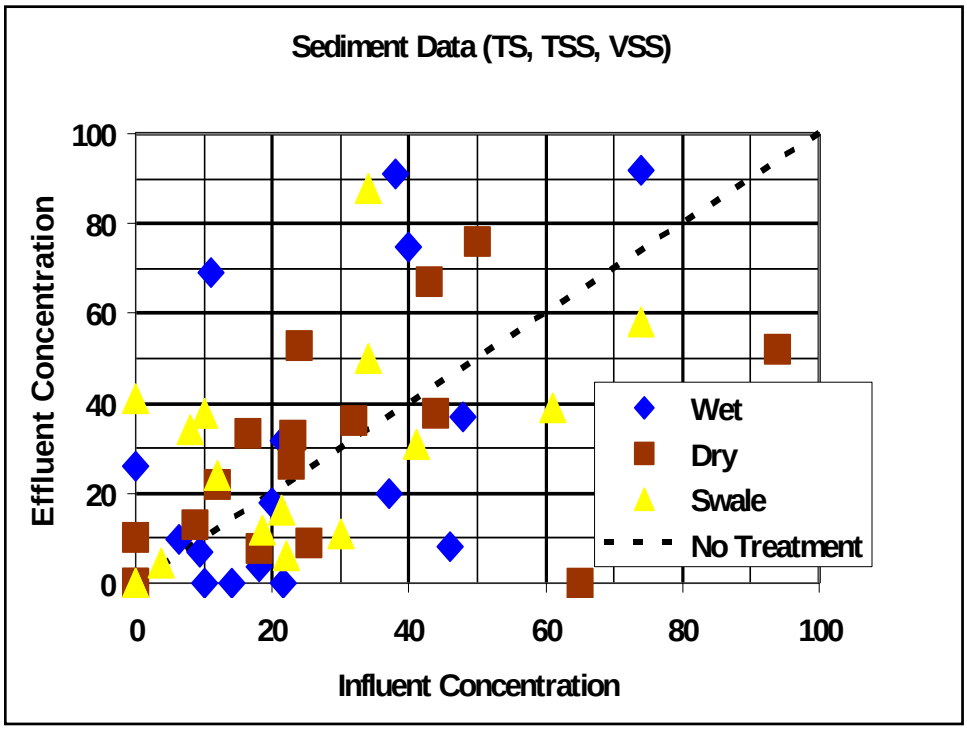
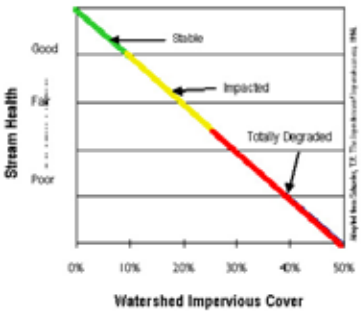
Current Research

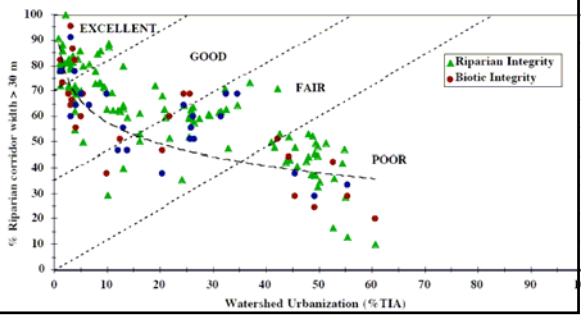
- Research[1] shows that most SW TX fail 2/3 of the time for some WQ constituents
- There is a lack of data examining stormwater devices for treatment performance
- There are a large number of devices in existence that are little used that may be superior

[1] Ballestero T.P., S.H. Jones, N.E. Kinner (2004), "Water Quality Assessment of Storm Water Control Systems", Final Report, Submitted to the NOAA-UNH Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET)



Impacts of Imperviousness



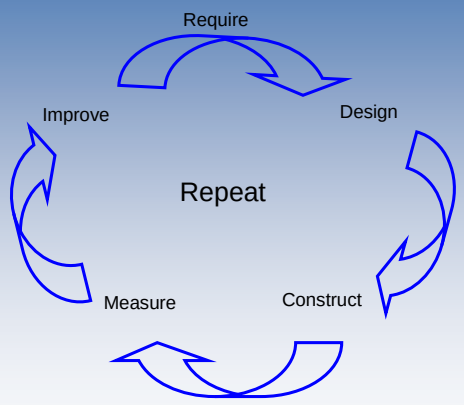


NE Floods May 13-15, 2006

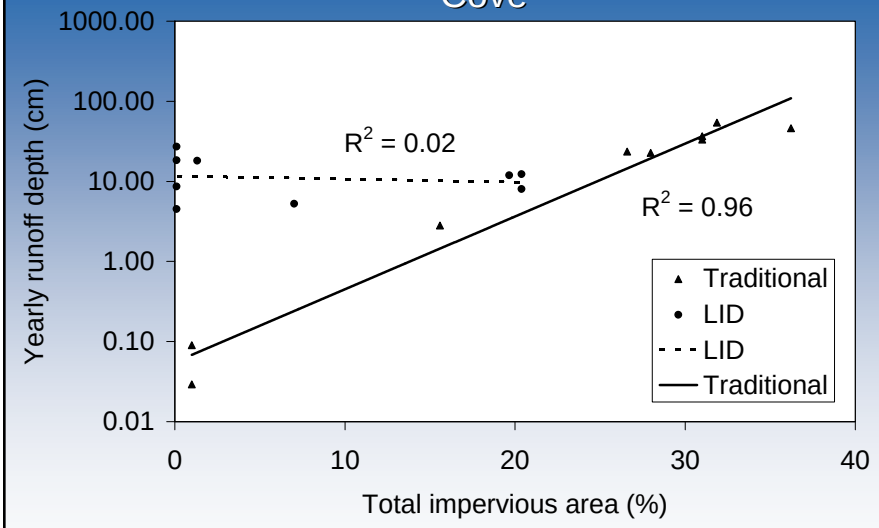
Reduction of Runoff Volumes is only achieved through infiltration of stormwater

Land Use Planning and Low Impact Development Stormwater Management is both the Solution and the Lack of is the Problem

The Cycle of Best Management



LID Design Results for Runoff Depth-- Jordan Cove



Jordan Cove Project, USEPA Funded, Dr Jack Clausen and Dr Michael Dietz

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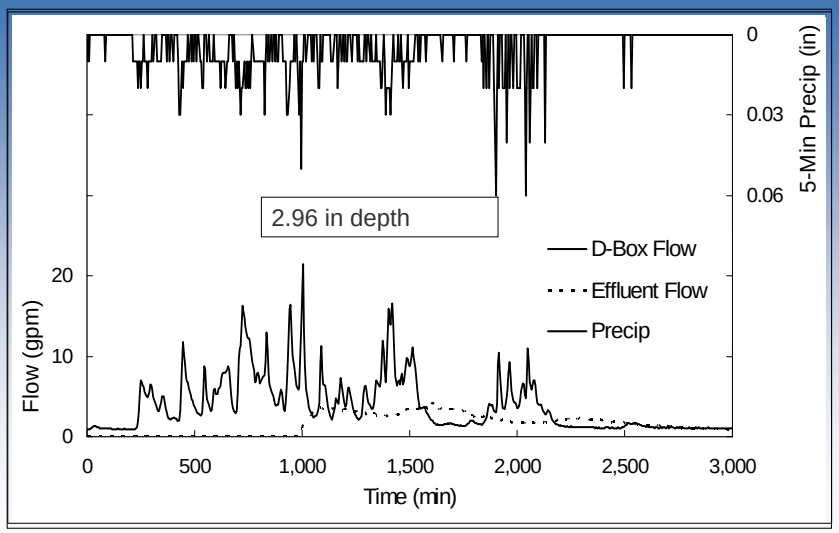
Porous Asphalt on Type C Soil



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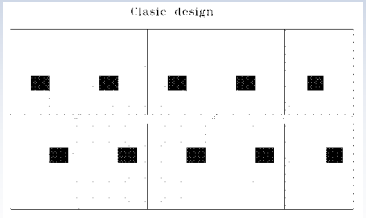
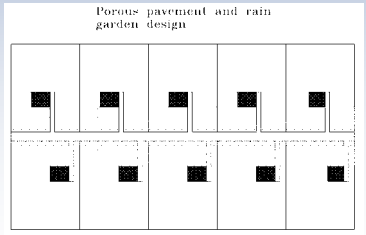
Numerical Simulation of Conventional and LID Site Design for Historical and Climate Change Storm Depths

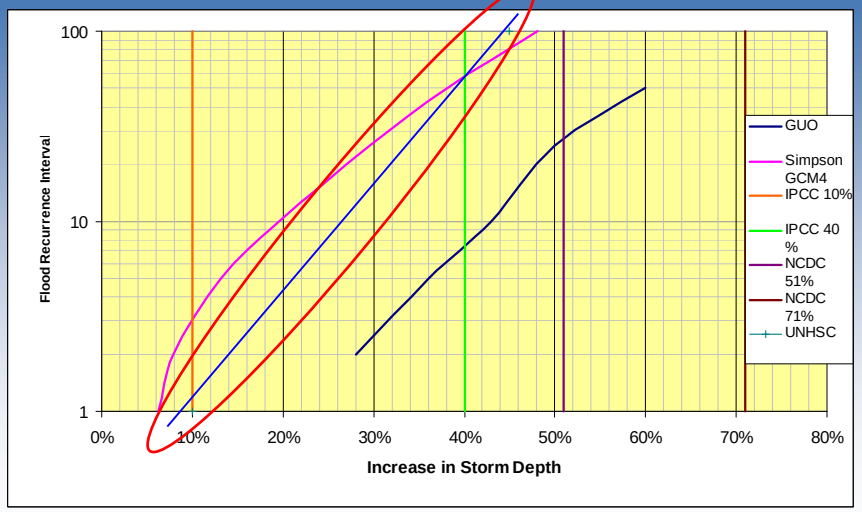
Experimental Design

- Numerical modeling of conventional and LID design
- 10 x 1 acre lots in watershed at 5% slope
- Type A and C soils
- Conventional connected impervious surfaces (rooftop, driveways, lawns, roadways)
- LID design uses disconnected imperviousness
  - Rooftop to bioretention 1" WQV, overflow to PA driveway
  - Driveway and Roadways as PA
  - Lawns to PA
  - 65% UDC, <10% EIC (NHDES reqs)





Estimates of Increases in Storm Depth with Climate Change



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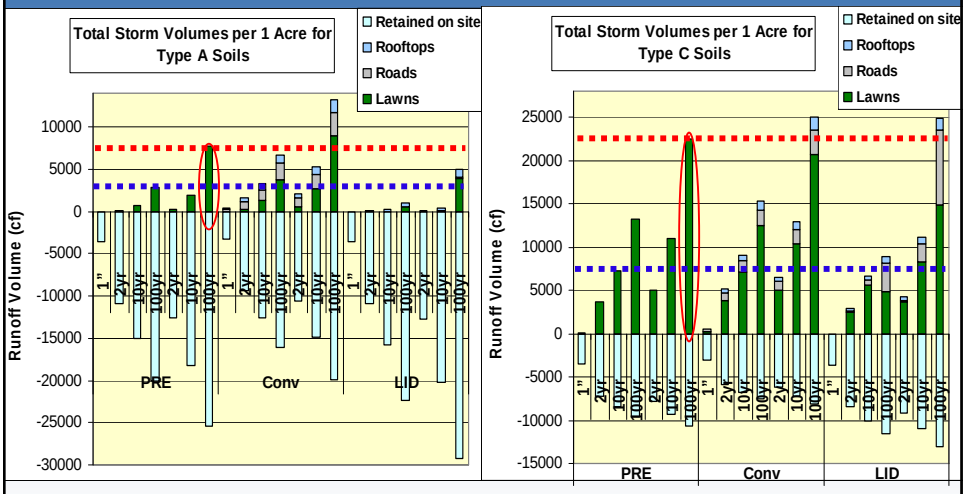
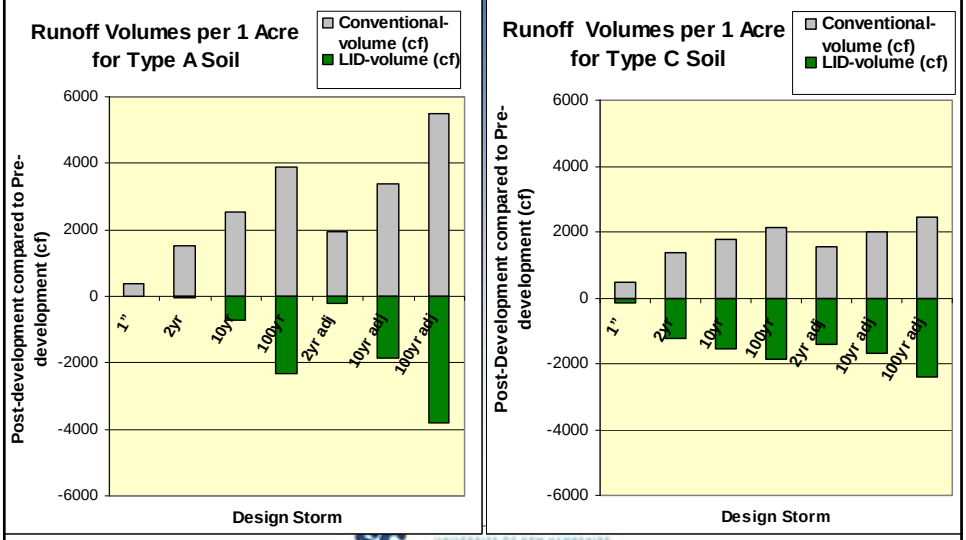
Storm Volumes for Type A and C Soils for LID and Conventional SWM



STORMWATER CENTER

Runoff Volumes for Type A and C Soils for LID and Conventional SWM



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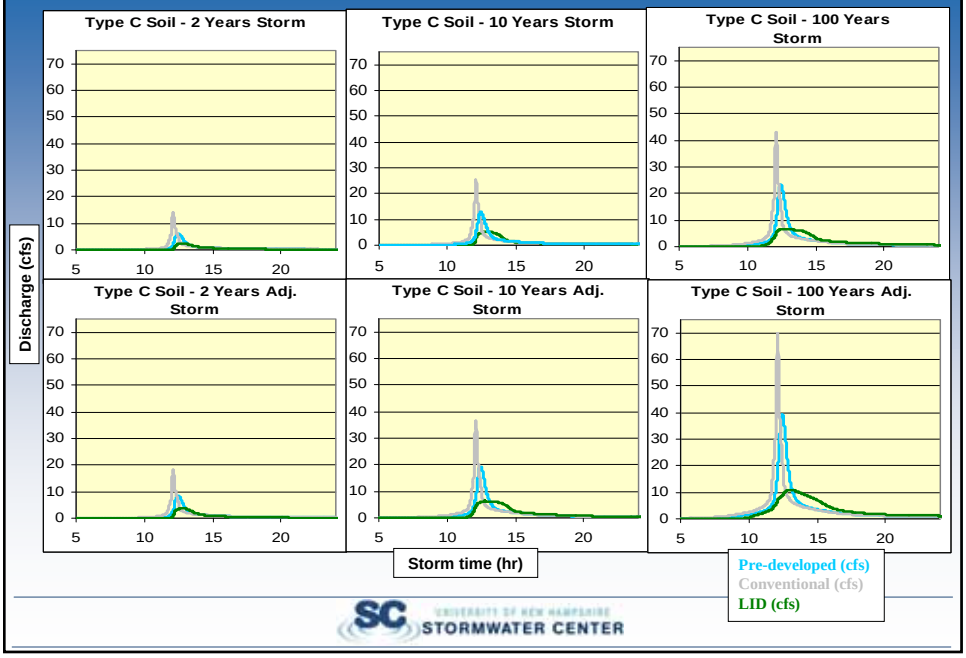
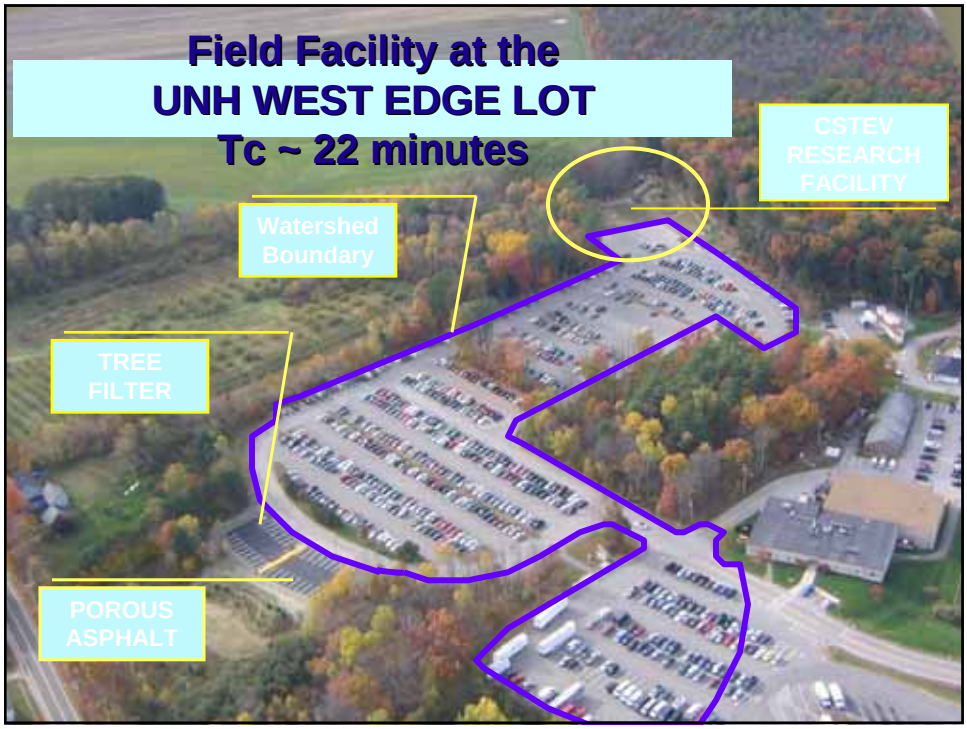
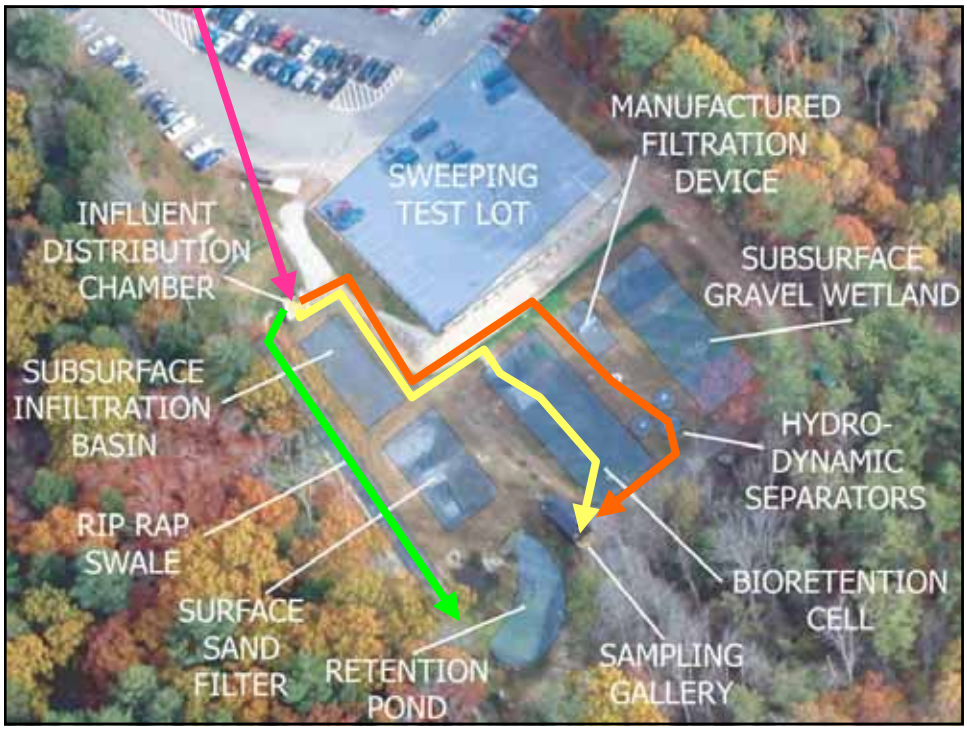
Peak Runoff Control

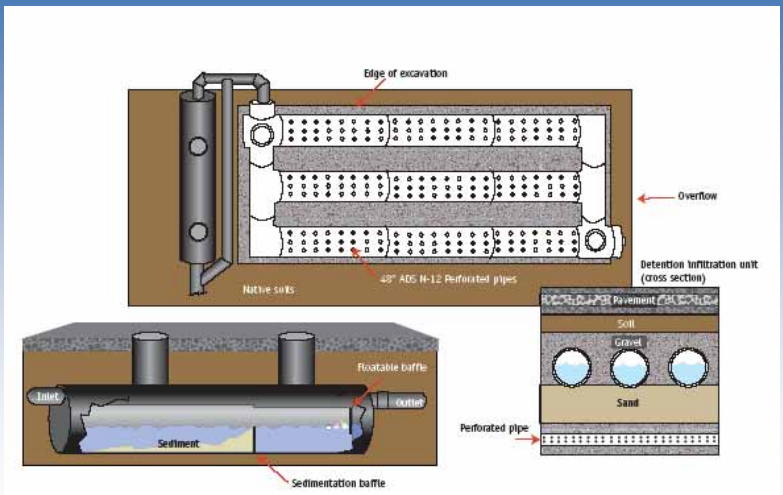


STORMWATER CENTER

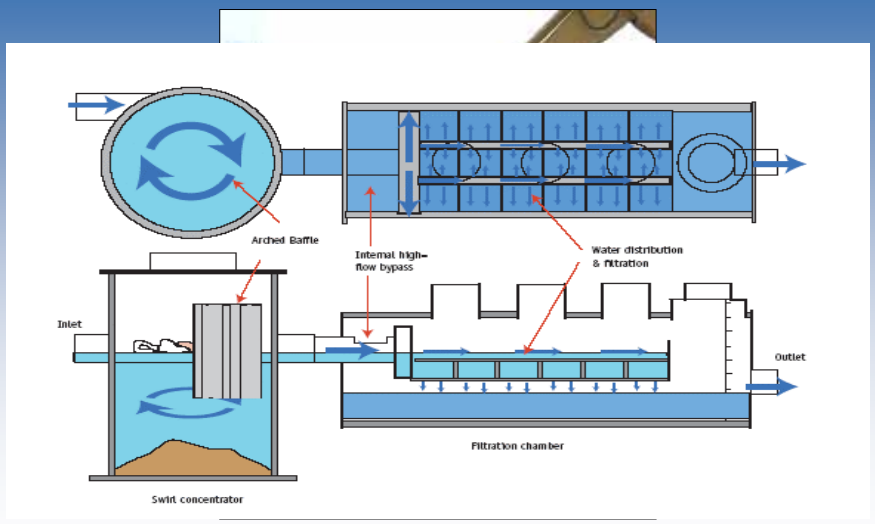

Field Facility at the
UNH WEST EDGE LOT
Tc ~ 22 minutes
CSTEV RESEARCH FACILITY
Watershed Boundary
TREE FILTER
POROUS ASPHALT


MANUFACTURED FILTRATION DEVICE
SWEEPING TEST LOT
INFLUENT DISTRIBUTION CHAMBER
SUBSURFACE GRAVEL WETLAND
SUBSURFACE INFILTRATION BASIN
HYDRO-DYNAMIC SEPARATORS
RIP RAP SWALE
BIORETENTION CELL
SURFACE SAND FILTER
RETENTION POND
SAMPLING GALLERY

Subsurface Infiltration



Manufacured Filtration



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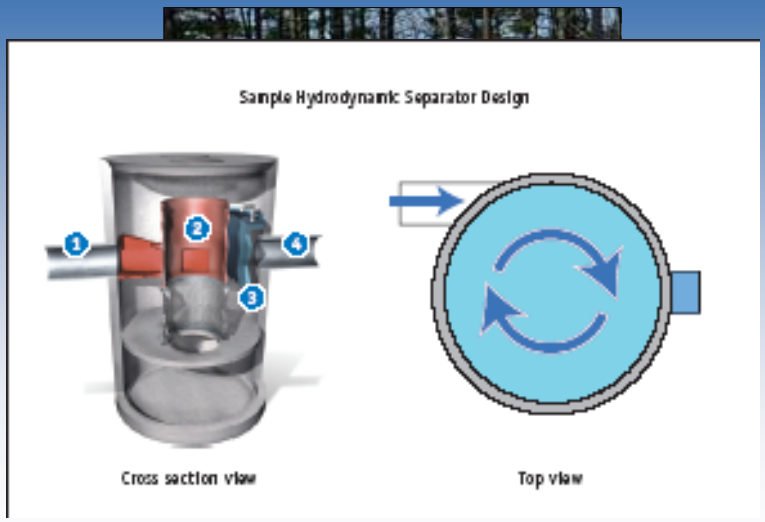
Hydrodynamic Seperation (HDS)



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TREATMENT STRATEGIES: Conventional Devices

Retention Pond---2004 to present

Rock-Lined Swale---2004-2005

Vegetated Swale---2005-2006

Vegetated Swale with Engineered Filter Berm---2006-present

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TREATMENT STRATEGIES: Low Impact Development Devices

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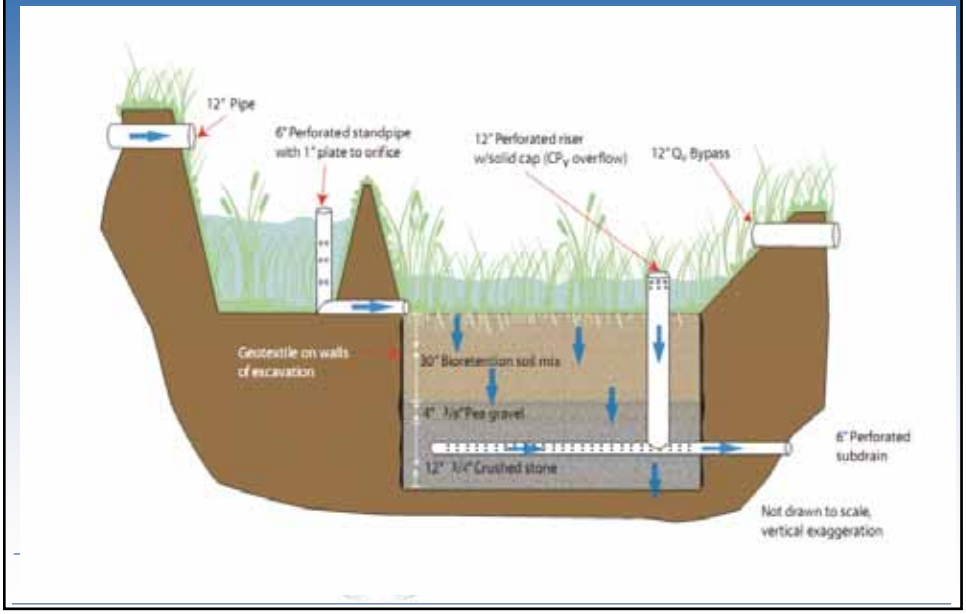
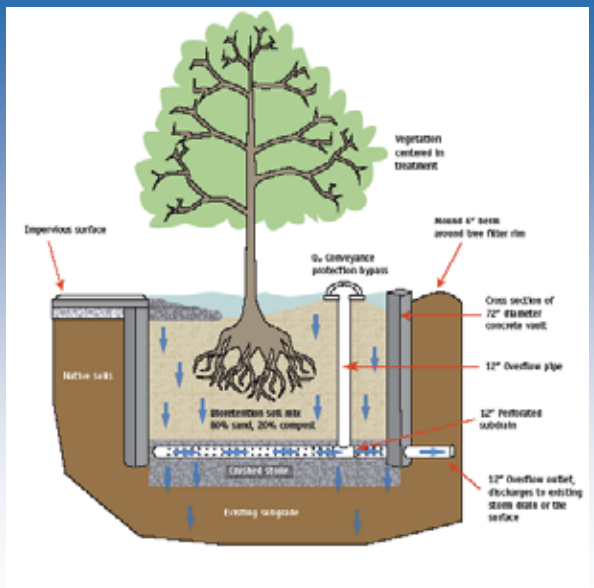
Bioretention



Tree Filter



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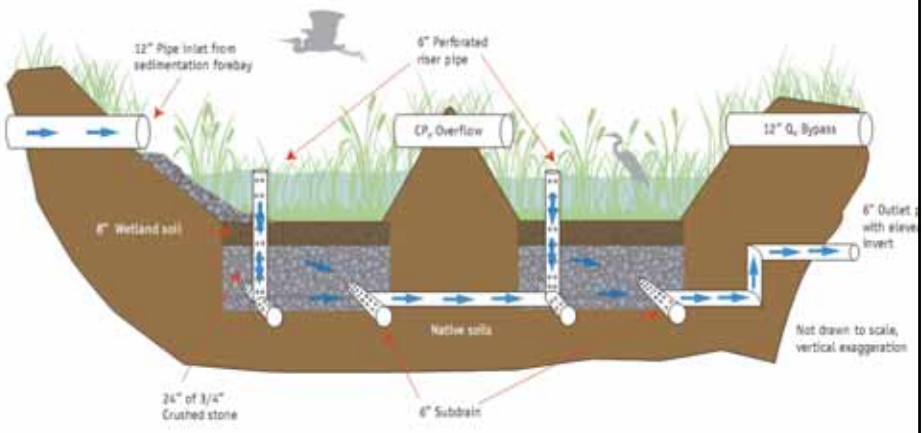
Gravel Wetland



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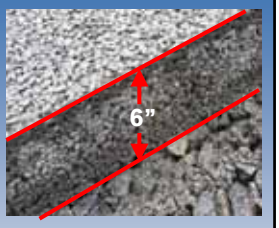
Porous Pavements

Porous Pavements
- Aggregate gradation: No fines added to mix
- Air voids: 18-20%
- Cold climate and WQ functionality dependent on sub base design
- Long-term FX dependent on production, not maintenance

Pervious Concrete
- Placement is challenging and requires certified installers
- Compressive strength: 3000 psi at 7 days
- Concrete is very resistant to aging

Porous Asphalt
- Modification of Open Grade Friction Course (OGFC)
- Asphalt binder often modified (polymers, fibers) but not necessary
- QC production at plant is crucial, install is simple



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How Do They Really Work?
43 in rainfall event in 3 minutes!

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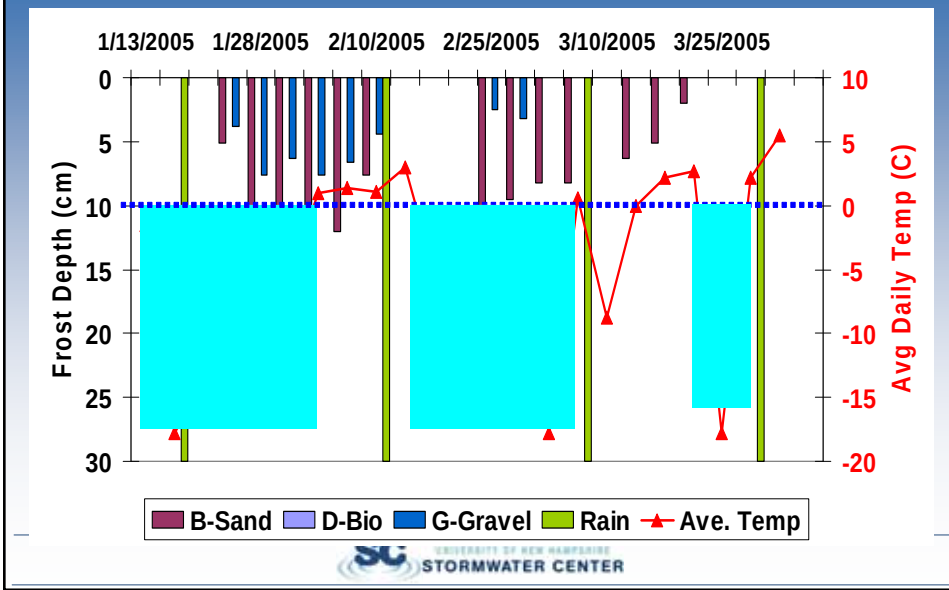
Filter Media Frost Penetration



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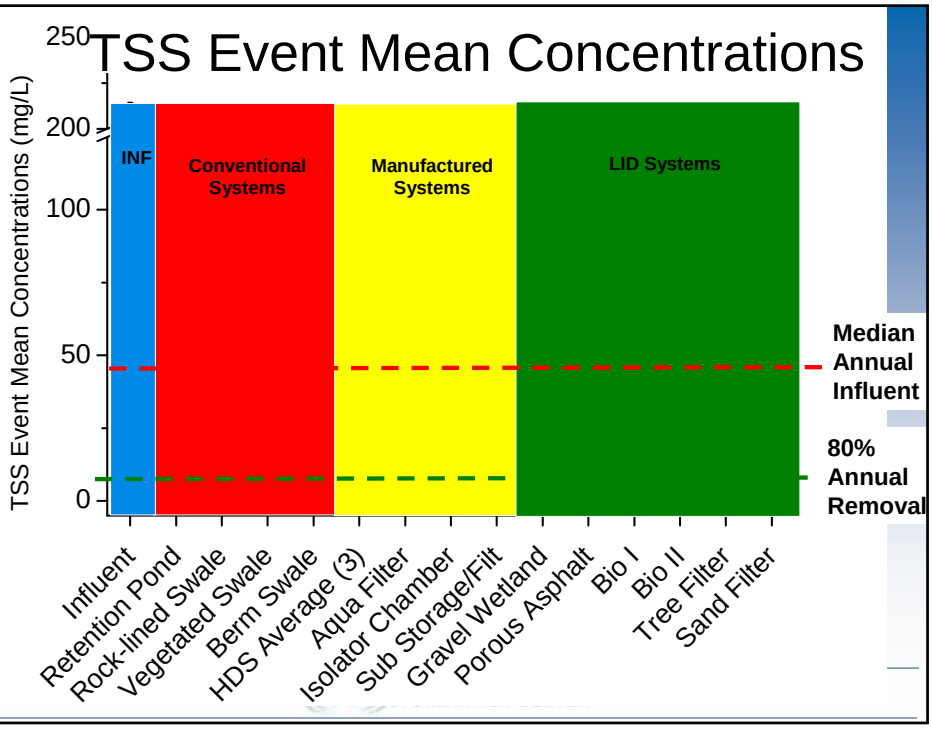
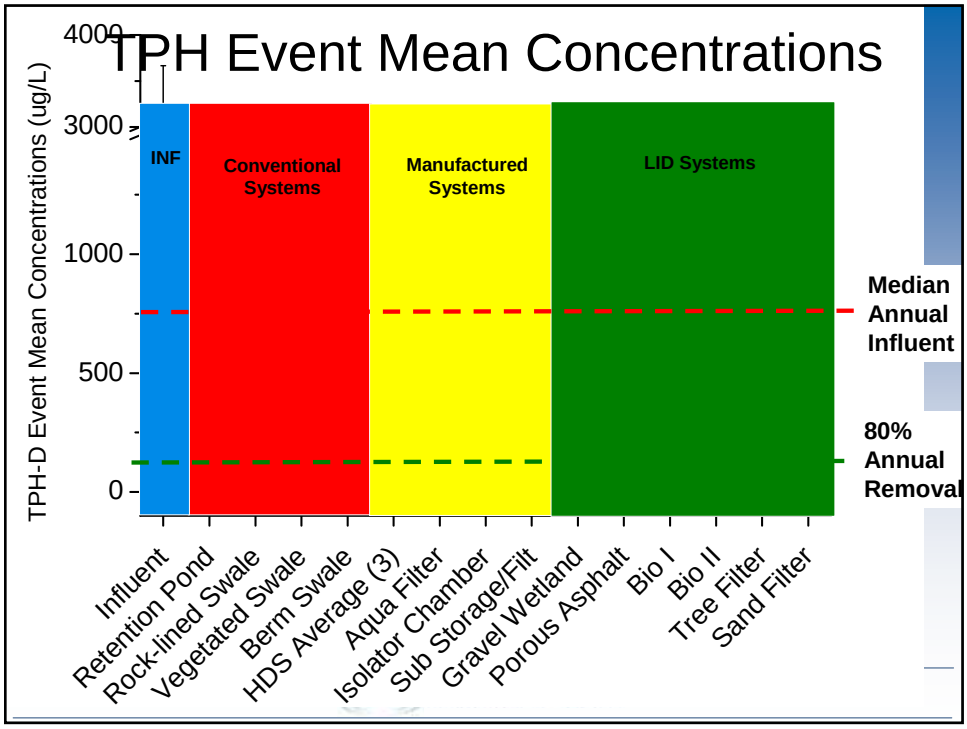
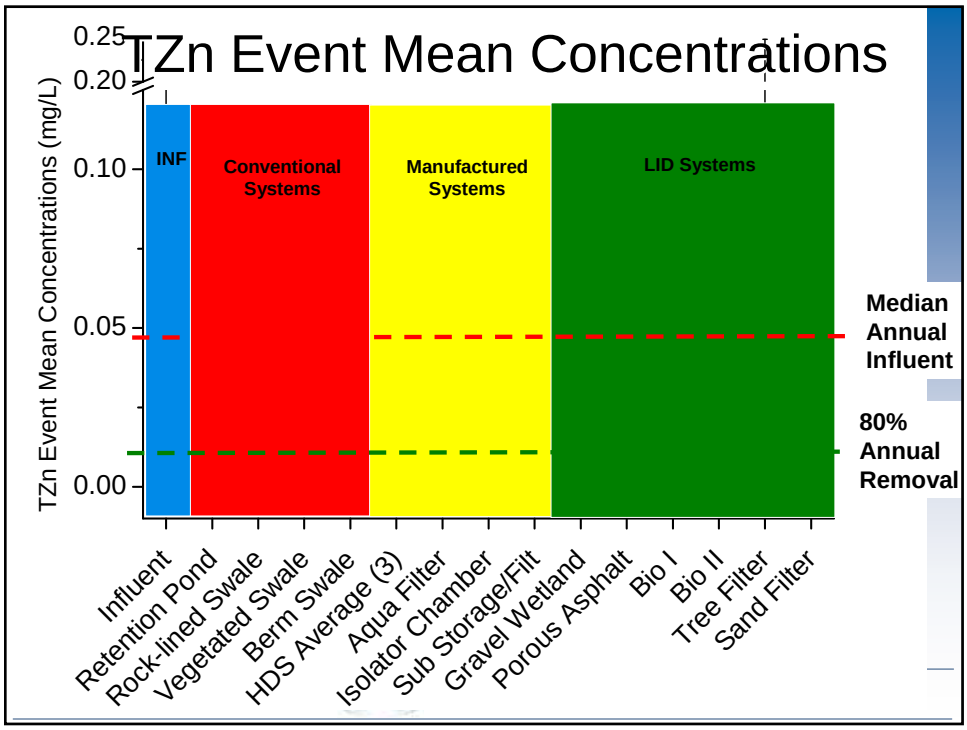
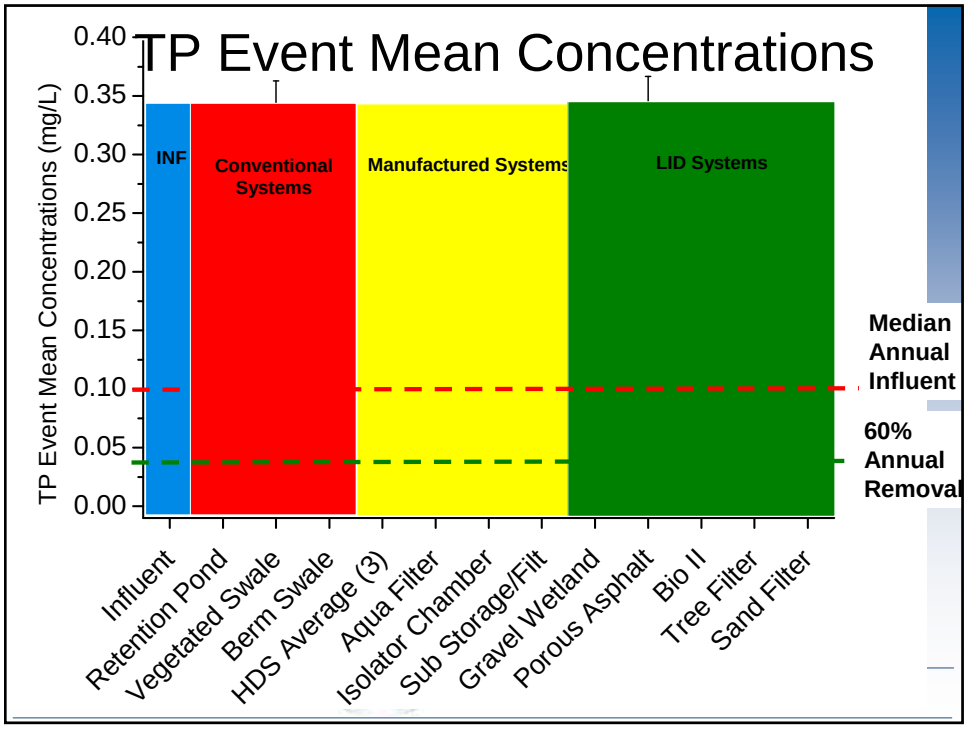
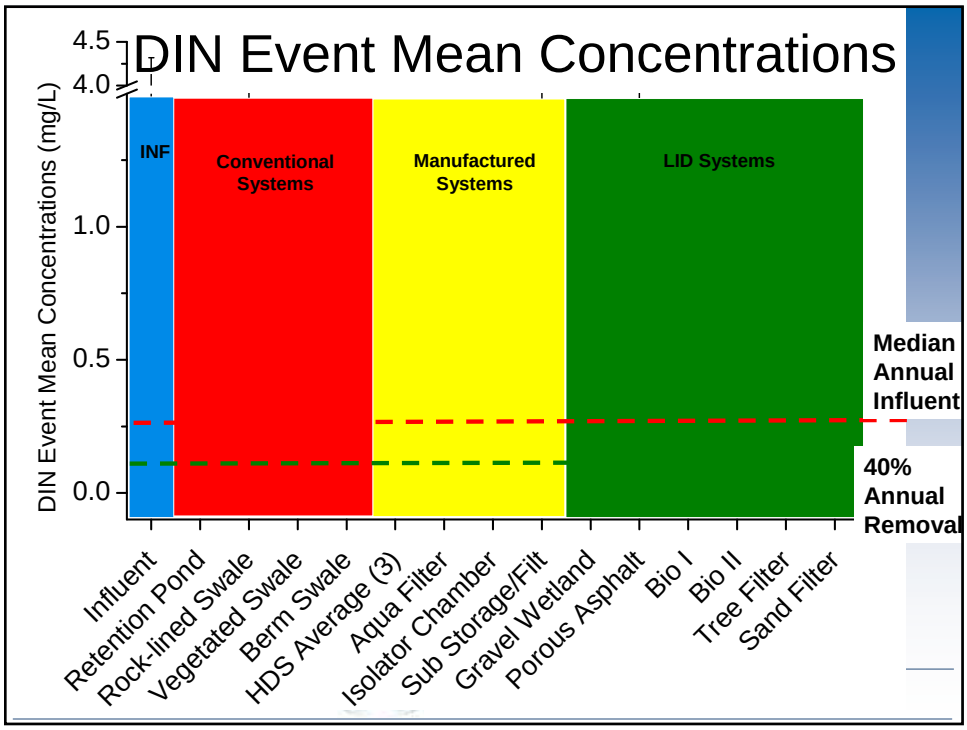
TSS Event Mean Concentrations




TPH Event Mean Concentrations
TPH-D Event Mean Concentrations (ug/L)
4000
3000
1000
500
0
INF
Conventional Systems
Manufactured Systems
LID Systems
Median Annual Influent
80% Annual Removal
Influent
Retention Pond
Rock-lined Swale
Vegetated Swale
Berm Swale
HDS Average (3)
Aqua Filter
Isolator Chamber
Sub Storage/Filt
Gravel Wetland
Porous Asphalt
Bio I
Bio II
Tree Filter
Sand Filter

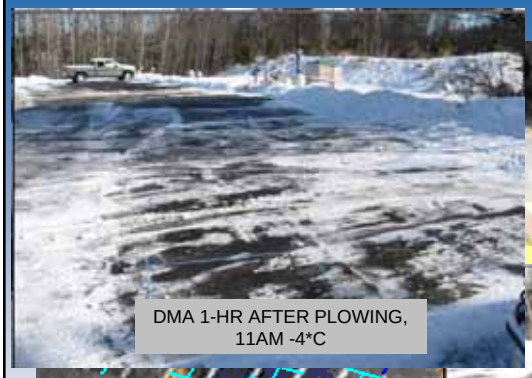

TZn Event Mean Concentrations
TZn Event Mean Concentrations (mg/L)
0.25
0.20
0.10
0.05
0.00
INF
Conventional Systems
Manufactured Systems
LID Systems
Median Annual Influent
80% Annual Removal
Influent
Retention Pond
Rock-lined Swale
Vegetated Swale
Berm Swale
HDS Average (3)
Aqua Filter
Isolator Chamber
Sub Storage/Filt
Gravel Wetland
Porous Asphalt
Bio I
Bio II
Tree Filter
Sand Filter


TP Event Mean Concentrations
TP Event Mean Concentrations (mg/L)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
INF
Conventional Systems
Manufactured Systems
LID Systems
Median Annual Influent
60% Annual Removal
Influent
Retention Pond
Vegetated Swale
Berm Swale
HDS Average (3)
Aqua Filter
Isolator Chamber
Sub Storage/Filt
Gravel Wetland
Porous Asphalt
Bio II
Tree Filter
Sand Filter

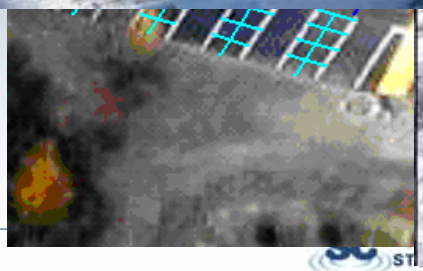

DIN Event Mean Concentrations
DIN Event Mean Concentrations (mg/L)
4.5
4.0
1.0
0.5
0.0
INF
Conventional Systems
Manufactured Systems
LID Systems
Median Annual Influent
40% Annual Removal
Influent
Retention Pond
Rock-lined Swale
Vegetated Swale
Berm Swale
HDS Average (3)
Aqua Filter
Isolator Chamber
Sub Storage/Filt
Gravel Wetland
Porous Asphalt
Bio I
Bio II
Tree Filter
Sand Filter

Cold Climate Performance Results

Salt Reduction and Porous Asphalt

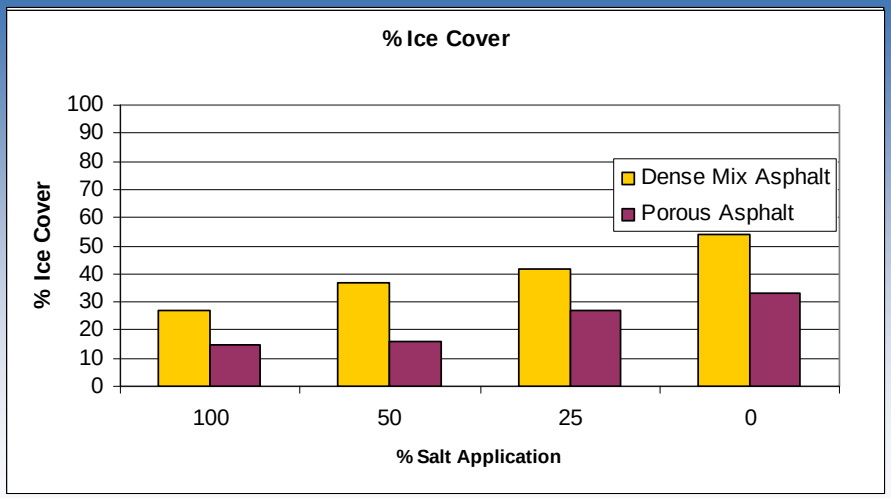


DMA 1-HR AFTER PLOWING, 11AM -4*C



PA 1-HR AFTER PLOWING, 11 AM -4*C

Salt Reduction and Porous Asphalt



STORMWATER CENTER

Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices

Table 1. Cost Comparisons Between Conventional and LID Approaches

Project	Conventional			Percent Difference[b]
2nd Ave				%
Auburn				%
Bellingham Bloedel Donovan Park	$52,800	$12,800	$40,000	76%
Gap Creek	$4,620,600	$3,942,100	$678,500	15%
Garden Valley	$324,400	$260,700	$63,700	20%
Kensington Estates	$765,700	$1,502,900	–$737,200	-96%
Laurel Springs	$1,654,021	$1,149,552	$504,469	30%
Mill Creek[c]	$12,510	$9,099	$3,411	27%
Prairie Glen	$1,004,848	$599,536	$405,312	40%
Somerset	$2,456,843	$1,671,461	$785,382	32%
Tellabs Corporate Campus	$3,162,160	$2,700,650	$461,510	15%

[a] Some of the case study results do not lend themselves to display in the format of this table (Central Park Commercial Redesigns, Crown Street, Poplar Street Apartments, Prairie Crossing, Portland Downspout Disconnection, and Toronto Green Roofs). [b] Negative values denote increased cost for the LID design over conventional development costs. [c] Mill Creek costs are reported on a per-lot basis.

Capital savings ranged from 15-80%

Costs Benefits Extend to Infrastructure

- Reduction of stress on urban stormwater infrastructure
- Minimize runoff volume increases associated with land use change
- Distribute costs over time through change in practice vs catastrophic cost associated with infrastructure failure
- Costs paid for by owners, developers not by municipalities and tax payers

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Summary and Conclusions

- Stress to stormwater infrastructure is caused by increases in runoff depth from land use and climate change
- LID systems benefits extend beyond WQ
- LID systems and planning can reduce volume and peak flow for extreme storms
- LID can contribute to community resiliency

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Funding

Funding is provided by the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) whose mission is to support the scientific development of innovative technologies for understanding and reversing the impacts of coastal and estuarine contamination and degradation.

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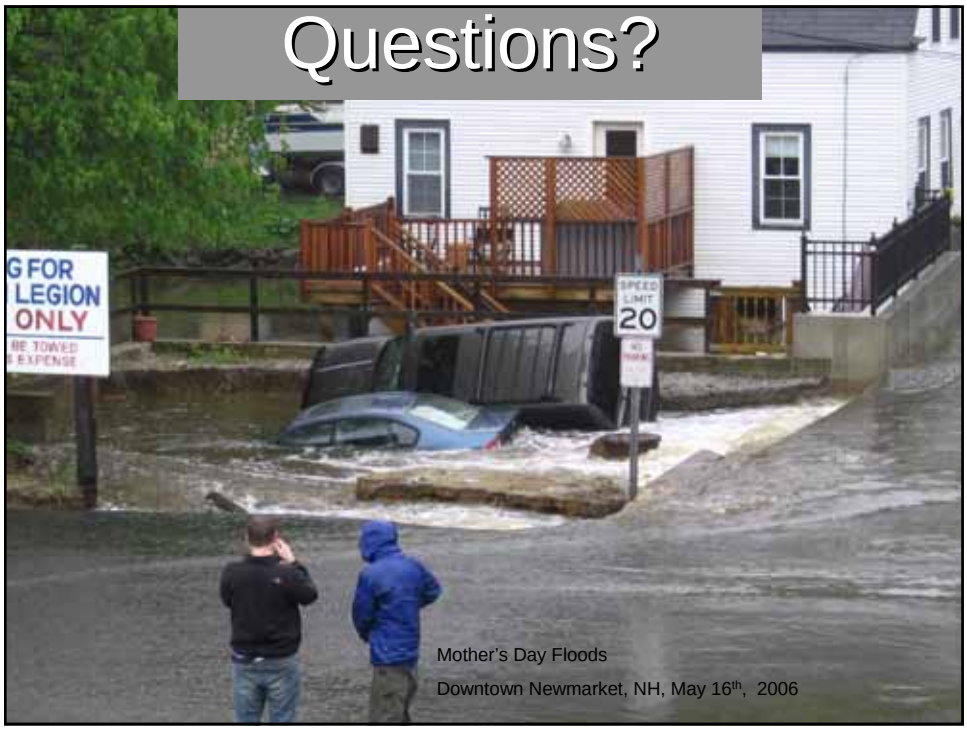
Questions?



Mother's Day Floods

Downtown Newmarket, NH, May 16th, 2006

NH Water Primer and Stormwater Permitting at NHDES

Overview and discussion

November 3, 2008

NH Water Primer

Purpose:

To comprehensively describe important water resource topics together in a single document.

- Provides significant issues and challenges related to each topic.
- Addresses the underlying themes and challenges such as landscape change, identifying status and trends, infrastructure needs, climate change and resources.

NH Water Primer
Stormwater Chapter

- Provides background on stormwater and its significance.

- Describes stormwater issues:
  - Conventional stormwater management practices are harmful to water resources & drainage infrastructure.
  - Existing stormwater structure is inadequate.
  - Municipalities have inadequate funding & regulatory mechanisms to improve stormwater management.

NH Water Primer
Stormwater Chapter

- Describes current management & protection programs
  - National Pollutant Discharge Elimination System (NPDES): CGP, MSGP, MS4.
  - Section 401 Water Quality Certification & Antidegradation.
  - Alteration of Terrain Program.
  - Shoreland Protection Act.
  - Local Stormwater Programs.
  - Technical Assistance: UNH, Regional Planning Commissions, NH Office of Energy & Planning, NH Dept. of Environmental Services.

NH Water Primer
Stormwater Chapter

- Provides stakeholder recommendations
  - Encourage Facilitate the local adoption of state stormwater management standards.
  - Encourage low impact development (LID) and compact development.
  - Upgrade stormwater infrastructure.
  - Implement stormwater utilities.
- Final chapter available early in November and

Multitudinous Permits

- Wetlands
- Alteration of Terrain (AoT)
- Comprehensive Shoreland Protection Act (CSPA)
- Subsurface (Septic)
- 401 Surface Water Quality Certification
- Water supply
- Wastewater engineering
- Federal Permits – Alphabet soup of 404, NPDES, CGP, small MS4 GP, SPGP

Permits related to stormwater

- Alteration of Terrain (AoT)
- Municipal Separate Storm Sewer System (MS4)
- Construction General Permit (CGP)
- Multi-Sector General Permit (MSGP)

Alteration of Terrain
State Authority

Who/where applies to –

- Earth moving operations (e.g., industrial, commercial, residential development, sand/gravel pits, rock quarries) that propose to disturb:
  - **100,000** sq. ft (2.3 acres) of earth disturbance, or
  - **50,000** sq. ft if ***ANY*** disturbance is within the Protected Shoreland (250' of a surface water)

What it requires –

- Devices and timing of implementation for erosion, sediment and runoff control;
- Detailed pre- and post-development drainage and grading plans; and
- Proposed permanent methods for protecting water quality from degradation due to runoff from paved surfaces, roofs, roadways, parking lots, commercial/industrial areas and other developed surfaces.

What it is trying to achieve --

"No person undertaking any activity for which a permit is required shall cause or allow the activity to cause any water quality degradation, including siltation or turbidity in surface water." Env-Ws 415.04

NPDES Phase II Municipal Separate Storm Sewer System (MS4)
EPA Authority

Who/where applies to –
- Urbanized areas (defined by the 2000 Census), U.S. military installations, state or federal hospitals, county prison complexes, states colleges or universities, highways, and other thoroughfares.

What it requires –
- 5-year permit term to implement a stormwater management program & "six minimum control measures":
  - Public education & outreach
  - Public participation/involvement in developing stormwater management program
  - Illicit discharge, detection, & elimination (IDDE)
  - Construction site runoff control
  - Post-construction runoff control
  - Pollution prevention/good housekeeping

What it is trying to achieve --
- Reduce the discharge of pollutants to the "maximum extent practicable",
- Protect water quality; and
- Satisfy the appropriate water quality requirements of the Clean Water Act.

NPDES Construction General Permit (CGP)
EPA Authority

Who/where applies to –
- Construction activity that disturbs one or more acre of land, or
- Work site creates less than one acre of disturbance, but is part of a larger "common plan of development or sale" that totals more than one acre.
- EPA administers (only in MA, NH, NM, ID, AK)

What it requires –
- Pollution prevent plans
- Appropriate construction site runoff controls to meet the goal of reduced pollutant discharge to receiving waters.

What it is trying to achieve -
- CWA goals – "…to restore and maintain the physical, chemical, and biological integrity of the Nation's waters." And attaining "…water quality which provides for the protection and propagation of fish, shellfish and wildlife." 33 U.S.C. 1251(a)(2).

NPDES Multi-Sector General Permit (MSGP)
EPA Authority

Who/where applies to –

- Stormwater discharges from industrial activities

What it requires –

- Implementation of control measures including BMPs and technology-based effluent limitations.
- Permit holders are required to perform routing facility, quarterly visual inspection of stormwater discharges, annual comprehensive site inspections, monitoring and reporting.
- Subject to inspections and enforcement by EPA.

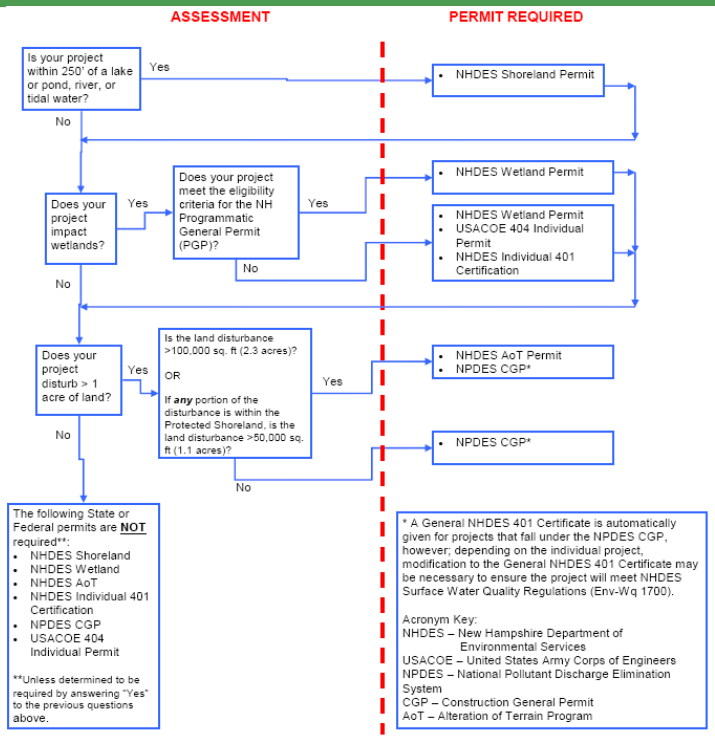
What it is trying to achieve --

- CWA goals – "…to restore and maintain the physical, chemical, and biological integrity of the Nation's waters." And attaining "…water quality which provides for the protection and propagation of fish, shellfish and wildlife." 33 U.S.C. 1251(a)(2).

Permitting Context

- Permits are dependent on what applicants request not on what agency wants.
- Decisions about where to put a project (in a locale) are largely made before permitting.
- Permitting may happen before, in parallel with, or after local permit decisions.
- Permit decisions are based solely on statutes and rules.
- Some permits are formulaic (septic) others have greater interpretation (wetlands).
- Some permits have a Federal component.

Permitting Assessment



Permitting Process and Commission Opportunities

Site Selection

Where in town is local – where on site is state?

Pre-Application

- Town and state meet together.
- Greatest opp. for change.
- New SIG project

Permit criteria

Functional vs. size and type

Performance vs. design criteria

Best env. result vs. avoid, minimize, mitigate

Permit integration

Request for More Information

Iterative process

Permit with conditions

Whose conditions?

Appeals

Which board and which court?

Compliance

Third party inspection

Permit inspection

Joint state/local enforcement

Reporting and assessment

Track environmental performance

Opportunities for Looking at Where?

- Municipal Master Plan and Zoning
- Municipal Conservation Plan (Con Com)
- F&G Wildlife Action Plan
- DES Source Water Protection Plan
- RSA 483 Designated River LAC Plans
  - DES shall consider when issuing AoT or Wetland permits
- Natural Heritage Bureau exemplary communities
- SPNHF and TNC Plans
- Land Conservation Plan for NH Coastal Watersheds

SW NH - Oct 2005

Water from the Hills:

Preparing Our Communities for Change

Michael Simpson

Antioch University-New England

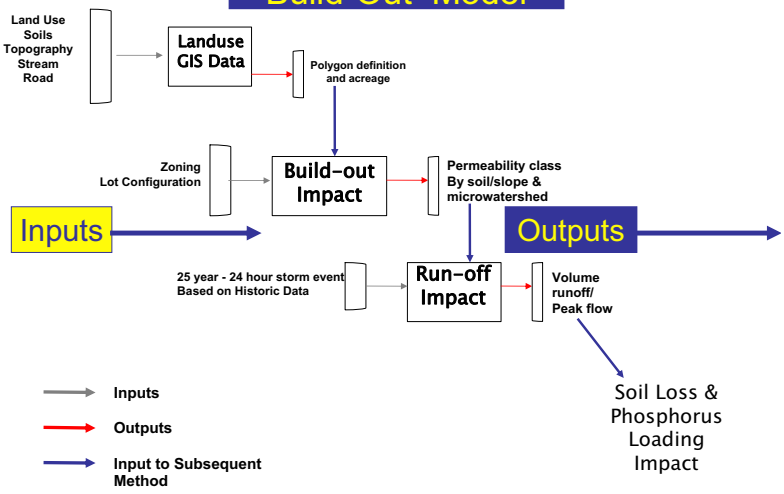
Central-Coastal NH - May 2006

24 hr-25 yr rain fall amounts SCS 1977

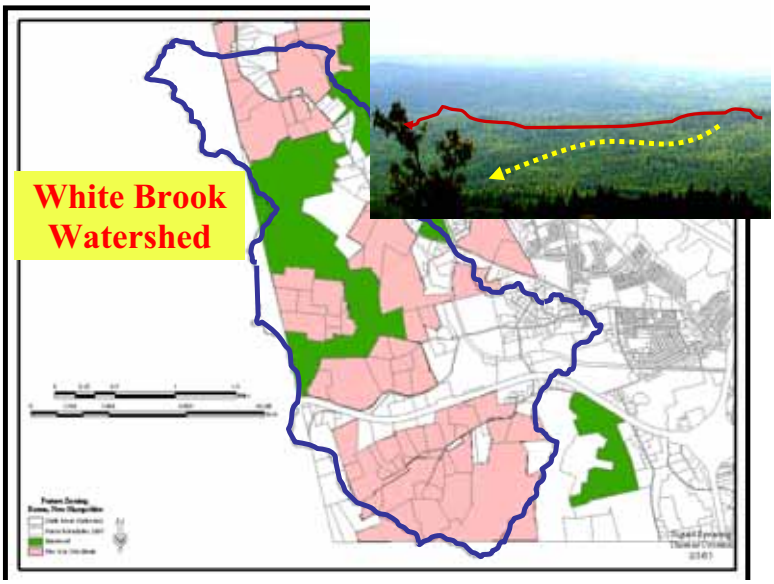
Central-Eastern NH - April 2007

Upper CT River Valley - June 2005

Phase 1: Build-Out Model

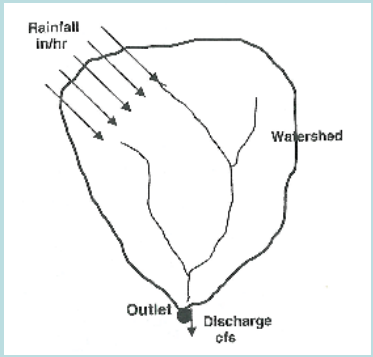


VT and Upper Valley - July 2007



Lakes Region NH - August 2008

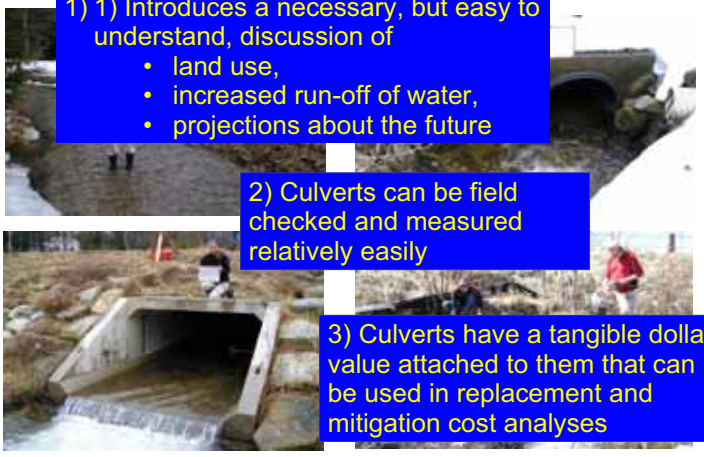
Catchment response to rainfall



WHY CULVERTS?

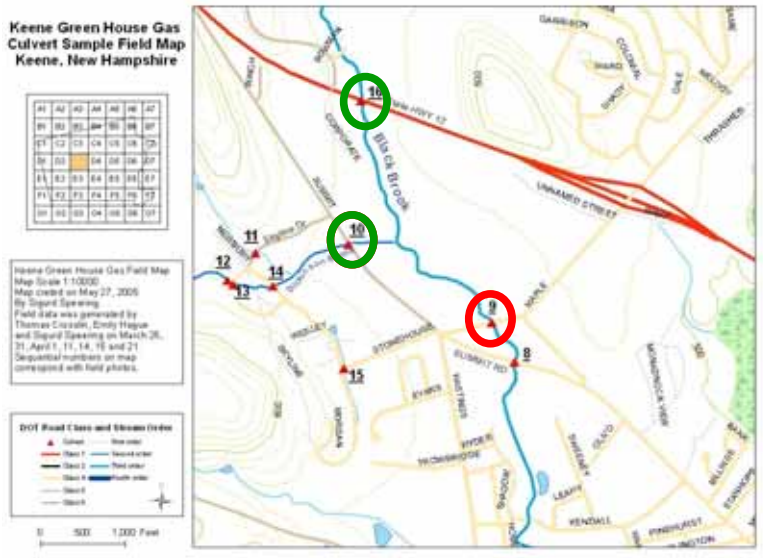
lvert and landscape characteristics

1) 1) Introduces a necessary, but easy to understand, discussion of
- land use,
- increased run-off of water,
- projections about the future

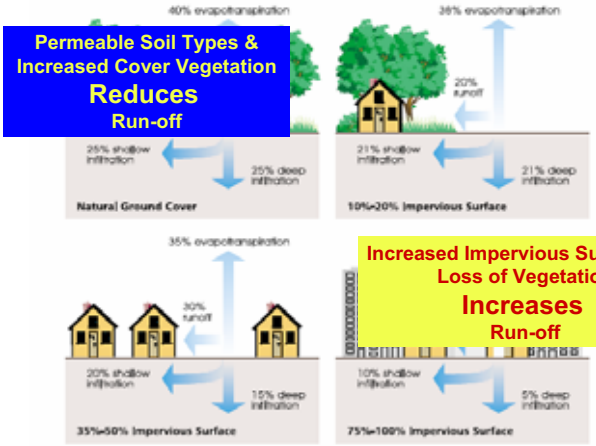


2) Culverts can be field checked and measured relatively easily

3) Culverts have a tangible dollar value attached to them that can be used in replacement and mitigation cost analyses



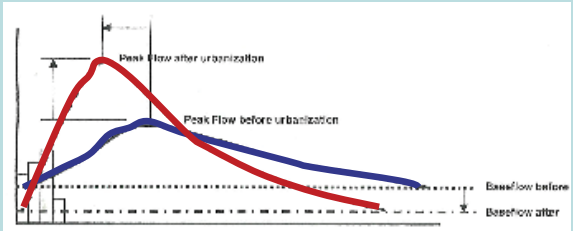
Some Basics About Development and Hydrology



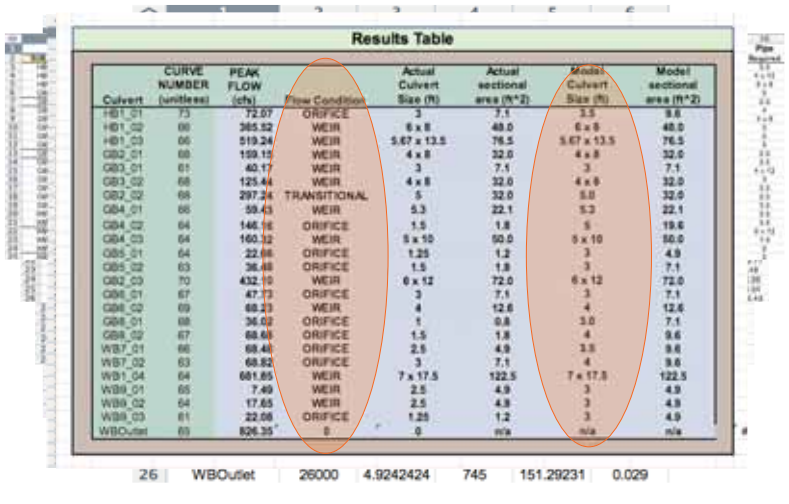
Source: *"Low Impact Development Hydrologic Analysis"*. Dept. of Env. Resources, Programs and Planning Division, Prince George's County, Maryland, July 1999.

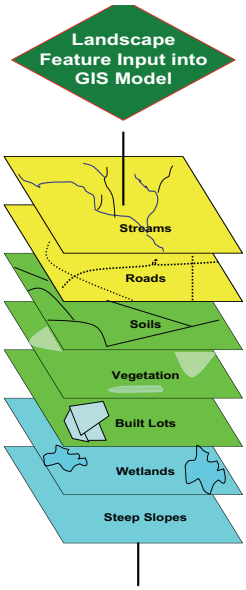
Slide Created by Emily Hague

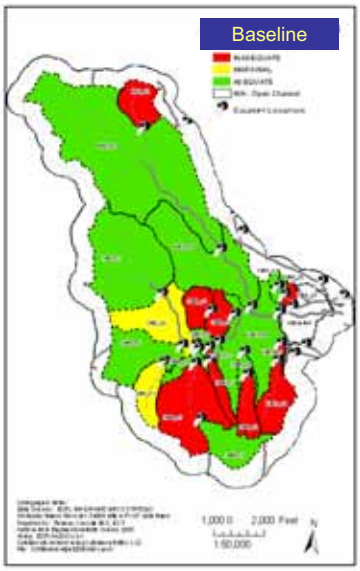
Urbanization increases peak flow (Q_p)



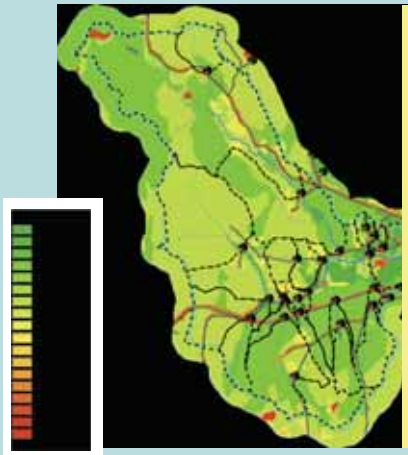
Runoff, Peak Flow, & reverse engineering computations







Spatial distribution of runoff potential

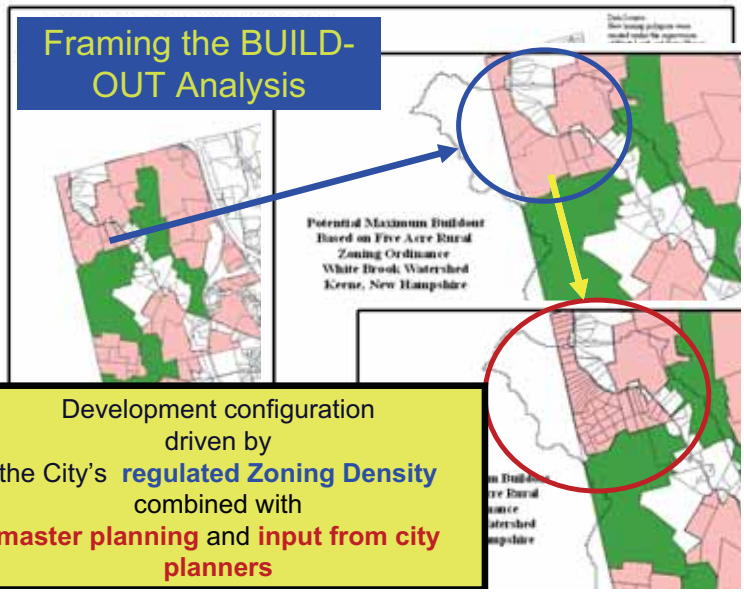


Variables exported to Excel for each sub-catchment

- Land use
- Slope
- Main channel length
- Sub-catchment area

SYNTECTIC International

Framing the BUILD-OUT Analysis



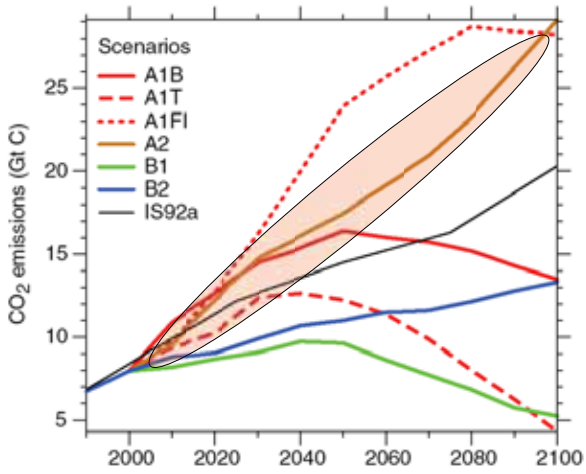
Development configuration driven by the City's **regulated Zoning Density** combined with **master planning** and **input from city planners**

Determining culvert and landscape characteristics

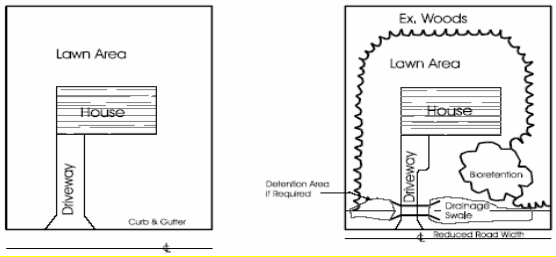
Photo-documenting structures

Measuring % change in slope

Projecting Future Climate Change for the Northeast: Greenhouse Gas Emission Scenarios

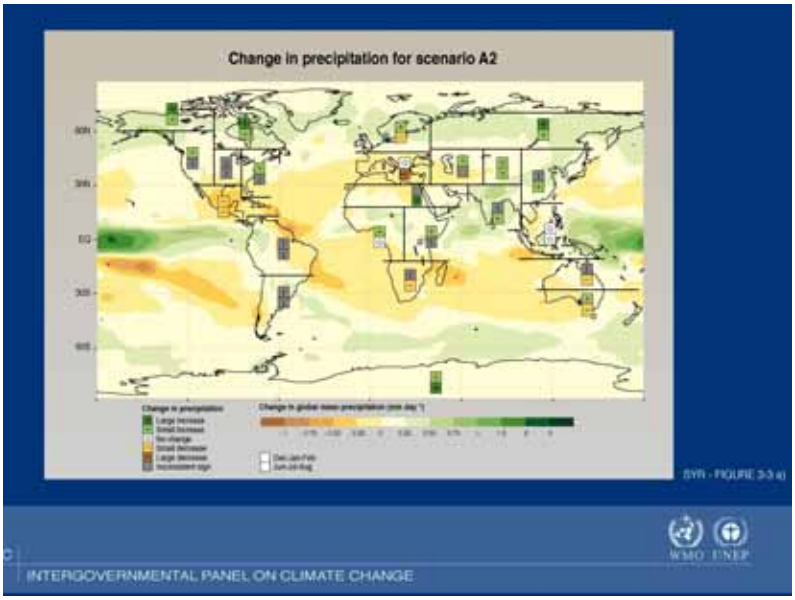


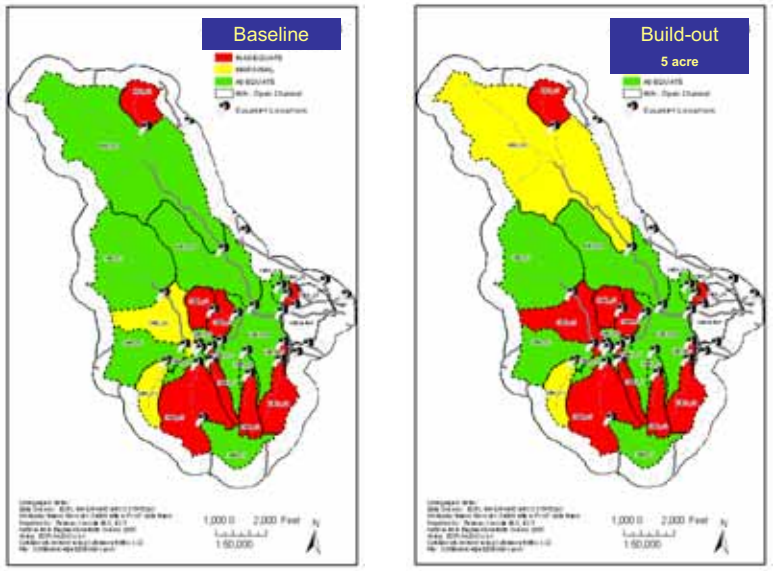
Thus…Build-out Projections are Based On Assumptions



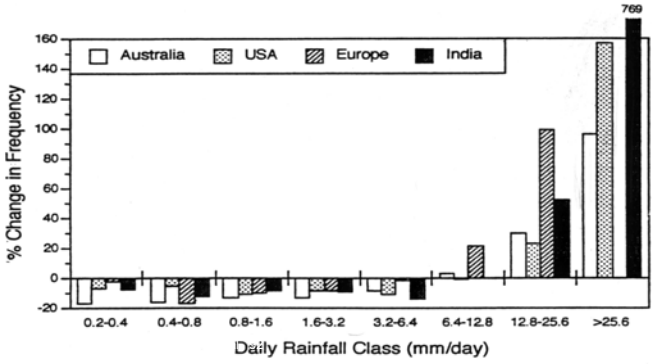
Example of an assumed 5-acre lot configuration :

Roof area: 2.3%
Driveway: 4.6%
Sidewalk/patio: .5%
Lawn: 18.4 %
Forest: 74.3%





Gordon et al. (1992) found that climate change induced increases in rainfall amounts will **disproportionately increase the frequency of the most intense storms:**



Syntectic Int'l, 04/07

Phase 2: Climate Change

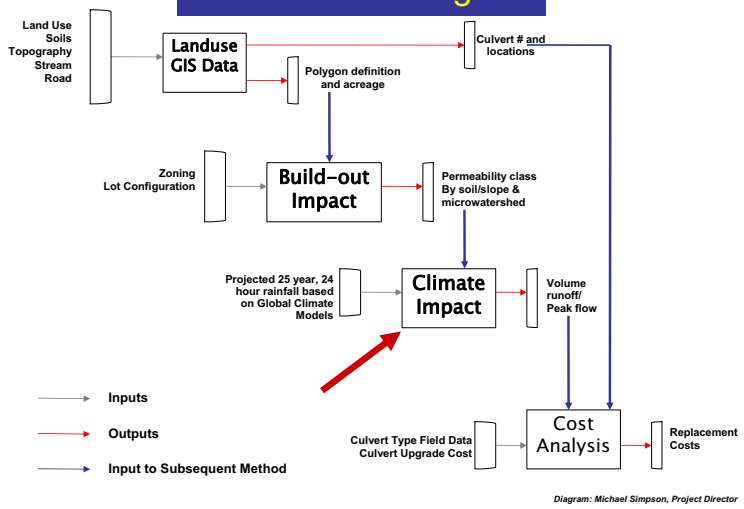
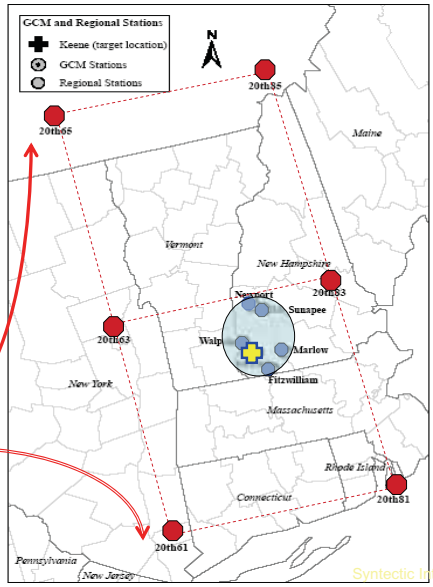


Diagram: Michael Simpson, Project Director

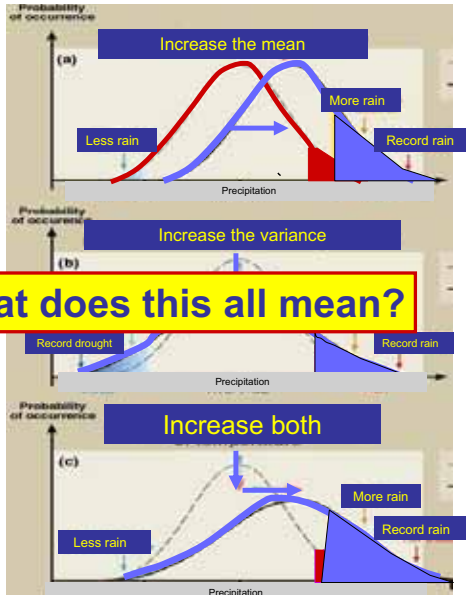
Six gridpoints proximate to Keene, NH were used to transfer the expected change in precipitation from the GCM to Keene and regional stations



Statistical depiction of why an increase in either mean precipitation,

or

precipitation variability, leads to an increase in the tail of the distrib

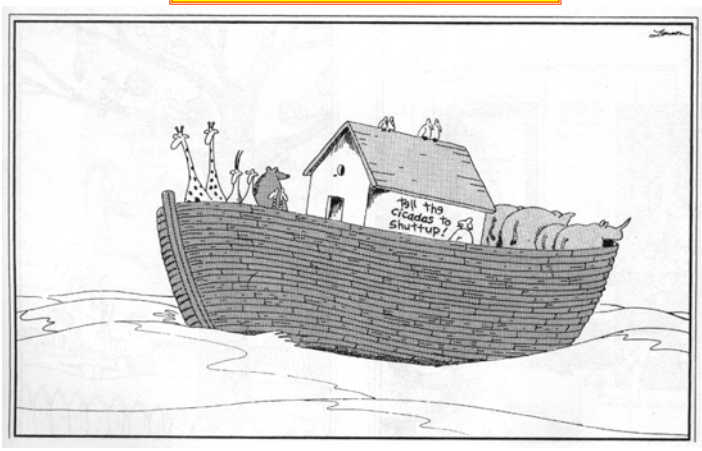


So what does this all mean?

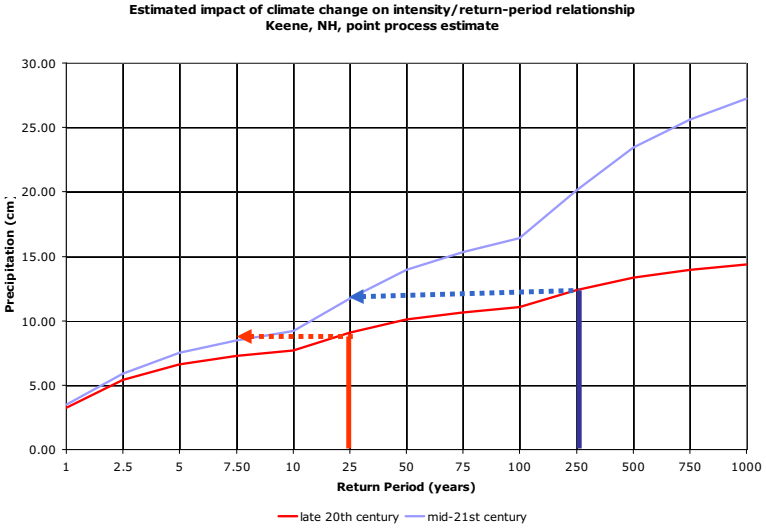
Projected Precipitation Amounts for Historic and Projected mid-21st century
(cm / 24 hours)

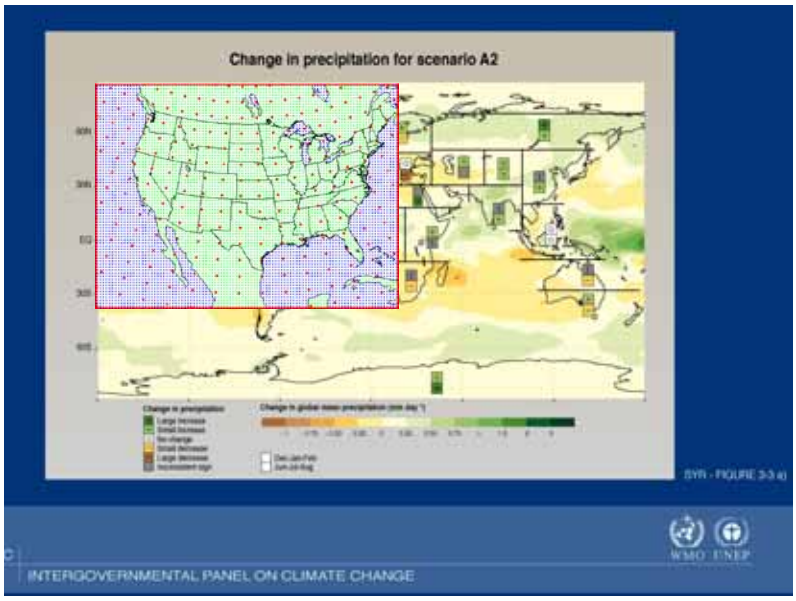
		rainfall		∂% rainfall
P	return period (years)	late 20th century	mid-21st century, de-normed scale & location	mid-21st century, de-normed scale & location
0.1	**1**	3.26	3.46	6.3%
0.6	**2.5**	5.44	5.87	7.9%
0.8	**5**	6.63	7.50	13.1%
0.8667	**7.50**	7.27	8.49	16.8%
0.9	**10**	7.71	9.21	19.5%
0.96	**25**	9.07	11.74	29.5 %
0.98	**50**	10.07	13.93	38.2%
0.98667	**75**	10.66	15.33	43.9%
0.99	**100**	11.07	16.39	48.1%
0.996	**250**	12.38	20.16	62.9%
0.998	**500**	13.36	23.46	75.6%
0.998667	**750**	13.94	25.60	83.6%
0.999	**1000**	14.35	27.21	89.7%

...more intense storms



"tell the cicadas to shuttup!"





Cost Development

Quantities and costs of culverts to be upgraded

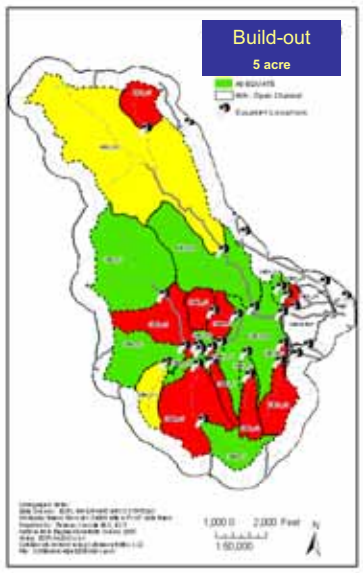
Annual Municipal Budget: $ 48,000,000

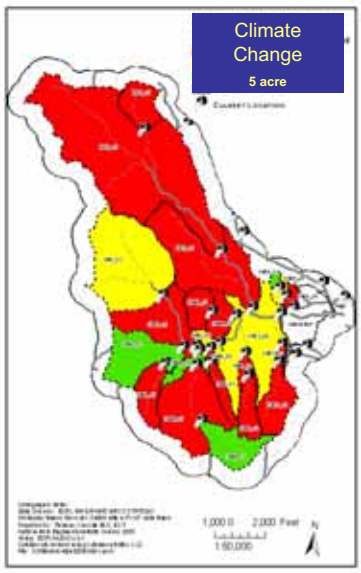
Population: 23,000

30 year municipal bond at 8%

$ 6.75 / capita / year

Extrapolated to entire community, would be approximately
$ 2 million to upgrade all culverts





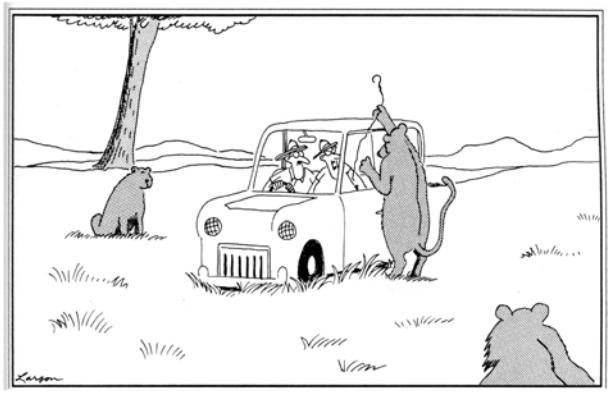
Whitcomb Mill Road

- Cost:
  Pro-action < *Reaction*
- *Inaction* & *Action*:
  both have consequences

Projected Culvert Upgrade
$ 56,000

Engineer's Coist to Repair Road
$ 93,000

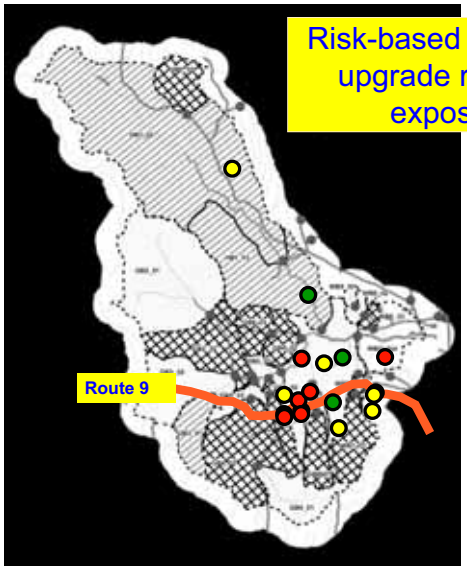
The Tools To Adapt



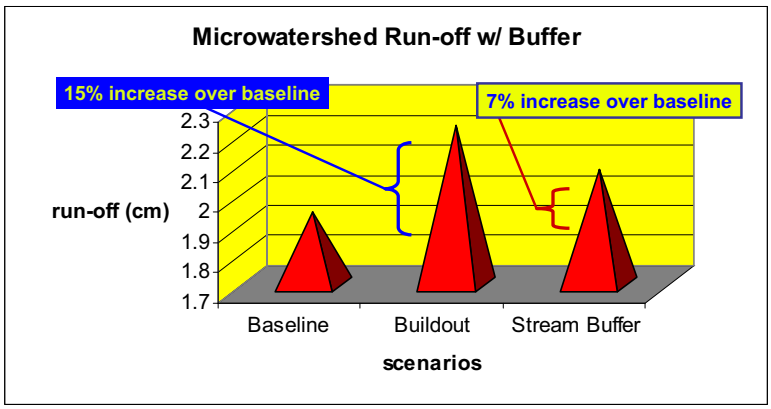
"Drive, George, drive! This one's got a coat hanger!"

"Drive, George, drive! This one's got a coat hanger!"

Steep Slopes

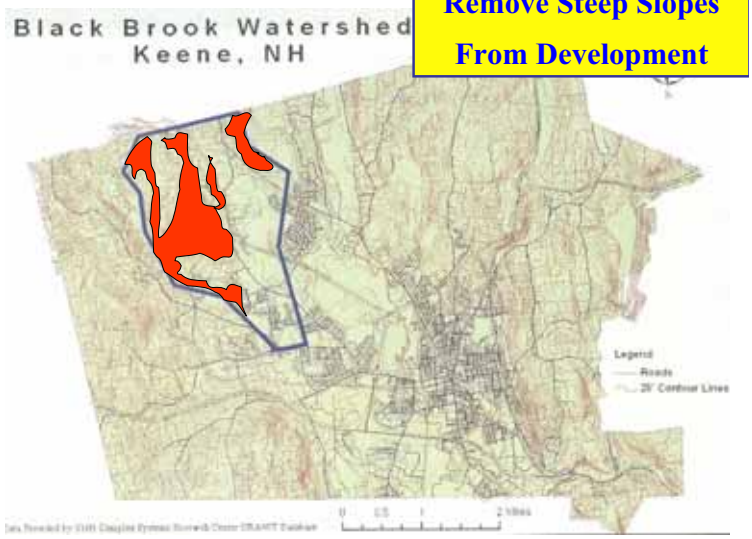


Risk-based & phased upgrade reduces exposure

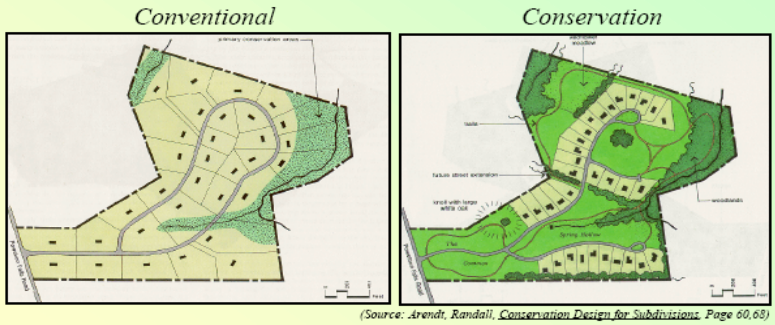


HURRICANE BROOK - 24 hour - 2 year storm event

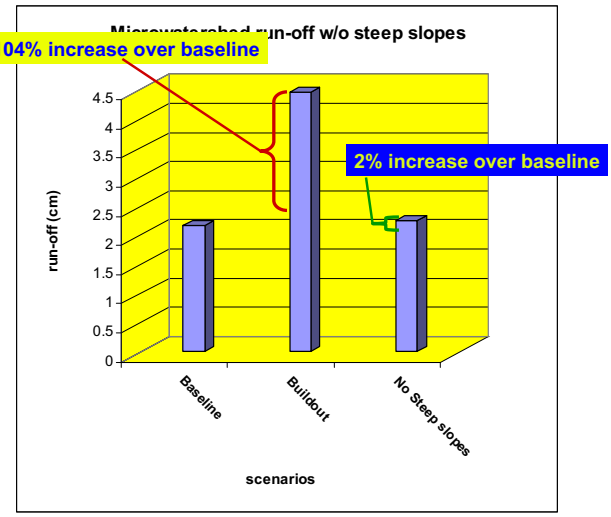
Remove Steep Slopes From Development



LOW IMPACT DEVELOPMENT DESIGN (LID)



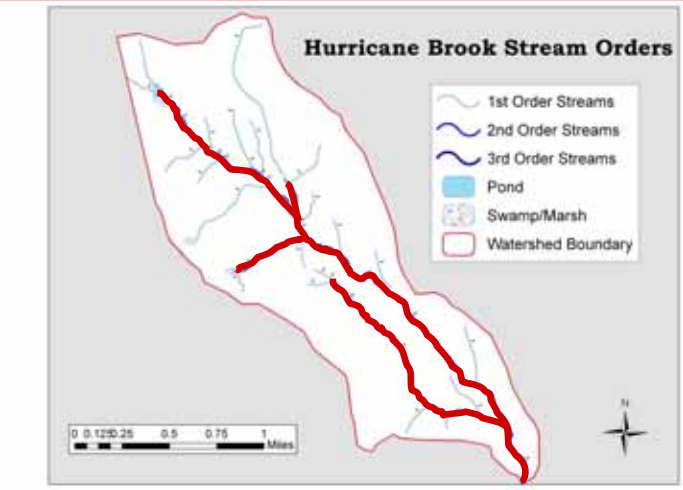
(Source: Arendt, Randall, Conservation Design for Subdivisions, Page 60,68)



BLACK BROOK - 24 hour - 2 year storm event

LID – Porous Asphalt
For all new build-out

Institute Riparian Buffers



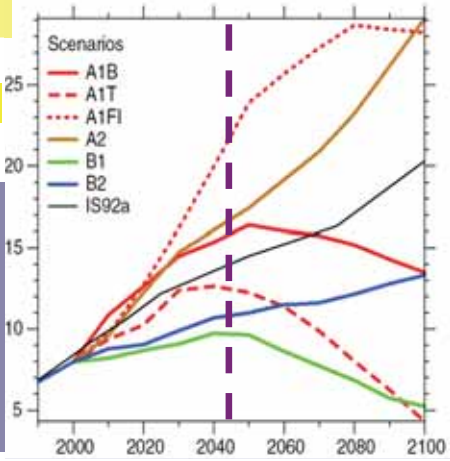
But the GCMs are still models... built upon a variety of assumptions about human behavior...

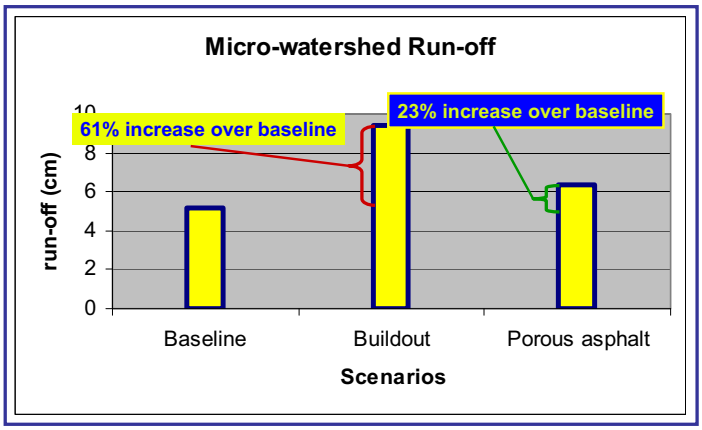
…how certain can we be?

4th Assessment Report was authored by 600 scientists

The review of this research included an additional 30,000 scientists

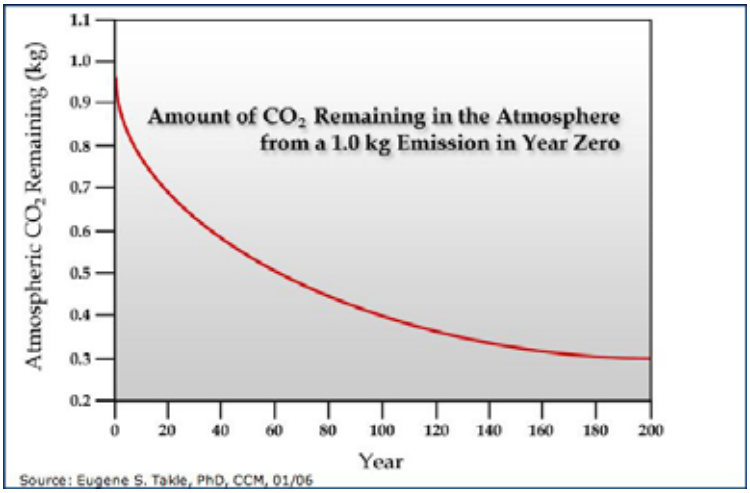
Consensus from the IPCC is that the climate change outputs from projected CO_2 loadings are...
very likely

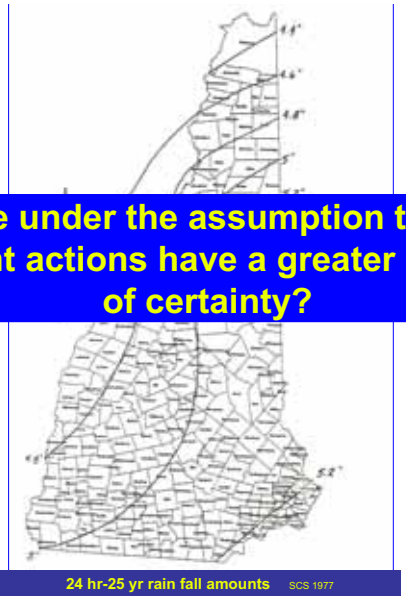




WHITE BROOK - 24 hour - 25 year storm event

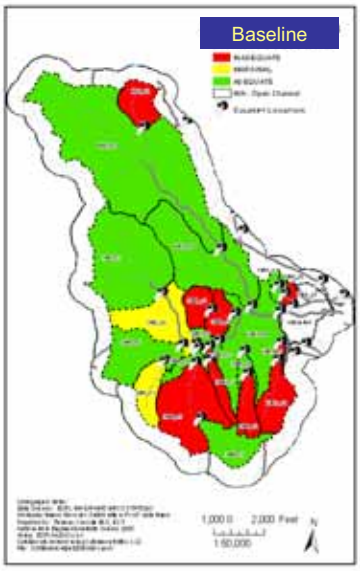
CO_2 persists in the atmosphere





Are we under the assumption that are current actions have a greater degree of certainty?

24 hr-25 yr rain fall amounts SCS 1977



Within the context of managing our landscape…

we operate within the daily decision-making contexts of planning boards, zoning boards of adjustment and annual town meeting budgetary decisions…

decisions reflect a **certainty** about our landscape but…

such decisions are incremental in nature because of the focus on the present

The specter of uncertainty

Risk = Exposure x Probability

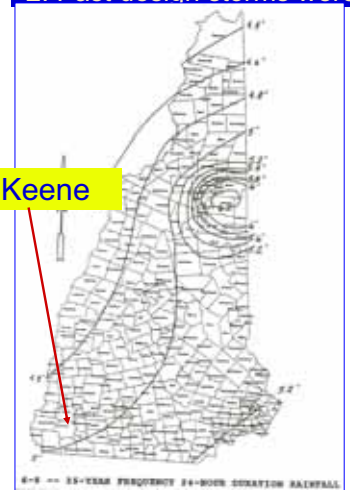
With information about climate change we are balancing uncertainties

The uncertainty that climate change is real, and if a reality that it will significantly impact me or my community

Uncertainty of making bad decisions due to incorrect commitment of, and therefore wasting, limited resources

Past not as certain as we'd like to think:

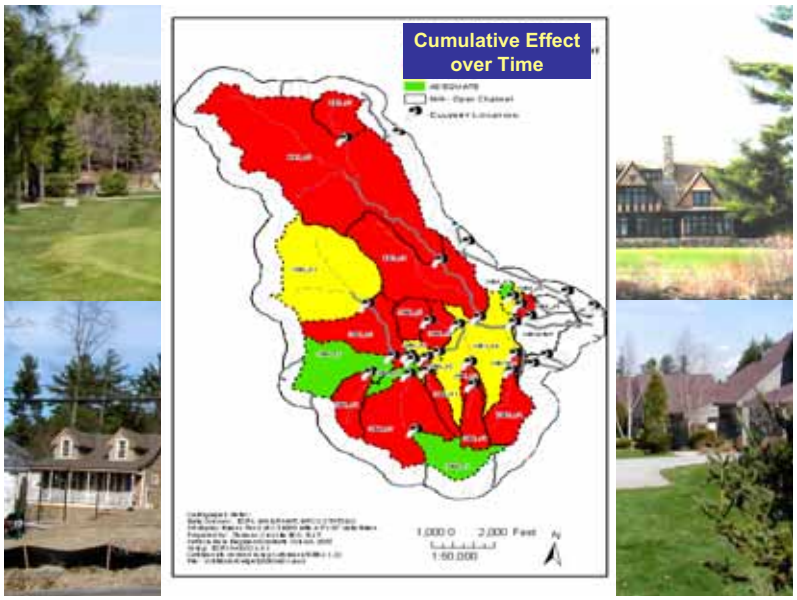
2. Past design storms were probabalistic

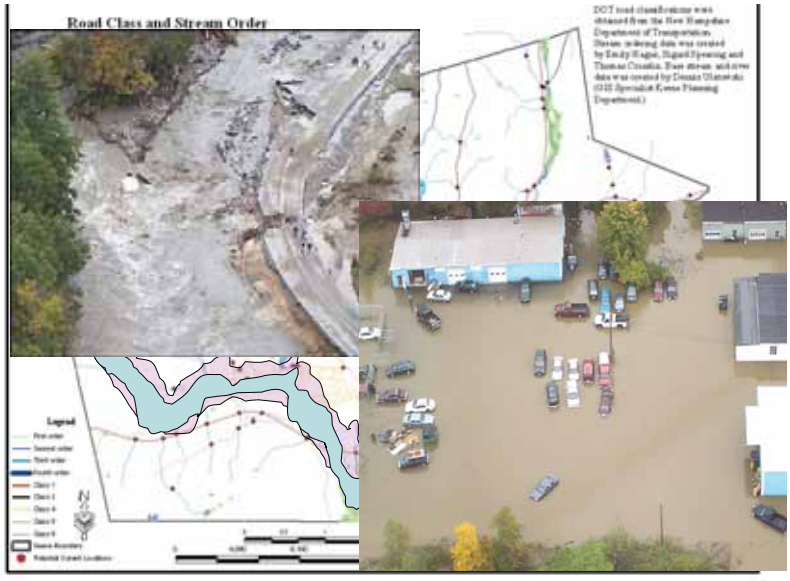


Point process estimate of 24-hr, 25-year storm, based on 1970-2000 NCDC records:

+95% ci = 12.4 cm (+41%)
point est. = 8.8 cm
-95% ci = 7.2 cm (-17%)

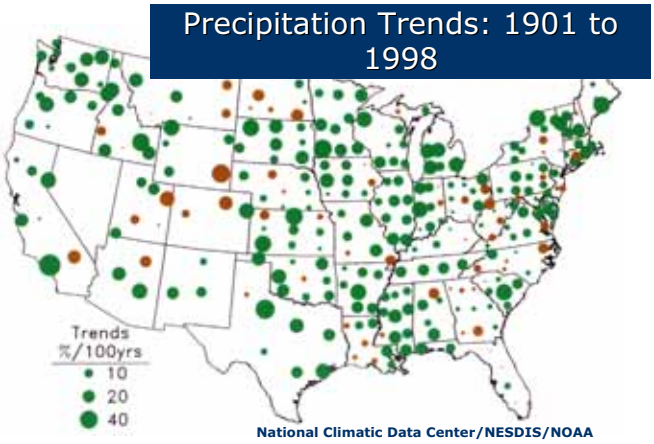
Spread is 58% of estimate…
NOT very precise!!

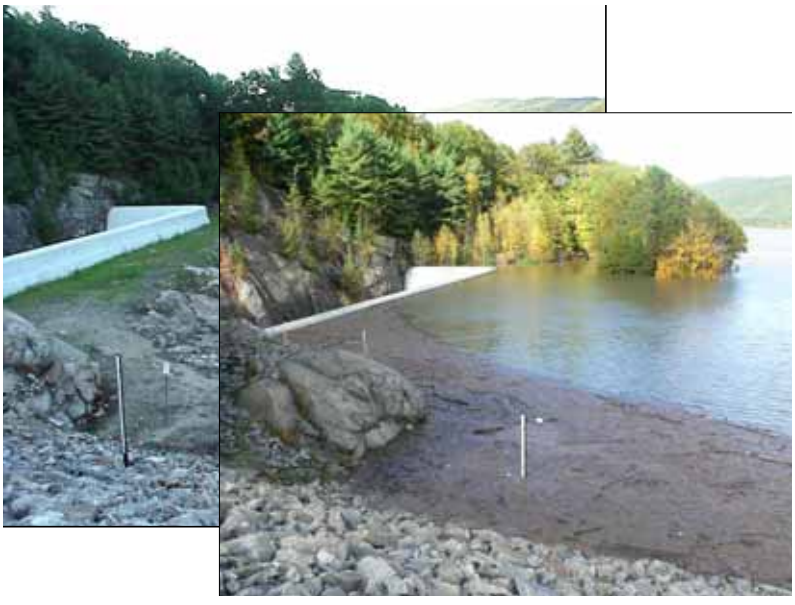




Past not as certain as we'd like to think:

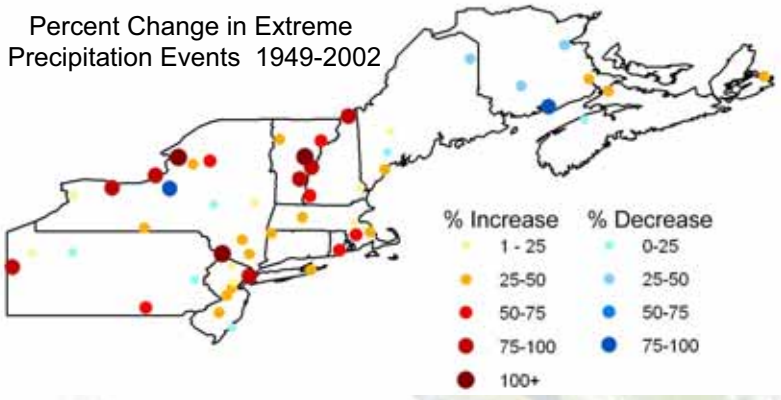
1. Intensity/frequency was not stationary





Spatial Variation of Extreme Precipitation Trends: 1970-2002

Percent Change in Extreme Precipitation Events 1949-2002



The extreme precipitation trend was calculated from a linear regression of number of


The best way to predict the future is….
to invent it.

Small MS4 General Permit

Barbara McMillan, NH Department of Environmental Services

December, 2008

Topics to be Covered

- Federal Stormwater Permits
- NH Stormwater Coalitions
  - Who
  - Why
  - What
- What Next

Phase I Stormwater Program

- Industrial activities associated with stormwater discharges
- Large municipal separate storm sewer systems
- Medium municipal separate storm sewer systems

Phase II Stormwater Program

- Construction General Permit (CGP)
- Multi-sector General Permit (MSGP)
- Municipal separate storm sewer systems (Small MS4s)

MS4 = Municipal Separate Storm Sewer System

- Systems that discharge to US waters
- Urbanized areas (defined by the 2000 Census)

Phase II in NH

- 38 traditional municipalities
- 7 municipalities with waivers
- 4 non-traditional municipalities?

Current Permit Status

- Permit expired on May 1, 2008
- Municipalities covered by previous permit remain covered until new permit and authorization

Permit Requirements

- Stormwater management program
- Notice of Intent (NOI)

Permit Requirements: Six Minimum Control Measures

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Storm Water Runoff Control
- Post Construction Management
- Pollution prevention and Good Housekeeping

Stormwater Coalitions - Who

- Nashua
- Seacoast
- Manchester

Stormwater Coalitions - Why

- Meeting permit requirements
  - Networking
  - Coordinating
  - Providing resources
  - Venting
  - Bonding

Stormwater Coalitions - What

- Projects
- Conferences
- Presentations
- Roundtables
- Legislation

Public Education and Outreach

- Requirements
- Done
- To do
- Barriers

Public Participation/Involvement

- Requirements
- Done
- To do
- Barriers

Illicit Discharge Detection and Elimination

- Requirements
- Done
- To do
- Barriers

Construction Site Runoff Control

- Requirements
- Done
- To do
- Barriers

Post Construction Runoff Control

- Requirements
- Done
- To do
- Barriers

Pollution Prevention/good Housekeeping

- Requirements
- Done
- To do
- Barriers

General Observations/Comments

- Coordinators take responsibility
- Regs lack enforcement
- Needs are diverse
- Coordinators lack support
- DPWs have other demands
- Regs fall short
- Citizens drive outcomes
- MS4 are small part of state

Might Help

- Encourage consistency
- Supply state education
- Tighten relationships
- Promote stormwater utility
- Define authority
- Coordinate state or regional efforts

Help on the Way (maybe)

- Stormwater utility grant
- Clean watersheds needs survey
- Increase in some federal funding
- More EPA enforcement
- New Alteration of Terrain Rules and other regulations
- Increase # of NH regulated communities

Conclusion

- There is a ton being done
- Efforts are ongoing
- Coalitions are a resource

Contact Information

- Barbara McMillan
  - Barbara.McMillan@des.nh.gov
  - (603) 271-7889

New Hampshire House Bill 648

Chapter 179 Laws of 2007

Comprehensive Flood Management Study Commission

Final Report

September 2008

Presentation to:

HB 1295 COMMISSION TO STUDY THE ISSUE OF STORMWATER MANAGEMENT

Steven M. Couture, NHDES Rivers Coordinator

HB 648 Flood Commission: Membership

- Rep. Gene Andersen, House: Science, Technology and Energy (CHAIR)
- Gary Kerr, Hydroelectric Industry (VICE CHAIR)
- Rep. Vincent Greco, House: Fish and Game
- Rep. Peter Allen, House: Environment and Agriculture
- Rep. David Russell, House: Resources, Recreation and Development
- Sen. Margaret Hassan
- Sen. Harold Janeway
- Katja Fox, Governor's Office (Assistant for Policy)
- John Magee, Rivers Management Advisory Committee
- Sue Desruisseaux, MPANH Municipal Association (Town of Goffstown)
- Mark Zankel, The Nature Conservancy
- Steve Couture, DES Commissioner (DES Water Division, Rivers Coordinator)
- Robert Beaurivage, P.E.NH Water Works Association (Manchester Water Works Assistant Director)
- Joanne Cassulo, Governor's Office of Energy and planning (Floodplain Coordinator)
- Stewart Yeaton, Agriculture
- Michael Andosca, Shorefront Property Owner
- James Gallagher, P.E.DES – Hydrologist (DES Water Division)

- Others: Jennifer Gilbert (OEP), Keith Robinson (USGS), Chris Pope & Mike Poirier (Emergency Management), Mike Pillsbury (NHDOT), Carl Paulsen (NH Rivers Council), & Steve Doyon, Rick Chormann, & Jennifer Rowden (NHDES

HB 648 Flood Commission: Process

- Timeline: August 2007-September 2008
- 16 presentations (Appendix C)
- 3 Subcommittees
  - Landscape Management
  - Flood Forecasting & Data Collection
  - Dam Management

HB 648 Flood Commission Key Finding

Need: Limit the new construction of new critical or state facilities in fluvial hazard zones.

- Increase state facilities stormwater requirements.
  - The sponsor of any development or redevelopment project involving a state facilities project 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.

HB 648 Flood Commission Key Finding

Need: Establish a state-level regulatory approach for floodplain management.

- Develop watershed-specific HEC-RAS models across the State to assist in understanding flood flow characteristics and how land use and climate changes are affecting flood prone areas. Such modeling could also determine critical flood storage areas needed for protection from development. State could use as basis for buildout analysis to be used by AoT.

HB 648 Flood Commission Key Finding

Need: Increase ability for the state and municipalities to manage stormwater.

- New Hampshire House Bill 1295 establishes a commission to study issues relating to stormwater. The following issues should be further investigated by the Stormwater Study Commission in relation to floodplain management:
  - Basic stormwater issues and their relevance to floodplain management.
  - Impervious surfaces and effect on peak flows and runoff volume.
  - New Hampshire should strive to minimize to the extent technically feasible

    development impacts to hydrology (volume and peak flows).
  - Climate change impacts on stormwater.

HB 648 Flood Commission Key Finding

Need: Increase ability for the state and municipalities to manage stormwater.

- Local fee on impervious surfaces could be used to address/upgrade stormwater management to minimize hydrologic changes.
  - House Bill 1581 Chapter 295, Laws of 2008 allows the formation of stormwater utilities.
- DES and OEP should actively support the creation of stormwater utilities.
  - DES and OEP should provide technical assistance program for communities.
- Continue support for DES and Regional Planning Commissions Innovative Land Use Controls stormwater ordinance.
- Encourage municipalities to submit stormwater infrastructure needs to DES as part of the 2008 Clean Water Needs Survey.
  - Fund stormwater infrastructure improvements through the State Revolving Fund and State Aid Grant programs.

HB 648 Flood Commission Key Finding

Need: Ensure that bridges and culverts are adequately sized.

- DOT should address climate change and impervious surface effects when updating its *Manual on Drainage Design for Highways*.

HB 648 Flood Commission Key Finding

Need: Increase education and outreach to communities regarding floodplain management and insurance options.

- Develop a multidisciplinary team to assist communities who request help to improve floodplain management. This could be based on the Natural Resources Outreach Coalition model.

HB 648 Flood Commission: Implementation to Date

- LSR 207 to include fluvial erosion hazard ordinance into the Innovative Land Use Controls statue
  (Primary: Rep. Andersen, Sponsor: Rep. Kappler)
- LSR 743 to authorize in lieu of fee option for wetlands for projects that impact floodplains and stream channels
  (Primary: Sen. Janeway, Sponsor: Rep. Spang)
- Inventorying state land in 100 & 500 year floodplains (DoS and DES)
- Inclusion of 100 year floodplains in new AoT rules. In Zone A the applicant will have to model the floodplain.
- Commission findings/recommendations included in OEP *Floodlines*, DES newsletter and Dept. of Safety's electronic newsletter.
- Report to be referenced in Climate Change Task Force Report, Adaptation Chapter and findings/recommendations to be considered in Climate Change Adaptation Plan

Summary of the Effects of Land Use on Water Quality, Aquatic Habitat and Biota
DRAFT

John A. Magee
Fish Habitat Biologist
New Hampshire Fish and Game Department
January 4, 2009

Submitted to: HB 1579 "Land Use" Commission
HB 1295 "Stormwater" Commission

Studies over the last three decades have clearly demonstrated that land use has direct and indirect impacts on water quality, stream characteristics, aquatic habitat, macroinvertebrates, and fish (e.g., references in Brown et al., 2005 and Hughes et al., 2006). Although the exact mechanisms for these impacts at specific sites is not always immediately obvious, the impacts have been demonstrated to be due to altered hydrology and its attendant water quality and aquatic habitat, both at the individual site and at the watershed scale. The two books cited in this paragraph contain more than 1,000 pages of peer-reviewed manuscripts reporting the results of dozens of studies recently conducted throughout the United States. There are hundreds of other recent manuscripts on this topic, some of which are cited here. It is the intent of this short paper to provide a summary of the effects of land use on the aquatic environment, and in doing so, a relatively small number of books and manuscripts have been cited. Some additional resources are contained in the Other References section. Inherent to land use is the fact that humans alter the hydrology watersheds.

Degradations in the channel morphology (e.g., Konrad et al., 2005), water quality, macroinvertebrates and fish (e.g., Deacon et al., 2005; Kennen et al., 2005; Walters et al., 2005; Stranko, et al., 2008) are common with increasing impervious area within a watershed. Overall, channel morphology and aquatic habitat become less diverse, nutrient and pollutant levels in streams increase, and macroinvertebrate and fish communities shift from those species that require high quality water to those that can survive in degraded water quality and habitat conditions.

Most studies have identified impervious surfaces as a quantifiable attribute of land use that is clearly linked to (i.e., actually causes) degradation of water quality, aquatic habitat and biota (e.g., Stranko et al, 2008; references in Brown et al., 2005 and Hughes et al., 2006). As more studies have been conducted throughout the United States and also in New Hampshire (see Deacon et al., 2005), the threshold at which impervious surfaces have been shown to cause impacts to stream channels, water quality and biota is about 4-5% (Stranko et al, 2008, who showed that wild brook trout were completely eliminated from watersheds in which the percent impervious surfaces were only 4% of the total watershed area), although 10% has also been reported as a general threshold by an earlier summary report (CWP, 2003). Additionally, the impacts occur quite rapidly, on the order of a decade or perhaps even more quickly. An important factor associated with impervious surfaces in New Hampshire is winter maintenance and the use of salt. The USEPA has criteria for chloride concentrations in receiving waters, and

routinely these standards are violated by stormwater runoff (Houle, 2008). A striking example of current conditions in New Hampshire is the level of impervious surfaces in forty-two coastal towns. Of the fifty HUC-12 watersheds (typically about 10,000 acres each) within those towns, 30 (60%) already exceed the threshold of 4% impervious surfaces, and 13 (26%) exceed the threshold of 10% impervious surfaces (Justice and Rubin, 2006). Additionally, Deacon et al., 2005, who studied ten streams in coastal New Hampshire, found that the percent urban land (similar to the definition of impervious surfaces) within 25 meters of study streams was negatively correlated with water quality, aquatic habitat and macroinvertebrates, thereby demonstrating the value of riparian buffers to protect these attributes. The value of riparian buffers to water quality and aquatic habitat has been demonstrated in many other studies.

Recent and current stormwater regulations may not be protective of water quality, aquatic habitat, and biota (Stranko et al, 2008; references in Brown et al., 2005 and Hughes et al., 2006) because individual lots are often not regulated relative to stormwater. Because of this, land use activities cumulatively can and do lead to higher peak flood flows and increased flooding (Coles et. al., 2004; NRC, 2009), which can ultimately impact the public and infrastructure, and also aquatic habitat and organisms. The increased peak flows as well as the increased duration of peak flows often lead to stream channel enlargement and/or incision, which is manifested by streambank and streambed erosion due to the altered hydrology (Konrad et al, 2005). Eroding streambanks are a loss of land to private landowners and can threaten private and public infrastructure (e.g., roads, culverts, bridges, sewers, pipelines, and buildings). Armoring an eroding bank may provide stabilization at the specific site, but may simply transfer the stream's energy upstream or downstream to abutting properties and streambanks (Biedenharn, et. al, 1997). From biological and water quality perspectives, the intentional hardening of streambanks themselves is a poor substitute for natural, vegetated riparian buffers as the riparian vegetation provides shading, organic matter and food (e.g., insects) to fish and other animals in a stream and it serves to reduce nutrient inputs to the stream channel. When channels incise, the finer sediments are removed and larger sediment is left behind, effectively armoring the channel bed. The armored bed is poor aquatic habitat. The geomorphic result of channel widening and incising, in response to poor stormwater management practices, is that streams lose their characteristic pools and riffles (Booth, 1991, Sovern, et. al., 1997). Incised streams may be unable to fill floodplain wetlands in normal wet years. An unnoticed, yet important aspect of incising streams is that this affects groundwater. Streams in New Hampshire generally control groundwater levels nearby. Therefore the lower the streambed, the lower the water level in the stream and thus the lower the groundwater levels nearby. This results in dewatered wetlands as well as reduced soil moisture available for floodplain plants. Groundwater serves as the domestic water supply for at least 60% of the New Hampshire population (NHDES Drinking Water and Groundwater Bureau data) and therefore dropping the groundwater can have consequences on the very urban populations that created the problem.

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Event Mean Concentrations and Land Use

Presented to the SB 1295
Stormwater Commission
April 6, 2009

Paul M. Currier, PE, PG
DES Watershed Management Bureau Administrator

Event Mean Concentration (EMC)

- An EMC is defined as the total constituent mass discharge divided by the total runoff volume (EPA 1983)
- EMCs were developed by the EPA's Nationwide Urban Runoff Program (NURP) (1983) to serve as a national measure of the magnitude of urban runoff, specifically pollutant loadings

After Jacob and Lopez, 1992

EMC - Event Mean Concentration values for TSS, BOD, TN and TP in mg/l (Houston Area EMC Database)

GBNEP – 15
March 1992

LUCODE	DESCRIPTION	TSS	BOD	TN	TP
11	RESIDENTIAL	100	15	3.41	0.79
12	COMMERCIAL AND SERVICES	166	9	2.10	0.37
15	INDUST & COMMERC CMPLXS	166	9	2.10	0.37
16	MXD URBAN OR BUILT-UP	166	9	2.10	0.37
21	CROPLAND AND PASTURE	201	4	1.56	0.36
31	HERBACEOUS RANGELAND	70	6	1.51	0.12

After Jacob and Lopez, 1992

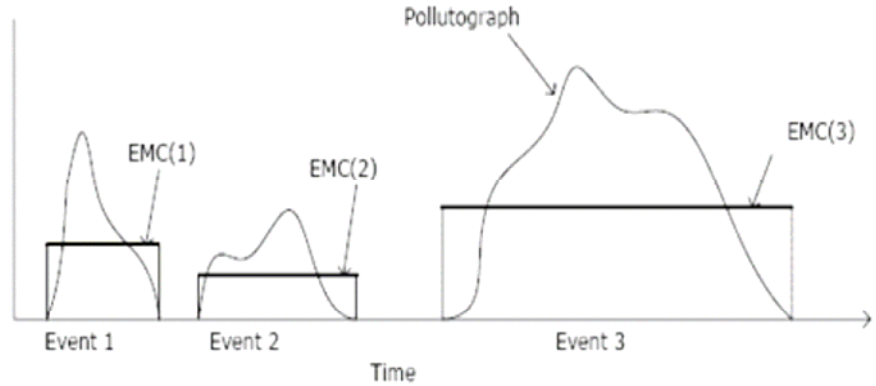
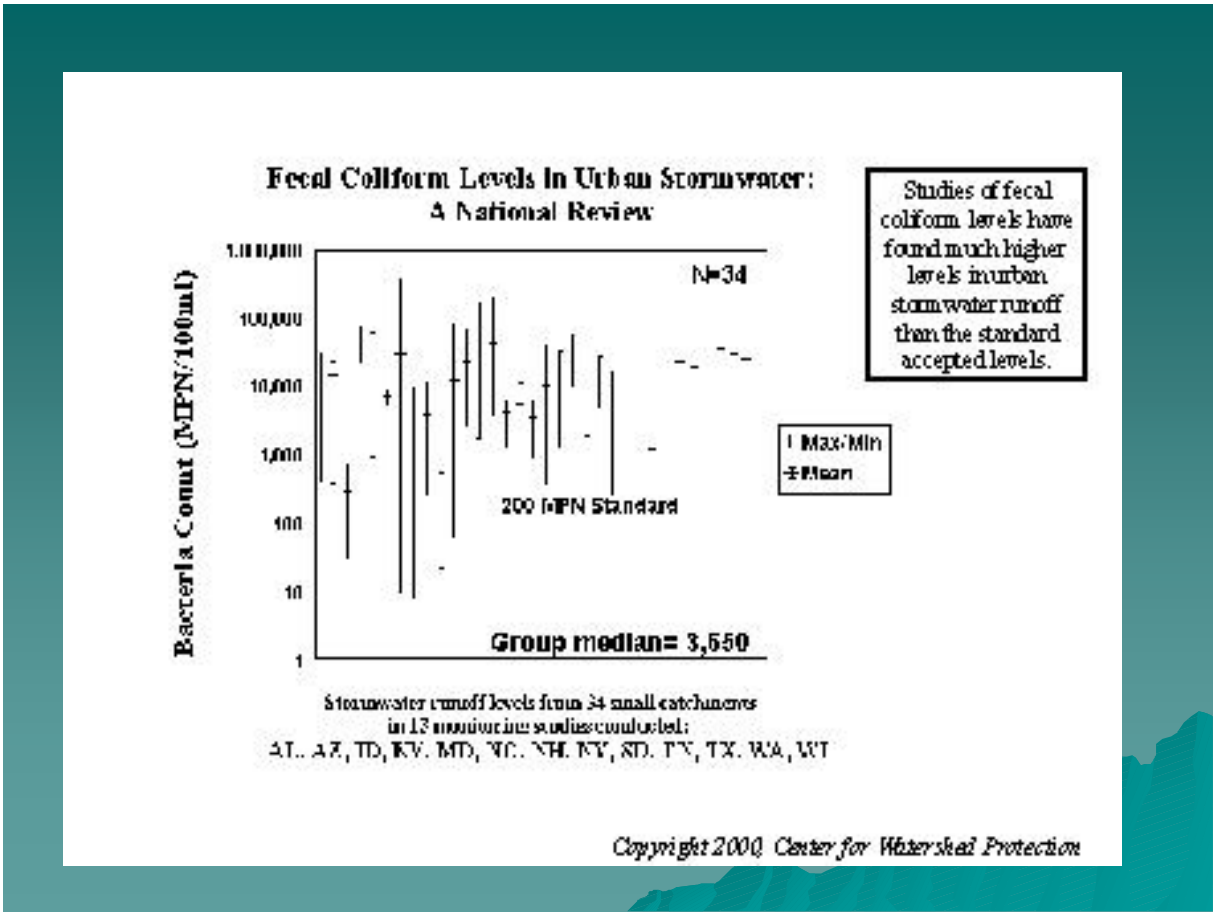


Figure 1 Inter-storm variation of pollutographs and EMCs.

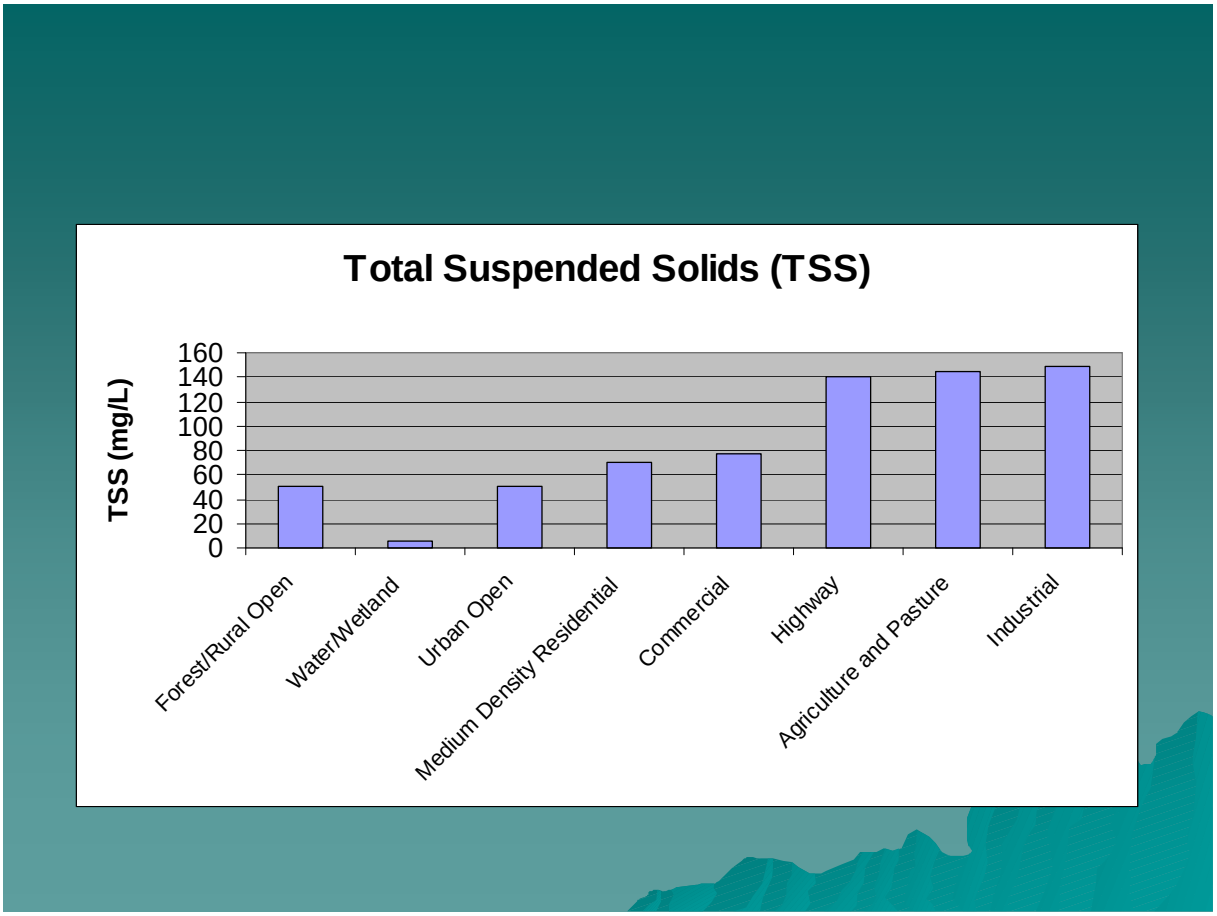
A Review of Event Mean Concentration (EMC) for Urban Stormwater Runoff

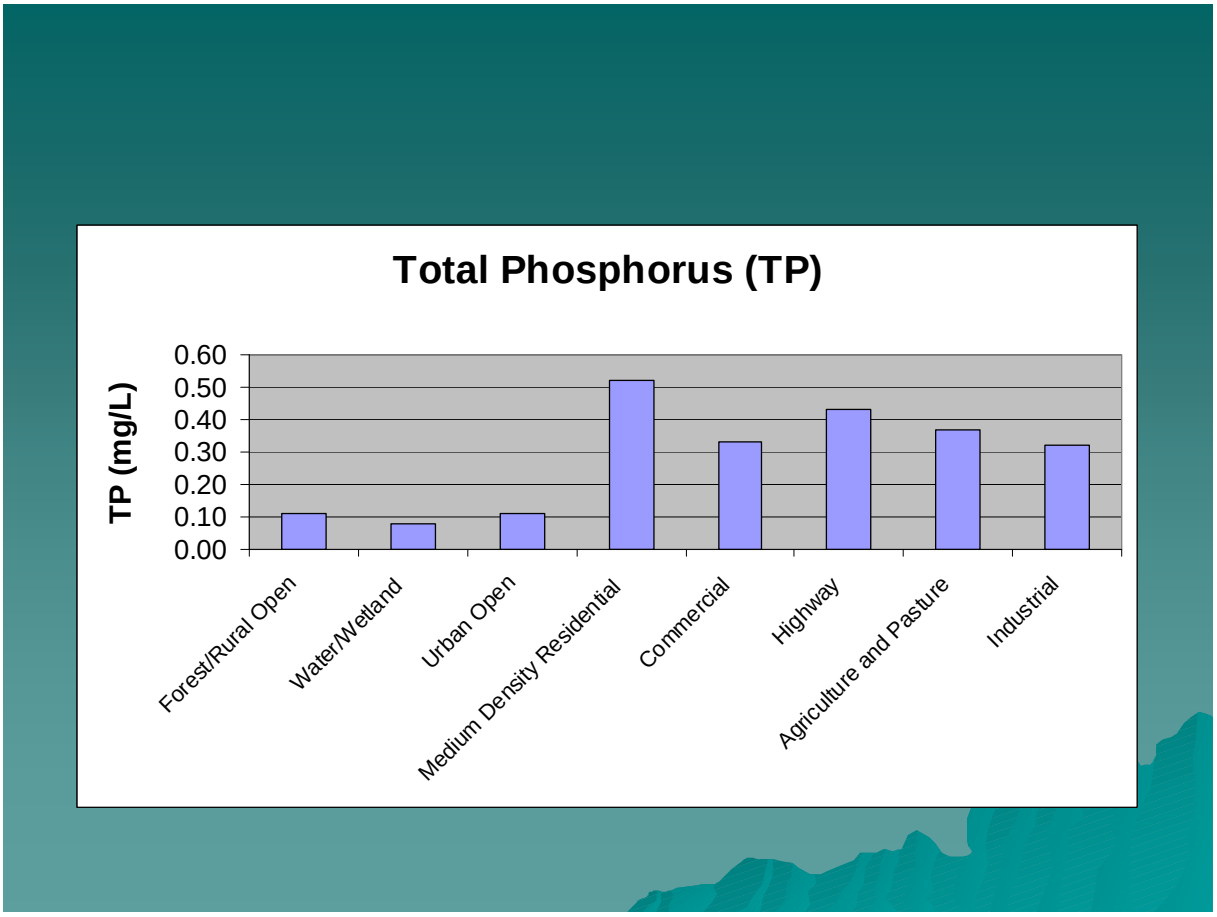
M.F. Chow*, Z. Yusop
[1]Institute of Environmental & Water Resource Management (IPASA), Universiti Teknologi Malaysia, 81310 Skudai, Johor Darul Ta'zim, Malaysia
*Corresponding author. Phone: +6017 775 4287, Fax: +607 553 1575
Email: mingfai1983@yahoo.com

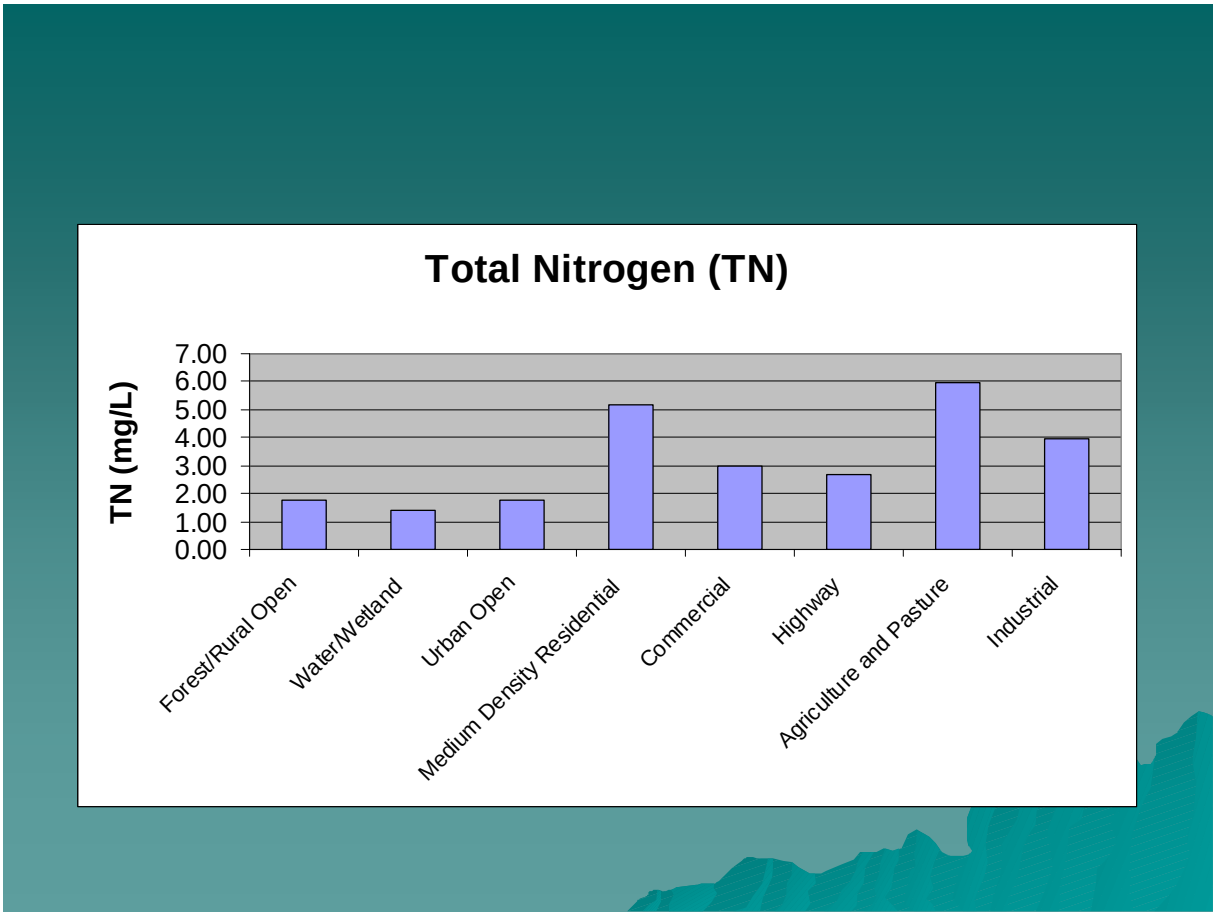


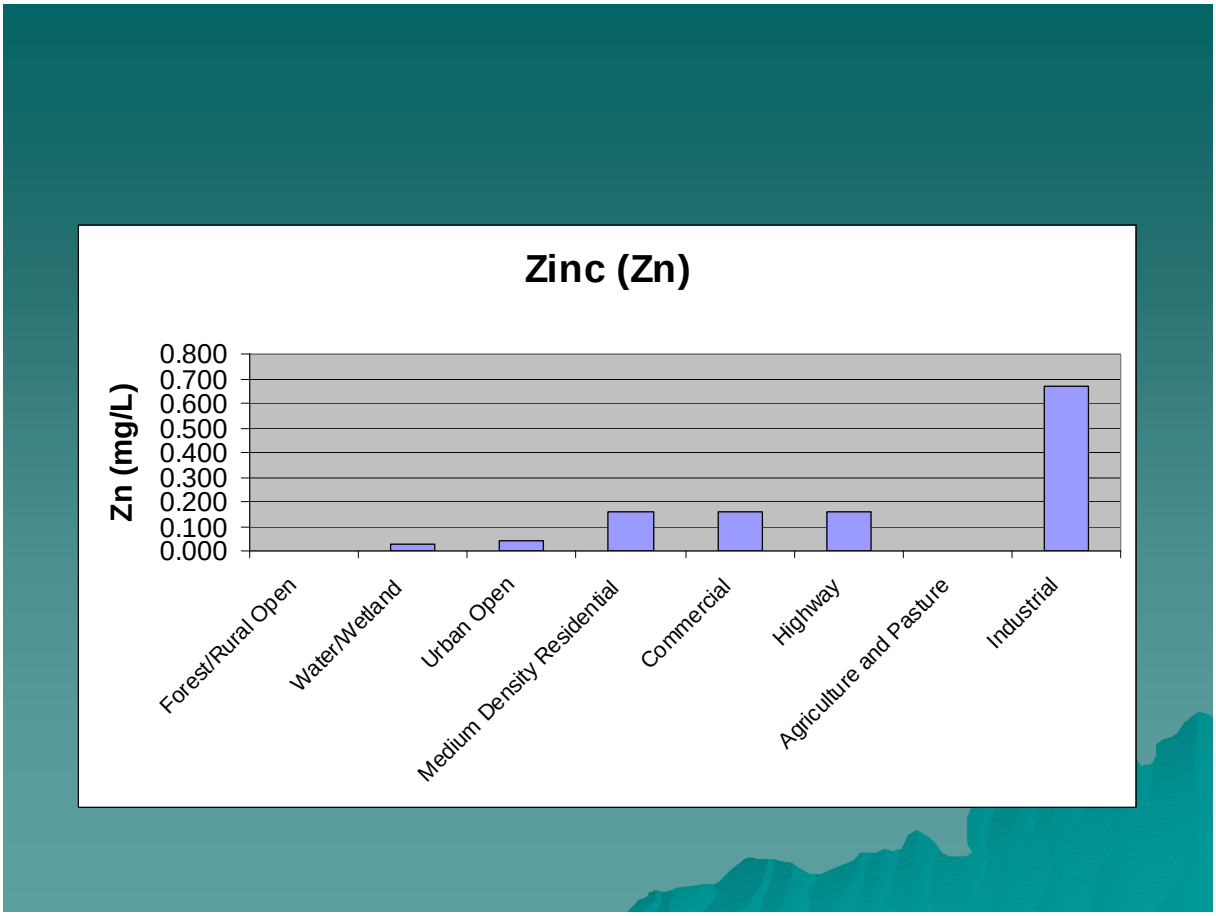
EMCs Ranking by Land Use (lowest to highest concentration)

Land Use	TSS	TP	TN	Zn
Forest/Rural Open	2	2	2	1
Water/Wetland	1	1	1	3
Urban Open	3	3	3	4
Medium Density Residential	4	8	7	7
Commercial	5	5	5	6
Highway	6	7	4	5
Agriculture and Pasture	7	6	8	2
Industrial	8	4	6	8


Total Suspended Solids (TSS)
TSS (mg/L)
160
140
120
100
80
60
40
20
0
Forest/Rural Open
Water/Wetland
Urban Open
Medium Density Residential
Commercial
Highway
Agriculture and Pasture
Industrial


Total Phosphorus (TP)
TP (mg/L)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Forest/Rural Open
Water/Wetland
Urban Open
Medium Density Residential
Commercial
Highway
Agriculture and Pasture
Industrial


Total Nitrogen (TN)
TN (mg/L)
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Forest/Rural Open
Water/Wetland
Urban Open
Medium Density Residential
Commercial
Highway
Agriculture and Pasture
Industrial


Zinc (Zn)
Zn (mg/L)
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
Forest/Rural Open
Water/Wetland
Urban Open
Medium Density Residential
Commercial
Highway
Agriculture and Pasture
Industrial

8-1. The Simple Method

Many models are available to estimate pre- and post-development pollutant loads, such as the STEPL, AVGWLF, WINNSLAMM, and the P8 Urban Catchment Model. Each model varies in strengths and weaknesses. NHDES is reviewing various models and will consider the use of other models if proposed. At this time, however, NHDES recommends using the "Simple Method", a spreadsheet based calculation, for comparing pre-development to post-development pollutant loads.

From NH Stormwater Manual
December 2008

SIMPLE METHOD

1. Annual loads are computed for the pre-developed condition based on pre-development pollutant loading values;

2. The annual loads from the proposed development are computed based on the proposed level of impervious cover and the appropriate loading factor for the applicable land use.

3. The desired condition is POST DEVELOPMENT LOAD <= PRE

4. If not (and not impaired or Outstanding Resource Water), then antidegradation policy applies.

5. Draft AoT regulations did not require loading analyses if % EIC was < 10% and % UDC was > 65% (assumes minor increase in loads will not harm aquatic life)

Table A.2 Pollutant Concentration from Different Source Areas/Land Uses							
Constituent	**TSS[1]**	**TP[2]**	**TN[3]**	**F Coli[1]**	**Cu[1]**	**Pb[1]**	**Zn[1]**
Units	mg/l	mg/l	mg/l	1,000 col/ ml	ug/l	ug/l	ug/l
Residential Roof	19	0.11	1.5	0.26	20	21	312
Commercial Roof	9	0.14	2.1	1.1	7	17	256
Industrial Roof	17	-	-	5.8	62	43	1,390
Commercial/Res Parking	27	0.15	1.9	1.8	51	28	139
Industrial Parking	228	-	-	2.7	34	85	224
Residential Street	172	0.55	1.4	37	25	51	173
Commercial Street	468	-	-	12	73	170	450
Rural Highway	51	-	22	-	22	80	80
Urban Highway	142	0.32	3.0	-	54	400	329
Lawns	80	2.1	9.1	24	17	17	50
Landscaping	37	-	-	94	94	29	263
Driveway	173	0.56	2.1	17	17	-	107
Heavy Industrial	124	-	-	-	148	290	1600
Residential (general)[4]	100	0.40	2.2	-	-	18	37
Commercial (general)[4]	75	0.20	2.0	-	-	370	250
Industrial (general)[4]	120	0.40	2.5	-	-	-	-

Sources:
1: Claytor and Schueler (1996)
2: Average of Steuer et al. (1997), Bannerman (1993) and Waschbusch (2000)
3: Steuer et al. (1997)
4: Caraco (2001), default values averaged from several individual assessments

Stormwater Utilities

Eugene Forbes, P.E.

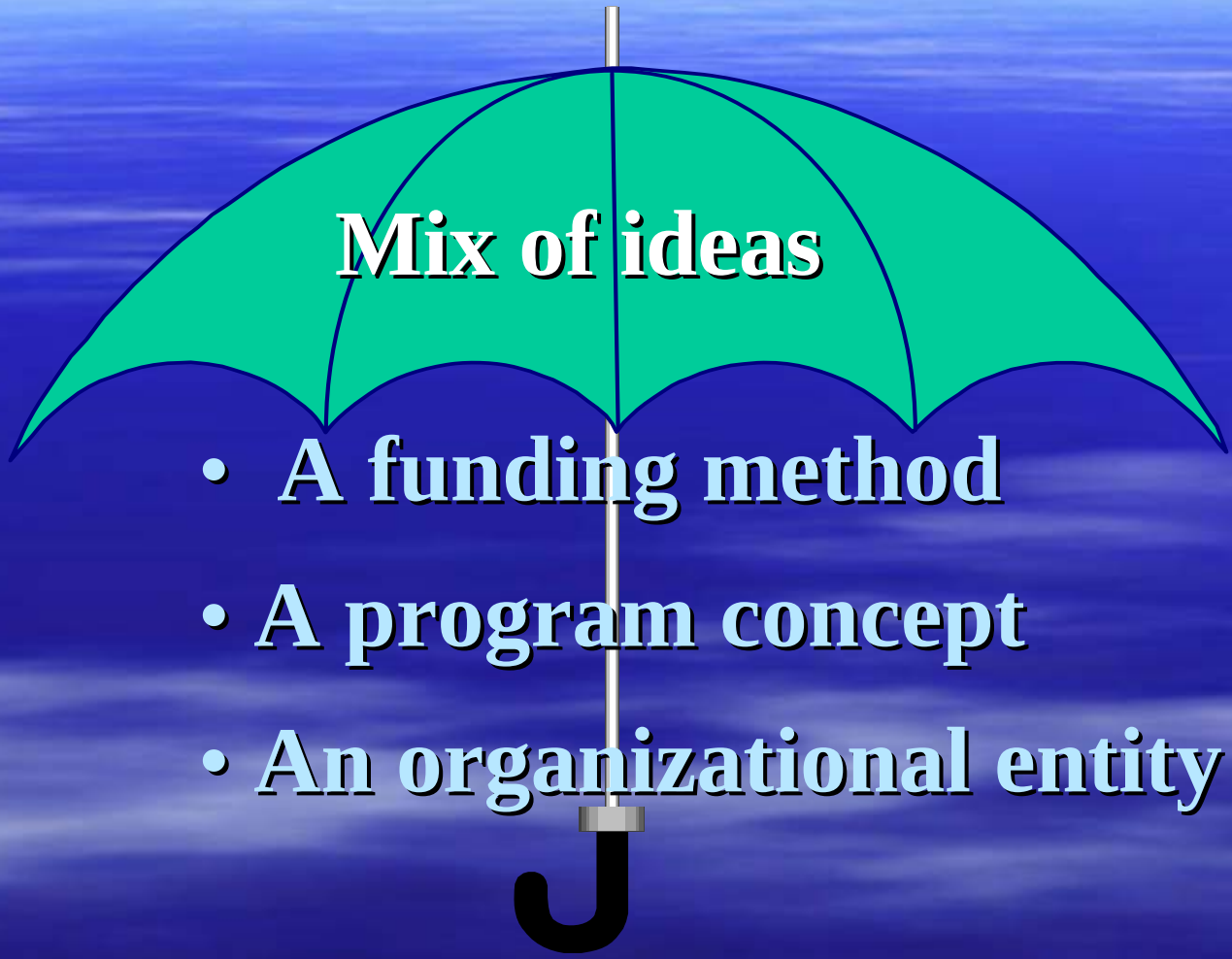
Hoyle, Tanner & Associates, Inc.

184 South Winooski Ave.

Burlington, VT 05401

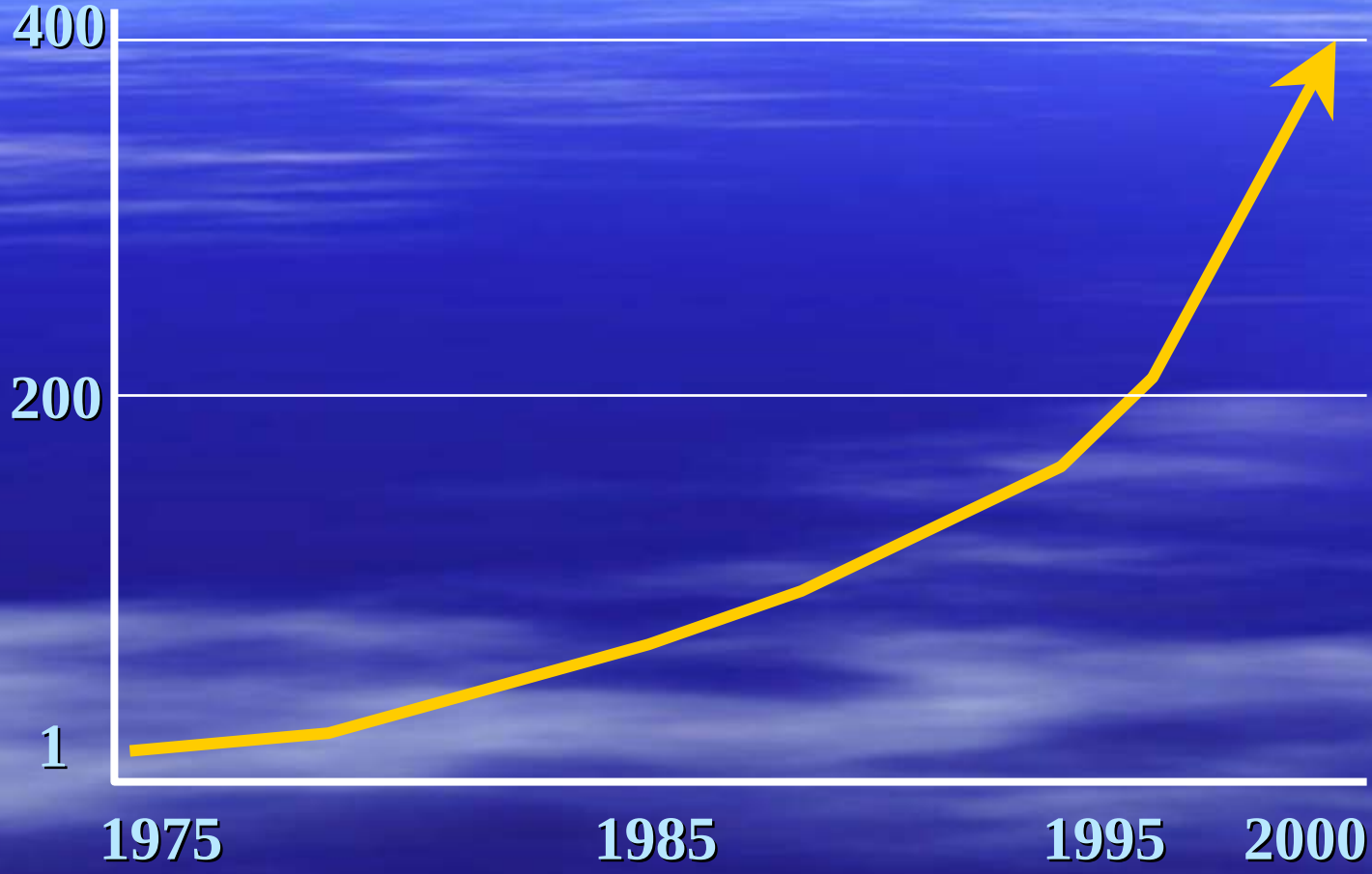
Courtesy of the Union Leader

What is a Stormwater Utility?



- A funding method
- A program concept
- An organizational entity

Growth of Utilities



What Led to Utility Popularity?

- Expansion of urban city's roles
- Shift away from general taxes to fees and demand-based funding
- Other prevailing priorities - police, schools, solid waste
- Proliferation of other enterprise funds - solid waste, waste water
- Changing stormwater programs

Stormwater Financing

- There is a difference between resources, money and revenue
- There are hundreds of funding methods out there, some better than others.

“Funding” Methods

- The usual way out: Taxes
- State/regional grants
- Federal Programs
- Partner with non-profits
- Free stuff on the web
- Corporate sponsorship
- Cost sharing
- Local programs
- Fees for service

Categories of Revenue

- Taxes
  - Primary revenue generator
  - No mandatory association with specific activities
- Service Charges
  - Tied to objectives
  - Level based on provision of goods & services
- Exactions
  - Approval or privilege to use
- Assessments
  - Direct and special benefit

Tax vs. Fee

- Tax
  - Easy to collect
  - Little added cost
  - Invisible to the citizen month to month
  - Vote on budget changes (?)
- User Fee
  - Administrative cost
  - Collects from tax exempt parcels
  - Equitable (rational nexus)
  - Built in incentive to reduce imperviousness
  - Allows other credits and fees to enhance equity and steer the program – flexible & tailored
  - Dedicated and grows with growth
  - Others uses of databases/mapping

Advantages of a Stormwater Utility

Stable

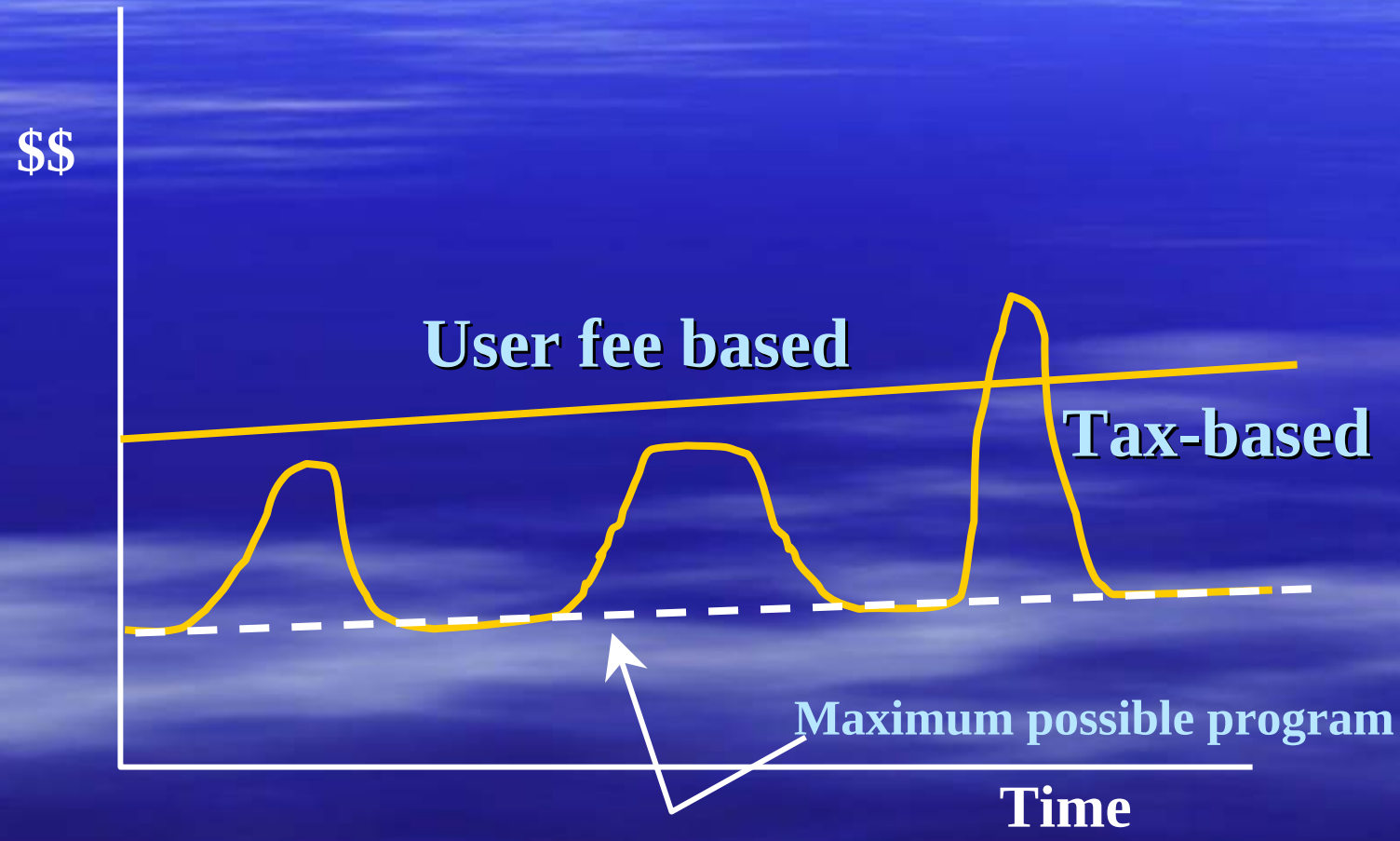
Adequate

Flexible

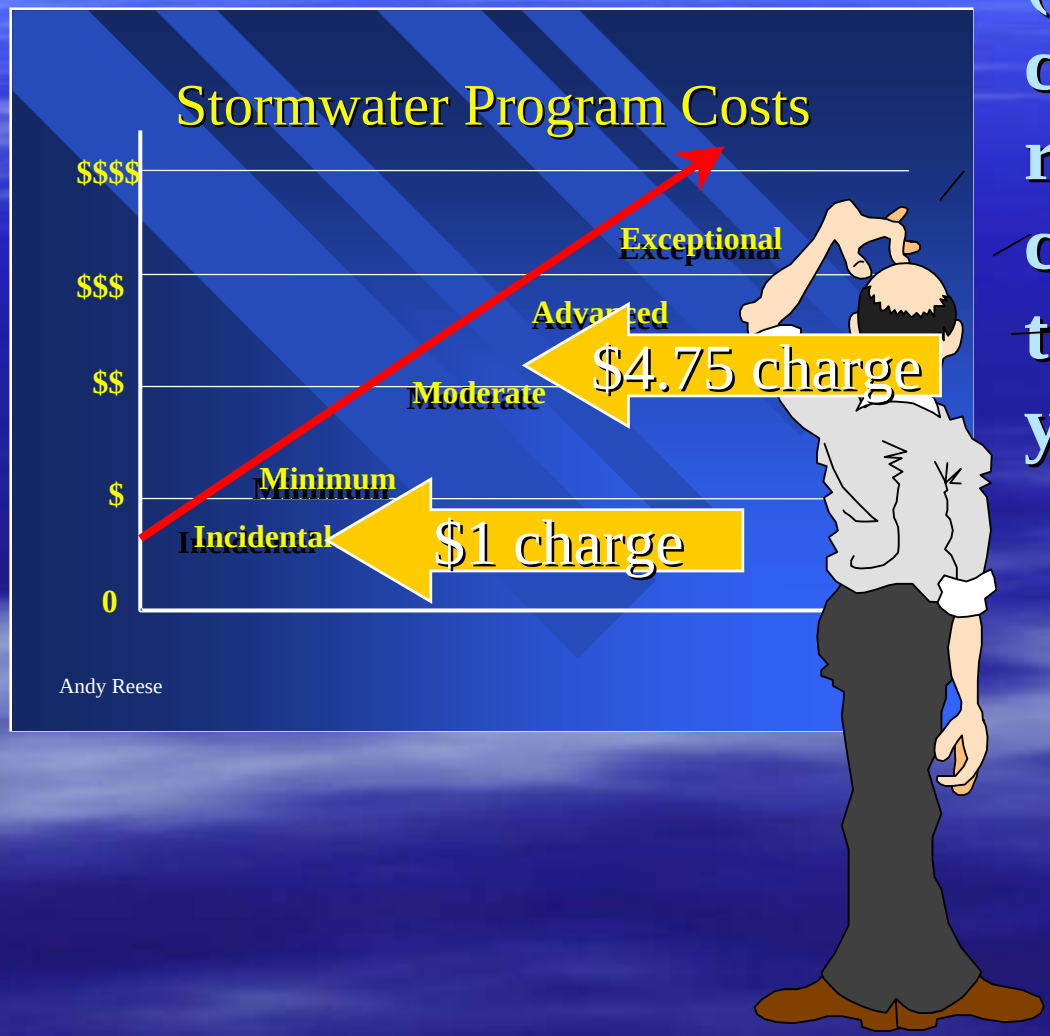
Equitable

Stable

Utility vs. Tax Funding



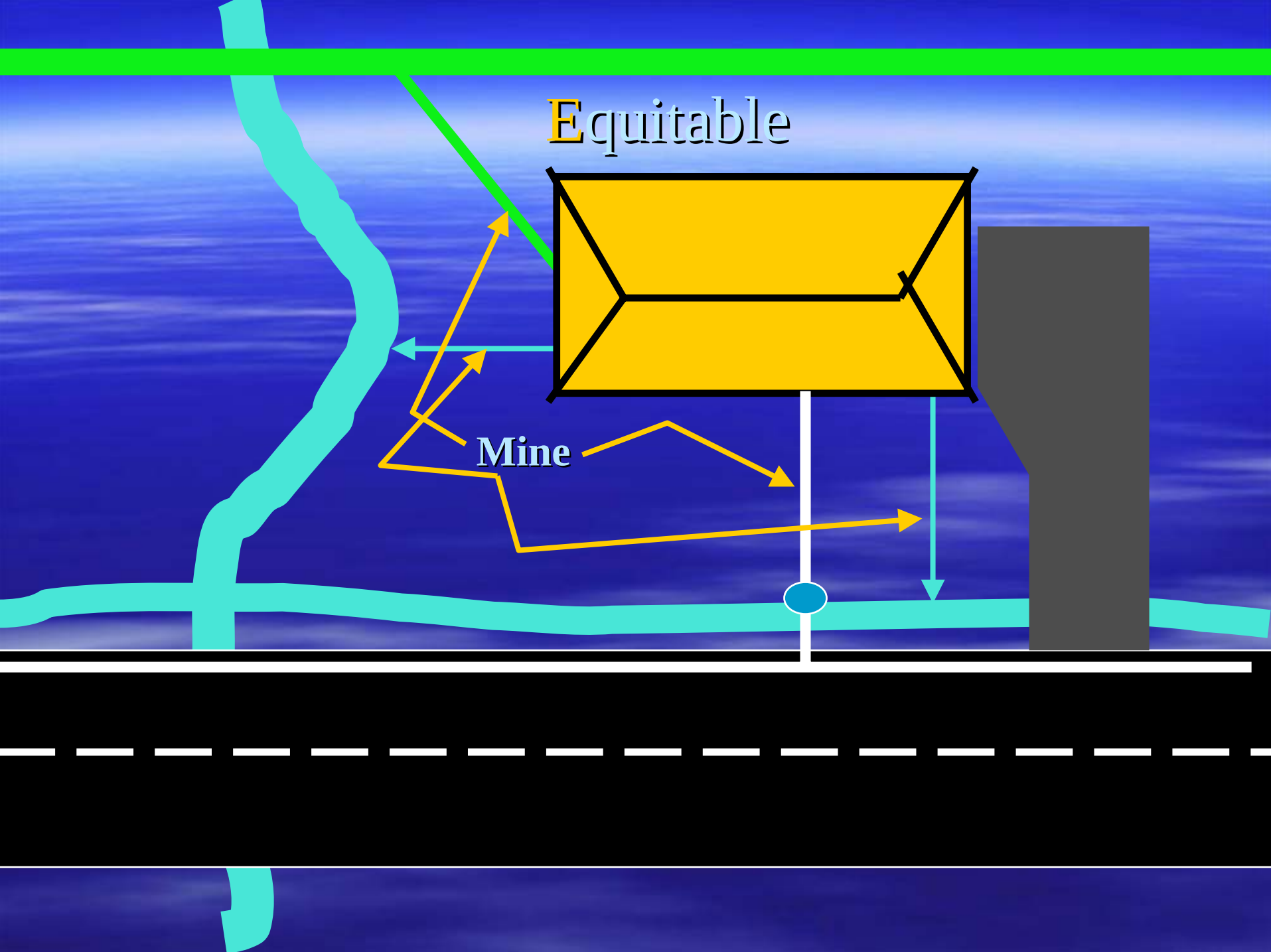
Adequate



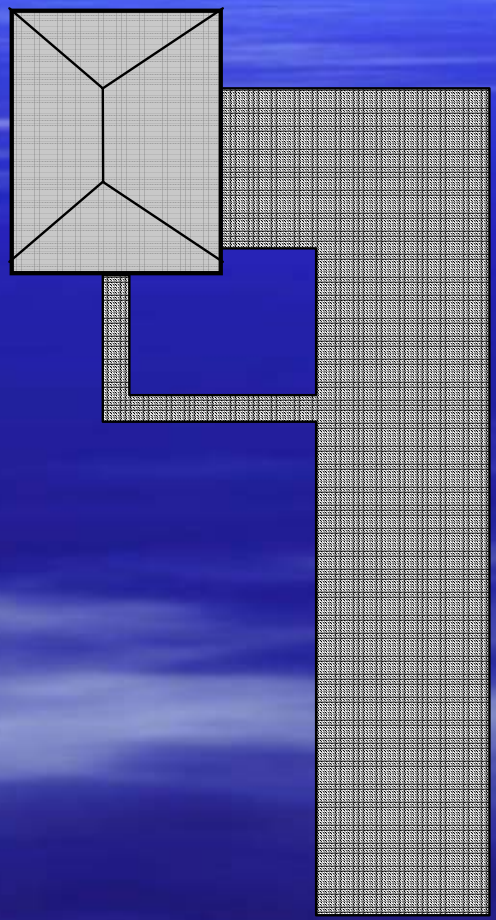
For every $1 dollar per month per house (and appropriate charges to non-residences) A utility can generate about $20 to $40 per acre per year.

Flexible

- Primary source for the whole program
- Other fees to enhance equity
- Credits to encourage good performance
- Can be geographically based
- Can take into account environmental costs


Equitable
Mine

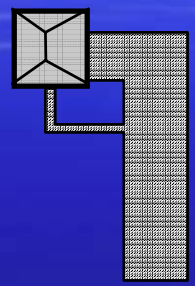
Equitable: How a Fee is Calculated



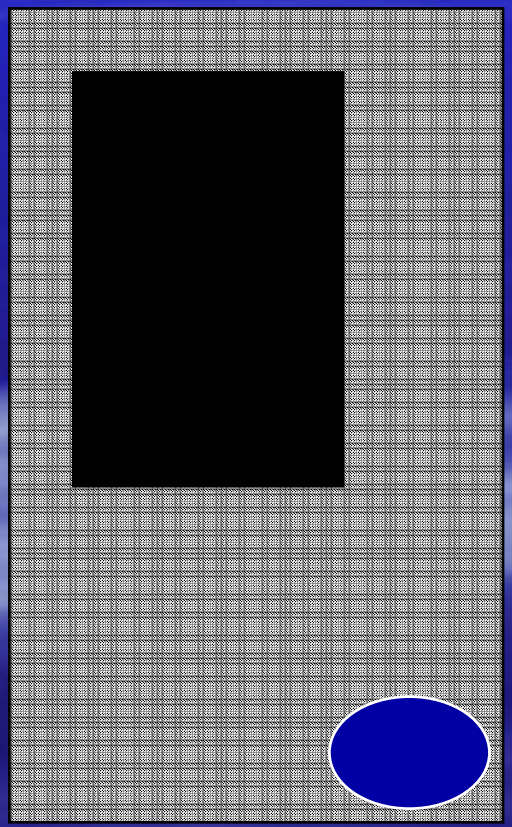
Equals 1.0 ERU

Say it is 2500 sq ft

Equitable: How a Fee is Calculated



= 1 ERU



= 40 ERUs less credit

Who will not like the concept?

- **tax exempt properties**
- **people with large paved areas with cheap buildings**
- **fixed income**
- **sometimes developers don’t like it**

How to implement a Stormwater Utility?

A question of “due diligence”

Establishing a successful stormwater utility requires that you pay attention to four key areas of due diligence:

- Program concept and the compelling case
- Public and political education and support
- Financial policies and documents
- Database accuracy and customer service

Key Policy Issues

- Program
  - Level and extent of service
  - Program specifics
    - Inter-relationships
    - Use of funding sources
  - Responsibilities
  - 5-Year Plan
- Finance
  - Rate basis
  - WQ considerations
  - Secondary funding
  - Vacant land and Streets
  - Credits
- Database
  - Billing merging & maint.
  - Use and QC of imperv. data
  - Myriad of “difficult cases”
  - Appeals and adjustments
  - Collections & delinquencies
  - Customer service
- Public
  - Plan for selling compelling case
  - Political leaders and top payers
  - Media
  - Materials and information

Utility Rate Structure

- Primary Funding Method
  - impervious area
  - combination of gross and impervious
- Rate Modification Factors
  - flat rate for residential
  - fixed cost per account
  - enhance equity
  - increase simplicity
- Secondary Funding Methods
- Credit Mechanisms

19% recognize pollution in the rate structure

Anticipate Legal Challenges

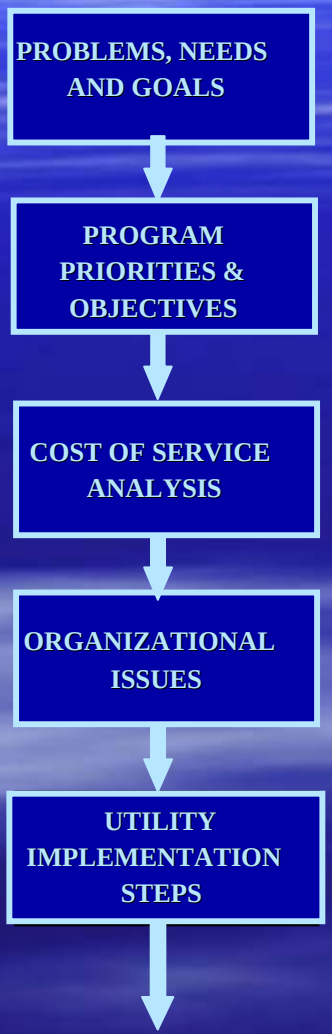
- Fair and reasonable
- Not illegally discriminatory or confiscatory
- Costs substantially related to provision of facilities and services
- Rate based loosely on demand
- Legal by charter or legislation
- Proper procedures followed

Utility Implementation

From finalizing the Program…
to sending out the first bills.

DEVELOPMENT OF A STORMWATER UTILITY

Program



PROGRAM TRACK

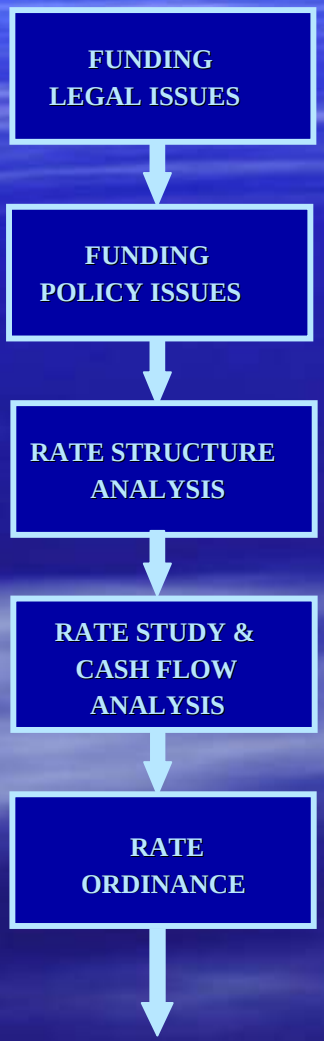
- Drives Rate
- Building Block
- Hit the Ground Running
- Balance Fixing and Planning

PROGRAM POLICY ISSUES

- Level and extent of service
- Responsibilities
- Program Specifics
  - Capital Improvement Program
  - Maintenance and Operations
  - Watershed Planning
  - NPDES Requirements

DEVELOPMENT OF A STORMWATER UTILITY

Finance



FUNDING TRACK

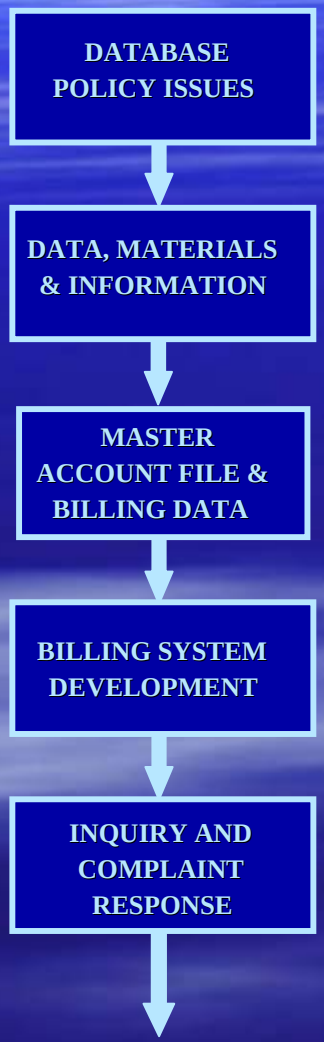
- Paired to Program
- Lots of Issues
- No “Right” Answer

FUNDING POLICY ISSUES

- Primary Funding Method
- Rate Modification Factors
- Secondary Funding Methods & Credits
- Vacant Lots and Streets

DEVELOPMENT OF A STORMWATER UTILITY

Database



DATABASE TRACK

- What to Bill
- How to Bill
- How to Maintain Database
- Feedback Loop

DATABASE ISSUES

- Billing & data maintenance
- Myriad of “difficult cases”
- Appeals and adjustments
- Collections & delinquencies
- How collect impervious areas

User Fee Data

- Impervious Area
  - Substantiating relationship of impervious area to cost of service and facilities
  - Measuring or estimating impervious area
    - Satellite or other high-resolution multi-spectral imaging
    - “Heads-up” digitizing
  - Establish impervious area equivalent units

DEVELOPMENT OF A STORMWATER UTILITY

PUBLIC TRACK

- Develop a plan
- Three phases:
  - Buildup
  - Billing Day
  - Post-billing
- Determine who the public is
- Program Identification Issues
- Different levels of access
- Customer service

QUESTIONS?

Reducing Fluvial Erosion Hazards through Improved Stormwater Management

Shane Csiki, NH Geological Survey
Sally Soule, NH DES, Watershed Assistance

Presentation to the NH Stormwater Commission
December 7, 2009

Presentation Outline

- Review of how urbanization and floodplain development affect fluvial (river) systems.
- Examples of river responses to watershed development.
- Fluvial erosion hazard (FEH) program in New Hampshire.
- How the data collected in FEH analysis can be used to improve stormwater management practices.

Urbanization and Stream Functions

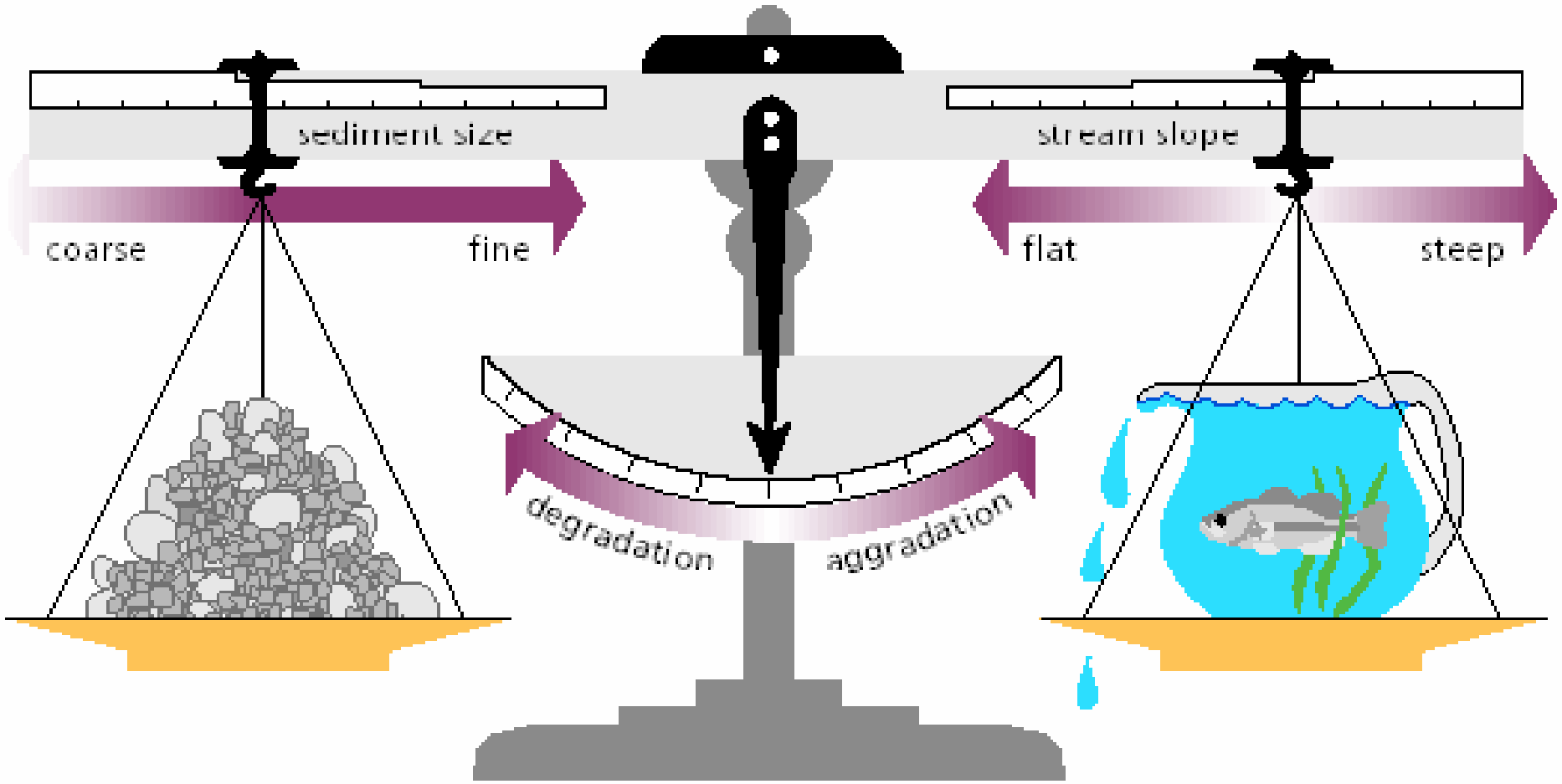
Hydrology

- Disrupted natural water balance
- Increased flood peaks and bankfull flows
- More frequent flooding & lower baseflows = “flashy” hydrology

Geomorphology

- Stream widening, aggradation, & erosion
- Habitat degradation
- Decreased channel stability

Lane's Balance



Impervious surfaces

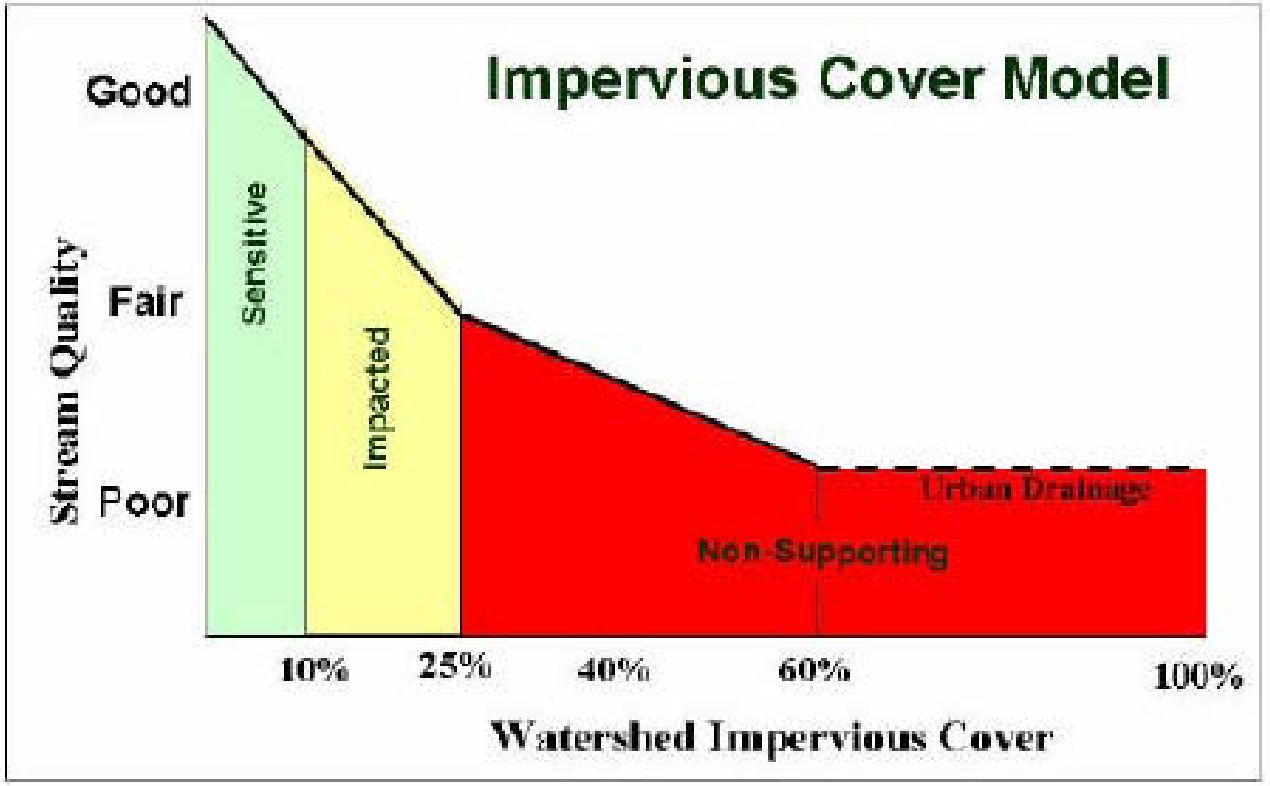
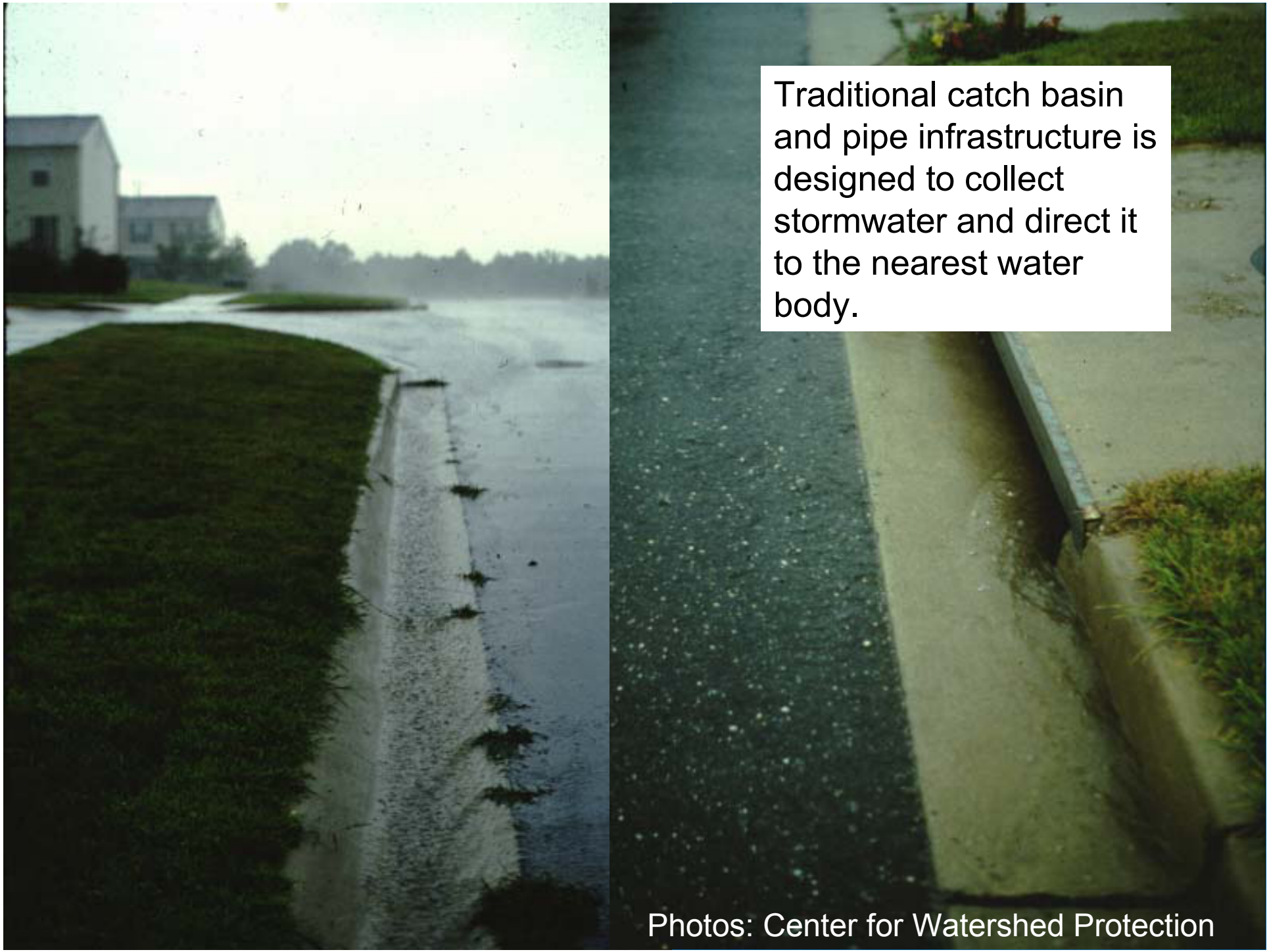


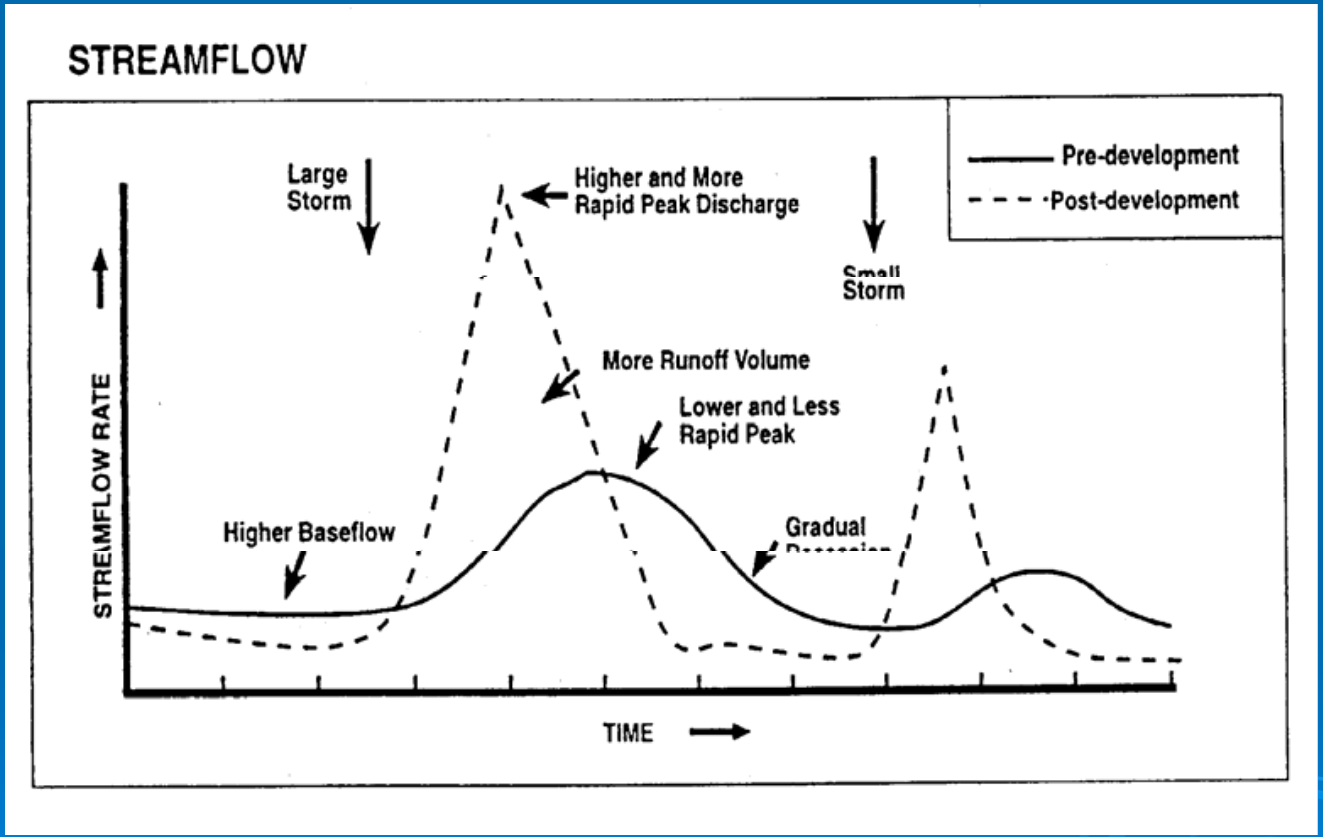
Figure 1 Impervious Cover Model
Source: Schueler, 1994

Increased Impervious	Resulting impacts:				
results in ↓	Flooding	Habitat Loss	Erosion	Channel Widening	Stream Alteration
Increased Amount of Flow	X	X	X	X	X
Increased Peak Flow	X	X	X	X	X
Increased Frequency of Peak Flow	X	X	X	X	X
Decreased Base Flow		X			
Sediment Loading	X	X	X	X	X

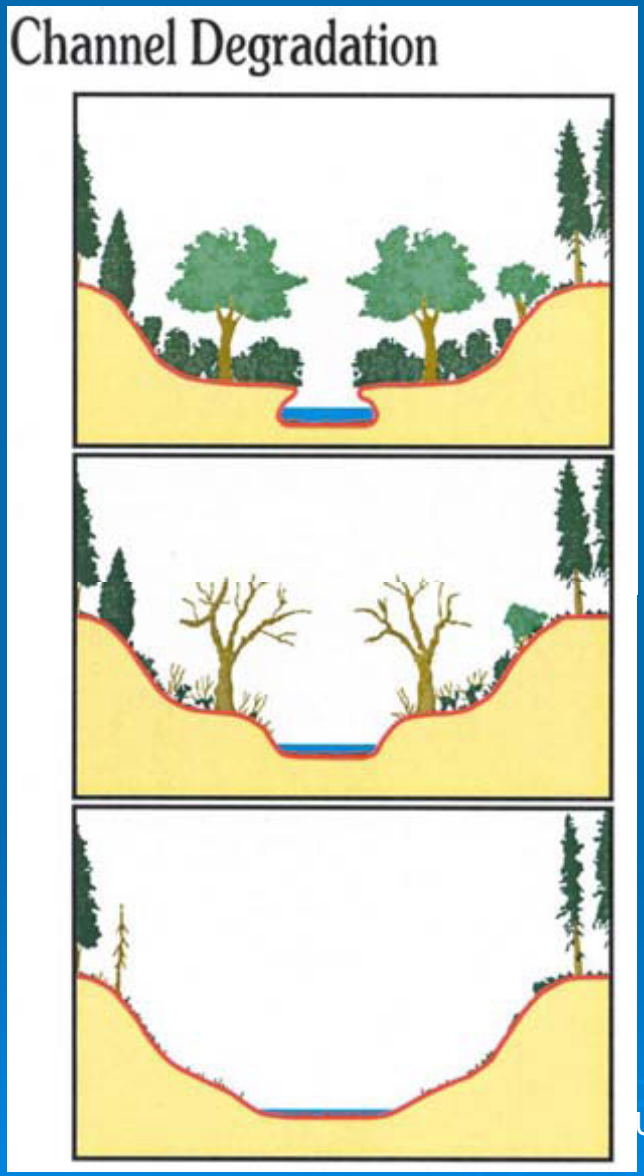
mod. EPA


Traditional catch basin and pipe infrastructure is designed to collect stormwater and direct it to the nearest water body.
Photos: Center for Watershed Protection

Urban Hydrology



CWP



Functioning channel

Erosion and downcutting

Over widened channel

UNCE

Photo: Center for Watershed Protection

Less than 5% impervious


8 -10%
Impervious
Photo: Center for Watershed Protection

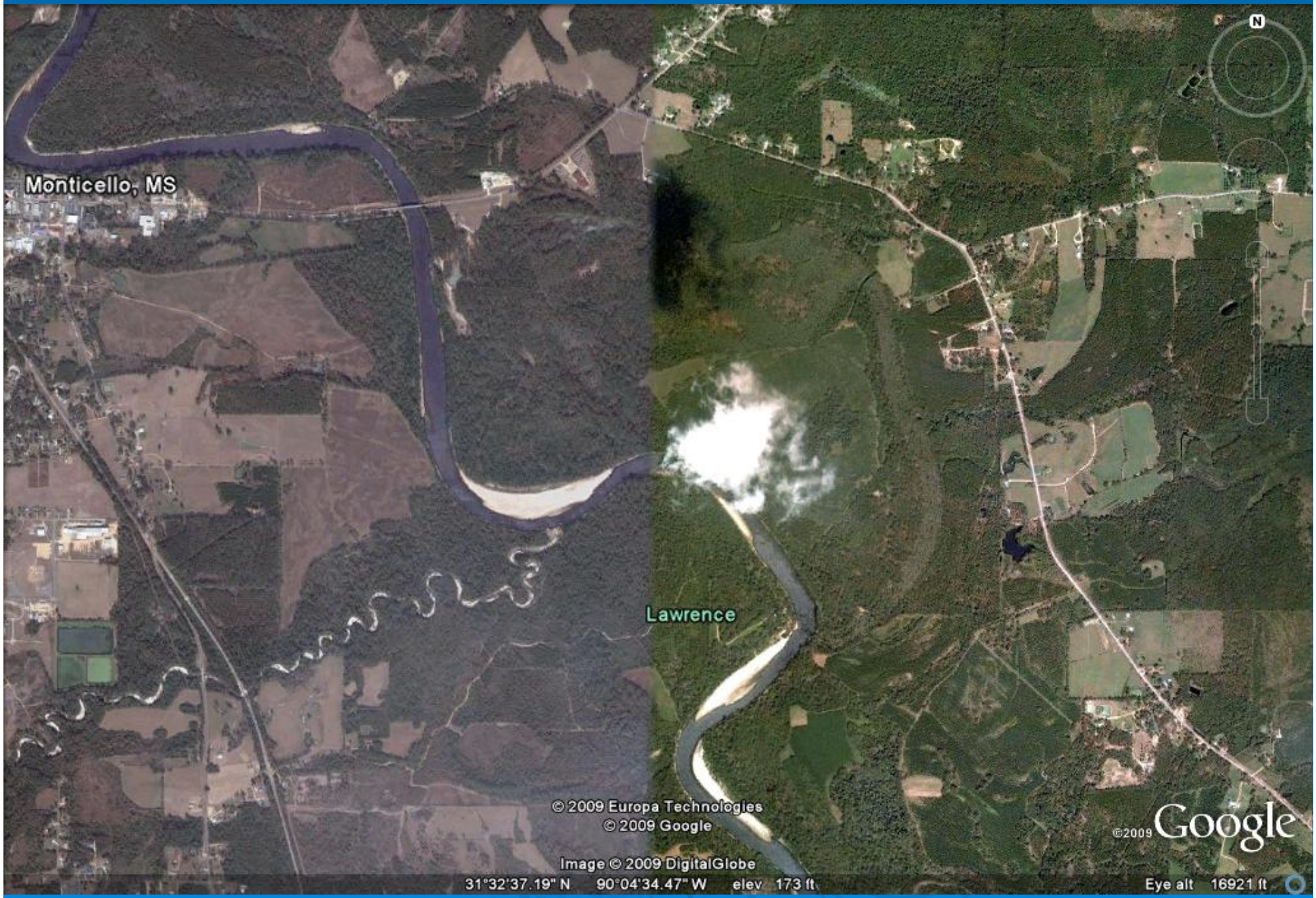

~20%
Impervious
Photo: Center for Watershed Protection


~30%
Impervious
Photo: Center for Watershed Protection


Downcutting in urban stream
Photo: Center for Watershed Protection

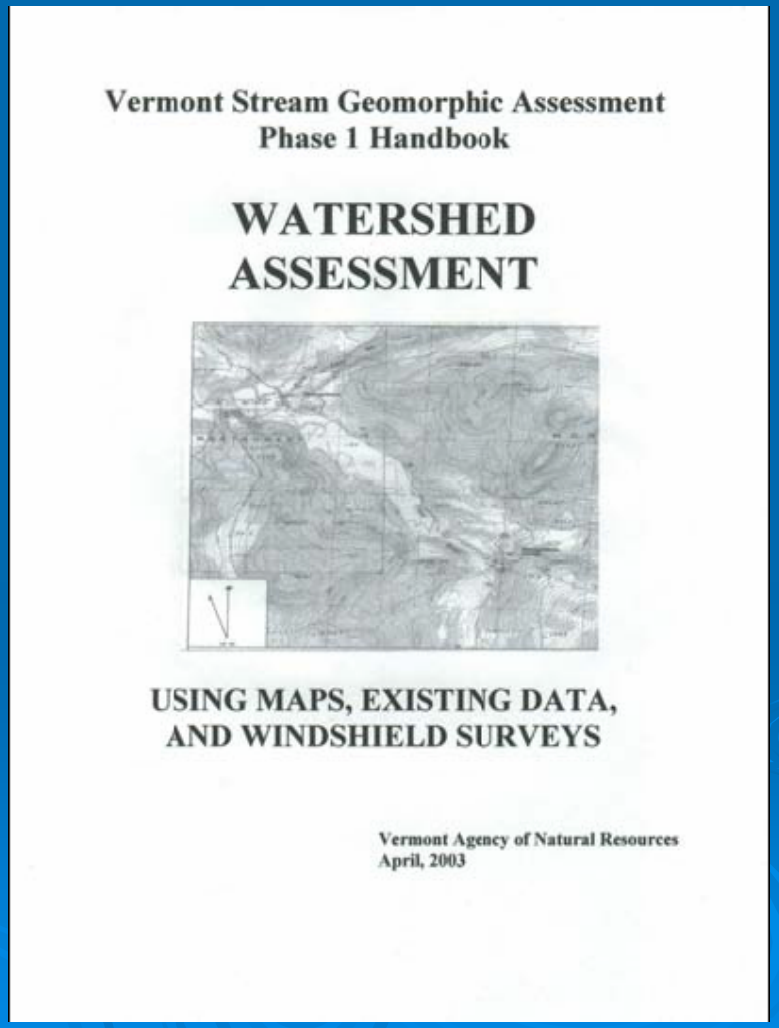
Fluvial Erosion Hazards (FEH) Program in New Hampshire

- Major flooding and coincident bank erosion damage from 2005-2007.
- Damages from these events cost New Hampshire **$75.6 million**.


Monticello, MS
Lawrence
© 2009 Europa Technologies
© 2009 Google
Image © 2009 DigitalGlobe
31°32'37.19" N 90°04'34.47" W elev 173 ft
©2009 Google
Eye alt 16921 ft

FEH Program in New Hampshire

- Based on protocols developed by Vermont Rivers Management Program



What information do we collect?

- GIS analysis of rivers under assessment
- Detailed in-field river geomorphic condition assessment

  - Channel constrictions, floodplain encroachments

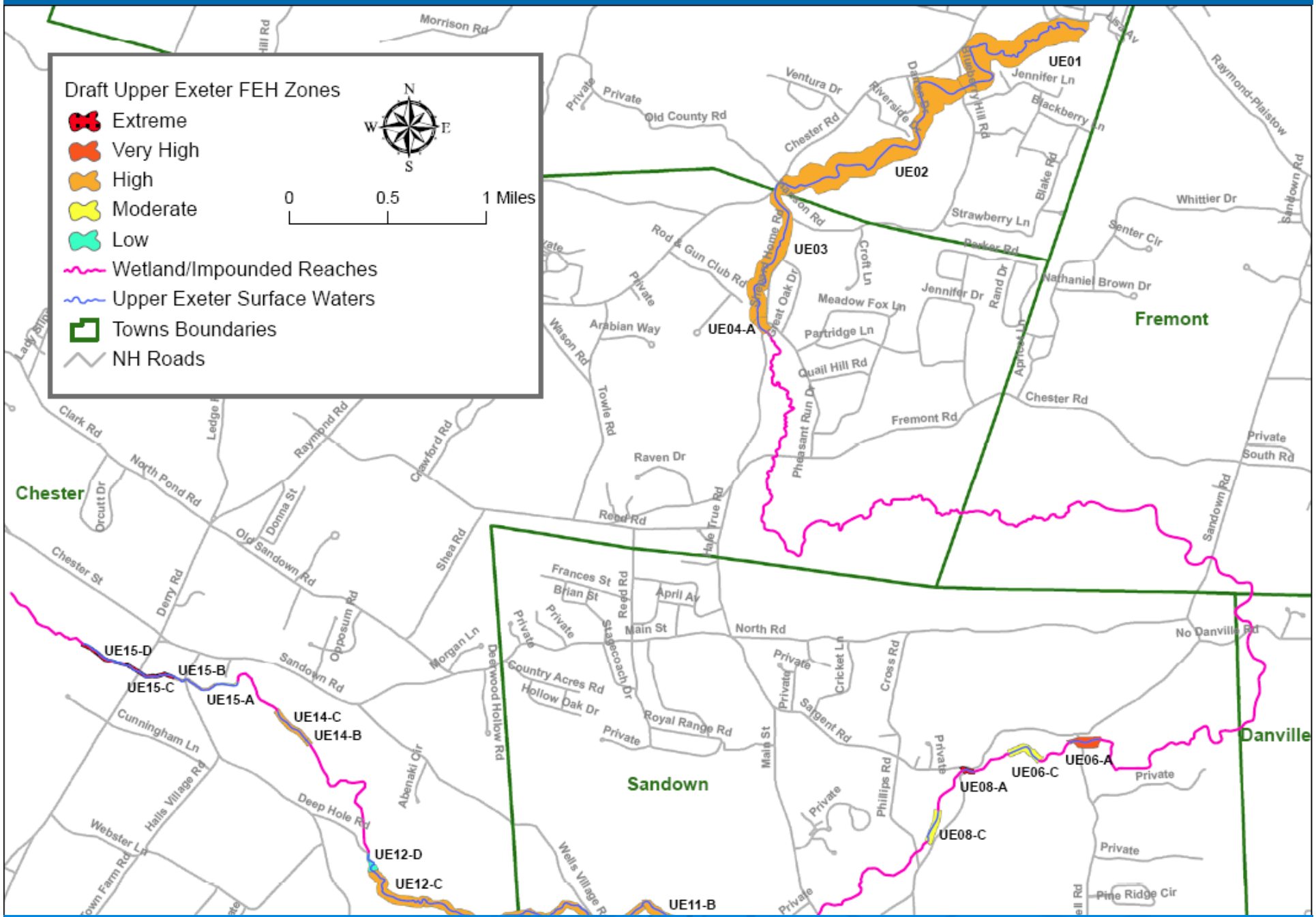
  - Cross-sections to capture channel form

  - Areas of bed and bank erosion; potential future locations of channel change

  - Locations of data points logged with GPS for import and storage in GIS

Where does the information go?

- Entered into and stored within a database specifically designed to house the geomorphic data collected.
- Stored as layers in GIS.
- On rivers that have been assessed – means that we can provide information on the geomorphic condition (i.e., degree of stability or instability on that river).
- **One important result is . . . .**


Draft Upper Exeter FEH Zones
Extreme
Very High
High
Moderate
Low
Wetland/Impounded Reaches
Upper Exeter Surface Waters
Towns Boundaries
NH Roads
N
W
E
S
0
0.5
1 Miles
UE01
UE02
UE03
UE04-A
UE06-A
UE06-C
UE08-A
UE08-C
UE11-B
UE12-C
UE12-D
UE14-B
UE14-C
UE15-A
UE15-B
UE15-C
UE15-D
Chester
Fremont
Sandown
Danville
Morrison Rd
Old County Rd
Ventura Dr
Chester Rd
Riverside Dr
Strawberry Hill Rd
Jennifer Ln
Blackberry Ln
Blake Rd
Raymond-Plaistow
Whittier Dr
Strawberry Ln
Parker Rd
Senter Cir
Nathaniel Brown Dr
Rod & Gun Club Rd
Croft Ln
Meadow Fox Ln
Jennifer Dr
Rand Dr
Partridge Ln
Quail Hill Rd
Fremont Rd
Arabian Way
Wason Rd
Towle Rd
Raven Dr
Pheasant Run Dr
Great Oak Dr
Clark Rd
North Pond Rd
Raymond Rd
Crawford Rd
Ledge Rd
Orcutt Dr
Donna St
Old Sandown Rd
Chester St
Derry Rd
Shea Rd
Opossum Rd
Sandown Rd
Morgan Ln
Deerwood Hollow Rd
Cunningham Ln
Halls Village Rd
Webster Ln
Deep Hole Rd
Abenaki Cir
Wells Village Rd
Reed Rd
Hale True Rd
Frances St
Brian St
April Av
Main St
North Rd
Stagecoach Dr
Country Acres Rd
Hollow Oak Dr
Royal Range Rd
Cricket Ln
Cross Rd
Sargent Rd
Phillips Rd
Main St
South Rd
No Danville Rd
Pine Ridge Cir
Private

Has this been done in New Hampshire yet?

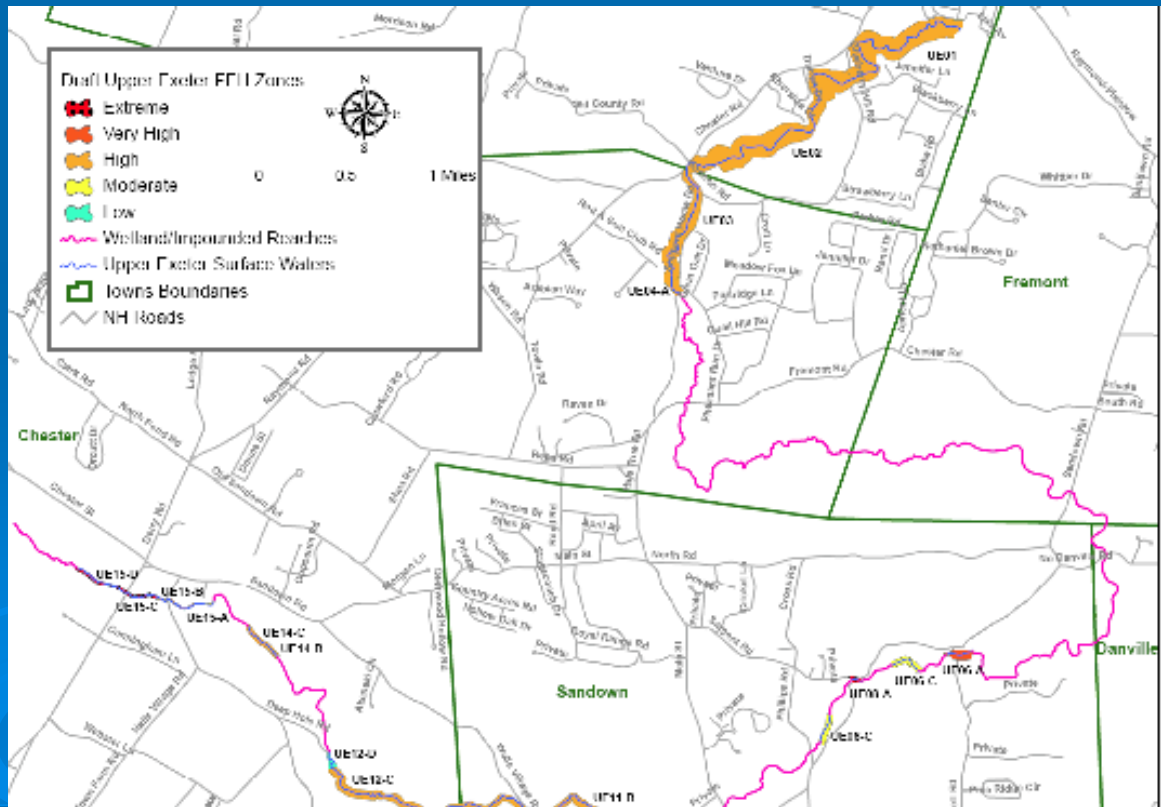
- Yes!
- Exeter River watershed (completed)
- Ammonoosuc River
- Isinglass River

Are more watersheds planned in the future?

- Yes!
- Cocheco & Lamprey watersheds (2010)
- Piscataquog and Souhegan watersheds (2011/2012)
- Program will be expanded across the state as we move into the future

Can FEH and geomorphic assessment results be used as a tool for improvement of stormwater management in New Hampshire?

- Yes!



Reducing FEH through stormwater management and land use planning

- FEH model ordinance: public safety focus, but other benefits realized

- Innovative land use planning methods: LID & stormwater planning and management that promotes pre-development hydrology (gravel wetlands, rain gardens, etc.), riparian buffer ordinances, conservation subdivisions

- Conservation of sensitive reaches

Takeaways for the Commission

- Coordinated, watershed-based stormwater management will help maintain the geomorphic integrity of our rivers and streams
- Prevent FEH losses with stormwater management practices that reduce runoff volumes and velocities
- Promote LID & conservation


Treebox filter – Hodgson Brook


Raingarden – Acton Wakefield Watersheds