

## **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**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
<b>Regulation/Policy Needs</b>						
1	<p>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.</p> <p>Comment: See 40 CFR 122.26(b)(13): stormwater runoff, snow melt runoff and surface runoff and drainage.</p>	<p>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</p> <p>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</p> <p>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.</p>	<p>1.) Identify and interpret any existing legislation/regulations that give authority to regulate existing development for the purposes of stormwater management.</p> <p>2.) Determine the cost of regulating vs. not regulating existing development for the purposes of stormwater management.</p> <p>3.) Identify how other states are managing stormwater from existing development, including the regulations, programs, incentives, and consequences for not restoring impaired waters.</p>	<p>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.</p>	<p>Specifically authorize municipalities to adopt stormwater management regulations, including the creation of a stormwater utility, through enabling legislation.</p>	<p>Create incentives for property owners to improve drainage.</p>

**NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
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**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
				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**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
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**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
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 management 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)
<b>Best Management Practices Needs</b>						
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**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
	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**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
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.		
<b>Planning Needs</b>						
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 inadequate existing infrastructure.	Develop cap & trade programs with possible in lieu fees		

**NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
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 –		
<b>Protection Needs</b>						
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 in place 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**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
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 – 1 <sup>st</sup> – 3 <sup>rd</sup> 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.	
<b>Funding Needs</b>						

**NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
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)
<b>Outreach Needs</b>						
1	<p>Technical Assistance with permit compliance for all applicable stormwater permits.</p> <p>Comment: from whom? If DES would increase state costs and developers would not like open ended assistance from DES at the developer's expense.</p>	<p>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</p>		Boiler-plate SWPPPs for routine projects	NROC-style technical assistance	Support for Stormwater Coalitions and other voluntary organized groups for permit compliance support.
2	<p>Increased understanding and municipal stormwater management on smaller projects under local authority.</p>	<p>The majority of land use decisions are made by local governments on smaller (&lt;1 acre) development projects. 1,2</p>		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	<p>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.</p>	<p>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</p>	<p>Watershed wide hydraulic models would help establish baseline conditions and identify areas in most need of attention.</p>	Create incentives for developers and engineers to pursue innovative stormwater management focused on source control		

**NEEDS IDENTIFICATION - HB 1295 NEEDS SUBCOMMITTEE**

	<b>IDENTIFIED NEED</b>	<b>BASED ON FINDING(S)</b>	<b>DATA / RESEARCH NEEDS</b>	<b>POTENTIAL SOLUTION (1)</b>	<b>POTENTIAL SOLUTION (2)</b>	<b>POTENTIAL SOLUTION (3)</b>
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		
<b>Infrastructure Needs</b>						
1	Many municipalities typically have aging, deteriorated, inadequate, and/or non-existent 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 identifying 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-existent 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**

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

**REFERENCES**

1. Currier, Paul, P.E., and Jillian McCarthy. Stormwater in New Hampshire, Presentation at the HB1295 Stormwater Legislative Commission Meeting. Legislative Office Building, Concord, NH. 4 September 2008
2. Roseen, Robert, Ph.D. Stormwater Management, Community Resiliency, and Climate Change. Presentation at the HB1295 Stormwater Legislative Commission Meeting. Legislative Office Building, Concord, NH. 6 October 2008.
3. Magee, John A. Summary of the Effects of Land Use on Water Quality, Aquatic Habitat and Biota. April 22, 2009.
4. Diers, Ted. NH Water Primer and Stormwater Permitting at NHDES. Presentation at the HB1295 Stormwater Legislative Commission Meeting. Legislative Office Building. 3 November 2008.
5. New Hampshire Department of Environmental Services. New Hampshire Stormwater Manual, Volume 1: Stormwater and Antidegradation. December 2008.
6. HB 1295 Stormwater Legislative Commission Needs Subcommittee. Draft Outline Needs Statement. 26 May 2009.

## **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;