

**Status of Municipal Stormwater Systems
in the Upper Valley Lake Sunapee Region of New Hampshire**

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Outreach Format and Response Rate Summary

UVLSRPC conducted municipal outreach in March of 2023 to better understand the condition and needs for municipal stormwater infrastructure. We are grateful to all who participated. All municipalities were contacted at least three times by way of the Highway Department, Road Agent, and/or administrative office. Coordinating a time was a barrier for some requests.

Municipal respondents were mostly Directors of Public Works, Town Road Agents, or Directors of the Highway Department. In addition, respondents included one on-staff engineer, four staff in planning or zoning departments, and two Town Administrators.

Representation by community population met project goals (a minimum of ten municipalities) with 17 out of 27 municipalities represented. The least represented community sizes were those under 1,000 in population with only a third participating. A summary can be found below.

Participant?	Community	Size	Population (2020 ACS 5-year)
No	Orange	Tiny (<1,000)	277
No	Dorchester	Tiny (<1,000)	339
No	Croydon	Tiny (<1,000)	801
No	Acworth	Tiny (<1,000)	853
Yes	Piermont	Tiny (<1,000)	769
Yes	Goshen	Tiny (<1,000)	796
No	Lempster	Small (1,000 - 1,700)	1,118
No	Unity	Small (1,000 - 1,700)	1,518
No	Cornish	Small (1,000 - 1,700)	1,616
Yes	Washington	Small (1,000 - 1,700)	1,192
Yes	Orford	Small (1,000 - 1,700)	1,237
Yes	Springfield	Small (1,000 - 1,700)	1,259
Yes	Grafton	Small (1,000 - 1,700)	1,385
Yes	Wilmot	Small (1,000 - 1,700)	1,407
No	Newbury	Medium (1,700-4,000)	2,172
No	Plainfield	Medium (1,700-4,000)	2,459
No	Grantham	Medium (1,700-4,000)	3,404
Yes	Lyme	Medium (1,700-4,000)	1,745
Yes	Sunapee	Medium (1,700-4,000)	3,342
Yes	Canaan	Medium (1,700-4,000)	3,794
Yes	New London	Large (>4,000)	4,400
Yes	Enfield	Large (>4,000)	4,465
Yes	Charlestown	Large (>4,000)	4,806
Yes	Newport	Large (>4,000)	6,299
Yes	Hanover	Large (>4,000)	11,870
Yes	Claremont	Large (>4,000)	12,949
Yes	Lebanon	Large (>4,000)	14,282

Questionnaire format was provided either over the phone through an interview or through an online survey. Of the seventeen completed questionnaires, six were submitted online and eleven through phone interviews. Those completed online tended to provide information on general condition with less substantive comments than the interviews.

Data summary is presented by question. Percentages are provided for questions where answer choices were provided, and response rate was the highest. Raw counts are provided for written or verbal comments that have been grouped into “*comment categories*” and do not represent a self-reported category or full representation of community perspective if each category had been asked directly. Comments are a paraphrase of conversation, unless in quotations.

Responses

System Type.

What are your main systems of stormwater management?

All municipal respondents indicated they maintain **open drainage** systems that include ditch lines, culvert structures, and other open system techniques.

While 75% of respondents indicated some **closed drainage** exists under municipal purview, only large communities, but not all, host more extensive closed systems. These include Lebanon, Claremont, Hanover, Newport, and New London.

When asked about the use of **green infrastructure or maintenance of natural systems (GSI)**, only four respondents indicated the use of GSI techniques.

Design.

What types of design do you use or are interested in?

Respondents were asked about the designs used or of interest. Most use site-specific knowledge for in-house design as it keeps costs down. In a couple communities, this approach meant implementing unique strategies. In some cases, in-house design was estimated to provide 90% savings. Designs in use or of interest include but are not limited to: bigger pipes, settling ponds, retrofits, tree boxes, pervious pavement, check dams, water bars, level spreaders, cutout, and swales.

GSI - Green Stormwater Infrastructure.

Does the community have, or considered, green infrastructure technologies (e.g., bioretention basin, permeable pavement, swales, etc.)?

Respondents described their knowledge and use of green infrastructure techniques. Most respondents held little awareness of this category of system types, and those that did had few

to no structures on Town properties due to cost, maintenance concerns, and limited right of ways to implement best practices. Installation challenges were especially noted in areas with competing uses such as sidewalks, bike lanes, or preservation of historic stone walls.

The following comments were made:

- Road projects are very challenging, prime real estate for walking, biking, utilities, etc.
- Considered tree boxes in street re-designs.
- GSI was designed into safety complex facility as part of the wetland mitigation.
- GSI has been included in some designs, however, the cost for those designs was outside of financial reach.
- No capacity for GSI.
- A couple of rain gardens on town maintained.
- Installed sediment traps on the outlet side of pipes in open systems.
- Talked about GSI with the planning board but it has not been adopted for our municipal practices.
- Only for a site improvement for rain garden.
- Some systems installed and maintained by municipal Parks or Recreation departments.

Procedure.

What are the main procedures and practices your community uses for stormwater management?

Respondents referenced several maintenance techniques and equipment that have been useful. Those that expressed the most confidence in their systems communicated a higher ability to conduct preventative maintenance measures at a consistency that maintains optimal condition of current structures without replacement.

Answer Choices	Responses
System maintenance	94%
Regulations	5%
Asset management plan	4%
Mapping systems	3%
Answered	17 count

Maintenance techniques mentioned include:

- Hydroseeding/Hay&grass with mulch.
- Better sand/silt materials.
- Maintenance coordination with neighbor Towns on shared roads.
- Source water protections.
- Infiltration study.
- Regular drive-by.

- Specific equipment: Concrete, pre-cast products; Straw mats with polyfiber; Leaf blower with truck mount; Vac truck; Catch basin cleaner; Back hoe; Sweeper; Loader; and Sand/salt shed.

Successes.

Please list a few aspects that you feel are going well?

Respondents pointed to several successes. First and foremost being their ability to effectively monitor the system for safety. In addition, respondents highlighted the ability to fundraise successfully and complete priority projects. Some success in planning was also mentioned.

Specific success mentioned include:

- **Lebanon:** An over decade long combined sewer overflow project in conjunction with EPA was an incredibly significant effort. The department now looks forward to the downtown West Lebanon project that will include Low impact development techniques.
- **New London:** A lot of problem areas have been addressed, including one along Brookside Drive (change out 3 culverts to bridge) and Pangry road (6 footers collapsing in, now wooden bridge).
- **Newport:** Fundraising has been considerable with 26 million coming with grant writing by the town manager and economic development coordinator.
- **Sunapee:** Recently completed NRI plus some progress on Master Plan.
- **Washington:** Using municipal funds, nine red-list bridges have been addressed. In addition, active work has been done to mitigate e-coli issues at Village Pond including collaboration with a dairy farmer. This e-coli project included a municipal appropriation to generate the grant funding and then get reimbursed.

Needs.

What aspects need improvement?

Respondents were asked about any specific concerns or issues they were having with their municipal stormwater system. The following table highlights those of mention, with only two respondents feeling very confident in their ability to take care of current challenges:

Comment Categories*	Responses
Need to upsize due to Increased rainstorm intensity	12
Mapping system	6
Water quality impact (sand, salt, and nutrients of specific mention)	5
Steeper slopes	4
Cleaning out ditches	3
Feel capable to take care of	2
Miscellaneous (old design, shoulder washing, plugged pipes, redirecting flow)	4
Answered	17

* Categories based on voluntary respondent comments.

The need to improve asset tracking through mapping software, as well as ensure data is housed in a shared platform in case of staff turnover, were both clearly identified needs that respondents emphasized.

- **Washington:** Working with a resident with coding experience to build a unique mapping management system to inventory and then track stormwater structures.
- **Lebanon and Newport:** Both with active mapping systems. Express challenges to have sufficient staff capacity/skills to maintain the system. This means the system is not kept fully up to date so when a structure needs a more detailed assessment, a site visit is still required.
- **New London:** No mapping system, but interested if able to attain the software/training.
- **Hanover:** Underdevelopment of asset tracking for the open system. Complete for the closed system and working to keep that up to date.

Asset management for stormwater, as presented by the New Hampshire Department of Environmental Services, is most often used for closed drainage systems. If deemed unable or unnecessary, many municipalities will utilize simpler programs for asset management. Many of these systems incorporate geographic information systems. However, any asset management program can be difficult to maintain overtime due to issues such as staff time, software costs, or software training.

Some respondents identified specific roads or structures of concern:

- **Charlestown:** The worst area for drainage is "downtown". The Main Street drainage system improvements over the years seem to have moved the issue and not resolved it.
- **Claremont:** double culverts on Washington St.
- **Enfield:** During 2–3-inch storms, always at the same places on steeper slopes. Specific concerns for shoulder washing, water on road, and plugged culverts along Lockehaven Rd, Methodist Hill, and Fallensby Road. FEMA money is looking to help at a site on Lower Potato Rd.
- **Goshen:** Issue with limited right of way along roads on mountain sides, especially where there are also stone walls. Specific mention of Mountain Road.
- **Grafton:** French hill Road is a big problem.
- **Hanover:** The downtown core is of concern with many pipes over 60 years old, and no one knows where they extend.
- **Lebanon:** Problem areas near Tracy St in West Leb. Some culverts that are not in good shape throughout the City, outlier areas (Cross Rd or former farm communities).
- **New London:** Working through roads for extensive ditch work, currently Wilmot Center Rd and Pleasant Street Hill. A few culverts in need of replacement on Brookside Drive.
- **Newport:** Maple St in need of full upgrades for drainage, as well as water, sewer, and sidewalk structures. Also, anything in-town, more closed drainage, needs an overhaul.
- **Piermont:** A culvert in a deep ravine on Indian Pond Rd needs replacement and [is noted] in the Town's ten-year plan. Also, there are twin culverts on Piermont Heights Rd where water passes over the road many times. Challenges on hillsides to keep water draining off the road while not picking up material.

- **Sunapee:** Mostly concerned about areas along the lakes and ponds. Also, some of the steeper roads have experienced severe washouts during extreme storm events.
- **Washington:** Active replacement underway for a concrete box culvert on top of an arched dam in proximity to a wetland. Also, concern for a twin culvert system on Half Moon Pond Rd that is prone to overtopping. Another on Lowell Mountain Rd that is on a summer maintenance road that is being upgraded due to the building of new properties.
- **Wilmot:** Twin pipe on Shindagan road needs close monitoring because it could overtop. Also, around Town Hall as the pond has gone over before.

Barriers.
What are barriers to improving current concerns?

With 88% of respondents, funding was the biggest barrier mentioned.

Answer Choices	Responses
Funding	88%
Professional development	19%
Targeted expertise such as engineering	13%
Leadership	6%
Culture	6%
Answered	16 count

On staffing challenges, four respondents specifically mentioned issues of enough staff capacity to complete required work, as well as new staff retention and commitment. Respondents specifically mentioned barriers for staff to feel pride in their work, attracting/retaining those who are environmentally minded, and ability to compete with area wages. These barriers have further challenges to ensuring continuity of services.

Responsibility.
What entity does the community see as responsible to guide / implement effective stormwater management?

All respondents indicated that the primary responsibility fell with the Department of Public Works, Highway Department, or Road Agent staff. All these respondents felt the Town was supportive of these departments' work and recommendations.

In New Hampshire, the select board or city council hold financial oversight. In addition, the municipal planning boards and/or conservation commissions engaged in stormwater management to some degree for roughly half of respondents. All such engaged communities expressed positive impacts because of those relationships or shared activities.

Public / Private Interface.

When interfacing with private land, are there any activities of collaboration or points of conflict?

Water does not follow political or property boundaries. Thus, the threshold between private and public land can stimulate both collaboration and conflict.

On **collaboration**, respondents spoke of broad public support of their work, often reflected in budget approvals at Town Meetings. In addition, some respondents working around Lake Sunapee showed a strong relationship with watershed groups, at times collaborating on fundraising for specific site's improvement or in public education. Also, long-standing Road Agents in smaller communities, such as Goshen and Piermont, expressed deep ties with residents that fostered trust and familiarity with the road agent, deterring conflict.

On **conflict**, many respondents expressed the need for more awareness of private property owners on stormwater issues and landowner responsibility. The most common issues mentioned related to driveways, blame directed at municipal staff for problems, increased use of lakeside properties, and private flows inappropriately tied into the public system often in the right of way. Respondents expressed limited strategies available to address private responsibility due to the need to keep relations positive. When serious problems arise, formal letters of notification on violation are sent. However, minor issues that require education and outreach are outside the purview of municipal staff.

To reduce conflict, respondents discussed the potential for landscapers and contractors to be better informed. At times contractors did not abide by Town requirements, either by ignorance or negligence. In addition, contractors are well positioned to educate landowners on stormwater management options that minimize conflict and damage.

Regulations.

Does the community have, or has it considered, stormwater requirements as part of local regulations?

The most common requirements mentioned include subdivision and site plan review procedures, driveway permits, low impact development practices, and integration in the master plan process.

Some respondents expressed concern for a knowledge gap between the professional road staff and the select board/city council and planning board representatives.

Answer Choices	Responses
Yes	65%
No	29%
No, but considered	6%
Answered	17 count

State Permitting.

State permitting was regularly mentioned as a barrier to project development. The most consistent problems noted included the timing of approval that corresponds with an acceptable construction schedule, the high cost of permitting, and permit standards that are not realistic to the financial capacity of municipalities (although recognized as positive goals to strive for). A common sentiment was *perfect being the enemy of the better*.

Examples of respondent comments included the following:

- An application for a culvert replacement is submitted in May, then not received until Thanksgiving, when construction is a considerable challenge and needs to be done before Winter.
- Needing to replace when no water in a culvert is not a consideration of permit timelines.
- A feeling that NHDES staff may lack confidence in their ability to issue permits, which delays the process.
- Spending more on consultants than the work. Job cost \$2,200, permit cost \$6,600.
- Projects with multiple partners may result in changes where municipal staff are not kept informed early. Changes in schedule then cause a problem when money needs to be approved or other projects are on hold.
- Perfect being the enemy of good. Funding is limited to meeting permit standards. Feels it is downshifting, paying for the ability to make things better for other people or other agencies goals without the funding to make that happen.
- A separate state permitting process for municipal bodies would be helpful.
- Wetlands Board is short staffed.

Grade.

How would you grade the effectiveness of your current municipal program and the state-maintained system to meet community need for stormwater management?

Respondents overall expressed greater confidence in municipal-maintained infrastructure than the state-maintained infrastructure. For **municipal programs**, most explained localized areas that needed attention, but not enough to be overall poor. Very few expressed confidence that the current systems would meet future needs, often referencing stronger and more common storm events. On the **state program**, respondents explained areas of known overdue maintenance and loss of funding for staff that that has raised concerns.

Answer Choices	Municipal Program	State Program
Fit for the future	6%	0%
Adequate for now	47%	25%
Requires attention	41%	50%
Poor at risk	6%	25%
Failing, unfit for purpose	0%	0%
Answered	17 count	16 count

Change.

How has this changed over the last 10 years?

For municipal programs, almost all explained success in maintaining the condition or improving the overall condition of their stormwater infrastructure over the past ten years. A few explained challenges to keep up, largely due to limited funding for needed replacements.

Answer Choices	Responses
Improved	44%
About the same	44%
Worsened	13%
Answered	16

Resources.

Are there any entities or resources you look to for guidance or advice?

Respondents referenced a variety of resources and networks utilized when seeking advice. These are largely based on relationships with neighbors or other professionals in the field who respondents trust based on past or shared experience. Although some print resources were mentioned, these were not popular for experienced staff as they did not provide the site-specific guidance municipal staff would look for.

Comment Categories*	Responses
UNH Technology Transfer Center	11
Neighbor Town Staff	9
Engineers, Private or NHDOT	6
NH Department of Environmental Services	5
Targeted workshops	3
Digital resources from other states (i.e., VT, ME, MT)	2
Miscellaneous (Vendors, Public Works Association, In-House training)	3
Answered	17

** Categories based on voluntary respondent comments. Response counts may not be fully representative if asked directly.*

State System.

How would you describe the state-maintained stormwater systems?

While respondents recognized budget challenges faced by the stated, serious concerns were raised by many about the maintenance of stormwater systems with one respondent calling it a “slipping” over twenty years. Most notable were stories of severe overdue maintenance of drainage structures, with maintenance sometimes taking multiple decades and counting. In some cases, maintenance impacted the municipal system, as well as the water quality of

waterbodies. Those respondents working in stormwater for several decades referred to a more limited staffing, impacting maintenance timelines. Most respondents felt the state staff were doing a decent job, but adequate resources are not available to these state staff.

Identified Needs based on Questionnaire Responses

The following are needs identified by most interview respondents and in some surveys.

- **Funding:** Funding assistance to develop shovel-ready projects.
- **GSI:** Cost effective and added value strategies to integrate Green Infrastructure.
- **Asset Maps:** Develop and maintain mapping systems.
- **State Communications:** Communication with the state on permitting deficiencies and state road maintenance.
- **Local Regulations:** Develop/improve local regulatory processes for private stormwater systems.
- **Networking:** Quarterly networking and site visit opportunities with Highway/Road agent staff.
- **Private contractor education:** Events for Contractors/Landscapers to increase stormwater awareness.
- **Public outreach:** Materials for public outreach.