



VSMM Update Process Overview

Vermont Stormwater Management Manual Update, Meeting #4

Shelburne, Vermont Town Office

January 17, 2014





Overview Outline



1 ANR's overall goals



2 Process timeframe

- Stakeholder meetings
- Overall manual revision



3 Discussion of key concepts

- Runoff reduction approach, and ties to Low Impact Development / Green Infrastructure



1. ANR's Goals (Sept. 2013)



Vegetated swale. Image credit
www.vtwaterquality.org/stormwater/html/sw_gi_bmp_vegetatedswales.htm

- Preserve what works but use collective expertise wisely to target updates
- Add approaches/practices known to be missing (esp. LID, GSI)
- Balance benefits of changing practices against cost of implementing changes
- Complete revised VSMM in a reasonable, timely fashion
- Be responsive to concerns from EPA that treatment practices currently in VSMM may not be sufficient to meet the Lake Champlain Phosphorus TMDL nutrient reduction goals

1. ANR and Stakeholder Goals for VSMM's Proposed Standards (December 2013)



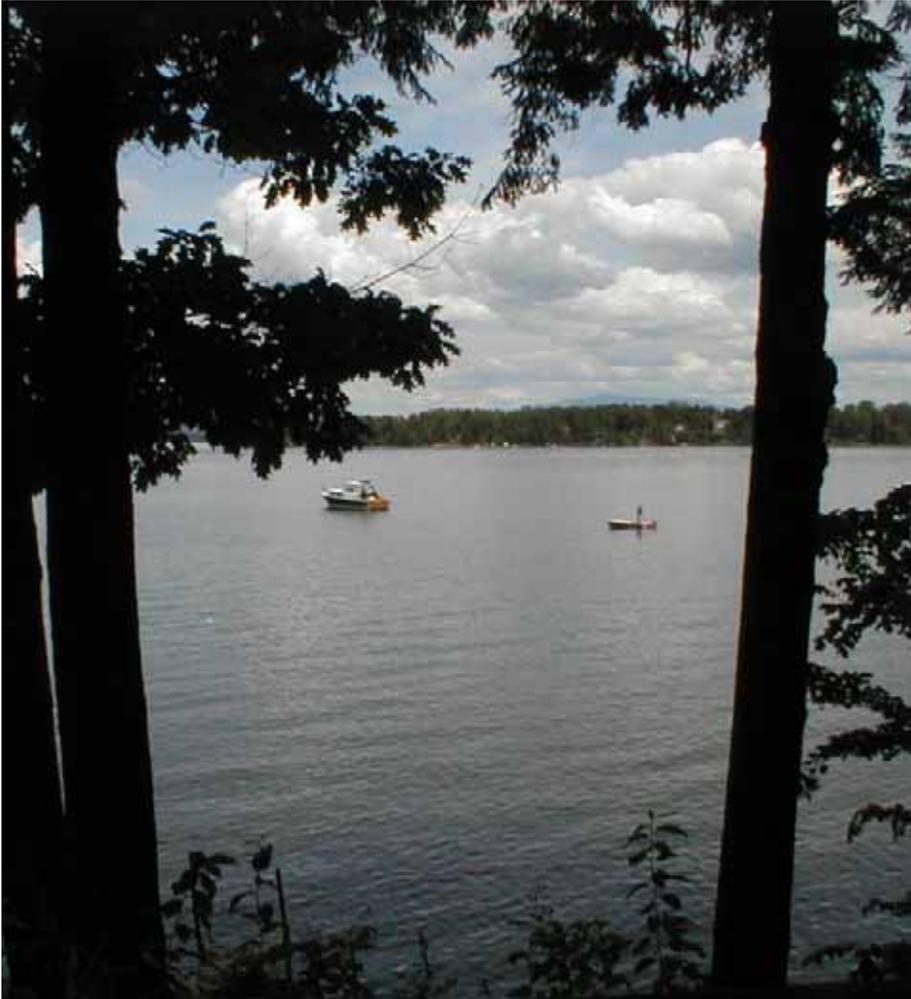
- Mimic predevelopment hydrology
- Maximize the use of non-structural practices
- Promote infiltration and evapotranspiration
- Practical and economical to apply and administer

2. Process Timeframe



- *Advanced Stormwater Standards Compilation: Fall 2012*
- VSMM Update stakeholder meetings: September 2013 through February(?) 2014
- VSMM Revisions: Spring – Summer 2014
- Adoption of Revised VSMM: Fall 2014

2. Why VSMM Update Matters for Trees



- Development or re-development projects that meet permitting thresholds (generally creating 1 acre or more of impervious surface) must obtain a post-construction State Stormwater Permit
- DEC Stormwater Section issues about 300 permits/year
- Most permitted projects are small (2/3 create 2 acres or less of impervious; ~37% are for expansions / <1 acre)
- 2002 was last VSMM update...

2. Why VSMM Update Matters for Trees



- We now have an opportunity to fundamentally shift how stormwater is managed in the developed landscape

3. Key Concepts



- Low Impact Development
- Green (Stormwater) Infrastructure
- Runoff Reduction Approaches

3. What is Low Impact Development?



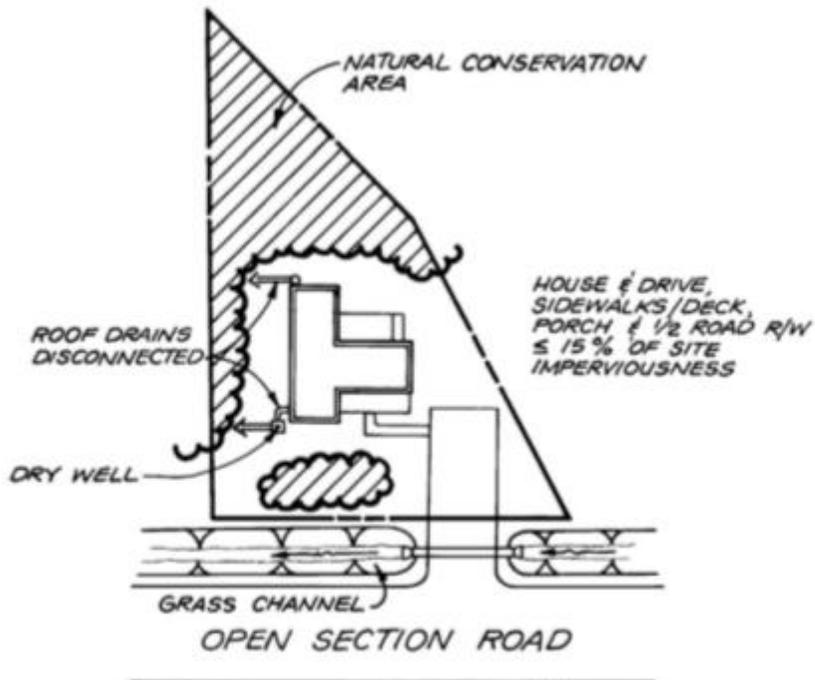
- US EPA (2012): “an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treats stormwater as a resource rather than a waste product.”

3. LID Site Design Philosophy



- Development strategy that doesn't consider stormwater LAST
- Avoid impacts of increased post-development stormwater runoff
- Reduce or minimize impacts
- Manage remaining impacts at the source using decentralized runoff reduction and treatment practices

3. LID Current Practice in VSMM



Schematic of Environmentally Sensitive Rural Development Credit

- No explicit mention of LID
- Six voluntary, non-structural practices for credits to reduce WQv and REv:
 - Natural Area Conservation
 - Disconnection of Rooftop Runoff
 - Disconnection of Non-Rooftop Runoff
 - Stream Buffers
 - Grass Channels
 - Environmentally Sensitive Rural Development
- “Alternative design standard” for CPv in 5th printing (if majority of site disconnected)

3. What is Green (Stormwater) Infrastructure (GSI)?



- US EPA: “Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water.”
- VT DEC: a suite of “systems and practices that restore and maintain natural hydrologic processes in order to reduce the volume and water quality impacts of stormwater runoff.”

3. GSI strategy and practice examples



Green roof at Heritage Aviation in South Burlington. Image credit www.vtwaterquality.org/stormwater/html/sw_gi_bmp_greenroofs.htm

- Volume reduction w/o infiltration
 - Green roofs, rainwater harvesting
- Stormwater wetlands
- Infiltration
 - Trenches / basins
 - Porous pavements
 - Infiltrating bioretention
- Filtering practices
 - Sand filters, other media filters, bioretention
- Open channels
 - Wet/dry bioswales, grass channels

GSI Current Practice in VSMM



- No specific mention, but several structural GSI practices included:
 - Stormwater wetlands (including gravel, extended detention)
 - Infiltration practices (basins, trenches)
 - Filtering systems (sand filters, organic filters, and bioretention, e.g., “rain gardens”)
 - Open channels (dry swales, wet swales, grass channels)
 - Filter strips (only as “limited applicability” practice)

3. What is Runoff Reduction (RR)?



- The runoff reduction approach seeks to maintain the same predevelopment runoff volume delivered to a stream after a site is developed (Chesapeake Stormwater Network, 2009).
- In its simplest terms, this means achieving the same predevelopment runoff coefficient for every storm, up to a designated storm event.

3. What is Runoff Reduction (RR)?



- Runoff reduction is defined as the total runoff volume that is reduced through canopy interception, soil infiltration, evaporation, rainfall harvesting, engineered infiltration, extended filtration, or evapotranspiration.

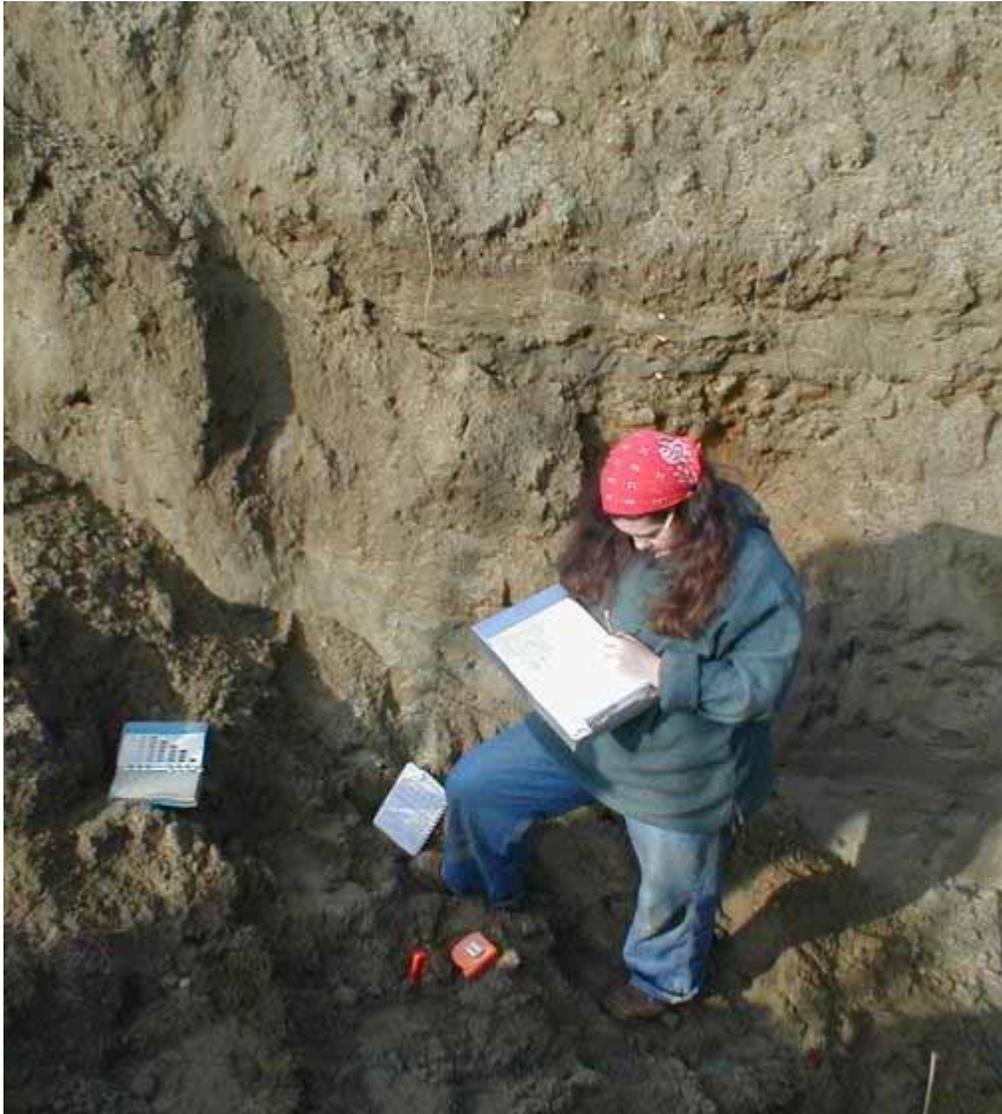
3. What is Runoff Reduction (RR)?



■ Key benefits:

- Post-development hydrology that mimics pre-development hydrology with respect to runoff volume, duration, and velocity.
- Explicit acknowledgment of the hydrologic difference between forest and turf, and disturbed and undisturbed soils, which should create better incentives to conserve forests, reduce mass grading, restore soils, and reforest sites.

What We Have – What We Need From You



- Have: Second-round “strawman” goals and a framework that incorporates RR with a minimum of complicated accounting
- Need: Feedback especially on how we define “site” and on how non-structural practices like trees/reforestation and soil amendment/restoration will be considered and implemented within this framework

Questions?

