“Reducing Runoff” is the most topically direct follow up to “Linking Land Use to Water Quality” (Basic NEMO). There is a good deal of overlap, but the major differences is that less time is spent on planning and zoning recommendations, with most of the show being devoted to site design considerations – what is now known as “low impact development.” There are quite a lot of slides (about 100), but it goes quickly because many of the slides are pictures of “green” BMPs like pervious alternative pavements, swales, green roofs, etc. This presentation has been perhaps the most requested NEMO module over the last 2-3 years. It is continually evolving, but mostly this takes the form of additional good photos and local examples.
Tonight’s Agenda

• land use impacts on water quality
• a quick look at North Branford
• reducing the impacts of impervious surfaces on North Branford’s waterways through:
  ➢ Planning
  ➢ Zoning
  ➢ Site Design

Main chapters of the talk, which is about 100 slides (1 hour) long.
A Watershed is an area of land that drains to a single outlet.

Watersheds come in a variety of sizes.

Watershed, defined. GIS layers show watersheds of different orders and how they're “nested.”
There is a short section in this talk that goes over some basic data layers for the town in question. This slide show the results of CLEAR’s 1985-2002 study of land cover change. Note the effect of water company land (inset) in preventing development in the northeast section of town.
Latest % impervious cover (from CLEAR 2000 subpixel analysis) by local watershed. This leads into the true heart of the Reducing Runoff show.
Tonight’s Agenda

- land use impacts on water quality
- a quick look at North Branford
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  - Planning
  - Zoning
  - Site Design

This abstract skips the brief planning and zoning sections. Most of the show focuses on site design – what is now known as “low impact development.”
Principles to Guide Development:
Site Plan & Subdivision Guidelines
1. Preserve pre-development hydrologic conditions.
2. Minimize disturbance of natural grades and vegetation
3. Protect natural wetlands and stream buffers.
4. Maximize infiltration of stormwater
5. Minimize and disconnect impervious surfaces.
6. Phase Construction.

Reminds viewer that the design goal relates strongly to the watershed/water cycle information given in the intro section.
The presentation goes over each major portion of the impervious surface budget. Roads, for instance, are the largest component of %IS in residential areas. For each section, we try to cover reducing runoff through three strategies: (a) reducing the IS footprint; (b) reducing runoff by using pervious alternatives to pavement; (c) treating runoff with vegetated, infiltration-oriented systems.
Lots of pictures in this presentation. Here’s one from the Roads section showing pervious concrete pavers.
Engineered Swales

- Promote infiltration
- Most effective at sediment removal
- Open system easier to maintain & troubleshoot
- Installation costs comparable to piped drainage
- They look better!

Hebron, CT

Parking section: reduce footprint through parking utilization studies leading to fewer stalls built.
Parking Requirements

- Are local standards excessive?
  Compare them to others (state/national)
- Are required spaces actually being used?
  Conduct Parking Utilization Studies

Parking section: reduce footprint through parking utilization studies leading to fewer stalls built.
Case Study

Parking

John Heinz National Wildlife Refuge at Tinicum, PA

Photo of pervious asphalt.
Porous concrete sidewalk at Penn State University Visitor’s Center

From: Cahill Associates

Photo of pervious concrete, from Sidewalks and Driveways portion of talk.
Photo of rain garden, from Roofs portion of talk.
An extensive green roof from Roofs section.
Contact information.