MEMORANDUM
BUREAU OF WATER PROTECTION AND LAND REUSE,
PLANNING AND STANDARDS DIVISION

TO: JOYCE KENNEDY RAYMES, STUDY COORDINATOR
LOWER FARMINGTON RIVER/SALMON BROOK WILD & SCENIC STUDY

FROM: JESSICA MORGAN, CT DEP LID COORDINATOR

SUBJECT: LID MANAGEMENT STRATEGY RECOMMENDATIONS

DATE: 10/4/11

CC: AIMEE PETRAS, SUSAN PETERSON, MARYAN NUSOM HAVERSTOCK

Thank you for the opportunity to comment on the LID management strategy recommendations for the Lower Farmington River/Salmon Brook Wild and Scenic Study Management Plan. Please contact me at 860-418-5994 or jessica.morgan@ct.gov with any questions.

CT DEP LID Management Strategy Recommendations for the Farmington River & Salmon Brook Wild and Scenic Study Management Plan

Stormwater Management through Low Impact Development (LID)

Background

Low Impact Development (LID) is a site design strategy intended to maintain or replicate predevelopment hydrology through the use of small-scale controls integrated throughout the site to manage stormwater runoff as close to its source as possible (*2004 Connecticut Stormwater Quality Manual*). In addition to decreasing the volume of stormwater runoff and recharging local groundwater resources, infiltration of stormwater through LID also helps to remove sediments, nutrients, heavy metals, and other types of pollutants from runoff.

As land is developed and impervious cover in a watershed increases, less stormwater filters into the ground. Conventional methods of land development collect and convey stormwater quickly into a series of drains and pipes that flow directly into the closest waterbody with little or no water quality treatment, while LID techniques focus on infiltrating as much stormwater on site as possible. Adoption of LID principles and practices into municipal plans of development and regulations is an important step that towns can take towards better protecting and managing local water resources. Towards that end, key strategies for effective LID include:

- preserving open space and minimizing land disturbance in overall site plan;
- conserving or restoring native soils and vegetation in area of disturbance;
- designing the site to minimize and disconnect impervious surfaces;
- infiltrating and/or detaining as much stormwater as feasible;
- managing stormwater at multiple locations throughout the landscape and;
- providing for maintenance and education.

It should be noted that LID stormwater infiltration practices may not be appropriate to use in all cases, such as areas where soils are compacted or contaminated, or situations where on-site activities involves the handling of hazardous materials or other potential pollutants. Therefore, use of LID practices need to be considered on a site specific basis.

Where site conditions permit, LID techniques can include:

- the use of pervious pavement or grid pavers (which are very compatible for parking lot and fire lane applications);
- impervious pavement without curbs or with notched curbs to direct runoff to properly designed and installed infiltration areas;
- the use of vegetated swales, tree box filters, and/or infiltration islands to infiltrate and treat stormwater runoff (from building roofs, roads, and parking lots);
- the minimization of access road widths and parking lot areas to the maximum extent possible to reduce the area of impervious surface;
- the installation of rainwater harvesting systems to capture stormwater from building roofs for the purpose of reuse for irrigation (i.e. - rain barrels for residential use and cisterns for larger developments) or other non-drinking water system applications (i.e. – toilets);
- the use of residential rain gardens to manage runoff from roofs and driveways;
- the use of vegetated roofs (green roofs) to detain, absorb, and reduce the volume of roof runoff

Water quality and quantity benefits are maximized when multiple techniques are used in concert with one another. This "treatment train" approach provides redundancy in treatment and volume control as well as utilizes specific BMPs for the removal of different pollutants. For example, roadside runoff could be directed toward a water quality swale for removal of sediments and heavy metals. As the runoff travels through the swale, evaporation would help to remove volatile organic compounds (VOCs). The runoff could then be directed to a constructed subsurface gravel wetland for nutrient removal.

In addition to helping to protect water quality and manage water quantity, additional benefits that a town may realize as a result of adopting LID strategies into its Plan of Conservation and Development and zoning/subdivision regulations may include opportunities to:

- preserve features that are important to a town's character;
- balance the need for growth with environmental protection;
- protect Outstanding Resource Values identified by the Lower Farmington/Salmon Brook Wild & Scenic Study;
- prevent or reduce local flooding;
- reduce the costs associated with stormwater infrastructure maintenance; and
- calm traffic through the use of narrowed roads and street plantings.

Recommendations

Encourage towns in the Wild & Scenic Study Area to utilize the Robinson & Cole "Municipal Plan and Regulations Review for the Lower Farmington & Salmon Brook Wild and Scenic Study Committee" (March 2009), the results of the "Farmington River Enhancement Grants - Municipal Land Use Evaluation Projects" (awarded to Farmington watershed towns in April 2009), and the "2004 Connecticut Stormwater Quality Manual" to identify and remove barriers to LID in land use policies. Encourage towns to adopt requirements for:

Environmental Site Design

- Require/encourage site design based on preserving natural features
- Require/encourage/offer density bonuses for open space subdivisions and/or cluster developments

- Allow maximum ROW for streets utilizing swales and bioretention for stormwater management and narrower ROW for conventional stormwater management
- Suggest tree preservation requirements
- Suggest wider buffer areas

Limiting Impervious Cover

- Restrict the amount of impervious cover throughout town by:
    - Decreasing road widths where possible
    - Reducing cul-de-sac diameters
    - Reconsidering sidewalk widths and requirements
    - Decreasing driveway widths, and/or promoting two track design, shared driveways, and pervious alternatives
    - Adjusting parking ratios requirements, and encouraging shared parking arrangements
    - Requiring bioretention areas as part of parking lot landscaping
    - Allowing curbless roads
- Require grassed swales for stormwater management where possible

Stormwater Treatment

- Require treatment of 1st inch of rainfall
- Require "no net increase" in runoff from new development
- Require stormwater to be treated before it is discharged
- Establish design criteria for BMPs
- Establish operations and maintenance protocols for BMPs
- Reference the *2004 CT Stormwater Quality Manual*
- Reference the *2002 CT Erosion and Sediment Control Guidelines*