

**GUIDANCE DOCUMENT FOR LOW IMPACT DEVELOPMENT
BEST MANAGEMENT PRACTICES FOR GUILFORD**

March 11, 2010

EFFECTIVE MARCH 26, 2010

INTRODUCTION

Over the past 30 years, Guilford has seen an increased interest in balancing environmental conservation with human needs, community growth and land use practices. Low Impact Development is an approach to the use of land which utilizes a variety of innovative approaches to site planning, conservation design and stormwater management. Overall, the goal of Low Impact Development is to make the fewest changes to the environment consistent with zero increase in stormwater runoff, environmental protection and economic considerations.

As a result of this approach, studies have shown that construction costs are reduced¹, local property values are likely to rise², tax revenues increase and compliance with wetland and other resource protection regulations is easier³.

Guilford's Stormwater Management regulations (adopted in 2005) require stormwater management plans to be consistent with the latest version of Connecticut's Stormwater Quality Manual. In this document, Section 4 describes Low Impact Development (LID) Site Planning and Management Practices. Additional guidance is described in "The Practice of Low Impact Development" by the US Department of Housing and Urban Development Office of Policy Development and Research, dated July 2003.

LID Planning and Design Practices include Site Planning, Erosion and Sediment Control, Stormwater Management and Landscape Design principles. To highlight those LID Management Practices expected in Guilford, the following principles are suggested for review by designers and developers. The attached checklist is intended for designers and developers to complete in order to provide the Planning and Zoning Commission and staff an overview of the developer's efforts to protect natural resources wherever reasonable on any given site.

SITE PLANNING CONSIDERATIONS

Environmentally sensitive development is of prime importance in Guilford, as is preservation of those elements which represent the Town's historic and cultural heritage. A visually appealing site plan which will stabilize and/or increase property values and encourage sustainable development and energy efficient design are important elements to be included in a Site Plan application whenever possible.

Site plans should also respect unique natural and historic features such as stone walls and public view sheds. As a result of this approach to site planning, more aesthetically pleasing and naturally attractive landscapes, more pedestrian friendly neighborhoods, more open space for recreation, and safer residential streets can be expected⁴.

Site planning can be divided into a four-step process.

1. Identification of Natural Resources
2. Locating buildings outside the natural resource areas wherever possible

3. Lay out streets, driveways, parking areas and trails
4. Creation of Lot Lines

Step 1. Identification of Natural Resources

An initial site assessment is conducted to determine the location of all natural resources on a given site. These resources shall include wetlands, coastal resources, meadows, steep slopes, soil types, mature forest, significant trees, riparian corridors, wildlife corridors, view sheds, and the location of any endangered species. Most of these elements have already been identified in Guilford's 2005 Natural Resource Inventory and Assessment (NRIA) and they are illustrated in the NRIA Map Atlas. Other natural resource references are identified in Table 1.

After a document review of the site has been performed, a field survey should be conducted to locate hydrologic features such as streams, wetlands, floodplains and existing natural surface water drainage patterns. Once wetlands features have been identified, a surveyor needs to locate them on a site plan along with features such as site topography, limits of vegetation, exposed ledge and stone walls. Additional items required on a site plan are listed on the attached Low Impact Design Best Management Practices check list and in Table 1.

Step 2. Locating buildings outside the natural resource areas wherever possible

As a result of these initial steps, a site plan can be created showing areas of the site best suited for development and areas of the site that should be conserved. The developable areas are those locations on the site which will least disturb the natural resources and have the fewest regulatory and zoning concerns. It may be advisable to cluster the development into one area of the site or into several smaller clusters that protect the site's natural features.

Conservation lands should include both inland and tidal wetlands, areas within the "A", "AE", or "V" flood zone as depicted on the Flood Hazard Boundary Map or Flood Insurance Rate Map, and steep slopes in excess of 25 percent (10 feet vertical in less than 40 feet horizontal), areas adjacent to open space, historic features such as stone walls, natural features such as fields, mature trees and forest, public view sheds, wildlife corridors, and site areas that contain threatened or endangered species.

Step 3. Lay out streets, driveways, parking areas and trails

The lay out of streets, driveways, and parking areas should be designed after the site analysis. These features should be laid out in a way that minimizes their overall length and width and cutting and filling to conform to natural contours. Shared parking and driveways need to be considered. Streets and driveways should conform to natural land formations in order to reduce impacts on the natural resources where possible.

Step 4. Draw in the lot lines

Once the above steps have been completed, the lot lines (if any) can be drawn based on the location of buildings, driveways, septic system, and wells. Due to the clustering of development, developers may be able to take advantage of an Open Space Subdivision or a Planned Residential Development.

EROSION AND SEDIMENT CONTROL

Erosion and stormwater drainage plans should utilize natural topography wherever possible. To reduce erosion of exposed soils and prevent sedimentation of wetlands, water bodies and other sensitive areas, land disturbance should be minimized to the area necessary for construction. Proposed development projects on a previously undeveloped site should minimize clearing and grading, especially in areas of steep slopes, erosion-prone soils and sensitive vegetation. For redevelopment projects, the site plan should concentrate development on previously disturbed areas to the extent possible. Vegetation outside immediate construction areas should remain undisturbed. Any disturbed areas should be replanted or heavily mulched. Erosion and sedimentation control plans shall be constructed in accordance with The Town of Guilford Subdivision and Zoning Codes using principles outlined in the Connecticut Guidelines for Soil Erosion Sediment Control (2002), as the same maybe revised.

STORMWATER MANAGEMENT

Guilford's stormwater management regulations are designed to protect local and regional wetlands and water bodies, Long Island Sound and its tributaries from non-point sources of pollution and to maximize groundwater recharge on site. The goal of LID stormwater management is to mimic pre-development hydrologic conditions by utilizing natural topography and soils to detain, retain, percolate and evaporate stormwater wherever possible. Priorities are to reduce impervious surfaces, manage stormwater at its source and use natural treatment systems instead of a centralized collection point. Non-structural stormwater management systems should be used wherever site conditions allow. Drain pipe/catch basins may be used, in part or in whole, only if the applicant can demonstrate that other systems are not feasible due to site conditions.

LANDSCAPE DESIGN

Demand for irrigation should be minimized and groundwater recharge from landscaped areas should be maximized to the extent possible. To reduce proliferation of invasive species, native plants should be used wherever possible. All disturbed areas should be replanted or mulched in accordance to the Erosion and Sedimentation Control plan. Plants on the 2004 Connecticut DEP Invasive Plant List (as the same maybe revised) should not be used.

The existing vegetation outside the immediate construction area should remain undisturbed. Significant existing trees within the proposed development area should be preserved where possible as per the following caliper size thresholds related to species:

- 4-6" for small trees such as dogwood and redbud
- 8-10" for medium species such as sassafras, cherry and water beech
- 12-14" for slow growing hardwoods (oak, maple, ash)
- 15-18" for fast growers such as tulip poplar, sycamore and conifers⁵

As a result of these practices, forests, wetlands and wildlife habitat would be preserved.

Definitions:

Permanent Erosion & Sedimentation Control Measures – Long-term devices placed, constructed on or applied to the landscape that prevent or curb the detachment of soil, the movement of water and or the deposition of sediment. Examples include detention basins, grass swales, level spreaders, and vegetation.

Steep Slopes - A steep slope has a grade of more than 25% and an area of 1,000 square feet or more. The grade is measured along a line perpendicular to the lot contours established at intervals not exceeding two feet.

View Shed - Scenic views into and from the site and any other features that contribute to the landscape character of the property. Examples include meadows, notable trees ridgelines, rock outcrops, stonewalls, beaches and dunes, Long Island Sound and its tributaries.

References:

1. Reducing Stormwater Costs through Low Impact Development (LID), Strategies and Practices, EPA Publication number 841-F07-006, December 2007.
2. The Economic Value of Open Space: A review and Synthesis, CJ Fausold and RJ Lilieholm, Environmental Management Volume23(3):307-320, 1999
3. The Practice of Low Impact Development by the U.S. Department of Housing and Urban Development, July.
4. 2004 Connecticut Stormwater Quality Manual prepared by the Connecticut Department of Environmental Protection.
5. Conservation Subdivision Design: A Brief Overview by Randall Arendt, FRTPI, ASLS (Hon.)