Hidden Opportunities for Urban Runoff
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Note: This is the second in a series of three articles about "Landscaping for the Watershed". This series takes a fresh look at the watershed to reveal ways to turn urban runoff into a resource, rather than a pollution source or flooding hazard. For more information, you can visit the web site of County Landscape & Design at www.owendell.com.

The solution to water pollution problems begins at the peak of every roof. There are inspiring, cost-effective, well-proven methods of optimizing the built watershed at every step of its cascade towards the ocean. There are many things we should be doing, and doing soon, if we are to truly remediate the damage that has been done to local watersheds by our urban development. And when we have finally built an efficient urban watershed system, it will be a tremendous asset for us and for future generations.

The ideas included here focuses on efforts that can be made on private property to reduce polluted runoff and retain water on site. These ideas comprise a summary of current knowledge that draws from the worldwide experiences of a broad variety of practitioners in many fields. It is by no means exhaustive, but it is at least ambitious, and perhaps it represents a respectable percentage of current knowledge.

PERCENT LANDSCAPED AREA

1. ADEQUATE LANDSCAPED AREA: Review and if necessary modify existing requirements for adequate landscaped area on private properties to provide absorption of stormwater and groundwater recharge, as well as healthy root environment for trees and other landscape plantings.

ROOFS

1. ECOROOFS: Allow, encourage and subsidize water-absorbent living "ecoroofs" for new construction and remodeling. (For more information see http://www.barrettroofs.com, http://www.enn.com/enn-news-archive/2000/12/12312000/rooftops_40979.asp, http://www.greengridroofs.com)

PAVING

1. ELIMINATE REQUIREMENTS FOR IMPERMEABLE DRIVEWAYS: Some local municipalities require impermeable paving of driveways. The additive effect of these driveways on urban runoff is significant. Change ordinances to prohibit impermeable driveways and require permeable ones. Permit and encourage safe loose paving materials such as decomposed granite, mulch, turfblock and other vegetated parking surfaces, as well as other permeable approaches to driveways, turnarounds and parking areas. (http://www.greenbuilder.com/sourcebook/PerviousMaterials.html) (Florida Concrete & Products Association Inc., 3030 Dade Ave., Orlando, Fla. 32804, 800-342-0080, http://www.fcpa.org) (Cool Communities, Rome, GA. http://www.coolcommunities.org/cool_pavements.htm)

2. ROOT-FRIENDLY PAVING: Encourage paving systems (including a no-paving option where applicable) that respect and protect the root systems of adjacent vegetation. Excavation deeper than 2-3 inches destroys the feeder roots of trees and shrubs.

3. REDUCE OVERALL PAVED AREA: Limit the percentage of land that can be covered with impermeable materials. Allow buildings equipped with ecoroofs to count as open space. Review each remodeling project for excess existing paving and require removal of paving where appropriate.

4. NON-TOXIC SEAL COATING: Develop and mandate the use of pavement maintenance materials that do not leach toxic waste.

STORMWATER SYSTEMS

1. DRAINAGE SYSTEM MODIFICATIONS: Educate property owners about methods of modifying drainage inlets to provide ponding areas for slowing the discharge of stormwater into drainage systems. Where appropriate, require that ponding zones be a part of all newly constructed drainage systems. Educate the public about the wastefulness of conventional piped drainage systems and the benefits of the alternatives.

2. RETENTION GRADING: Where geologically and hydrologically appropriate, include bermed ponding areas and swales to hold water on site.

WATER HARVESTING **& GROUNDWATER RECHARGE**

1. PROGRESSIVE GRADING ORDINANCES: Where appropriate, permit, encourage and require grading practices that permit rainwater to remain on site rather than running off. This would include the use of berming, ponding, dry streambeds, percolation zones, driveway drywells, percolation chimneys, elevated drain inlets, bioswales, filter beds, constructed wetlands, pervious paving, gravel or decomposed granite driveways and walks, ripraps and other methods and structures.

2. GRAYWATER SYSTEMS: Encourage the installation of graywater systems on private commercial and residential properties. Develop educational programs on the implementation of graywater harvesting. Subsidize graywater systems where possible. (http://www.rmi.org/sitepages/pid287.php)(http://oasisdesign.net/index.htm)

3. CISTERNS & RAINWATER CATCHMENT SYSTEMS: Encourage and subsidize the installation of cisterns, water walls, rain barrels and other water catchment and storage devices.
(http://www.cityfarmer.org/rainbarrel72.html,
http://www.greenbuilder.com/Sourcebook/rainwater.html)
(http://dmoz.org/Science/Environment/Water_Resources/Rainwater_Harvesting)
(http://www.edgewaterenviro.com/rainwater.htm)
(http://www.rmi.org/sitepages/pid287.php)

4. DRY STREAMBEDS: Install natural dry streambeds in runoff areas. Where appropriate, include percolation chambers to direct storm water into the ground.

BIOFILTRATION

1. BIOSWALES: Encourage the development of vegetated bioswales on private property.

Require bioswales on new projects where it is geologically safe to do so. Educate property owners about the advantages of vegetated runoff zones and the techniques for creating them. Subsidize the development of bioswales as a less-expensive alternative to engineering approaches to stormwater management.

IRRIGATION WATER MANAGEMENT

1. PUBLIC EDUCATION: In all public water awareness and irrigation management programs, include information on the effects of careless water management on the watershed.

2. ET-BASED WATER MANAGEMENT SYSTEMS: As technological advances permit, investigate the possibility of automatic ET-based irrigation controllers. Subsidize installation where possible.

Photo caption: This vegetated ecoroof on a building in Philadelphia filters and reduces rainwater runoff. It was installed by the Barrett Company of New Jersey. (www.barrettroofs.com)