

GreenStep Cities Best Practice # 17 **- final draft for comments through May 2010 -**

❖ **Efficient Stormwater Management:** Prevent stormwater generation.

Required for Category C cities

Category: Environmental Management

Summary

Increased stormwater runoff and water pollution can easily accompany land use changes and urbanization, negatively impacting aquatic and groundwater systems, compromising clean drinking water and fishable, swimmable waters that support plants, animals and our local quality of life. Using a low-impact development, green stormwater infrastructure approach, stormwater generation is minimized, managed on-site and the rate and volume of predevelopment stormwater reaching receiving waters is largely unchanged. Cost savings are typically realized through this approach.

Best Practice Actions

- Category C cities must implement this best practice by completing at least one of the following Actions.
 - Category A and B cities must complete at least two of the following actions if they choose to implement this best practice.
- (1) Complete the Blue Star City stormwater management assessment and achieve a minimum threshold of specific activities detailed in this program.
 - (2) Adopt by ordinance one or more of the following:
 - a. A narrower streets provision allowing 22-foot roads.
 - b. A 1.5 inch rainfall on-site rainwater infiltration design requirement for construction sites.
 - c. A 25% impervious surface area maximum provision (% of a new development project area).
 - d. A stormwater runoff volume limit to pre-development volumes for the 5-year, 24-hour rainfall maximum event.
 - (3) Maintain less than 12% impermeable surfaces in the watershed in which the city lies.
 - (4) Create a stormwater utility, which uses variable fees to incentivize stormwater reduction and fund community stormwater infrastructure and assistance.
 - (5) Adopt and implement design standards or guidelines for renovations or new construction in the city addressing at least one of the following:
 - a. Rain gardens.
 - b. Green roofs with or without cisterns and water/greywater reuse systems.
 - c. Green alleys.
 - d. Green parking lots.
 - (6) Adopt, with modifications as needed, the model *Stormwater and Erosion and Sediment Control Ordinance*.

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Implementation Resources

(tied to the relevant Action by number)

- (1) Friends of the Mississippi River Blue Star Recognition Program: www.fmr.org
- (2a) North St. Paul, working with the Ramsey-Washington Metro Watershed District, identifies 22-foot streets with parking allowed on one side as workable: <http://www.rwmwd.org>

- (2) and (3) and (4)
- *Better Site Design: A Handbook for Changing Development Rules in Your Community* (Center for Watershed Protection, 1998): http://www.nextstep.state.mn.us/res_detail.cfm?id=335
 - *Urban Small Sites Best Management Practice (BMP) Manual* (Metropolitan Council: 2001): http://www.nextstep.state.mn.us/res_detail.cfm?id=922
 - *Minnesota Stormwater Manual* (MN Pollution Control Agency: 2005): <http://www.pca.state.mn.us/water/stormwater/stormwater-manual.html>
 - U.S. EPA green infrastructure resources: http://cfpub2.epa.gov/npdes/home.cfm?program_id=298
 - *Water Quality Scorecard: Incorporating Green Infrastructure Practices at the Municipal, Neighborhood, and Site Scales* (U.S. EPA: 2009): http://www.epa.gov/smartgrowth/water_scorecard.htm
- (5a) Rain garden resources from the cities of Burnsville and Maplewood:
http://www.nextstep.state.mn.us/res_detail.cfm?id=1449
- (5b) Minnesota Green Roofs Council and other resources: http://www.nextstep.state.mn.us/res_detail.cfm?id=512
- (5b) In 2008 a 10,000 gallon cistern was installed in the Minneapolis City Hall as part of a greenroof system. See *Evaluating the Feasibility and Developing Design Requirements and Tools for Large-scale Rainwater Harvesting in Ontario* (Canada Mortgage and Housing Corporation: 2009):
<http://www.cmhc.ca/odpub/pdf/66602.pdf>
- (5c) *The Chicago Green Alley Handbook* (2007): http://www.nextstep.state.mn.us/res_detail.cfm?id=4024 Note that Shoreview and Owatonna, Minnesota have installed porous alleys.
- (5d) Toronto's *Design Guidelines for 'Greening' Surface Parking Lots* (2007) and a prototype downtown Minneapolis low-impact parking lot (University of MN Metropolitan Design Center: 2004):
http://www.nextstep.state.mn.us/res_detail.cfm?id=4057
- (5d) Run-off from parking lots sealed with coal tar, which is a probable human carcinogen, can contaminate stormwater pond sediments, making them a hazardous waste, disposal of which is extremely expensive for a city. The City of White Bear Lake banned the use of coal tar in 2010. See model ordinance language on use of sealants for local units of government, developed with the League of MN Cities, at
<http://www.pca.state.mn.us/water/stormwater/stormwater-coaltar.html>
- (6) *Stormwater and Erosion and Sediment Control Ordinance* in the 2009 Minnesota *Model Ordinances for Sustainable Development*: <http://www.crplanning.com/susdo.htm>

Benefits

- *Stormwater BMP Performance Assessment and Cost-Benefit Analysis* (St. Paul's Capitol Region Watershed District: 2010): <http://www.capitolregionwd.org>
- National Green Values™ Calculator , a tool for quickly comparing the performance, costs, and benefits of Green Infrastructure, or Low Impact Development, to conventional stormwater practices. Estimates include annual and life cycle benefits of reduced air pollutants, carbon dioxide sequestration, compensatory value of trees, groundwater replenishment, reduced energy use, and reduced water treatment benefits. From Chicago's Center for Neighborhood Technology: 2009: <http://greenvalues.cnt.org/national/calculator.php>
- Low-impact development was simulated for an existing development in Lakeville, MN and several financial and environmental benefits were calculated: http://www.nextstep.state.mn.us/res_detail.cfm?id=2434

Connection to State Policy

- In 2009 the Minnesota Legislature allocated funds for the development of Minimal Impact Design Standards based on a low impact development (LID) approach to storm water management that mimics a site's natural hydrology as the landscape is developed. Using the low impact development approach, storm water is managed on site and the rate and volume of predevelopment storm water reaching receiving waters is unchanged. The calculation of predevelopment hydrology is based on native soil and vegetation. (Minnesota Statutes 2009, section 115.03, subdivision 5c).
- 2009 Minnesota state law bans state agencies from using coal tar sealants on trails and parking lots.

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