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Newburgh Conservation Advisory Council's Green Infrastructure Guide

May 13, 2015

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What is Green Infrastructure?

Green infrastructure *uses and enhances natural processes to absorb and filter pollutants from the air and water* leading to healthier developed environments.

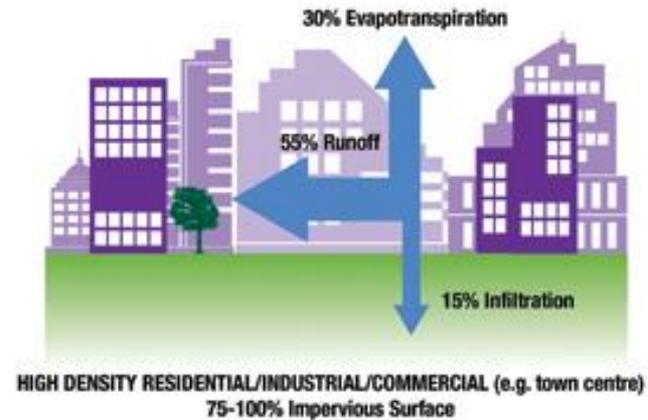
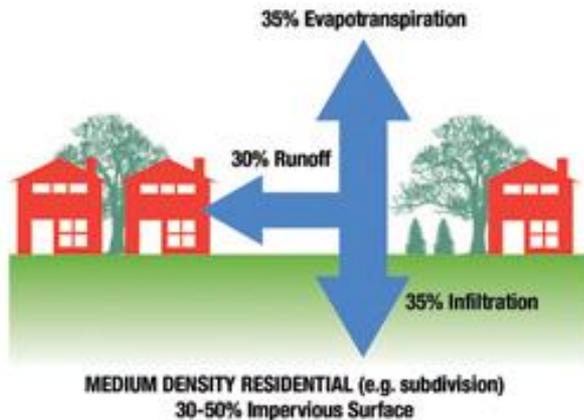
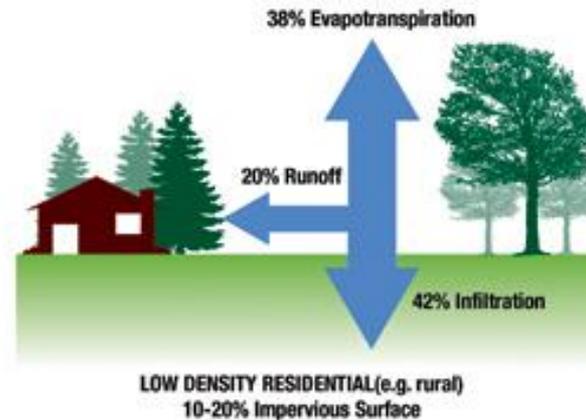
At the scale of a neighborhood or site, **green infrastructure refers to stormwater management techniques that mimic nature by soaking up and storing water.**

Why do we care about stormwater?

- **Nutrients**
- **Pathogens**
- **Sediment**
- **Toxic contaminants**
 - **Oil & grease**
 - **Thermal stress**
- **Increases water volume leading to erosion & channelization**

How does land development affect water?

EFFECTS OF IMPERVIOUSNESS ON RUNOFF AND INFILTRATION



Source: Arnold and Gibbons (1996) Impervious Surface Coverage.



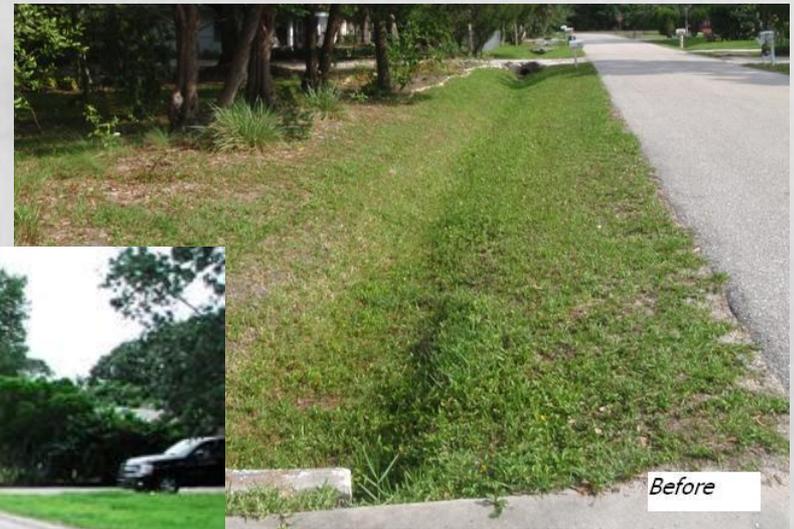


Benefits of Green Infrastructure

- Reduces and delays stormwater runoff volumes
- Reduces localized flooding
- Reduces sewer overflow events
- Enhances groundwater recharge
- Reduces stormwater pollutant loads



Bioswales



Rain Gardens



Green & Blue Roofs



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Downspout Disconnections



Constructed Wetlands



Porous Pavement



Low Impact Development (LID)

- An approach to land development (or redevelopment) that **works with nature *to manage stormwater as close to its source as possible***. LID focuses generally on development design *at the site level*.
- LID principles include:
 - Preserving and recreating natural landscape features;
 - Restricting construction on designated sensitive areas, such as wetlands and steep slopes;
 - Minimizing impervious hardscape to create functional and aesthetically appealing site drainage; and
 - Treating stormwater as a resource rather than a waste product.



GI & LID: How are they related?

- **Focus first on project design (LID)**; then integrate engineered-as-natural ecosystems such as green roofs, porous pavement, swales and rain gardens that largely rely on using soil and vegetation to infiltrate, evapotranspire, and/or harvest stormwater runoff and reduce flows to drainage collection systems.
- **GI can be used at a wide range of landscape scales** in place of, or in addition to, more traditional stormwater control elements to support the principles of LID.
- **GI is broader than LID** and its techniques may be employed beyond the stormwater context to generate other benefits.



Role of CACs in Land Use Process

- CACs may **advise** on certain land use discretionary approvals and other development-related permits where authorized to do so under the provision establishing the council and its responsibilities
- While advisory only, the CAC is the only municipal agency solely focused on environmental matters and may raise particular concerns not addressed by the land use boards or municipal legislature



CACs & Green Infrastructure

- While CACs are advisory only, they may **champion the use of green infrastructure** and ensure, in their review of land development applications, that the applicant is **satisfying the technical requirements** of the NYS Stormwater Management Design Manual.
 - **Serve as a check** on the approval of SWPPP submitted to land use agency or municipal stormwater officer

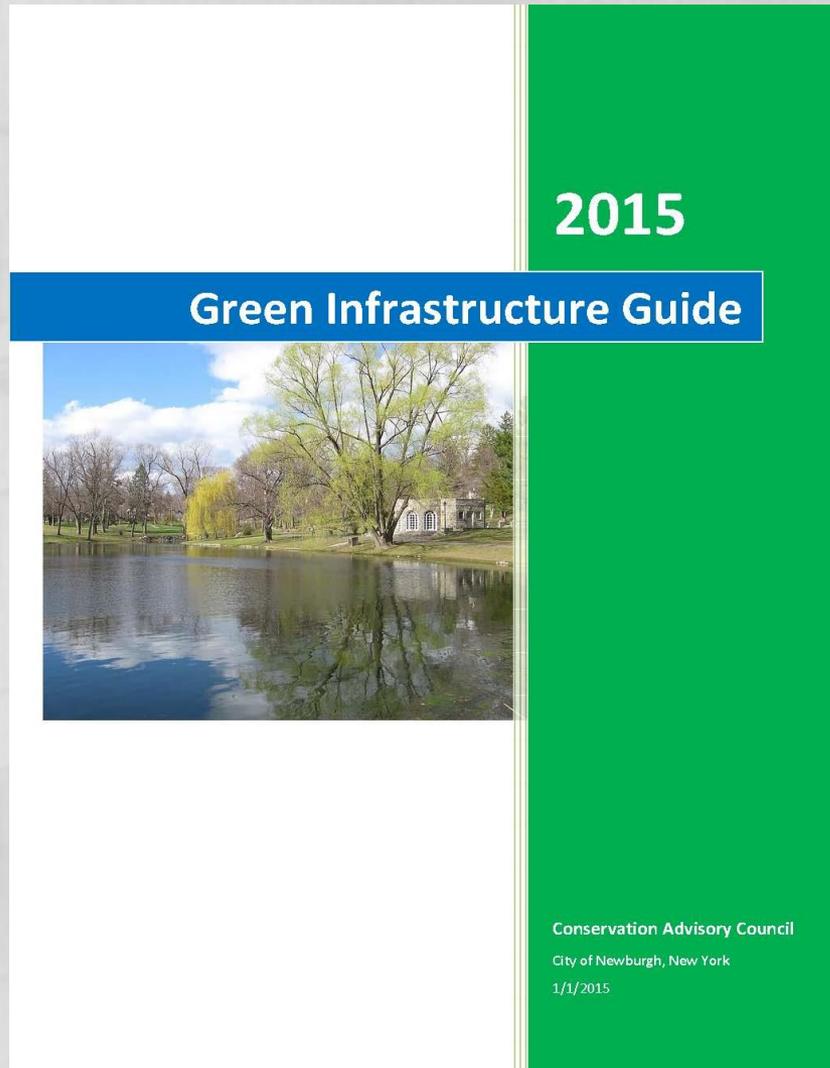


Newburgh CAC & GI Project

- Primary project objective is to **demonstrate how a highly urbanized municipality, through its CAC, can champion green infrastructure** and overcome local political impediments to its implementation
- Developed a **Green Infrastructure Guide** for the City of Newburgh CAC that:
 - Documents the CAC's role in the land use regulatory process
 - Adopts a Green Infrastructure Policy
 - Highlights specific green infrastructure practices to address stormwater
 - Provides recommended specifications for certain green infrastructure interventions (sidewalks and tree pits)
 - Provides a digest of important green infrastructure resources, like the New York State Stormwater Management Design Manual.



Newburgh CAC Green Infrastructure Guide

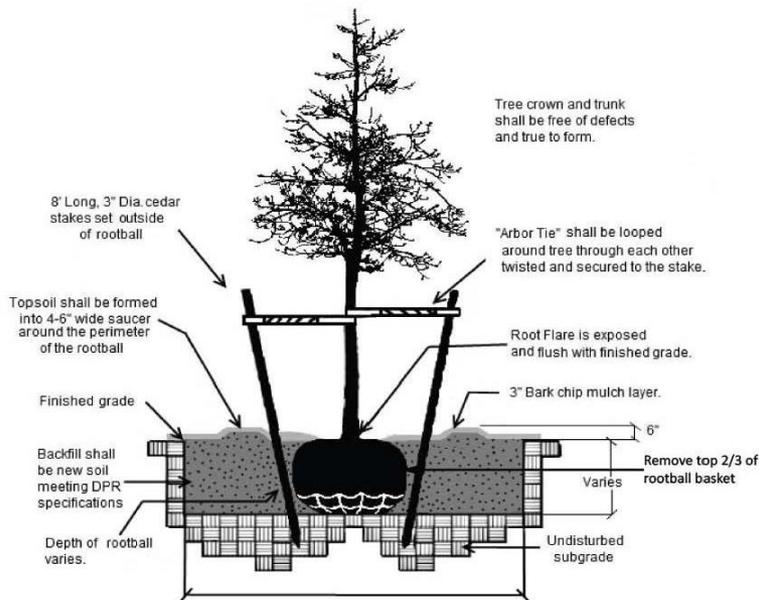


Newburgh CAC GI Policy

1. Avoid development impacts
2. Limit site impervious surface
3. Manage development impacts through green infrastructure
4. Enhance the City's natural environment (greater use of trees)
5. Coordinate intermunicipal cooperation to ensure watershed protection



Green Infrastructure Guide – Technical Specifications



Tree Planting & Stake Detail

Not to Scale

Sizing Criteria

$WQ_v = [(P)(R_v)(A)] / 12$, where:

$R_v = 0.05 + 0.009(I)$;

I = Percent Impervious Cover;

Minimum $R_v = 0.02$;

P = 90th percentile rainfall event in inches = 1.1
inches

A = catchment area in acres



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