

1. Why is green infrastructure needed in the Geneva South Main Street Historic District?

2. What are the green infrastructure practices and techniques suitable for this area? Where should these practices be implemented?

3. What are the advantages of implementing these practices?

4. What are the examples of successful green infrastructure practices here and in other historic districts?

History

The district of South Main encompasses 140 structures, including Pultney Park, and stretches a mile long. The north end of the district is closer to the center of downtown Geneva, and is characterized by the brick row houses built in the 1820's and 1830's. The south end of the district includes the Hobart and William Smith campus, which has since expanded and absorbed many of the historic houses along South Main Street.

Over time, development occurred and now the east side of South Main is just about as developed as the west. Water drainage problems have since arisen, specifically cited by residents was poor drainage in backyards behind houses on the east side of South Main Street. Additionally, it appears that some homes have downspouts whose water eventually discharges into Seneca Lake. Originally, home owners had receptacles kept in the backyard that collected rain water, which helped prevent severe run-off issues and recycled water through storing it and using it as needed. This kind of practice developed into the device of a rain barrel in later times.



Acknowledgements

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About the FLI-Community Design Center (FLI-CDC)

The Finger Lakes Institute, in partnership with Hobart & William Smith Colleges has created a community design center that strives to provide Finger Lakes communities with innovative, creative, and sustainable design solutions that improve the built environment and quality of life, while protecting the natural environment.

Communities throughout the Finger Lakes region share similar economic, environmental, and social characteristics mainly as a result of the natural assets and history of the region. The current and future state of communities relies on improving quality of life for all citizens, being good stewards of natural resources, and fostering the responsible growth of the built environment. To support these efforts, we offer comprehensive sustainable community development planning and design services to communities throughout the Finger Lakes region.

It is our mission to:

- Raise awareness of the benefits and potential of sustainable community development and design for small towns, villages, cities and other entities;
- Encourage preservation and protection of natural resources and the built environment;
- Facilitate regional planning and collaboration among communities, businesses, non-profits, higher education institutions, and other entities;
- Foster community resilience by providing an active resource center for holistic community planning and design and disseminating our expertise nationally.

Please contact us at fli@hws.edu for more information.

About this Project

The primary goal of Green Infrastructure for Historic Districts is to provide assistance to municipalities and residents who wish to incorporate the concepts and practices of green infrastructure into their structures while maintaining the historic integrity of the individual buildings and the overall character of their community.



How to Grow a Green Community A Guideline for Stormwater Management

Geneva South Main Historic Street District

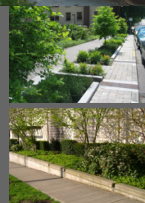
1. "green infrastructure" In the context of stormwater management, the term includes a wide array of practices at multiple scales to manage and treat stormwater, maintain and restore natural hydrology and ecological function by infiltration, evapotranspiration, capture and reuse of stormwater, and establishment of natural vegetative features.

As impervious ground cover increases with development, such as roadways, buildings and sidewalks, run-off from rain and snow events increases. As this run-off travels across these surfaces, it collects pollutants and contaminants. With traditional grey infrastructure, it travels to sewers and pipes, and is often deposited untreated into local waterbodies, harming the ecosystem. Green infrastructure provides opportunities to reuse that water, filter it and re-charge the groundwater aquifer, protecting the natural environment. Many green infrastructure practices today actually were common place in the Geneva South Main Street Historic District in the 19th century, pre-industrialization.

The green infrastructure techniques recommended are intended to improve the absorption of water, reduce risk of flooding, and minimize the spread of pollutants and contaminants. The recommended techniques are meant to blend in with existing infrastructure and also help preserve the historic feel of this area.

- **Tree planting** refers to concentrated groupings of trees planted in landscaped areas while tree pits, also called tree boxes, generally refer to individually planted trees in contained areas such as sidewalk cut-outs or curbed islands.

- **Stormwater planters** are small landscaped stormwater treatment devices that can be placed above or below ground and can be designed as infiltration or filtering practices. Three versions of storm water planters exist: contained planters, infiltration planters, and flow-through planters.



- **Storm drain marking** is labeling a storm drain inlet with a pre-printed marker, title, sticker, or stencil that has a message to prevent pollution into storm drains. In urban areas, most nonpoint source pollutants like pesticides, motor oil, pet waste, carwash chemicals, among others, get swept from rainfall flow into drains and then into the waterways.



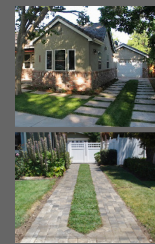
2. The green infrastructure techniques proposed and recommended for Geneva South Main Street Historic District include:

Porous Pavement, Ribbon Driveways, Shared Driveways, Rain Gardens, Rain Barrels, Tree Planting, Storm Water Planters, and Storm Drain Marking

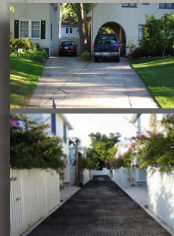
- **Porous, or permeable pavement** is material that allows storm water to move through the surface and be absorbed rather than flow over the surface.



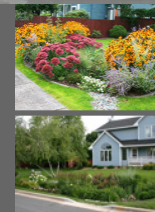
- **Ribbon driveways** are drives where the ruts from wheels are paved leaving a strip of grass or other permeable material in the center. A ribbon driveway helps slow the water moving over a driveway during storm events causing sediment and pollutants to drop out or be caught by plants and soil and slowly filtered out.



- **Shared driveways** refer to areas or spaces that are used to serve two or more individual properties. This is when individual land-uses, either on the same site or from nearby sites form an agreement to share available parking spaces and/or driveways.



- **Rain gardens** are shallow depressions in the landscape that are planted with deep rooted native plants and grasses. Rain gardens should be placed around edges of a building, near downspout outlets, or frequently wet and soggy areas of yards.



- **Rain barrels** are water tanks used to collect and store rainwater runoff, typically from rooftops via rain gutters. Barrels usually range from 50 to 80 gallons and have a spigot for filling watering cans and a connection for a soaker hose.



3. The benefits of implementing these green infrastructure techniques include: minimizing the spread of pollutants, filtering out pollutants, reducing erosion, slowing the speed of water, recharging ground water, collecting and storing free water resources for use, improving aesthetics, reducing the heat island effect, and strengthening the local ecosystem.

Specifically, **porous pavement** is effective at taking out heavy metals from water and restoring ground water levels. **Ribbon driveways** help increase property values and the appeal of a neighborhood. **Shared driveways** not only reduce impervious landscapes, but also have economic incentives such as reducing costs of developing and maintaining parking areas. **Rain gardens** improve water quality and reduce storm water pollution by collecting and using rain water that would otherwise be drained into the sewer system. **Rain barrels** are useful tools for saving money and reducing stormwater run-off. They easily collect gallons and gallons of water for gardening, car washing, pet washing, and other lawn care utilities, which reduces demand, and amount you are billed for each month. **Storm drain marking** doesn't directly reduce the volume of stormwater like most other techniques, however it helps raise awareness that run-off often goes untreated into our waterways, and education is often the first step. **Stormwater planters** are another creative way to incorporate "gardens" into urban areas. Hanging planters in front of storefronts and homes are always an aesthetic addition to an area, stormplanters are just another way to achieve this effect on a larger scale.

4. Examples of water management techniques that we call "green infrastructure" today existed prior to industrialization. Historic photos and documents of this district show heavily planted tree-lined streets. **Trees** have the ability to soak up an extra 30% of groundwater, and their leaves soak up air and noise pollution. Many of these historic photos also show examples of **porous pavement**. The road was dirt, sidewalks were gravel or brick in some cases, and many driveways were gravel and shared. **Rain barrels** are suggested for any homeowner in this district. With the steep slop and crowded gutter systems, especially on the rowhouses, a few rain barrels could go a long way in helping reduce run-off and erosion, as well as flooding.