

# Green Stormwater Infrastructure

**FOR THE**

**#GATORGOOD**

Florida-Friendly Landscaping™ Program  
Claire Lewis



# Florida-Friendly Landscaping™

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## What is it?

- Science-based approach to maintaining an attractive, diverse, and more sustainable landscape.
- Funded through 319 grants

## Goals:

- Conserve water
- Protect water quality

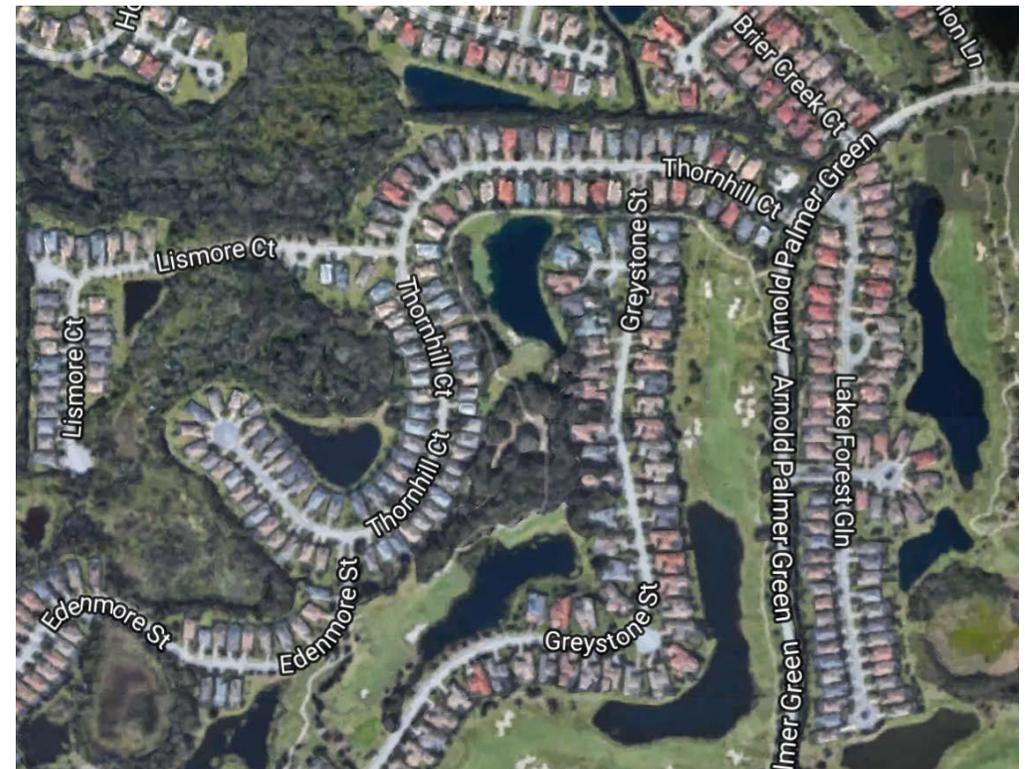
# Pre-development vs. Development

The original stormwater treatment



Wetlands

Today's urban stormwater treatment



Man-made ponds

# Neighborhood Stormwater Ponds:

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- Are tools for managing runoff from rooftops, driveways, roads and other impervious surfaces
- Are designed to help prevent flooding not nutrient removal
- Research shows only about 40% of Nitrogen is removed before the water flows onward to a stream, lake, or estuary
- Stormwater ponds are sold as lakefront property



Reduced lot lines- everyone wants to live on a pond

# BMPs for Stormwater Runoff

Follow	all local fertilizer regulations
Have	fertilizer free zones around the pond, down street, and around storm drains
Blow	grass clippings and leaves back in the yard
Plant	florida native aquatic plants around the pond



# Benefits of Aquatic Plants

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- Compare the shoreline with plants verses shoreline without plants.





## Low Impact Development (LID) and Green Stormwater Infrastructure (GSI)

- Are both approaches to managing stormwater runoff in a more sustainable and environmentally friendly manner.
- LID – minimize the runoff being produces
- GSI is the management of the stormwater

While they share similar objectives, there are some differences between the two concepts.

# Low Impact Development (LID):

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- Identify existing hydrology
- Identify environmentally sensitive resources: wetlands, mature trees, slopes, drainage ways, permeable soils, waterway buffers
- Define a development envelope
- Reduce impervious surfaces



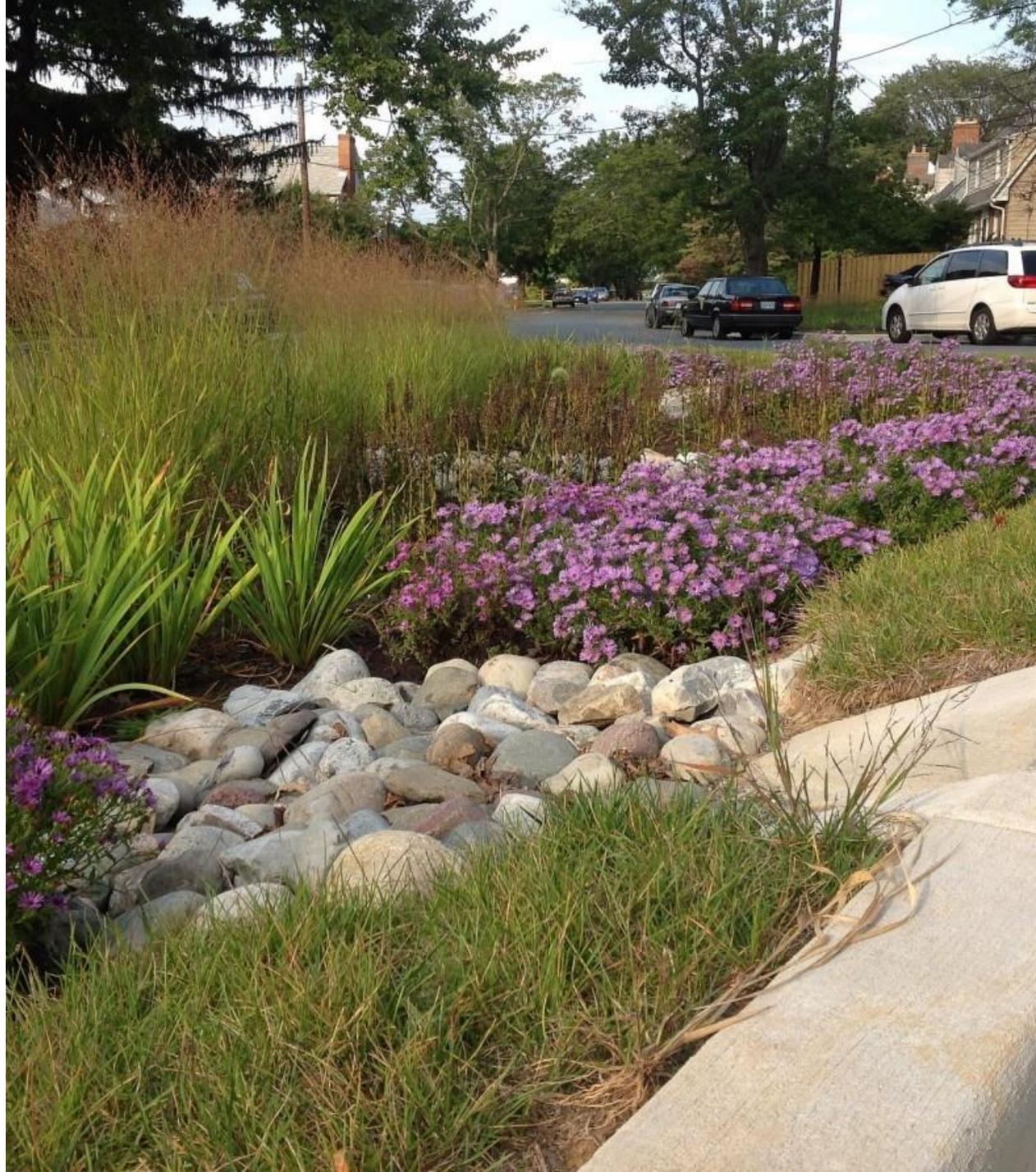
Conventional site design  
Courtesy Pierce County, Washington and AHBL, Inc.



LID site design  
Courtesy Pierce County, Washington and AHBL, Inc.

# Green Stormwater Infrastructure (GSI):

- GSI specifically focuses on using natural or engineered systems to manage stormwater runoff.
- GSI refers to a range of practices and technologies designed to mimic natural processes and promote infiltration, filtration, evapotranspiration, and detention of stormwater runoff.
- Can be done pre-development or installed as a retrofit



# GSI Strategies

- Treat stormwater close to the source
- Create subwatersheds and “micromanage” runoff in a treatment train of small structures
- Flatten slopes, lengthen flow paths, maximize sheet flow
- Maintain natural flow paths, use open drainage
- Recessed tree islands



Conventional site design courtesy PGDER



LID site design courtesy PGDER

# GSI Techniques



Tree box filter



Bioretention cell



Rain Gardens & Bioswale



Green Roof



Permeable Pavement System



# Benefits of GSI

## Environmental

- Reduces water pollution and improves quality of ground and surface waters
- Reduces urban heat island effect
- Protects and enhances aquatic and wildlife habitats

## Social

- Improves aesthetics of communities
- Improves water and air quality
- Increases appeal of recreational opportunities

## Economic

- Reduces clearing and grading costs, and long-term costs of stormwater management
- Increases property values
- Lowers heating and energy costs



# Florida-Friendly Landscaping™ Resources

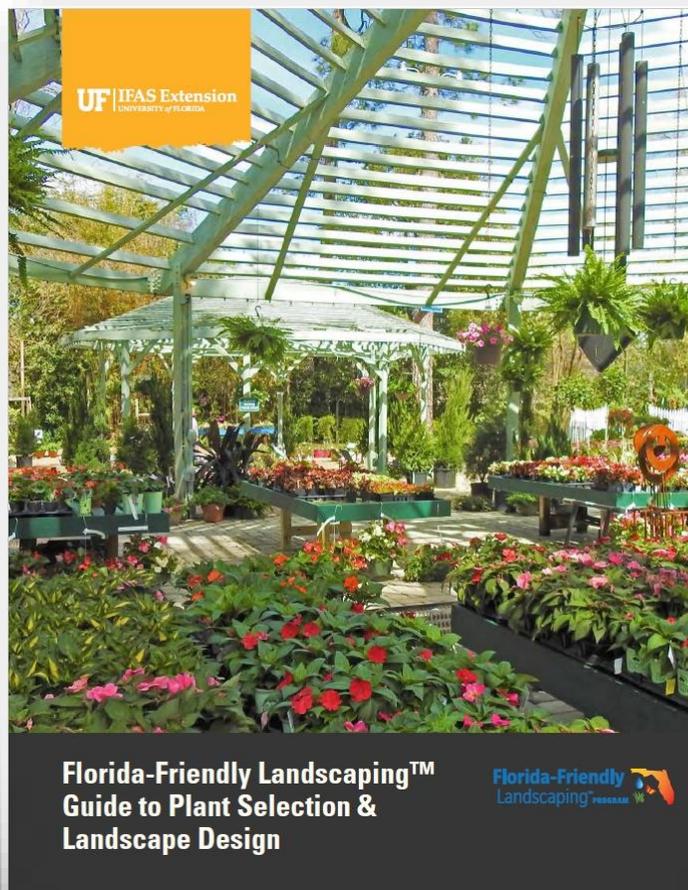


Manuals

Web Applications

Continuing Education

Webinars



[Floridafriendlylandscaping.com](http://Floridafriendlylandscaping.com)

# Florida-Friendly Landscaping™ Web Apps

**UF** IFAS Extension  
UNIVERSITY of FLORIDA

FLORIDA-FRIENDLY LANDSCAPING™ PROGRAM

Florida-Friendly Landscaping™ PROGRAM

## FLORIDA-FRIENDLY LANDSCAPING™ WEB APPS

FFL Plant Guide

[BROWSER →](#) [IOS →](#) [ANDROID →](#) [ABOUT →](#)



Florida Fertilizer Ordinances

Florida Toxic Plants

FFL Butterfly Gardens

FFL Bee Gardens



# Webinars

## FLORIDA-FRIENDLY LANDSCAPING™ WEBINARS

The Florida-Friendly Landscaping Program™ offers free, science-based webinars for professionals and homeowners. Recordings of past webinars are also available.

### HOMEOWNER SERIES

FFL's webinars for homeowners and residents provide science-based information from UF/IFAS experts to help your Florida landscape thrive while caring for the environment.

[MORE](#)

### PROFESSIONAL SERIES

The webinar series for professionals provides free, science-based information for green industry professionals, landscape architects, community association managers.

CEUs are available for a \$10 fee.

[MORE](#)

### GREEN STORMWATER INFRASTRUCTURE SERIES

Green Stormwater Infrastructure delivers benefits that include reduced pollution and improved water quality. This webinar series covers funding, design, maintenance and more.

CEUs are available for a \$10 fee.

[MORE](#)

[Subscribe to FFL Educational Announcements](#)

## GREEN STORMWATER INFRASTRUCTURE WEBINAR SERIES

The [Florida Department of Environmental Protection](#) is partnering with the Florida-Friendly Landscaping™ program and Ferguson Waterworks to host a nine-part webinar series informing communities on [green stormwater infrastructure](#) and how they can implement these methods to protect Florida's water resources.

Supplementing conventional stormwater management with these new methods can enhance the performance of an entire drainage system. These techniques deliver environmental, social and economic benefits to communities, including reducing water pollution and improving quality of ground and surface waters.

The webinars cover topics ranging from funding to design, maintenance, ordinance compliance, and more.

*Approved for 1.5 CEU from the following agencies FNGLA, DBPR (LA), LIAF, Professional Engineer, Floodplain Managers, and FFLCP.*

[Subscribe to webinar email list](#)

[View recordings of past webinars](#)

## 2023 WEBINAR SCHEDULE

Date	Webinar Topic
February 16	Introduction to Green Stormwater Infrastructure
March 16	Funding Green Stormwater Infrastructure
April 20	Tree Boxes and Suspended Concrete Systems
May 18	Pervious surfaces
June 22	Bioretention/ Rain Gardens
July 27	Bioswales
August 17	Design Techniques
September 21	Municipal/ Regulatory
October 19	Lessons Learned and Roundtable

To receive a CEU certificate for a webinar you attended, click below to request CEUs and pay the \$10 administrative fee.

# Continuing Education

Landscape Architects

Community Association Managers

FNGLA Certified Professionals

FDACS - Limited Urban Fertilizer Certification

LIAF

Florida Water Star<sup>SM</sup>

The screenshot displays the IFAS Extension website interface. At the top, there is a navigation bar with the text "PROFESSIONAL DEVELOPMENT EDUCATION HUB" and search filters for "LOCATION" and "SEARCH COURSE". Below this, several course cards are visible, each featuring a thumbnail image, a title, a brief description, and a "LEARN MORE" button. The courses include:

- Lawn and Landscape BMPs for Professionals (FDACS LF Category CEU)**: This course consists of four short videos, a reading, two practice quizzes, and a course test. Topics include characteristics and properties of common fertilizers, calculation of fertilizer application rates, selection criteria, soil type and pH, sprayer calibration, and material handling and spills.
- Introduction to the Florida-Friendly Landscaping™ Program**: This one-hour course provides an introduction to the 9 principles of the Florida-Friendly Landscaping™ Program. It is one of six courses needed to complete the Florida-Friendly Landscaping™ Training Certification requirements.
- Florida-Friendly Landscaping™ Design Considerations**: This one-hour course was designed for people who want to learn how to create a successful Florida-Friendly Landscape and how to convert a traditional Florida yard to a Florida-Friendly Landscape. It qualifies for continuing education credit (CEU) for Landscape Architects and Community Association Managers.
- Florida-Friendly Landscaping™ - Recognition Program**: This one-hour course provides an overview to the Florida-Friendly Landscaping™ - Recognition Program. Upon completion, students will be able to identify FFL appropriate landscape maintenance practices and become familiar with the FFL recognition programs available for existing home landscapes and new construction.
- Irrigation BMPs for Professionals (FDACS LF Category CEU)**: This course qualifies for 1 CEU credit for FDACS Urban Fertilizer (LF) category. Topics include irrigation system types and the effects of irrigation on volatilization, leaching, runoff, excessive withdrawal and water quality issues.

Each course card also includes a "Course Registration Options" section and a list of keywords related to the course content.



# FFL Landscape Certification Programs



Green Industries Best Management Practices

Florida-Friendly Landscaping™ Certified Professional

Florida-Friendly Water Star Gold Certification

Green Stormwater Infrastructure Maintenance Certification

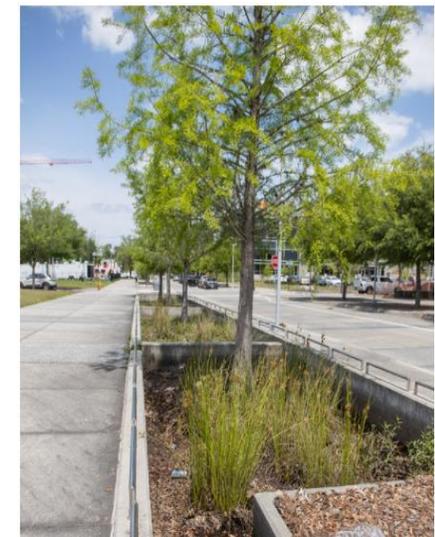
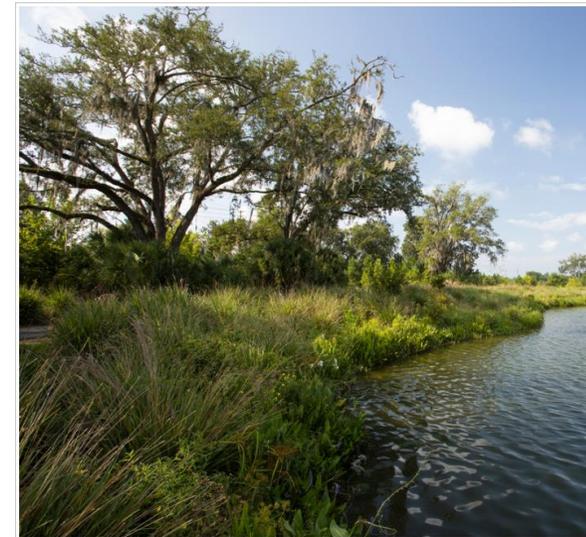
Florida-Friendly Ponds

# GSI Maintenance and Planting Manual



## GSI Maintenance Certification Training

- 1 day training
  - Morning – classroom lecture
  - Afternoon – applied learning
- Manual
- Checklists
- Plant Selection Guide



# Thank You!

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