

Low Impact Development vs
Conventional Development

Green Stormwater Infrastructure
vs Gray Stormwater Infrastructure





Stormwater management solves a problem

Stormwater management solves a problem


- Stormwater runoff is rainwater running off “impervious surfaces” roads, parking lots, and rooftops.
- These surfaces prevent rain from soaking into the natural pervious landscape that existed before development.
- Uncontrolled polluted runoff has been identified as one of the greatest sources of receiving water pollution





The conventional approach to managing runoff

- The main purpose of most gray stormwater infrastructure is flood control.
- Runoff is collected and moved to stormwater ponds or storage systems as quickly as possible.
- This approach is known as “gray stormwater infrastructure” because it uses concrete drains and culverts.

A photograph of a coastal area with a stream, a bird, and a large white circular overlay containing text. The stream flows from the top left towards the bottom right, bordered by a sandy bank on the left and a grassy bank on the right. A bird is standing in the stream. The white circular overlay is on the left side of the image, containing the title and two bullet points.

Pros and cons of gray stormwater infrastructure

- **Pro: Quickly whisks stormwater away from the environment and into treatment systems before discharging into waterbodies.**
- **Con: Requires high capital costs (e.g., site grading, paving, large piping) and does not remove pollutants which enter our Creek and IRL**

Growth stresses conventional systems

Successful economic development increases impervious surface area, which means more runoff.

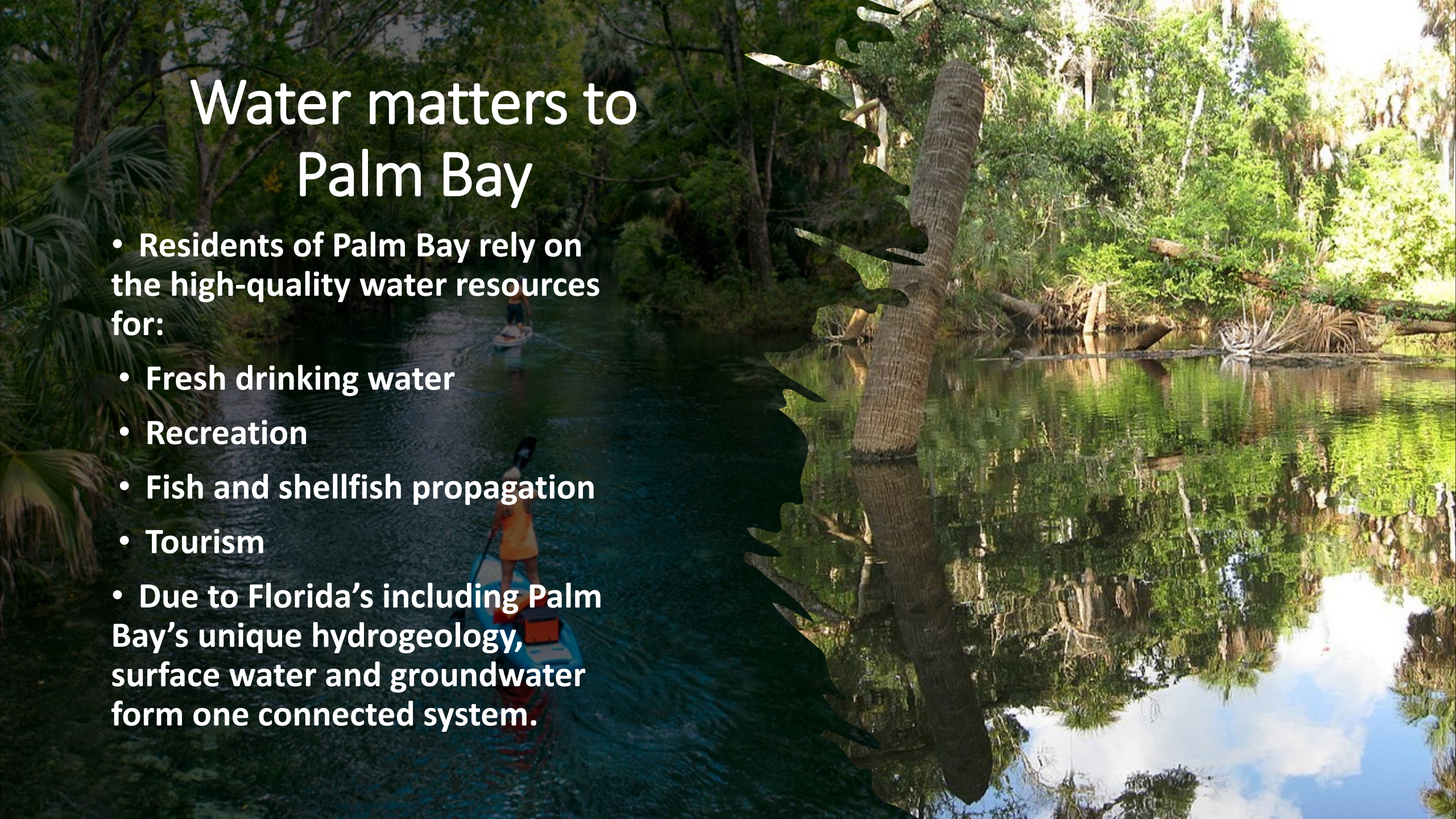
Water rapidly runs off into storm drains, ponds, lakes and streams.

Runoff carries pollutants such as petroleum products, bacteria, fertilizer, pesticides and heavy metals to our waterbodies.



Water matters to Palm Bay

- Residents of Palm Bay rely on the high-quality water resources for:
- Fresh drinking water
- Recreation
- Fish and shellfish propagation
- Tourism
- Due to Florida's including Palm Bay's unique hydrogeology, surface water and groundwater form one connected system.



Good stormwater management matters more than ever

- Environmental health
- Economic health
- Cost to taxpayers

- Good stormwater management in Palm Bay fosters economic growth and quality of life.

- We can accomplish both while providing a host of additional benefits.



Adapting stormwater
infrastructure for a clean
water future

A photograph showing a green stormwater infrastructure installation in a parking lot. A concrete curb separates a paved area from a landscaped area containing a young tree, various green shrubs, and a metal grate for a stormwater inlet. In the background, there is a yellow building, a red car, a palm tree, and a blue fence under a clear sky.

Green Stormwater Infrastructure

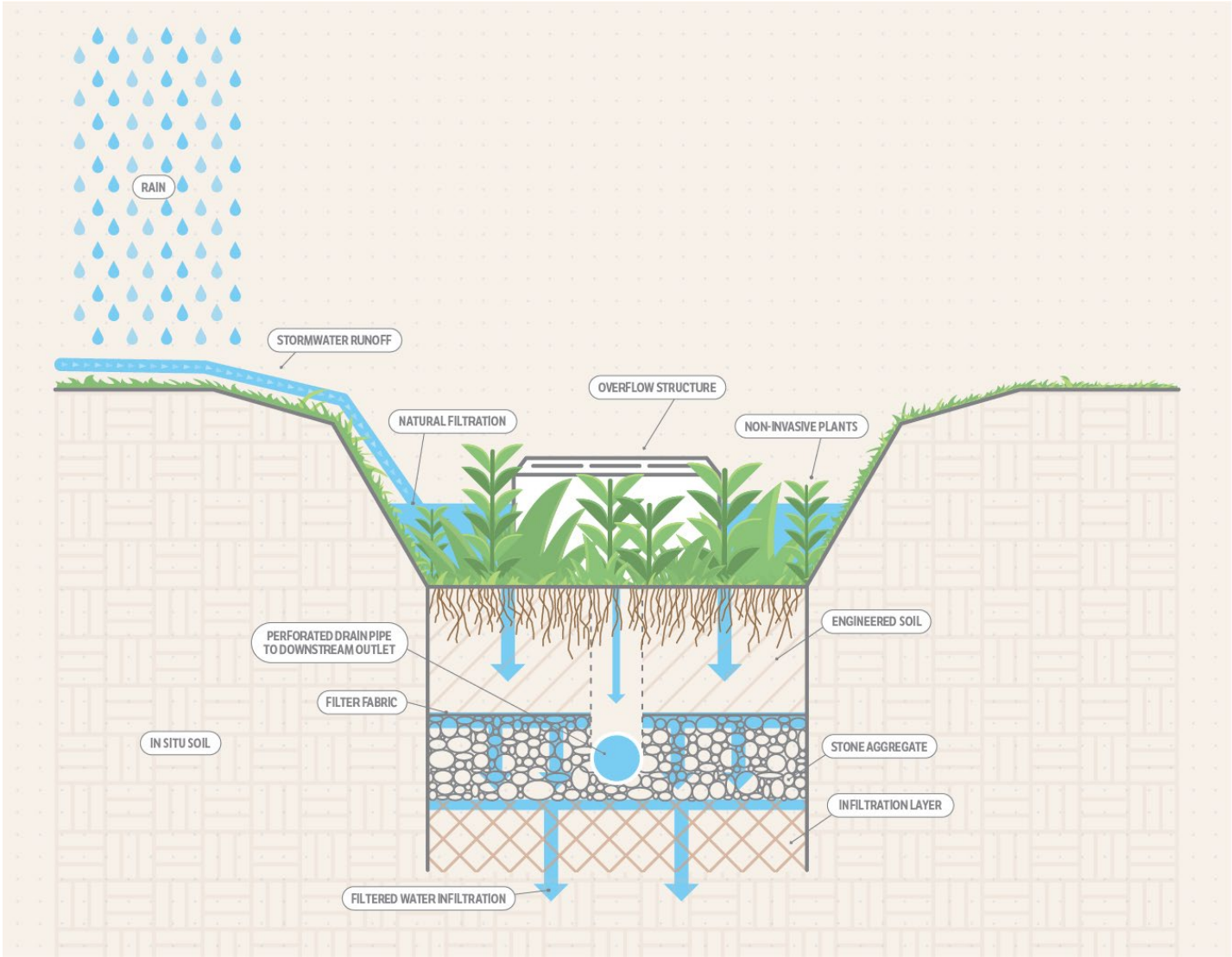
- Green stormwater infrastructure reduces and treats stormwater by retaining rainfall near its source.
- These systems address the regular, smaller storms that carry pollutants to waterways.
- Besides providing clean water and mitigating flooding, GSI has economic and social benefits.



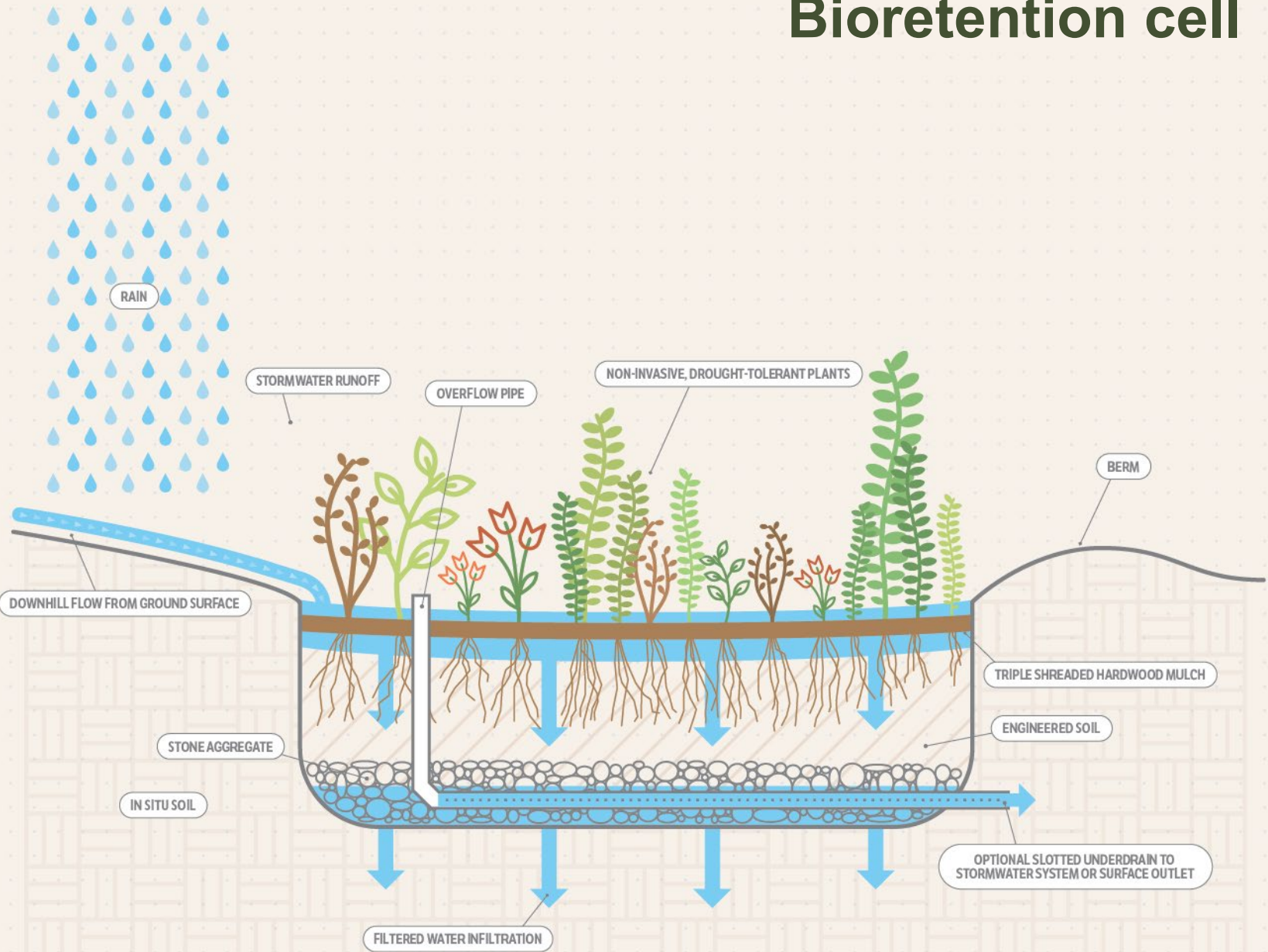
Examples of GSI

Adaptable to different communities' needs

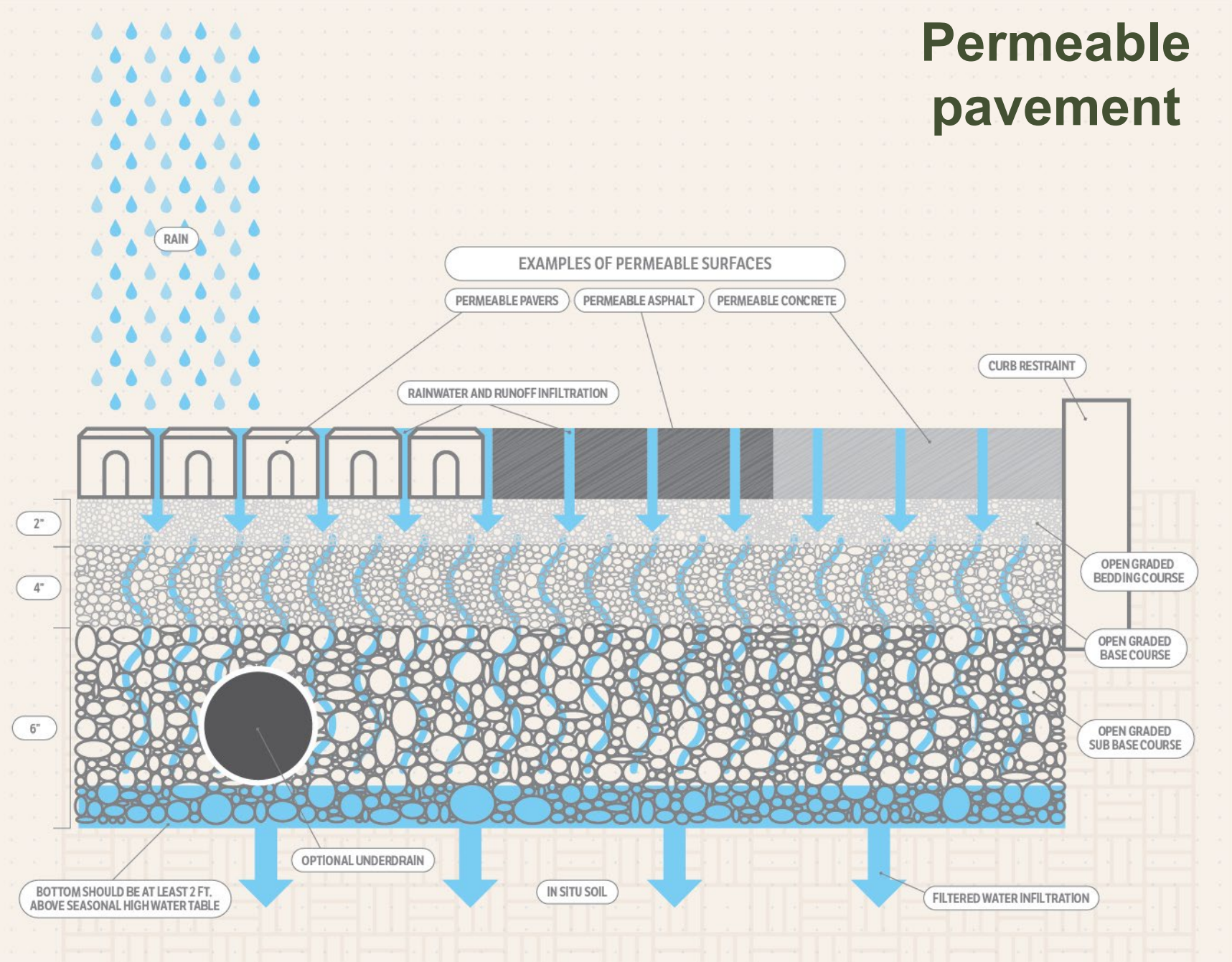
Bioswale



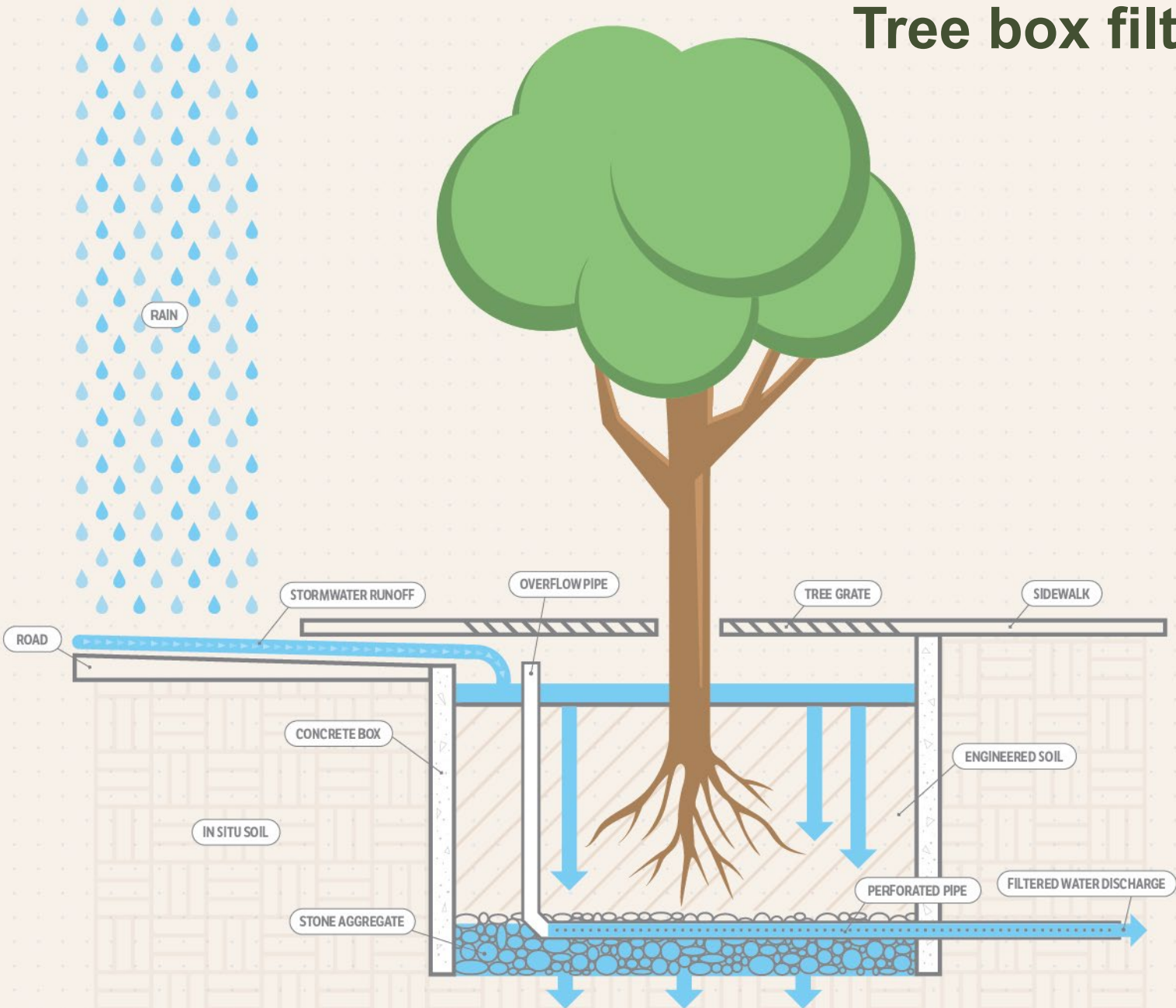
Bioretention cell



Permeable pavement



Tree box filter



Benefits of GSI

GSI can benefit the whole community, economy and neighborhoods



Community-wide benefits

Compatible with many different kinds of urban environments.

Improves aesthetics of communities.

Increases appeal of recreational opportunities.

Enhances property values and reduces long-term burdens to taxpayers.





Economic benefits

- **Florida's economy is dependent on clean water.**
- **Our unique environment attracts millions of visitors annually.**
- **Promotes a healthy economy and preserves our quality of life.**



Neighborhood benefits

- **Fosters positive public and environmental health.**
- **Betters social and recreational opportunities.**
- **Enhances residential property values.**
- **Small steps in neighborhoods can make a big difference.**

Success Stories

GSI can be big or small

Clermont, FL

Victory Pointe Stormwater Treatment Area

Combined several elements into a utility stormwater pond that freed up land for park development.

A park space that includes a filter marsh to polish storm runoff before it reaches Lake Minneola.



Cocoa Beach, FL

Minuteman Stormwater LID Improvement

Balanced stormwater management, parking, traffic flow, pedestrian safety/comfort and beautification.

Landscaped rain gardens that prevent excess nutrients from entering groundwater.

Reduced storm runoff to city canals and the Indian River Lagoon.

Provides a comfortable place to stroll and shop.



Cost, suitability, ease, impact

- Is it more expensive than conventional methods?
- Is it right for us?
- Does it require a full overhaul of existing infrastructure?
- Will it really make a difference?



What are we doing?

- We've taken a step towards complying with current Statutes and trends in effective stormwater management by introducing the City's Voluntary LID Ordinance
- Explore:
 - Funding opportunities
 - Demonstration projects
 - Partnerships with community groups, NGOs and other local governments

Conclusion

- **Good stormwater management is vital for fostering economic growth and quality of life.**
- **GSI is customizable to Palm Bay's needs.**
- **New approaches to stormwater management have environmental, social and economic benefits.**
- **Help with funding and know-how are available for local governments.**

Questions ?