

# Low Impact Development (LID) in Houston



## THE PROBLEM

Excess stormwater needs to be better managed in Houston. With our current infrastructure, stormwater runoff causes pollutant problems and can contribute to flooding, erosion and other hazardous conditions. Additionally, many Houston bayous fail to meet EPA standards.

## LID BENEFITS

LID is an engineering and land planning approach to managing stormwater runoff and is being implemented in many areas around the U.S. By mimicking nature, we can promote natural movement of water in the City's watersheds, thereby improving the City's water quality.

### Benefits of LID:

- Reduces flooding in Houston
- Lowers capital costs (compared to installing conventional drainage systems)
- Aids with EPA water pollution standards
- Contributes to sustainable urban watersheds



Flooding near University Blvd.

## LID IN ACTION

A variety of landscape alterations are used to implement LID into urban areas.

**Swales** are designed to capture and slow down runoff by spreading it horizontally across the landscape.



**Bioretention** is designed to filter stormwater runoff.



**Green Roofs** are designed to absorb up to 2 inches of inundating rainfall.



**Cisterns** are built to store rainwater.



**Permeable pavers** allow the movement of stormwater through the surface that reduces runoff and filters pollutants from the water.

# Rice Urban Lab for the Environment (RULE)

## WHY RICE

Rice University serves as Houston's premiere research university and home to the SSPEED Center. It is located in the heart of the city and adjacent to the Texas Medical Center, Houston Museum District and Brays Bayou. As the campus continues to expand its facilities, stormwater and green space management will become more important. The benefits from the Rice Urban Lab for the Environment include:

- Reduce flooding and pollutant loads both on campus and in the neighboring areas
- In-line with campus sustainability goals
- Create educational outreach for LID in Houston
- Create cooperative center (City & County) to evaluate integrated LID technology



Whirlpool on Campus



Campus Storage

### Spotlight: The Woodlands

*Rice spent 10 years studying low impact development in The Woodlands during the 1980's. Water quality and flow impacts were evaluated for the entire watershed within Spring Creek. The success of LID was firmly established in this amazing community.*

## CURRENT PROJECTS

Rice University has been involved in LID planning, implementation, monitoring and projects across Houston for many years. This includes The Woodlands development, Cottage Grove demonstration project, Birnamwood Drive monitoring, and vegetated roof initiatives. Dr. Bedient at Rice is committed to continuing to expand the LID footprint on campus in order to mitigate stormwater runoff at Rice and neighboring communities as well as improve water quality in Houston.

## NEXT STEPS

Rice is primed to become Houston's lab for LID. Rice can serve as an education center while its outcomes will benefit the city. The Center's future considerations for Rice:

- Monitor our existing green infrastructure on campus
- Evaluate several sites to implement new LID features
- Integrate and model LID as a system
- Monitor the effectiveness of features both in the field and lab

