Historical Context

Four years ago, in the wake of massive urban flooding around the US, the Center for Neighborhood Technology (CNT) asked a couple of basic questions:

What is the full impact of flooding?
What do we really know about it?

CNT’s research showed that there are three main reasons why urban flooding has become the norm. Over the past 50 years, heavy storm events (heaviest 1%) have increased nearly 40% in the Great Lakes region.

Simultaneously, communities have developed more impervious surface, converting green fields to buildings, streets, and parking lots, which causes more stormwater to run into our sewer systems. These first two problems happened over the last 50 years, but our sewer infrastructure was designed and built more than 50 years ago. Unfortunately, our aging infrastructure has not been well-maintained nor appropriately sized to deal with the increases in stormwater and impervious surfaces.

Urban flooding is under-reported and repetitive in nature; it impacts ecosystem health as urban flooding increases pollution in water bodies, and it’s getting worse.

Goal: Reduce Urban Flooding

RainReady Home aims to empower homeowners by helping them better understand the risk of urban flooding on their property, the root cause of the flooding, and what solutions are best suited to solving the problem.

RainReady Home also acts as the homeowner’s representative during the bidding and construction process, providing guidance in selecting a bid and performing construction oversight.

Overview

Developed and Managed by Center for Neighborhood Technology

Applicable Sites
- Residential Properties
- Institutions (schools, parks, HOAs, etc.)
- Businesses
- Municipalities

Program Summary

The Center for Neighborhood Technology’s RainReady Home program is designed to help homeowners fight urban flooding or flooding that occurs beyond the floodplain. RainReady Home provides property flood risk assessment, flood mitigation recommendations like nature-based solutions, and, should the homeowner decide to invest, construction oversight and financing guidance.

Nature-based solutions not only help prevent flooding in homes and yards, but they also improve local water quality by removing phosphorus and other pollutants from stormwater runoff, sometimes by up to 70%.
RainReady Home is a “one-stop shop” for residential flood relief services. They perform an interior and exterior assessment of the home and recommend flood mitigation solutions with estimated construction costs. These recommendations can include both traditional plumbing and nature-based solutions depending on the type of flooding that a property is experiencing.

They prioritize nature-based solutions, including rain gardens, bioswales, rain barrels, drywells, landscape regrading, and downspout disconnection. If the homeowner is willing and able to invest, they help the homeowner bid the work to pre-qualified contractors, select a bid, provide construction oversight during the construction process, and offer ongoing monitoring for the first year.

**Criteria for Success**

1) Did the property assessment accurately identify the source(s) of flooding?
2) Did the installed flood mitigation measures reduce the number of basement flooding incidents and/or inches of water in the basement or yard, for a given storm type?
3) What are the costs of the implemented solutions compared to future flooding costs?
4) Are the homeowners satisfied with the service?

RainReady also considers the broader ecosystem and community benefits associated with nature-based solutions. These include water quality benefits achieved (in terms of total suspended solids and phosphorus removed), groundwater recharged and erosion prevented (in terms of gallons of stormwater infiltrated), and improved property values.

**Lasting Impact**

Nature-based solutions implemented at the property scale have myriad co-benefits. Not only can these solutions reduce the risk of flooding to homeowners, but they can reduce erosion and improve water quality by reducing peak flows up to 70% and remove some pollutants by up to 80%. (IL EPA, 2009 - www.tinyurl.com/naturebased)

Additionally, RainReady homeowners will often share their experience with neighbors, who will, in turn, implement stormwater management techniques on their own properties, increasing the beneficial impacts on the community sewer system, local habitat biodiversity, neighborhood identity, public health, and even recreation opportunities.

**Figure 2:** RainReady backyard, with native plants, rain gardens, and pervious pavement

**Figure 3:** Disconnected downspout routed into bioswale

**Nature-Based Solutions**

RainReady Home is a “one-stop shop” for residential flood relief services. They perform an interior and exterior assessment of the home and recommend flood mitigation solutions with estimated construction costs. These recommendations can include both traditional plumbing and nature-based solutions depending on the type of flooding that a property is experiencing.
Begin a stormwater project planning process by asking residents about the problem and then pull in the data. For example, in Midlothian, IL the planning process began with an engaged group concerned with well known overbank flooding. However, RainReady reached a broader resident base and found a complex mix of flooding, overbank, seepage and basement backups, aggravated by infiltration and in-flow into the sewer system.

Municipalities should partner closely with resident groups when designing a residential stormwater program. Partnerships provide municipal staff with enhanced understanding of where flooding is occurring on a lot- or block-level, and enables them to coordinate sewer capital-improvement projects based on that geographical knowledge.

Guide and educate homeowners through the assessment process, to ensure that the recommended solutions are appropriate, for the property and the homeowner. For instance, some individuals may be willing to maintain a rain garden, while others might prefer a lower-maintenance option like a sub-surface drain or backflow valve. Understand homeowner preferences for long-term maintenance prior to site assessment and when developing recommendations.

Many thanks to Anna Wolf and Marcella Bondie Keenan for sharing this program with the ravine region.

For More Information: Anna Wolf Associate, Rain Ready Home at awolf@cnt.org

Lessons Learned

Advice to Ravine Communities

Provide a mix of incentives that benefit both homeowners and the broader community. Given the wide variety in homeowner experiences, the first step is to identify the scope of your community’s program. Determine which types of flooding, flood protection strategies, and barriers are most prevalent and feasible to address. There may also be certain neighborhoods that are better or worse candidates.

Identify the flood type, protection strategies, and homeowners’ barriers to implement. Communities can choose to incentivize a wide range of flood proofing solutions, but some of these solutions, like backflow prevention valves and overhead sewers, only benefit the homeowner. Communities should consider also incentivizing nature-based solutions, which have the broader community benefit of reducing basement backups for everyone in the sewershed.

Count all of the costs and benefits when scoping the program and getting buy-in for incentives. Communities may not immediately see the value in investing in building retrofits or nature-based solutions. The truth is, residents are already paying the cost of flooding. To convince people to make investments, demonstrate that solution’s reliability and cost – then weigh it against the likely cost of future flooding if investments aren’t made.