



Residential-Scale Stormwater BMPs for Lake Water Quality





Source: clarkpark.gidnoy.com

We all want good water quality



Source: Marilyn Sanders Photography



**Icky Lake
= NO FUN**

Source: Diane Tanc

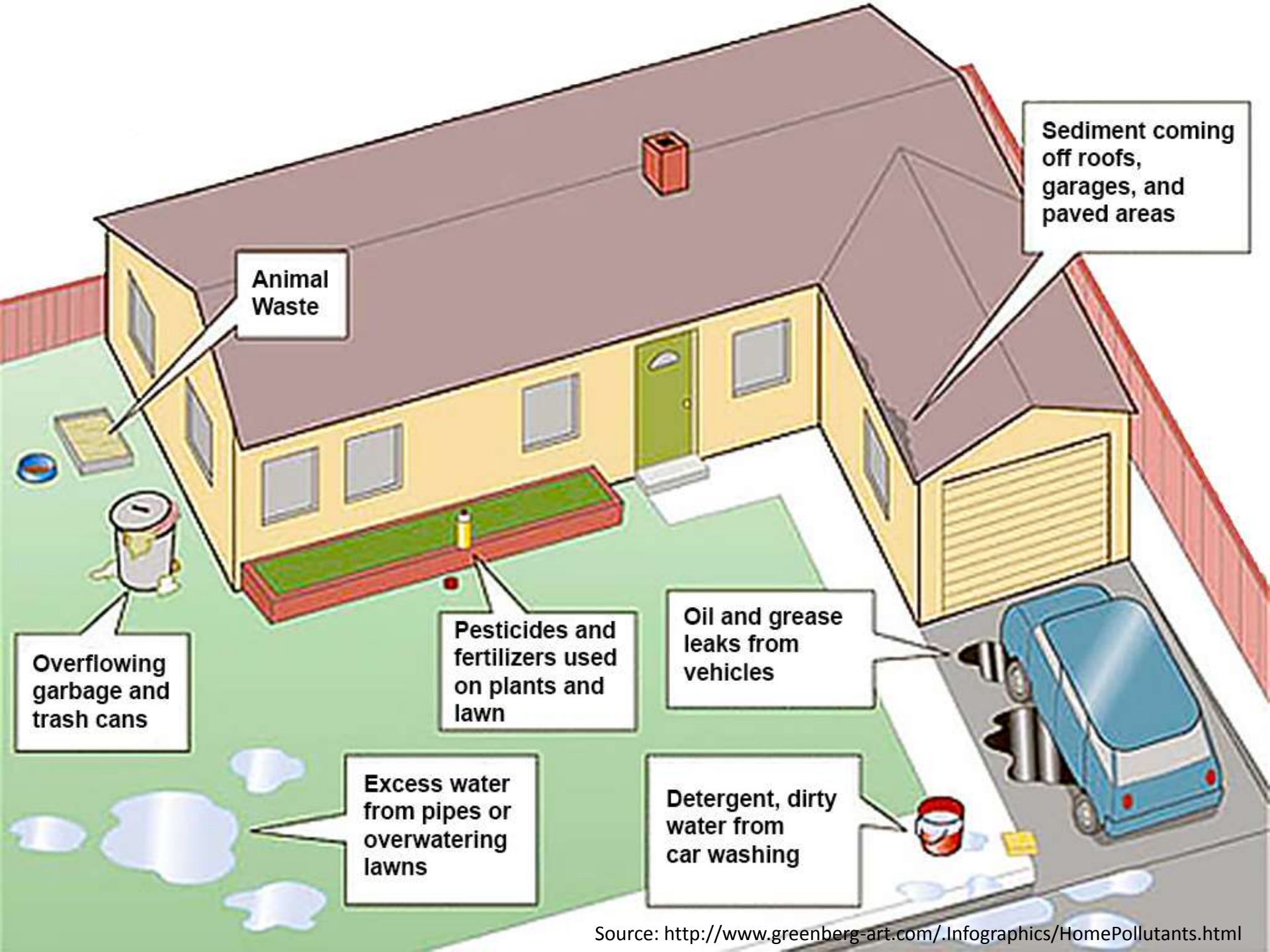
Westlake Village Golf Course
N 42°18'49.07
W 89°17'16.20

**Stormwater
BMPs = Improved
Lake WQ**



Rain Fun = Lake Fun





Animal Waste

Sediment coming off roofs, garages, and paved areas

Overflowing garbage and trash cans

Pesticides and fertilizers used on plants and lawn

Oil and grease leaks from vehicles

Excess water from pipes or overwatering lawns

Detergent, dirty water from car washing

Lake Water Quality

Physical: Water clarity, DO, temp

Chemical: Nutrients, SS, pH, conductivity

Biological: Chlorophyll, bacteria

Source: <http://www.epa.state.il.us/water/conservation/lake-notes/quality-parameters.pdf>

Every curb is a shoreline

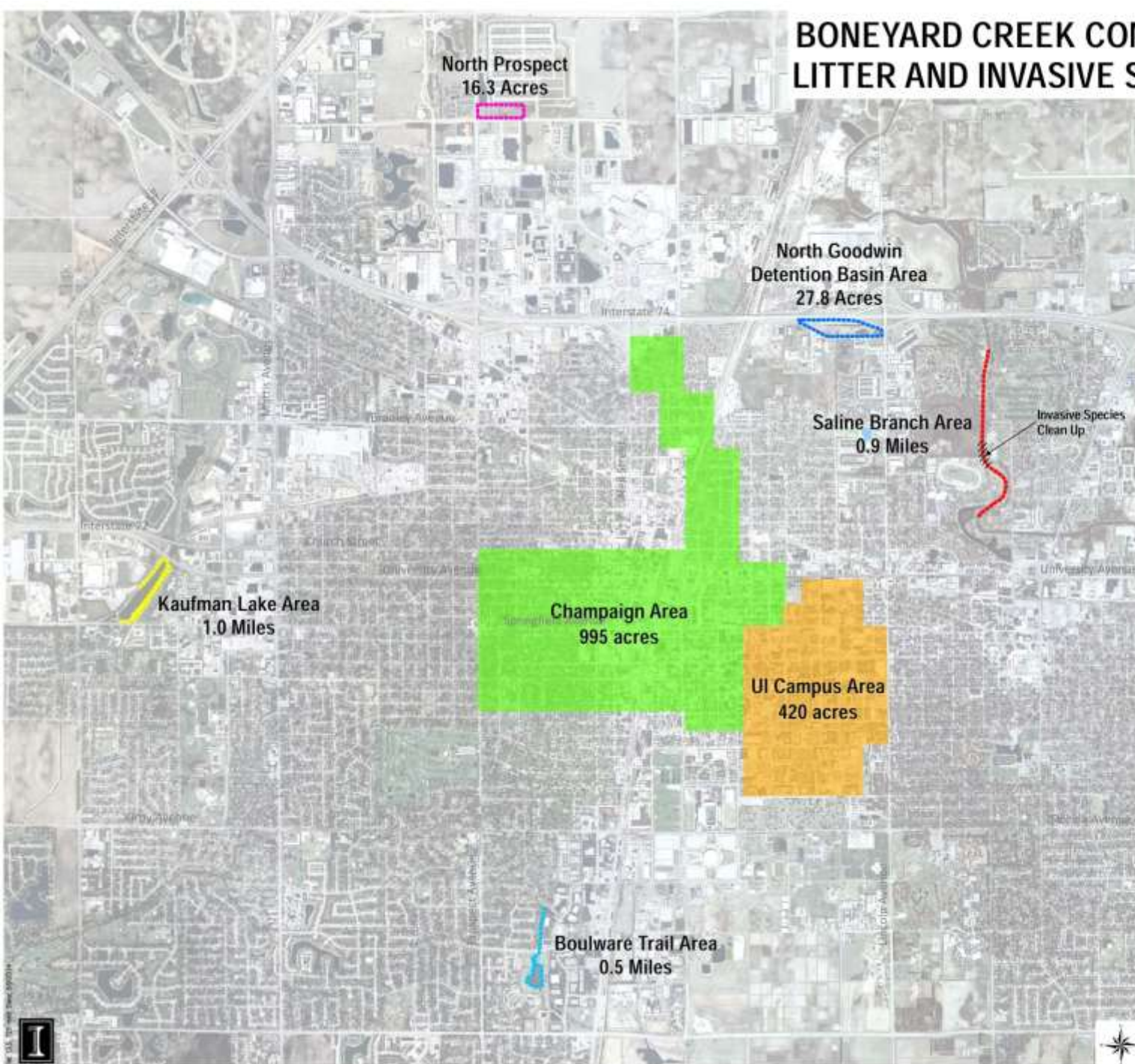


www.boneyardcreek.org



Source: Lisa Lauderdale

BONEYARD CREEK COMMUNITY DAY 2014 LITTER AND INVASIVE SPECIES CLEAN UP



Legend

- Boulware Trail Area
- Kaufman Lake Area
- North Prospect Area
- Saline Branch Area
- North Goodwin Av. Det. Area
- University Campus Area
- Champaign Area

Litter Clean Up Total
1459 Acres
2.4 Miles

**Invasive Species
Clean Up Total**
0.2 Mile

400 Volunteers

Job Well Done!



THE RESULTS:

4,341 PLASTIC BAGS



333 STRAWS/STIRRERS



3,473 FOOD WRAPPERS



228 CUPS/PLATES



366 CAPS/LIDS



667 BOTTLES/CANS



194 UTENSILS



3367 CIGARETTE BUTTS



PHOTO ILLUSTRATION BY AUSTIN KEATING THE DAILY ILLINI



Source: Jana Mason



Source: Gregg Skaggs





Source: <http://cfpub.epa.gov/npstbx/FeaturedProducts.cfm>



Photo Credit: Archie Nicolette

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USGS Leaf Collection Study



Can we improve water quality by changing our leaf collection program?

MAPS

- [Overall Map of Study Areas](#)
- [Neighborhood 1](#)
- [Neighborhood 2](#)
- [Neighborhoods 3 & 4](#)

USGS MONITORING SITES

- [S Kenosha Dr](#)
- [Gray Fox Trail](#)
- [Yellowstone Dr](#)
- [S Kenosha Dr \(East\)](#)



Source: www.flickr.com/people/st3f4n/



working for clean rivers

Green Street PLANTING

Where are the plants?

The best time to plant green street facilities is in spring and fall. The city will plant this facility during the next planting season.

Green streets manage stormwater runoff to protect rivers and streams, and help prevent basement backups.

www.portlandoregon.gov/lex/greenstreets



DEPARTMENT OF PUBLIC WORKS
CITY OF PORTLAND
WORKING FOR CLEAN RIVERS



Source: <http://www.pca.state.mn.us/index.php/about-mpca/mpca-news/news-media-center/news-center-photographs.html>





Source: Gale Fulton

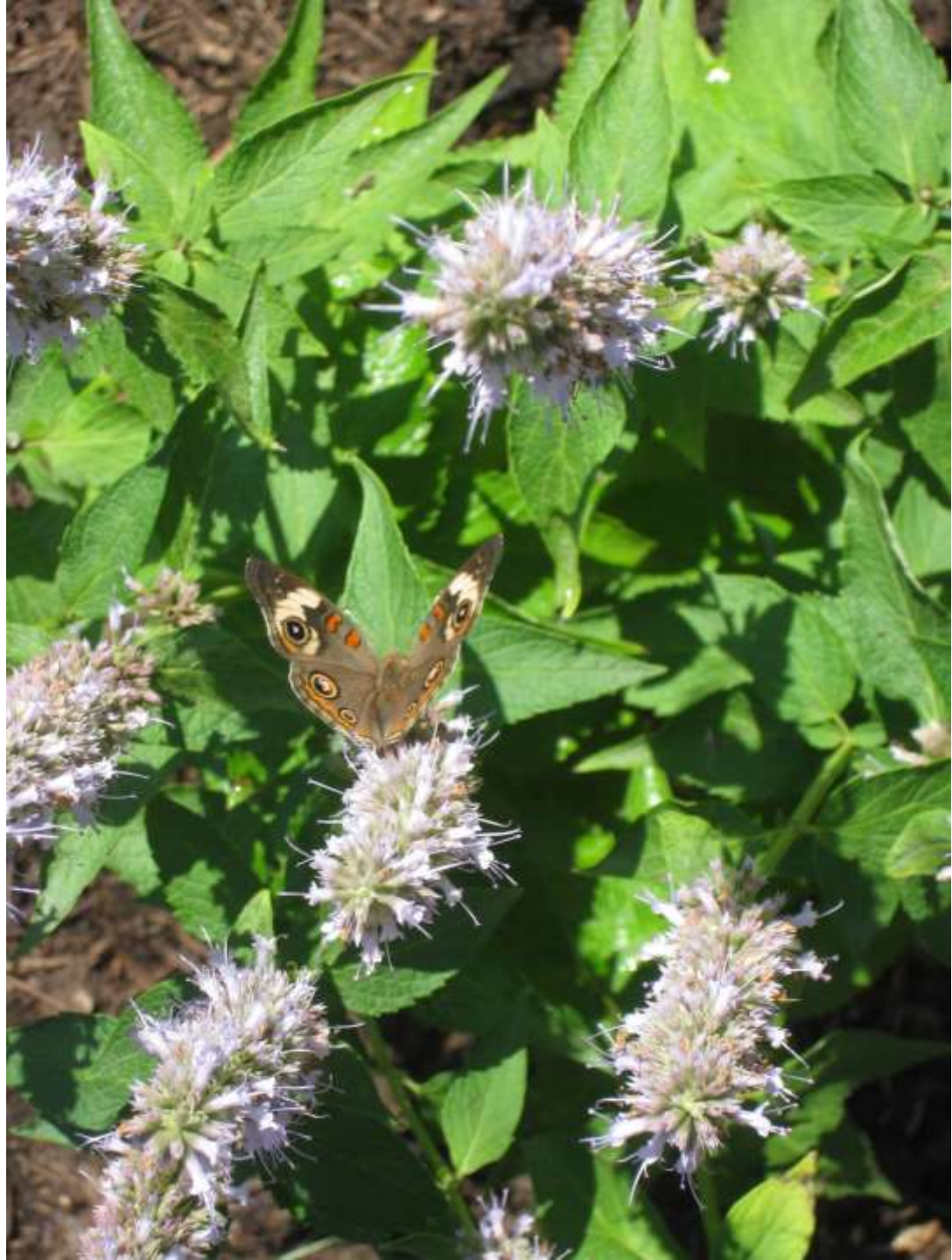


Source: Gale Fulton



















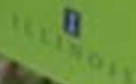


Rain Garden

Rain gardens help relieve local flooding problems by collecting rain and snowmelt. The water soaks into the ground and is absorbed by plants.

Anyone can create a rain garden!

This project was a partnership between:



Design Considerations:

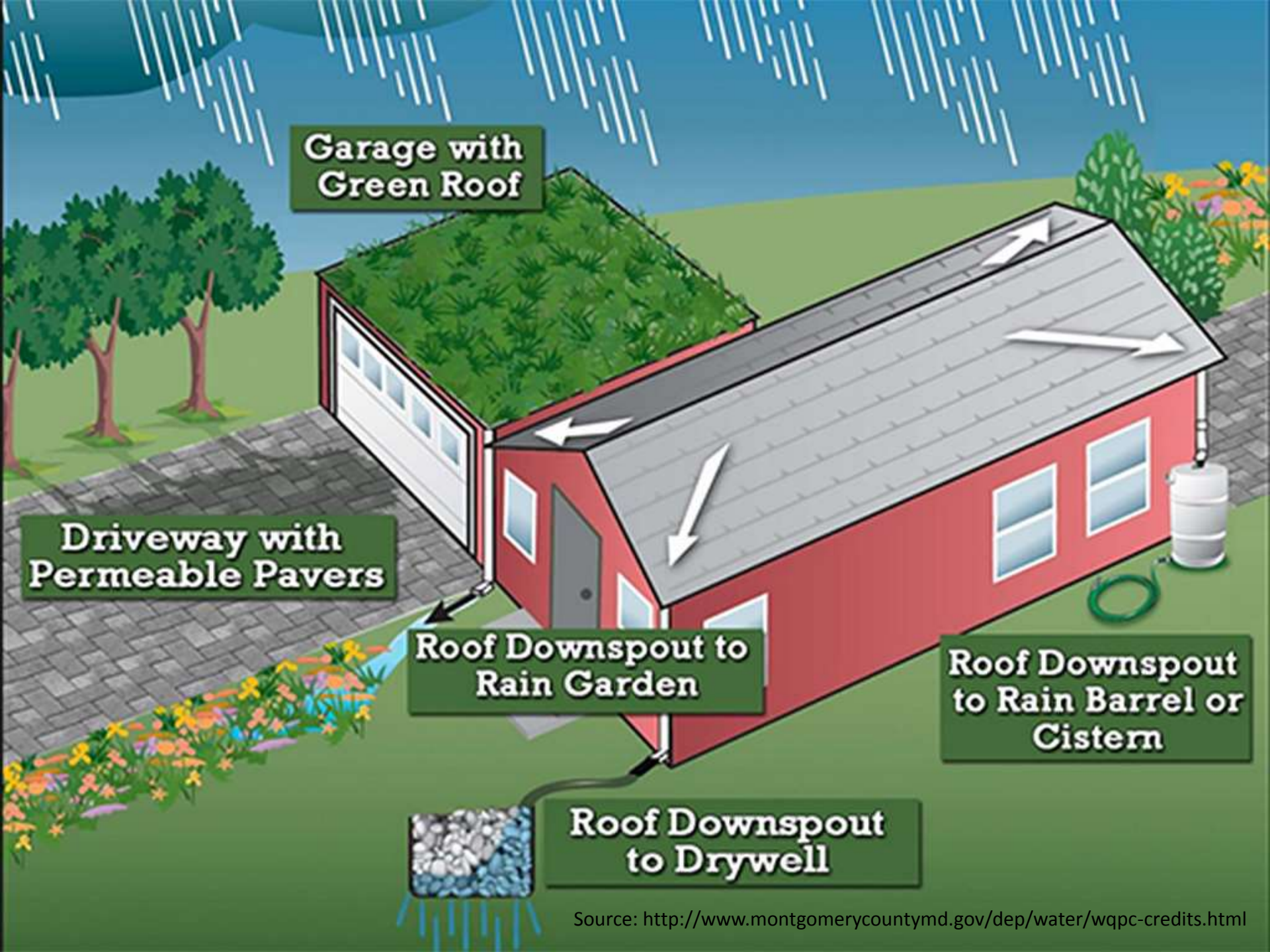
- ✓ Design for small storms.
- ✓ Excavation required: 4-1".
- ✓ Locate at least 10' from building foundation.
- ✓ Check soil. Dig a small hole, fill with water, see how long it takes to drain.
- ✓ Avoid compacted soils!



Design Considerations:

- ✓ Use existing infrastructure.
- ✓ Use native plants – U of W.
- ✓ Messy ecosystems/Orderly Frames – J. Nassauer, U of M.
- ✓ Subtle color palette – See Piet Oudolf, e.g. Lurie Garden.
- ✓ Doesn't have to be kidney bean shaped.





Garage with Green Roof

Driveway with Permeable Pavers

Roof Downspout to Rain Garden

Roof Downspout to Rain Barrel or Cistern

Roof Downspout to Drywell

Be a Stormwater Detective





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Resources:

<http://rainready.org/for-homeowners>

http://www.iisgcp.org/%5C/catalog/l2l/LMrain_garden.html

<http://www.iisgcp.org/l2l/lawncare.html>

<http://www.theconservationfoundation.org/page.php?PageID=30>

http://www.chicagobotanic.org/conservation/rain_garden

<http://www.cityofmadison.com/engineering/stormwater/LeafStudy.cfm>

<http://www.cityofmadison.com/engineering/stormwater/raingardens/documents/USGSRainGardenStudyFinal.pdf>



Rain Fun = Lake Fun

I love good water quality!



I love good water quality!



Source: Marilyn Sanders Photography

I love good water quality!



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Source: Rob Kanter



Thank you!