

# Adapting Cities to WaterWorld

## Smart Growth Techniques for Rainwater Management

Moderator: Phillip Rodbell, US Forest Service

**Tom Jacobs**, Mid-America Regional Council

**Nick Kuhn**, Missouri Department of Conservation

**Randy Neprash**, Stantec Consulting



# Future Climate in the Midwest

- During the summer, public health and quality of life, especially in cities, will be negatively affected by increasing heat waves, reduced air quality, and increasing insect and waterborne diseases. In the winter, warming will have mixed impacts.
- The likely increase in precipitation in winter and spring, more heavy downpours, and greater evaporation in summer would lead to more periods of both floods and water deficits.
- While the longer growing season provides the potential for increased crop yields, increases in heat waves, floods, droughts, insects, and weeds will present increasing challenges to managing crops, livestock, and forests.
- Native species are very likely to face increasing threats from rapidly changing climate conditions, pests, diseases, and invasive species moving in from warmer regions.

From: US Global Change Research Group



# Benefits of Trees

- Reduce stormwater run-off
- Improve air and water quality
- Reduce energy use
- Offset carbon emissions
- Increase property values
- Enhance public health (mental and physical)
- Reduce crime
- Improve quality of life
- Wildlife habitat and food



# Stormwater Benefits

- Trees act as sponges that keep water on site and recharge groundwater.
  - A typical urban forest of 10,000 trees will retain 10 million gallons of rainwater per year.
- Reduce the amount of runoff, pollutants, and sedimentation into creeks.
  - While built drainage systems such as sewers and storm drains accelerate the flow of polluted water through community, trees slow it down and filter the water.

# www.iTreetools.org



The banner features the i-Tree logo on the left, which includes a stylized tree and a city skyline. The main text reads "Tools for assessing and managing Community Forests" in a serif font, with "About i-Tree >>" below it. To the right is the University of Arkansas System logo. The background image shows a lush green park with a lake and a city skyline in the distance. In the foreground, two women in green shirts are looking at a handheld device.

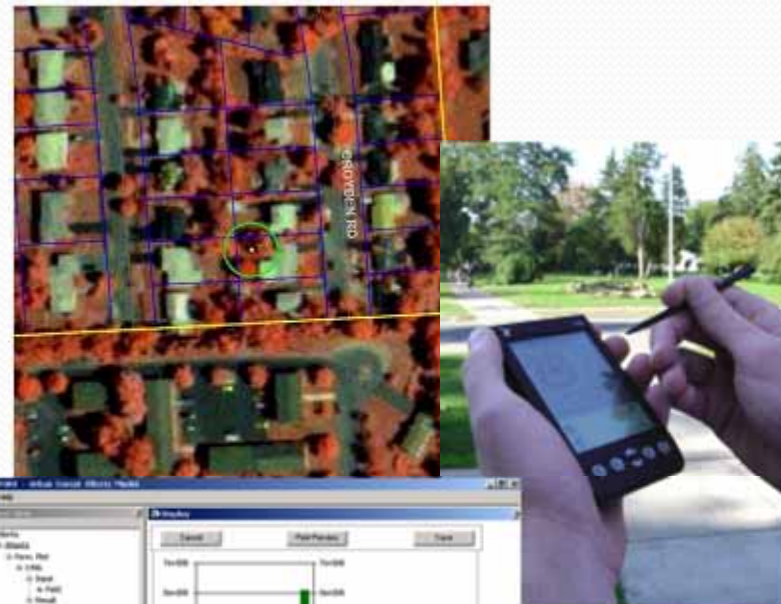
Resource/Learning Center      Support      Quick Links      FAQs

 <h3>Assessing Urban Ecosystems</h3> <p>Find out how to assess your community's <i>entire urban forest</i>.</p> <p><a href="#">click here to begin</a></p>	 <h3>Assessing Street Tree Populations</h3> <p>Learn how to assess the <i>street tree component</i> of your community's urban forest.</p> <p><a href="#">click here to begin</a></p>	 <h3>Applications and Utilities</h3> <p>Access tools to help you strengthen your community's <i>tree management</i> efforts.</p> <p><a href="#">click here to begin</a></p>	<h3>What's New?</h3> <p><a href="#">i-Tree Newsletter</a>—June 2006</p> <p><a href="#">i-Tree Midwest Workshop</a> (November 15-16) is full. <a href="#">Click here</a> to register and be put on the waiting list.</p> <p><a href="#">Purchasing a PDA for use with i-Tree?</a>—an urgent note on PDA compatibility.</p> <p><a href="#">Find out more &gt;&gt;</a></p>
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[<< i-Tree Team Login >>](#)

# Assessing Urban Ecosystems

- iTree assesses:
  - Structure
    - Energy
    - Air pollution
    - Carbon
  - Value
  - Management
    - Health
    - Pest impacts



# iTree Design (iTreetools.org)

- 🌳 Ideal planting location
- 🌳 Storm water runoff
- 🌳 Grow-out

Get started with these easy steps:

**Enter your tree's species:**

Magnolia

*Note: If you're looking for a Willow Oak, it's listed as "Oak, Willow". If your tree isn't listed, use the general "Other" listings.*





**Enter how wide (diameter) your tree is at 4.5 feet above the ground:** 15 inches.



*Note: This measurement is what foresters call "diameter at breast height".*

**Enter what type of condition best describes your tree:** Excellent

**Check here if you would like to evaluate energy effects:**

**Draw your structure & locate your tree:**

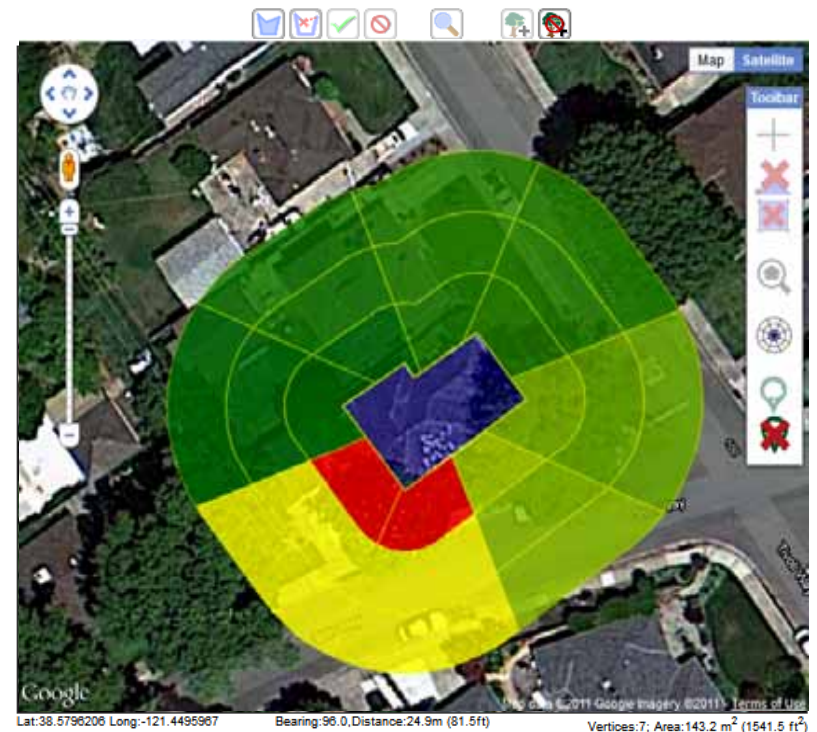
Use the drawing tool  above the map to outline your house or building. Be sure to outline "conditioned" living area only; garages and other unheated or uncooled spaces should not be included. When you are finished outlining your building, click on the  button. You can also use  to delete your last point or use  to cancel the entire drawing.

Now, use the tree tool  above the map to locate your tree. Place the marker as close to the base (or center) of the tree as possible. You cancel the tree placement by clicking .

**Indicate when your structure was built:**

pre-1950

Calculate Benefits

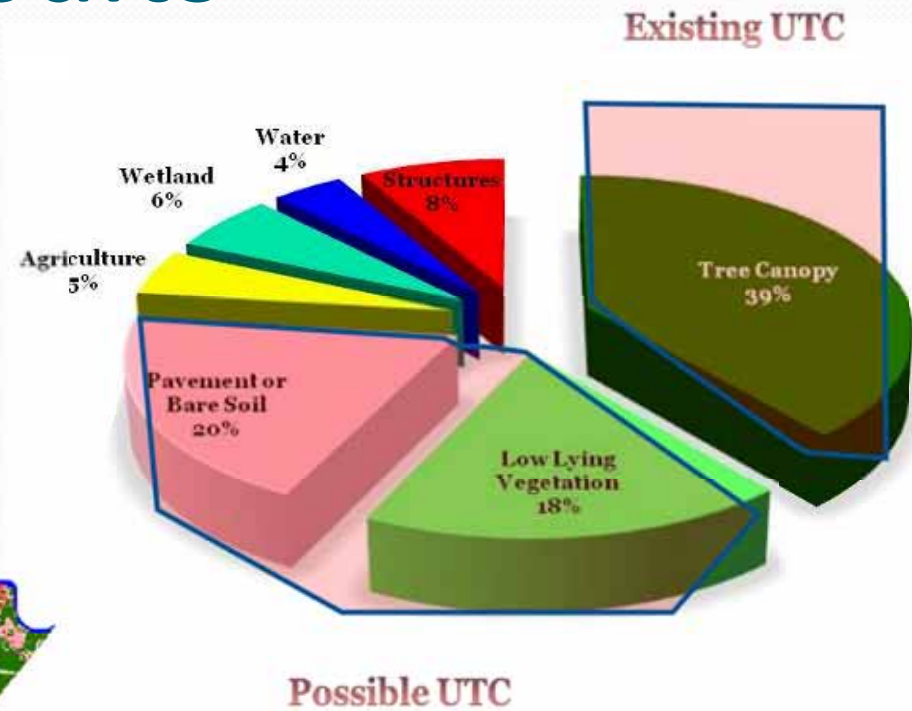
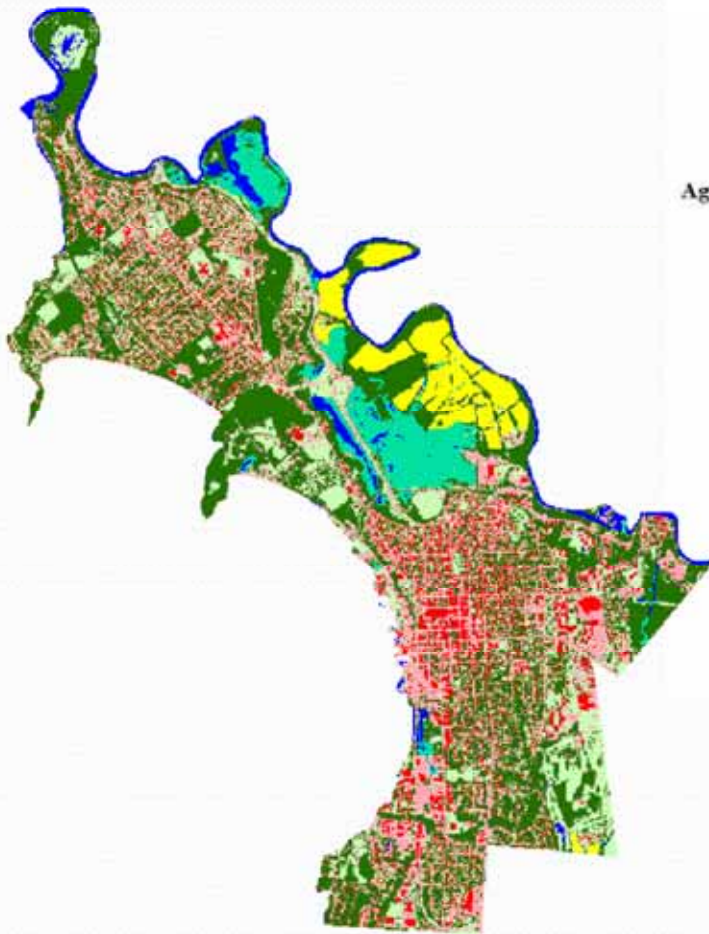


# New Tools for Tree Cover





# Land Cover Results



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