

Urbanization and streams in Austin, TX

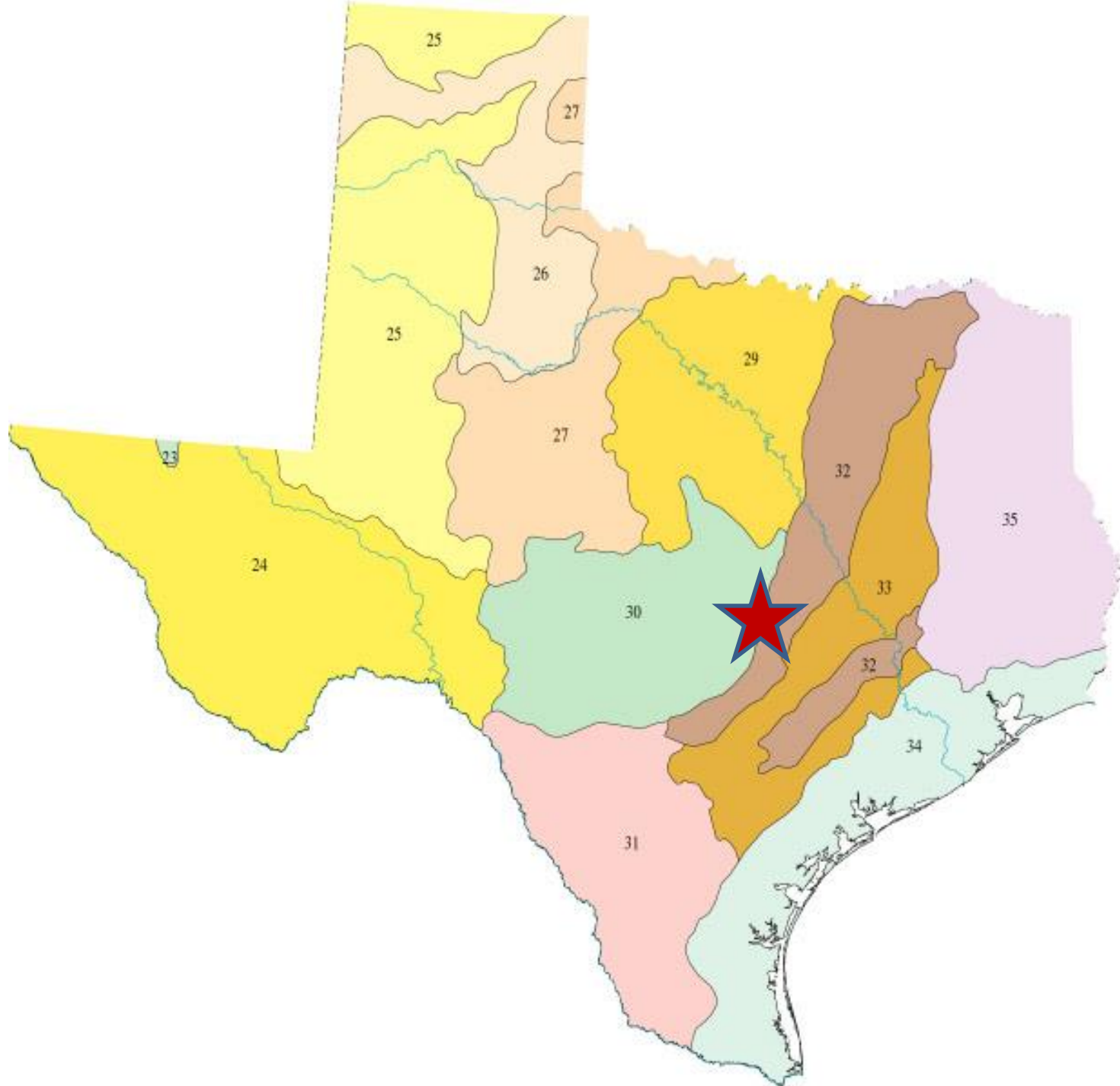
Mateo Scoggins



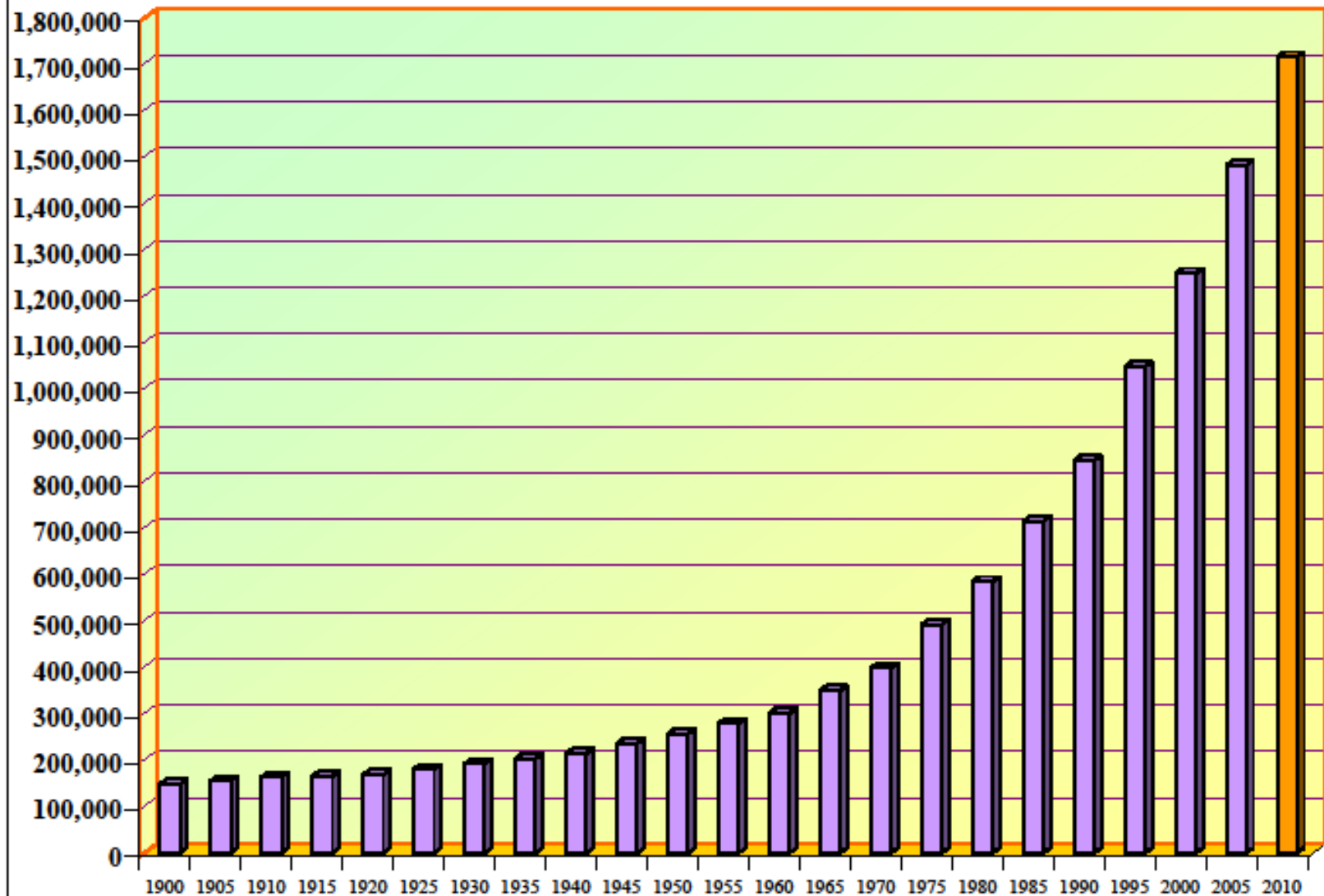
Background

- **Municipality**
- **Bottom up, ecological program**
- **Restoration for the city**





Austin MSA Population History: 1900 to 2010



Produced by: Ryan Robinson, City Demographer, Department of Planning, City of Austin, February 2011.

Dominant Paradigm

- **Simple**
- **Clean**
- **Move away water**



Dominant Paradigm

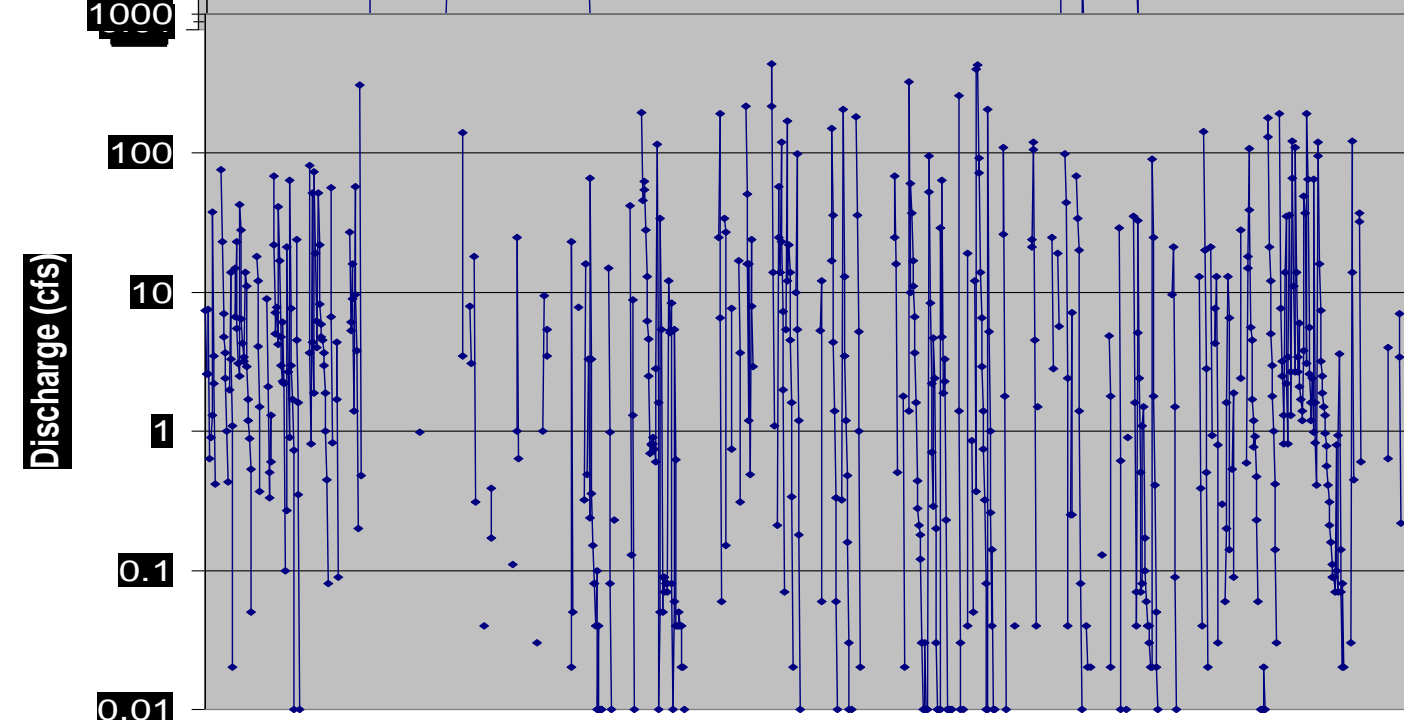
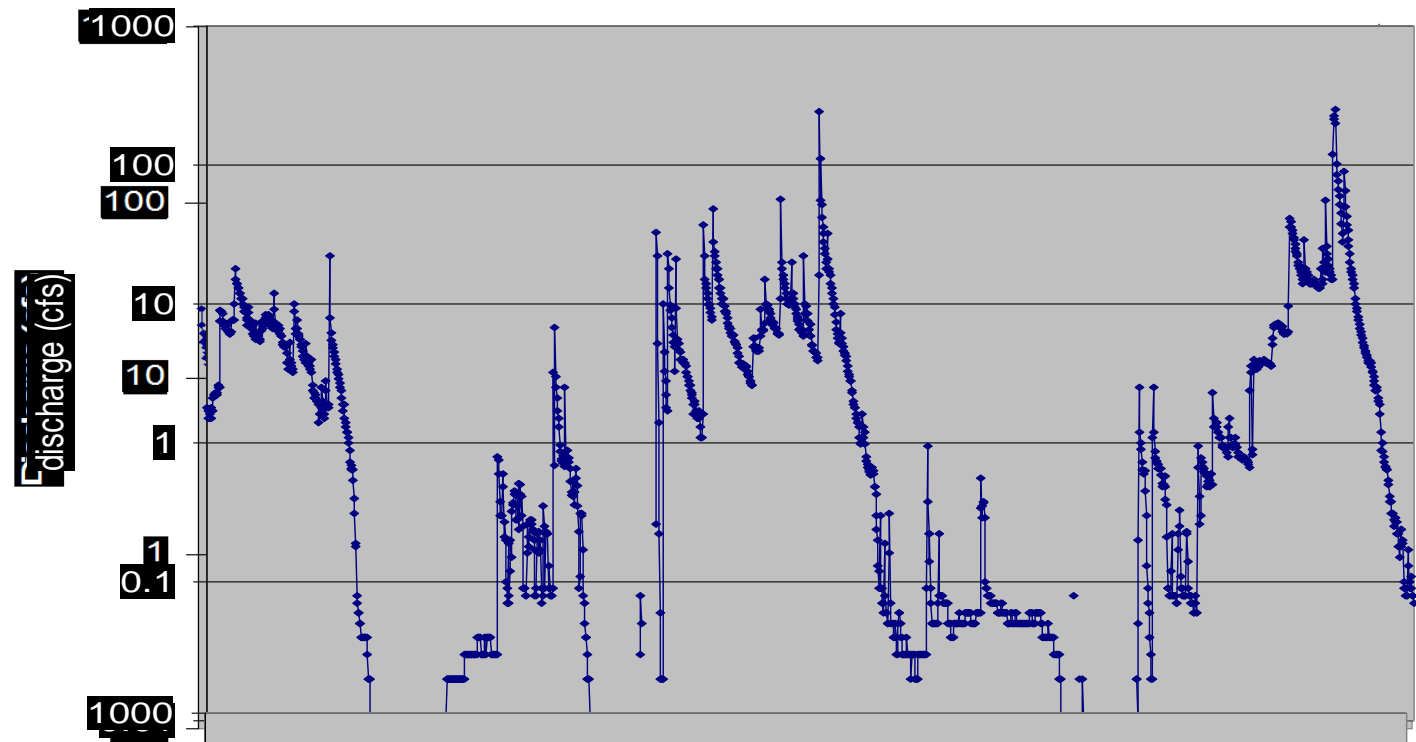
- **Native**
- **Wild**
- **Clean**
- **Healthy**

Reality



Reality





Urban Stream Syndrome



Erosion



Water Quantity



Water Quality

Urban Stream Solutions

- **Riparian Buffers**
- **Stormwater Controls**



Key Tools:

- **Small inputs (function over form)**
- **Scalable**
- **Diverse partnerships**
- **Monitoring**



Willowbrook, 15 years





Grow Zone

Ecological restoration through managed succession

- **No Mow Zone (eliminate primary disturbance)**
- **Seed bank**
- **Woody recruitment**
- **Soil erosion and compaction**
- **Invasive species control**



Partnerships

- **Highly scalable**
- **Non-profit “groups**
- **Adopt-a-Creek program**
- **Simple mgmt plans**
- **Creek Walks/Talks**
- **Signage, cues to care**

Future Creekside Forest

Grow Zone
(No Mowing!)

The City of Austin is working to **restore the native forests** that used to flourish beside creeks by creating “grow zones” in city parks. *This area was designated as a “grow zone” in 2012 and it will take several years for seedlings to become large trees.* Volunteers, birds and squirrels are taking care of the planting – the City of Austin won’t hamper this natural process by mowing.

Benefits of a creekside forest:

- Improves the natural and beneficial functions of the floodplain
- Prevents stream bank erosion
- Filters storm runoff, removing pollutants before they reach the creek
- Provides habitat and food for a diverse group of animals
- Provides shade that cools air and water temperatures
- Creates a greenbelt forest with diverse tree and plant communities for outdoor enthusiasts
- Reduces the City’s carbon footprint
- Reduces maintenance so park staff can focus on other park projects

Mowed

First Year of Growth

5 to 10 Years

www.austintexas.gov/watershed/creekside
512-974-2550



Light:
Surv. Part Shade

Soil Needs:

- Amend existing soil with 2-3" of compost
- Be sure that your total soil base is 6-8" deep
- If additional soil is needed, use a good quality soil mix (approximately 25% compost, 65% loam and 10% sand)

Water Needs:

Once established, these plants require little to no water. If plants look wilted, however, water thoroughly every 3-4 weeks if there is no rainfall.

Irrigation:

- Hand-watering is recommended
- If you must use an irrigation system, use bubblers for the birds

Turf:

Not recommended next to the creek.

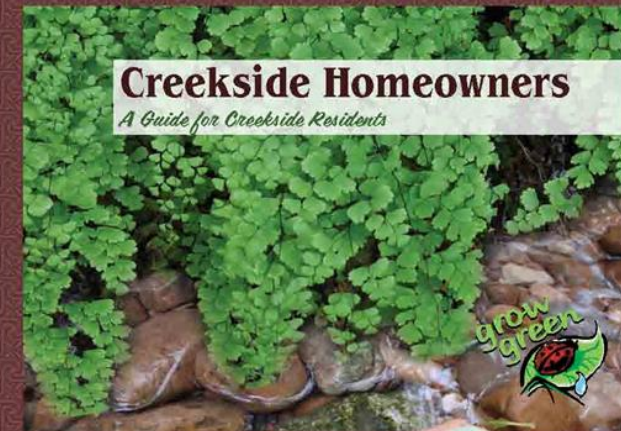
Gardening Tips:

- Do not plant trees or shrubs in the city's gutter
- If planting the garden in phases, start with the trees. They will be the slowest growing vegetation and play an important role in shading the creek from the hot Texas sun!
- Allowing the vegetation that is closest to the stream to go fully wild is beneficial and will become more tame as the tree canopy develops.

Good Plant Choices:

<p>Large Trees</p> <p>Bald Cypress Bur Oak Chinquapin Oak Live Oak Sycamore</p> <p>Small Trees</p> <p>Carolina Buckhorn Mexican Plum Possumhaw Holly Roughleaf Dogwood Redbud Yaupon Holly</p> <p>Shrubs</p> <p>Coriariery Buttonbush Eve's Necklace Chili Pequin Dwarf Palmetto</p>	<p>Wax Myrtle Cherry Laurel</p> <p>Perennials</p> <p>Blue Mistflower Columbine Turk's Cap</p> <p>Ground Covers</p> <p>Big Muhly Frog Fruit Horsebalm Noddybush</p> <p>Ornamental Grasses</p> <p>Indian Grass Inland Sea Oats Switchgrass Meadow Sedge Canada Wild Rye Eastern Gamma Grass</p>	<p>Aquatic and Semi-Aquatic Plants (for rain gardens)</p> <p>Obedient Plant Bushy Bluestem Wood Fern Spike Sedge</p> <p>Creekside Seed Mix</p> <p>Clasping Cornerflower Cutleaf Daisy Sage Pillbox Sage Maximilian Sunflower Black-Eyed Susan Bluestem Bushy Bluestem Eastern Gamma Grass Switchgrass</p>
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www.cityofaustin.org/growgreendesigns.htm
 For more earth-wise gardening tips, visit www.growgreen.org
 For water conserving tips and rebates, visit www.watervisitaustin.org



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- An aerial photograph of a landscape, likely a wetland or marsh area, with a network of blue lines representing waterways or drainage patterns. Overlaid on the map are numerous green shapes of various sizes, which appear to be the 'Grow Zones' mentioned in the text. The text is written in yellow and is positioned on the left side of the image.
- 46 Grow Zones
 - 13 miles
 - 210 acres
 - ~\$3 per linear foot/year
 - ~\$125K in reduced mowing

5 years:

- **Diversity**
- **Structure**
- **Shade**
- **Stability**
- **H2O Quality**
- **H2O Quantity**





Resilience





Stewardship



Challenges

Flood Risk!



General Notes

Plant all saplings in designated planting areas.
Space saplings approximately 3 ft apart.
Planting zone starts at bank of creek and runs 15-25 ft perpendicular to the stream.
Plant all saplings between the marked flags that corresponds to your assigned planting zone.

Legend

- Parking Area
- Planting Area
- Meeting Area
- Creeks
- COA Parkland



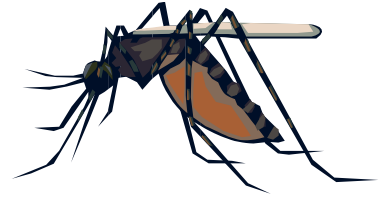
Challenges

Ugly!
Neglect!



Challenges

Fear!



Challenges

Exotic!
Invasive!



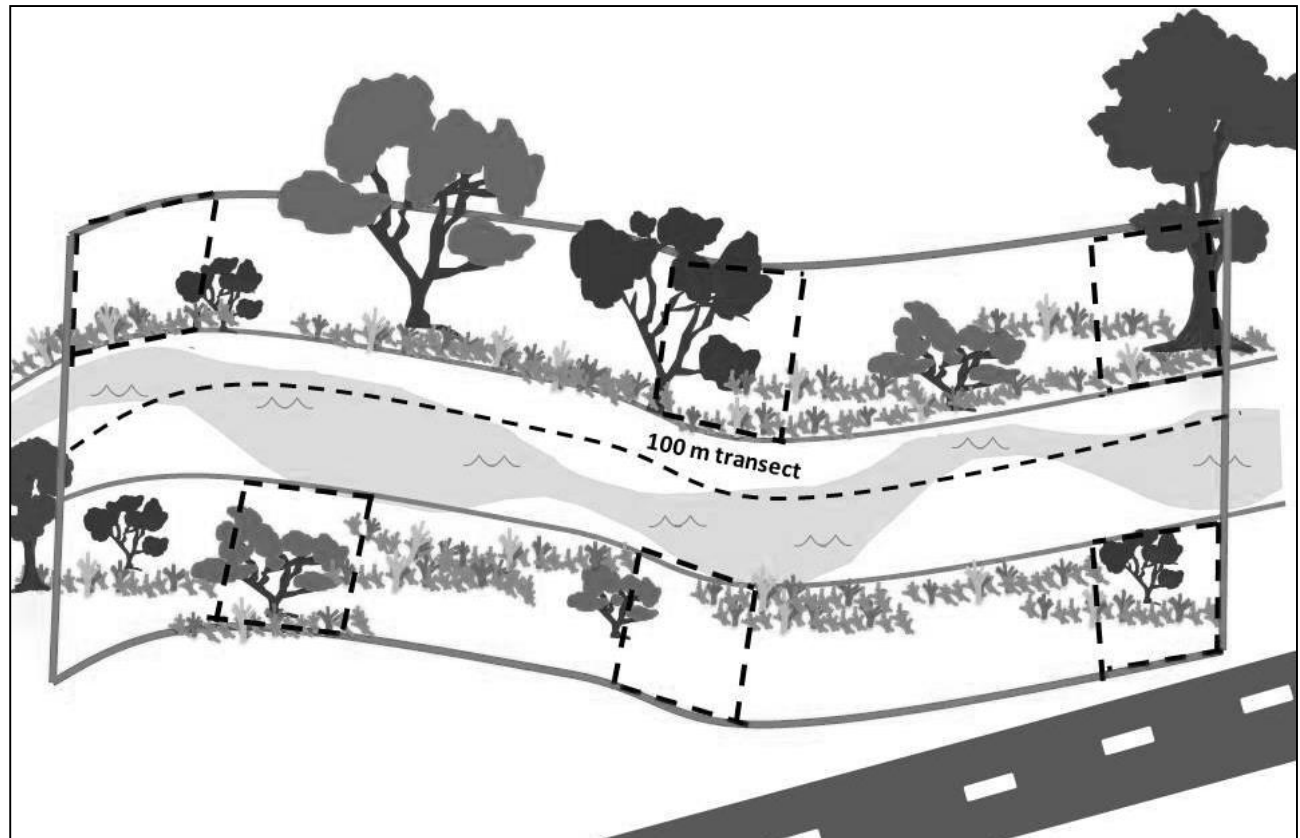
Challenges

**Access,
Trails!**



Monitoring:

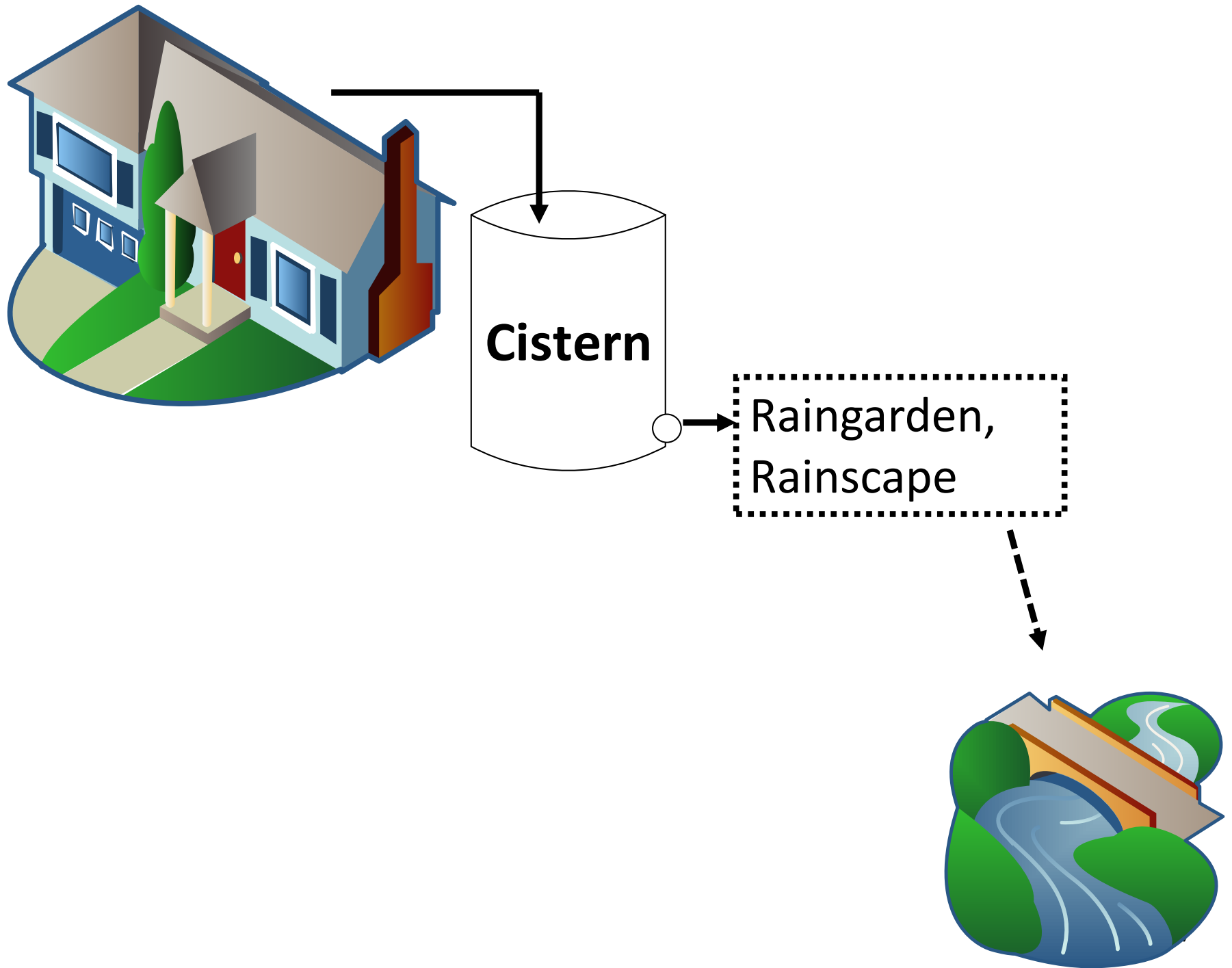
- **Quantify functional shifts**
- **Reference vs. Degraded reaches:**



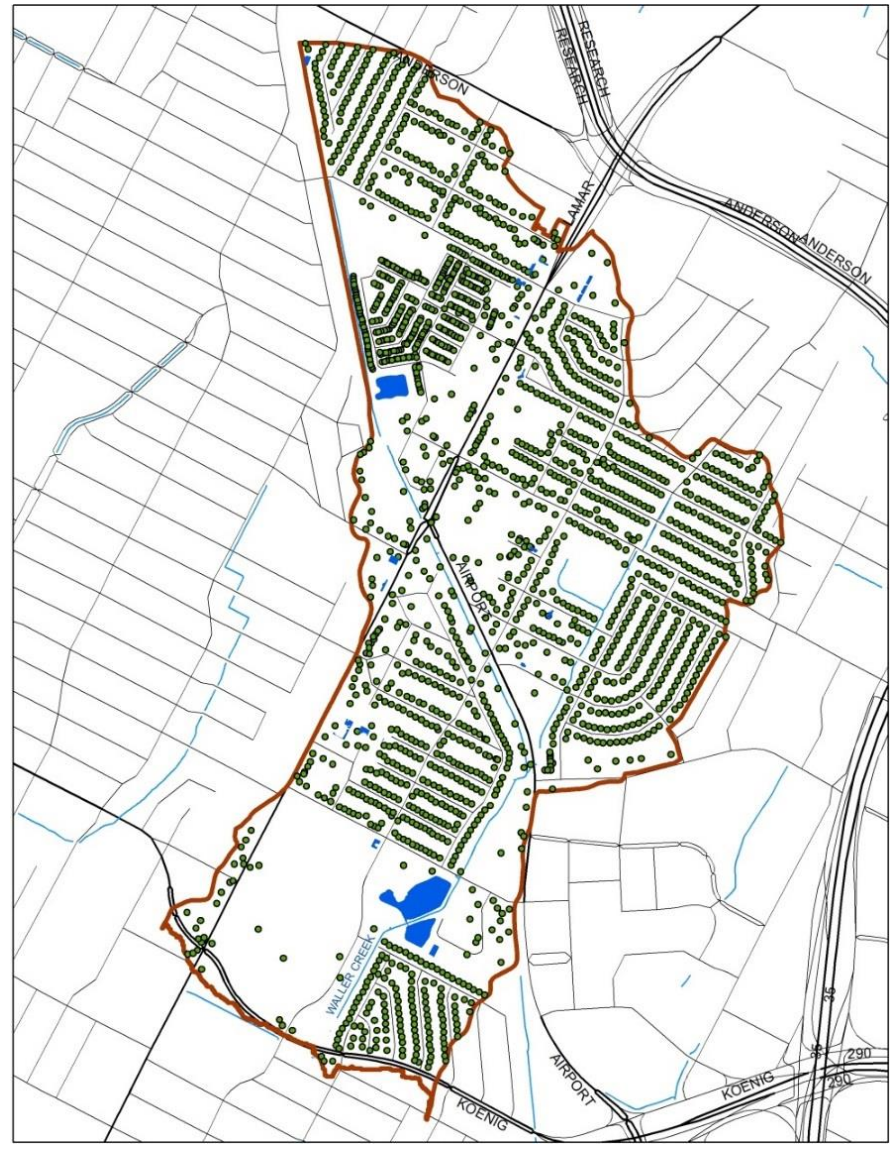
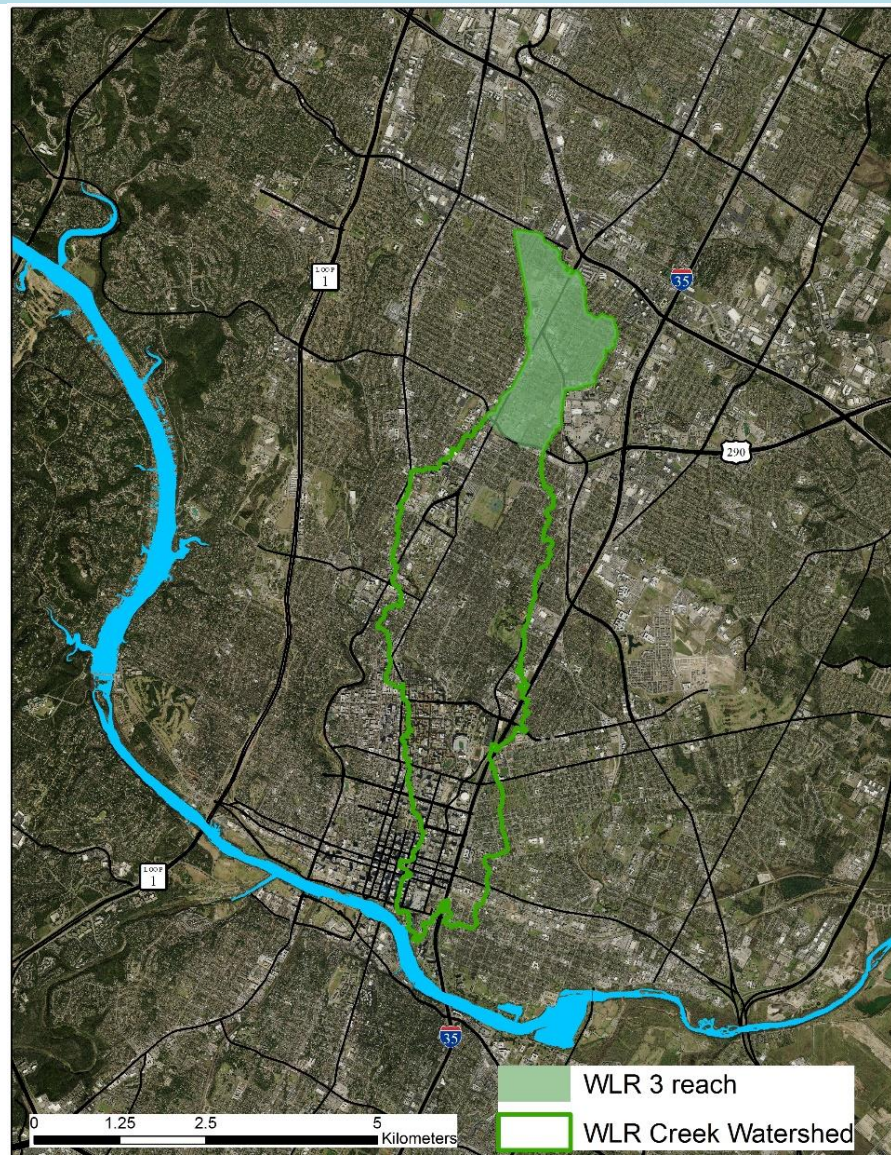
Green Stormwater Controls

- Rain gardens

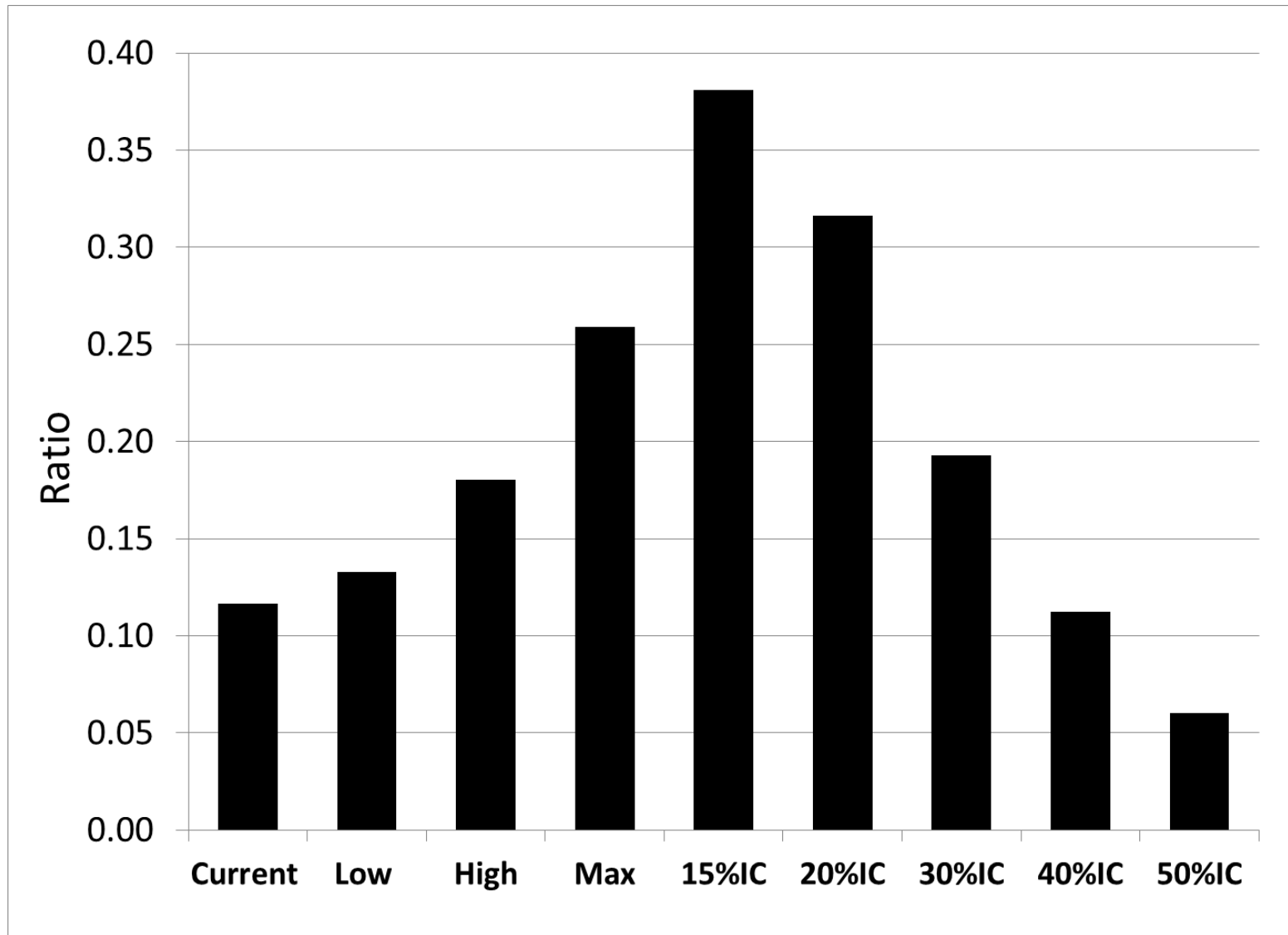


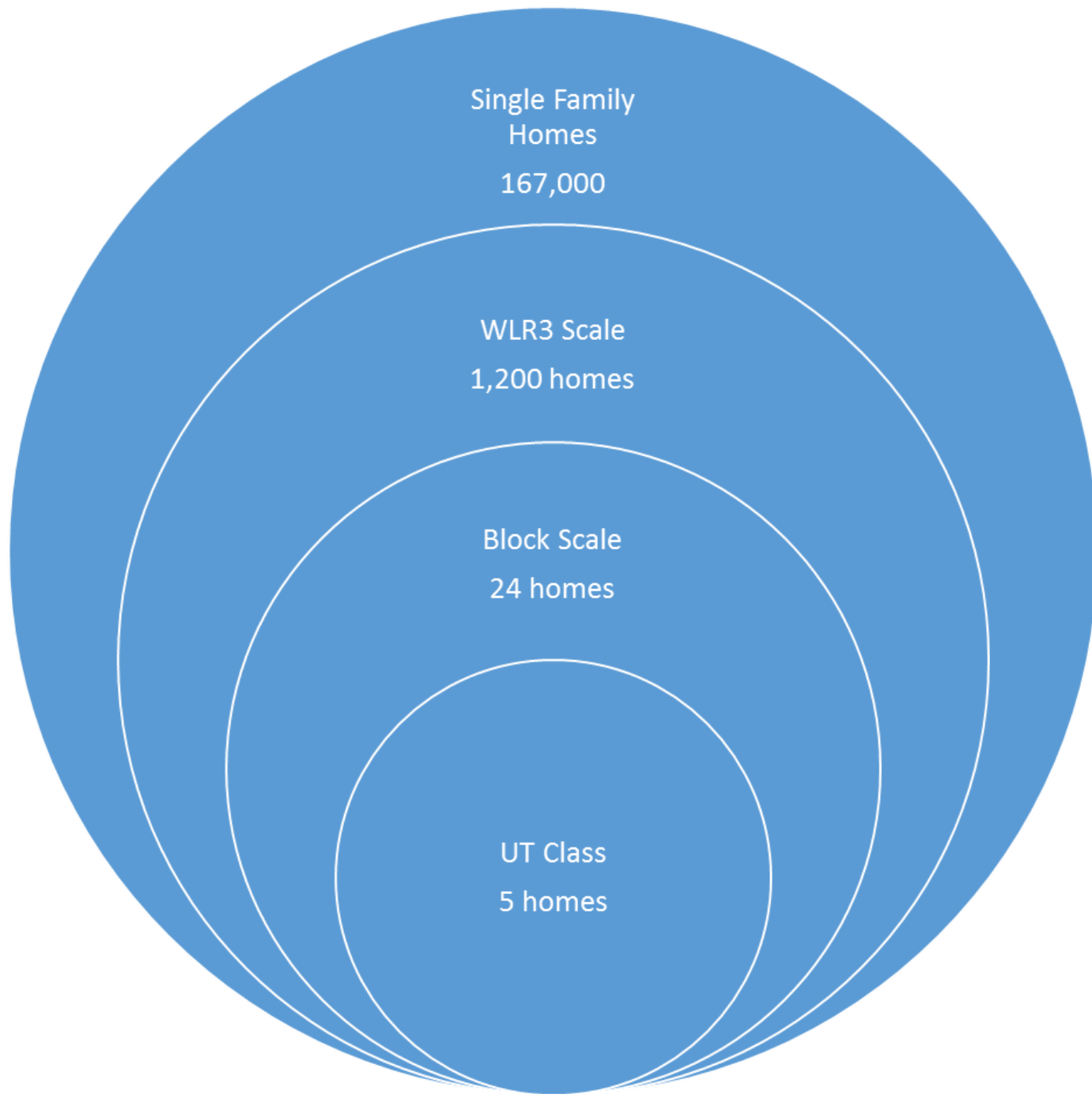


Watershed-scale GSI



Ratio of Baseflow/Total Flow







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Monitoring: Riparian Functional Assessment

