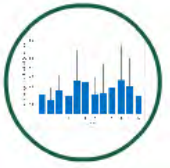
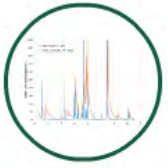
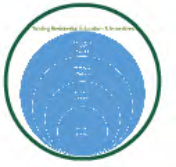
Urban Hydrology Restoration

The problem (s)




City of Austin
WATERSHED PROTECTION

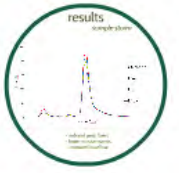


How do we implement it?


The solution?



A watershed scale pilot



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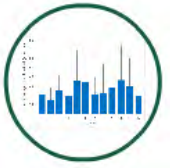

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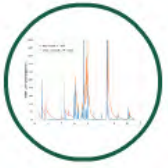


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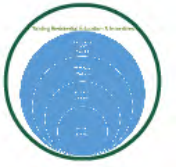
WATERSHED PROTECTION



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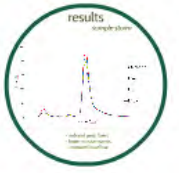

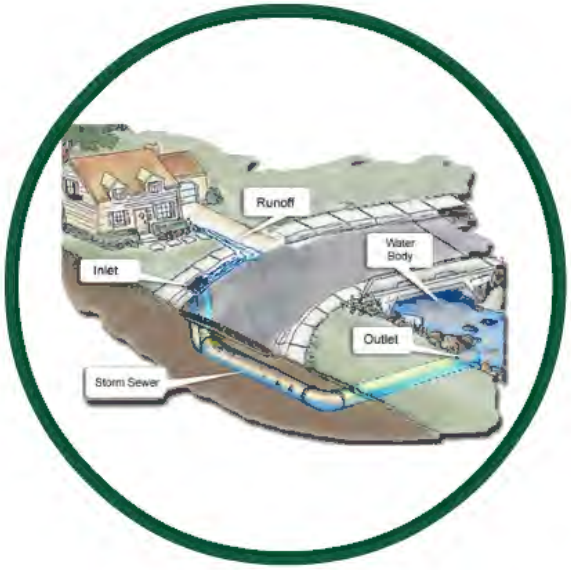

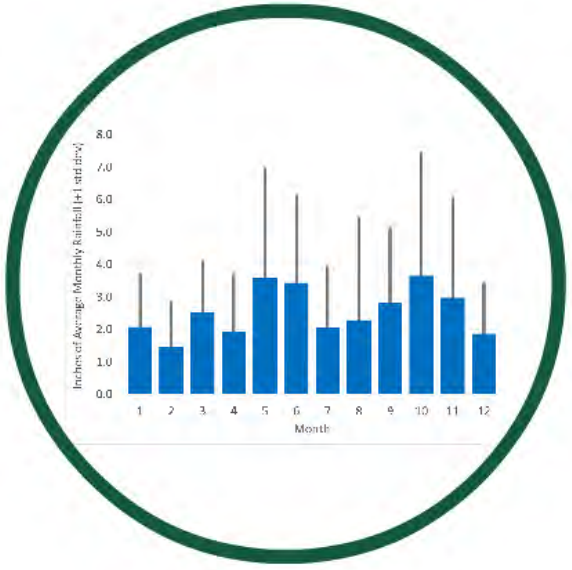

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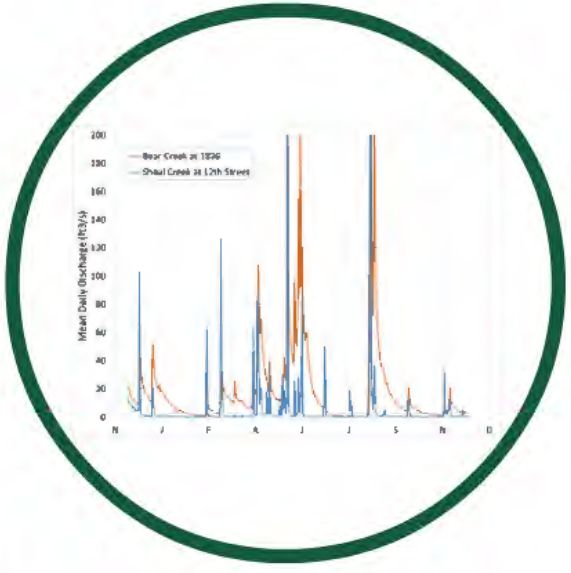
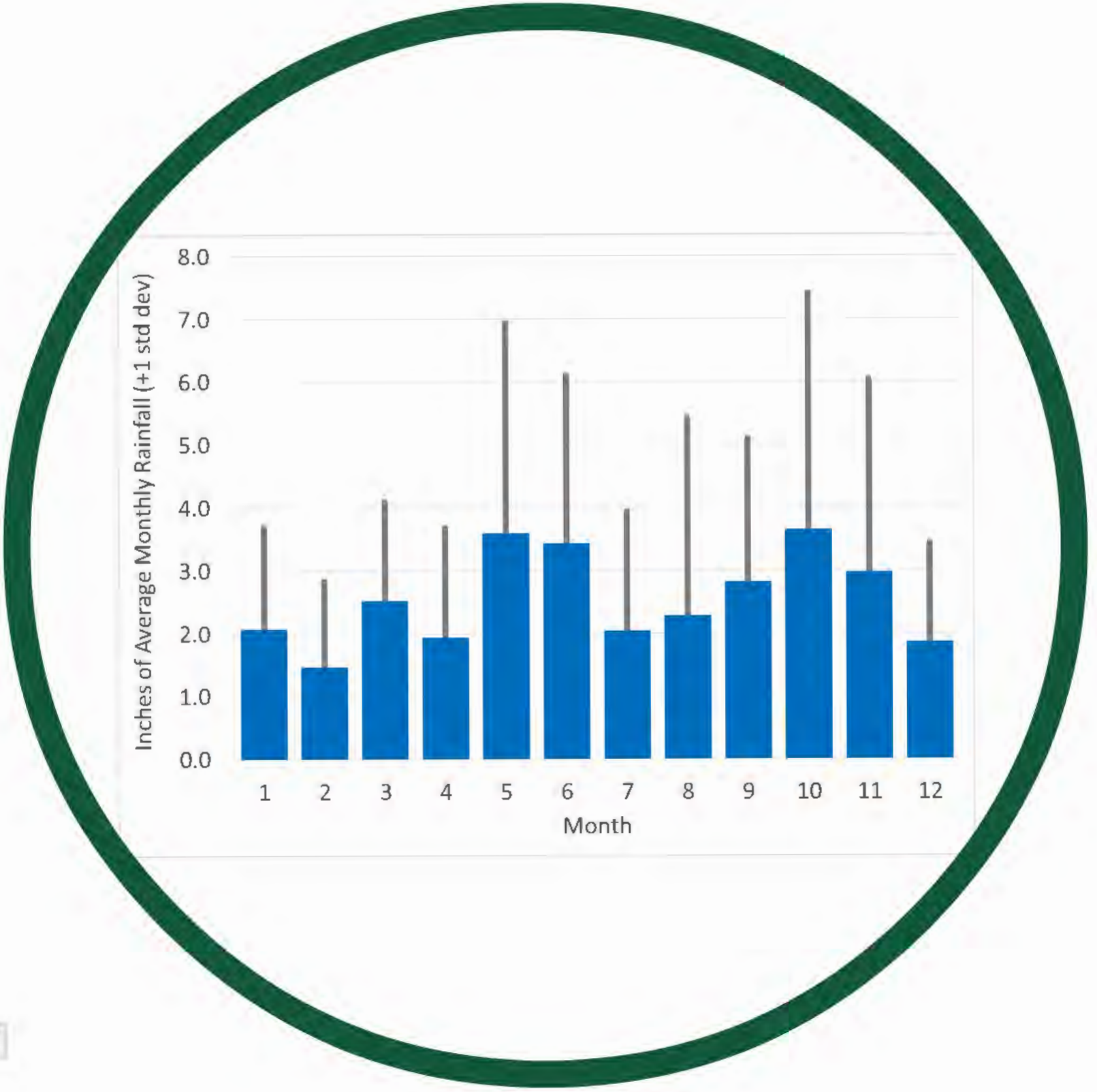
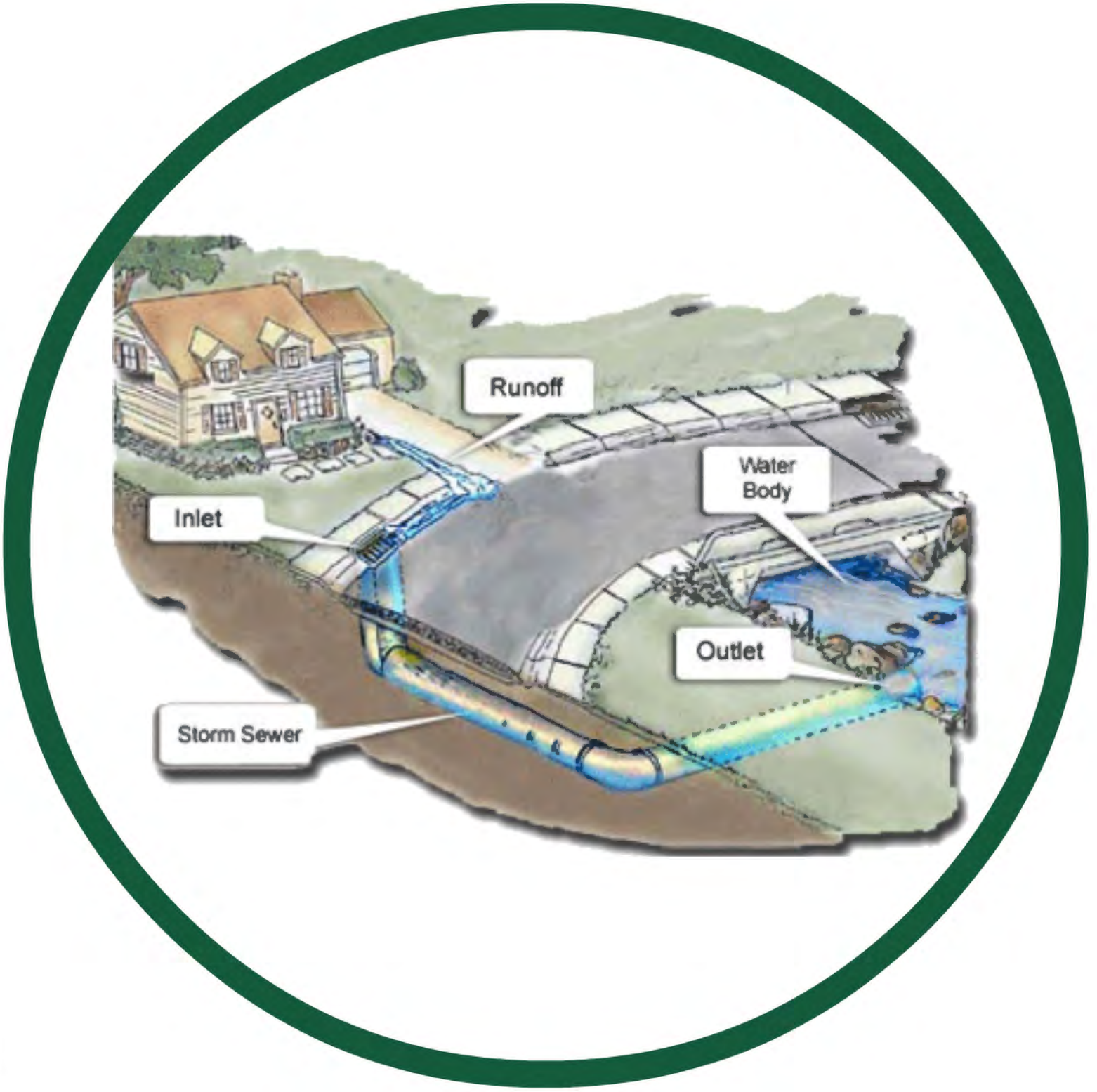
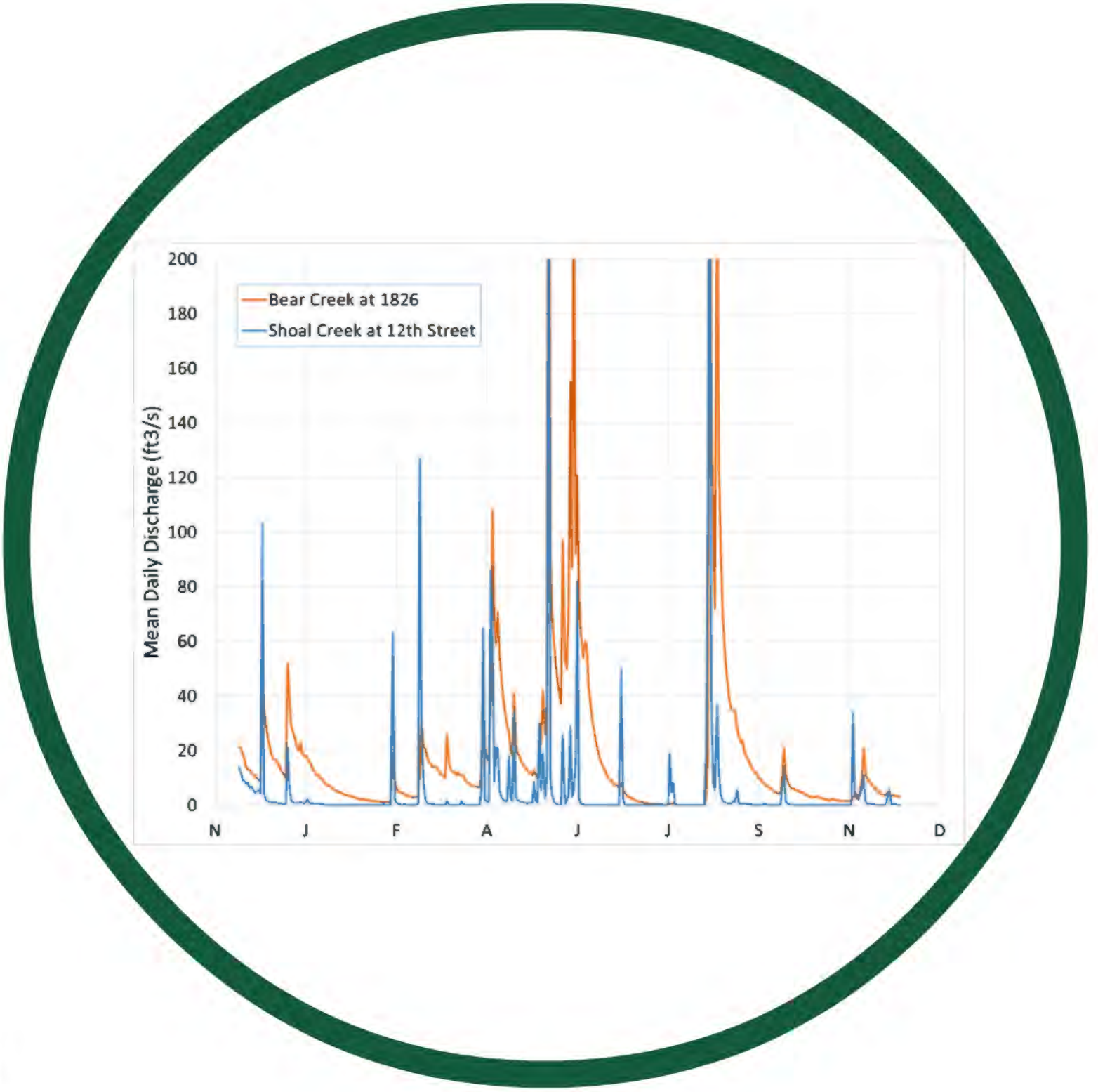



Inches of Average Monthly Rainfall (+1 std dev)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1
2
3
4
5
6
7
8
9
10
11
12
Month


Runoff
Water Body
Inlet
Outlet
Storm Sewer


Bear Creek at 1826
Shoal Creek at 12th Street
Mean Daily Discharge (ft3/s)
200
180
160
140
120
100
80
60
40
20
0
N
J
F
A
J
J
S
N
D


29%

The solution?

Storage
regional or decentralized?

massively distributed public and private land

potential benefits
when rain is a resource

hydrological rehabilitation
reduced pollutant loading
localized drainage solutions
potable water saving
increased resiliency to drought in upland areas
improved tree establishment and tree health
increased evapotranspiration and heat island mitigation
potential green jobs

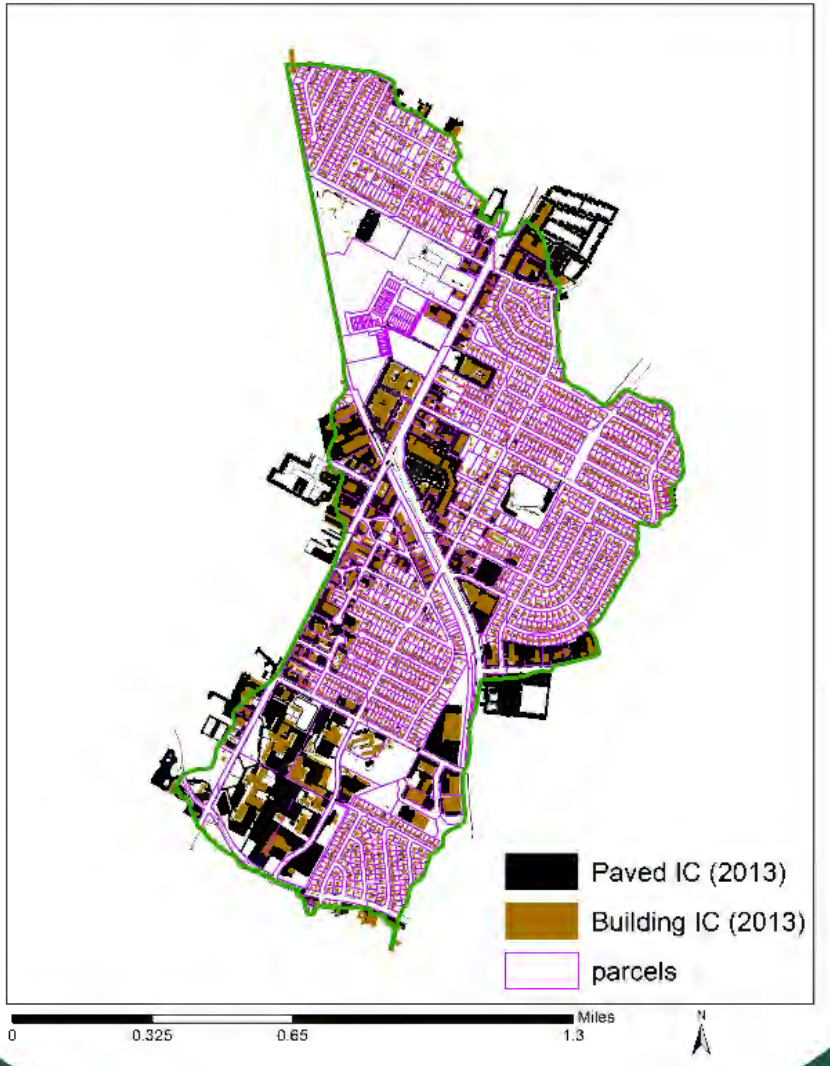
addressing the cause

water focus
resource
asset

Storage

regional or decentralized?

massively distributed public and private land



addressing the cause

water focus

resource

asset

potential benefits

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reduced pollutant loading
localized drainage solutions
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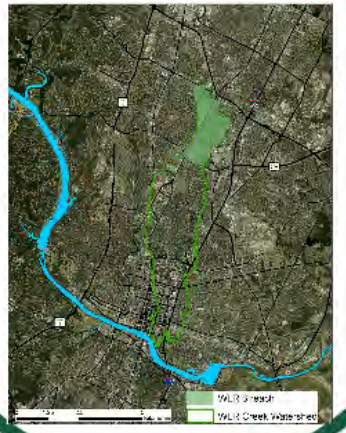
testing an alternative service delivery model



fully urbanized
small
baseline data

what we learned

- hydrology shifts proportional to density of treatments
- hydrological change takes place even though transportation was not included in the modeling
- potential reduction in ~25% effective IC

A watershed scale pilot

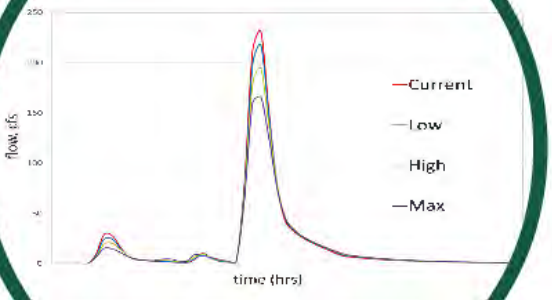
proof of concept modeling

can distributed stormwater controls create a departure in urban hydrology?

what reduction in effective impervious cover can be achieved?

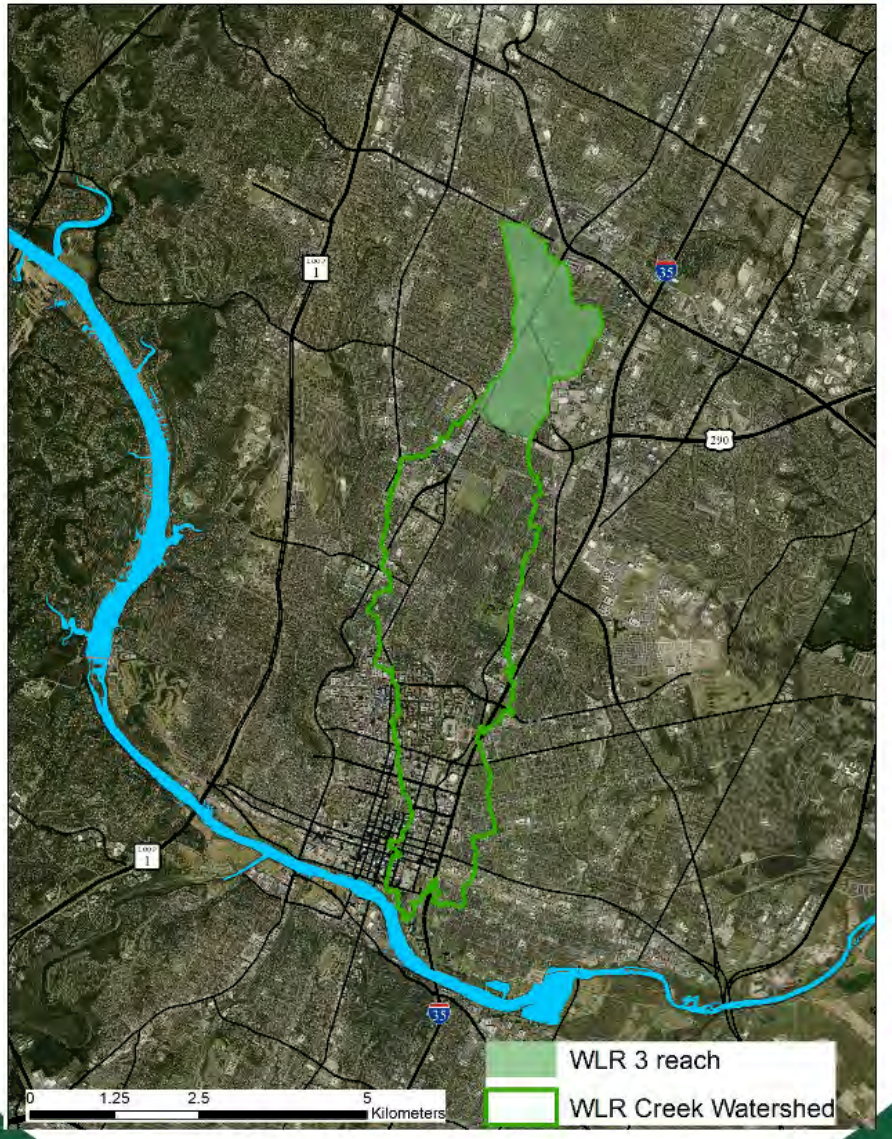
results

sample storm



- reduced peak flows
- fewer erosive events
- increased baseflow

testing an alternative service delivery model



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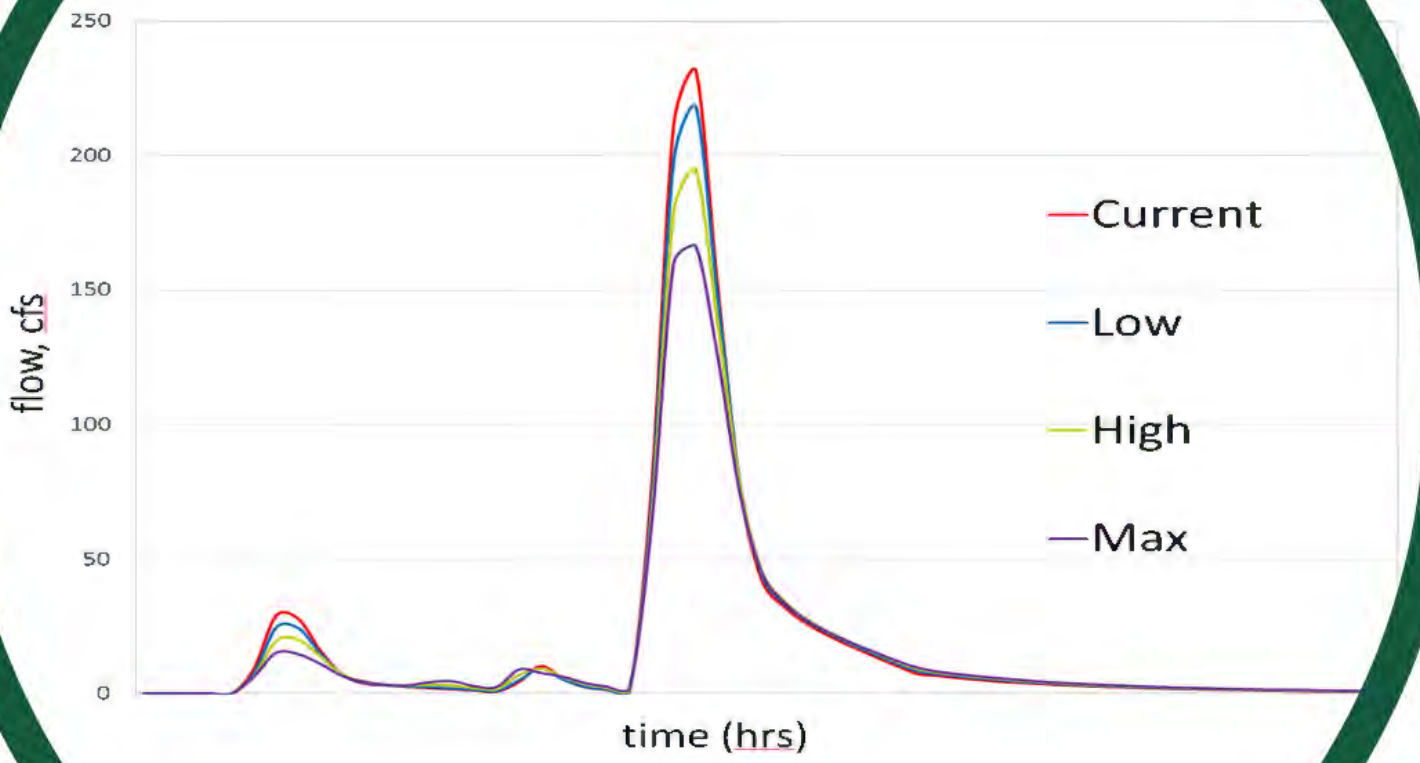

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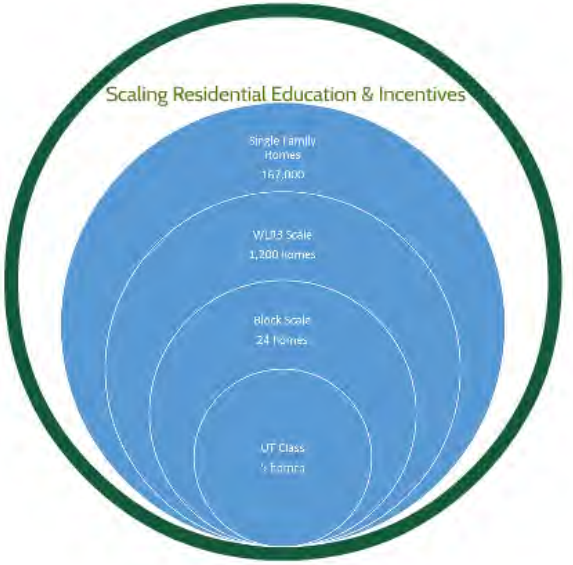
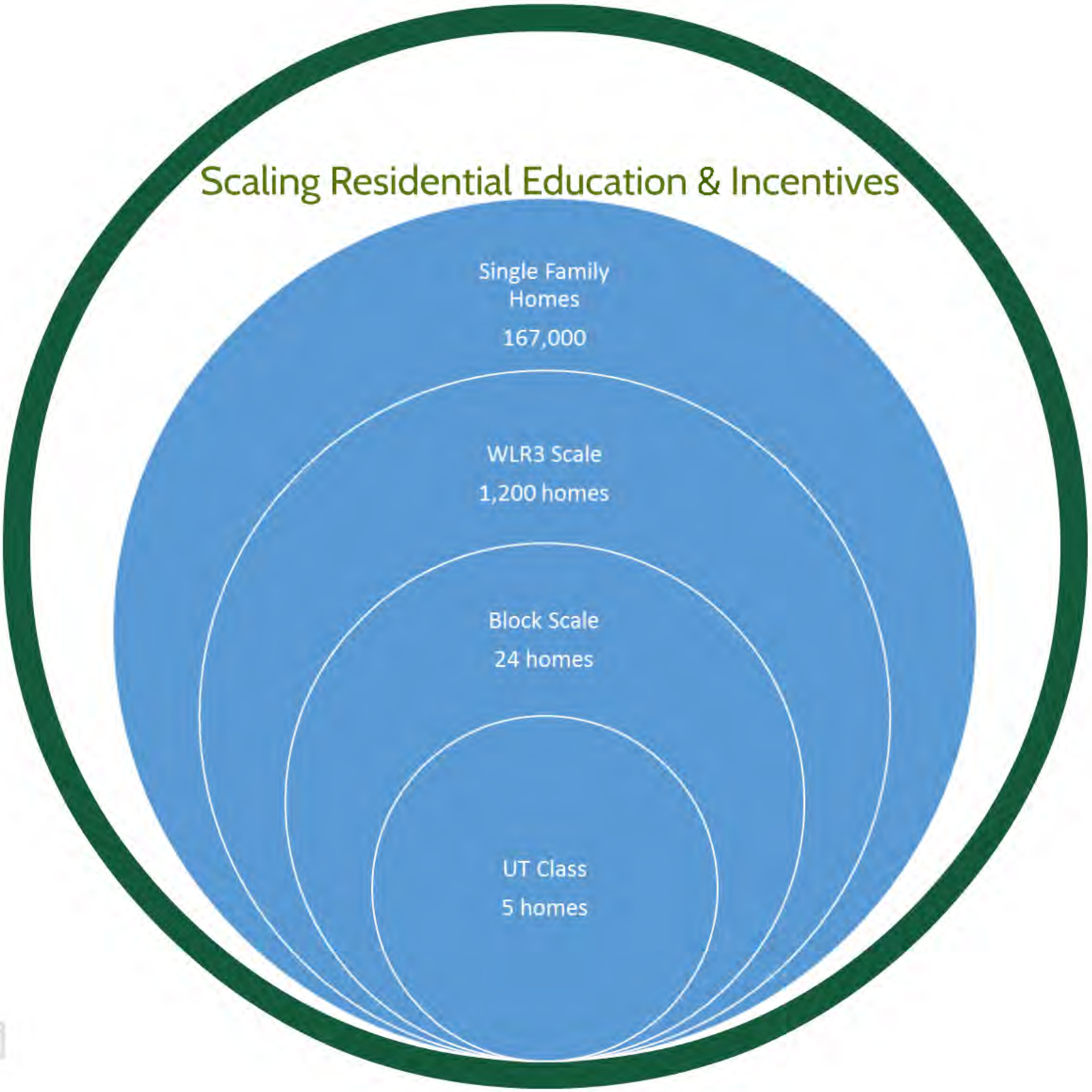


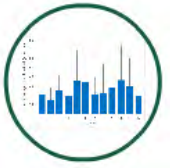
How do we implement it?


Demonstration Projects
Residential
I ♥ RAIN
Right of Way & Public Land
Commercial

Reilly Elementary


Scaling Residential Education & Incentives
Single Family Homes
167,000
WLR3 Scale
1,200 homes
Block Scale
24 homes
UT Class
5 homes

Urban Hydrology Restoration

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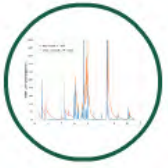


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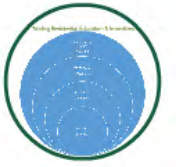
WATERSHED PROTECTION



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