COLLECTIVE IMPACT FOR RESILIENT CITIES:

How innovation in planning and design can help cities accomplish more

KATIE COYNE, AICP, SITES AP,
CERTIFIED ECOLOGIST - ESA

SENIOR PLANNER/
ECOLOGIST

MS COMMUNITY AND REGIONAL PLANNING UNIVERSITY OF TEXAS

MS SUSTAINABLE DESIGN
UNIVERSITY OF TEXAS

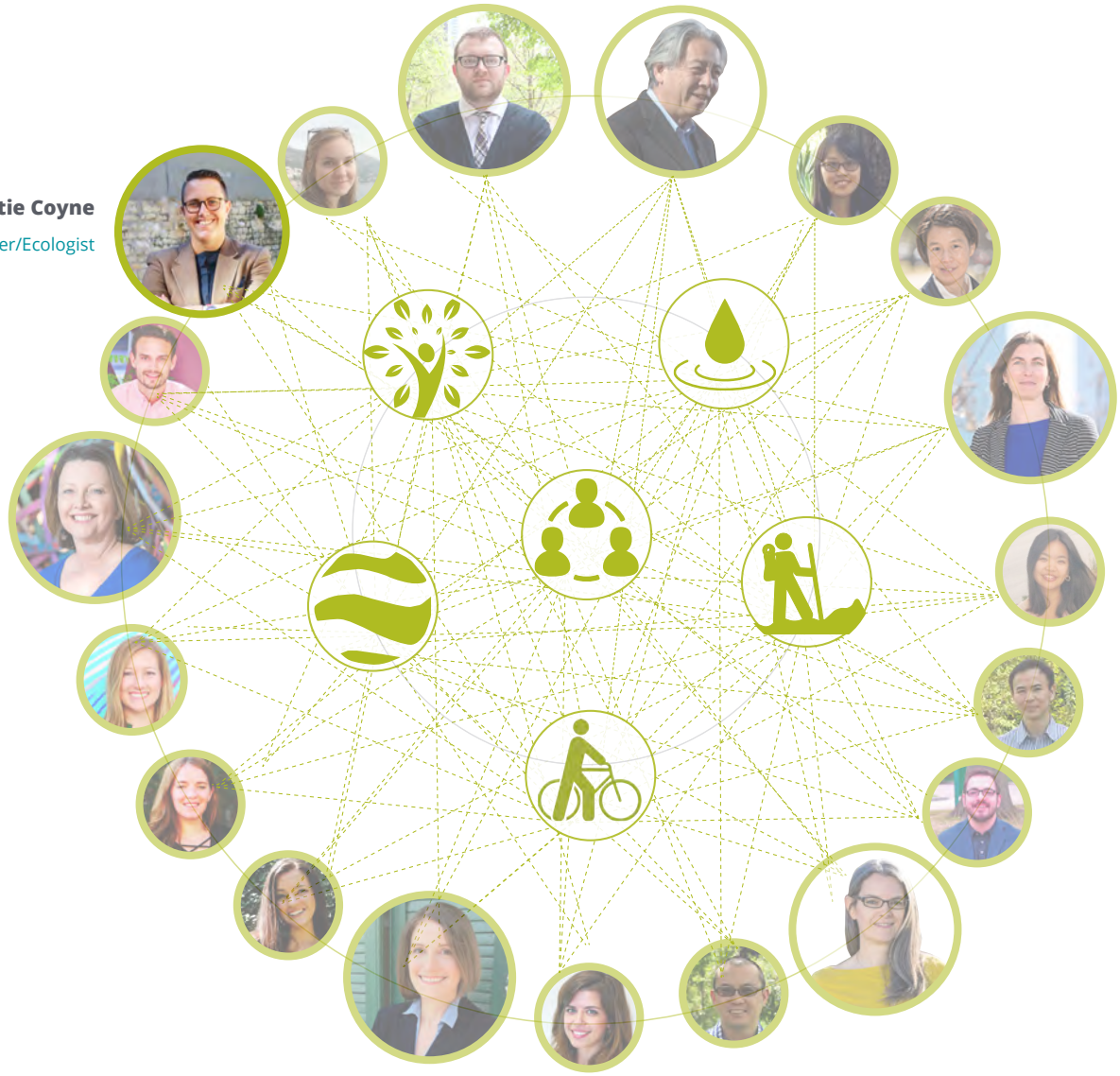
BS ECOLOGY
UNIVERSITY OF FLORIDA

asakura robinson

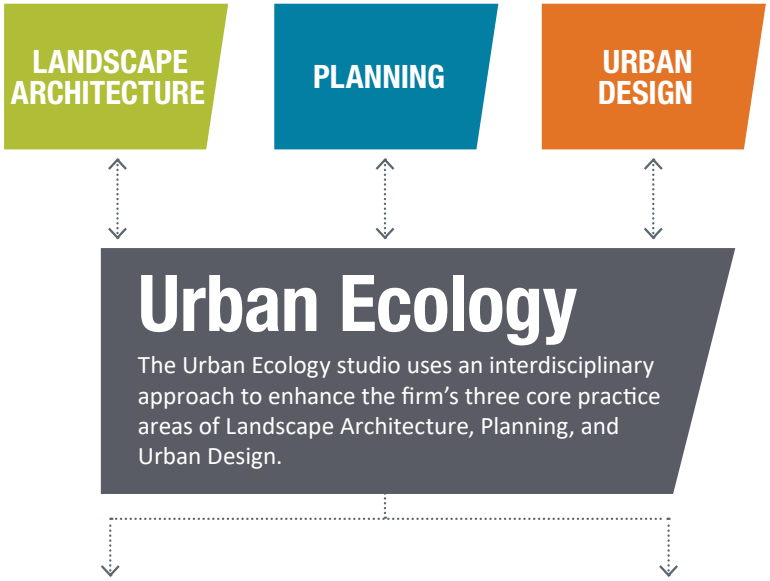
WHO WE ARE

Asakura Robinson is a planning, urban design, and landscape architecture firm which strengthens environments and positively impacts communities through innovation, engagement, stewardship, and an integrated design and planning process.

Katie Coyne
Senior Planner/Ecologist



THE URBAN ECOLOGY STUDIO



Urban Ecology

The Urban Ecology studio uses an interdisciplinary approach to enhance the firm's three core practice areas of Landscape Architecture, Planning, and Urban Design.

PRACTICE AREAS

- CONSERVATION + RESTORATION
- RESILIENCY FRAMEWORKS
- PARKS + OPEN SPACE
- GREEN INFRASTRUCTURE
- ECO-TOURISM

GOALS

- COMMUNITY INVESTMENT
- ECOLOGICAL FUNCTIONING
- PUBLIC HEALTH
- ACCESS TO NATURE + RECREATION
- MULTIFUNCTIONALITY
- CULTURAL PRESERVATION
- MOBILITY + CONNECTIVITY

WHAT ARE THE CORE VALUES OF YOUR PRACTICE?

WHO AM I?

FIRST JOB
Girl Scout Counselor and Lifeguard

UNDERGRAD
B.S. Wildlife Ecology
University of Florida

OUTWARD BOUND
Outdoor Educator's Expedition

COLLEGE JOB
Mote Marine Lab Researcher

PLANNED PARENTHOOD
Admin

PEACE CORPS
Environmental Resource Volunteer

BARTENDING
Poker night

TEACHING
G-star School

GRAD SCHOOL
M.S. CRP / M.S. Sustainable Design
University of Texas

GAINFULLY EMPLOYED
Asakura Robinson Company

CITY OF AUSTIN
Environmental Commission & Joint Sustainability Committee

TRAIL FOUNDATION
Ecological Restoration Committee

EQUALITY TEXAS
Board Member & Diversity and Inclusion Chair

MAIN POINTS

1. FRAMEWORKS, LANGUAGE, AND SCALES
2. VALUES TRANSLATE TO GOALS
3. SYSTEMS THINKING
4. MULTIFUNCTIONALITY
5. IN PRACTICE

AGENTS OF CHANGE

SCIENTIFIC RESEARCH
studying change

QUESTIONS THEY MIGHT ASK:

1. How are systems not performing resiliently?

2. What makes systems resilient?

AGENTS OF CHANGE

SCIENTIFIC RESEARCH
studying change

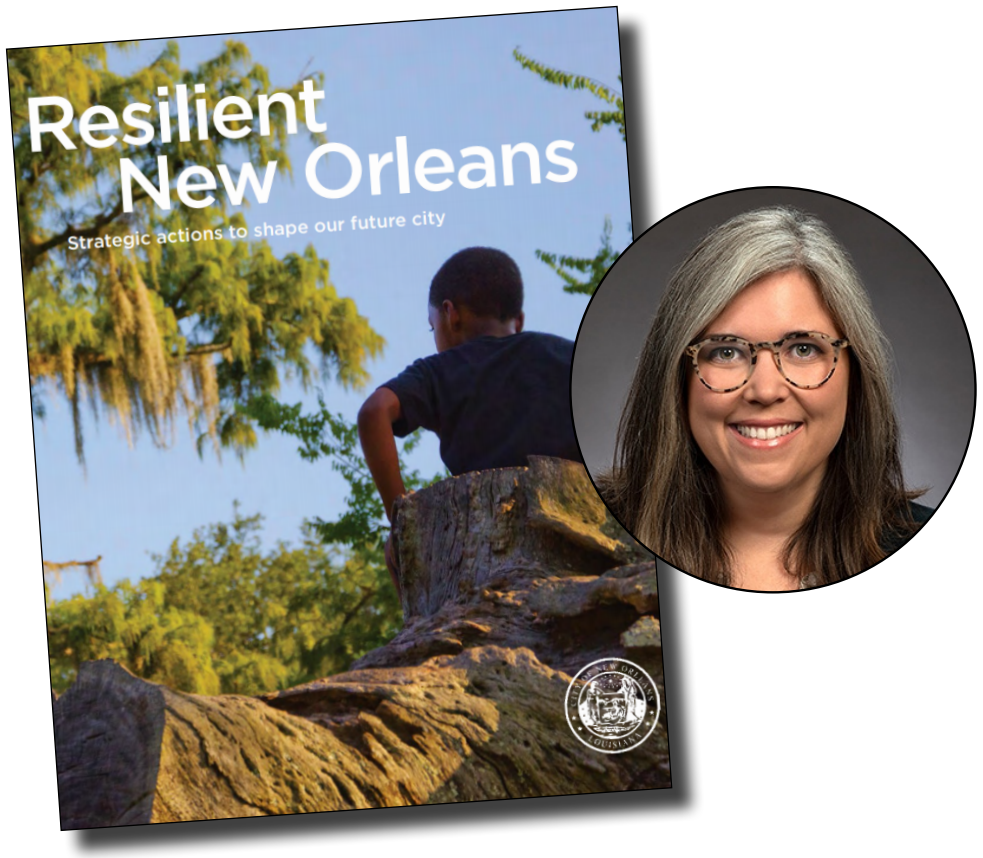
↔

PLANNING AND POLICY
managing change

QUESTIONS THEY MIGHT ASK:

1. What framework of policies and practices will result in the most resilient outcomes?

2. What science and data should inform the framework?



AGENTS OF CHANGE

SCIENTIFIC RESEARCH
studying change

PLANNING AND POLICY
managing change

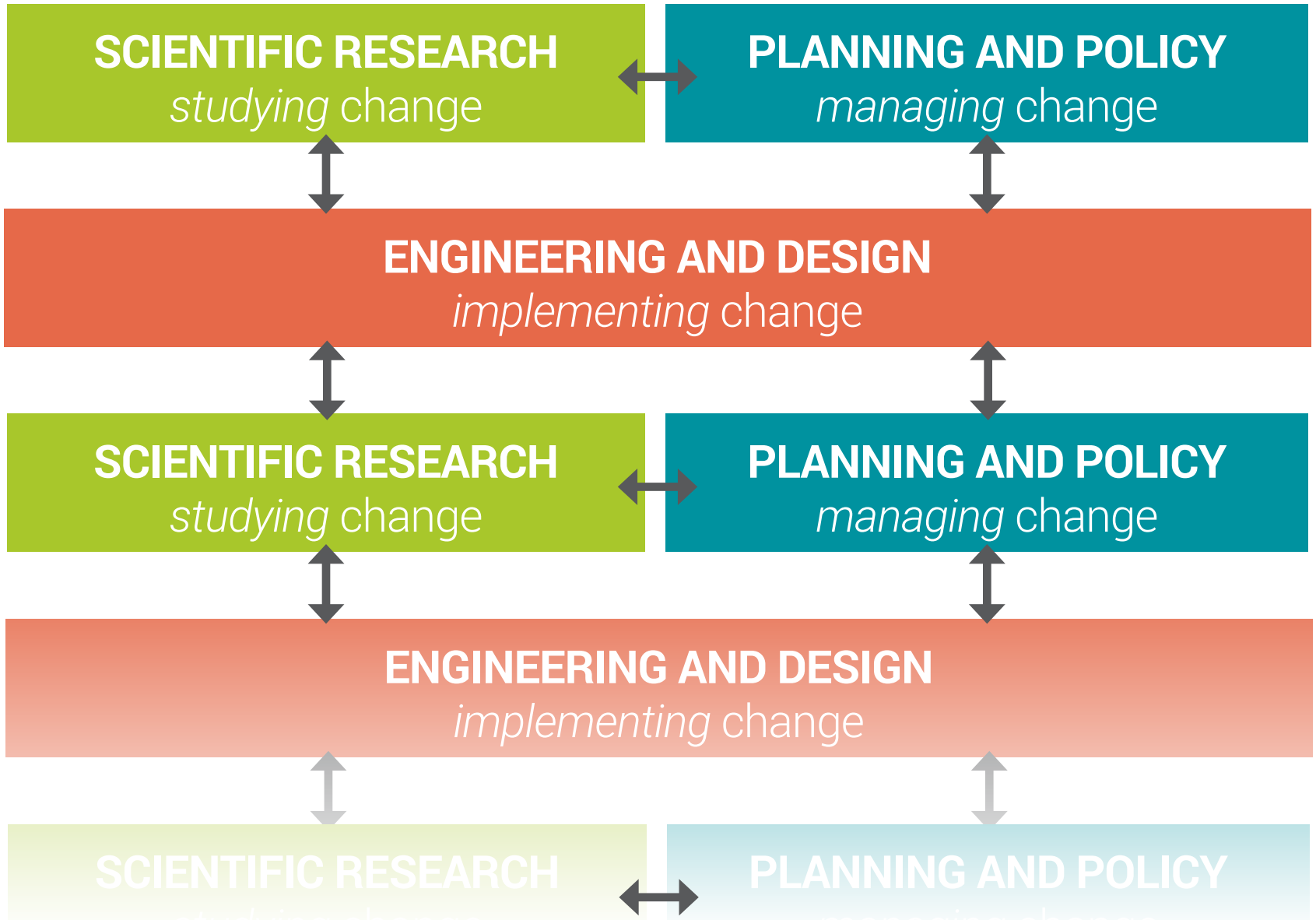
ENGINEERING AND DESIGN
implementing change

QUESTIONS THEY MIGHT ASK:

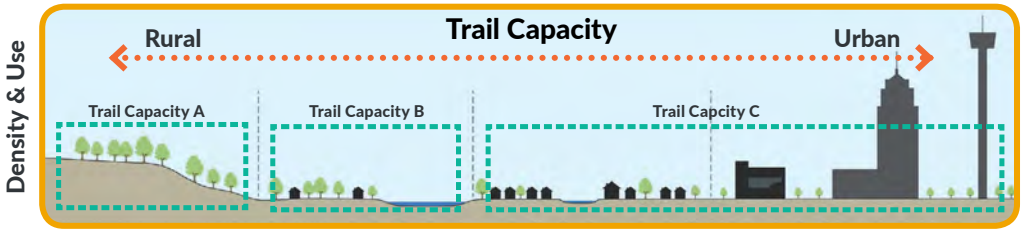
1. What policy or practice framework exists where I am doing work - i.e. how do I implementat a design on the ground?

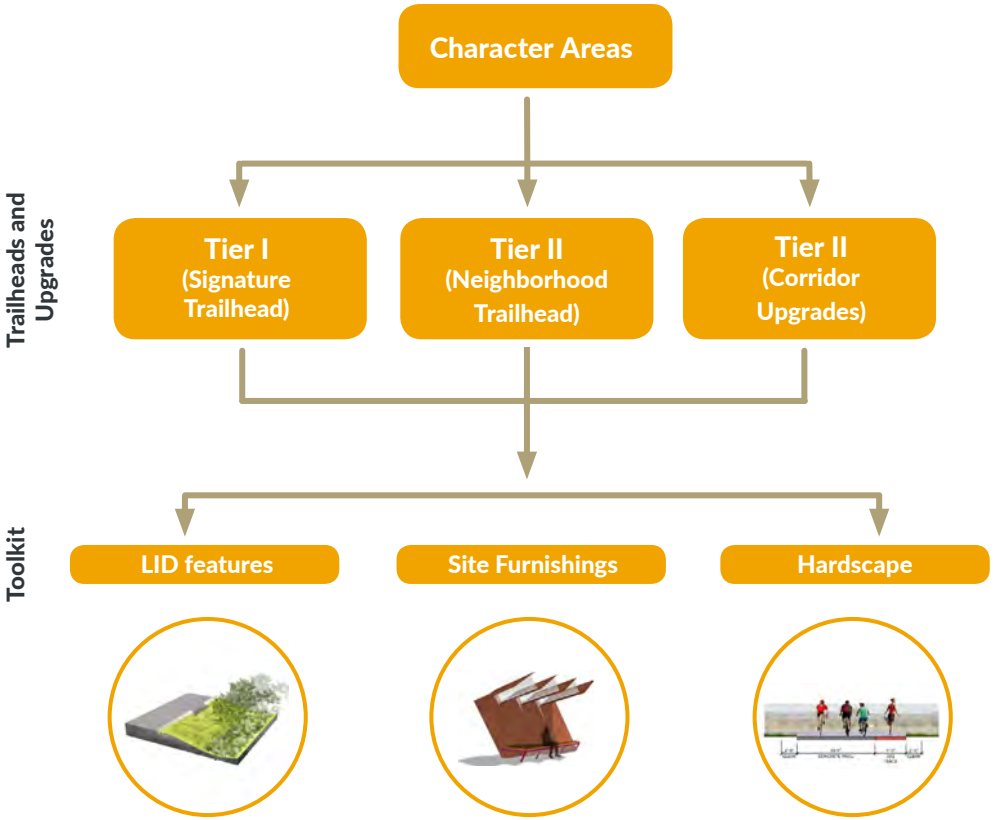
2. What science and data should inform a design concept in implementation?

AGENTS OF CHANGE



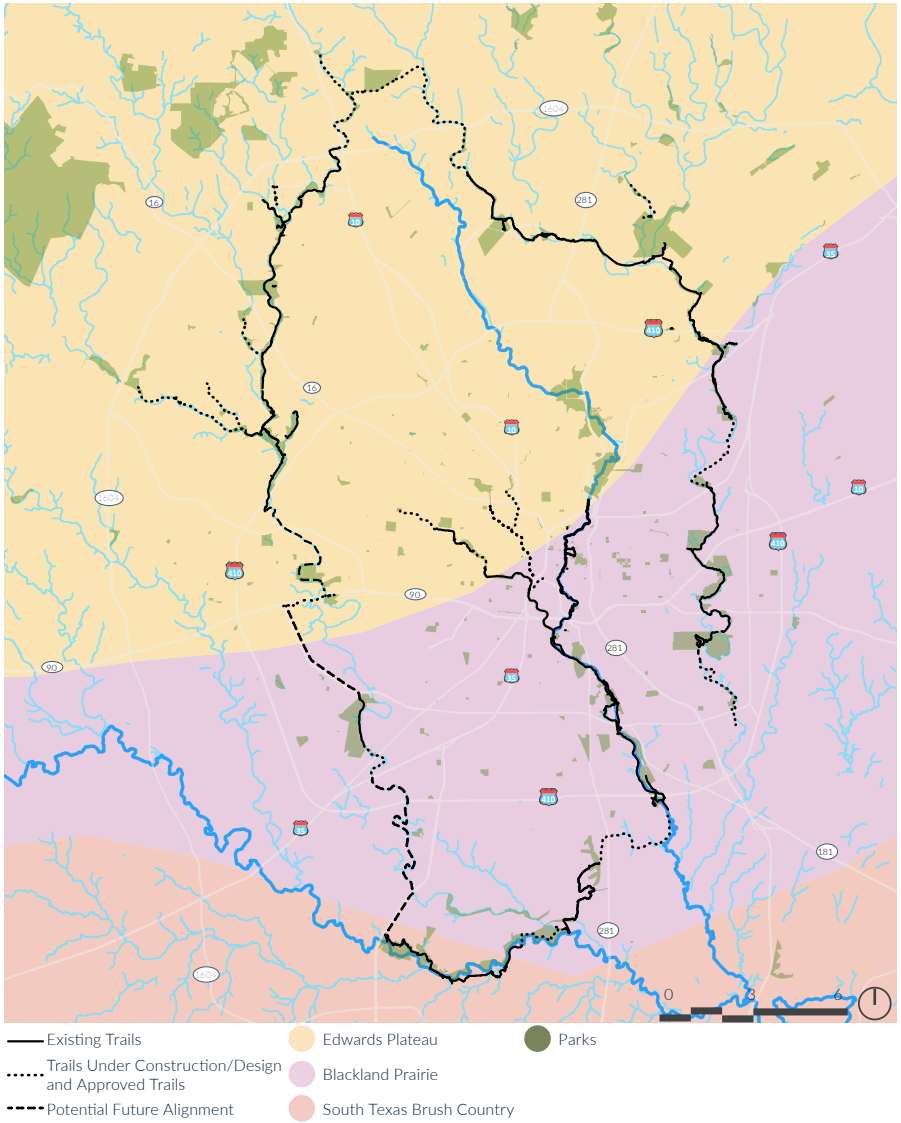
SAN ANTONIO TRAIL DESIGN STRATEGY





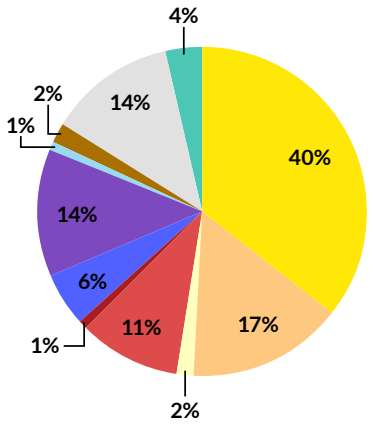
SAN ANTONIO TRAIL DESIGN STRATEGY

BIOREGIONS

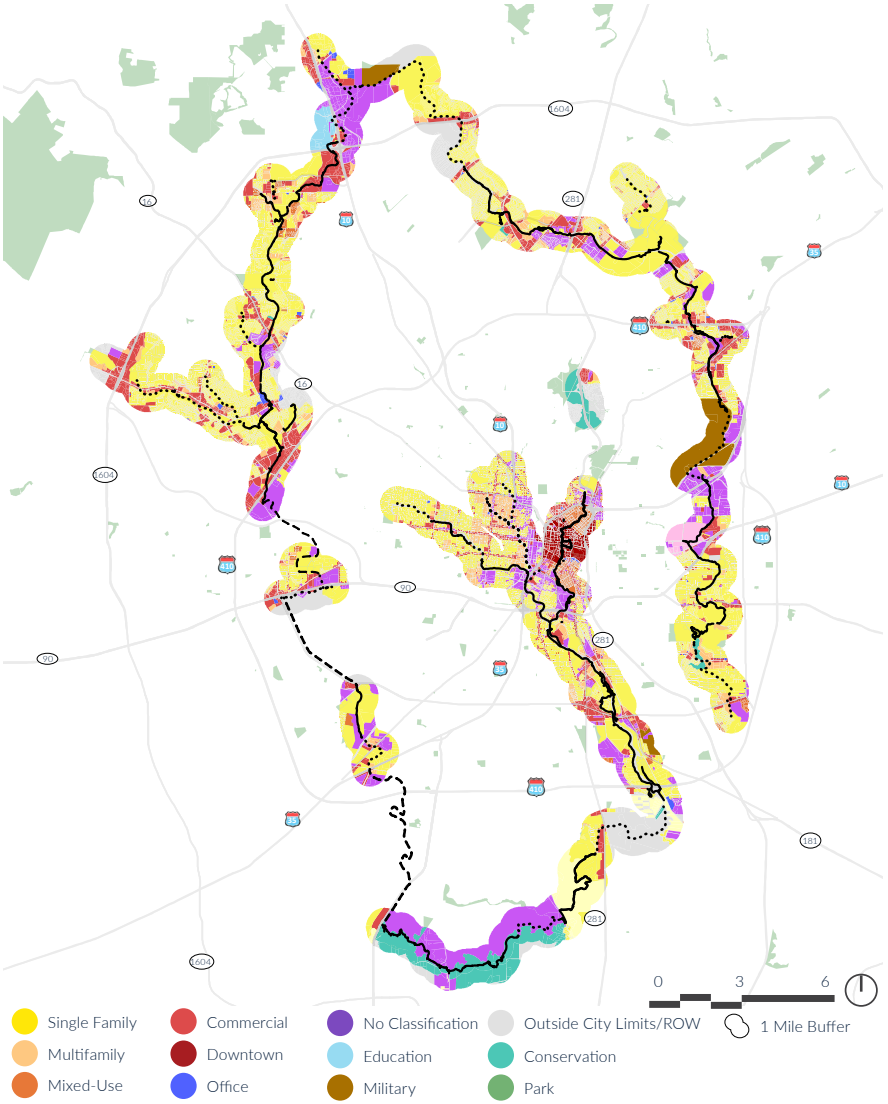


SAN ANTONIO TRAIL DESIGN STRATEGY

CURRENT LAND USE SHARE NEAR TRAILS



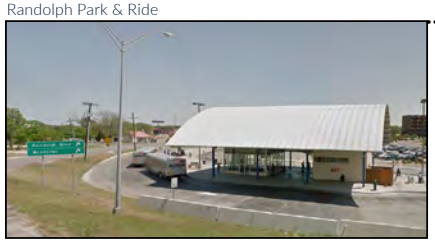
CURRENT LAND USE NEAR TRAILS



SAN ANTONIO TRAIL DESIGN STRATEGY

TRANSIT NEAR TRAILS

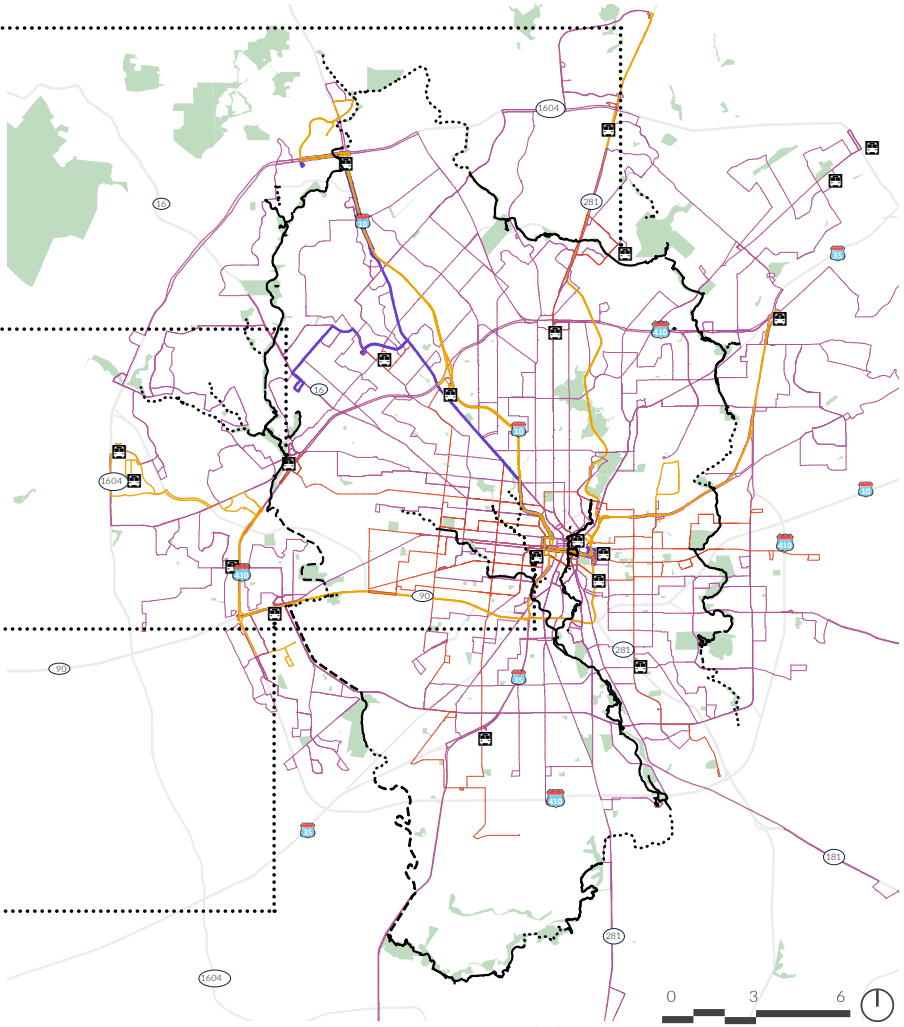
Randolph Park & Ride



Ingram Transit Center

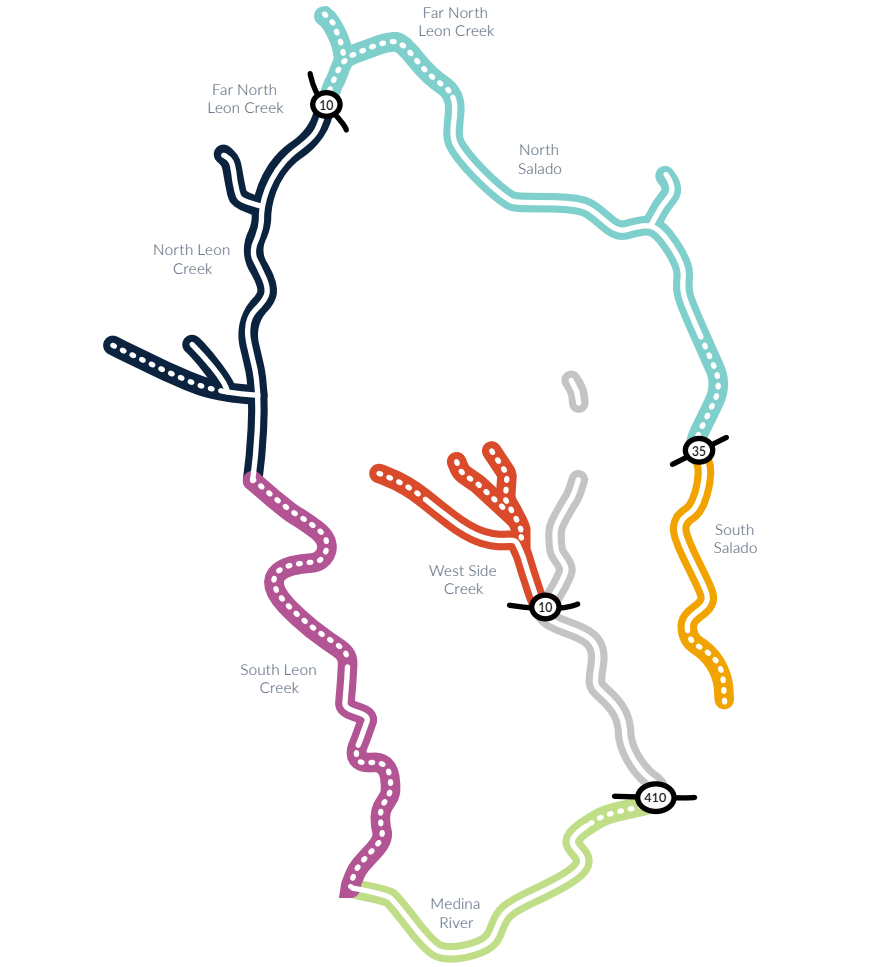
Centro Plaza Transit Center, VIA Metro Transit

VIA Kel-Lac Transit Center



SAN ANTONIO TRAIL DESIGN STRATEGY

SYSTEM CHARACTER MAP



SAN ANTONIO TRAIL DESIGN STRATEGY

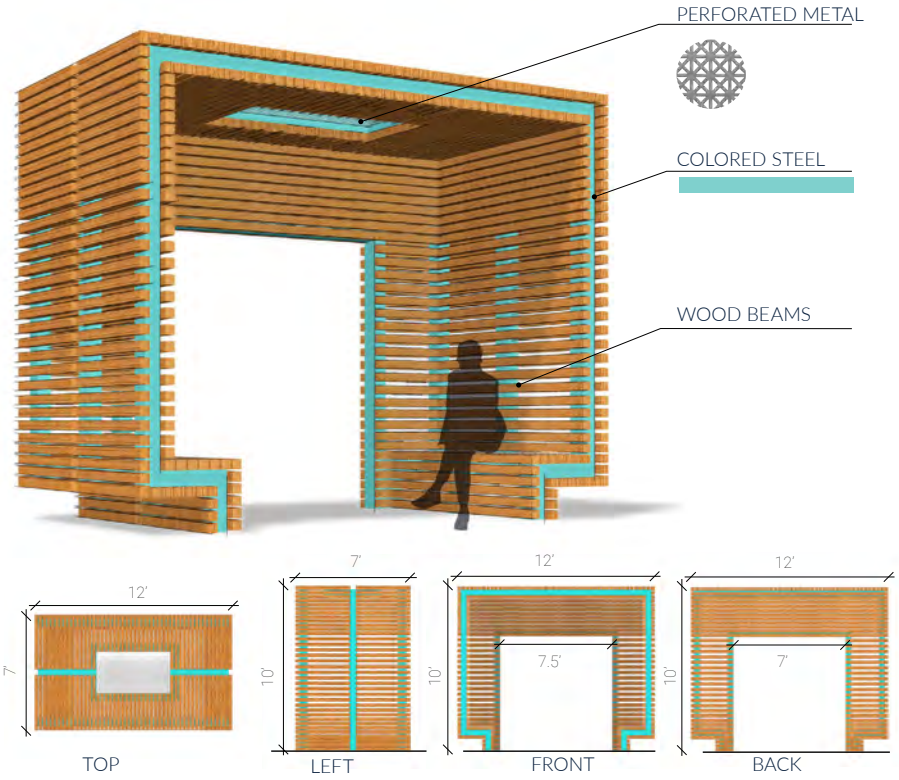
SHADE STRUCTURE

Inspired by a modern design aesthetic and the dominant tree cover character of Salado Creek, the shade structure consists of offset wood beams supported by steel "ribs". The wrapped walls provide maximum solar protection while the spacing allows for visual transparency while a perforated metal "skylight" casts intricate patterns onto the floor below.

CHARACTER AREA COLOR

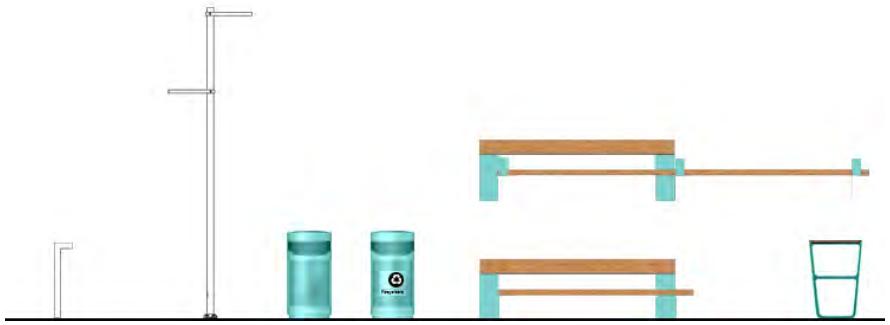
Artesian Blue

Under Development



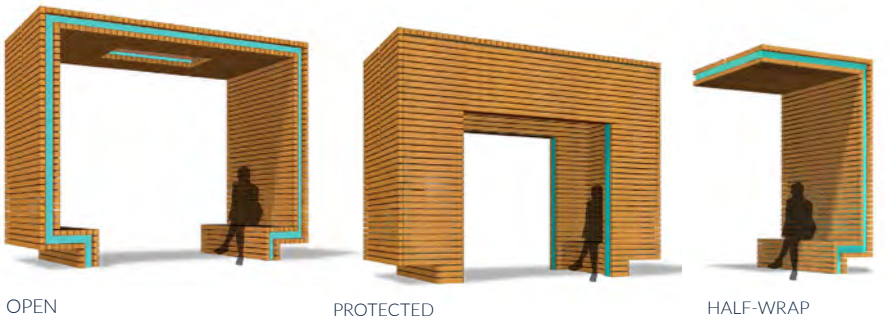
FURNISHINGS

Under development

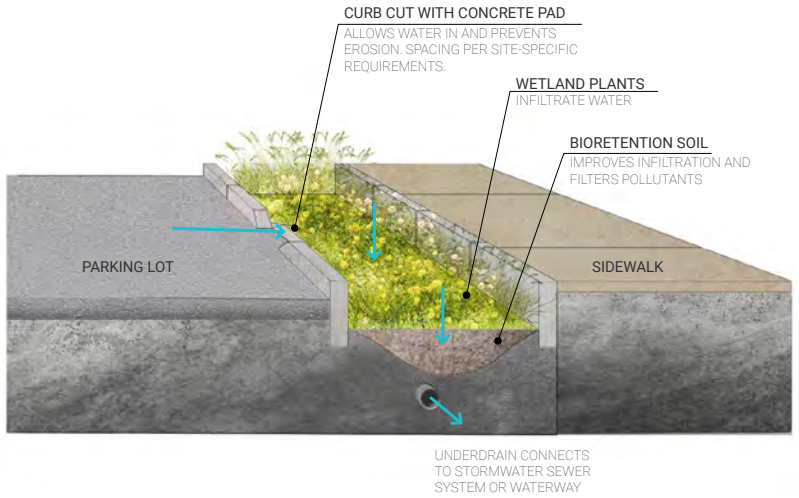


ALTERNATES

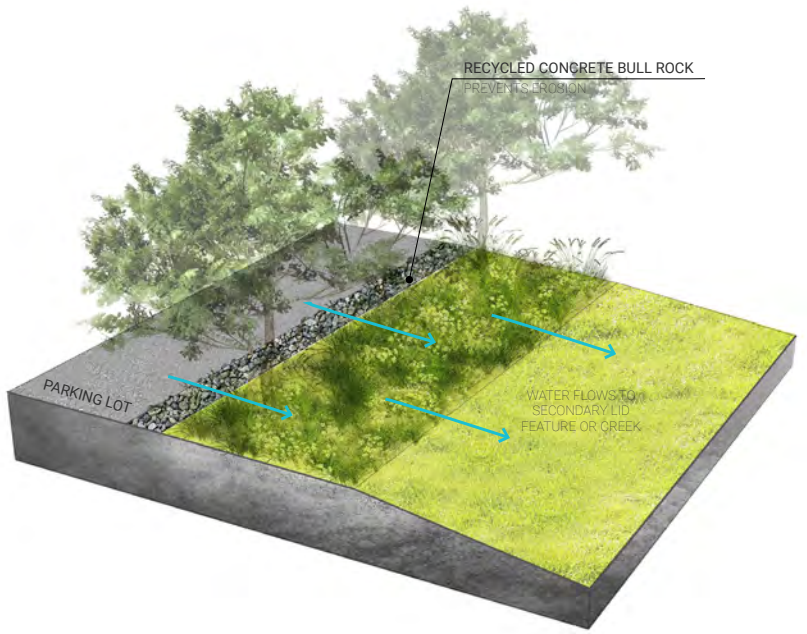
Under development



SAN ANTONIO TRAIL DESIGN STRATEGY



Bioswale



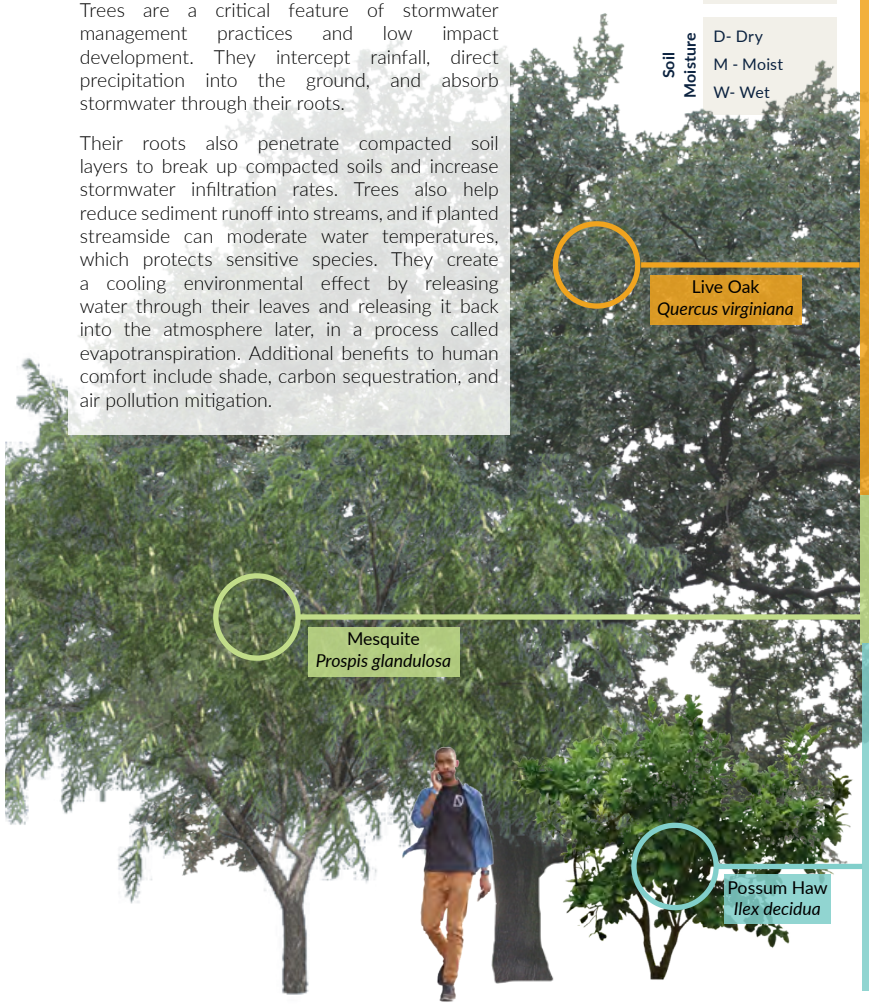
Vegetated Filter Strip

SAN ANTONIO TRAIL DESIGN STRATEGY

TRAIL DESIGN STRATEGY
SAN ANTONIO

Trees are a critical feature of stormwater management practices and low impact development. They intercept rainfall, direct precipitation into the ground, and absorb stormwater through their roots.

Their roots also penetrate compacted soil layers to break up compacted soils and increase stormwater infiltration rates. Trees also help reduce sediment runoff into streams, and if planted streamside can moderate water temperatures, which protects sensitive species. They create a cooling environmental effect by releasing water through their leaves and releasing it back into the atmosphere later, in a process called evapotranspiration. Additional benefits to human comfort include shade, carbon sequestration, and air pollution mitigation.



Sun Needs
- Sun
- Part Shade
- Shade

Soil Moisture
- D- Dry
- M - Moist
- W- Wet

	Common Name	Latin Name	Size	Shade Provision	Sun Needs	Water Needs	Soil Moisture	Riparian Restoration	Bioswale	Bioretention Basin	Vegetated Filter Strip
TALL SHADE TREES 40-60+ Feet	Black Willow	*Salix nigra*	L	max. 875 sf	☼ ◐ ●	High	M, W	●	●	●	
	Bur Oak	*Quercus macrocarpa*	L	max 1200 sf	☼ ◐	Medium	D, M				●
	Cedar Elm	*Ulmus crassifolia*	L	max 875 sf	◐	Medium	M	●	●	●	●
	Chinquapin Oak	*Quercus muhlenbergii*	L	max 875 sf	☼ ◐	Medium	D				●
	Mexican Sycamore	*Platanus mexicana*	L	max 1200 sf	☼ ◐	High	D,M,W		●	●	●
	Hackberry	*Celtis spp.*	L	max 875 sf	☼ ◐ ●	Low	D, M	●			●
	Bald Cypress	*Taxodium distichum*	L	max 1200 sf	☼ ◐	Medium	M	●	●	●	●
	Live Oak	*Quercus virginiana*	L	max 875 sf	☼ ◐	Medium	M				●
	Anaqua	*Ehretia anacua*	L	max 875 sf	☼ ◐	Low	D				●
	Pecan	*Carya illinoinensis*	L	max 1200 sf	☼	High	M				●
MEDIUM TREES 25-40 Feet	Huisache	*Vachellia farnesiana*	M	max 550 sf	☼	Low	D				●
	Eve's Necklace	*Styphnolobium affine*	M	max 875 sf	◐	Low	D	●	●	●	●
	Mesquite	*Prospis glandulosa*	M	max 250 sf	☼	Low	D				●
	Carolina Buckthorn	*Frangula caroliniana*	M	max 250 sf	☼ ◐	Medium	M				●
SHORT TREES 15-25 Feet	Texas Crabapple	*Malus ioensis var. texana*	S	too short to shade	☼	Medium	M				●
	Kidneywood	*Eysenhardtia texana*	S	too short to shade	☼	Low	D				●
	Mexican Buckeye	*Ungnadia speciosa*	S	too short to shade	☼ ◐	Low	D				●
	Rusty Blackhaw	*Viburnum rufidulum*	S	too short to shade	☼ ◐	Low	D, M, W		●	●	●
	Texas Mountain Laurel	*Sophora secundiflora*	S	too short to shade	☼ ◐	Low	D, M				●
	Possumhaw	*Ilex decidua*	S	too short to shade	☼ ◐	Medium	M	●	●	●	●

MAIN POINTS

1. FRAMEWORKS, LANGUAGE, AND SCALES
2. VALUES TRANSLATE TO GOALS
3. SYSTEMS THINKING
4. MULTIFUNCTIONALITY
5. IN PRACTICE

WHAT IS GREEN INFRASTRUCTURE?

- your definition

WHAT IS GREEN INFRASTRUCTURE?

- your definition
- in academic literature

WHAT IS GREEN INFRASTRUCTURE?

- your definition
- in academic literature
- for engineers

WHAT IS GREEN INFRASTRUCTURE?

- your definition
- in academic literature
- for engineers
- for designers

WHAT IS GREEN INFRASTRUCTURE?

- your definition
- in academic literature
- for engineers
- for designers
- in Texas

WHAT IS GREEN INFRASTRUCTURE?

- your definition
- in academic literature
- for engineers
- for designers
- in Texas
- in New Orleans

WHAT IS GREEN INFRASTRUCTURE?

- your definition
- in academic literature
- for engineers
- for designers
- in Texas
- in New Orleans
- in Portland or New York

WHAT OTHER TERMS ARE USED?

HOW DO WE DEFINE RESILIENCE?

WHAT IS RESILIENCE?

re·sil·ience

/rəˈzilyəns/

noun

1. the capacity to recover quickly from difficulties; toughness.
   "the often remarkable resilience of so many British institutions"
2. the ability of a substance or object to spring back into shape; elasticity.
   "nylon is excellent in wearability and resilience"
   synonyms: flexibility, pliability, suppleness, plasticity, elasticity, springiness, spring, give; More

WHAT IS RESILIENCE?

ad·ap·ta·tion

/ˌadapˈtāSH(ə)n/

noun

the action or process of adapting or being adapted.
"the adaptation of teaching strategy to meet students' needs"
synonyms: converting, conversion, alteration, modification, adjustment, changing, transformation;
More

- a movie, television drama, or stage play that has been adapted from a written work, typically a novel.
  "filming her adaptation of a beloved children's book"
- BIOLOGY
  a change or the process of change by which an organism or species becomes better suited to its environment.
  "living in groups is an adaptation that increases the efficiency of hunting"

PARK SMART PRECINCT 1: TRANSLATING

Community Resiliency

Community resiliency is the ability for a community to utilize its collective resources to recover from and move forward after a negative impact. Community resiliency relies on leveraging community assets, which can generally be broken down into social, economic and environmental resources. When combined, these community resources are what build strong, resilient communities.

SOCIAL

- FAMILIES
- NEIGHBORHOOD GROUPS
- NEIGHBORHOOD SCHOOLS
- CHURCHES AND OTHER FAITH-BASED ORGANIZ ATIONS

ECONOMIC

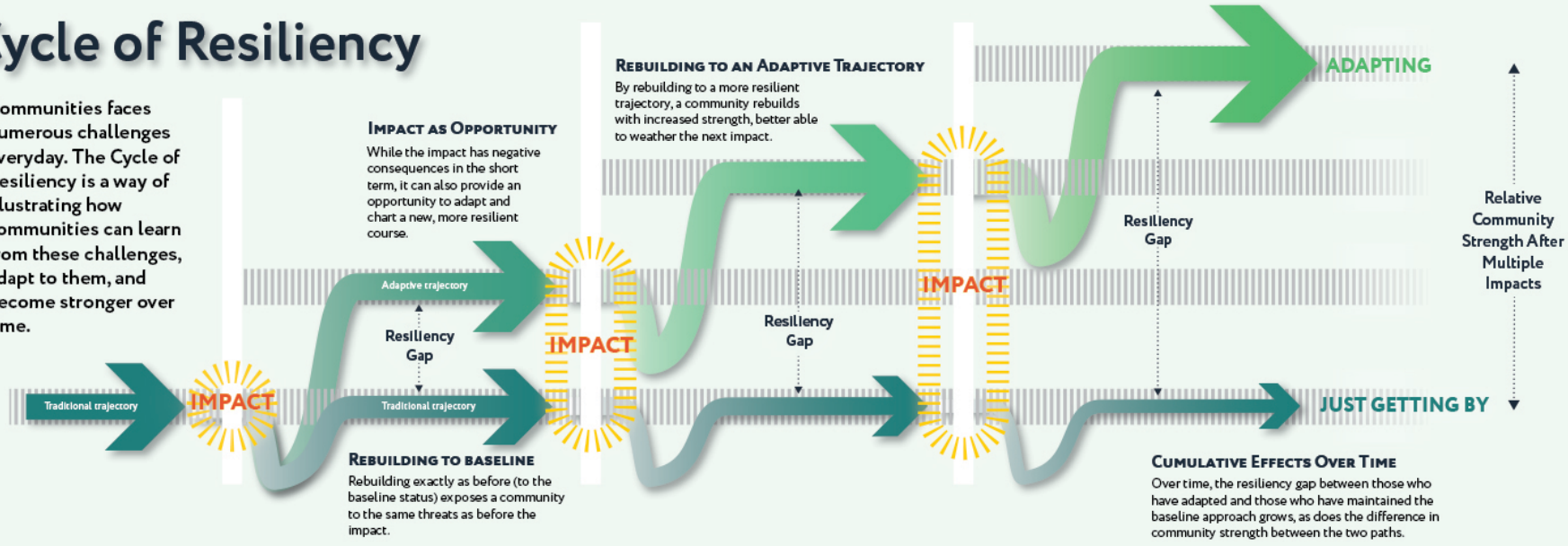
- LOCAL BUSINESSES
- LOCAL NON-PROFITS AND CHARITABLE ORGANIZATIONS
- FEDERAL, STATE, OR LOCAL GRANTS AND FUNDING SOURCES

ENVIRONMENTAL

- PARKS
- TRAILS
- HABITAT AREAS
- GREEN INFRASTRUCTURE

Cycle of Resiliency

Communities faces numerous challenges everyday. The Cycle of Resiliency is a way of illustrating how communities can learn from these challenges, adapt to them, and become stronger over time.



Impact as Opportunity

While the impact has negative consequences in the short term, it can also provide an opportunity to adapt and chart a new, more resilient course.

Rebuilding to an Adaptive Trajectory

By rebuilding to a more resilient trajectory, a community rebuilds with increased strength, better able to weather the next impact.

Rebuilding to Baseline

Rebuilding exactly as before (to the baseline status) exposes a community to the same threats as before the impact.

Cumulative Effects Over Time

Over time, the resiliency gap between those who have adapted and those who have maintained the baseline approach grows, as does the difference in community strength between the two paths.

PARK SMART: TRANSLATING

NEIGHBORHOOD

What are the places and institutions which make your neighborhood stronger?

NEIGHBORHOOD

How does the environment in your neighborhood affect your life?

NEIGHBORHOOD

What does resilience mean to you?

RANKING RESILIENCE

PRIORITY

High

Low

IMPACT

Me

My family

My block

My neighborhood

My city

Sticker Key:

Rain Garden:
Rain gardens are planted areas that allow rainwater and runoff to infiltrate into the ground slowly or be taken up by plants instead of diverted directly to stormwater infrastructure. Rain gardens provide the benefit of slowing water velocity, increasing infiltration, and reducing the need for irrigation.

Constructed Wetlands:
Wetlands can help slow and absorb runoff, as well as improve water quality via biofiltration. Constructed wetlands provide these same benefits for specific problem areas.

Green Streets:
Green streets are designed to allow runoff from the street to flow directly onto vegitated areas, slowing the velocity of the runoff, allowing for increased infiltration, and providing water for plants. Existing streets can also be adapted to provide some of these same services.

Bioretention:
Bioretention cells or ponds are vegitated areas that collect runoff during storm events. They slow water velocity, allowing for increased infiltration, and typically improve water quality through filtration of sediments.

Rainwater Harvesting:
Cisterns, either above or below ground, can be used to collect water during a rain event so it can be used for irrigation during dry spells. The proper use of cisterns also helps to decrease the immediate burden on either grey or green infrastructre during a storm event.

Infiltration Drainfields and Underdrains:
Infiltration drainfields and underdrains can help either move water away from areas prone to ponding, or to store large amounts of water underground, allowing it to slowly infiltrate and recharge groundwater supplies.

Green Roofs:
Green Roofs can decrease the urban heat island effect, as well as decrease runoff and provide insulation for buildings, reducing energy consumption for heating and cooling.

Permeable Paving:
Permeable paving systems allow for water to filter through the pavement material, decreasing runoff and recharging groundwater supplies. In some cases, stormwater quality is improved via filtration.

Walking Trails and Amenities:
Pedestrian infrastructure allows for easy and safe movement around parks and neighborhoods, and promotes an active lifestyle and community interaction.

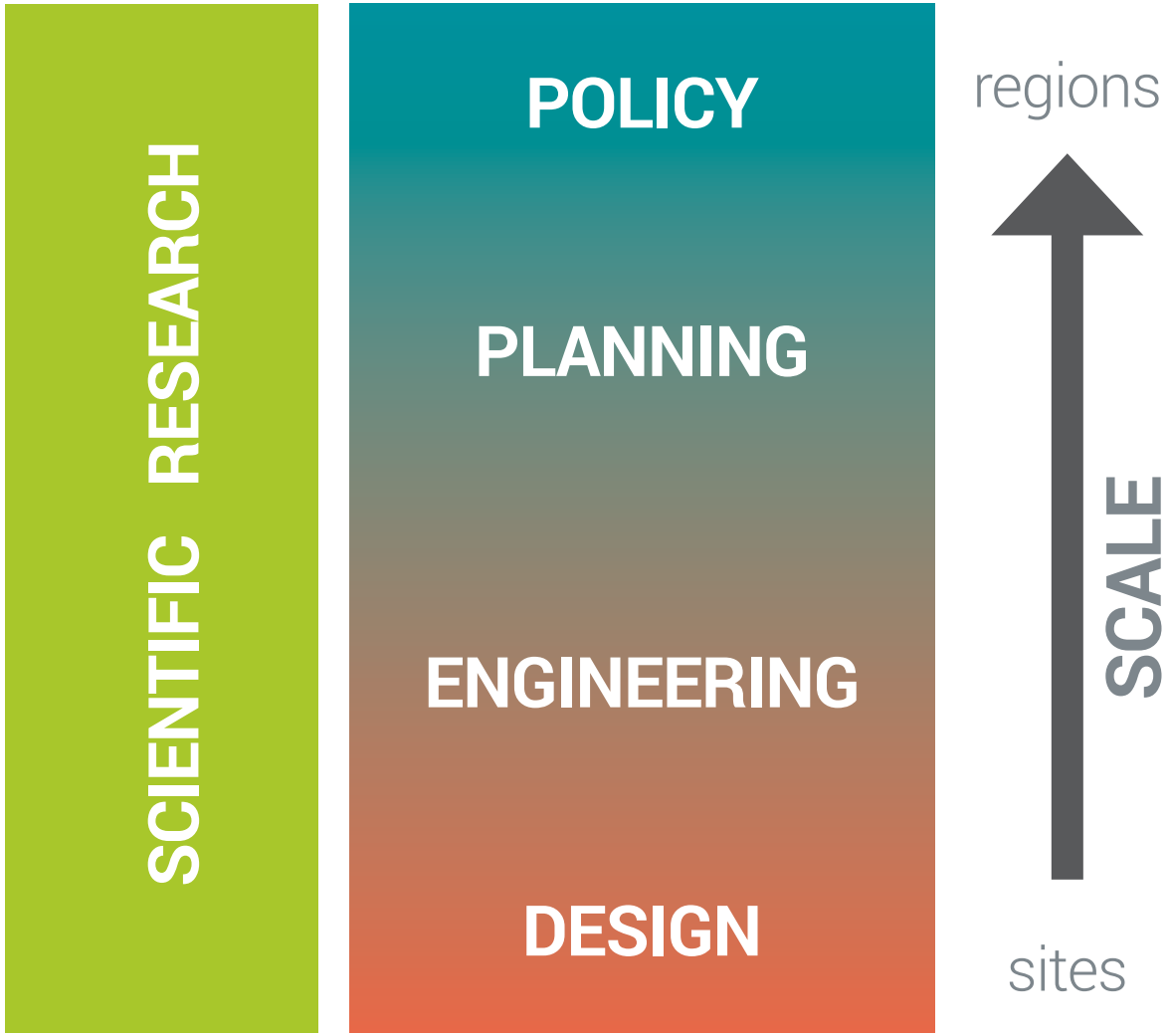
Bike Trails and Facilities:
Bike infrastructure allows for easy and safe movement across the city, and promotes an active lifestyle and community interaction.

Increased Tree Canopy:
A large tree canopy can slow stormwater, decrease the urban heat island effect, and provide carbon storage and air filtration. Trees can provide shade for park goers, and habitat for various wildlife species.

MAIN POINTS

1. FRAMEWORKS, LANGUAGE, AND SCALES
2. VALUES TRANSLATE TO GOALS
3. SYSTEMS THINKING
4. MULTIFUNCTIONALITY
5. IN PRACTICE

AGENTS OF CHANGE AT WHAT SCALE?



AT WHAT SCALE DOES GREEN INFRASTRUCTURE EXIST?

SCALER THINKING

BAGBY STREET, HOUSTON, TX:

0.62 MILES

AMD SITE:
59 ACRES

WALLER 3, AUSTIN, TX:

700 ACRES

MUELLER DEVELOPMENT, AUSTIN, TX:

700 ACRES

SOUTH CENTRAL WATERFRONT, AUSTIN, TX:

118 ACRES

AMD SITE, AUSTIN, TX:

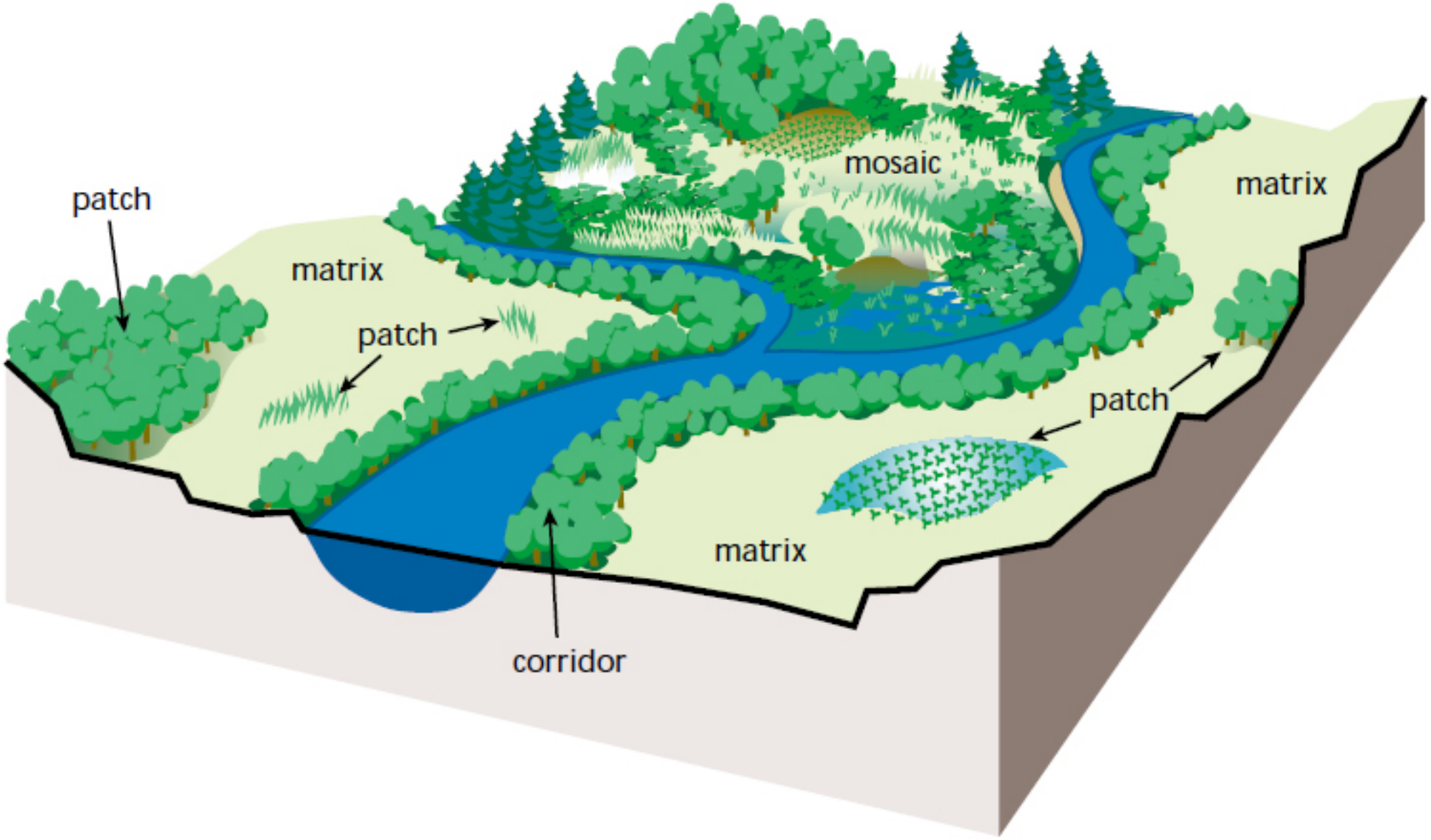
59 ACRES

BAGBY STREET, HOUSTON, TX:

0.62 MILES

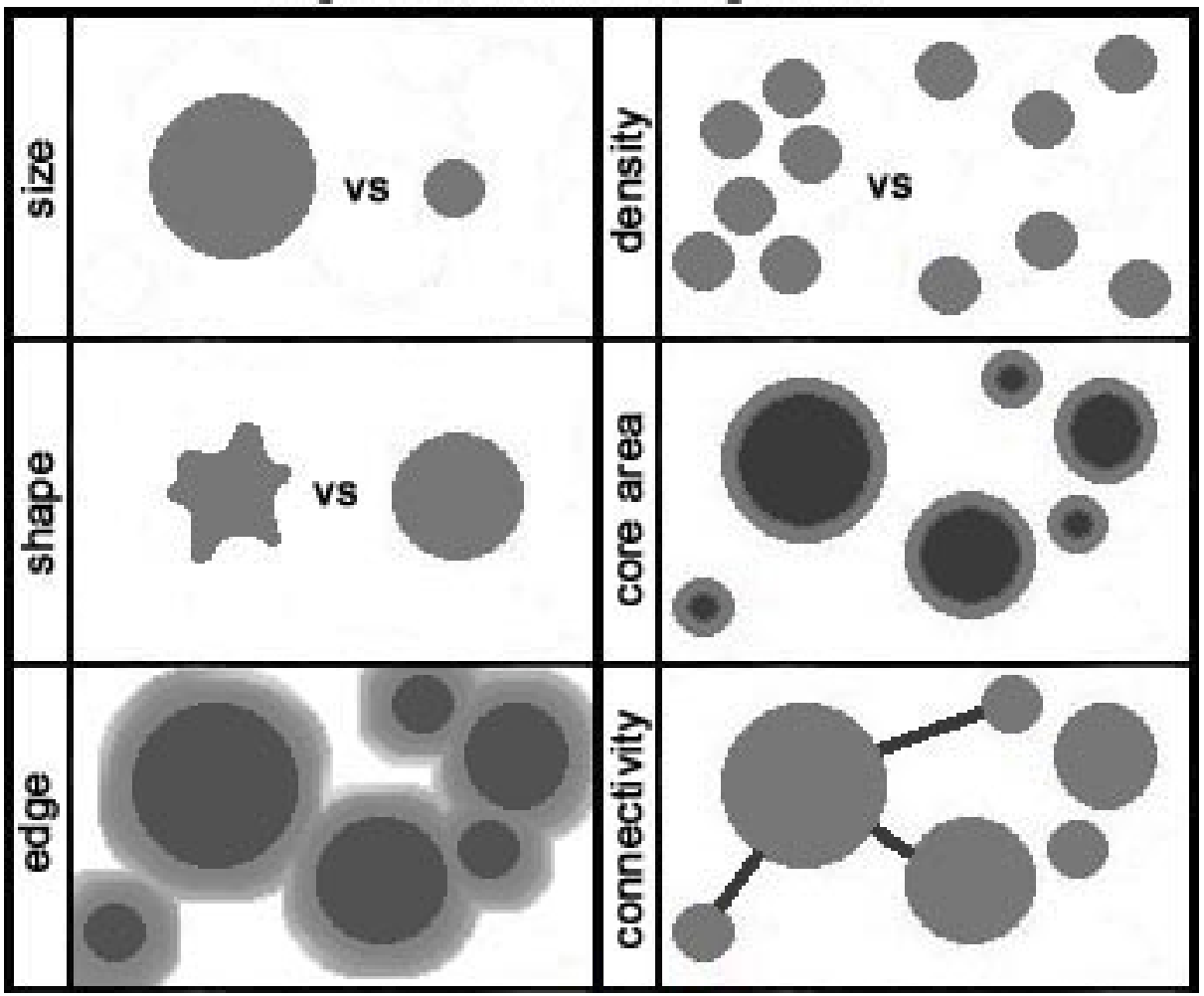
WHY IS SCALE IMPORTANT IN GREEN INFRASTRUCTURE WORK?

AN ECOLOGIST'S TAKE

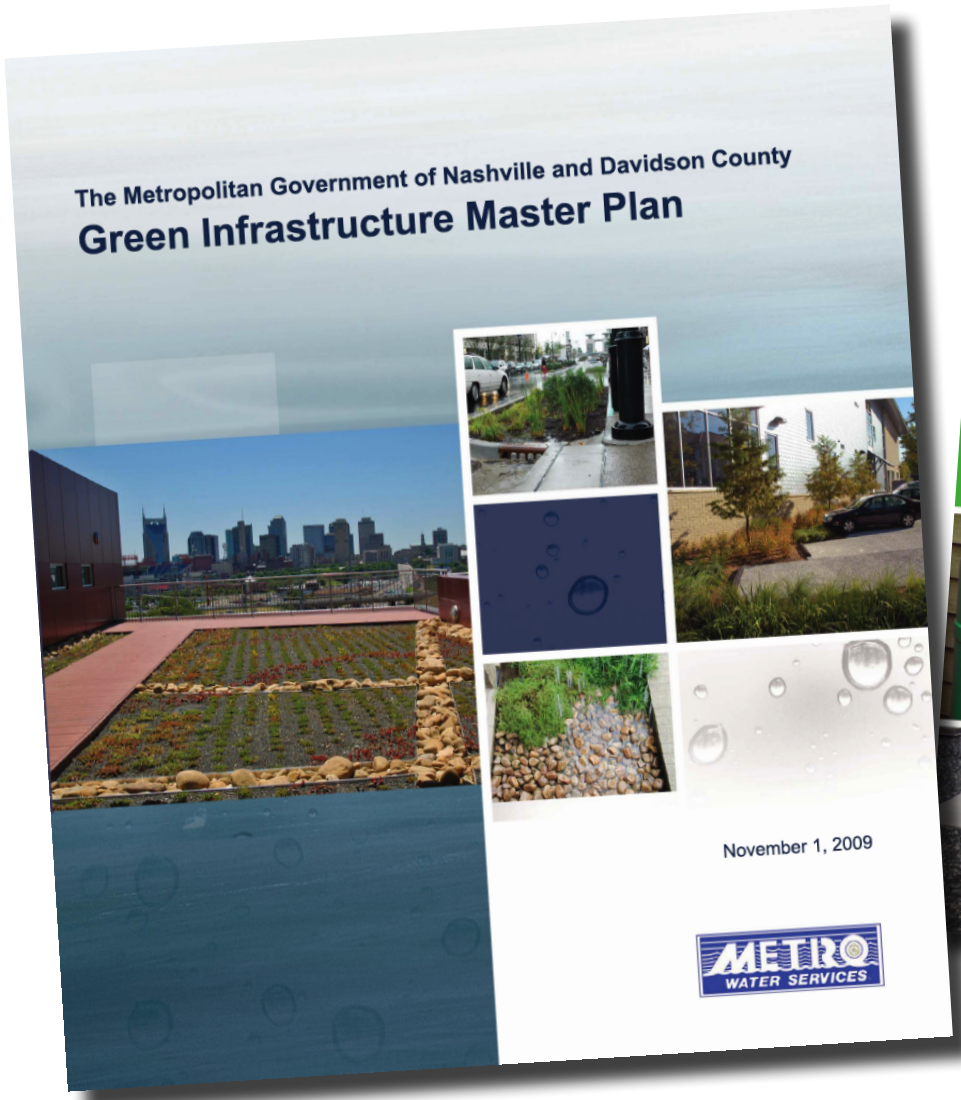


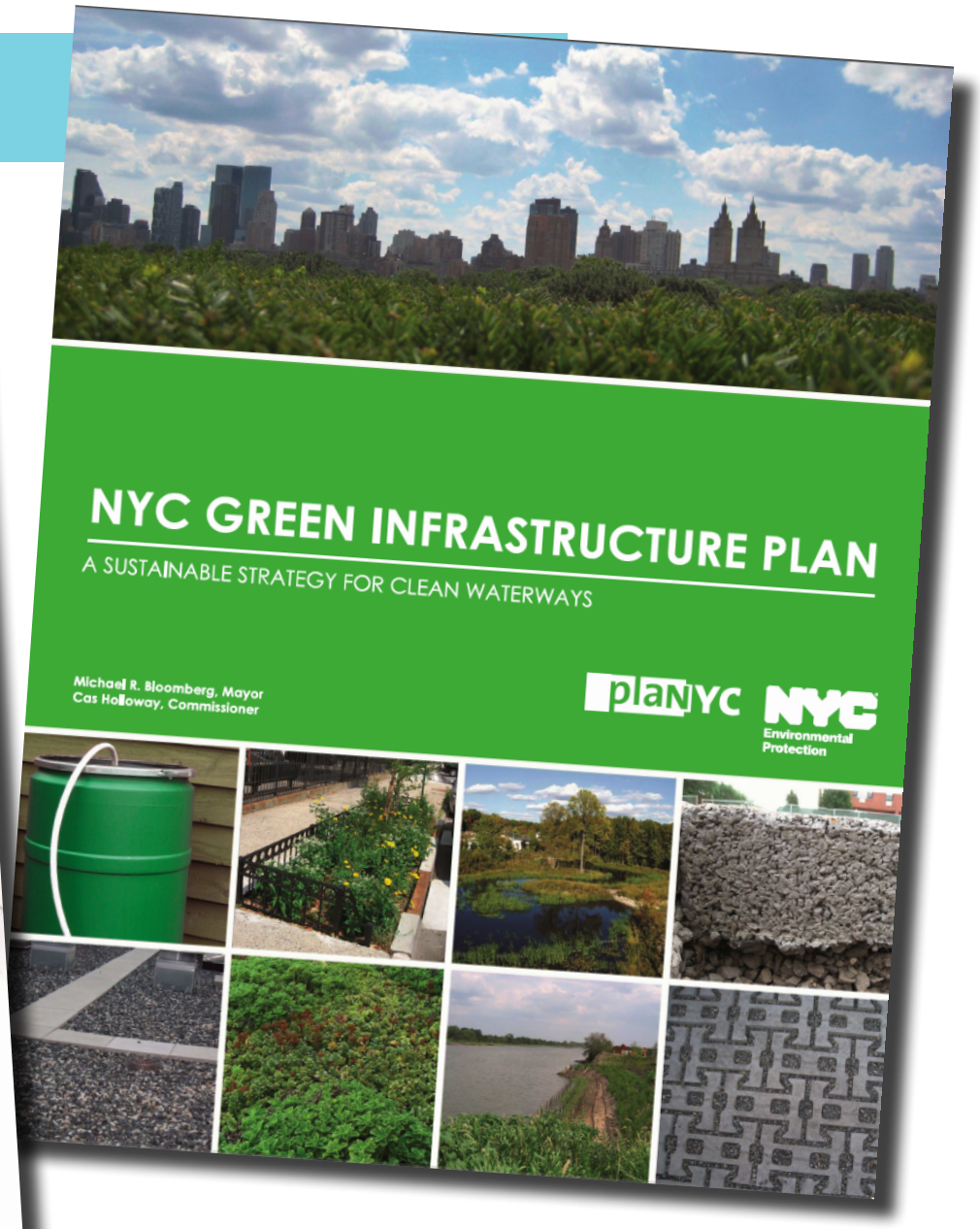
AN ECOLOGIST'S TAKE

Figure 2 : Patch Configuration



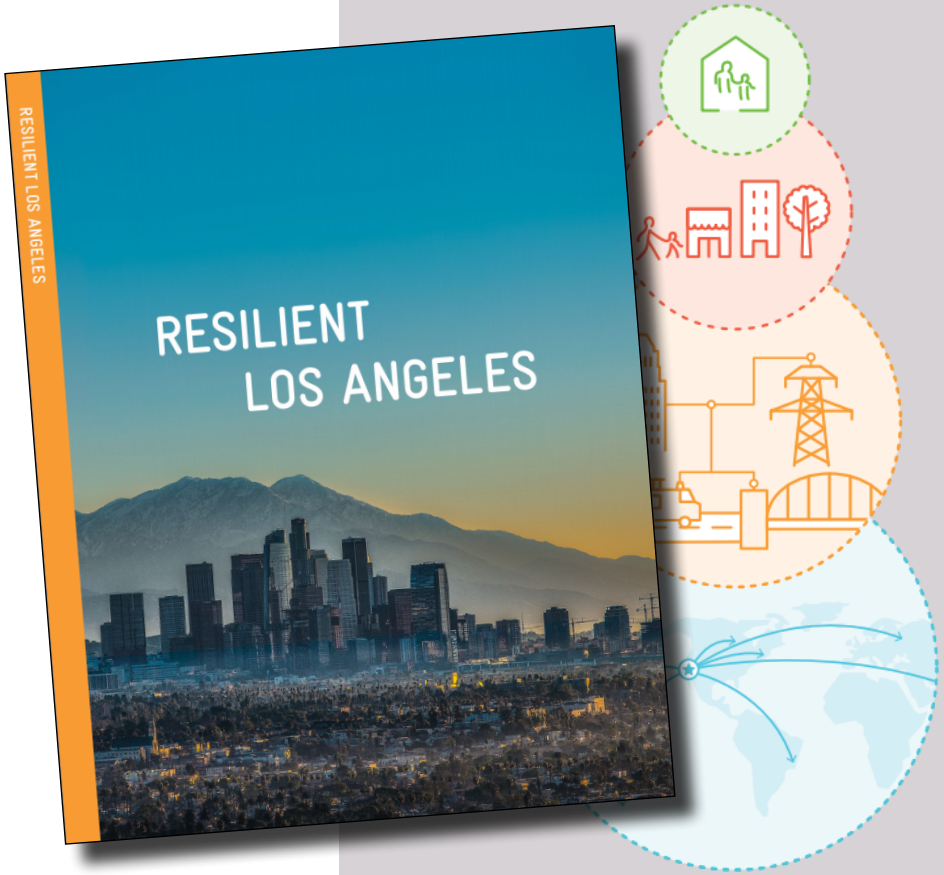
A PLANNER'S TAKE





HOW DO WE THINK ABOUT SCALE IN RESILIENCE WORK?

RESILIENT LOS ANGELES



4 CHAPTERS, 15 GOALS, 96 ACTIONS

Resilient Los Angeles is a call to action for every Angeleno to contribute to the resilience of our city at every scale.

CHAPTER 1
SAFE AND THRIVING ANGELENOS will call attention to the role that individuals, families, businesses, and property owners can take to both prevent and prepare for future shocks and stresses.

- GOAL 1: Educate and engage Angelenos around risk reduction and preparedness so they can be self-sufficient for at least seven to 14 days after a major shock. — pg 31
- GOAL 2: Develop additional pathways to employment and the delivery of financial literacy tools to support our most vulnerable Angelenos. — pg 41
- GOAL 3: Cultivate leadership, stewardship, and equity with young Angelenos. — pg 46

CHAPTER 2
STRONG AND CONNECTED NEIGHBORHOODS will focus on actions that support and strengthen community connectedness and collaboration.

- GOAL 4: Build social cohesion and increase preparedness through community collaboration. — pg 56
- GOAL 5: Increase programs and partnerships that foster welcoming neighborhoods. — pg 65
- GOAL 6: Prepare and protect those most vulnerable to increasing extreme heat. — pg 69
- GOAL 7: Reduce health and wellness disparities across neighborhoods. — pg 76

CHAPTER 3
PREPARED AND RESPONSIVE CITY will emphasize strategies the City and its partners will take to ensure that Los Angeles is equipped to address current and future challenges.

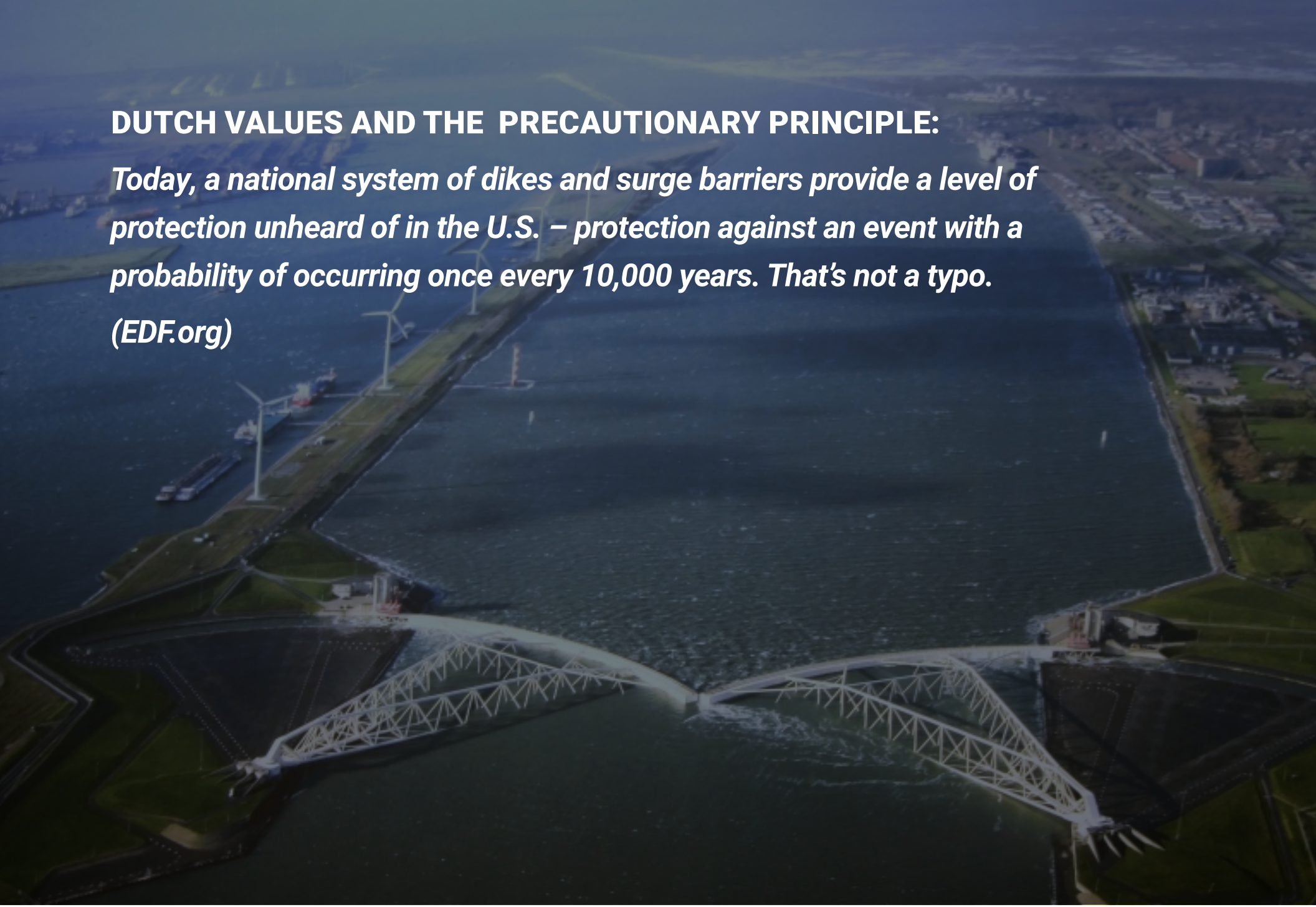
- GOAL 8: Integrate resilience principles into government to prioritize our most vulnerable people, places, and systems. — pg 86
- GOAL 9: Equip government with technology and data to increase situational awareness and expedite post-disaster recovery. — pg 95
- GOAL 10: Provide safe and affordable housing for all Angelenos. — pg 99
- GOAL 11: Restore, rebuild, and modernize Los Angeles' infrastructure. — pg 104

CHAPTER 4
PIONEERING AND COLLABORATIVE PARTNER will feature the multidisciplinary innovations and partnerships that will continue to propel Los Angeles forward as a leader among our global peers.

- GOAL 12: Use climate science to develop adaptation strategies consistent with the Paris Climate Agreement. — pg 126
- GOAL 13: Foster a healthy and connected Los Angeles River system. — pg 132
- GOAL 14: Strengthen regional systems and fortify critical infrastructure. — pg 137
- GOAL 15: Grow public, private, and philanthropic partnerships that will increase resources dedicated to building resilience. — pg 143

MAIN POINTS

1. FRAMEWORKS, LANGUAGE, AND SCALES
2. VALUES TRANSLATE TO GOALS
3. SYSTEMS THINKING
4. MULTIFUNCTIONALITY
5. IN PRACTICE



DUTCH VALUES AND THE PRECAUTIONARY PRINCIPLE:

Today, a national system of dikes and surge barriers provide a level of protection unheard of in the U.S. – protection against an event with a probability of occurring once every 10,000 years. That's not a typo. (EDF.org)

VALUES VS. GOALS

1

VALUES AND GOALS ALIGN

2

VALUES MISALIGN

GOALS ALIGN

3

VALUES AND GOALS IN CONFLICT

VALUES VS. GOALS

1

VALUES AND GOALS ALIGN

2

VALUES MISALIGN

GOALS ALIGN

3

VALUES AND GOALS IN CONFLICT

AUSTIN WATERSHED PROTECTION DEPT.

slide credit - Mateo Scoggins

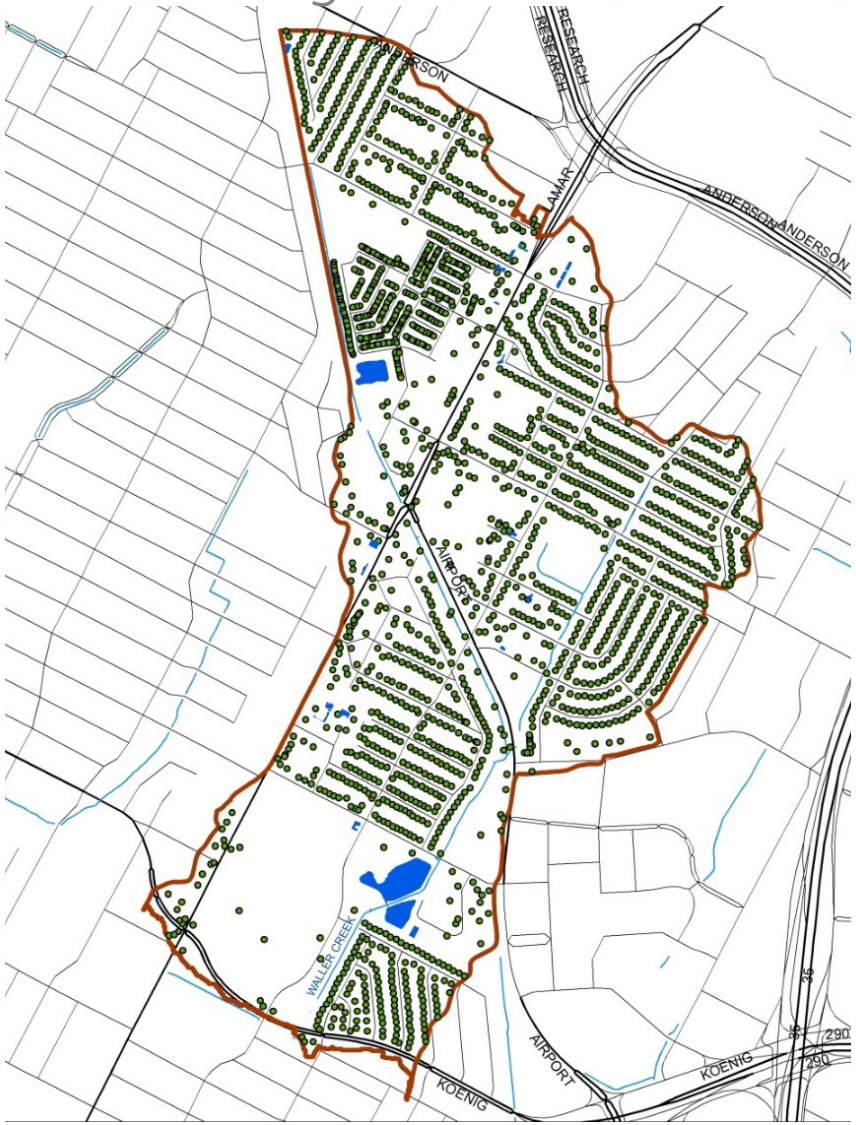
WALLER 3 PILOT PROJECT - AUSTIN, TX

Existing Regional Controls vs. Distributed + Regional Controls

GOAL:

Incentivize the implementation of a green infrastructure network in an existing neighborhood

VALUES: ?

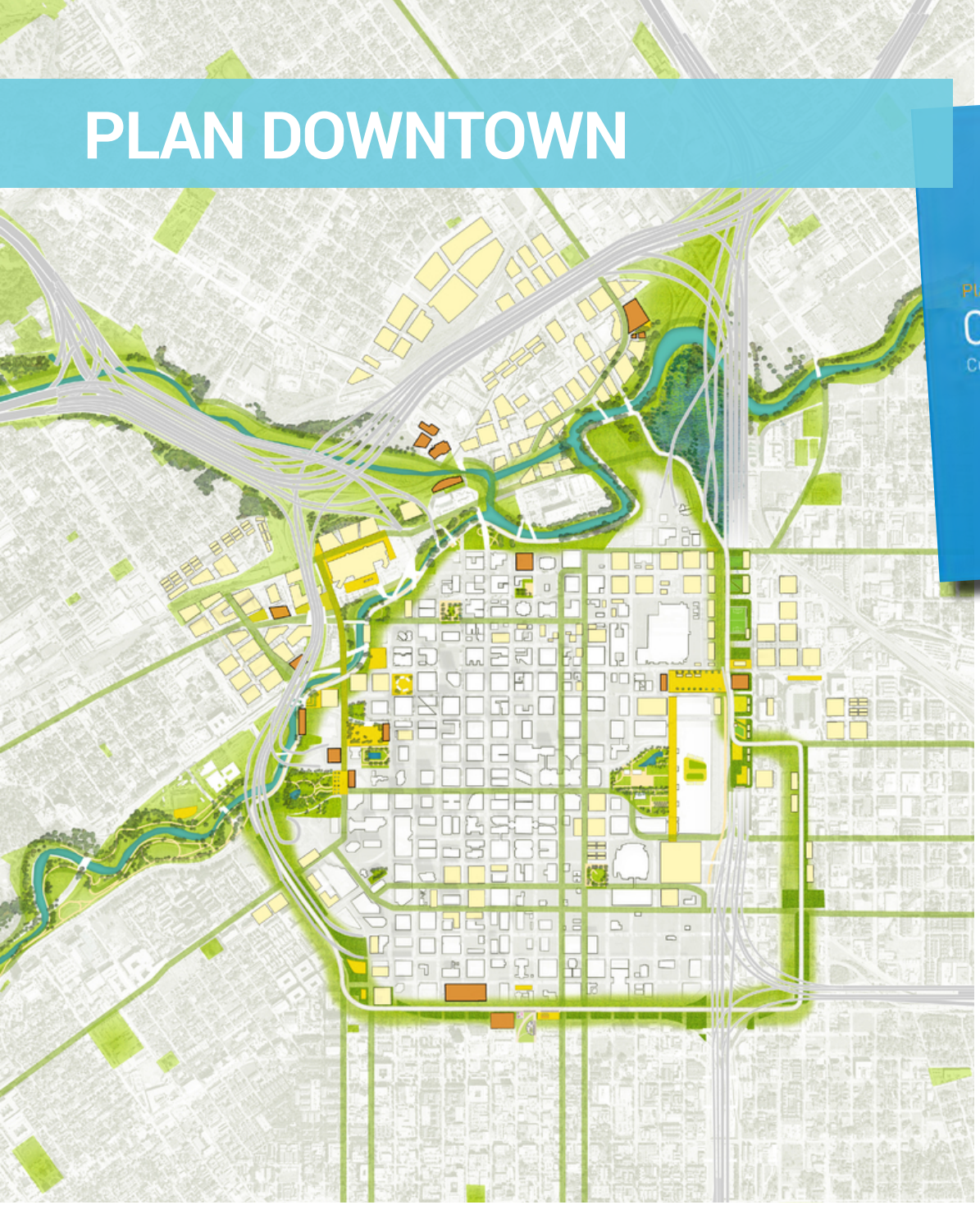


slide credit - Mateo Scoggins

WHAT CAN GOOD GREEN INFRASTRUCTURE DO?


SUPPORTING
PROVISIONING
CULTURAL
REGULATING
Ecosystem Services
What Nature provides us for free
Food
Soil Formation
Photosynthesis
Biodiversity
Habitat
Stewardship
Aesthetic
Recreation
Education
Clean Air
Store Carbon
Purify Water
Control Flooding
Cool Temperatures
Pollination
Wood
Fish
Clean Water

PLAN DOWNTOWN



GOAL:

Design a resilient downtown Houston and be a leader in resilience City-wide

VALUES: ?

MAIN POINTS

1. FRAMEWORKS, LANGUAGE, AND SCALES
2. VALUES TRANSLATE TO GOALS
3. SYSTEMS THINKING
4. MULTIFUNCTIONALITY
5. IN PRACTICE

IN EDUCATION

"Systems thinking utilizes habits, tools and concepts to develop an understanding of the interdependent structures of dynamic systems. When individuals have a better understanding of systems, they are better able to identify the leverage points that lead to desired outcomes." (The Waters Foundation)

IN MANAGEMENT AND LEADERSHIP

"Systems thinking is a management discipline that concerns an understanding of a system by examining the linkages and interactions between the components that comprise the entirety of that defined system." (The Institute for Systemic Leadership)

IN RESILIENCE

"The idea that nothing exists in isolation–but only as part of a system." And, "Systems thinking would enable us to perceive the patterns that connected otherwise disparate things and to detect the counter-intuitive logic underlying an often deceptive reality, thereby creating more coherent diagnoses, policies, and plans." (resilience.org)

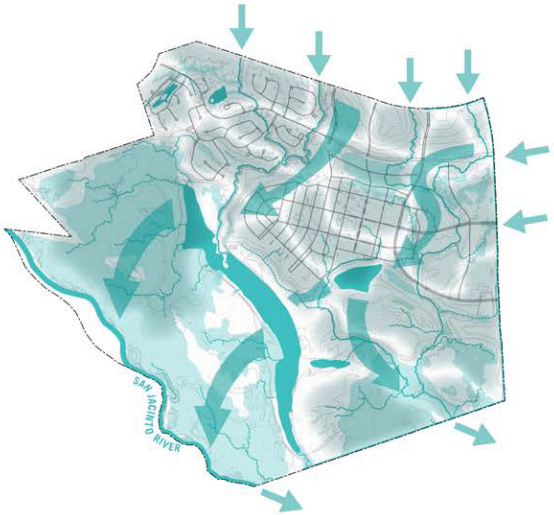
IN URBAN PLANNING

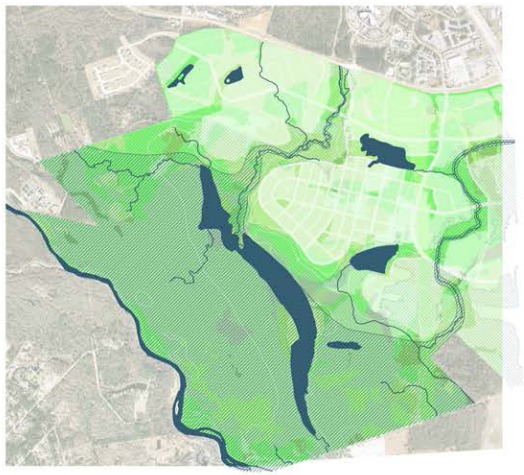
"Systems thinking can make cities work for people." And, "Understanding a city as a whole and finding pathways to more sustainable futures means integrating urban design, strategic thinking, economic analysis and engineering knowledge. It requires an appreciation of the complex interactions between different urban systems – everything from transport networks to social networks." (thoughts.arup.com)

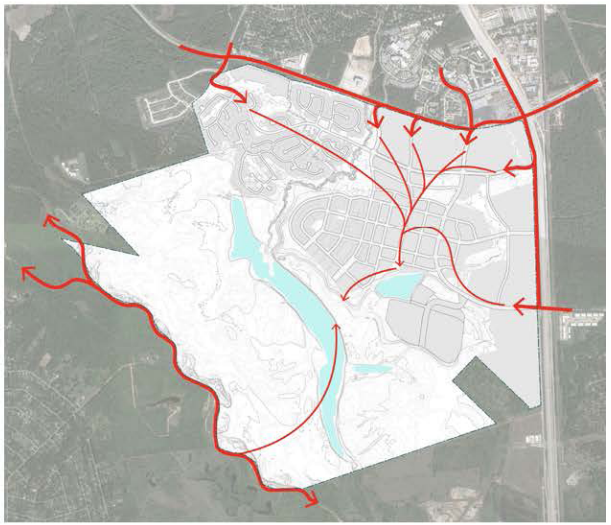
IN ECOLOGY

"Systems thinking is the process of understanding how things influence one another within a whole. In nature, systems thinking examples include ecosystems in which various elements such as air, water, movement, plants, and animals work together to survive or perish. In organizations, systems consist of people, structures, and processes that work together to make an organization healthy or unhealthy. Systems Thinking has been defined as an approach to problem solving, by viewing "problems" as parts of an overall system, rather than reacting to specific part, outcomes or events and potentially contributing to further development of unintended consequences." (environment-ecology.com)

WHAT SYSTEMS?







WHY?

ecological

IS NEVER

socially neutral

(and vice-versa)

Time Magazine, Sept. 2015

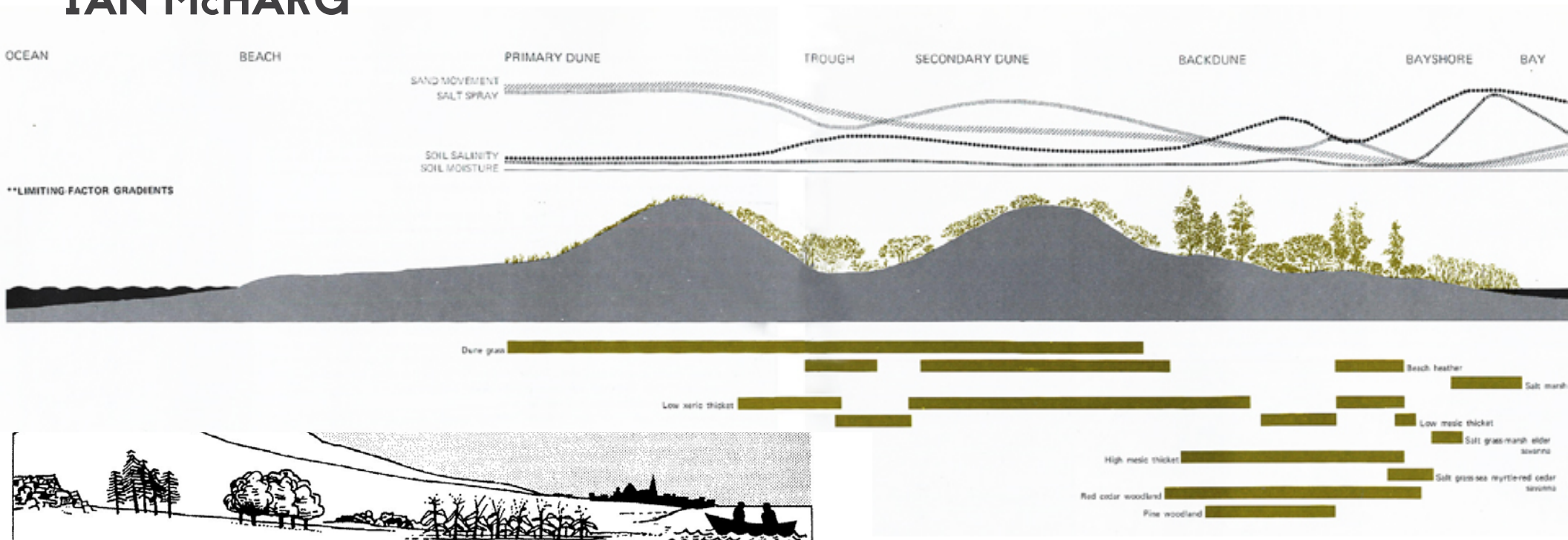
From 2006 to 2011, large swaths of Syria suffered an extreme drought that, according to climatologists, was **exacerbated by climate change.** The **drought lead to increased poverty and relocation to urban areas**, according to a recent report by the Proceedings of the National Academy of Sciences and cited by Scientific American. "That drought, in addition to its mismanagement by the Assad regime, contributed to the displacement of two million in Syria," says Francesco Femia, of the Washington, D.C.-based Center for Climate and Security. **"That internal displacement may have contributed to the social unrest that precipitated the civil war. Which generated the refugee flows into Europe."** And what happened in Syria, he says, is **likely to play out elsewhere going forward.**

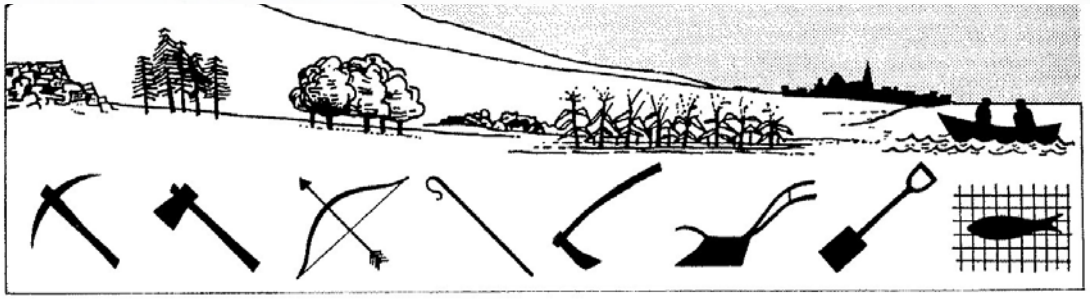
WHERE?

revisiting language...

WHAT IS A TRANSECT?

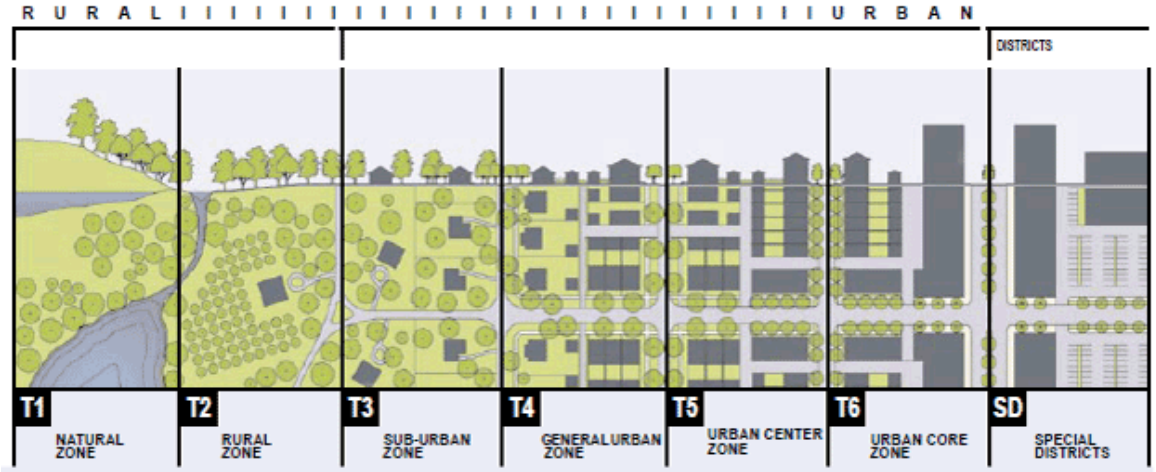
IAN McHARG

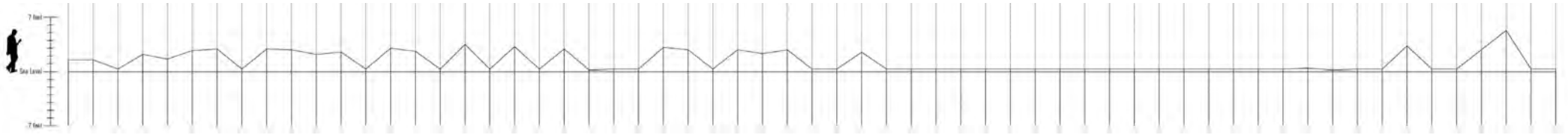




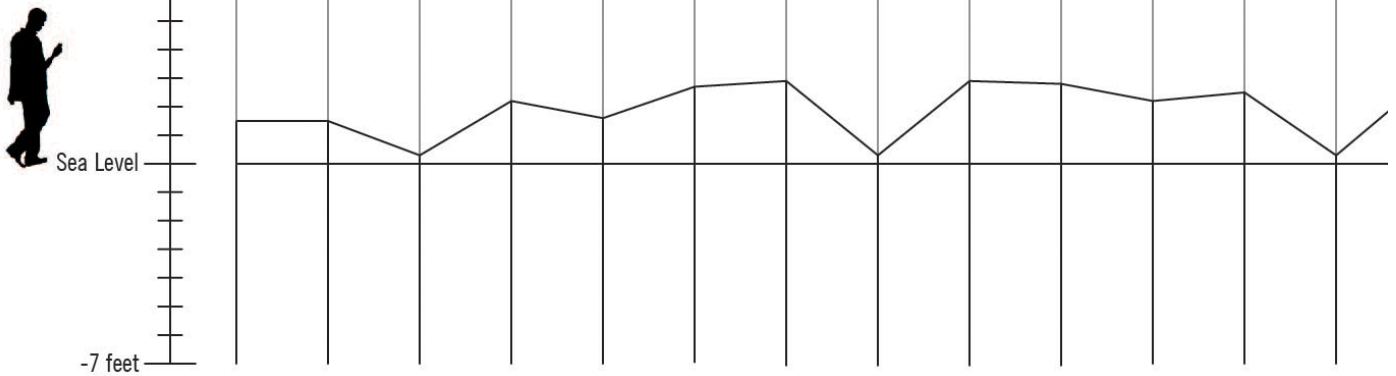
PATRICK GEDDES

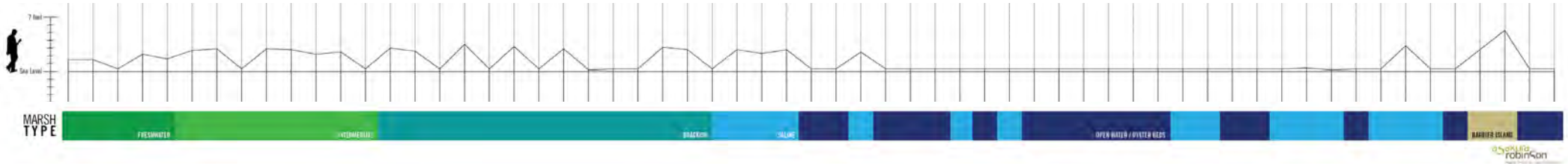
NEW URBANISM



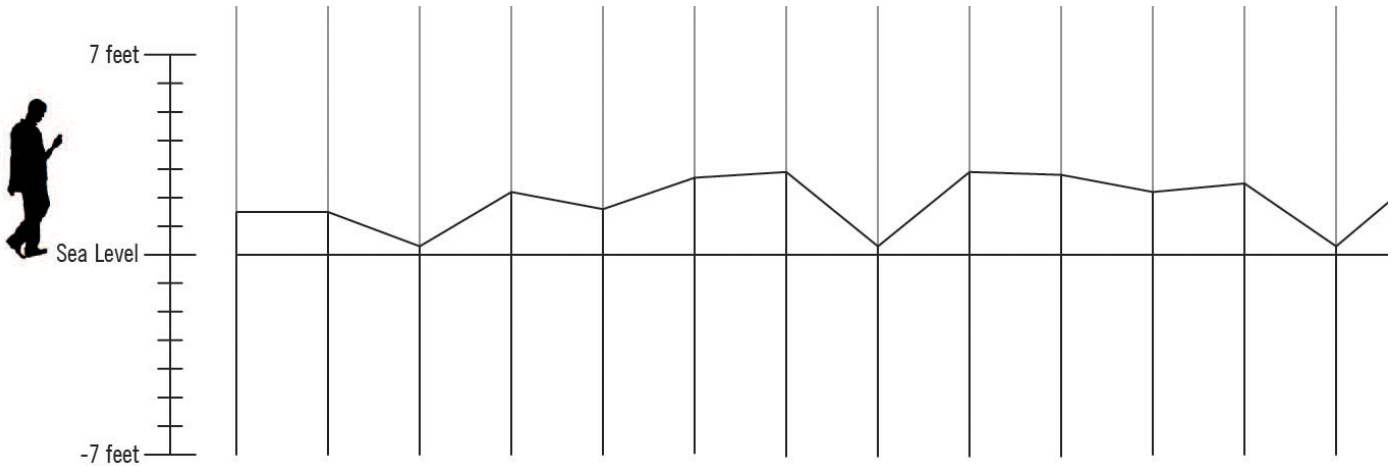


ELEVATION

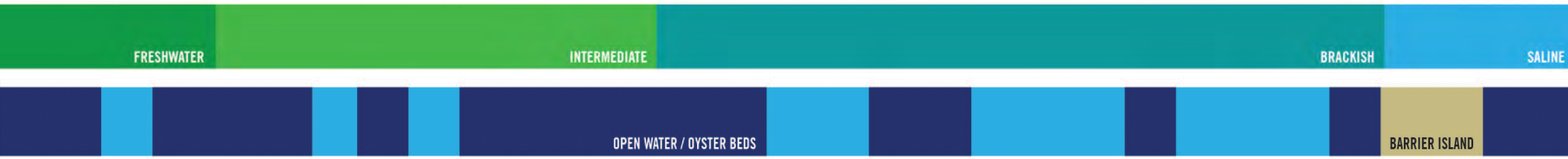


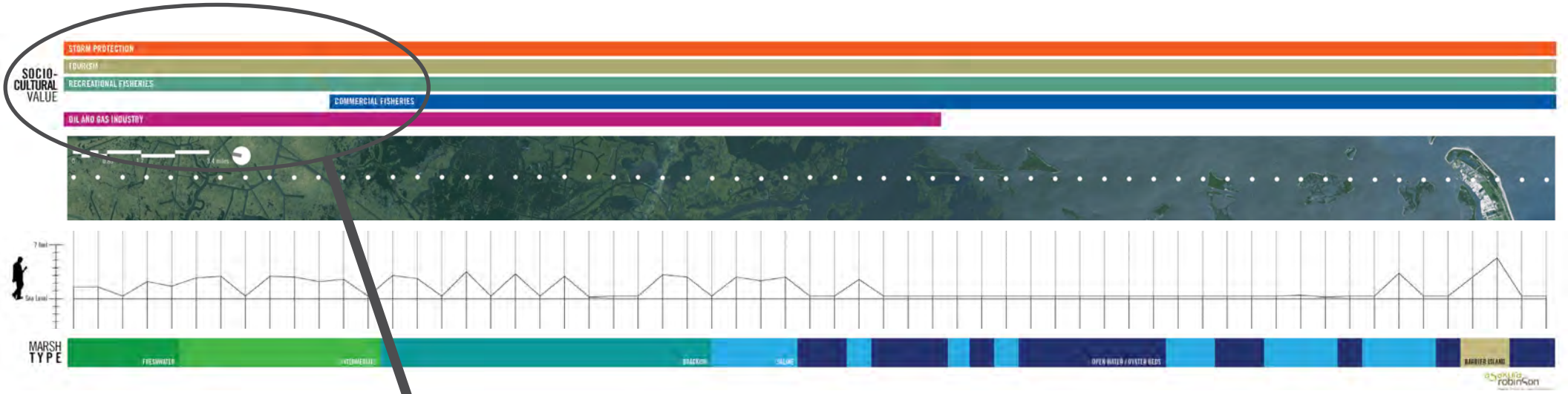


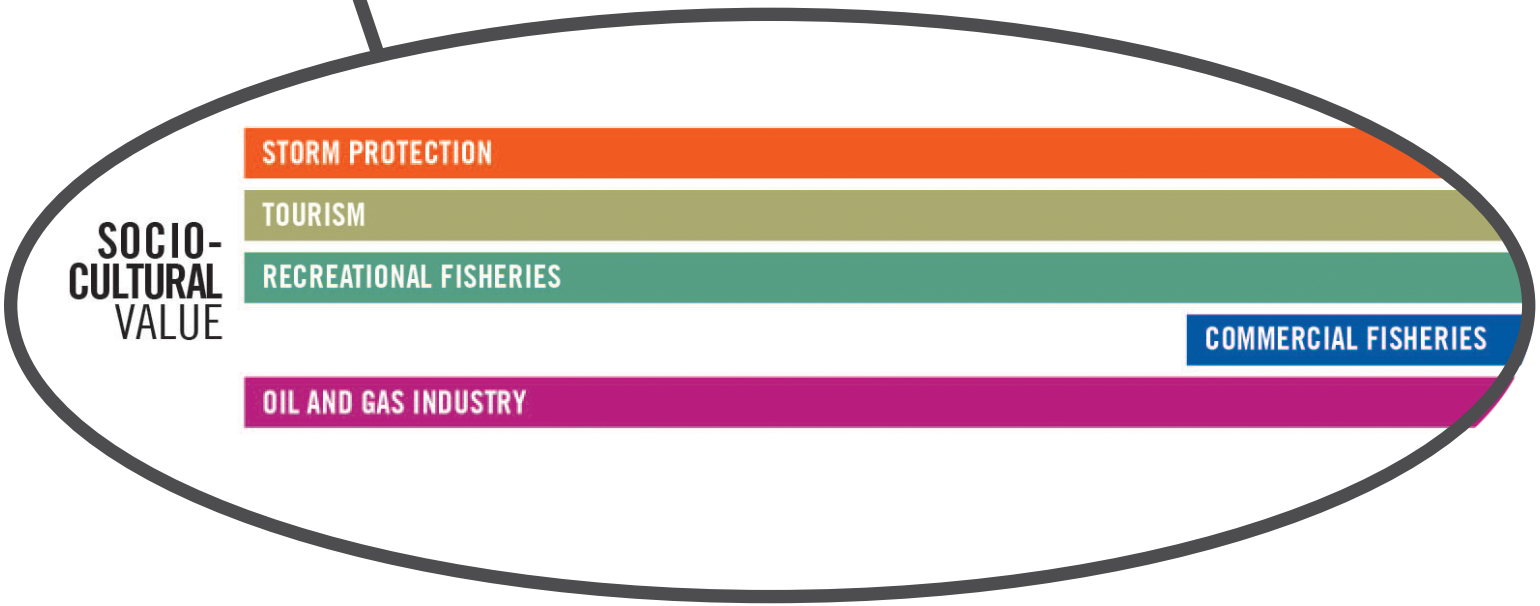
ELEVATION



MARSH TYPES




SOCIO-
CULTURAL
VALUE
STORM PROTECTION
TOURISM
RECREATIONAL FISHERIES
COMMERCIAL FISHERIES
OIL AND GAS INDUSTRY
MARSH
TYPE
FRESHWATER
BRACKISH
SALINE
OPEN WATER / OYSTER REEFS
BARRIER ISLAND


SOCIO-
CULTURAL
VALUE
STORM PROTECTION
TOURISM
RECREATIONAL FISHERIES
COMMERCIAL FISHERIES
OIL AND GAS INDUSTRY

ECOSYSTEM SERVICES

STORM PROTECTION

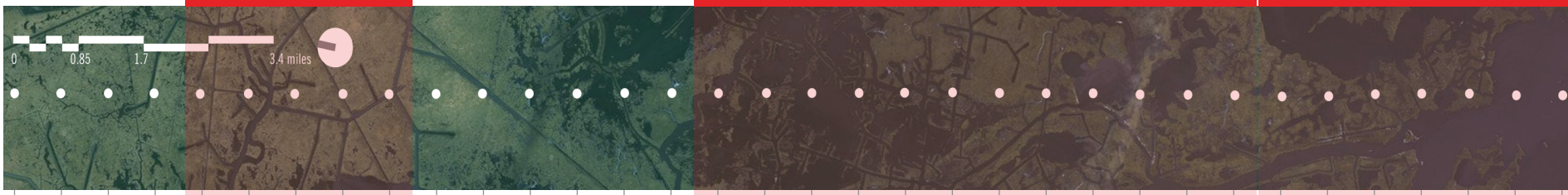
TOURISM

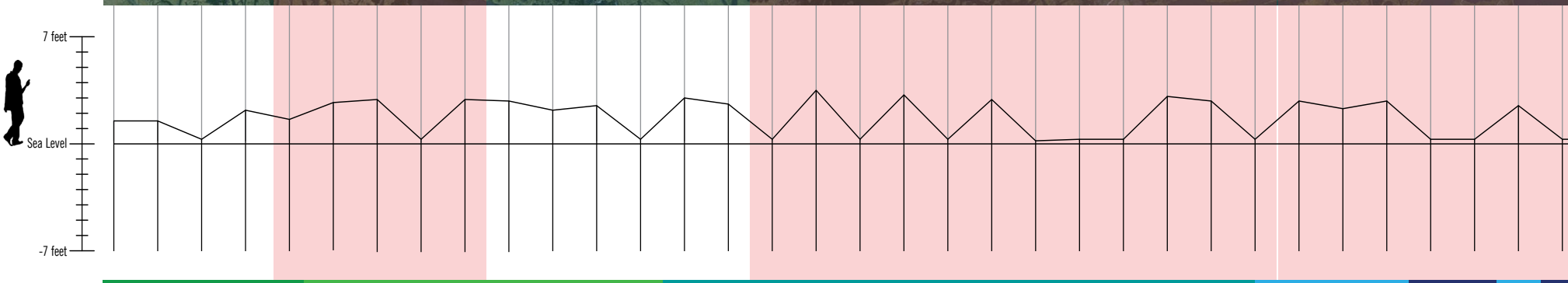
RECREATIONAL FISHERIES

COMMERCIAL FISHERIES

OIL AND GAS INDUSTRY

2 3 5





MARSH TYPE

FRESHWATER INTERMEDIATE BRACKISH SALINE

RESTORATION TOOLKIT

SHORELINE BARRIERS

SEDIMENT DIVERSION

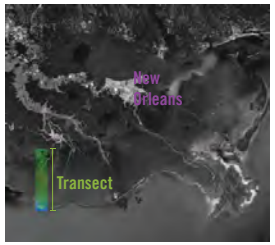
DREDGING / MARSH CREATION

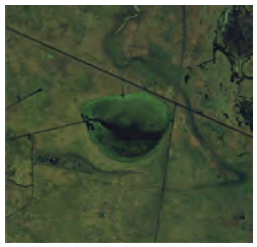
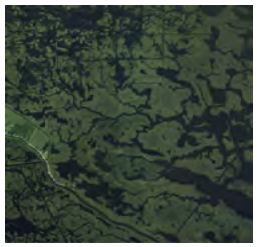
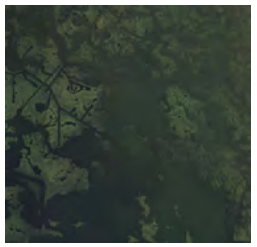
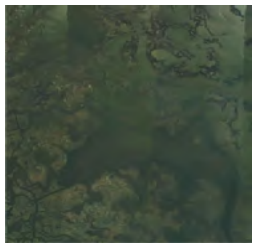
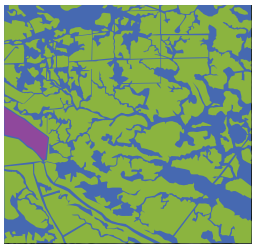
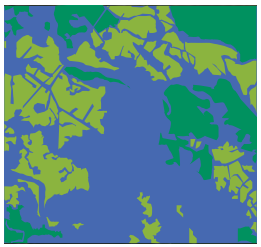
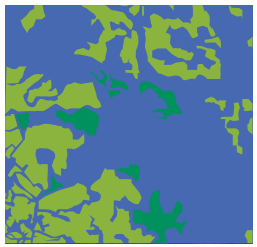
FRESHWATER DIVERSION

OYSTER REEF RESTORATION / CREATION

BARRIER ISLAND RESTORATION

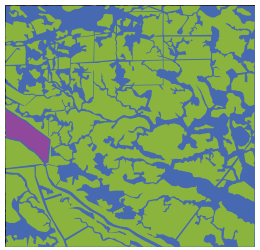
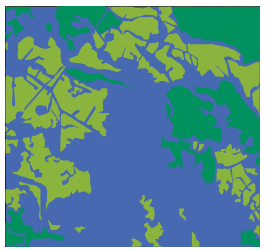
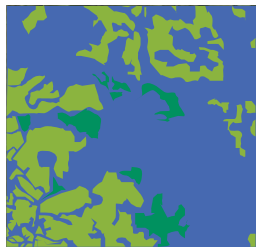
COASTAL ECOSYSTEM TRANSECT



	FRESHWATER MARSH	INTERMEDIATE MARSH	BRACKISH MARSH	BAYS AND SALT MARSH	BARRIER ISLANDS
				 	
Marsh Open Water Submerged Marsh Human Settlement Barrier Island				 	
CHARACTERISTIC VEGETATION, ETC.	**Dominant:** *Panicum hemitomon* (maidencane) **Other:** *Eleocharis spp., Sagittaria lancifolia, Alternanthera philoxeroides, Spartina patens, Phragmites communis, Bacopa monnieri, Ceratophyllum demursum, Cyperus odoratus, Eichhornia crassipes, Pontederia cordata, Peltandra virginica, Hydrocotyle spp., Lemna minor, Myriophyllum spp., Nymphaea odorata, Typha spp., Utricularia spp., Vigna luteola, and Zizaniopsis miliacea*	**Dominant:** *Spartina patens* (wiregrass) **Other:** *Phragmites communis, Sagittaria lancifolia, Bacopa monnieri, Eleocharis spp., Scirpus olneyi, S. californicus, S. americnaus, Vigna luteola, Paspalum vaginatum, Panicum virgatum, Leptochloa fascicularis, Pluchea camphorata, Echinonchloa walteri, Cyperus odoratus, Alternanthora philoxeroides, Najas guadalupensis, Spartina cynosuroides, and S. spartineae*	**Dominant:** *Spartina patens* (wiregrass) **Other:** *Distichlis spicata, Schoenoplectus olneyi, S. robustus, Eleocharis parvula, Ruppia maritima, Paspalum vaginatum, Juncus roemanianus, Bacopa monnieri, Spartina alteriflora, and S. cynosuroides*	**Dominant:** *Spartina alterniflora* (smooth cordgrass) in marsh areas; *Crassostrea virginicus* (American oyster) creates reefs **Other:** *S. patens, Distichlis spicata, Juncus roemarianus, and Batis maritima*	Salt tolerant xeric grasses and succulent herbs on the dunes grading into salt marsh vegetation on the inland side *Batis maritima* (saltwort), *Salicornia virginica* (glasswort), stunted forms of *Distichlis spicatata* (salt grass), and *Spartina alterniflora* (smooth cordgrass)
VALUE	• Most biodiverse of any marsh type • Provides habitat for birds, butterflies, and reptiles of conservation concern • Provides filtration of pollutants before entering other marsh ecosystems • Final buffer between dense human settlement and storm surge • Carbon sink	• Very important to many bird species of conservation concern • Supports large numbers of wintering water fowl • Critical nursery habitat to larval marine organisms • Provides further filtration of pollutants • Buffers storm surge • Carbon sink	• Very high value to estuarine larval forms of marine organisms such shrimp, crabs, menhadden, etc. • Buffers intermediate and freshwater marsh from saltwater intrusion • Buffers storm surge • Carbon sink	• Buffers storm surge • Provides storage for large amounts of water during storm events • Functions as a nitrogen and phosphorus sink (at least seasonally), thereby improving the quality of water that passes through it • Carbon sink	• Initial and vital line of defense against storms

asakura robinson
asakura robinson company LLC
Planning Urban Design Landscape Architecture

COASTAL ECOSYSTEM TRANSECT

	FRESHWATER MARSH	INTERMEDIATE MARSH	BRACKISH MARSH	BAYS AND SALT MARSH	BARRIER ISLANDS
	Marsh Open Water Submerged Marsh Human Settlement Barrier Island			 	
SALINITY	< 2 ppt	3-10 ppt	8 ppt mean	16 ppt mean	16-35 (gulf-side) ppt
RESTORATION OPTIONS	• Marsh restoration • Canal infill • Freshwater diversion	• Marsh restoration • Ridge restoration • Canal infill • Freshwater diversion	• Marsh restoration • Ridge restoration • Canal infill • Freshwater and sediment diversion	• Marsh restoration • Ridge restoration • Canal infill • Freshwater and sediment diversion • Oyster reef creation	• Marsh restoration • Sediment diversion • Oyster reef creation • Jetty reinforcement • Dune planting
RESTORATIONS PROS	• Stores 81 to 216 metric tons of carbon per acre • Most affected marsh system with highest rates of loss • Highest biodiversity of any coastal marsh type	• Stores 81 to 216 metric tons of carbon per acre • Important habitat to many conservation species • Critical estuary habitat to healthy local fisheries • Important buffer in preserving existing freshwater marsh	• Stores 81 to 216 metric tons of carbon per acre • Important habitat to many conservation species • Critical estuary habitat to healthy local fisheries • Important buffer in preserving existing freshwater and intermediate marsh	• Stores 81 to 216 metric tons of carbon per acre • Acts as a sink to filter out nitrogen and phosphorus - improving water quality across local systems • Important habitat to many conservation species • Critical estuary habitat to healthy local fisheries • Important buffer in preserving all other marsh types • Stores large volumes of water during and after storm events	• Acts as a vital storm buffer necessary to all other marsh health
RESTORATIONS CONS	• Needs influx of freshwater (not viable along levees) • Potentially unsustainable as sea levels rise - little to no tolerance for increased salinity	• Needs some influx of freshwater (less viable along levees) • Potentially unsustainable as sea levels rise - low tolerance for increased salinity	• Needs some influx of freshwater • Potentially unsustainable as sea levels rise - intermediate tolerance for increased salinity	• Most fragmented habitat • Least biodiverse habitat • Some historic marsh areas have transitioned to oyster reef or open water	• Cost • Requires ongoing maintenance • Short life expectancy of projects

AVERAGE COST/ACRE RESTORED

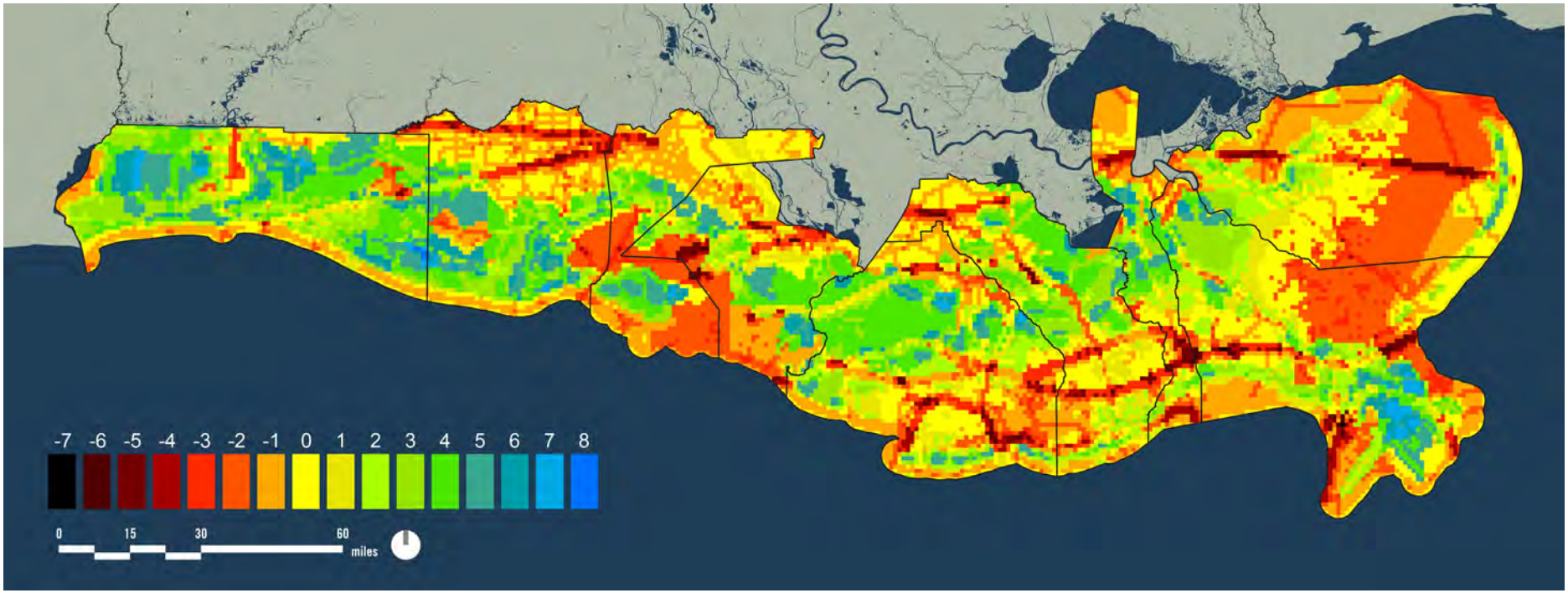
MARSH **$131,412.00**

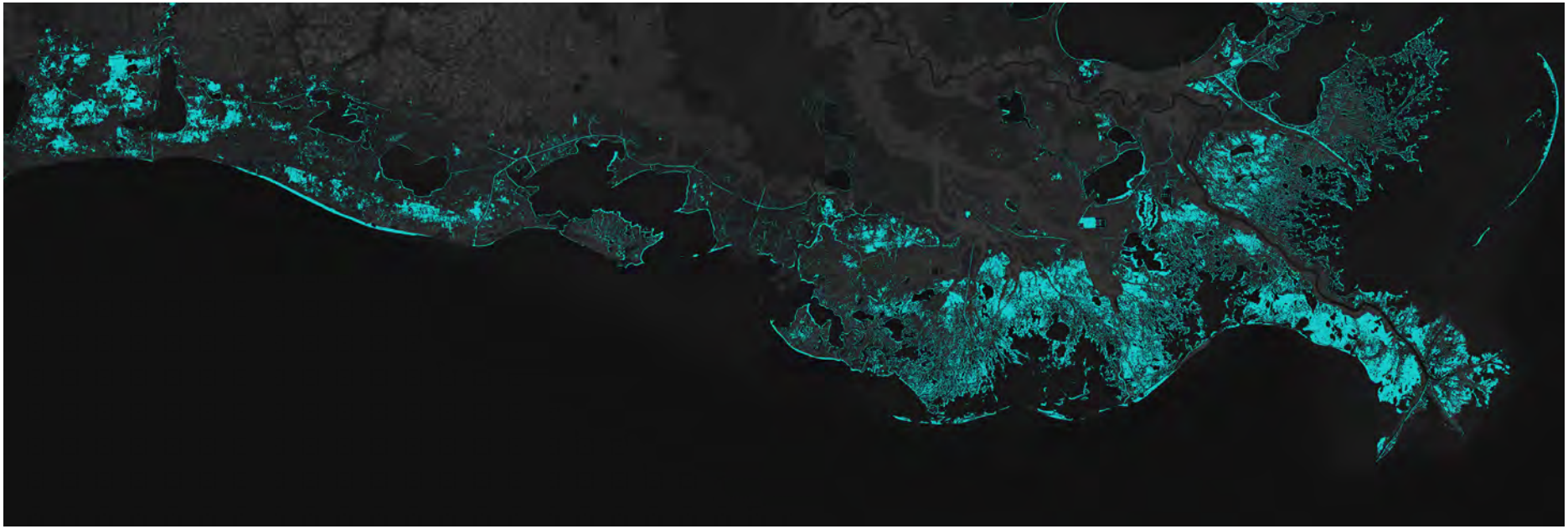
DIVERSION **$11,955.00**

Nationwide, coastal wetlands reduce hurricane damage in the U.S. by over $3,800/acre/year.
(The Conservation Fund)

OYSTER **$12,552.00**

BARRIER ISLAND **$123,302.00**


-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8
0 15 30 60
miles



MAIN POINTS

1. FRAMEWORKS, LANGUAGE, AND SCALES
2. VALUES TRANSLATE TO GOALS
3. SYSTEMS THINKING
4. **MULTIFUNCTIONALITY**
5. IN PRACTICE

WHAT IS THE VALUE OF A CREEK?

- Is it Green Infrastructure?
- How should we value creeks in Austin?
- Which creeks are most valuable?

CULTURAL AND SOCIAL ISSUES IN ENVIRONMENTAL PLANNING

Participation in this survey is entirely voluntary. The results will contribute to my thesis research as a graduate student in the Community and Regional Planning/Sustainable Design programs at the University of Texas. The purpose of this research is to better understand the relationship practitioners of ecological restoration projects have between their practice and social and cultural issues. The survey below should take less than 5 minutes and is being distributed to all Urban Riparian Symposium participants. Survey responses will remain anonymous however email addresses will be requested to contact two randomly selected participants to distribute a $25 amazon gift card. Thank you for your participation. If you have any questions please contact me:

Katie Coyne
kacoyne@utexas.edu
561.339.5712

Please answer the questions below to the best of your ability.

In your day to day work, how often do you think about social issues in relation to projects you are working on?

Never	Seldom	Sometimes	Often	All the time
1	2	3	4	5

How often do you include consideration of social issues within decision making processes?

Never	Seldom	Sometimes	Often	All the time
1	2	3	4	5

How often do you include consideration of social issues as part of project management?

Never	Seldom	Sometimes	Often	All the time
1	2	3	4	5

Do you consider human culture to be part of ecological restoration projects?

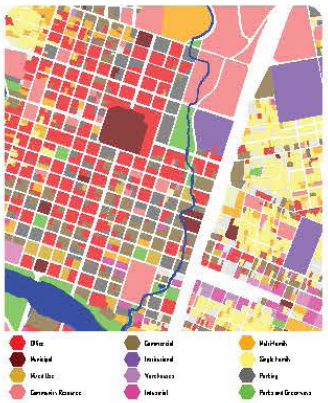
Not at all	Very little	Somewhat	Very	Extremely
1	2	3	4	5

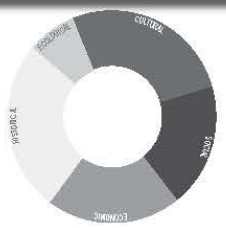
Identify one social component that is related (directly or indirectly) to an ecological aspect of a project you are working on.

See reverse

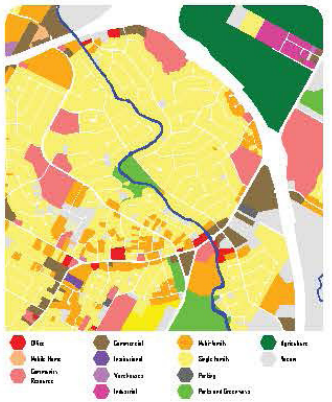
AUSTIN'S CREEK TRANSECT

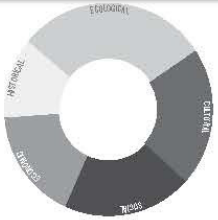
URBAN CORE



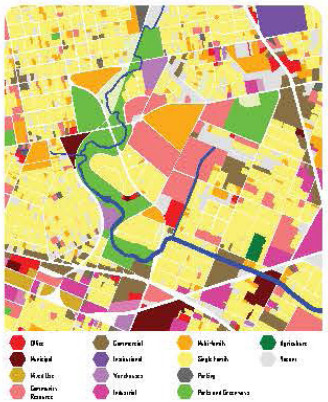


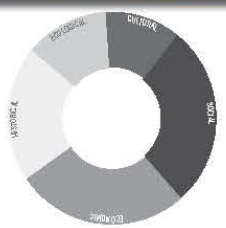
SUBURBAN



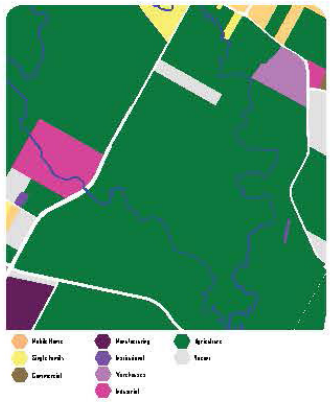


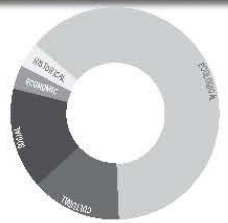
URBAN PERIPHERY





RURAL



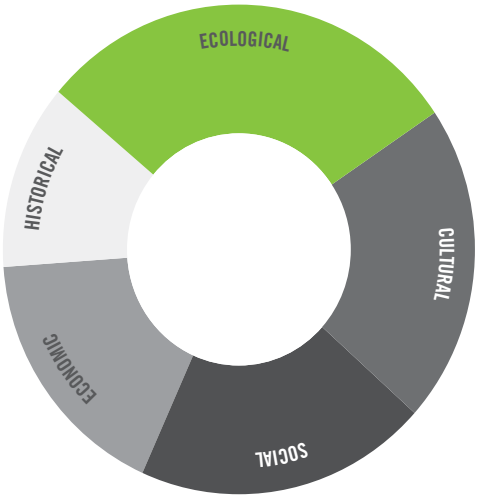


TRANSLATION TO VALUES

URBAN CORE

URBAN PERIPHERY

SUBURBAN



RURAL

TRANSLATION TO VALUES

TRANSLATION TO VALUES

MAXIMIZING FUNCTIONALITY

DOES YOUR DEFINITION OF GREEN INFRASTRUCTURE ALLOW FOR MULTIFUNCTIONALITY?

MAIN POINTS

1. FRAMEWORKS, LANGUAGE, AND SCALES
2. VALUES TRANSLATE TO GOALS
3. SYSTEMS THINKING
4. MULTIFUNCTIONALITY
5. IN PRACTICE

HEALTHY PARKS PLAN

FOR TRAVIS, BASTROP & CALDWELL COUNTIES

St David's Foundation

The Trust for Public Land

asakura robinson

TBG

Exercising is one of the most important ways people can improve physical health.

Hacer ejercicio es una de las formas más importantes para que las personas mejoren su salud física.

Improving local air and water quality and mitigating climate impacts can improve community health.

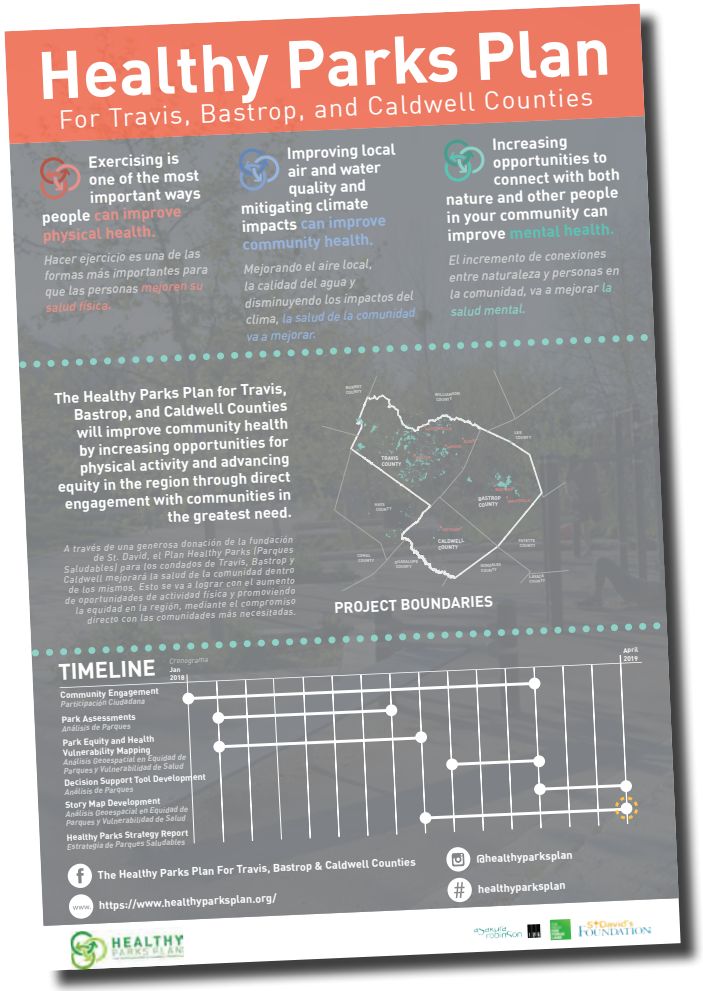
Mejorando el aire local, la calidad del agua y disminuyendo los impactos del clima, la salud de la comunidad va a mejorar.

HEALTHY PARKS PLAN: CORE IDEAS

Increasing opportunities to connect with both nature and other people in your community can improve mental health.

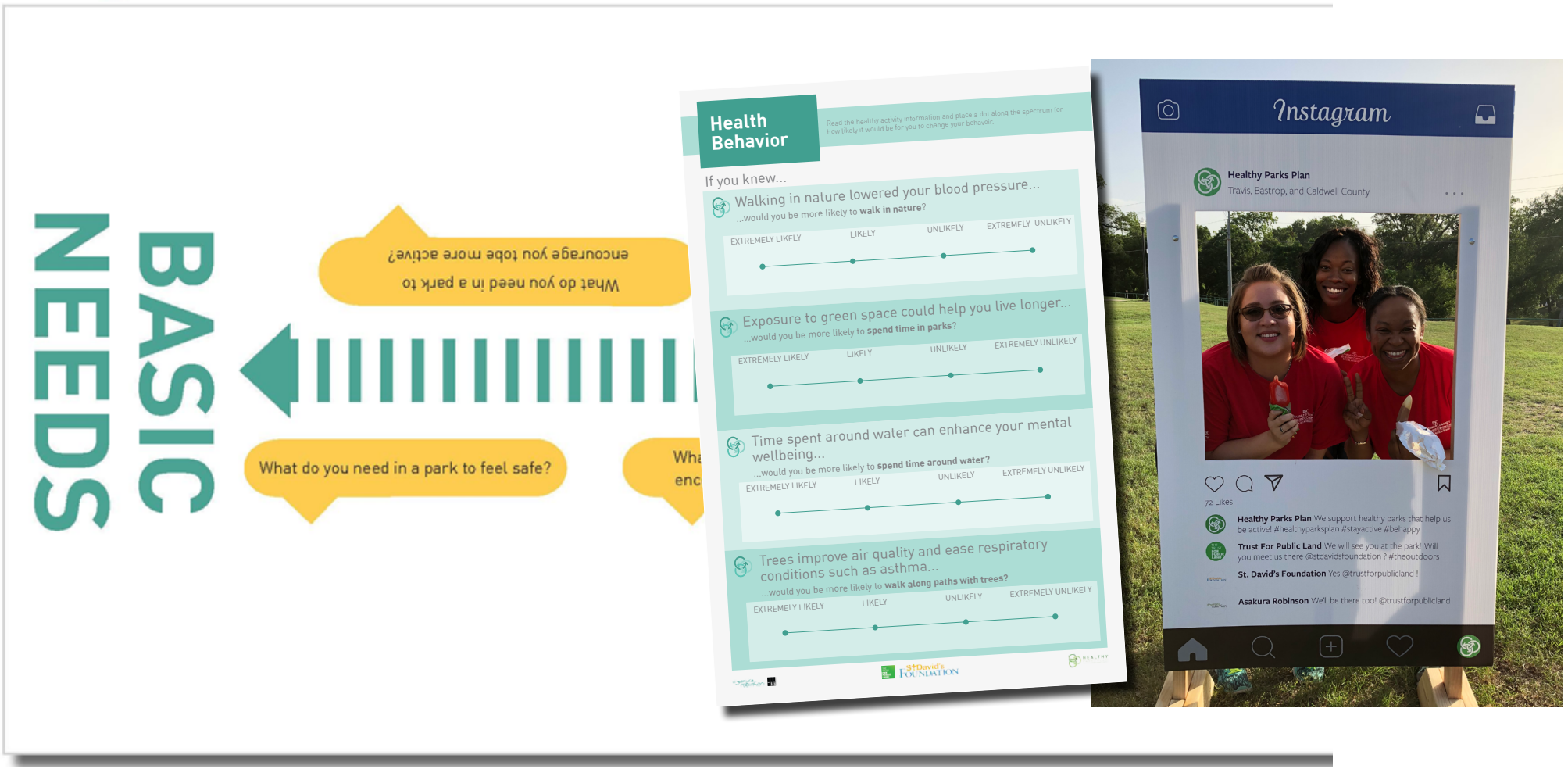
El incremento de conexiones entre naturaleza y personas en la comunidad, va a mejorar la salud mental.

TRANSLATING + CONVENING

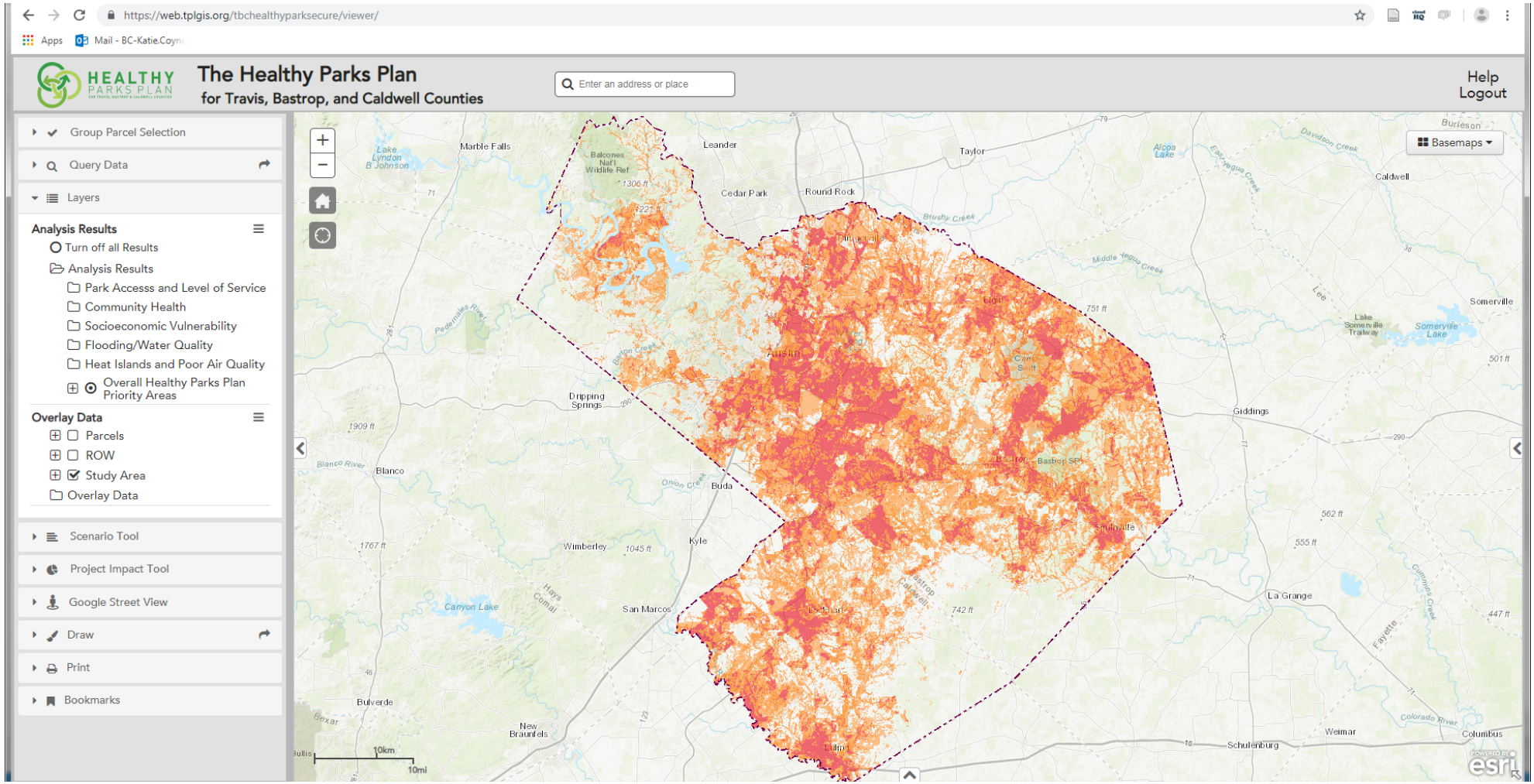


St David's Foundation · The Trust for Public Land · Sakura Robinson · TBG

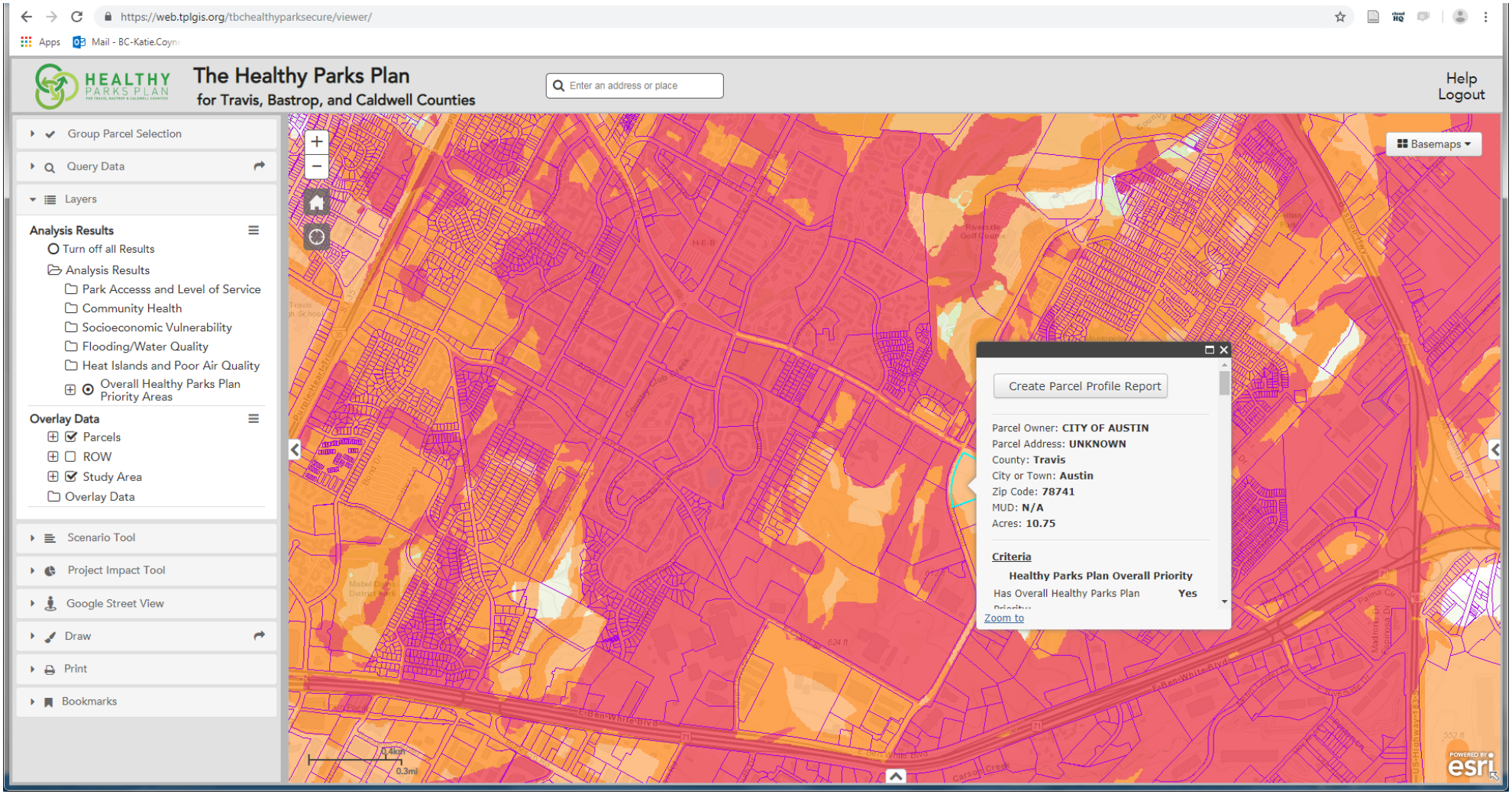
TRANSLATING + CONVENING



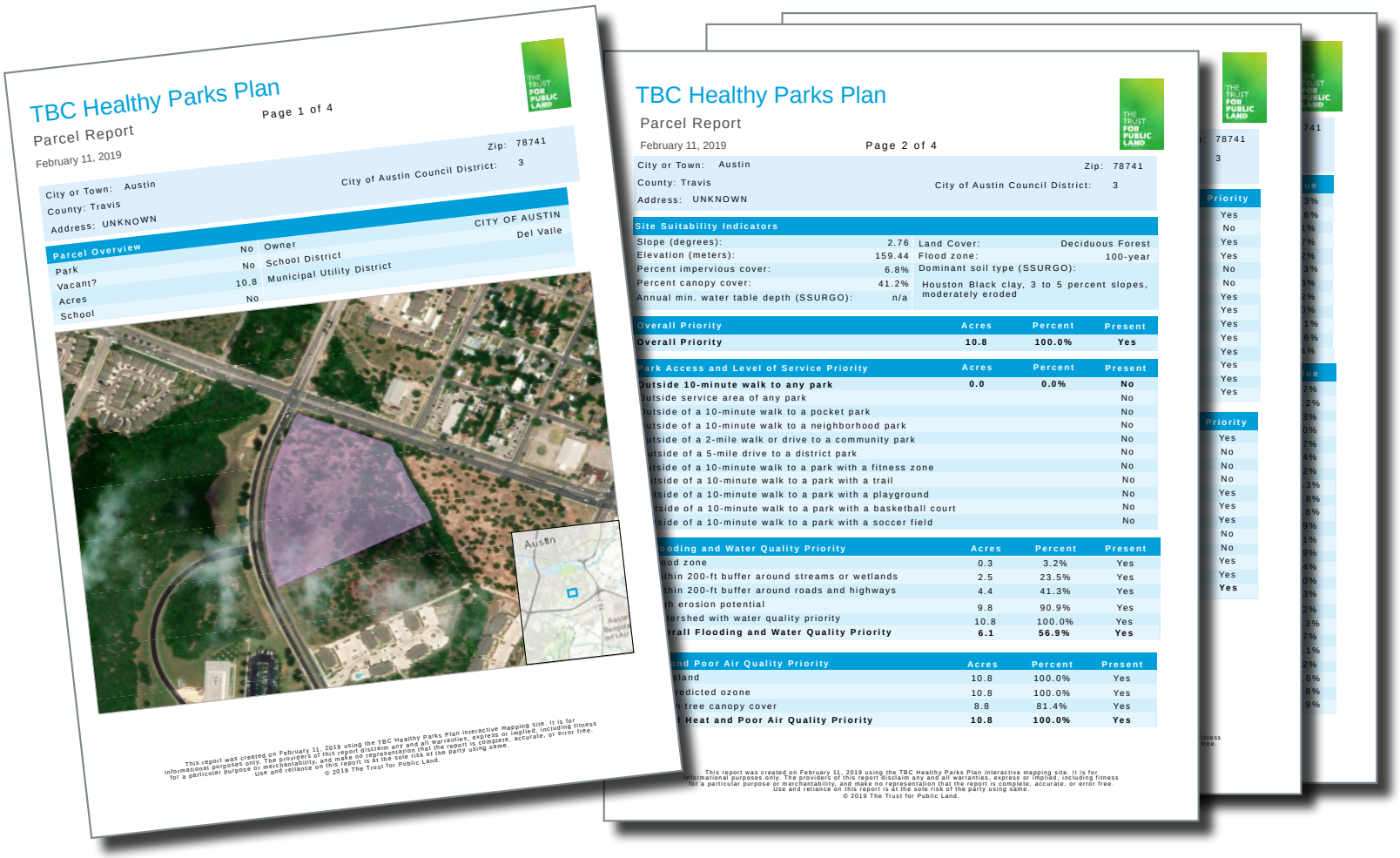
SYSTEMS THINKING + SCALE



SYSTEMS THINKING + SCALE



SYSTEMS THINKING + SCALE



TBC Healthy Parks Plan

Parcel Report

February 11, 2019 Page 1 of 4

City or Town: Austin
County: Travis
Address: UNKNOWN
City of Austin Council District: 3
Zip: 78741

Parcel Overview			
Park	No	Owner	CITY OF AUSTIN
Vacant?	No	School District	Del Valle
Acres	10.8	Municipal Utility District	
School	No		

TBC Healthy Parks Plan

Parcel Report

February 11, 2019 Page 2 of 4

City or Town: Austin
County: Travis
Address: UNKNOWN
City of Austin Council District: 3
Zip: 78741

Site Suitability Indicators			
Slope (degrees):	2.76	Land Cover:	Deciduous Forest
Elevation (meters):	159.44	Flood zone:	100-year
Percent impervious cover:	6.8%	Dominant soil type (SSURGO):	
Percent canopy cover:	41.2%	Houston Black clay, 3 to 5 percent slopes, moderately eroded	
Annual min. water table depth (SSURGO):	n/a		

Overall Priority	Acres	Percent	Present
Overall Priority	**10.8**	**100.0%**	**Yes**

Park Access and Level of Service Priority	Acres	Percent	Present
Outside 10-minute walk to any park	**0.0**	**0.0%**	**No**
Outside service area of any park			No
tside of a 10-minute walk to a pocket park			No
tside of a 10-minute walk to a neighborhood park			No
tside of a 2-mile walk or drive to a community park			No
tside of a 5-mile drive to a district park			No
tside of a 10-minute walk to a park with a fitness zone			No
tside of a 10-minute walk to a park with a trail			No
tside of a 10-minute walk to a park with a playground			No
side of a 10-minute walk to a park with a basketball court			No
side of a 10-minute walk to a park with a soccer field			No

ooding and Water Quality Priority	Acres	Percent	Present
ood zone	0.3	3.2%	Yes
thin 200-ft buffer around streams or wetlands	2.5	23.5%	Yes
thin 200-ft buffer around roads and highways	4.4	41.3%	Yes
h erosion potential	9.8	90.9%	Yes
ershed with water quality priority	10.8	100.0%	Yes
rall Flooding and Water Quality Priority	**6.1**	**56.9%**	**Yes**

nd Poor Air Quality Priority	Acres	Percent	Present
sland	10.8	100.0%	Yes
redicted ozone	10.8	100.0%	Yes
tree canopy cover	8.8	81.4%	Yes
Heat and Poor Air Quality Priority	**10.8**	**100.0%**	**Yes**

TRANSLATING + FRAMEWORKS + MULTIFUNCTIONALITY

Benefits
Tool benefits detail the ways in which the tool improves health.

Citation
The research that supports this tool.

Park Type
Indicates whether this tool is appropriate for a Neighborhood, Community, or Regional Park.

Research
Research or supporting evidence for why this tool is considered a healthy park amenity.

Relative Cost
Relative cost of the amenity. Ranges from $ - $$$.

Intensity
In the Physical Health Toolkit, Intensity indicates the level of cardiovascular activity or strength the amenity requires.

TRANSLATING + FRAMEWORKS + MULTIFUNCTIONALITY

Benefits

Decreases Stress Levels

Time spent in nature, especially in "blue spaces" like ponds, lakes, streams, and fountains, have been shown to decrease stress levels.

Cost: $$

Kaplan & Kaplan, 1989

Benefits

Eases Asthma

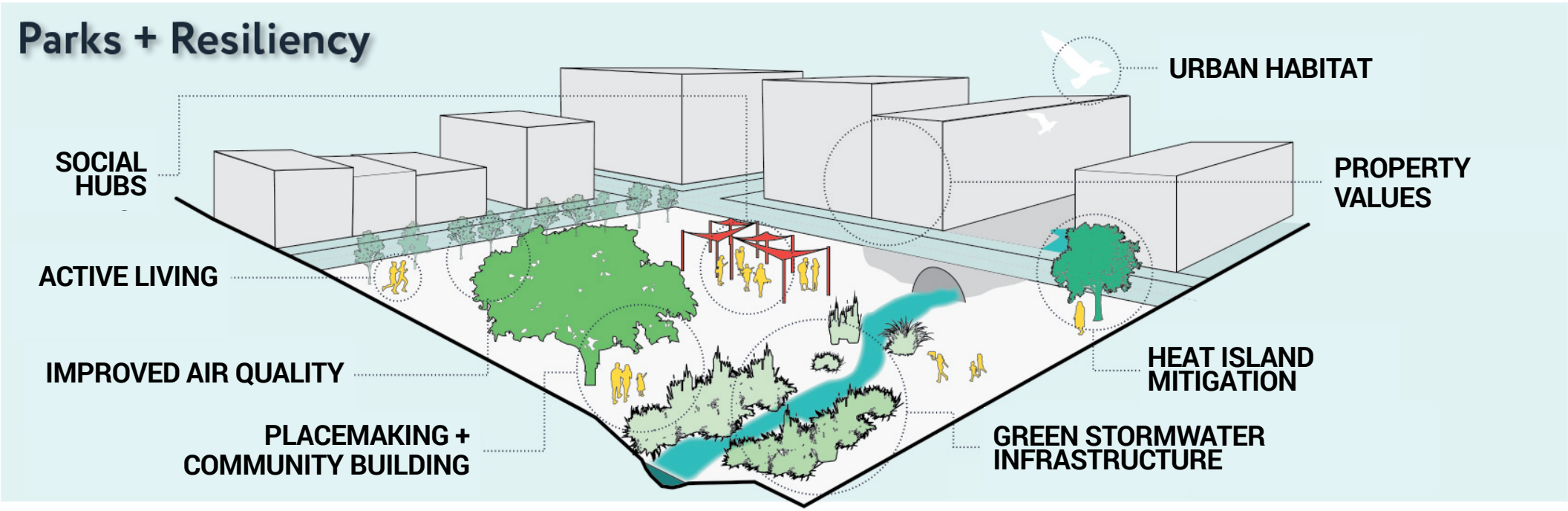
Prevents Heat-Related Illnesses

Asthma is the most common chronic disease in the United States, and it is often exacerbated by air pollution, which worsens as air temperatures increase. Trees both improve local air quality and provide cooling effects through shading and evapotranspiration.

Cost: $

Health.gov

TRANSLATING + FRAMEWORKS + MULTIFUNCTIONALITY



MAIN POINTS

1. FRAMEWORKS, LANGUAGE, AND SCALES
2. VALUES TRANSLATE TO GOALS
3. SYSTEMS THINKING
4. MULTIFUNCTIONALITY
5. IN PRACTICE

QUESTIONS?

CONTACT:

KATIE COYNE

AICP, SITES AP,
CERTIFIED ECOLOGIST - ESA

URBAN ECOLOGY STUDIO LEAD
ASAKURA ROBINSON COMPANY

katie@asakurarobinson.com

asakura robinson