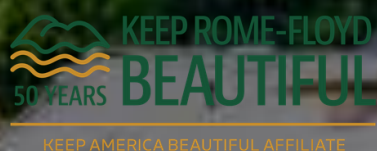


ROOTED IN COLLABORATION

The Living Infrastructure Framework: Managing Canopies, Ordinances, and Operations for Resilient Communities





PRESENTATION ROADMAP

01

Rome's Why

- Founded at the confluence of three rivers, Rome's history has always been connected to natural systems.

02

Terminology & Key Concepts

- Understanding the concepts that shape sustainable growth and development

03

The Dual-Network Approach

- Balancing Hard Engineering Capabilities with Natural Utility Performance

04

Trees as Infrastructure

- Stormwater management, cooling, walkability, and long-term value

05

Legacy & Leadership

- The Human Capital and Innovative Thinking Driving Our Living Utility

06

Trails, Greenways & Community Connectivity

- How outdoor recreation strengthens quality of life and economic growth

07

Cost Benefit Analysis

- Understanding the Long-Term Economic, Environmental, and Community Value of Green Infrastructure

08

Importance of Good Infrastructure Planning

- Building Communities That Function Better, Last Longer, and Adapt More Successfully

09

Consequences of Poor Planning

- How Short-Term Decisions Create Long-Term Infrastructure Challenges

10

Funding the Future & Looking Ahead

- Grants, partnerships, phased implementation, and building community capacity

ROME'S WHY

Founded at the confluence of three rivers, Rome's history has always been connected to natural systems.

Photo Location: Rome-Floyd ECO Center

Wetlands Demonstration Area

Photo credit: Hannah Bagley



ROME'S WHY

The City of Rome was founded in 1834, for its rich waterways and commerce. Rome was strategically established at the confluence of the Etowah, Oostanaula, and Coosa Rivers.

Rome's rivers, trail systems, tree canopy, and outdoor recreation assets are not separate from the city's infrastructure—they are foundational to it.

The region's waterways support:

- **ecological biodiversity**
- **recreation**
- **tourism**
- **community character, and watershed health**

Because Rome sits at the confluence of three rivers, every planning decision ultimately becomes a watershed decision.



Photo credit Georgia's Rome Tourism website.

ROME'S WHY

The rivers that define Rome are part of one of the most ecologically significant freshwater systems in the Southeastern United States.

The Coosa River Basin is recognized as a biodiversity hotspot and supports:

- Native fish species
- Freshwater mussels
- Aquatic insects
- Amphibians
- Reptiles
- Migratory birds
- Pollinator habitats
- Riparian forests



Photo credit: Georgia Rivers

Many species found within the basin occur nowhere else in the world.



TERMINOLOGY & KEY CONCEPTS

Understanding the concepts that shape sustainable growth and development

Photo Location: Rome-Floyd ECO Center

Wetlands Demonstration Area

Photo credit: Hannah Bagley



TERMINOLOGY & KEY CONCEPTS - **WATERSHED**

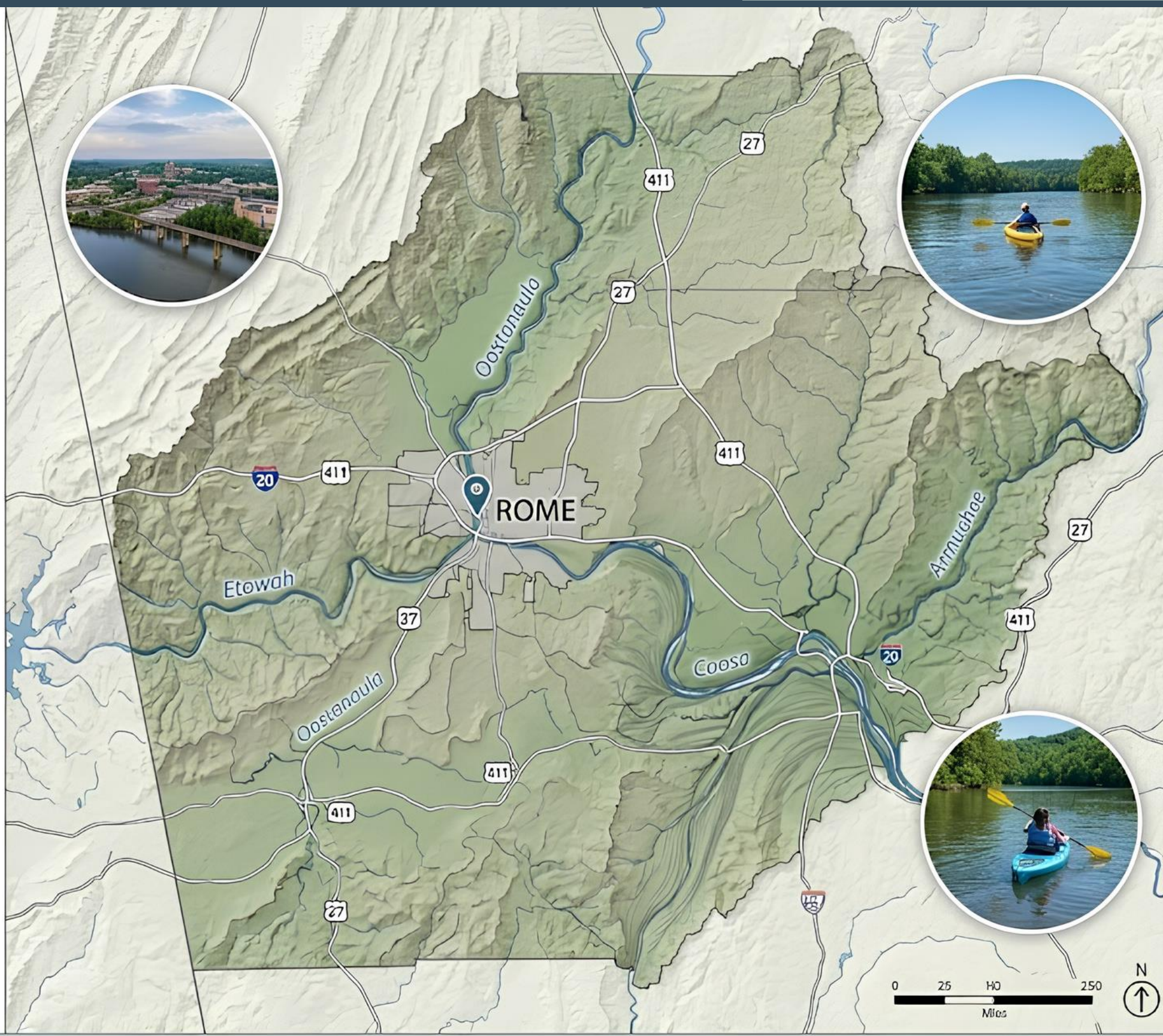
OUR WATERSHED: FLOYD COUNTY, GEORGIA

The ecological diversity of the Coosa River Basin is preserved and refined as a super-detailed and annotated watershed boundaries, large ecological diversity, main integrated panel of macro-photography and data visualization, detailed photos clean, the Coosa River Basins, are annotated and its overall connectivity rises from the geographical aspects.



Rome's Natural Heritage

- Clean Water
- Eloquent Water
- Brown Water
- Wildlife Habitat
- Various native fish of species
- Fish of mussel species
- Mussel species
- Floyd's River Roots
- Cooler treed community
- Oostanaula River
- Armanaula
- Cooler treed community
- Weor:Heritage



Every drop.
Every decision.
Every tree.
Protects our
natural
resources.

TERMINOLOGY & KEY CONCEPTS - WILDLIFE OF THE CRB

1. COOSA DARTER (*Etheostoma coosae*)



HABITAT: Clean, rocky shoals and riffles.
THREATS: Siltation, habitat fragmentation.
KEY FEATURE: Vibrant breeding colors.

2. PYGMY SCULPIN (*Cottus paulus*)



HABITAT: Cold, clear spring runs and pools.
THREATS: Ground water decline, pollution.
STATUS: Federally Endangered.

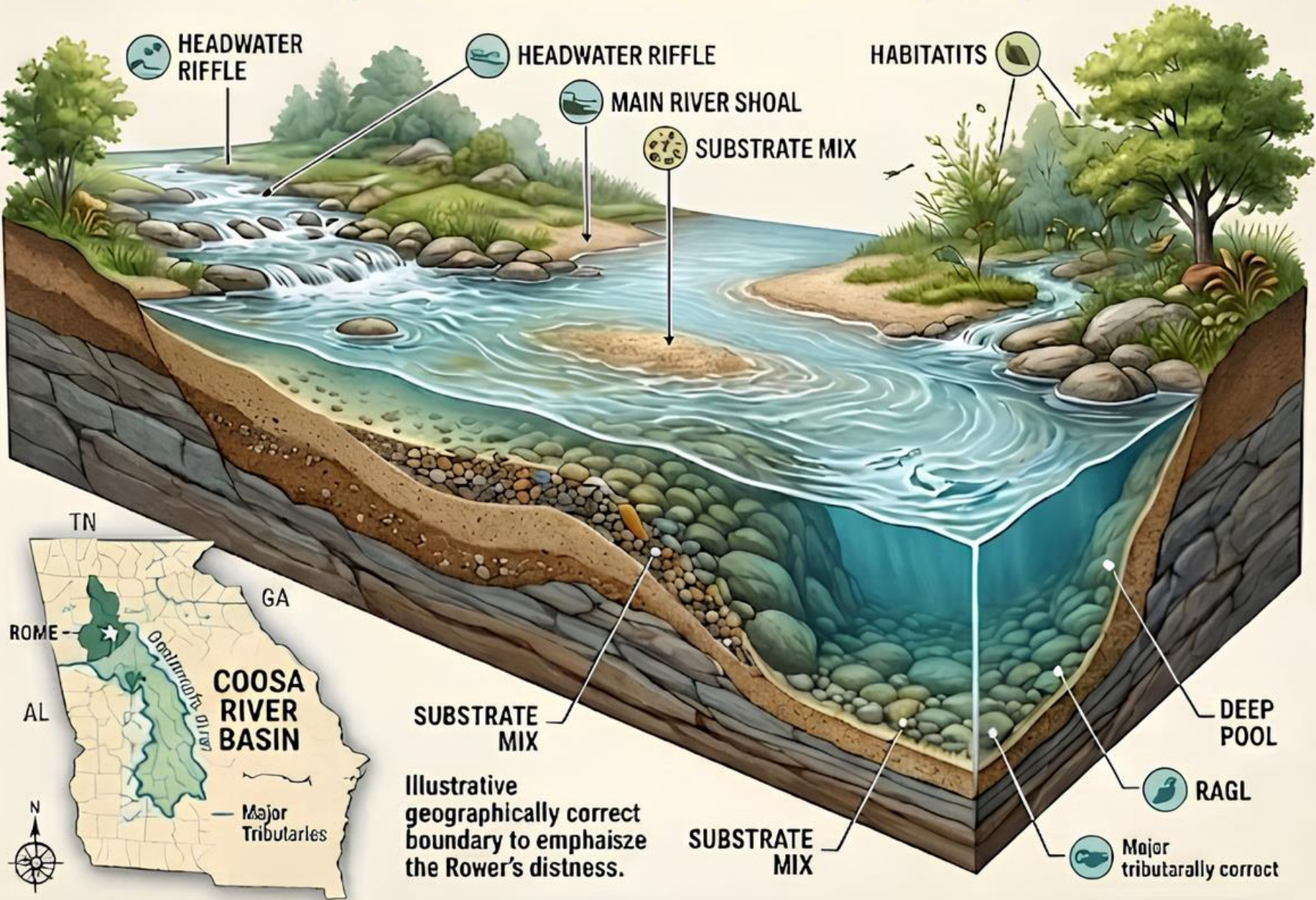
3. CHEROKEE DARTER (*Etheostoma scotti*)



HABITAT: Clean, rocky shoals and gravel beds
THREATS: Habitat loss, sedimentation, and ...
KEY FEATURE: Federally Threatened.

ENDEMIC SPECIES OF THE COOSA RIVER BASIN

A Showcase of Aquatic Wildlife Found Nowhere Else on Earth
The Upper Coosa Basin: A Global Biodiversity Hotspot



Illustrative
geographically correct
boundary to emphasize
the Rower's distness.

SUBSTRATE
MIX

RAGL

Major
tributarally correct

KEY ENDEMIC GROUPS: 9 FISH SPECIES, 82 SNAIL SPECIES (Historic), 11 MUSSEL SPECIES
OVER 30 CURRENTLY KNOWN ENDEMIC AQUATIC SPECIES
CONSERVATION URGENCY: The largest stxtinction event in modern times occurred in this basin.
Protecting remaining endemics is crucial.

2. COOSA CRAWFISH (*Cambarus coosae*)



HABITAT: Medium-sized streams, typically found beneath rocks.
THREATS: Sedimentation, flow alteration.
STATUS: Endemic to Upper Coosa basin (AL/GA)

4. PAINTED ROCKSNAIL (*Leptoxis coosaensis*)



HABITAT: Large streams & rivers in sand/gravel.
THREATS: Excess sedimentation, flow changes.
KEY FEATURE: Pronounced, deep ridges.

6. COOSA MOCCASINSHELL (*Medionidus parvulus*)



HABITAT: River sandbars and gravel beds.
THREATS: Water contamination, sedimentation.
STATUS: Federally Threatened.

TERMINOLOGY & KEY CONCEPTS - NATIVE TREES OF NWGA

KEY TERMS & CONCEPTS

**NATIVE SPECIES**
e.g. White Oaks

VS.

**non-native species**

Plants that evolved naturally in the region over thousands of years, forming vital relationships.

**ECOSYSTEM**



A community of living organisms and their environment, interacting as a system.

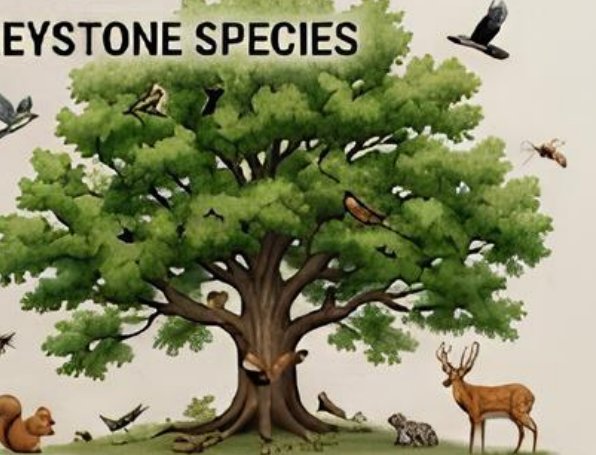
**3. RIPARIAN ZONE**

The interface between land and a river or stream, critical for water quality and habitat.

**4. WATERSHED**

An area of land where all water drains to a common point, like the Coosa River.

**5. KEYSTONE SPECIES**



Species that have a disproportionately large effect on its natural environment relative to its abundance (e.g., GAB9).



PROFILE OF SELECTED NATIVE TREES



AMERICAN SYCAMORE
Platanus occidentalis



LOCATION: Riverbanks, floodplains.
VALUE: Large scale, shade, erosion control.



WHITE OAK
Quercus alba



LOCATION: Upland forests.
VALUE: Keystone species, vital for wildlife (mast), wood.



EASTERN HEMLOCK
Tsuga canadensis



LOCATION: Cool, moist streams.
VALUE: Unique habitat, vulnerable to pests, shades streams.



RIVER BIRCH
Betula nigra



LOCATION: Water's edge.
VALUE: Fast growth, excellent for bank stability, provides cover.

ECOSYSTEM BENEFITS

1 EROSION CONTROL:



ROOT SYSTEMS
Anchor soil, stabilize riverbanks, and prevent soil loss.

EROSION CONTROL:
Erosion, poor water quality, higher flooding, reduced wildlife.

2 STORMWATER HELP:



1 Rain
2 Canopy
3 Surface flow
4 Infiltration

DECIDUOUS TREE:
Intercepts ~750 GAL/yr.
EVERGREEN:
Intercepts ~4,000 GAL/yr!
Filters pollutants, reduces runoff, recharging groundwater.

WITHOUT NATIVE TREES:
Erosion, poor water quality, higher flooding, reduced wildlife.

WITH NATIVE TREES:
Stability, clean water, reduced flooding, thriving ecosystem.

2 WILDLIFE HABITAT:



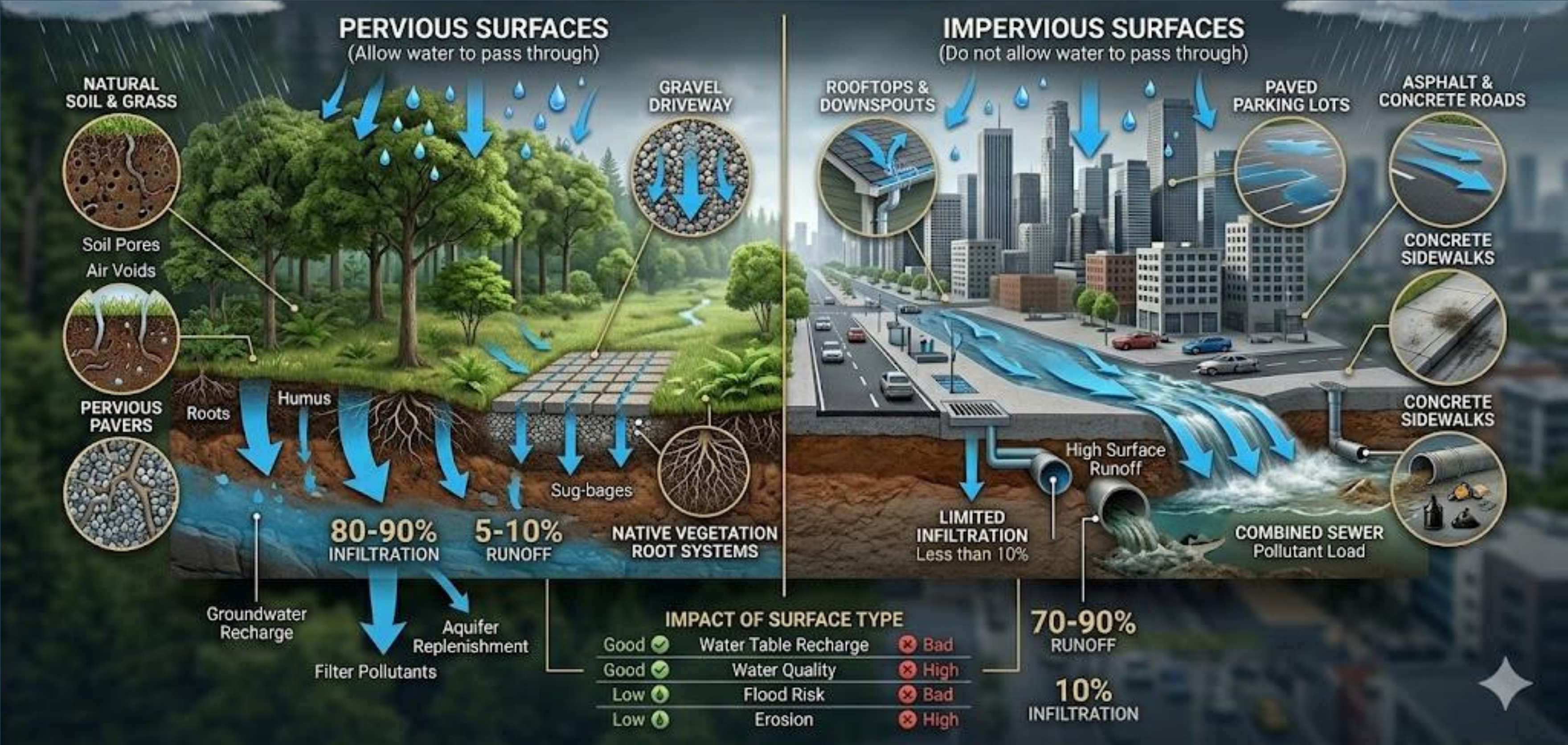
Food, shelter, breeding sites, corridors.

3 COMMUNITY BENEFITS:

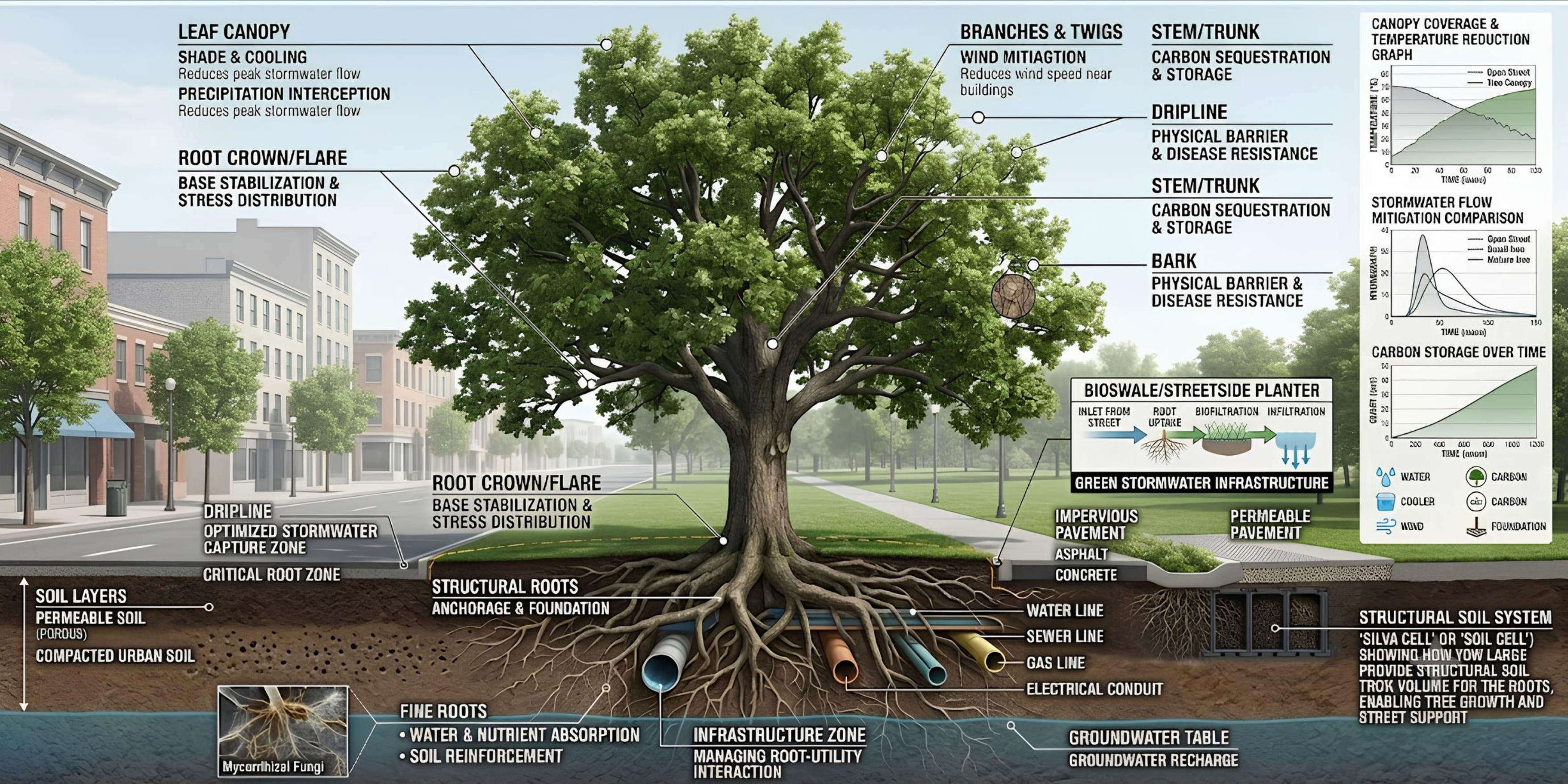


FILTERED WATER
SHADE & COOLING
CLEAN AIR
RECREATION & AESTHETICS

TERMINOLOGY & KEY CONCEPTS - PERVIOUS VS. IMPERVIOUS



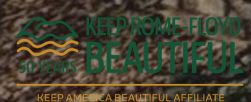
TERMINOLOGY & KEY CONCEPTS - TREES & INFRASTRUCTURE



THE DUAL-NETWORK APPROACH

Balancing Hard Engineering Capabilities with Natural Utility Performance

Photo Location: Unity Point
Photo credit: Hannah Bagley



THE DUAL-NETWORK APPROACH

THE SEPARATE MS4 SYSTEM



THE DUAL-NETWORK APPROACH



TREES AS INFRASTRUCTURE

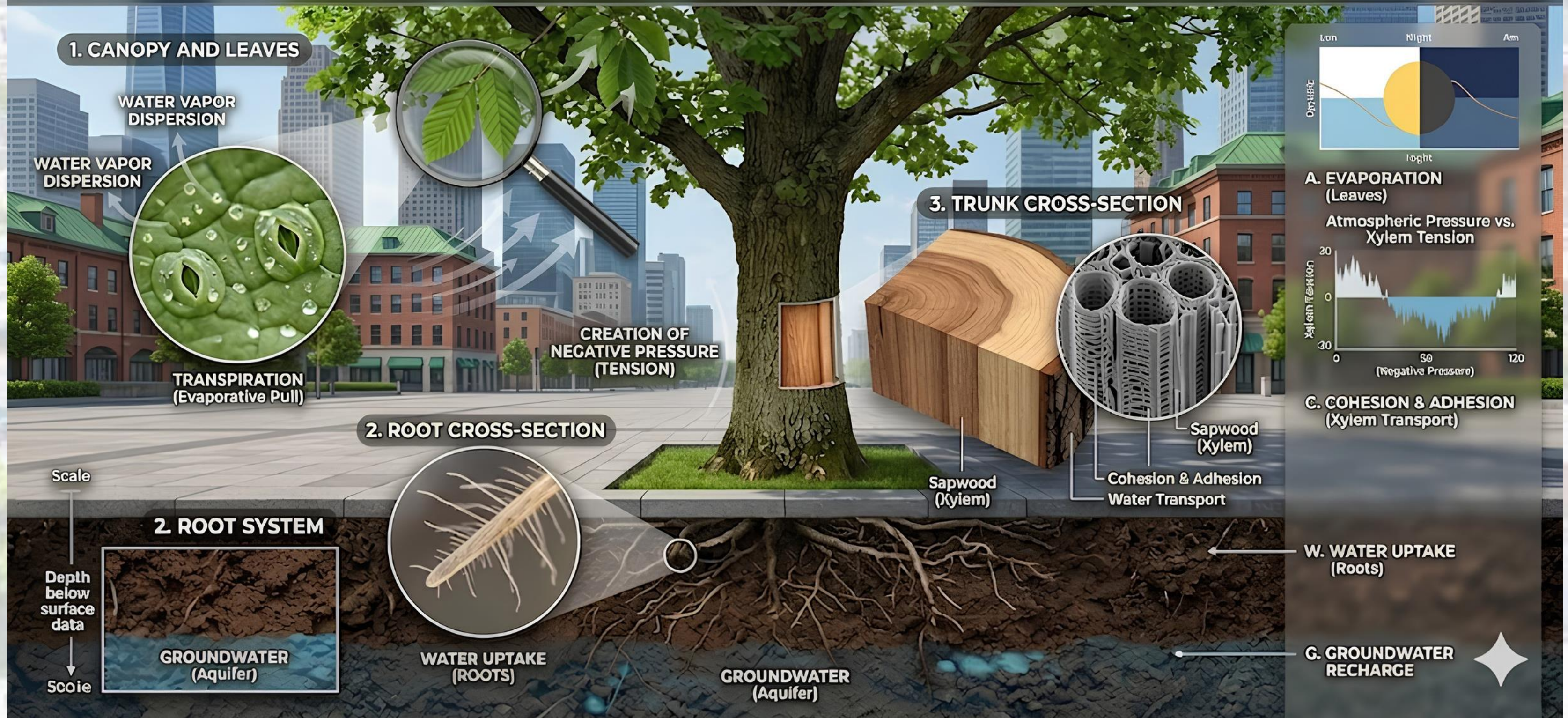
Stormwater management, cooling, walkability, and long-term value

Photo Location: Downtown Broad Street
Photo credit: Hannah Bagley

TREES AS INFRASTRUCTURE

A LIVING TREE AS A HYDRAULIC PUMP

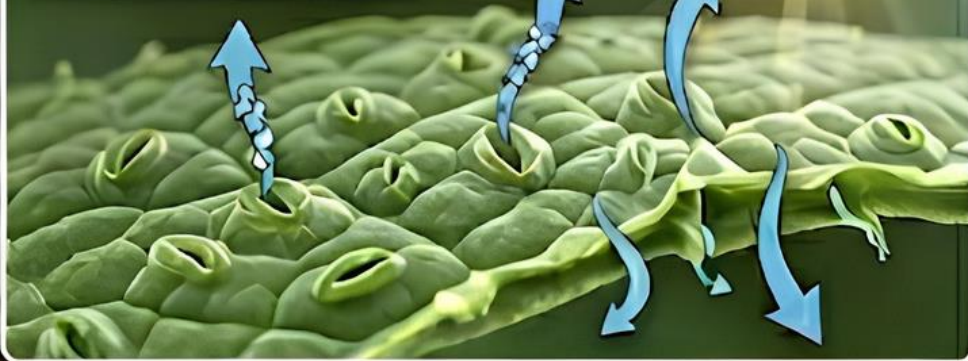
THE COHESION-TENSION THEORY AND TRANSPIRATION PULL



TREES AS INFRASTRUCTURE

PANEL 1: CANOPY AND LEAVES

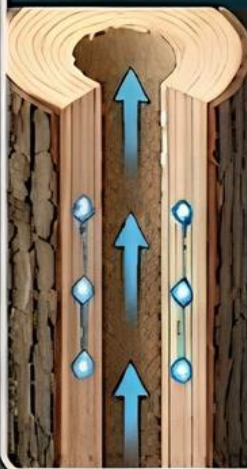
Millions of microscopic valves (stomata) actively control fluid dynamics. Solar energy drives transpiration, generating negative pressure (transpiration pull/tension).



PANEL 3: TRUNK CROSS-SECTION

Cohesion-Tension Theory of plant hydraulics

Water molecules tightly cling through hydrogen bonding. Unbroken chain of water in xylem vessels acts like a giant rubber band stretching from root to canopy. Sun powers this mechanical suction upward against gravity with incredible physical force.



PANEL 4: SILVA CELL MITIGATION

Silva Cell Modular Frames (Grid structure)

Roots are contained and directed **downward** within the cells, preventing pavement heave

Porous pavement at surface allows continuous infiltration

Safe root path preserves sidewalk brand of growing integrity



Reduced need for pavement expansion joints

Safe root path preserves sidewalk integrity

THE CHALLENGE: SIDEWALK BUCKLING

FULLY MATURE CANOPY TREE:
Absorbs 10-150 gal/day.

DOWNTOWN STREETSCAPE TREE (in natural conditions):
Pumps 10-50 gal/day during season.
500-1,500 gal/year.

Fine root hairs in soil macropores

THE CHALLENGE: SIDEWALK BUCKLING

Dense uncompact urban soil volume in limited space forces large, structural roots to heave concrete and pavers, creating hazards.

Biological Fracturing: Fine roots shattering compacted soil, creating a massive, sprawling network of soil macropores. Turning ground into a natural underground sponge to safely hold, slow, filter, and infiltrate millions of gallons of stormwater into local aquifers. Trees actively physically re-engineer and restructure the entire urban soil profile.

Pumps 10-80 gal/day during active season.

Intercepts/Evaporates 500-1,500 gal/year.

Continuous, large, uncompact soil volume

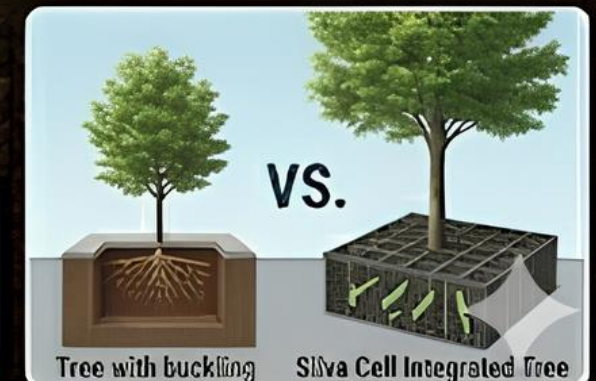


TREES AS URBAN HYDRAULIC UTILITY

Active, solar-powered biological pumps re-engineering soil for water processing. Extraordinary bioengineering. Decentralized network pulling thousands of gallons from overtaxed storm sewer system daily.

OPTIMAL URBAN TREE LONGEVITY THROUGH SOIL HEALTH.

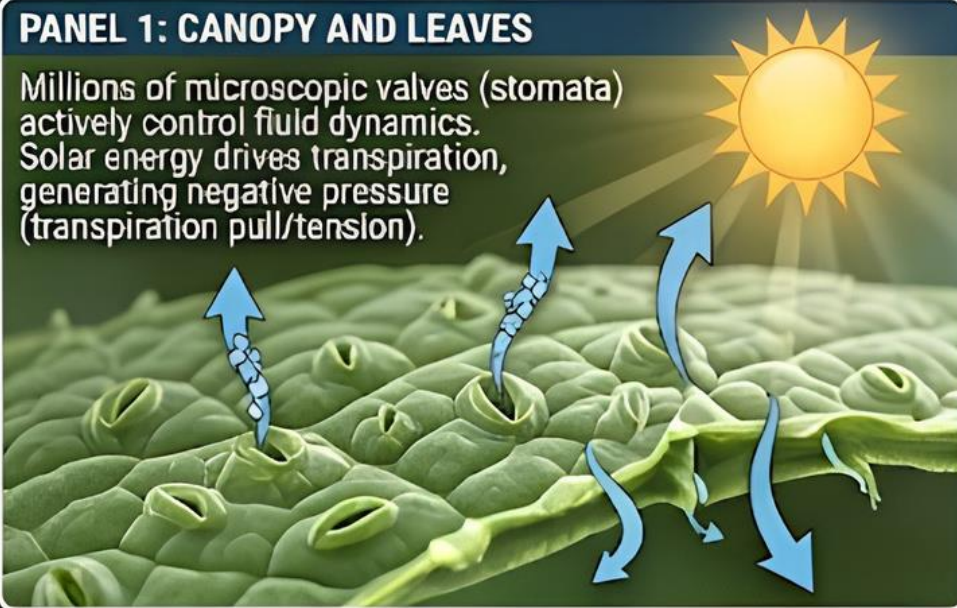
SILVA CELL TECHNOLOGY FOR OPTIMAL GROWTH - Healthy root expansion, allowing street trees to live much longer, reach full maturity, and deliver maximum infrastructural benefit. Proper soil conditions = healthier, more resilient trees.



TREES AS INFRASTRUCTURE

PANEL 1: CANOPY AND LEAVES

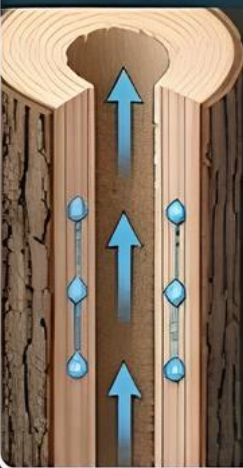
Millions of microscopic valves (stomata) actively control fluid dynamics. Solar energy drives transpiration, generating negative pressure (transpiration pull/tension).



PANEL 3: TRUNK CROSS-SECTION

Cohesion-Tension Theory of plant hydraulics

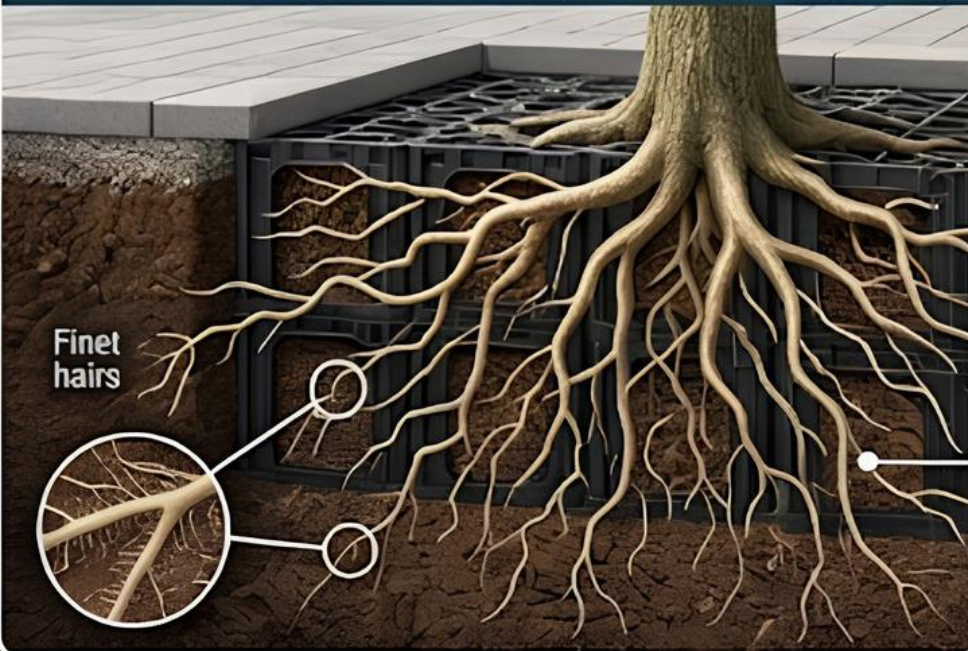
Water molecules tightly cling through hydrogen bonding. Unbroken chain of water in xylem vessels acts like a giant rubber band stretching from root to canopy. Sun powers this mechanical suction upward against gravity with incredible physical force.



PANEL 2: ROOT SYSTEM AND BIOLOGICAL SOIL RE-ENGINEERING

FULLY MATURE CANOPY TREE:
Absorbs
10-150 gal/day.

DOWNTOWN STREETSCAPE TREE (with Silva Cell):
Pumps 10-50 gal/day during season.
500-1,500 gal/year.



Biological Fracturing: Fine roots shattering compacted soil, creating a massive, sprawling network of soil macropores. Turning ground into a natural underground sponge to safely hold, slow, filter, and infiltrate millions of gallons of stormwater into local aquifers. Trees actively physically re-engineer and restructure the entire urban soil profile.

Pumps
10-50 gal/day
during active
season.

Intercepts/
Evaporates
500-1,500
gal/year.

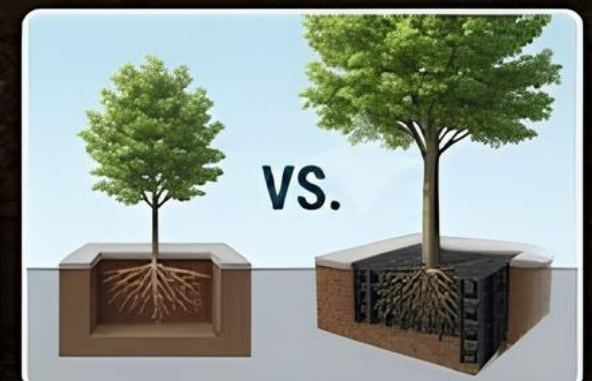
ENHANCED URBAN TREE LONGEVITY THROUGH SILVA CELL INTEGRATION

The Silva Cell provides vast, uncompacted soil volumes for healthy root expansion, allowing street trees to live much longer, reach full maturity, and deliver maximum infrastructural benefit. Proper soil conditions = healthier, more resilient trees.



TREES AS URBAN HYDRAULIC UTILITY

Active, solar-powered hydraulic pumps processing water for free. Extraordinary sub-surface engineering. Decentralized network pulling thousands of gallons from overtaxed storm sewer system daily.



LEGACY & LEADERSHIP

The Human Capital and Innovative Thinking Driving Our Living Utility

Photo Location: Downtown Rome
Photo credit: Hannah Bagley

LEGACY & LEADERSHIP

- 36 Years as a Tree City USA: Proudly recognized by the Arbor Day Foundation since 1990.
- Active State Partnership: Core member of the Georgia Tree Council, unlocking technical forestry grants and planning assistance.
- Community-Led Governance: The Rome Tree Board meets bi-monthly at the Rome-Floyd ECO Center to oversee public right-of-ways.
- The Living Legacy: Transition of our historic Memorial Arboretum to the scenic Mount Berry Trail, expanding public green space

CITY OF ROME, GA: COMMUNITY CREDENTIALS & ASSETS



TREE CITY USA (SINCE 1990)



TREE CITY USA



ISA CERTIFIED ARBORIST STAFF

✓ TRAQ CERTIFIED



GA UNIFIED LAND DEVELOPMENT CODE (ULDC) COMPLIANCE



URBAN FORESTRY MASTER PLAN



36-YEAR PARTNERSHIP: TREE CITY USA



DEDICATED TREE BOARD AT



INTEGRATED MUNICIPAL DEPARTMENTS



GEORGIA TREE COUNCIL MEMBER



GEORGIA TREE COUNCIL MEMBER



PLANNING



ENGINEERING



PUBLIC ENVIRONMENTAL WORKS

LEGACY & LEADERSHIP



Terry Paige, Former Municipal Arborist



Chad Hampton, City of Rome Street Department Director



Chris Jenkins, City of Rome Public Works Division Director

LEGACY & LEADERSHIP

ISA Certified Arborist (International Society of Arboriculture):

- Core focus: Scientific tree health and structural pruning standards.
- Active guidance: Matching the correct species to local soil profiles and spacing.

TRAQ Certification (Tree Risk Assessment Qualification):

- Core focus: Active hazard identification and liability mitigation.
- Municipal protection: Standardized risk-rating to protect citizens, roads, and power lines.

over 90 years of experince



Chad Hampton

City Street Department Director
SA Certified
20 Years



Ernest Watson

City Municipal Arborist
ISA Certified/ TRAQ Certified
25 Years



Seth Hawkins

Georgia Forestry Commission
Urban & Communtiy Forest
Coordinator
ISA Certified/ TRAQ Certified
11 Years



John Hendrickson

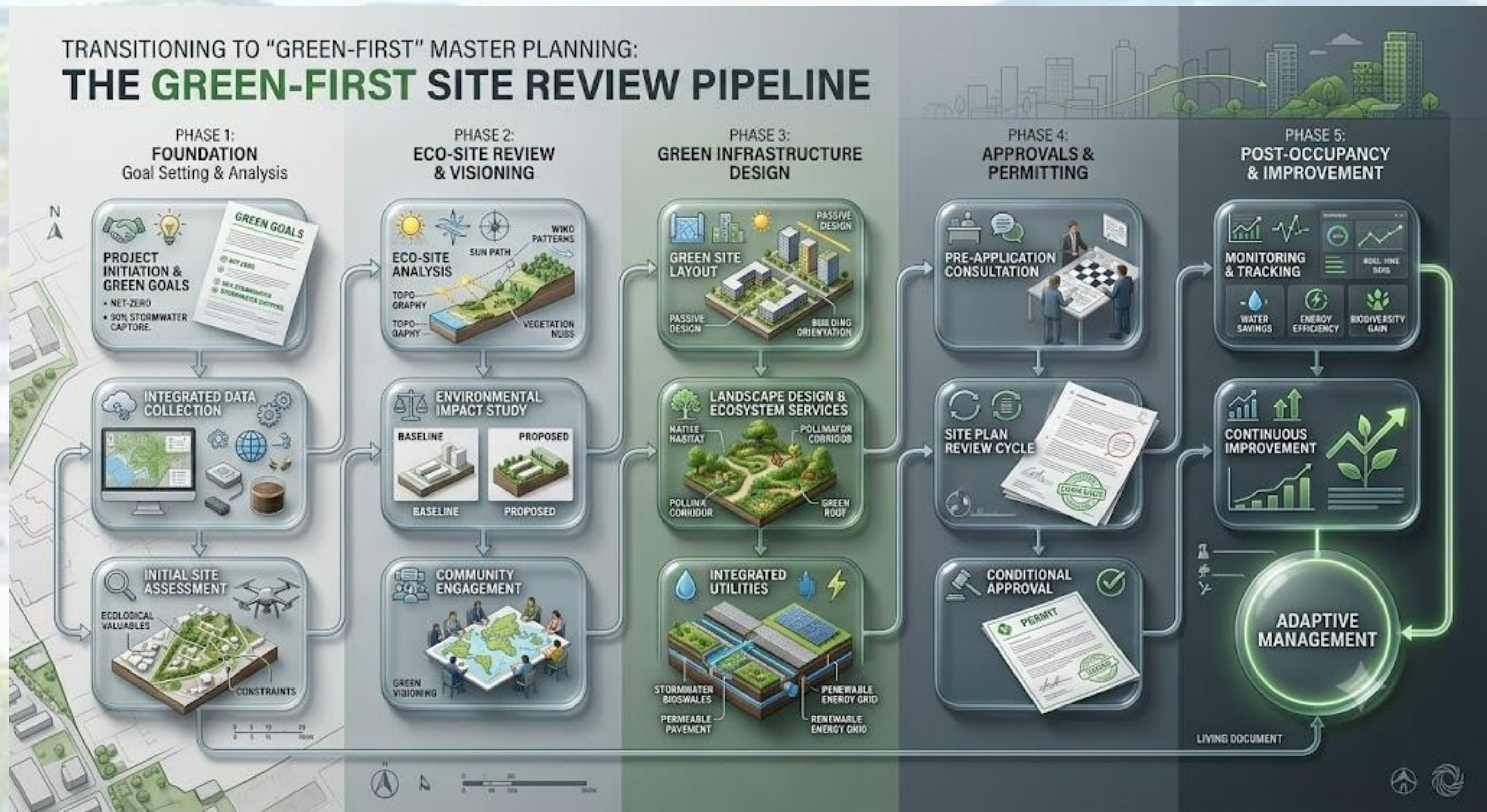
John Hendrickson
Tree Board Chairman
Retired Forester of
40 years

PLANNING FOR RESILIENCE

Integrating green infrastructure into master plans and development

Photo Location:
Photo credit: Hannah Bagley

PLANNING FOR RESILIENCE SUCCESS and CHALLENGES



TRAILS, GREENWAYS & COMMUNITY CONNECTIVITY

How outdoor recreation strengthens quality of life and economic growth

Photo Location:
Photo credit: Hannah Bagley

TRAILS, GREENWAYS & COMMUNITY CONNECTIVITY

- Increase quality of life
- Improve pedestrian connectivity to downtown and the larger Rome community
- Improve downtown activity
- Increased health benefits, including mental health



TRAILS, GREENWAYS & COMMUNITY CONNECTIVITY



Explore Georgia 2024 Spending and Economic Impact: Floyd County

- \$149.9 Million total visitor spending
- 2.4% – share of jobs directly sustained by visitor spending in the County
- Visitors generated \$12.2 million in state and local taxes
- \$19.2 of the \$149.9 million spent on recreation



COST BENEFIT ANALYSIS

Understanding the Long-Term Economic, Environmental, and Community
Value of Green Infrastructure

Photo Location:
Photo credit: Hannah Bagley

COST BENEFIT ANALYSIS

Systematic process used to compare the total expected costs of a project against the expected benefits.

THE LONG-TERM FINANCIAL IMPACT: INVESTING IN GREEN INFRASTRUCTURE PAYS OFF



LOWER INFRASTRUCTURE COSTS

Less runoff means smaller, less costly stormwater pipes, detention basins, and treatment systems.



REDUCED FLOOD DAMAGE

Fewer and less severe floods protect homes, businesses, roads, and critical infrastructure.



LOWER OPERATION & MAINTENANCE COSTS

Green infrastructure has lower long-term maintenance costs compared to traditional gray infrastructure.



STRONGER PROPERTY VALUES

Greener, healthier neighborhoods are more attractive places to live, work, and invest.



HEALTHIER, MORE RESILIENT COMMUNITY

Clean water, green spaces, and resilient systems reduce future costs and improve quality of life.



GREEN INFRASTRUCTURE IS AN INVESTMENT IN OUR COMMUNITY TODAY FOR A MORE RESILIENT, AFFORDABLE, AND THRIVING TOMORROW.

ADD INFO FROM SETH'S TREE BOARD DISCUSSION LINKS TO THE STUDIES

IMPORTANCE OF GOOD INFRASTRUCTURE PLANNING

Building Communities That Function Better, Last Longer, and Adapt More
Successfully

Photo Location:
Photo credit: Hannah Bagley

IMPORTANCE OF GOOD INFRASTRUCTURE PLANNING

- Improve the aesthetic appearance of downtown
- Attract private investment
- Improve accessibility and pedestrian connectivity
- Increase local dollars spent in the community
- Increased dollars downtown creates opportunity for more jobs
- Better quality of life
- Connect downtown to larger community
- Create shade, especially during warmer months
- Reduce heat islands





IMPORTANCE OF GOOD INFRASTRUCTURE PLANNING



CONSEQUENCES OF POOR PLANNING

How Short-Term Decisions Create Long-Term Infrastructure Challenges

Photo Location:
Photo credit: Hannah Bagley

CONSEQUENCES OF POOR PLANNING



CONSEQUENCES OF POOR PLANNING

- Economic costs
 - businesses closing, higher vacancy rate, loss of jobs
- Public Health Issues
- Reduced Quality of Life
 - Environmental damage
 - Increased flooding
 - Urban Heat Island Effect
 - Biodiversity Loss
 - Poor Air Quality and Water Quality
 - Higher Health Risks
 - Reduced Mental Well-Being
- Higher Infrastructure Costs
- Greater Disaster Losses
- Lower Property and Investment Appeal
- Reduced Community Cohesion



Funding the Future

Grants, partnerships, phased implementation, and building communtiy capacity

Photo Location:
Photo credit: Hannah Bagley

FUNDING THE FUTURE

Deadline
Reason
Eligible
Attainable
Match



FUNDING OPPORTUNITIES

Trail/Recreation/Connectivity Projects

- Perrow Park Redevelopment Project: \$1,000,000 (Jasper)
- Goodyear Trail: \$200,000 (Cedartown)
- Walker Rocks Trail Remediation: \$200,000 (Walker County)
- Pentz & Cuyler Street Corridor Improvement Project: \$2,000,000 (Dalton)
- John Ross Commons Playground: \$387,000 (Rossville)



LOOKING AHEAD

Building resilient communities through long-term stewardship and planning

Photo Location:
Photo credit: Hannah Bagley



Conservation Efforts



PROTECTED AREAS

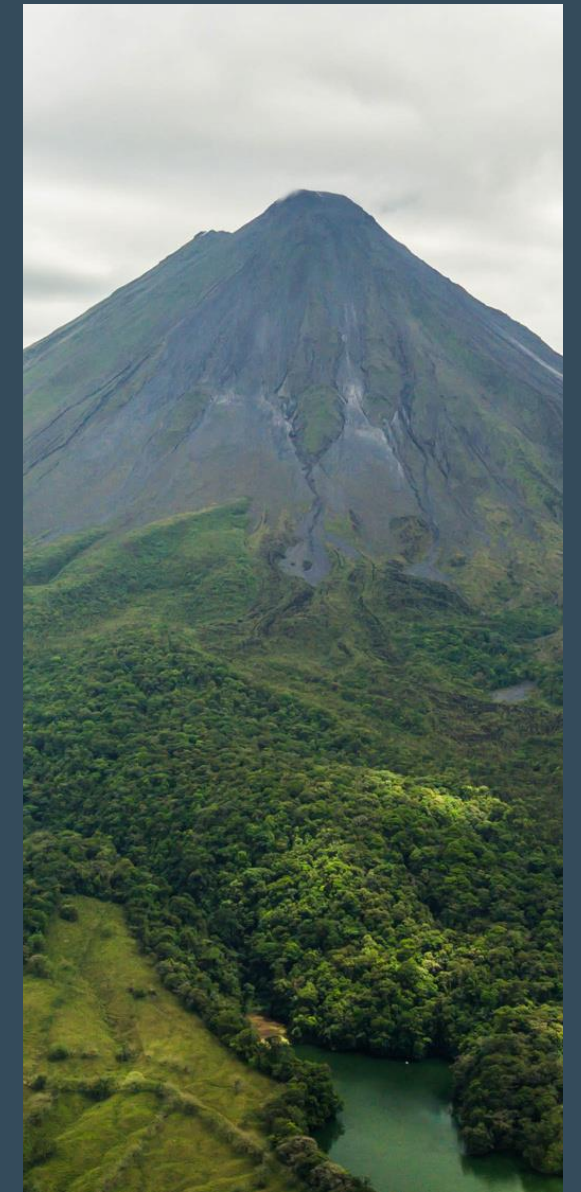
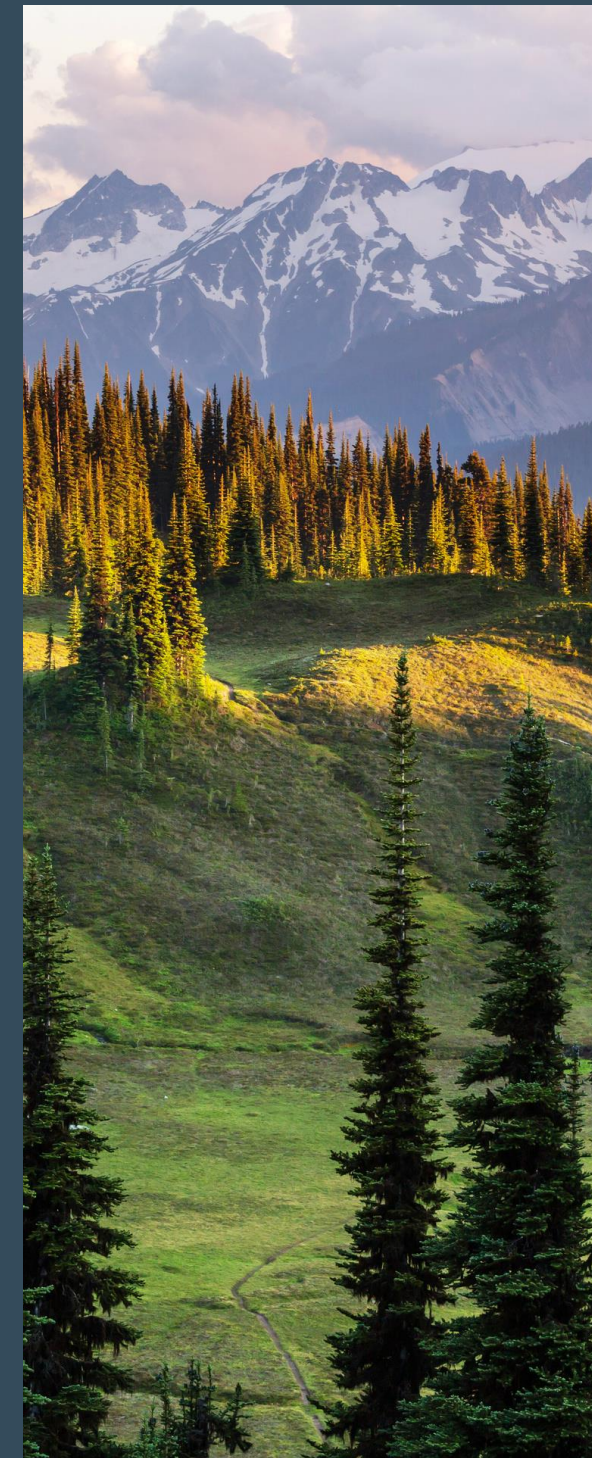
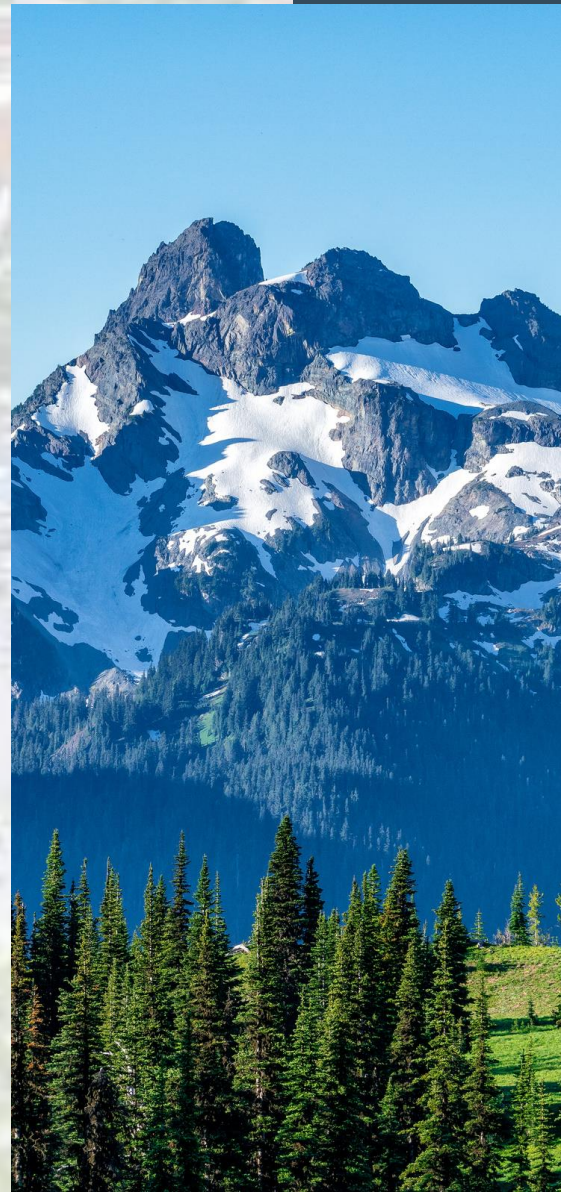


SUSTAINABLE TOURISM



GLOBAL INITIATIVES

Conclusion



THANK YOU FOR ATTENTION

In Rome, green infrastructure is not simply about beautification — it is about protecting our waterways, strengthening resilience, preserving our community forest, and investing in the long-term health of the places we call home.

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 romega.us

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