

2024

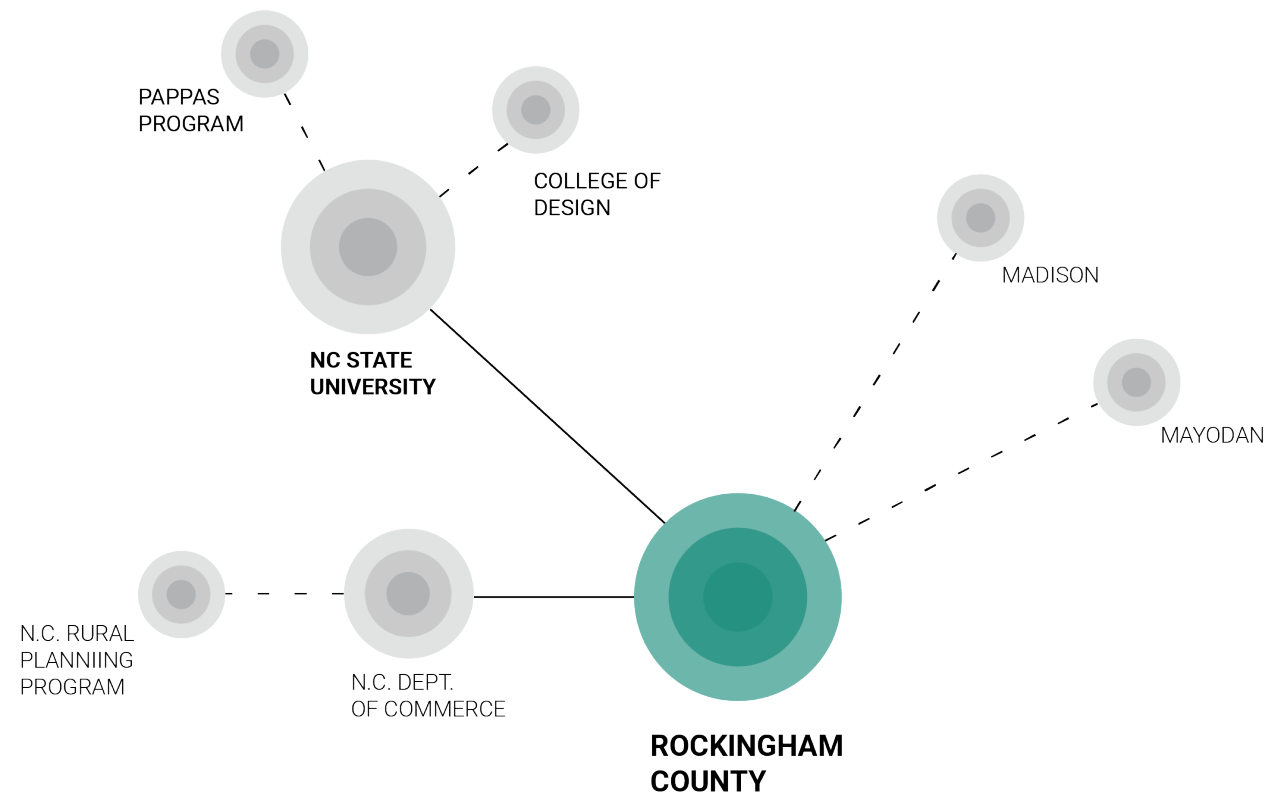
CREATING OUTDOOR RECREATION ECONOMIES
DESIGN STUDY

Madison, NC



Pappas Real Estate
Development Program

The Pappas Real Estate Development Program and faculty and students from the College of Design at North Carolina State University, in partnership with the North Carolina Department of Commerce's Rural Economic Development Division (REDD), is supporting communities participating in REDD's Creating Outdoor Recreation Economies (CORE) program. NC State's CORE team is focused on advancing CORE planning initiatives through design and planning expertise. Our goal is to collaborate with CORE communities to develop a clear and inspired path forward while fostering a shared understanding of how to achieve CORE plan goals. This report is the culmination of the team's efforts with Town and County leadership.



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Pappas Real Estate
Development Program



**NC DEPARTMENT
of COMMERCE**
RURAL ECONOMIC
DEVELOPMENT

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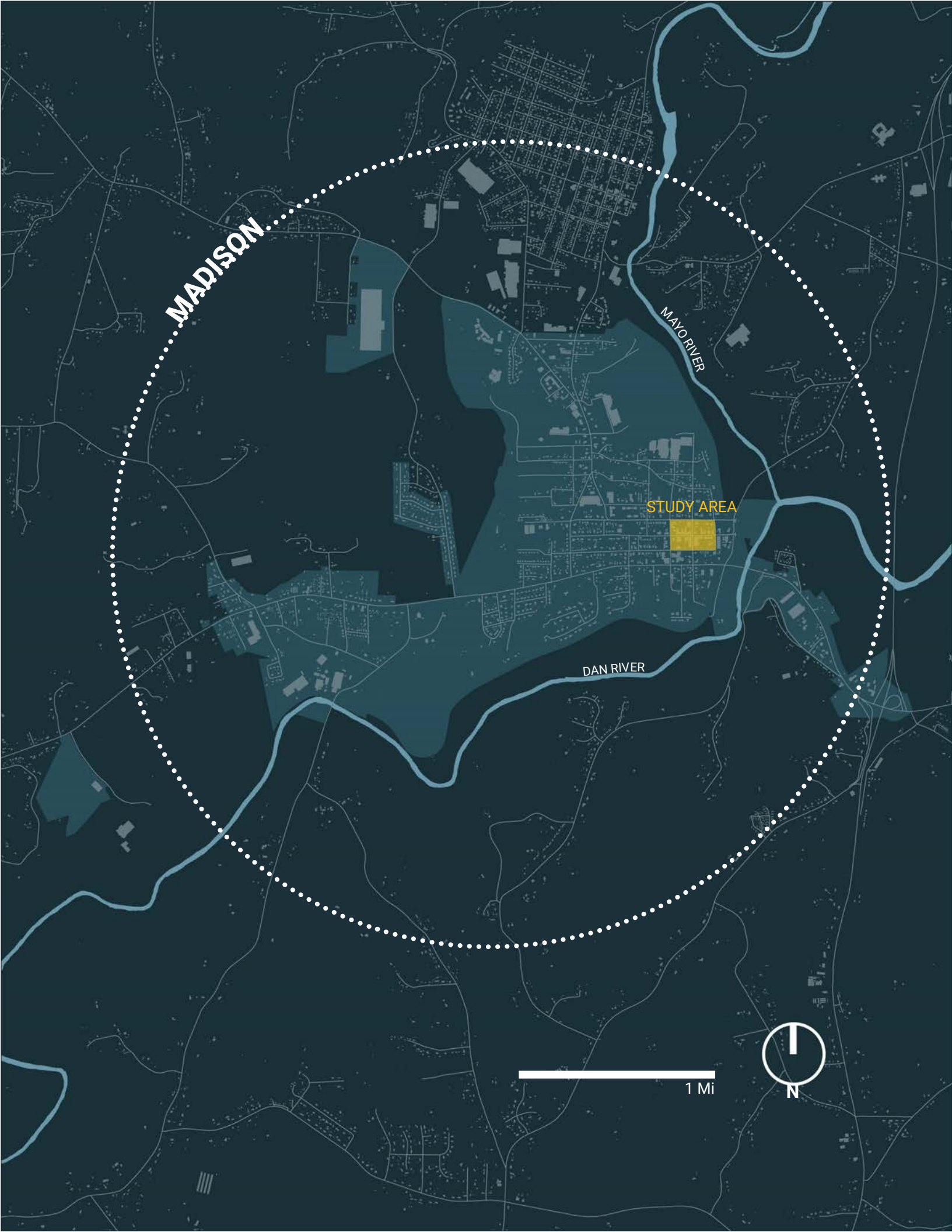
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SCOPE OF WORK

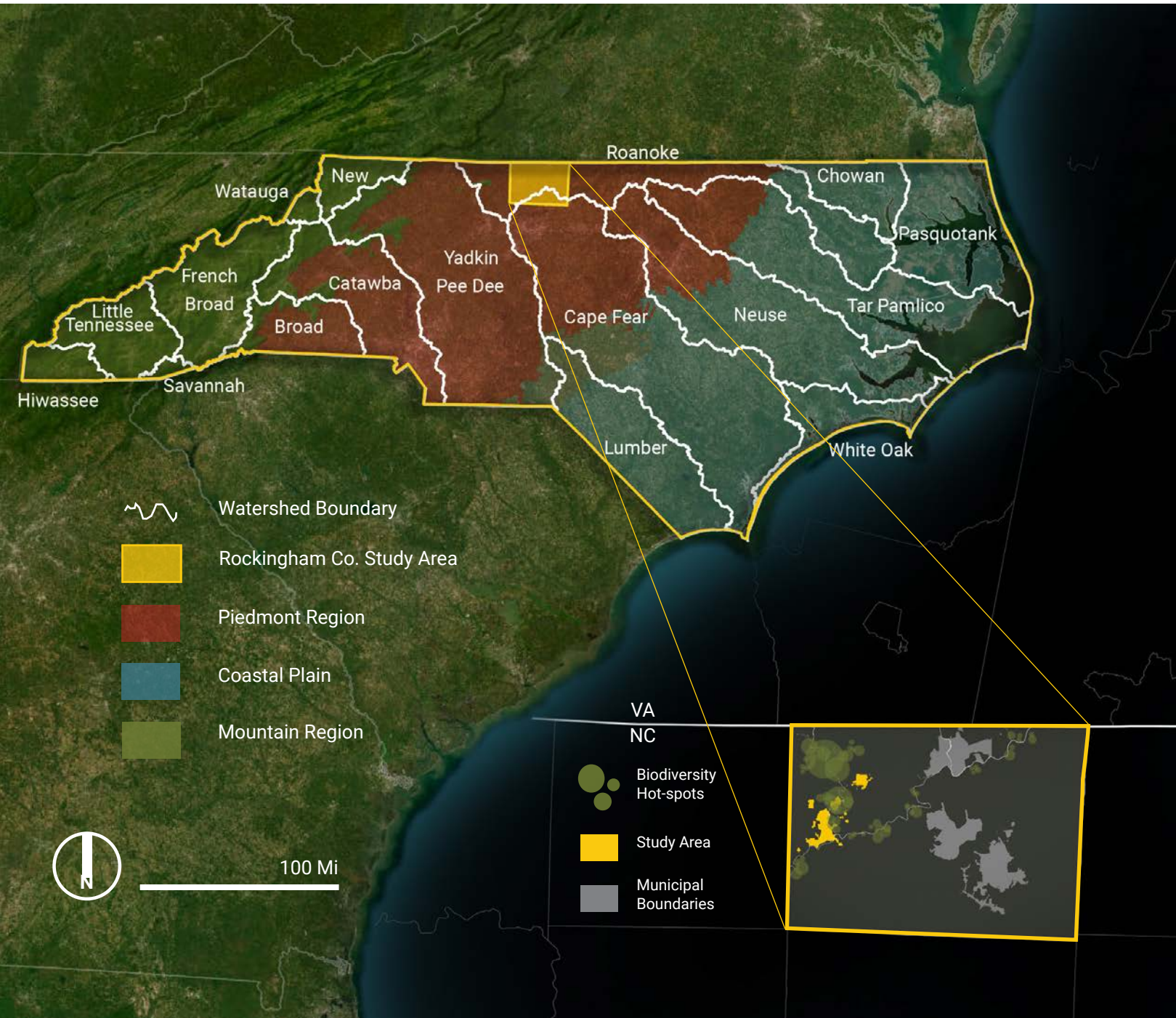
SCOPE OF WORK

Madison, a town with roots in 19th-century tobacco trade, took on its current urban form in the early 20th century to support burgeoning textile industries. As both tobacco and textile industries have waned in North Carolina, Madison, like many similar towns, faces the challenge with out-migration and identity. The NC Commerce Department's CORE program aims to address this challenge by fostering sustainable outdoor recreation economies. NC State's CORE design support team is tasked with visualizing the implementation of CORE strategies and action items within these communities. Our goal is to inform, inspire, and support fundraising efforts by providing tangible examples of how these strategies can be brought to life.

In the case of Madison, our team focused on enhancing the connection between the town and the Mayo River. We believe that improving the town's public spaces is crucial to attracting river-centric recreation. By creating a vibrant public life, we can stimulate the growth of supporting retail services and housing options, which are essential to broader economic development strategies.

Through a thorough site analysis, we have developed conceptual design ideas to create a more connected public realm. Our design approach involves a series of placemaking interventions along the primary north-south and east-west downtown streets. These seemingly small but impactful improvements can serve as catalysts for economic growth, transforming Madison's river access and park from a standalone destination into an integral part of a larger, more meaningful experience for both visitors and locals.

ECOREGIONS, WATERSHEDS, AND BIODIVERSITY HOT SPOTS



NORTHERN PIEDMONT

Rockingham County is situated in the Piedmont region of North Carolina, a landscape characterized by rolling hills and significant hydrological networks. This region hosts three of North Carolina’s major river basins: the Cape Fear, Roanoke, and Yadkin-Pee Dee. Within Rockingham County, four major rivers—the Mayo, Smith, Dan, and Haw—serve as key ecological and hydrological resources. Notably, the Mayo, Smith, and Dan rivers drain into the Roanoke River Basin, which is further subdivided into the upper and lower Dan River sub-basins. Classified under WS-IV water supply standards, these rivers flow through moderately to highly developed areas, making them vulnerable to ecological degradation from human activities.

The region’s shallow, broad waterways—fed by clean mountain tributaries—historically attracted industries such as milling and tobacco production. The demand for energy to sustain these industries led to the construction of hydroelectric plants and dams along the Mayo and Dan Rivers. While these developments supported local economies and communities, they significantly disrupted the rivers’

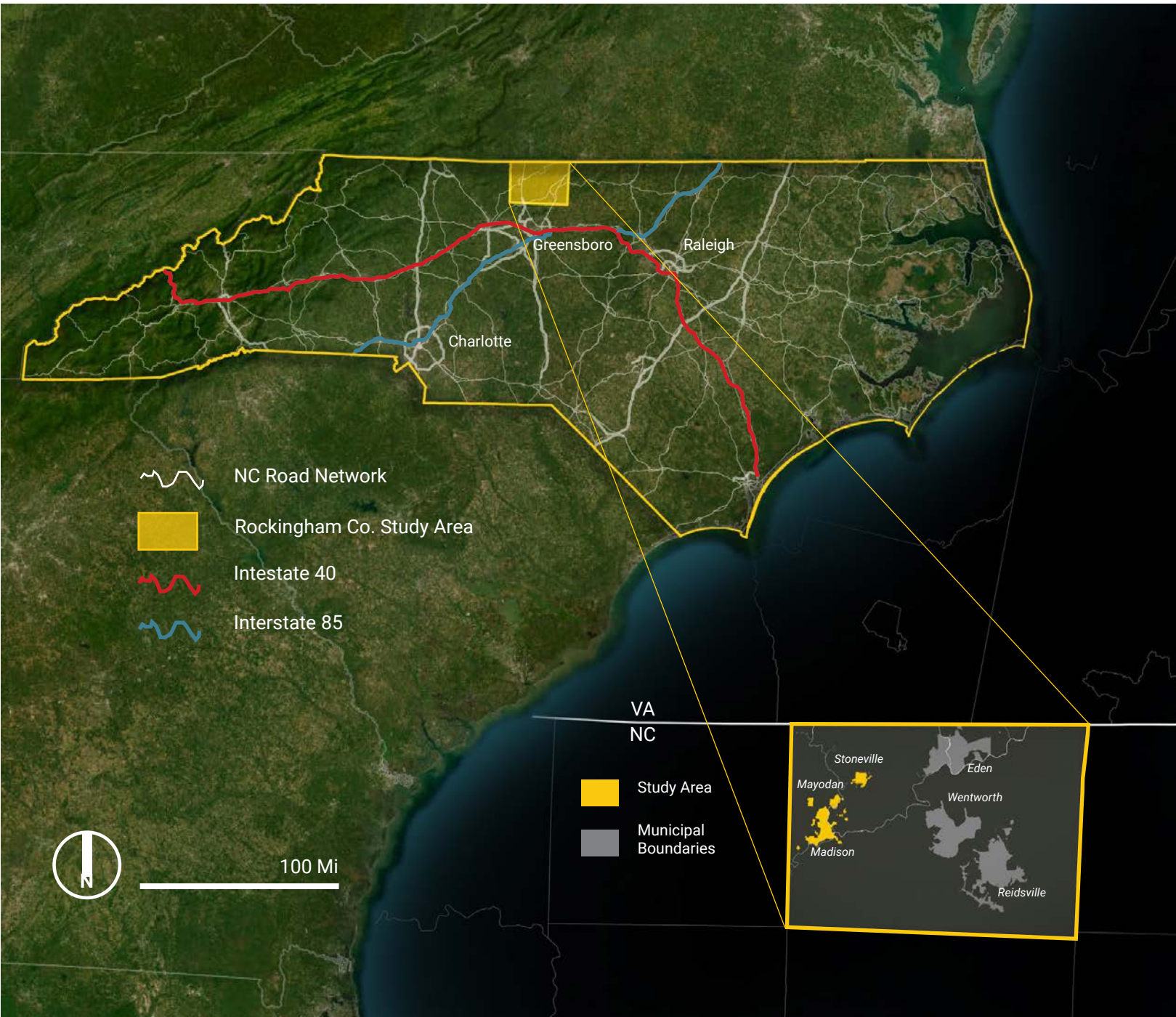
ecological functions, fragmenting wildlife habitats and altering natural flow patterns. Despite these challenges, the Mayo and Dan Rivers continue to support rich and critical ecosystems, meandering through areas of relatively undisturbed wilderness. The Natural Heritage Inventories have identified 19 unique natural areas within this region, recognized for their ecological significance at regional, state, and national levels (Piedmont Land Conservancy). These lands constitute a biodiversity hot-spot, harboring numerous endangered and threatened species. Among these is the Roanoke Logperch, a fish endemic to the Roanoke watershed, which was recently delisted from the Federal Endangered and Threatened Wildlife list due to successful dam removal and river restoration efforts.

Although ongoing conservation initiatives aim to preserve the natural beauty and ecological integrity of the region, increasing development along the river corridors poses a persistent threat. Maintaining a balance between growth and ecological stewardship is essential to safeguarding these invaluable natural resources.



Threatened and endangered species within the Dan and Mayo River network.
Image Credit: Timmons Group, Mayo River State Park Master Plan

POPULATION PROJECTIONS, RECREATION STATISTICS, AND TRANSPORTATION CORRIDORS



RECREATIONAL PROJECTIONS

Regional Context

Rockingham County is situated in a centralized location with near proximity to two major interstates and one of North Carolina's largest cities. North Carolina's population is expected to grow 21.5% over the next 20 years, yet Rockingham County is currently seeing a population decrease and a very small increase of 0.88% in the next 20 years (Rockingham Vision 2040 Land-use Plan, 2021). Along with the exodus of residents, much of the population is above 65 years old and is expected to grow 240% by 2050. However, since COVID, Rockingham county has seen a drastic increase in visitations and revenue generated from tourism. Overall visitor spending across multiple sectors (food and beverage, transportation, lodging, recreation, and retail) increased 13.2% from 2021 to 2022, coming in as the 22nd fastest-growing tourism revenue in the state of North Carolina

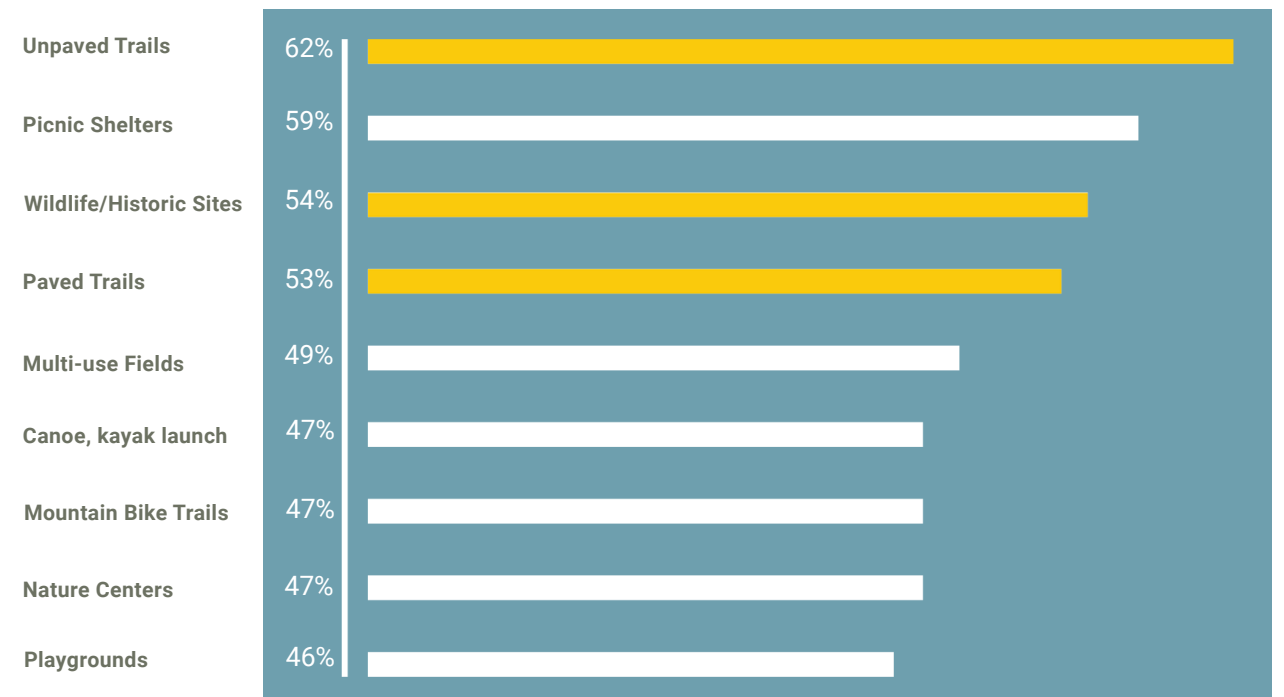
(Rockingham Update, 2023). There is a need for updated mechanisms to increase visitation times to Rockingham County regarding tourism and recreational ventures.

Within the 2040 Vision Plan for Rockingham County, one of the main guiding principals is "Natural Resource Conservation & enhanced Public Access," where one of the main priorities is to "invest in outdoor recreation infrastructure and improve public access to the county's rivers and protected natural areas to improve quality of life and attract visitor." Therefore, prioritizing the creation of destination areas, enhancing visitor experiences, perpetuating resilient community amenities, and preservation of natural resources is imperative within the study area.

Recreational Assets:

Priorities and Types of Facilities

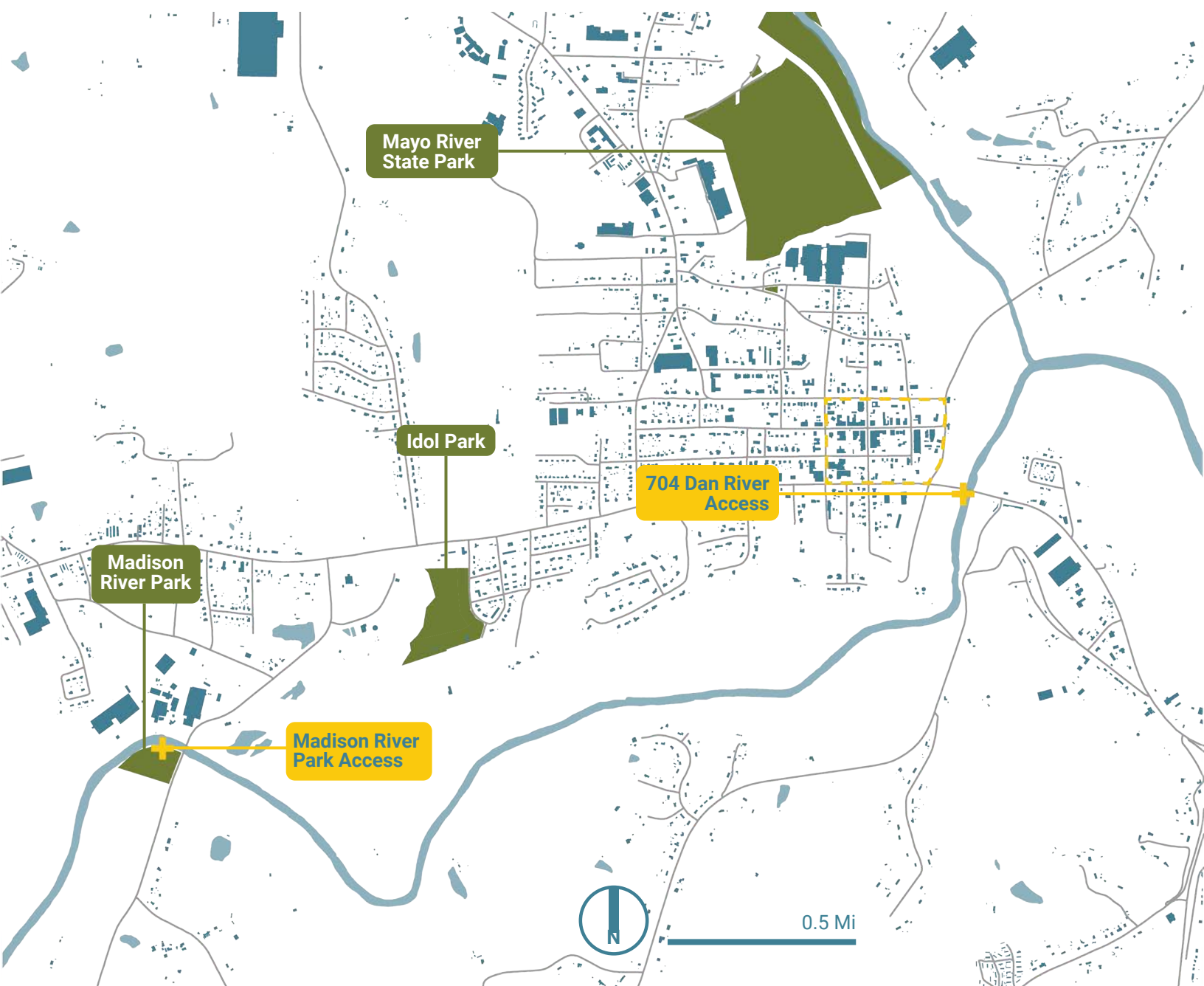
Most Popular Outdoor Recreational Activities



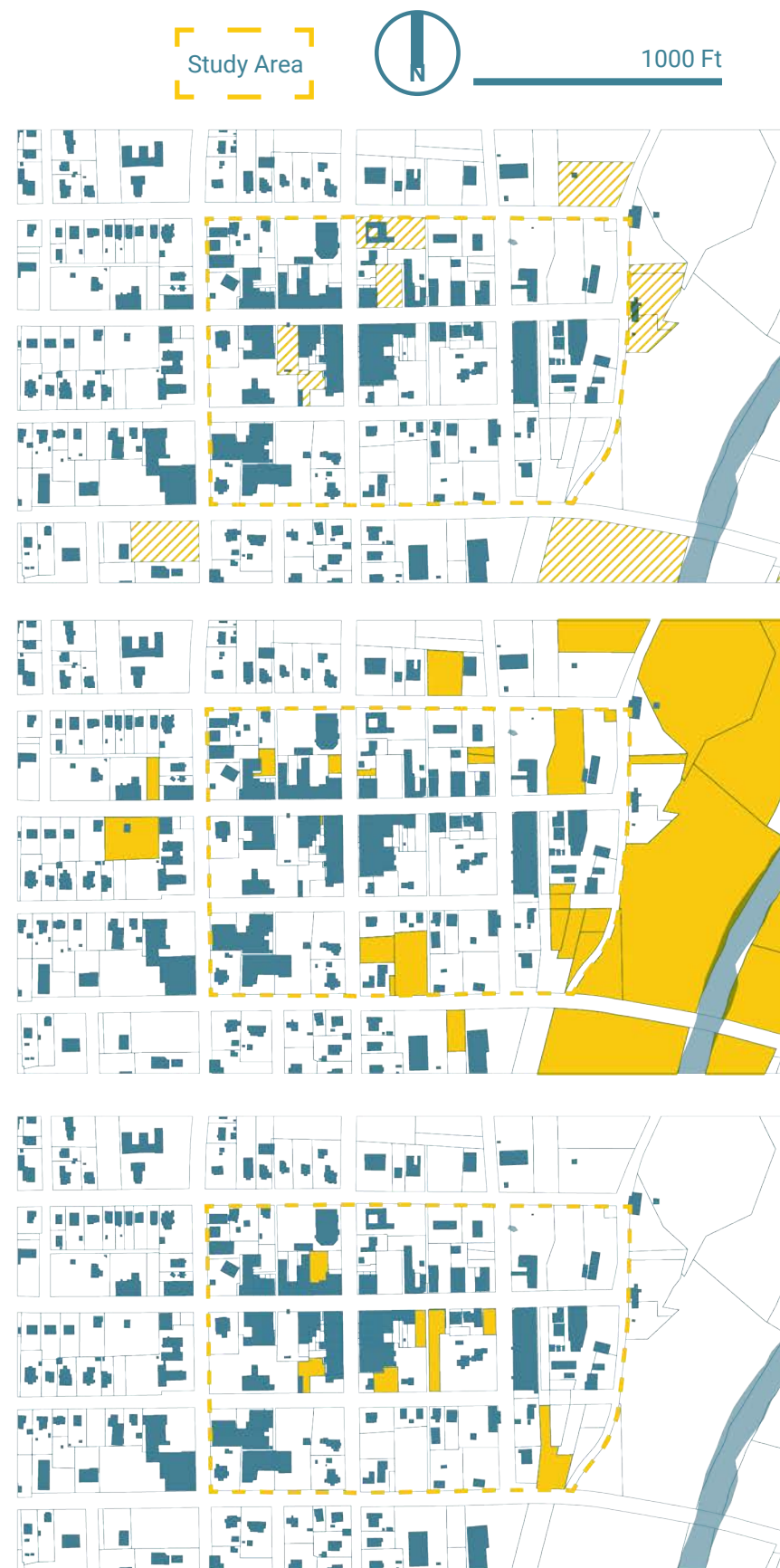
SITE SYSTEMS ANALYSIS

The downtown area currently lacks significant public openspaces that are a key component to urban placemaking. By conducting a detailed analysis of existing land use and quantifying the proportion of hardscape to vegetated surfaces, we identified key opportunities and constraints for openspace enhancement. This evaluation informed

the strategic placement of design interventions in areas with the greatest need or highest potential. Building on these findings, we developed a connection study, mapping a conceptual pedestrian network to link these interventions and enhance urban connectivity.



Land Typology Inventory



Property Owned By The Town Of Madison

This inventory illustrates opportunities for municipal involvement by identifying municipally owned parcels.

Vacant Property

Vacant properties have the potential for acquisition and redevelopment. They hold the largest latent capacity for positive change.

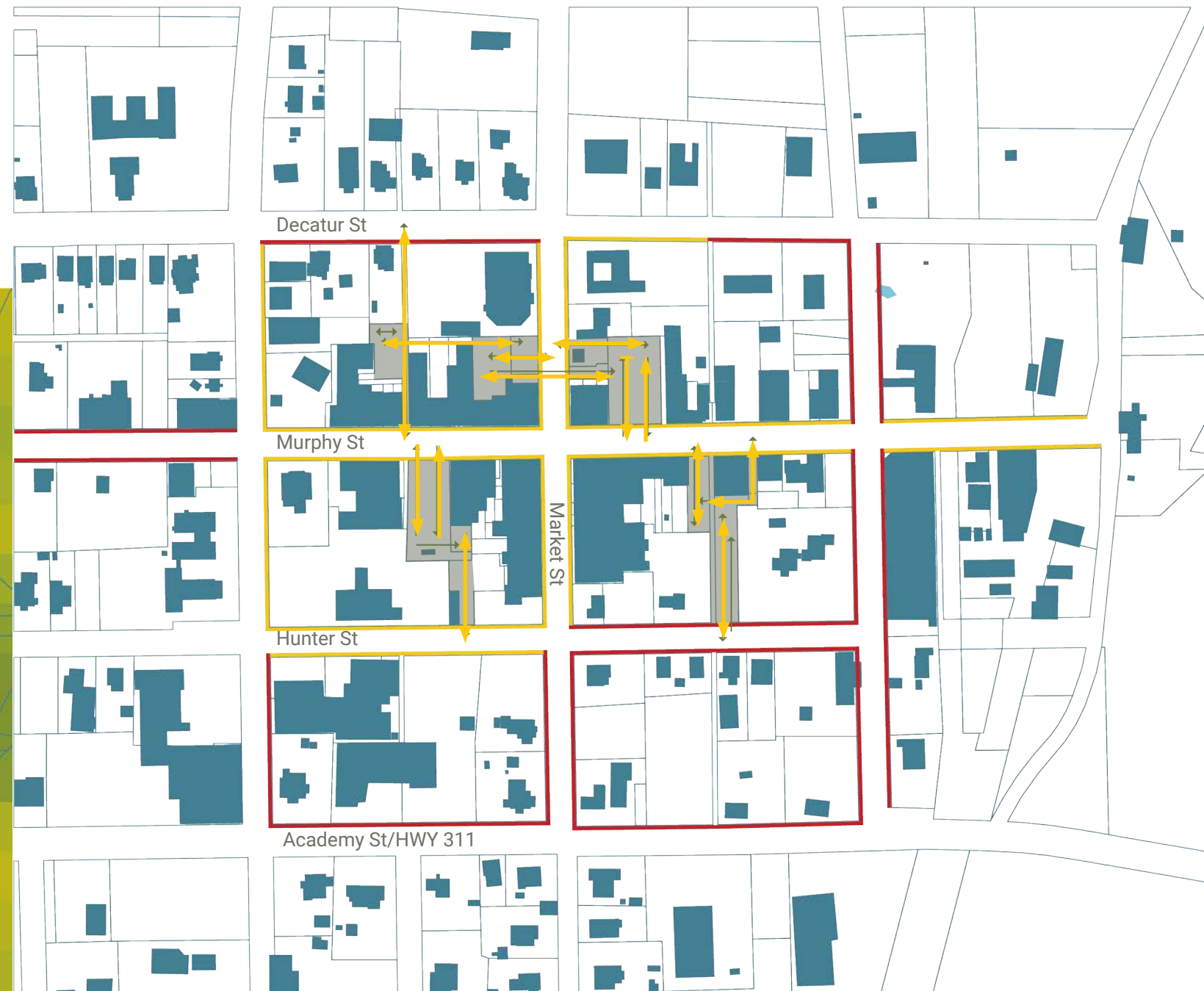
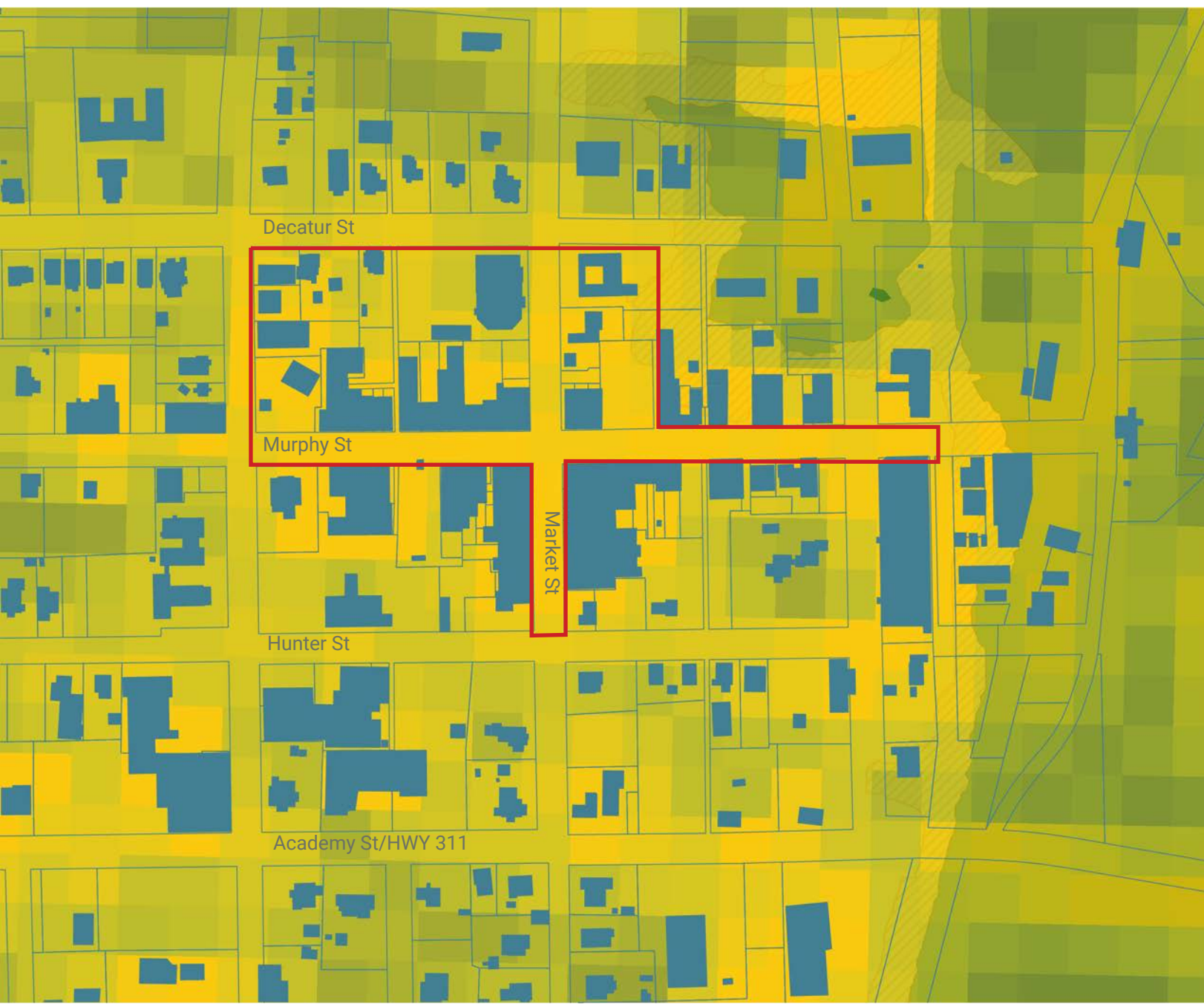
Disturbed land or open space

Parcels with significant existing green space could be leveraged and connected to build a sense of a green urban experience that reflects the surrounding natural amenities.

Vegetation and Hardscapes

NDVI (Normalized Vegetation Difference Index) is a tool that allows us to visualize where quality vegetation exists in the landscape. It also allows us to see where there is large amounts of hardscape surfaces. These surfaces absorb and release heat,

contributing to the urban heat island effect. We can see there is a need for increased vegetation within in the downtown corridor, especially along the center intersection of Murphy + Market streets and surrounding streetscape.



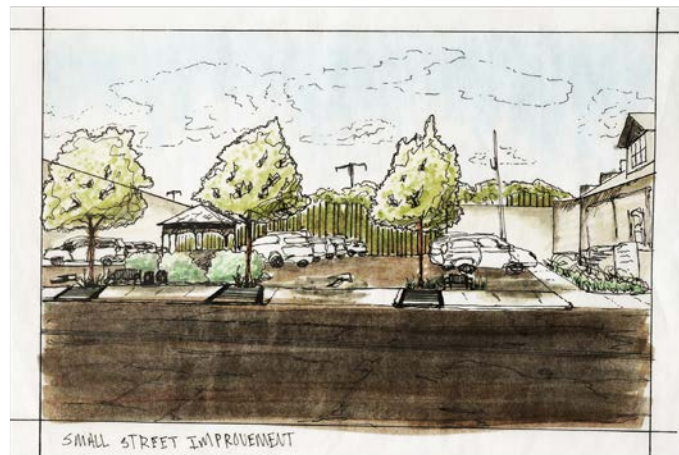
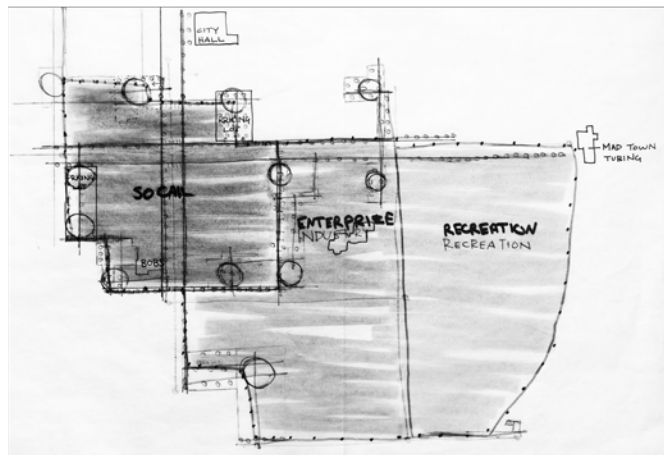
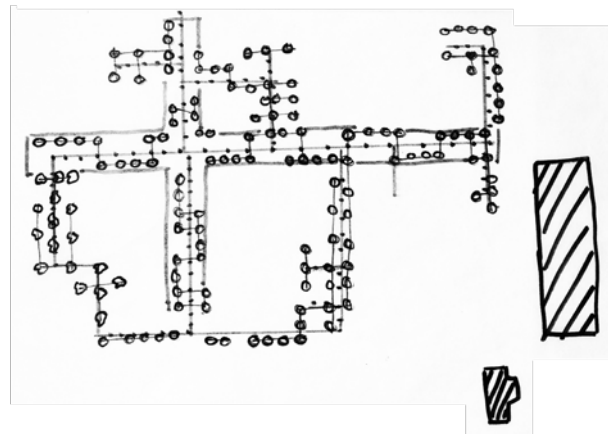
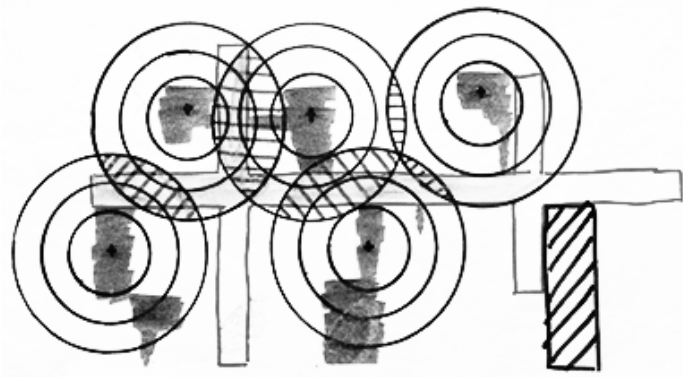
Connectivity Study

Evaluating the existing mobility infrastructure and possible adjacent spaces that could serve as anchor spaces or interstitial green space, this inventory revealed a need for expanding the pedestrian walkways available outside the main intersection and an opportunity to implement street trees within the areas with ample pedestrian right-of-ways.

CONCEPT DEVELOPMENT

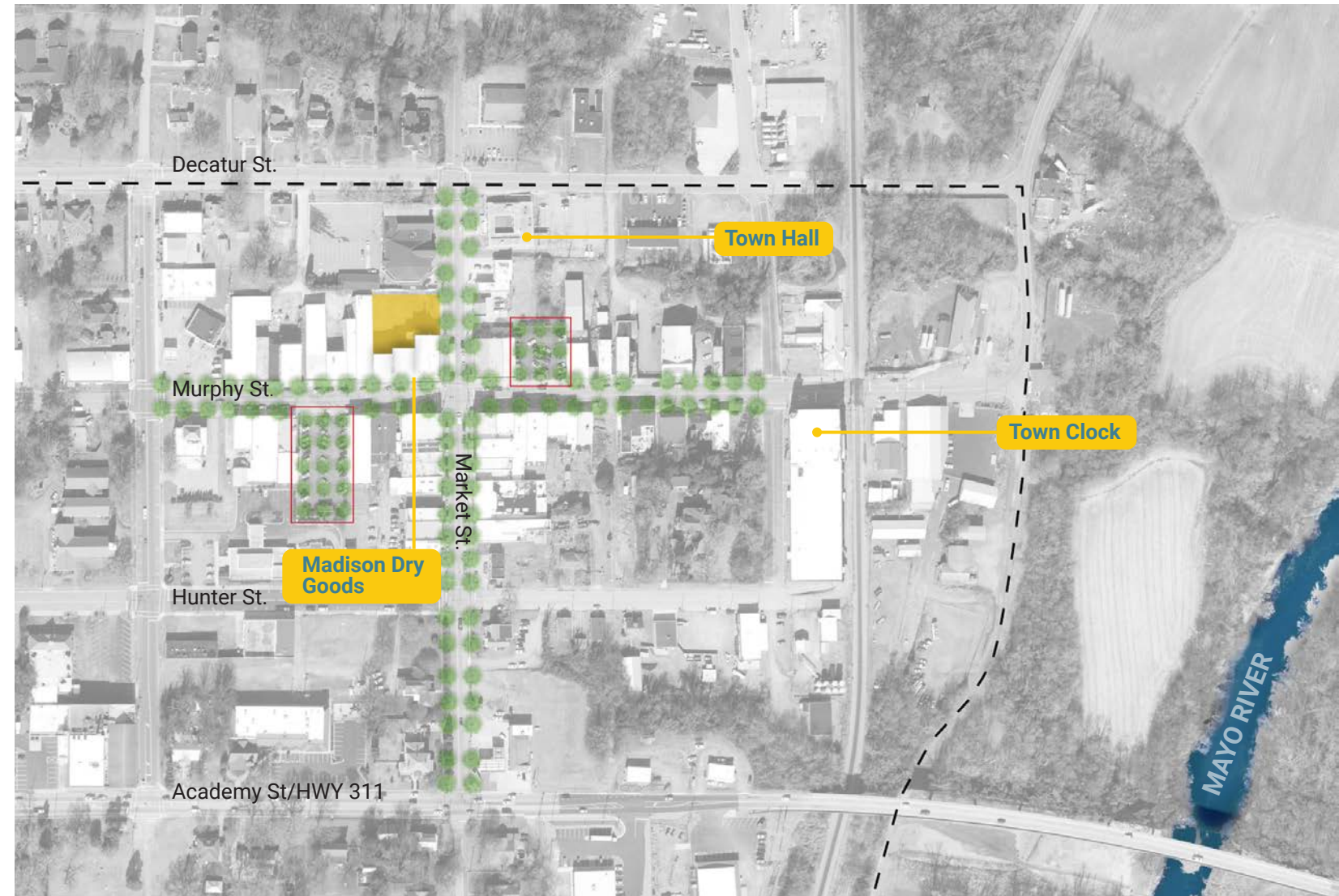
Concept development focused on creating a linear alley of trees in the heart of Madison. Connecting E. Murphy Street and N. Market Street to smaller pocket parks. Uniting these informal gathering spaces will start to create a social cohesion in the public realm. Street trees are highly effective in providing shade for comfort and can play a significant role in stormwater management. Street

trees also promote biodiversity and increase habitat for birds and insects. Through the ideation process, we wanted to envision ways to connect the anchor spaces visually and spatially through vegetation, leaving room for further connection to the river or any peripheral development that may occur in the future.



Early sketches

CONCEPTUAL MASTER PLAN



- Proposed Parking lot Improvements
- Proposed Pocket park
- Approximately 100 Street Trees added

Streetscape Improvements

Integrating street trees and stormwater control measures into the public realm offers a multitude of benefits for both the environment the community. Street trees play a crucial role in reducing the urban heat island effect by lowering ambient temperatures, creating a cooler more comfortable environment for pedestrians. Their

shade provides natural protection from the sun, while their foliage improves air quality by filtering pollutants. These elements not only enhance pedestrian experience but also promote physical and mental well-being by connecting people to nature.

In addition to environmental and health benefits, thoughtful street improvements like clear and well-designed signage contribute to more navigable

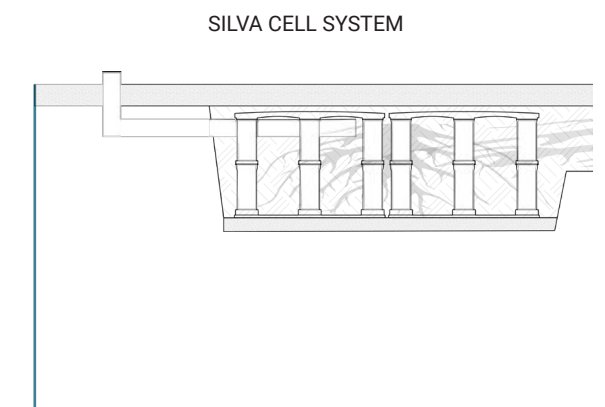
and inviting urban landscape. Signage helps visitors and residents alike find their way, reinforce a sense of place and strengthen town identity. Together, these enhancements foster a welcoming atmosphere encouraging increased foot traffic, longer visits, and greater engagement with local businesses. Over time, such investments in can boost economic vitality and cultivate a stronger, more connected downtown Madison.



Silva Cell Stormwater Control

Silva cells are becoming an industry standard for urban vegetation infrastructure serving two main purposes; growing large trees and treating stormwater on location. These cells work to provide large tree roots space to thrive, while keeping them contained from damaging the pavement above. These soil cells are low-impact design tools for stormwater capture, where runoff can be cooled, cleaned, and recharged.

Below is a standard detail showing the system in place under a streetside pedestrian pathway. This detail illustrates how the Silva Cells house and contain the root network of trees below paved surfaces.



Parking Lot Improvements

Madison's two public parking lots serve as essential gateways to downtown, connecting visitors to businesses and amenities. By redesigning these lots with street trees and green spaces, they can become more than functional areas; they can contribute to a vibrant and sustainable urban environment. Located within the town's primary drainage corridor, these lots

offer an opportunity to incorporate stormwater management features like rain gardens, bioswales, and retention areas. These elements can mitigate flooding and enhance the area's visual appeal and ecological value, transforming infrastructure into green space. Additionally, their proximity to businesses allows for the integration of outdoor gathering spaces, supporting community events, social interactions, and outdoor dining.



Bioswale Median

Enhanced Green Space and Tree Cover

Mural Wall

Proposed Outdoor Seating Area

Proposed Pocket park

Pedestrian Promenade

Expanded Parking Lot

Pocket Park Creation

Transforming the vacant lot behind the Dry Goods store into a multi-use green space offers an opportunity to enhance downtown Madison with a central pocket park. This space can host events, gatherings, and daily activities, bringing life to the community's heart. Its central location makes it ideal for social interaction, fostering connections

among residents. This pocket park can showcase local creativity with public art, sculptures, and rotating installations celebrating the town's culture and talent. A small performance area can host music, theater, and other performances, adding energy to the downtown experience. By blending function and aesthetics, this space can become a valued destination for all visitors.



Utilizing Natural Grade as Terraced Seating

Space for Local Art and Sculpture

Event Area with Lawn

Mural Wall

RECOMMENDATIONS & CONCLUSIONS

Expand the Urban Street Tree Canopy and Streetscape capacity

- Integrate a street tree network to enhance environmental quality and provide essential shade to enhance comfort in public spaces.
- Use Silva Cells or similar infrastructure to effectively manage stormwater runoff and tree health.
- Incorporate more permeable surfaces for improved urban hydrology and aesthetics

Create Informal Gathering Spaces

- Develop parking lots and existing under utilized open spaces to support diverse programming, including music, art, and recreation.
- Create multi-use spaces that encourage residents and visitors to interact with downtown recreational opportunities and local businesses
- Use streets, building facades, and pocket parks to promote local arts with murals and sculptural elements. These could begin to create a brand for Madison or develop a core downtown Identity as an arts district.

Funding

Although the NC State CORE team is primarily tasked with design assistance, we offer a few select programs for potential project funding. The NC Department of Commerce CORE program staff is a resource for further funding sources and assistance formulating grant proposals.

- [Hometown Strong Rural Grants Program](#): A database with useful links and other resources for completing infrastructure based projects
- [Urban Heat Island Effect Solutions and Funding](#): A North Carolina based resource guide for evaluating urban heat island and acquiring funding.
- [Nature-based Solutions Funding Database](#): national Wildlife Federation's databased for all funding opportunities and tools associated with constructing nature-based infrastructure on a community scale.





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