CREATING SUSTAINABLE AND RESILIENT COMMUNITIES

ASEEDS INITIATIVE IN DUCK HILL, MISSISSIPPI

EPA offers a range of technical assistance programs that support community revitalization by investing in emerging community-based organizations. This fact sheet highlights how the community of Duck Hill, Mississippi combined EPA technical assistance with other funding to help build a culture of health, trust and sustainability.

BACKGROUND

In 2018, the Duck Hill community received a two-year, $300,000 grant from the Southeastern Sustainability Directors Network and the Kendeda Fund. The grant focuses on supporting community development, addressing environmental hazards and improving quality of life in this rural community of about 1,100 people. Local organizations began working together. They formed the Achieving Sustainability through Education and Economic Development Solutions (ASEEDS) Initiative, a comprehensive, community-driven initiative focused on public health, sustainability and economic vitality.

APPROACH

Early on, ASEEDS adopted EPA's Environmental Justice Collaborative Problem-Solving Model to facilitate community building, goals setting and partnerships. Through this collaborative planning approach, ASEEDS identified five community goals (see box at right).

COMMUNITY GOALS

1. Defend against extreme weather events and/or other environmental hazards.
2. Empower residents to become involved in achieving community resilience.
3. Improve public health and overall quality of life.
4. Increase social and economic opportunities.
5. Create a model that people can use in places like Duck Hill.

LOCAL FOODS, LOCAL PLACES

In 2018, EPA selected Duck Hill as one of 13 communities to participate in the Local Foods, Local Places technical assistance program. Local Foods, Local Places helps cities and towns across the country protect public health and the environment. The program engages with local partners to reinvest in neighborhoods as they develop local food systems. EPA provided a consulting team to Duck Hill, and a steering committee was formed that included residents and representatives from public health, academia, elected officials and 11 federal agencies. The nine-month planning process focused on solving food desert issues in Duck Hill and nearby towns. Outcomes include:

- Hosting a two-day planning workshop with 125 participants in June 2018.
- Developing the Duck Hill Local Food and Economic Development Action Plan, currently in the implementation phase.
- Starting a community garden with plans for a community farm to provide food for area schools and the Head Start program.

For more on EPA's Local Foods, Local Places program, please visit https://www.epa.gov/smartgrowth/local-foods-local-places.

ECONOMIC IMPACTS

Supported a minority contractor – **$117,000 contract.**

Supported a minority subcontractor – **$14,000 contract.**

Hired **four** local residents at **$15 per hour.**

Paid **18** youth creek rangers stipends of **$10 per hour.**

STORMWATER FLOOD MITIGATION

To mitigate severe flooding in Duck Hill, ASEEDS installed over 1,000 feet of grey and green infrastructure, installed a water diversion system at the community gym, and mitigated flooding in seniors' homes.

YOUTH LEADERSHIP – CREEK RANGERS PROGRAM

The ASEEDS Creek Rangers Program focused on creek restoration and engaged youth in activities including community events, community service, S.M.A.R.T. (Science, Math, Art, Reading and Technology) curriculum and installing greenspace at Binford High School.

ADAPTATION AND RESILIENCY PLANNING

ASEEDS and partner EcoAdapt engaged residents in a resiliency planning process focused on climate change. Outcomes include hosting a 50-participant workshop, developing the Duck Hill Community Climate Assessment, Adaptation and Resiliency Plan, approval of the Sustainable Duck Hill Resolution for the City of Duck Hill and organizing two meetings with clergy for strategic discussion on the role of the African American church in combating climate change.

CREATIVE PLACEMAKING

ASEEDS supported a reuse visioning process for the vacant Binford High School building. A design workshop helped community members consider reuse opportunities for the area.

OUTCOMES

By 2020, ASEEDS led several successful projects and increased quality of life in Duck Hill by reducing flooding, investing in youth leadership, and facilitating community planning for food security, placemaking and resiliency. Throughout this work, ASEEDS invested in community wealth-building through community hiring and contracting.

FOR MORE INFORMATION

EPA Region 4
https://www.epa.gov/aboutepa/about-epa-region-4-southeast

EPA Office of Community Revitalization
https://www.epa.gov/community-revitalization

Duck Hill Community Action Plan
https://www.ams.usda.gov/sites/default/files/media/LFLPDuckHillMS.pdf

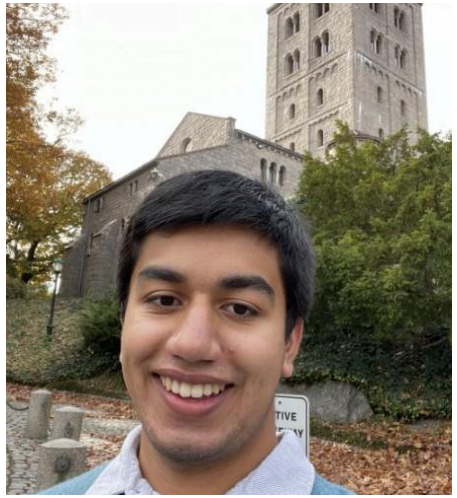
The ASEEDS Initiative has accomplished its goals through several strategic partnerships. Project partners include:

- Southeastern Sustainability Directors Network
- Town of Duck Hill
- Action Communication and Education Reform
- Mississippi State University College of Architecture, Art and Design
- Mississippi Department of Wildlife, Fisheries, and Parks
- State Bank and Trust
- North Montgomery Citizens United for Prosperity

EPA
United States Environmental Protection Agency

Developing a Jackson Sustainability Plan

Planning for the present and future of sustainability in Jackson



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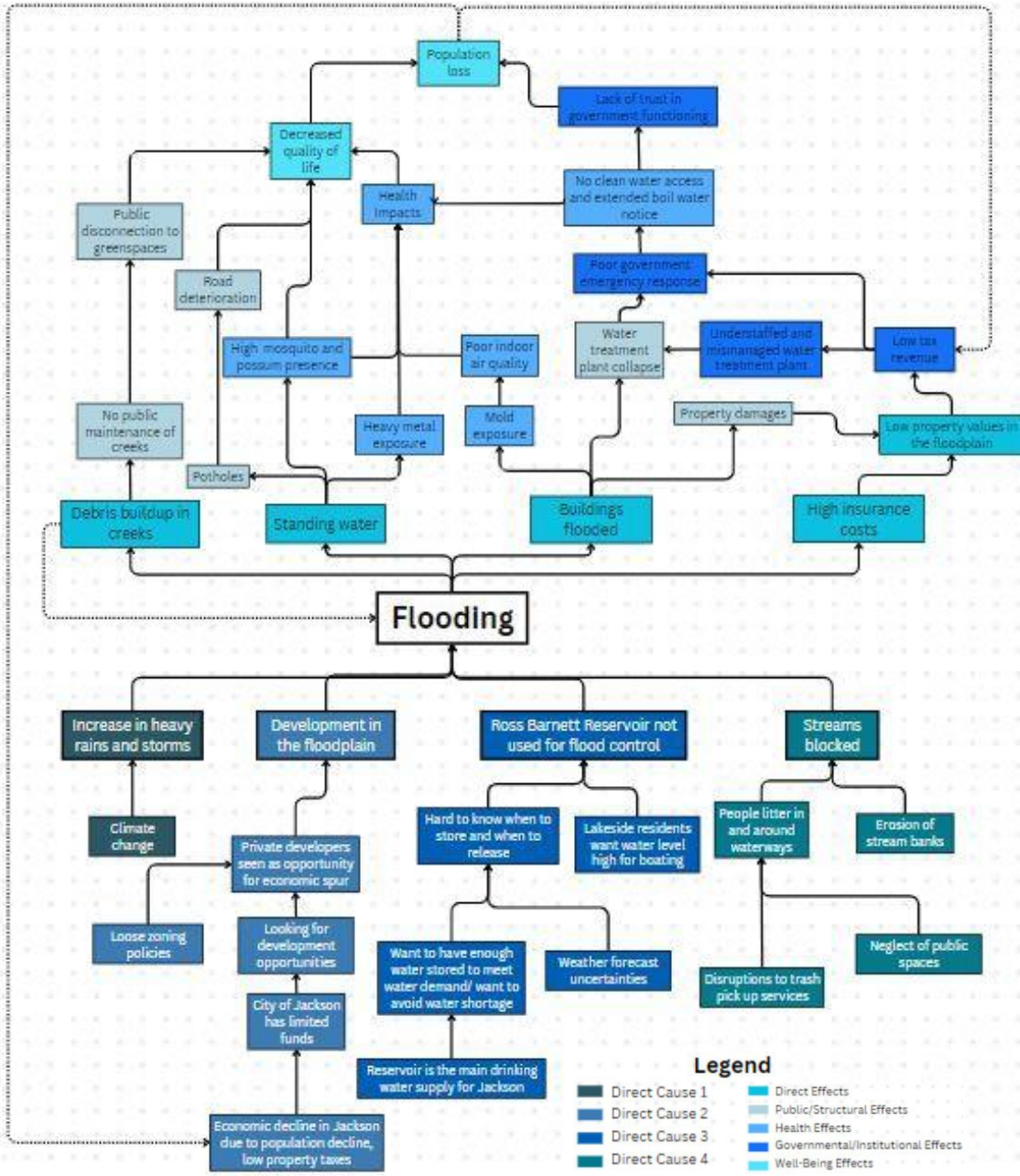
Presentation Outline

1. Why a Sustainability Plan?
2. Summary of Progress and Future Work Plans
3. Sustainability Plan Overview and Structure
    a. Nature-Based Solutions
    b. Non Nature-Based Solutions (Gray Infrastructure)
    c. Socioeconomic Interventions
4. Long-term Goals for MCUP and Future Cohorts
5. Survey Updates
6. Conclusion

Why a "Sustainability Plan"?

- A "flood reduction plan" isn't enough
- Flood management governance is a systemic issue with *multiple competing goals* and *no clear definition* of "success"
  - Protecting public health & safety
  - Safeguarding biodiversity & natural systems
  - Building community character, waterfront access
  - Reducing property damage, property value loss
  - Addressing past inequities



Rethinking How to Plan for Sustainability

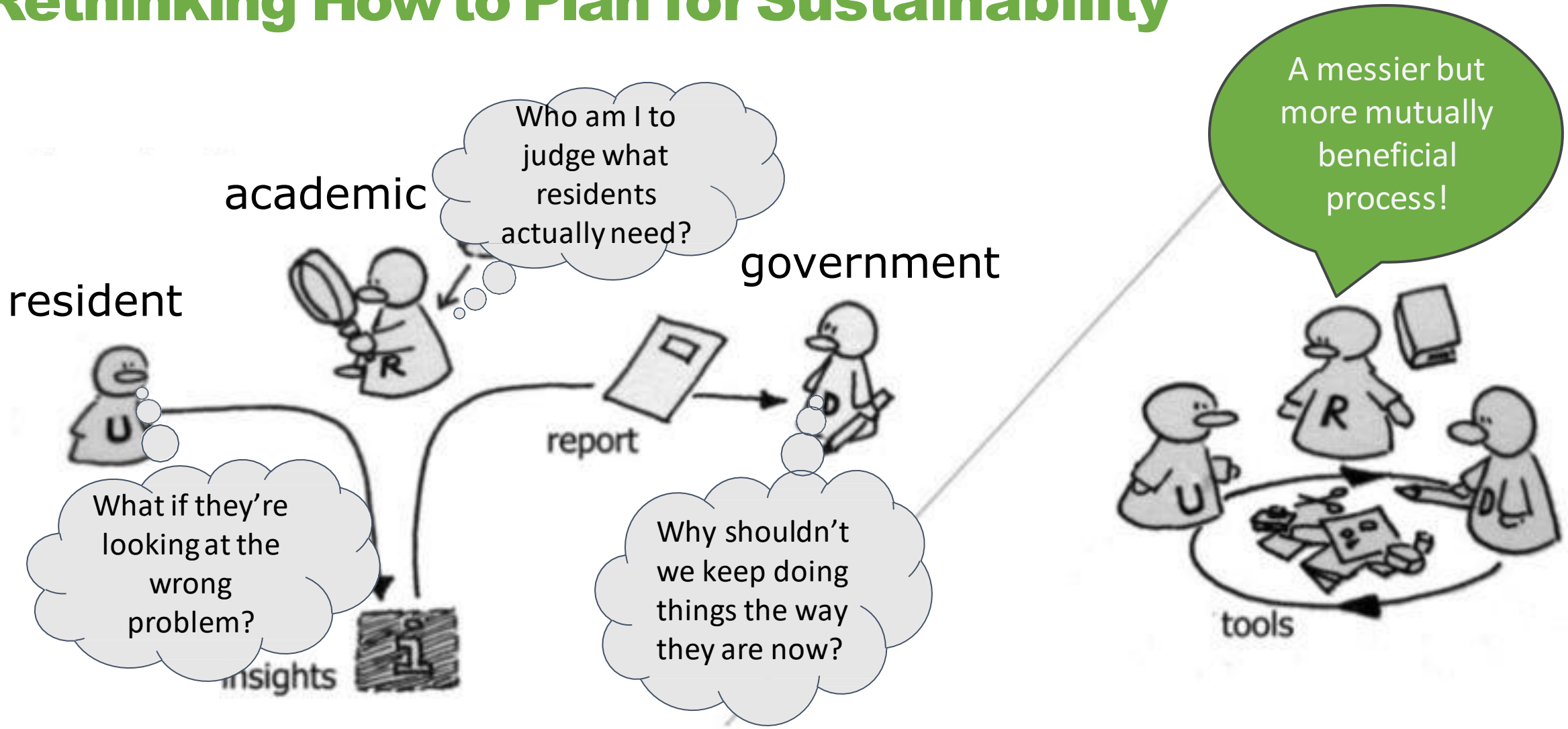


Image credit: Sanders and Stappers, 2008

Moving Towards a Sustainability Plan

Previous Jackson Groups

- Communication Plan
- Early Survey Planning
- Problem Mapping

Current Action

- Literature Review & General Research
- Develop Work Plan
- Trip Logistics/ IRB Consultations
    - Survey Details Feasibility

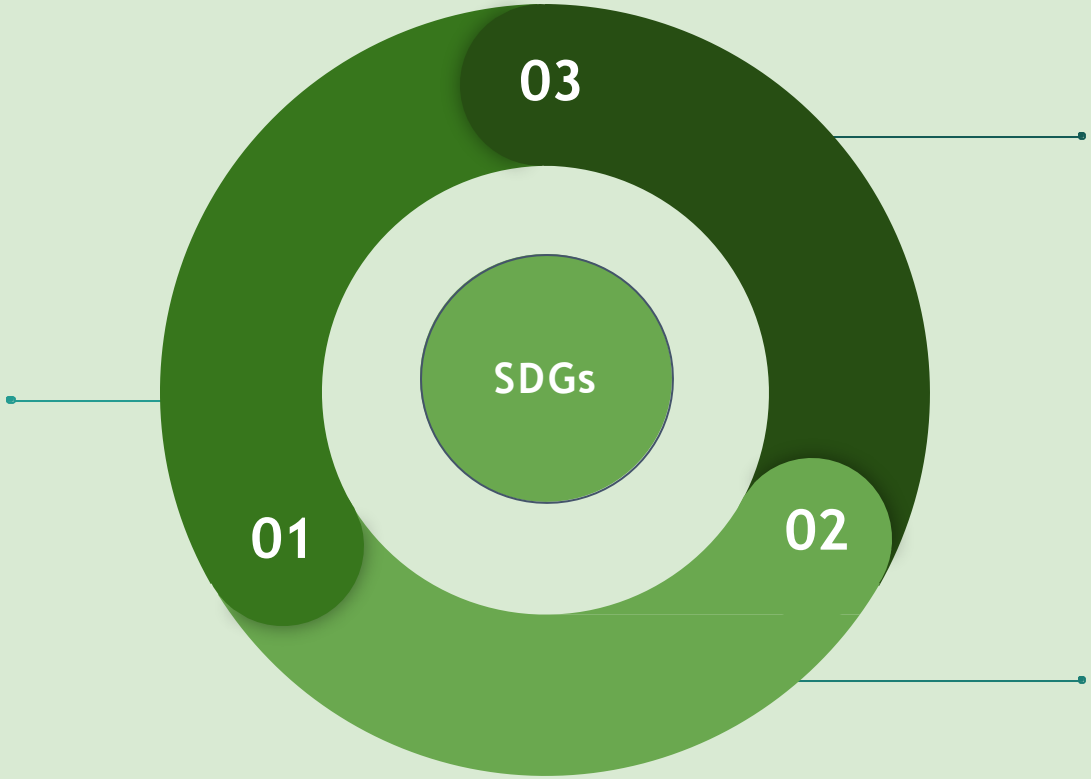
Next Steps

- Formalizing Sustainability Plan
- Survey Development
- Funding sources
- Partnerships
- Main Issues

Tools for a Sustainability Plan

Nature-Based Solutions

Leveraging the natural environment, such as wetlands and native vegetation, to manage flooding and enhance resilience against extreme weather events.



Economic Interventions

Economic Interventions, Gov/Reg partnerships, Community Buyouts, Stakeholder Involvement.

Non-Nature-Based Solutions

Construction and enhancement of physical structures such as levees, floodwalls, and drainage systems to mitigate flooding and protect communities and infrastructure.

Background & Goals

RBF sources

- BLOCKED STREAMS
- INCREASE IN RAIN AND HEAVY STORMS
- ROSS BARNETT RESERVOIR
- PRIVATE DEVELOPMENT IN FLOODPLAIN

RBF leads to

- DEBRIS BUILDUP
- INCREASED INSURANCE COSTS
- SEWAGE BACKFLOW
- BUILDING DAMAGE

RBF solutions

- UPDATE INFRASTRUCTURE
- LEVERAGE NATURAL SOLUTIONS
- SOCIOECONOMIC + PUBLIC HEALTH INTERVENTIONS

This proposal is an alternative to the One Lake Plan.
Our main goal is to address:

RAIN-BASED FLOODING (RBF)

Flooding Through a Public Health Framework

Jackson's flooding crisis exacerbates public health challenges through the introduction of sewage and heavy metals into water sources, posing significant health risks to residents. Additionally, frequent flooding disrupts transportation networks, hampers access to education and essential services, and disrupts recreational activities.

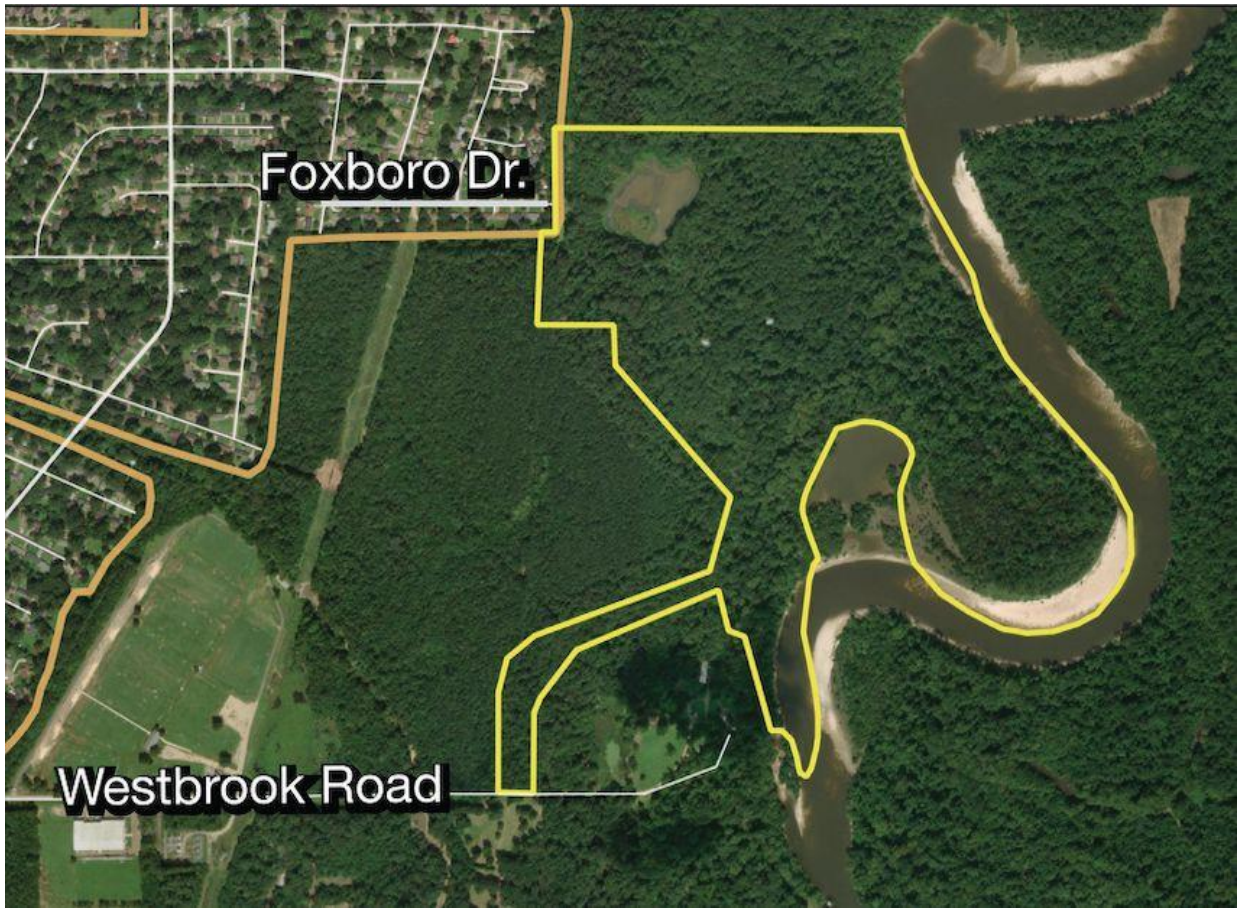
Possible Interventions

- Address SDGs: 3)Good Health, 6)Clean Water & Sanitation
- Community education on flood preparedness
- Collaboration with regional stakeholders
- Expansion of floodplain mapping and zoning regulations

Literature Review and General Research

Shifting terrains: Understanding residential contaminants after flood disasters

Avenue 1- Nature-Based Solutions



Possible Interventions

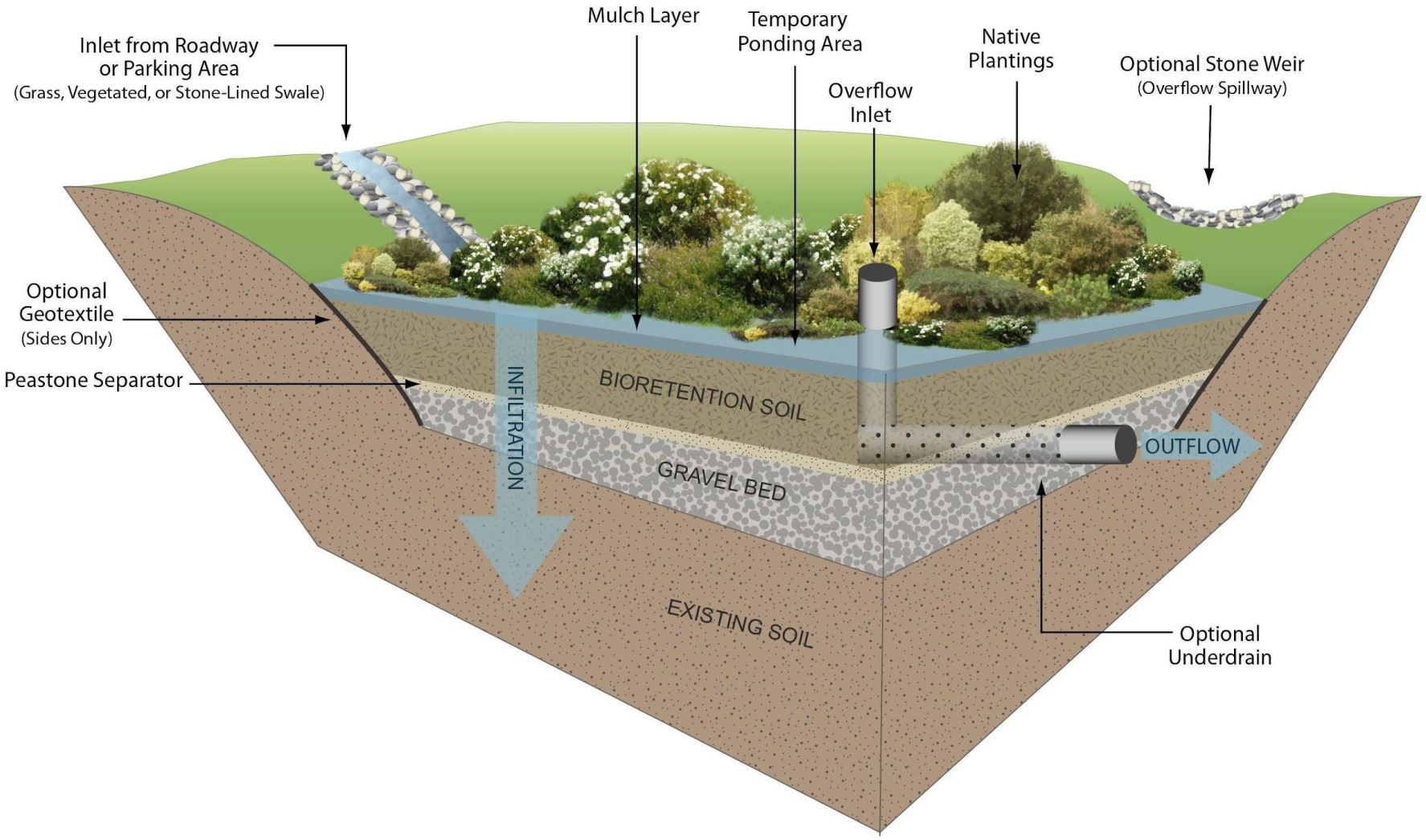
- Integrated Catchment Management (ICM)
- Surveying key tributaries for
  - afforestation
  - wetland restoration
- Westbrook Road plot of land
- Aligning community-building and SDGs
- Rain garden serves as dual-purpose
  - Collect and absorb stormwater
  - Serve as a community green space

Literature Review

- ICM to connect green infrastructure to necessary gray infrastructure and community involvement
- Evidence supporting small-scale natural flood management projects
- Projects must be adapted to local conditions → literature on indigenous flora

Rain Gardens: Physical Implications

- Filters up to 90% of chemicals and 80% of sediments from stormwater
- Absorbs up to 40% more water than grass or cleared land
- Replenishing groundwater supply
- Cost-effective and easier to implement

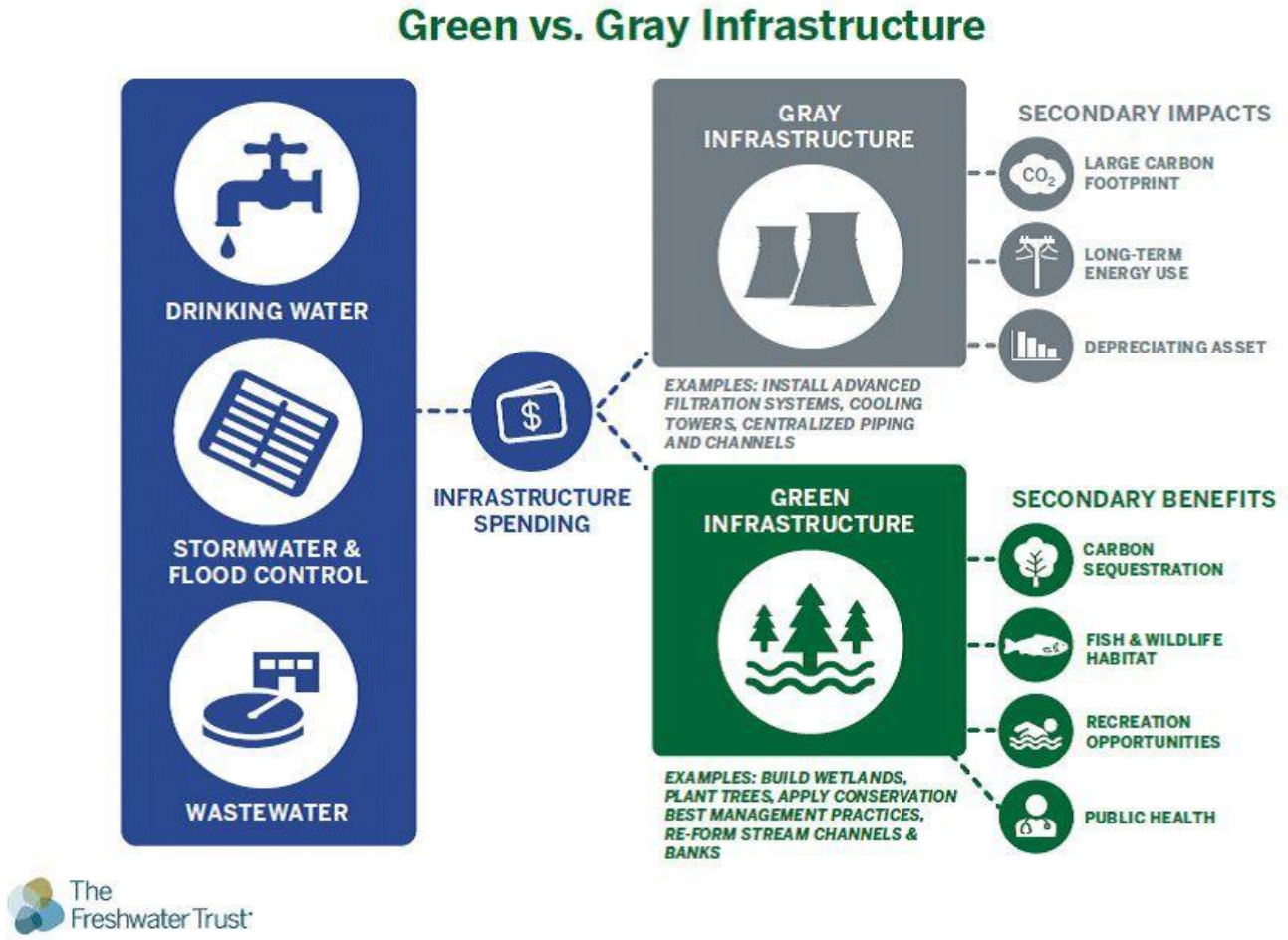


Rain Gardens: Social Implications

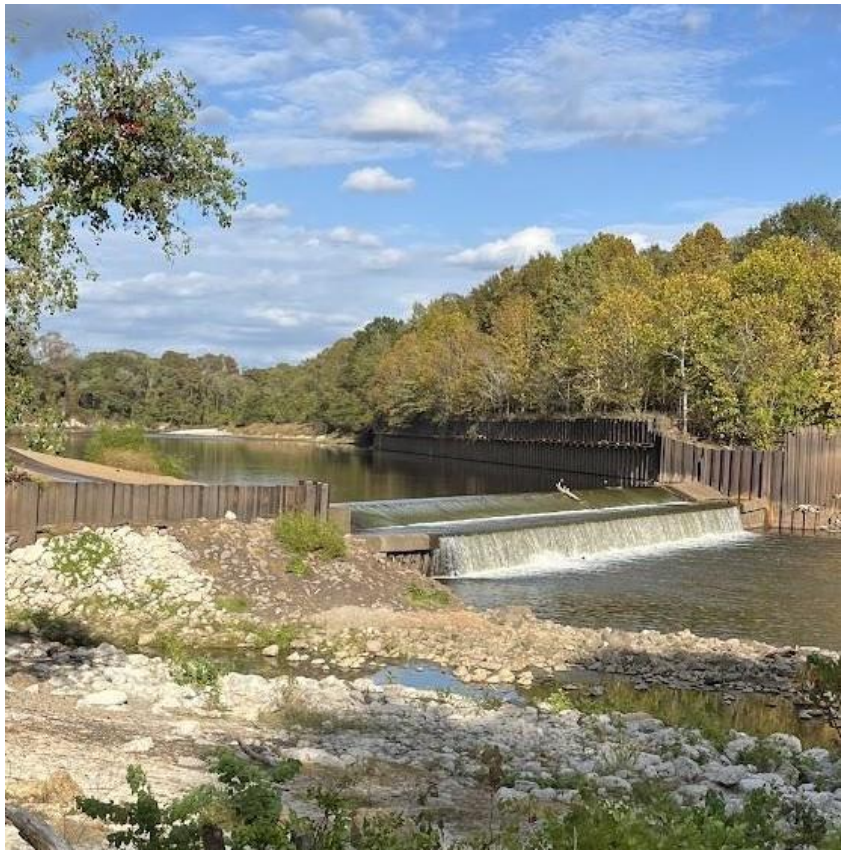
- Rain gardens are not only excellent at reducing flooding and chemical pollution → **they are beautiful green spaces and educational opportunities**

Avenue 2- Gray Infrastructure

Due to its geographical location and limited infrastructure, Jackson is prone to flooding, posing significant risks to its residents, businesses, and infrastructure. Reconnecting levees can enhance the city's resilience, reducing flood damage, and safeguarding the well-being of its population.



Avenue 2- Gray Infrastructure



Possible Interventions

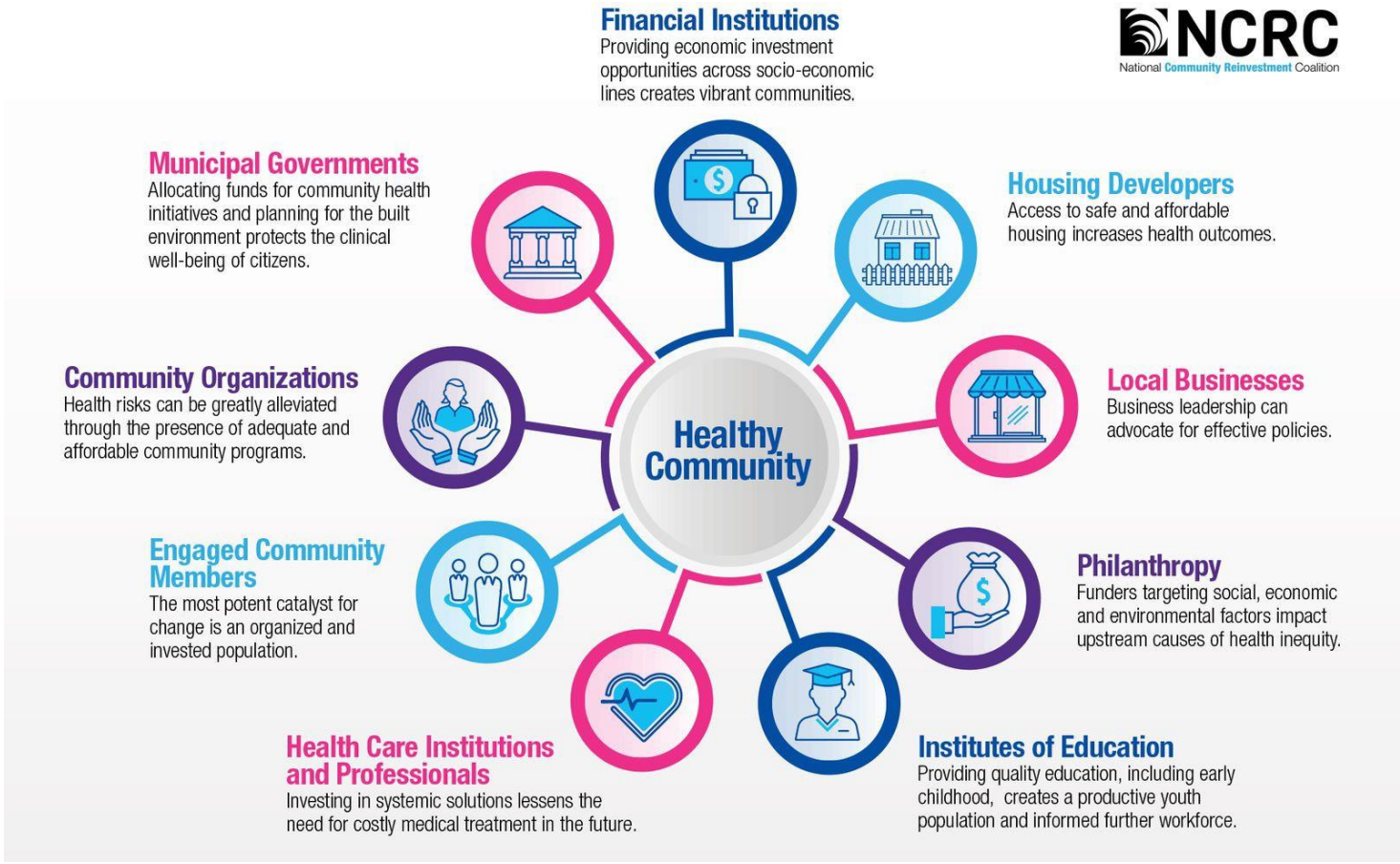
- Monitor water level & flow of local tributaries (USGS)
- Develop West Riverbank Levees
- Repurpose Upstream Reservoir
- Assess local stormwater drainage capacity

Background Research

- Large federal funding allocated
- Fragmentation in regional water management
- Levee-only plans:
  - Fixed water level increase
  - Encourages flood-prone area migration
  - Displaces problems downstream
- Lack of robust funding for levee maintenance in the U.S.

Avenue 3 - Socioeconomic Interventions

In Jackson, Mississippi, historical racism and discriminatory zoning laws have perpetuated economic disparities and environmental injustices, leading to marginalized communities bearing the brunt of flood-prone economic activities.



Avenue 3 - Socioeconomic Interventions

Possible Interventions

- Community-Led Buyouts
- Flood Insurance (Renting v Ownership)
- Investment in infrastructure resilience + flood technology
- Identify Funding Paths

Literature Review and General Research

- Property Buyouts Can Be an Effective Solution for Flood-Prone Communities

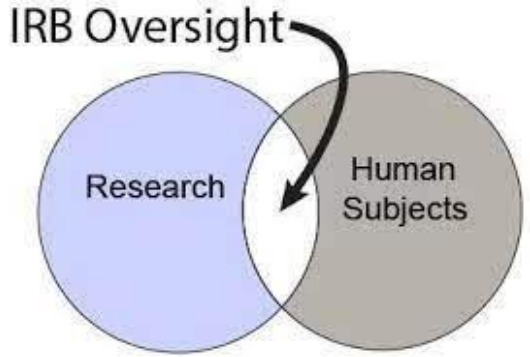
Long Term Goals

01	Updating Infrastructure	• Retrofit aging stormwater drainage systems • Expand capacity to manage increased rainfall • Focus on low-lying and flood-prone areas
02	Establishing Accessible Green Spaces	• Create rain gardens and green infrastructure • Place along tributaries and waterways • Enhance community access in neighborhoods
03	Implementing Community Buyouts	• Facilitate voluntary buyouts in high-risk flood zones • Reduce exposure to flood hazards for historically marginalized communities; • Promote safer relocation options
04	Enhancing Regulatory Partnerships	• Collaborate with regulatory agencies and city office • Enforce zoning regulations • Promote sustainable land use practices citywide
05	Improving Watershed Management	• Upgrade sewage systems to prevent back/overflow • Prioritize areas with high contamination risk • Ensure resilience against heavy rain events

IRB/Survey Updates

After being in contact with IRB we've learned that **IRB approval is not necessary to administer the survey**, since the purpose of this survey does not constitute as "research" or "human subjects research":

- "*Research*" is defined as a systematic investigation, including research development, **testing and evaluation**, designed to develop or contribute to **generalizable knowledge**
- *"Human subject"* is defined as a living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information



Important things to keep in mind:

- **informed consent in crucial**
  - If a research study involves little or no risk to the subject, the research is exempt from further IRB review. Exemption waives the need for further IRB review; however, it does not negate the need for the consent of subjects where applicable.

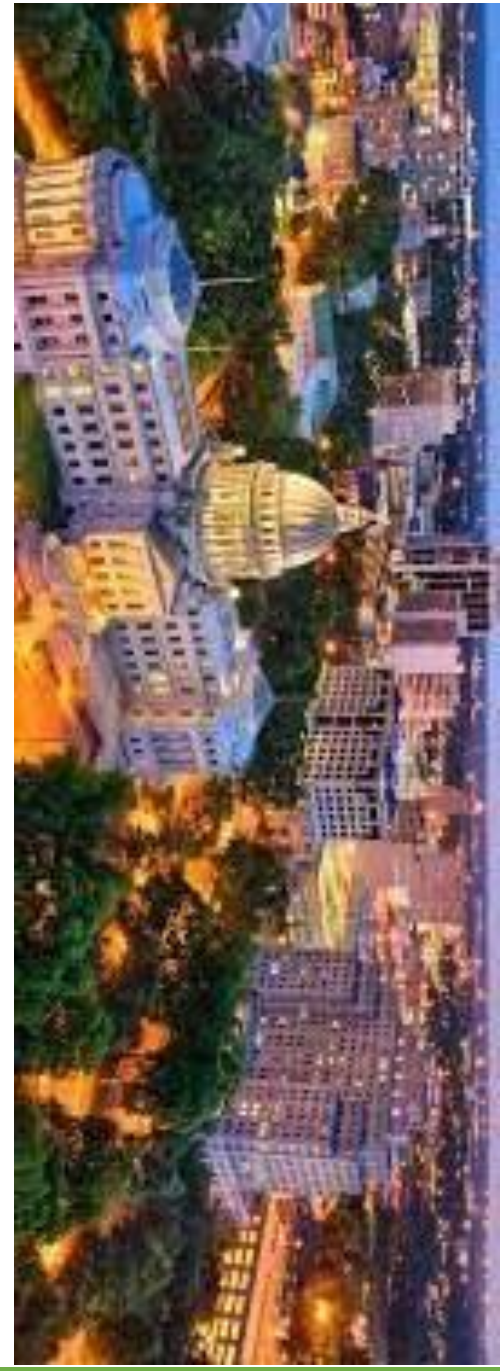
Action Items: Identify necessary next steps to administer survey (set up qualtrics, etc.)

Concluding Thoughts

In conclusion, addressing rain-based flooding in Jackson requires a multifaceted approach that integrates infrastructure updates, green space initiatives, community engagement, regulatory partnerships, and wastewater management improvements.

By implementing these measures, we can enhance the city's resilience to flooding, mitigate risks to public health and safety, promote equitable development, and foster a more sustainable and inclusive future for all residents of Jackson.

Through collaborative efforts and proactive measures, we can build a city that is better prepared to withstand the challenges of a changing climate while creating a safer and more vibrant community for generations to come.



Thank You