I. PROJECT INFORMATION

Project Title*	Nature Based Solutions to Mitigate Climate Change Impacts in Port St Joe, Florida
Project Director*	Michael Volk
Project Location*	Port St Joe
Project Summary*	This project will assist the City of Port St Joe and North Port St. Joe community (NPSJ) , to improve community wellbeing through nature-based solutions (NBS) to mitigate current and future environmental risks. Phase 1 will: 1) assemble community stakeholders, agency staff, and advocates for affordable housing, community health, accessible recreation, and water quality in the St Joseph Bay; 2) assist this coalition to identify future climate/environmental hazards and impacts on community health and resilience; and 3) evaluate potential NBS's for the community and their relationship to health, housing, equity, and future implementation and identify 1-2 focal projects. Phase 2 will result in a NBS master plan for the community, and fully designed NBS for 1-2 focal projects. This plan will provide a system blueprint for future NBS, and will leverage other ongoing collaborative efforts around development rights, housing buyout policies, and ongoing research related to residential health assessments. NPSJ is a historically black community, separated by rail and underutilized industrial land from the rest of the city. Generations of neglect have left the neighborhood at significant risk from environmental and climate-related hazards. In recent years the community has built a strong foundation for greater resilience through community-based leadership, strategic partnerships, and the commitment of stakeholders. This project will provide needed cohesion to the community's initiatives. The NBS plan and projects will reduce flood risk, provide solutions to environmental pollution, and spur equitable regeneration, while also improving ecological outcomes related to water quality, supply, and habitat provision.

II. PROGRESS REPORT QUESTIONS

1. Please revisit your proposal and review your goals and the outcomes you were seeking to achieve through this grant. How successful were you in meeting your goals? Please assess your success against the criteria you set in your proposal and use any combination of anecdotes, stories, graphs, charts, visuals as well as data to explain your success. Upload supporting files if you choose.*

Please see attached final report document.

Optional File Upload

Final Report.pdf

Filename: Final Report.pdf **Size:** 39.7 MB

2. How has your work benefited your organization, professional field, community, or other stakeholders?*

Please see attached final report document.

3. Are there any other successes related more broadly to this project that you would like to share with us?*

Please see attached final report document.

4. What did you learn (positive or negative) as a result of this grant? What lessons would you share with other organizations or the field at large?*

Please see attached final report document.

5. How do you characterize your relationship with GRP and what suggestions do you have for improvement?*

Please see attached final report document.

6. Please provide any other feedback or comments you have for the GRP.*

Please see attached final report document.

7. If applicable, please identify and describe the ways you or your organization leveraged GRP's grant (e.g., other funders, volunteers who worked on the program, in-kind donations etc.) Please specify the value and/or number/hours of volunteers if possible.

Please see attached final report document.

FINAL REPORT:

Nature Based Solutions for Mitigating Climate Impacts in North Port St Joe, Florida

University of Florida Project Leads:
Center for Landscape Conservation Planning
Florida Resilient Cities Program
University of Florida
Gainesville, Florida

Port St Joe Community Partner:
Pioneer Bay Community Development Corporation
Port St Joe, Florida

1. **Please revisit your proposal and review your goals and the outcomes you were seeking to achieve through this grant. How successful were you in meeting your goals? Please assess your success against the criteria you set in your proposal and use any combination of anecdotes, stories, graphs, charts, visuals as well as data to explain your success. Upload supporting files if you choose.***

   In assessing the success of this project in meeting its goals, it is important to consider the context and challenges faced by the community of North Port St. Joe. The city has a history of industrial decline, chronic flooding issues, and health disparities. The impacts of Hurricane Michael in 2018 further exacerbated these challenges. This project aimed to

   1) Build new or expand existing partnerships,
   2) Engage community stakeholders to identify:
      a. climate related hazards
      b. how health and community resilience is impacted by these hazards
      c. potential nature based solutions and how these could enhance health or community resilience
   3) Develop the Phase 2 proposal with project partners

   To this end, the following is a summary of approach and outcomes from this process:

1. Building new and existing partnerships

   The core project team began by identifying a set of key partners – both current and potential, including academic, community, corporate, and agency partners. This list of partners and their contributing roles to a potential Phase II project is included in **Appendix A**. Additional partners not included in this list are involved in other ongoing projects and we expect to coordinate with them moving forward, including additional federal and state agency and City staff, as well as faculty at the University of South Florida and University of West Florida.

   Work included creating a list of parameters for identifying private engineering and design consultants to assist with a potential Phase 2 project and vetting a set of potential candidates with the core university and community team members. The choice of Kimley-Horn and Associates was ultimately based on the breadth of work and experience of the firm across an international range of projects, their staff and resources dedicated to grant-funded implementation, and their proximity to the core project team members in Gainesville, Florida.

   The project also received national attention through an invitation for core team members to participate in a White House panel on environmental justice. This invitation has led to additional meetings and connections with staff at the federal level, including participation in regional Environmental Justice meetings hosted by the EPA and others to highlight the work being completed in North Port St Joe.

   To this end, our internal assessment of this objective is that the team was successful in building external partnerships and building momentum for additional funding and research. The project made

significant progress in reinforcing partnerships and creating new ones. The Pioneer Bay Community Development Corporation (PBCDC) and North Port St Joe Project Area Coalition (PAC) played instrumental roles in supporting and executing community engagement activities. External collaborators such as The Nature Conservancy (TNC), Northwest Florida Water Management District (NFWMD), St Andrews and St Josephs Bay Estuary Program (SASJBEP) also provided support and expertise by participating to community engagement initiatives, attending regular team meetings to discuss the project progress, and by reviewing the proposal for Phase 2. Furthermore, we created new collaborations with BFA Environmental Consultants and Kimley-Horn and Associates that will support data collection and NBS design in Phase 2. These new partners participated in a multi-phase series of meetings and community workshops intended to clarify the appropriate approach in Phase 2 for addressing the complex needs of the community through NBS. Expanding participation of community residents is an important goal that we will continue to pursue, although the team was successful in engaging residents in this project.

2. Engaging community stakeholders to identify climate risks, impacts to community resilience, and potential nature-based solutions.

   As part of the Phase 1 project, the team also developed a systems approach for considering the relationship between housing, health, climate-related factors, and nature-based solutions (**Appendix B),** with the important goal of providing a model for understanding potential unintended consequences from NBS project implementation; positive and negative relationships between NBS solutions, health, housing, and other factors; and to develop a potential quantitative model for evaluating NBS solutions relative to possible co-benefits or risks.

   In coordination with a parallel vulnerability assessment project underway for the City of Port St Joe with funding from the Florida Department of Environmental Protection (FDEP), the team collected an extensive amount of additional data on existing and future flood risks from storm surge, sea level rise, and 100/500 year flooding (Figures 1 and 2); water quality – including samples for nitrogen and fecal coliform; and soil contamination based on existing surveys and data maintained by the Florida Department of Environmental Protection, U.S. Environmental Protection Agency, and others. The team also collected housing data to better understand existing inequities and issues within the community and conducted a literature review as a basis for understanding relationships between housing and potential NBS improvements. A subset of this information is included in **Appendix E (Figures 1-11).** Note in -particular that the figures included to represent vulnerability assessment data in Appendix E are only a sample of the multiple mapping and flood assessment analyses completed in coordination with the FDEP project partners. The FDEP project has also included development of an online viewer (currently in final draft review) to understand tipping points for vulnerability to specific flooding events, which will be used as a tool to assist with adaptation planning work city-wide. In addition, the detailed reports and data included on soil contamination and housing have not been included in full.

   Working with the local PBCDC and North Port St Joe Project Area Coalition, the project team also engaged with community residents at two different points to obtain input on existing environmental issues (including subsidence, flooding, and contamination), perceptions of potential NBS solutions to these issues, and to discuss the three pronged project approach described in the Ph 2 proposal for this project, including the short, mid, and long-term solutions. Participatory mapping and the use of visual materials aided in effective communication and decision-making (**Appendices C-D**) Engagement work included a community walk where team members met with residents of North Port St. Joe directly affected by flooding and subsidence issues to discuss potential applications for NBS solutions (Figure

6, 7, 8, 9). During the walk we showed seven possible NBS solutions to be used on possible locations across the neighborhood. Residents responded positively and expressed interest, support, and eagerness to implement solutions at their homes. Significant outcomes of the workshop included a strong preference that the Phase 2 NBS project be multi-scalar and include private property interventions for vulnerable properties, a street scale public stormwater mitigation project along Battles St., and a neighborhood scale NBS strategic action plan for future projects. This initial community exercise was followed by an additional community event, where a refined version of this approach was discussed with citizens to inform proposal development (Figures 10-11).

Both the quantitative data collected through vulnerability assessments, and the community input obtained during engagement events led to a better understanding of both 1) existing conditions within the community, prior planning foundations and efforts, and potential nature-based solutions for providing technical solutions to existing and future climate risks; 2) community perceptions and needs regarding nature based solution projects - including the need for a multi-scalar approach, additional data collection, capacity building and workforce development as a component of NBS projects; and 3) data gaps needed to fully and accurately understand the complex existing environmental systems and provide for NBS solution design that successfully address environmental issues (Figure 5.1 and 5.2). In Phase 2 we will build on this and other ongoing work within the community to inform the NBS project design.

3. Phase 2 proposal development

The team successfully submitted a Phase 2 proposal, which we believe makes a strong case for a multi-scalar approach to NBS solutions within the North Port St Joe community, with near, mid, and long-term approaches and potential for impacts. The Phase 1 project's success in collecting data, reinforcing partnerships, assessing existing conditions, and engaging the community lays a strong foundation for Phase 2 and the implementation of NBS solutions. By addressing the community's housing, health, and equity needs, the project aims to create a more resilient and sustainable future for the City of Port St. Joe.

2. How has your work benefited your organization, professional field, community, or other stakeholders?*

This work has brought several benefits to our Institution, the professional field of landscape architecture and urban design, and the community of North Port St. Joe,. These include but are not necessarily limited to the following:

1. Organization: The project has benefited the PBCDC, PAC, and partner organizations by expanding and strengthening connections with all of the partners listed herein and with new entities at the state and federal levels. Today, these connections are actively providing the community and team access to additional expertise and resources, enhancing their capacity to effectively address the challenges faced by North Port St. Joe and similar communities.
2. Professional Field: The project has contributed to the professional field of landscape architecture and urban design by developing a model for collaboration between professional practitioners and academic research institutions. This model has the ability to provide applied and research-based solutions to projects beyond North Port St Joe in ways that would not be otherwise possible.

3. Community: The project has directly benefited the community of North Port St. Joe. By collecting data on flood risks, water quality, and housing conditions, the project team has gained a better understanding of the community's needs and vulnerabilities. The engagement activities, such as workshops, discussions, and community walks, have empowered community members to participate actively in decision-making processes. Through participatory mapping and visual materials, residents were able to visualize and provide feedback on potential nature-based solutions for their neighborhoods. This engagement process has created a sense of ownership and collaboration among community members, fostering a stronger connection between the project and the people it aims to serve. In addition, these efforts helped to increase understanding of the complex hydrological and geologic conditions affecting the community, and crystallize an approach for effectively addressing current and future environmental risks through data collection, engagement, design and planning, and workforce development.
4. Other stakeholders: Similar to the benefits listed in 1) above, this project has benefited other organizations and stakeholders outside of North Port St Joe by providing opportunities for collaboration, expanding opportunities for learning and engaging in the execution of nature based solutions, and expanding opportunities for working in the underserved community of North Port St Joe, but also using work there as a model for addressing similar needs in other communities suffering from issues of environmental justice. The partnerships developed through this project have been key - and will continue to exist beyond this and any potential Phase 2 work.

As noted in our Phase 2 proposal regarding existing and future benefits:

> "Although extensive and critical needs exist, the work that North Port St Joe has done to-date is being held up as a national example of coalition building and funding to address issues of equity and environmental justice. This project has the potential to greatly increase the understanding of how NBS can be used to mitigate climate-related hazards. In addition, if funded the Phase 2 project will contribute to the community's existing efforts by creating transferable models for 1) collaboration between traditional design/planning practitioners (such as large design and engineering firms), local government, African-American owned small business, university research institutions, and community partners to address on-the-ground needs through a community-driven approach; 2) using nature-based solutions to address complex problems using a systems-based approach; 3) performance-based *assessment* of nature-based solutions to quantify potential benefits and drawbacks, in a form that can be used by other communities to evaluate either existing or potential projects for addressing future climate resiliency, equity, and issues of environmental justice.
>
> Our work with Kimley-Horn and Associates (1) above is a critical component of the project, as we will work collaboratively to develop and test a NBS design 'hypothesis' developed by the core team – based on a metric, system-based approach for using a nature-based solution to address community needs. We will be able to do this within a specific, local, applied context. The team will then be able to assess the performance of that solution in terms of direct benefits and co-benefits to the community. This model for practitioner-university-community collaboration is important, as similar critical partnerships could be an effective approach to deliver community-driven and high-quality design and planning for local communities.
>
> This information will be included in documentation shared with NASEM as part of the post-design learning and analysis documentation, including documentation of partners, collaborative design processes, lessons learned, and the post-project evaluation outlined in this request for

applications. Particular focus will be placed on the engagement process, and how equity was addressed in terms of teaming, contracting, process implementation and outcomes.

This information will then be actively disseminated to other communities as part of the community's existing partnerships with the White House Office of Environmental Justice, EPA, and other state, federal, and local partners. Most importantly, it will be developed in partnership and shared with the City of Port St Joe, so that it can be used to inform future capital improvements and other projects within both the community of North Port St Joe, and other parts of the city."

3. **Are there any other successes related more broadly to this project that you would like to share with us?***

   We believe that the partnerships and approaches developed in this project for addressing the needs in the community of North Port St Joe are our primary successes. However as previously mentioned, during the project period, project partners Dannie Bolden from the PBCDC, and PI Volk were invited on behalf of the residents of North Port St Joe to be one of five communities that participated in a White House Environmental Justice in Action Roundtable highlighting this project and the success of the community in building coalitions and partnerships. Bolden, Hendry, Volk, and Carney were then asked to present the community's work as part of the EPA's Environmental Justice Community Engagement Calls in May 2023. This is part of a larger effort by community leaders to highlight the community's needs at the national level, and additional coordination is ongoing, most recently through the Southeast Environmental Justice Summit in Atlanta (June 2023). The connections developed through these efforts have tangibly increased awareness of the community and it's needs at the state, regional, and federal levels.

4. **What did you learn (positive or negative) as a result of this grant? What lessons would you share with other organizations or the field at large?***

We would suggest that for those engaging in a planning grant, that organization is key, in terms of overall project scheduling, regular team calls to keep on track, and regular check-ins to make sure project goals are being achieved. This is particularly important on a project such as ours in North Port St Joe, where the environmental and community issues are extremely complex, and require careful thought, analysis, and collaborative work to effectively understand and address.

5. **How do you characterize your relationship with GRP and what suggestions do you have for improvement?***

We have no suggestions for improvement. Our relationship with the GRP was excellent.

6. **Please provide any other feedback or comments you have for the GRP.***

We have no other feedback or comments.

7. **If applicable, please identify and describe the ways you or your organization leveraged GRP's grant (e.g., other funders, volunteers who worked on the program, in-kind donations etc.) Please specify the value and/or number/hours of volunteers if possible.**

APPENDIX A:

List of Primary Phase 2 Project Partners

Non-University Project Partners:

In the Phase 2 project, University of Florida staff will collaborate with key existing and new community partners as summarized below. Letters of support from the City of Port St. Joe, Pioneer Bay Community Development Corporation, and The Nature Conservancy were provided as part of the Phase 1 application, and these partners maintain their support:

Pioneer Bay Community Development Corporation (PBCDC): Dannie Bolden and John Hendry will represent the PBCDC in this partnership. The PBCDC is critical to this project as the community organization engaging neighborhood voices and experts who are vested in the community and its future development. Bolden and Hendry will provide planning assistance for community engagement events, including connecting with the community residents, informing them of the community meeting and its purpose, and providing information and project content that supports the engagement of North Port St. Joe residents. Bolden and Hendry will also play an important role during community events to provide a 'bridge' between the University and the community, helping to ensure that there is common ground between all those involved in the meeting, whether as researchers or residents of North Port St. Joe.

City of Port St. Joe: The City of Port St. Joe's cooperation is essential to ensure successful project implementation and management locally, as well as future connectivity between infrastructure systems in North Port St Joe and other areas of the City. The project team will build on existing contacts with multiple City of Port St Joe staff throughout the Phase 1 project to continue this work, with Mike Lacour, Financial Analysis and Fair Housing Coordinator as the lead contact. Mr. Lacour's duties include parks and open space planning within the City, and he has been a core contact for the research team. Additional relationships with Jim Anderson, the City Manager and the 5 member city council will be maintained throughout the project.

Kimley-Horn and Associates: Kimley-Horn (www.kimley-horn.com) is a nation-wide professional planning, design, and engineering firm with offices across the United States. Elisabeth Manley, Landscape Architect, will be the Gainesville-based point of contact (POC) for staff in the firm's Tallahassee and other offices who will assist with the project. Kimley-Horn will serve as the design and engineering lead for the mid-term, linear nature-based project on Battles Street. This will include participation in project scoping and community engagement; serving as the lead for site analysis, design, and preliminary development approvals; collaborating with the UF team to provide data as needed for the project assessment; and assisting with development of the long-term Project Action Plan through their staff focused on grant-funded project implementation. The UF team will provide overall project leadership, including development of project goals, metrics, and benchmarks in coordination with Kimley-Horn staff to guide project development and assessment, and develop the model for community-university-practitioner partnership described later in this proposal.

BFA Environmental Consultants: Patrick Barnes, P.G. and (https://www.bfaenvironmental.com/) is a professional geologist and environmental justice advocate, who is currently assisting the community with capacity building through environmental job skills training and providing limited site environmental assessments through EPA funded grants. We will work with Patrick to provide advisory input on the scope, deliverables, and hydrogeological as well as geotechnical data analysis of this project's work products. He will help ensure that the team and community has a comprehensive understanding of soil and landfill characteristics and the knowledge of how contamination transport may be influenced by the proposed nature-based solution design. He will also support the use of this project to expand community education, job training and mentorship in the use and application of NBS.

Northwest Florida Water Management District (NFWMD): Darryl Boudreau will be the project's lead NFWMD partner. NFWMD staff led by Mr. Boudreau will assist by providing technical input and supporting community and city engagement activities during the project, and are critical partners relative to long term implementation and management of NBS strategies in the watershed.

The Nature Conservancy (TNC): Bob Bendick, the Director of the TNC's Gulf of Mexico Program will be the project's lead partner. Mr. Bendick has worked on conservation in the Florida panhandle for 25 years, and was overall supervisor for TNC's recently completed Scaling Up Nature Based Solutions (SUNS) project (referenced below). Additional TNC support will be provided by Dr. Christine Shepard, Science Director of the TNC Gulf of Mexico Program and an expert in nature-based solutions. Dr. Shepard has been the leader of the SUNS project. TNC brings science and engagement expertise in nature-based solutions to address stormwater flooding and water quality issues through extensive nationwide and regional planning, project implementation, and advocacy, and will assist with integration between this project and the SUNS project. TNC will also be providing $25,000 in matching funds as part of a NOAA funded hydrology study that is foundational to this project.

St Andrews and St Josephs Bay Estuary Program (SASJBEP): SASJBEP staff who will support the project include Director Dr. Jessica Graham. SASJBEP will assist by providing stakeholder engagement and technical support related to broader watershed issues as they affect the surrounding bays and waterbodies.

University of Florida Project Partners

Michael Volk, Project Director and Associate Director of the University of Florida (UF) Center for Landscape Conservation Planning (CLCP), conducts applied research on urban green infrastructure and resiliency in coastal communities, including landscape performance assessment. As one of four founding faculty members of the Florida Resilient Cities Program (FRC), Michael has worked in the community of North Port St Joe since 2019. In this project, Michael will be ultimately responsible for assuring successful project completion and coordination among partners; and will serve as the overall team Research Lead for the mid-term and long-term projects.

Jeff Carney, Co-PI, is the Director of the Florida Institute for Built Environment Resilience (FIBER) and the FRC at UF. Examples of his work include ongoing FRC projects in Port St. Joe, Cedar Key, Cape Coral, and Jacksonville. As the current lead for a Florida Department of Environmental Protection (FDEP) climate change vulnerability assessment in Port St Joe, Jeff will have a critical role in ensuring that this project is coordinated with broader city-wide efforts, and will assist by providing input and expertise across all levels of the project.

Dr. Carla Brisotto is a community designer, who currently leads research and outreach initiatives across multiple FRC projects. As the Project Management and Engagement Lead for this project, Dr. Brisotto will supervise day-day project management, scheduling, and correspondence. She will also be the UF-lead for stakeholder coordination and engagement in partnership with the Pioneer Bay CDC (described below).

Isabella Guttuso is the Urban Green Infrastructure Coordinator for the UF CLCP. Isabella's background includes both professional practice and research-based work focused on urban and recreational green infrastructure. Isabella will serve as the Product Development Lead – in charge of research and preliminary identification of project metrics, goals, and assessment; development of Post-Design Learning and Analysis

documentation; and development of the Project Action Plan document. She will compile necessary research and information for review by the team and develop final documentation and products – working directly under the project PI, Co-PI, and with other core partners.

Dr. Eban Bean is a UF Assistant Professor and Extension Specialist of Urban Water Resources Engineering. Dr. Bean is a leader in low-impact development (LID) and green stormwater infrastructure (GSI) design research and works closely with state and local agencies on addressing these issues. Dr. Bean will serve as the lead for the near-term nature-based solution portion of this project, working directly with private property owners to identify and implement NBS to reduce stormwater flooding impacts and assist with training for maintenance of NBS installations.

Dr. Yi Luo is an UF Assistant Professor in Landscape Architecture specializing in landscape performance assessment and stormwater management, who has been working in Port St Joe since 2020. Dr. Luo will be the Metrics and Assessment lead for the mid-term project working in coordination with other project team members to identify co-benefits and incorporate design data.

Dr. Lisa Sundahl Platt is a UF Assistant Professor of Interior Design. Dr. Platt's research investigates how interdisciplinary research can elicit practical innovation to improve human and system resilience. Her role in the Phase 2 project will be to facilitate the evaluation of the effect of health risk and resilience optimization strategies on the community environment of the designed NBS options. She will also assist with development and review of the conceptual "systems" model that identifies relationships between health, housing, economic, and environmental factors as they relate to project implementation, as well as literature and research regarding health-related co-benefits for NBS solutions.

Dr. Matt Deitch is an Assistant Professor and IFAS Extension Agent at UF, and Director of the Watershed Management Lab at the West Florida Research and Education Center. Matt's role in the Phase 2 project will be to contribute expertise related to watershed hydrology as it relates to assessments of NBS opportunities within the community, and particularly the role of NBS in improving water quality for the community and St Joseph Bay. Dr. Deitch will also assist with review and data for the mid-term project metrics and assessment products, and the long-term Project Action Plan.

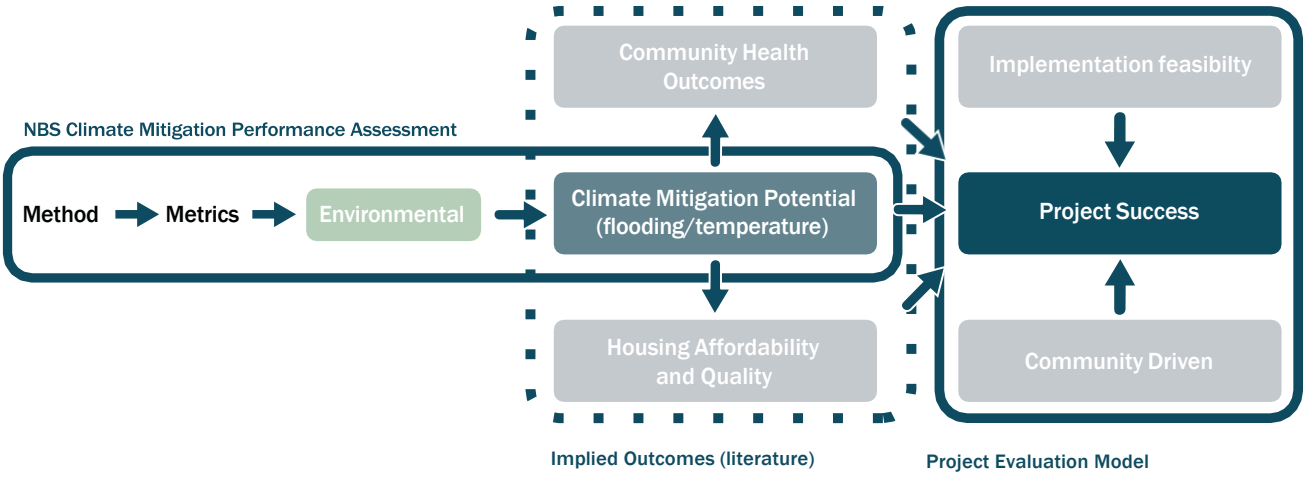
Dr. Maria Watson is an Assistant Professor at the UF Shimberg Center for Housing Studies specializing in how to better structure environmental policies to meet household needs following disasters. Dr. Watson will contribute expertise related to housing and disasters including elements of the long-term Project Action Plan, and to incorporate community input and the best available literature, policy, and GIS-based data to minimize the impact of environmental improvements and nature-based solutions on housing affordability and maximize co-benefits from NBS solutions.

Bill O'Dell is the Director of UF Shimberg Center for Housing Studies, and as a founding member of FRC has led community engagement and analysis related to the intersection of affordable housing, equity, health, and environment. Bill's role in the Phase 2 project will be to contribute expertise related to housing issues as they relate to NBS, equity, and climate risks within the community.

Christian Calle Figueroa is an urban designer and Research Assistant Scholar at UF. During the last decade, Christian has worked on urban studies and projects in different parts of the world, addressing a variety of urban issues, from the re-urbanization of favelas in Brazil to inward development projects in cities in Switzerland and Germany. Christian's role in this project will be to assist with two- and three-dimensional graphic production particularly as needed for community engagement activities.

APPENDIX B:

Systems diagram to illustrate relationships between health, housing, environmental factors and nature-based solutions



APPENDIX C:
Workshop Walk Flyer distributed to the community

PORT ST. JOE SECOND WORKSHOP WALK

A workshop focused on North Port St. Joe
Nature Based Solutions for stormwater and flooding
March 10th, 2023 | 4pm – 6:30pm

OVERVIEW

Please join us to participate in an on-site discussion of stormwater management, green infrastructure, and community resilience opportunities in North Port St. Joe. This event will be hosted by the **University of Florida's Florida Resilient Cities program (FRC)** with the support of the National Academis of Sciences, Engineering, and Medicine (NASEM) and engage government officials, local experts, and community members to Nature-Based Solutions available to mitigate stormwater and flooding.

DETAILS

We will meet at George Washington High School Campus, David Jones Gymnasium (401 Kenny Street) to discuss and learn about Nature-Based Solutions (NBS) to mitigate stormwater in North Port St. Joe. The workshop is divided in three parts. First, we will review what Nature-Based Solutions are and why they can help mitigate stormwater and flooding. Then, we will walk around North Port St. Joe to envisions these solutions on the places that mostly need them. At the end, we will return to the gym where all participants can actively evaluate the NBS and discuss priorities.

The Walking Schedule is as follows:

ITINERARY

4pm:
Welcome and presentation of the workshop scope

4:30pm:
Presentation of the Nature Based Solutions options

5:00pm:
Walk around the neighnourhood

6:00pm:
Evaluationa and feedback on NBS

6:20pm:
Final remarks

This effort will provide all the information needed to submit a grant proposal that will have the objective of design the prioritized NBS.

This event will take place on Friday March 10th from 4 pm to 6:30 pm. Please let us know if you, or others, are interested and available to join us in sharing your knowledge with the group. Please RSVP by March 3rd.

Interested in Participating? Please contact Carla Brisotto – c.brisotto@ufl.edu

Organized and Supported by:

UF Florida Institute for Built Environment Resilience

The National Academies of SCIENCES ENGINEERING MEDICINE

UF CENTER FOR LANDSCAPE CONSERVATION PLANNING

APPENDIX D:
Workshop Walk Informative Materials Distributed to the Community

PORT ST. JOE SECOND WORKSHOP WALK

A workshop focused on North Port St. Joe
Nature Based Solutions for Current and Future Flooding

ITINERARY

INSTRUCTIONS

Please provide your feedback on each tactic by responding to the questions on the following pages.
Your feedback will be used to discuss which combinations of tactics may best help to address current and future flood risks within North Port St Joe.

Nature Based Solutions (Tactics)

1. Rainwater Harvesting

2. Wetland Restoration

3. Bioswales

4. Stormwater Parks

5. Pervious Surfaces

6. Trees

7. Rain Gardens

Organized and Supported by:

UF Florida Institute for Built Environment Resilience

The National Academies of SCIENCES ENGINEERING MEDICINE

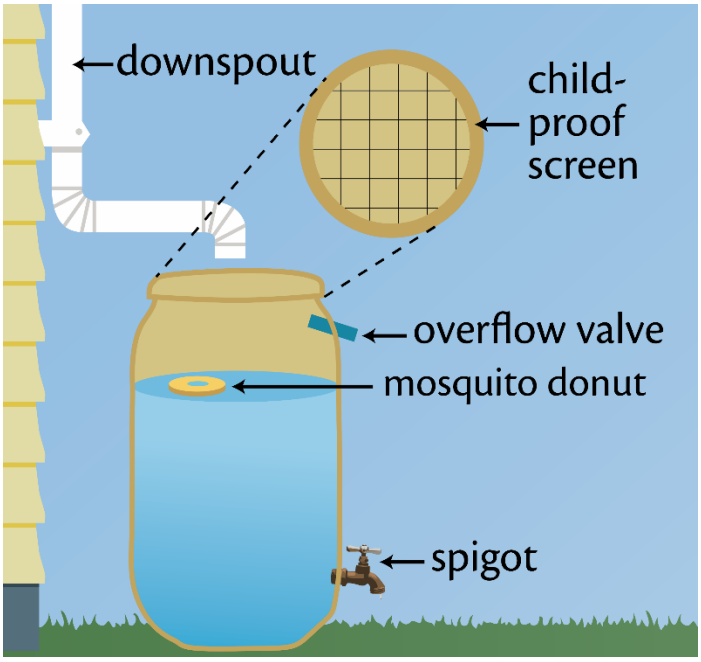
UF CENTER FOR LANDSCAPE CONSERVATION PLANNING

1. RAINWATER HARVESTING

What: Devices to collect and store rainwater from roof surfaces

Where: Private residences, commercial, and public buildings

Why: Slow down and reduce runoff, store water for later use



- Are you familiar with this tactic? Circle your response

  yes no

- Would you be willing to have this tactic at your house? Circle your response

  yes no maybe

  Why? Write your comment below

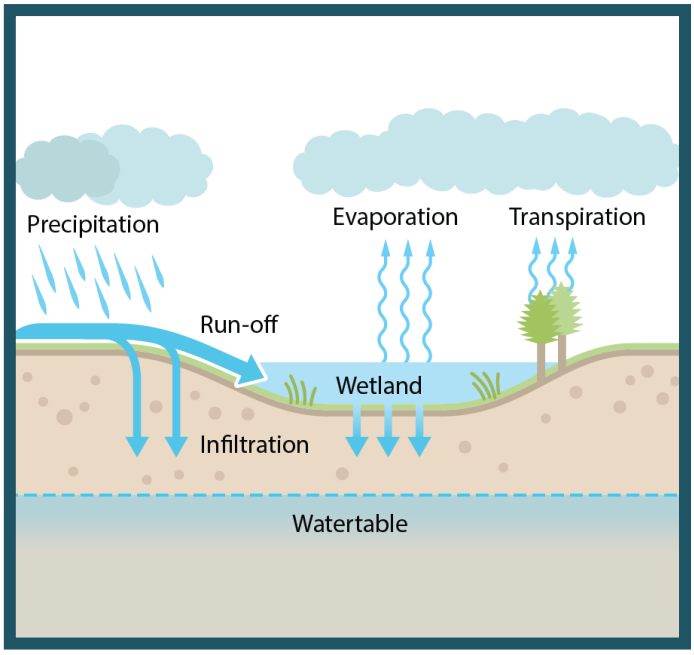
- Other comments

2. WETLAND RESTORATION

What: Restoration of historic wetlands and wetland functions

Where: Larger parcels where water storage or treatment is possible

Why: Capture stormwater runoff, reduce erosion, filter water pollution, provide habitat and recreational opportunities



- Are you familiar with this tactic? Circle your response

  yes no

- Would you be willing to have this tactic close to your neighborhood? Circle your response

  yes no maybe

  Why? Write your comment below

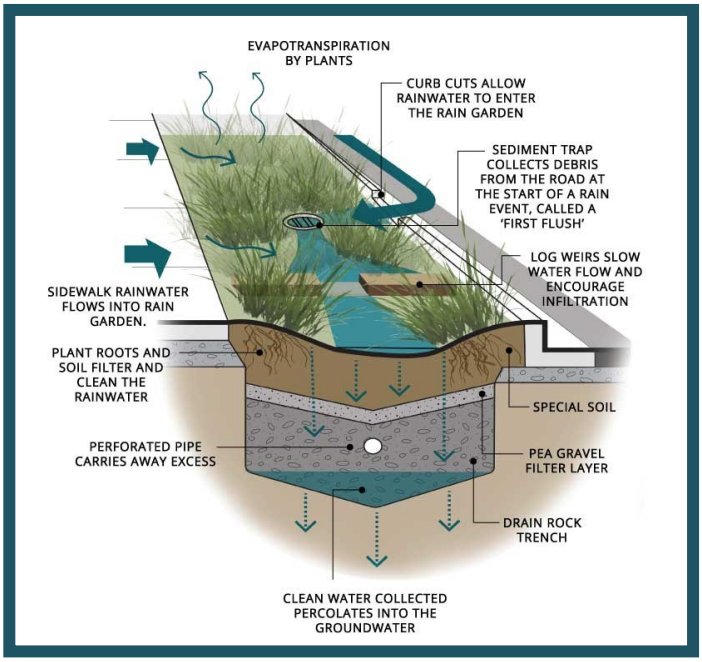
- Other comments

3. BIOSWALES

What: Linear, vegetated swales which allow for the collection, conveyance, filtration, and infiltration of stormwater

Where: Along streets and parking lots

Why: Slow down and reduce stormwater runoff, improve water quality



- Are you familiar with this tactic? Circle your response

  yes no

- Would you be willing to have this tactic along Battle Street? Circle your response

  yes no maybe

  Why? Write your comment below

- Other comments

4. STORMWATER PARKS

What: Small basins to collect, treat, and drain stormwater runoff, which can double as community open space

Where: Small parcels of vacant land

Why: Collect, treat, and drain stormwater runoff, increase neighborhood open space for recreation, provide urban habitat

- Are you familiar with this tactic? Circle your response

  yes no

- Would you be willing to have this tactic in the neighborhood? Circle your response

  yes no maybe

  Why? Write your comment below

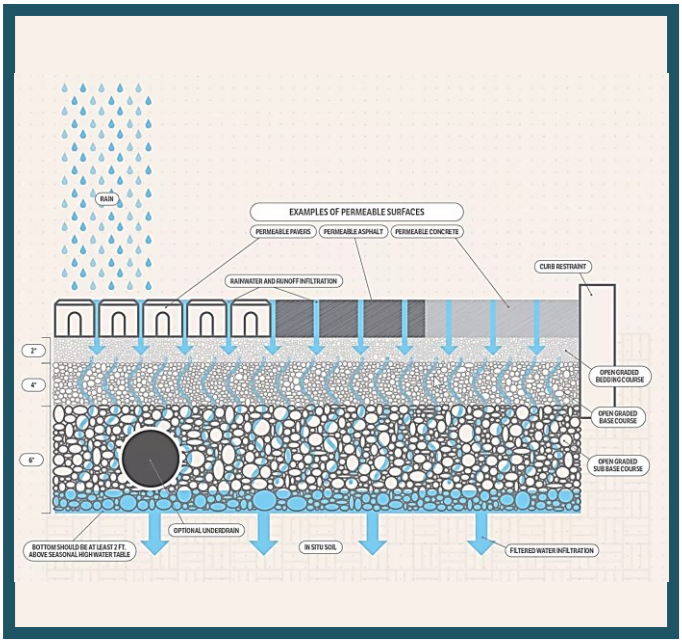
- Other comments

5. PERVIOUS SURFACES

What: Pervious concrete, porous asphalt, interlocking pavers, unpaved surfaces

Where: Parking lots, driveways, and other typically paved areas

Why: Increase the ability for rainfall to soak into the ground and reduce runoff



- Are you familiar with this tactic? Circle your response

  yes no

- Would you be willing to have this tactic on your driveway? Circle your response

  yes no maybe

  Would you be willing to see this tactic in a parking lot? Circle your response

  yes no maybe

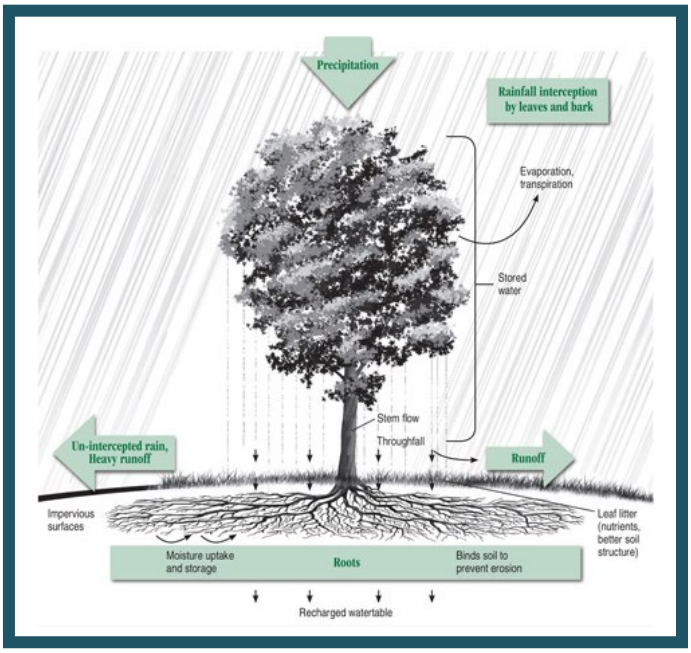
  Why? Write your comment below

6. TREES

What: Planting of Florida Friendly street tree species

Where: Along streets, residential yards, parks

Why: Reduce stormwater runoff, improve air quality, provide shade and reduce heat, improve environmental quality



- Are you familiar with this tactic? Circle your response

  yes no

- Would you be willing to see this tactic along the streets of your neighborhood and in parking lots? Circle your response

  yes no maybe

  And in your yard? Circle your response

  yes no maybe

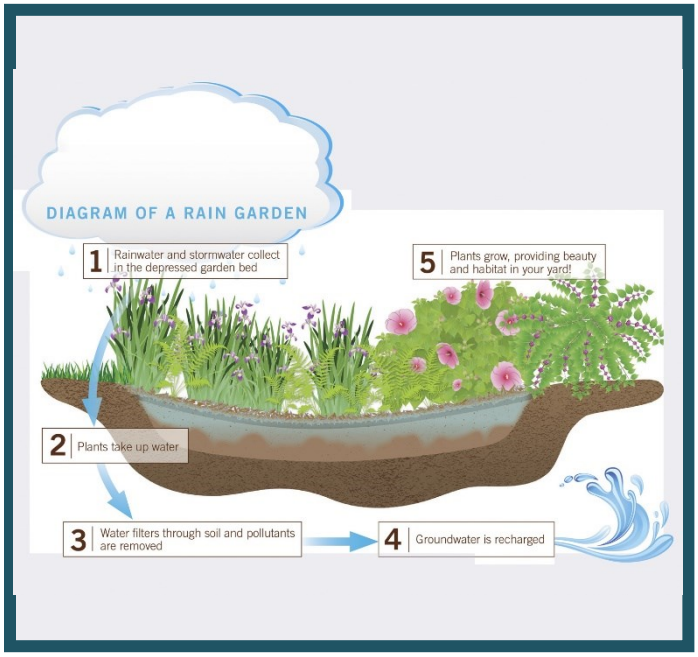
  Why? Write your comment below

7. RAIN GARDENS

What: Shallow basins that absorb stormwater runoff

Where: Along streets, sidewalks, yards

Why: Slow down and drain runoff from roofs and paved areas, improve urban habitat



- Are you familiar with this tactic? Circle your response

  yes no

- Would you be willing to have this tactic in your yard? Circle your response

  yes no maybe

  And along the streets of your neighborhood? Circle your response

  yes no maybe

  Why? Write your comment below

APPENDIX E:
Figures Referenced in Text

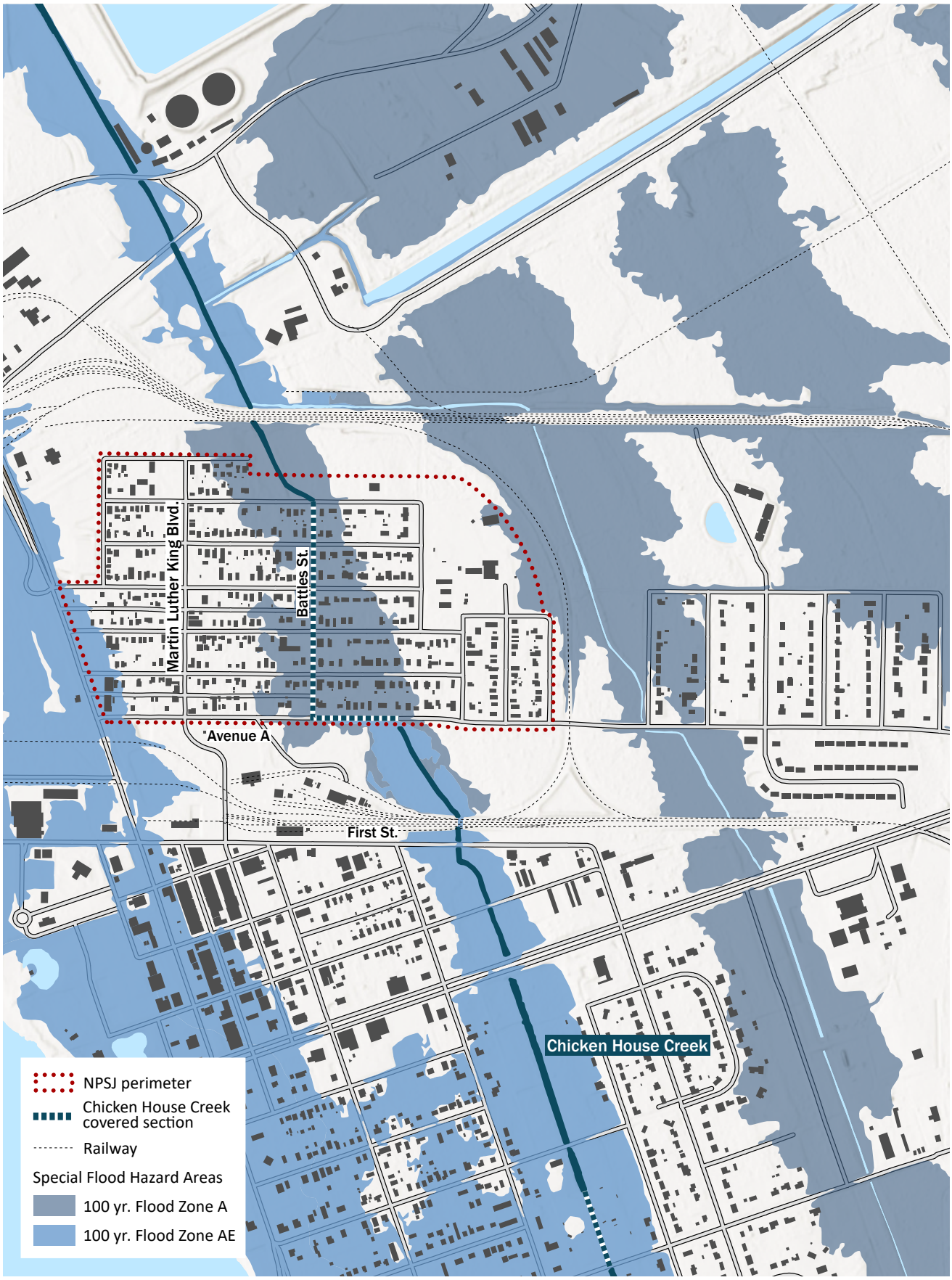


Figure 1. Flood extent 100 yr. Special Flood Hazard Area

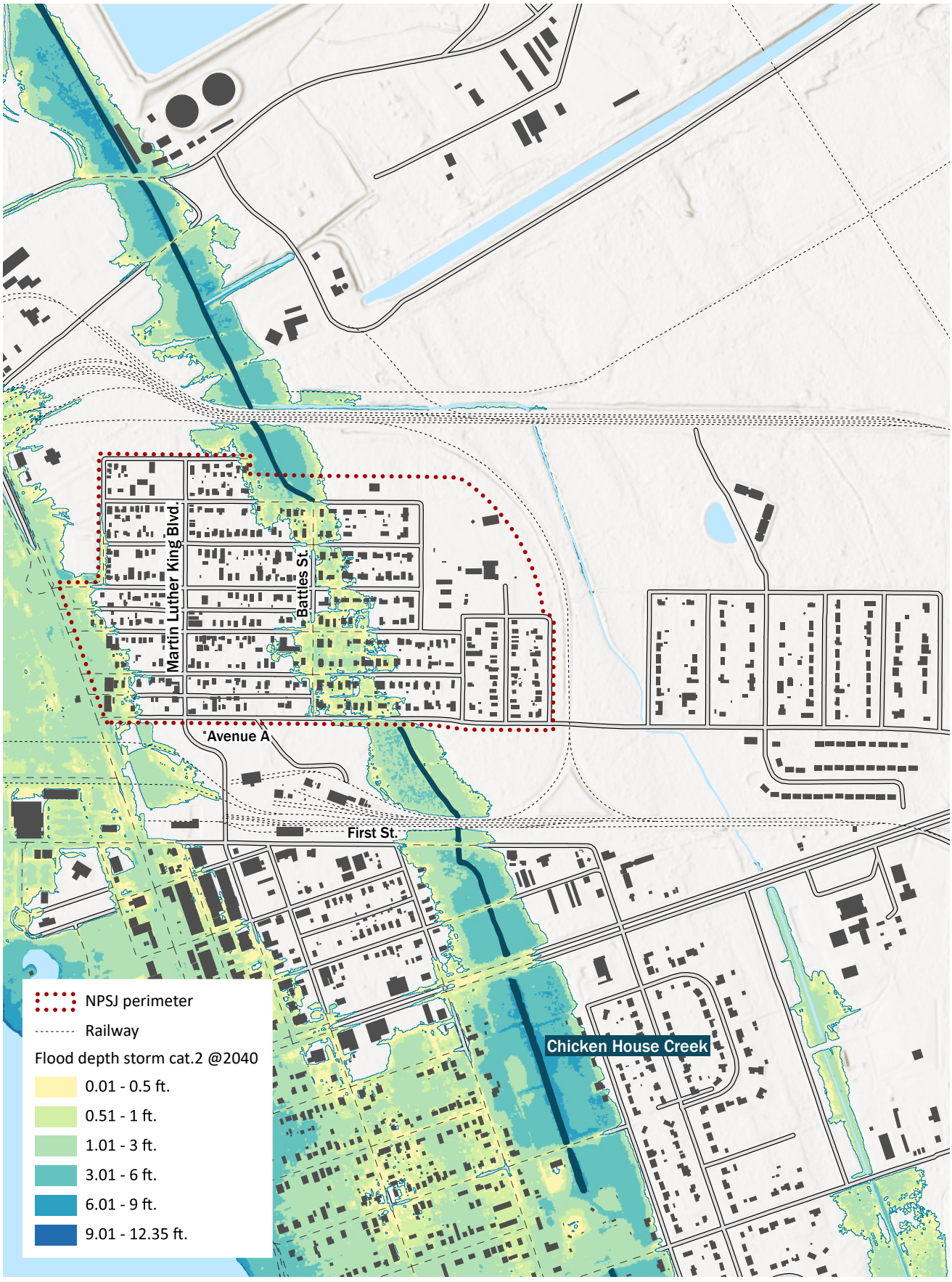


Figure 2. Flood Depth Category 2 Hurricane @2040

Sites sampled by UF staff around North Port St. Joe, FL on May 9, 2023.

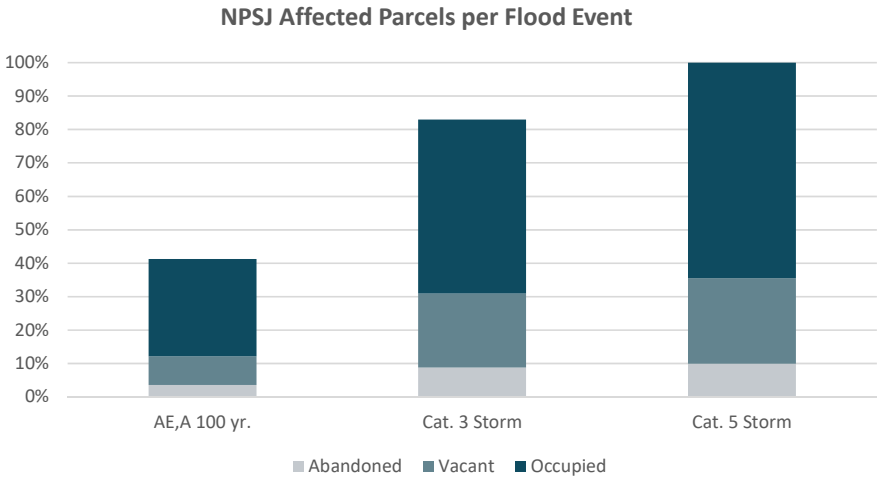
Sites sampled by UF staff around Port St. Joe, FL on May 9, 2023.

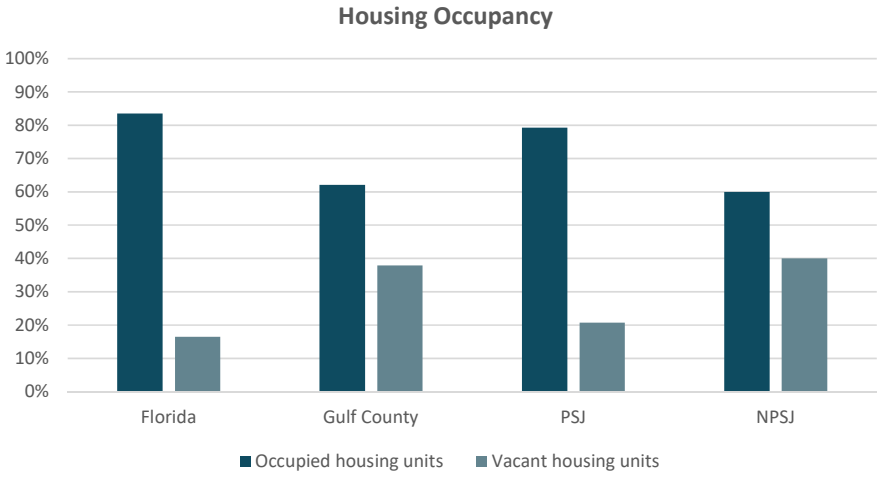
Figure 3. Water samples were taken from six locations in Gulf County, around Port St. Joe, FL, on May 9, 2023. Samples were placed on ice, returned to UF's West Florida Research and Education Center, and prepared for quantification of fecal indicator bacteria E. coli and enterococcus via IDEXX Colilert and Enterolert. Samples were read for fecal indicator bacteria enumeration on May 10, 2023.

Site name	E. coli, MPN/100 mL	Enterococcus, MPN/100 mL
Depot Creek at 8th St.	1300	> 2420
Depot Creek at Long Ave	> 2420	> 2420
St. Joseph Bay at Frank Pate Park	> 2420	> 2420
Chickenhouse Creek at Avenue F	133	648
Chickenhouse Creek at Industrial Rd.	60	107
Gulf County Canal at Highway 98	> 2420	> 2420
(The site identified as “Culvert at First Street” in North Port St. Joe had no water.)		

Fecal indicator bacteria levels at six sites in Gulf County, FL, May 9, 2023.

Table 1. Results of the water samples.





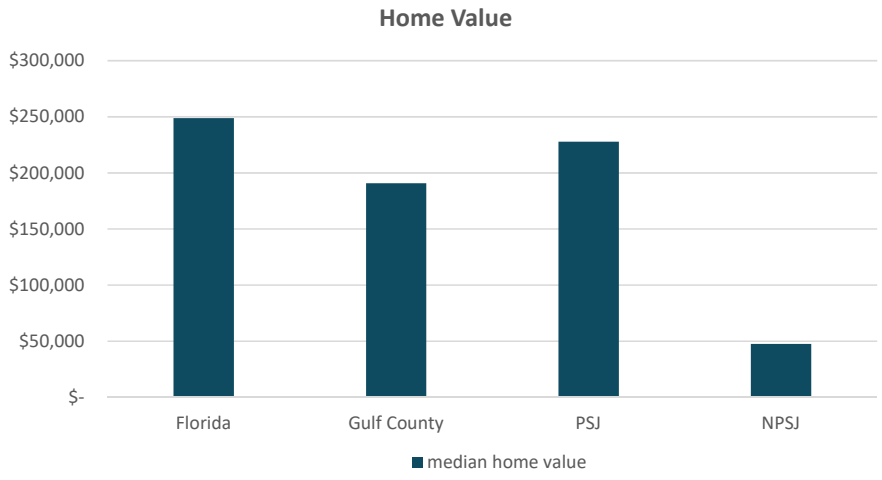


Figure 4. Housing data for North Port St Joe reflects disparities in home value and a high percentage of vacant housing land compared to the rest of the city and state, as well as vulnerability to flood events. Data source: Census Data, GeoPlan Statewide Parcel Data in Florida - 2021, UF FIBER flood vulnerability maps.

Figure 5.1. North Port St. Joe. Surficial looding after a storm event.

Figure 5.2. Existing stormwater inlets. In some cases inlet elevations are above surrounding grade due to land subsidence, making drainage ineffective.

Figure 6. A resident of North Port St. Joe is standing in front of the house in which he grew up. The house is now rendered uninhabitable.

Figure 7. Community workshop held before the neighborhood walk

Figure 8. Pastor Davis shared his experience with the Project team and the community about the subsidence problems

Figure 9. A row of houses with subsidence problems on buildings located on the east side of Battles St.

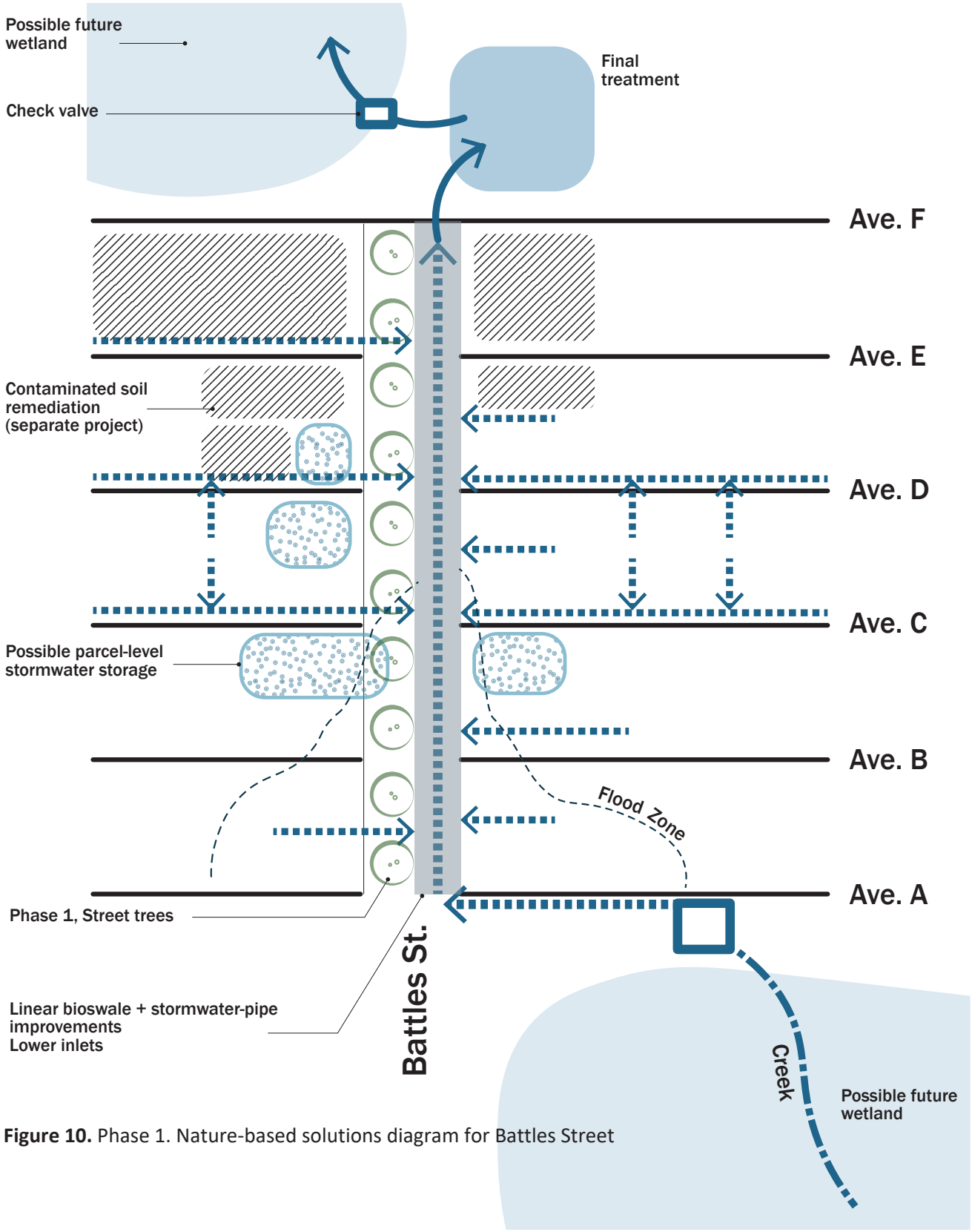


Figure 10. Phase 1. Nature-based solutions diagram for Battles Street

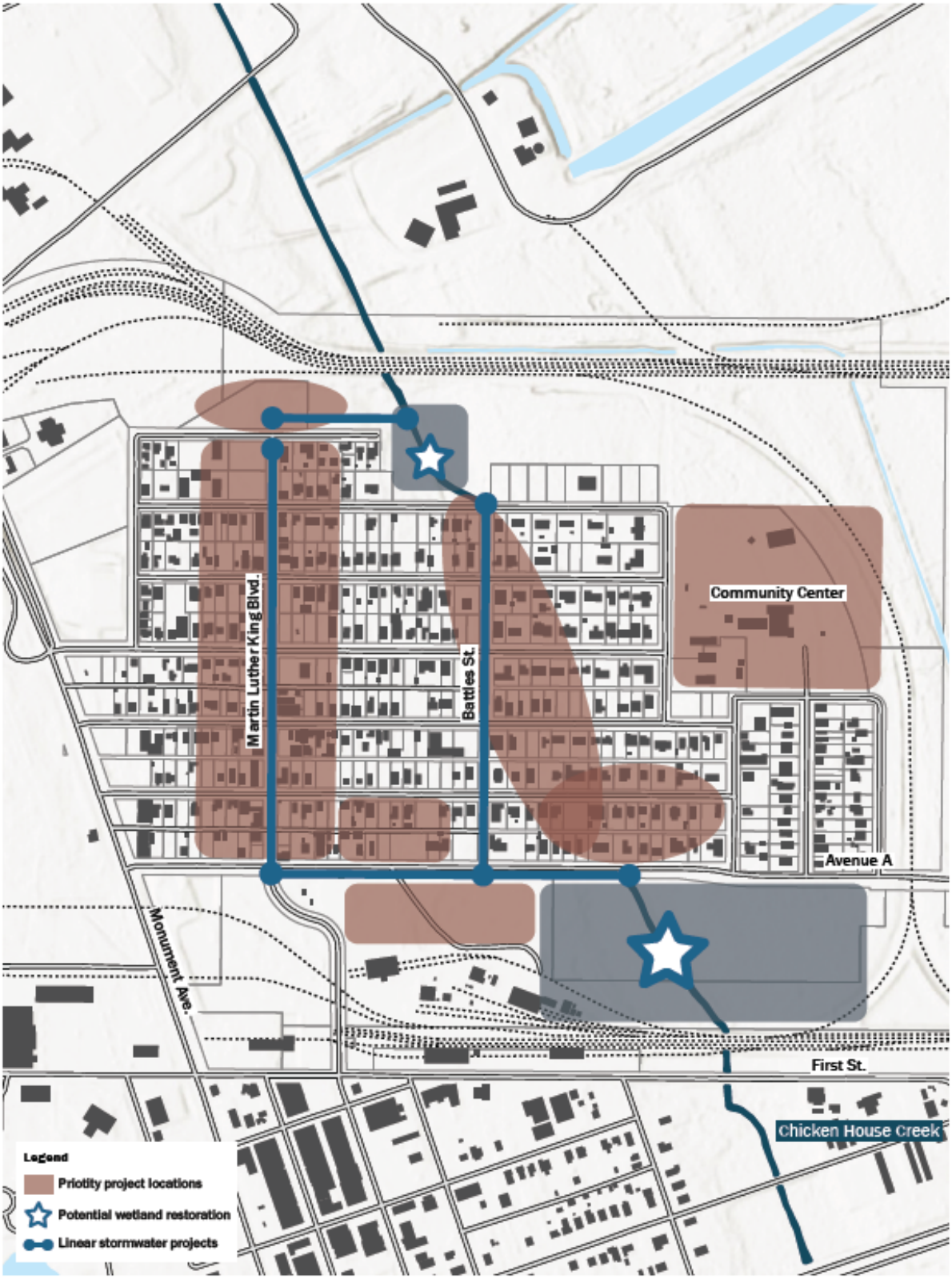


Figure 11. Community Project Focal Areas (redevelopment projects are in brown, wetland restoration projects are in gray, linear stormwater projects are highlighted in blue)