



Gulf Water Justice Strategic Planning Project

The Deep South Center for Environmental Justice (DSCEJ), in collaboration with the Barbara Jordan – Mickey Leland School of Public Policy at Texas Southern University (TSU), is undertaking a strategic planning process to design the Gulf Water Justice Project. Recognizing that communities along the Gulf Coast Region are collectively exposed to but uniquely challenged by climate change, DSCEJ aims to positively contribute to equitable water management decisions in the region.

The predicted effects of climate change being severest on predominantly African American and low-wealth communities in the Gulf Region compel action to ensure that communities are able to effectively participate in the management of their public water systems. Human health and safety are dependent on these systems that provide drinking water, monitor groundwater usage, assess surface water quality, and either divert or drain flood water.

Through the increased intensity and frequency of climate-induced disasters in recent years, it has become clear that our water systems in the Gulf Region are poorly managed and operated and are fraught with aging and neglected equipment. Consequently, significant health and safety risks for Gulf coastal residents result from:

- Unsafe drinking water
- Inadequate flood control
- Migration of toxic chemicals in stormwater
- Overuse of groundwater leading to land subsidence

Additionally, water utilities, which consume massive amounts of fossil fuel-generated electricity, are also contributing to the problem of power plant pollution that harms our health and warms our planet. Incorporating climate resilience into the management of water systems and switching them to efficient and renewable energy alternatives are at nascent stages and occurring mostly outside of the Gulf Region. Yet, even with these progressive efforts to make water utilities climate ready, there is scant attention to ensuring that the input and concerns of vulnerable communities are included in these efforts.

*The Gulf Water Justice Strategic Planning Project is funded by
The Kresge Foundation.*

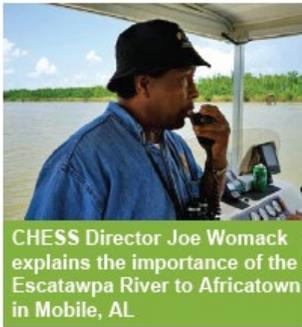
About the Gulf Water Justice Network



Hurricane Harvey in Houston, TX
August 2017



Street flooding in New Orleans, LA
August 2017



CHES Director Joe Womack explains the importance of the Escatawpa River to Africatown in Mobile, AL



Flash flooding in Gulfport, MS
April 2016



Family cleaning up after flood in Wedgewood - Pensacola, FL
May 2014



Central to the strategic planning process is the formation of the Gulf Water Justice Network. The network is comprised of community-based organizations in cities of the Gulf Region depicted in the above photographs, as well as HBCU academic researchers and practitioners. Network members have contributed to the design of a grassroots infrastructure for ensuring that water management decisions meet the needs of communities vulnerable to climate change and subjected to environmental injustice. The network is undergirded by the HBCU-CBO Gulf Coast Equity Consortium, which is co-directed by DSCEJ and TSU.

GULF WATER JUSTICE NETWORK MEMBERS

Rev. Calvin Avant, Unity in the Family Ministry – Wedgewood, Rolling Hills, Olive Heights in Pensacola, FL
Ms. Logan Burke, Alliance for Affordable Energy – New Orleans, LA
Rev. James Caldwell, Coalition of Community Organizations – Houston, TX
Mr. Scott Eustis, Gulf Restoration Network – New Orleans, LA
Ms. Rashida Ferdinand, Sankofa Community Development Corporation – Lower 9th Ward in New Orleans, LA
Ms. Dawn Hebert, East New Orleans Neighborhood Advisory Commission – East New Orleans in New Orleans, LA
Ms. Jhonette Jackson & Ms. Dorothy McWilliams, Concerned Citizens of Melia – Melia Neighborhood in New Orleans, LA
Mr. Arthur Johnson, Center for Sustainable Engagement & Development – Lower 9th Ward in New Orleans, LA
Dr. Glenn Johnson, Texas Southern University – Houston, TX
Dr. Elicia Moss, Alabama A & M University – Huntsville, AL
Ms. Bridgette Murray, Achieving Community Tasks Successfully – Pleasantville in Houston, TX
Dr. Earthea Nance, Texas Southern University – Houston, TX
Dr. David Padgett, Tennessee State University – Nashville, TN
Dr. Bernard Singleton, Dillard University – New Orleans, LA
Ms. Ruth Story, Education, Economics, Environmental, Climate and Health Organization – Gulfport, MS
Dr. John Warford, Florida A & M University – Tallahassee, FL
Dr. Joan Wesley, Jackson State University – Jackson, MS
Mr. Joe Womack, Clean, Healthy, Educated, Safe and Sustainable Community – Africatown in Mobile, AL

MAKING THE CASE OF STORMWATER IMPROVEMENTS IN PENSACOLA, FLORIDA

 UNITY IN THE FAMILY MINISTRY (UFM)

THE CHALLENGE: FLOODING, LANDFILLS, AND LOCAL WATERWAYS

Marcus Bayou and Crescent Lake were once places where residents of Wedgewood, Olive Heights, and Rolling Hills in Pensacola, Florida would fish, swim, and hunt. These waterways now suffer from both toxic contamination and recurring flooding, due to a lack of proper stormwater drainage and the prevalence of borrow pits and construction and demolition landfills. The health, safety, and quality of life Wedgewood, Olive Heights, and Rolling Hills residents—all predominantly African American communities—are increasingly threatened, as storm surges and flood events worsen and landfills continue to leach toxins into local waterways. Local officials must work with residents to address these threats and improve the environmental health of local communities.

MAKING THE CASE FOR IMPROVED STORMWATER INFRASTRUCTURE

While flooding varies based on the severity of precipitation events, flooding is also exacerbated by insufficient and poorly maintained stormwater and drainage facilities. Improving stormwater infrastructure requires considerable investment—however, the long-term costs of inaction are significant and are borne by local governments and residents alike. The costs associated with stormwater can generally be grouped into two categories:

- **MANAGEMENT COSTS** associated with treating stormwater and reducing the damaging effects of stormwater.
- **DIRECT DAMAGE COSTS** associated with flooding, including property damage, water quality degradation, destruction of habitat, and public health impacts.²

Many impacts are beyond economic measure, including stress from living in a flood zone, loss of possessions and financial resources, loss of community cohesion as households are forced to move, and the public health impacts of water contamination.



The rationale for prioritizing investment in stormwater management improvements in under-resourced communities is clear: residents in neighborhoods such as Wedgewood, Olive Heights, and Rolling Hills are tax-paying households who are equally entitled to basic public services that protect health and safety, including functional stormwater drainage systems and mitigation measures to prevent landfill leaching.



Long-term costs of inadequate stormwater infrastructure include:

- Flooding and associated property damage
- Erosion of streambanks and sedimentation that clogs waterways
- Negative aesthetic impacts, including dirty water, trash and debris, and bad smells
- Economic impacts due to business closures and impairments
- Increased costs of water and wastewater treatment
- Public health and safety impacts from flooding & water contamination, especially in the case of landfills

LOCAL SOLUTIONS FOR IMPROVING STORMWATER IN PENSACOLA, FLORIDA

MITIGATE FLOODING WITH THESE GREEN STORMWATER INFRASTRUCTURE INSTALLATIONS:

- Rain Gardens
- Street Trees
- Bioretention Ponds
- Permeable Pavement
- Bioswales
- Open Space Preservation
- Constructed Wetlands
- Vegetated Drainage Channels



CASE STUDY: Landfill Buffers in Love Canal, New York

The Love Canal site in New York highlights the importance of controlling run-off and run-on to landfill sites. The original landfill was covered with soil and leased, but subsequent groundwater testing found that the presence of water in the area had dispersed toxic chemicals throughout the surrounding area. One goal of remediation was to prevent recontamination of the surrounding soil by runoff, which led the EPA to focus on containing the pollution to the landfill by building a cap that prevented rain infiltration, as well as a barrier drain and leachate collection system. Acquiring land for open space was also part of this strategy, with funds allocated to purchase homes, businesses, and a nearby school to create a buffer around the landfill.⁵

STORMWATER INFRASTRUCTURE IMPROVEMENTS

There are a number of stormwater infrastructure improvements that local officials in Pensacola could make to improve stormwater drainage and stormwater quality. "Green" stormwater infrastructure solutions such as bioswales and constructed wetlands can decrease both stormwater runoff volume and runoff rates, allowing smaller volumes of water to pass through existing traditional drainage systems and mitigating the risk of systems becoming overwhelmed. Moreover, green infrastructure naturally filters pollutants out of stormwater, contributing to improved water quality in downstream waterways that support recreation, consumption, and habitat.



Photo Credit: phillippicreek.org



NEXT STEPS

There are number of steps the City of Pensacola, the Emerald Coast Utilities Authority, and the Florida Department of Environmental Protection can take in partnership with local organizations to invest in much needed stormwater improvements in Wedgewood, Olive Heights, and Rolling Hills.

Partner with community-based organizations such as UFM to map local flooding problem areas and identify infrastructure improvement needs. Residents have on-the-ground knowledge of localized flooding patterns that are not captured by official floodplain maps and should be leveraged by public decision-makers.

Identify infrastructure improvement projects on public and private land. Vacant land in the Wedgewood, Olive Heights, and Rolling Hills areas could be acquired and repurposed into green stormwater infrastructure such as a bioretention pond; and vegetative buffers could be built surrounding existing landfills to mitigate toxic runoff.

Pursue funding options for green infrastructure improvements. There are many grant programs that government agencies can pursue to cover or supplement the capital costs of projects. For example, the Community Development Block Grant program, administered by the Department of Housing and Urban Development (HUD), is designed to provide resources to low-income communities for a variety of neighborhood infrastructure needs, including stormwater infrastructure. Focused on helping underserved communities, the EPA's Urban Waters Small Grants program funds projects that improve the health of urban waterways. The Hazard Mitigation Grant Program (HMGP), administered by FEMA, can also help pay for green infrastructure projects that demonstrate long-term flood mitigation benefits.

¹ Booth, D.B., Jackson, C.R., 1997. Urbanization of Aquatic Systems-- Degradation Thresholds, Stormwater Detention, and the Limits of Mitigation. *Journal of the American Water Resources Association*, 22(5), 1077-1090. <https://doi.org/10.1111/j.1752-1688.1997.tb04126.x>

² Visitation, B.J., Booth, D.B., Steinemann, A.C., 2009. Costs and Benefits of Storm-Water Management: Case Study of the Puget Sound Region. *Journal of Urban Planning and Development* 135, 150-158. [https://doi.org/10.1061/\(ASCE\)0733-9488\(2009\)135:4\(150\)](https://doi.org/10.1061/(ASCE)0733-9488(2009)135:4(150))

³ Parkinson, J., 2003. Drainage and stormwater management strategies for low-income urban communities. *Environment and Urbanization* 15(12), 115-126. <https://doi.org/10.1177/095624780301500203>

⁴ Washington D.C. Department of Energy & Environment, n.d. Why is stormwater a problem? <https://doee.dc.gov/service/why-stormwater-problem>

⁵ EPA, n.d. Love Canal Niagara Falls, NY. <https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0201290#Done>

The information presented below is prepared by Earth Economics for the Gulf Water Justice Project, a regional collaborative directed by the Deep South Center for Environmental Justice. The project's mission is to build the capacities of communities to advance equitable water management policies in the Gulf Region. UFM is a network member of the Gulf Water Justice Project. This fact sheet was made possible with funding from the Kresge Foundation.

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EARTH ECONOMICS

MAKING THE CASE FOR PROTECTING WETLANDS IN THE LOWER NINTH WARD AND EAST NEW ORLEANS

CENTER FOR SUSTAINABLE ENGAGEMENT AND DEVELOPMENT (CSED), SANKOFA CDC, AND THE EAST NEW ORLEANS NEIGHBORHOOD ADVISORY COMMISSION (ENONAC)

THE CHALLENGE: WETLANDS, CLIMATE CHANGE, AND FLOODING

MORE THAN 90% OF WETLANDS IN NEW ORLEANS ARE LOCATED WITHIN THE LOWER NINTH WARD AND EAST NEW ORLEANS. These natural assets provide critical protection to residents who have experienced disproportionate impacts from flooding, storms, and hurricanes. As sea level rise and extreme storm events worsen with climate change, local officials in New Orleans have a critical opportunity to partner with community champions to protect, preserve, and enhance the city's natural assets and build long-term resilience for communities in the Lower Ninth Ward and East New Orleans.

THE ECONOMIC VALUE OF WETLANDS

Coastal wetlands provide critical benefits to local residents -- including protecting life and property, creating and sustaining jobs, and managing stormwater. **A SINGLE ACRE OF WETLANDS GENERATES THOUSANDS OF DOLLARS OF ECONOMIC VALUE.**

THE DOLLAR VALUE OF THE BAYOU BIENVENUE



1 ACRE OF COASTAL WETLAND = \$9000 GENERATED EACH YEAR



427 ACRES IN BAYOU BIENVENUE = \$3.8 MILLION GENERATED EACH YEAR



CASE STUDY: Louisiana's Coastal Wetlands, A Lesson in Nature Appreciation

Much of New Orleans is below sea level, and southeast Louisiana's coastal wetlands, which once helped buffer the city from large storms, have been disappearing at a strikingly swift pace. Now, environmental scientists are calling for restoration of wetlands and barrier islands to help protect New Orleans the next time a hurricane strikes.⁷



WETLAND ECOSYSTEMS ARE AMONG THE MOST PRODUCTIVE ON EARTH AND PROVIDE A MULTITUDE OF ECONOMIC BENEFITS TO PEOPLE—FOR FREE.



Flood Control, Shoreline Stabilization, and Storm Blockage

Wetlands protect people and property from storms and floods. Wetlands act as a sponge, helping to control floods by reducing the speed and volume of water entering a drainage. On the coast, wetlands act as a physical barrier against storm surges by slowing waves, absorbing water, and reducing flooding.¹ Properties located behind salt marshes experience 20% fewer damages relative to areas without salt marshes.



Stormwater Management

Wetlands retain and infiltrate stormwater and release it gradually back into the watershed, removing excess nutrients, heavy metals and other toxics that accumulate when water runs off impervious surfaces. This is a critical economic safety net for communities below sea level because impervious surfaces accelerate stress on overburdened drainage systems.



Climate Change Adaptation and Mitigation

Wetlands remove carbon from the atmosphere and store it in plants and soil, helping to mitigate global warming and temper the impacts of climate change.



Recreation, Tourism, and Job Creation

Wetlands are hubs of biodiversity and support species that sustain commercial industries and recreation alike. Restoration of coastal Louisiana presents significant career advancement opportunities, through commercial fishing and tourism.

LOCAL SOLUTIONS FOR PROTECTING WETLANDS IN THE LOWER NINTH WARD AND EAST NEW ORLEANS



POLICY & INCENTIVE-BASED TOOLS FOR WETLAND PRESERVATION

The City of New Orleans should pursue a range of policy tools for preserving and restoring wetlands:

- **Changing Zoning and Building Codes** Local governments can codify land use and building practices that preserve wetlands and prevent harmful development.
- **Land Acquisition or Exchange** Land Acquisition can permanently preserve wetlands and prevent development. This typically involves a partnership between local government and a land or water trust.
- **Easements and Tax Incentives** Easements can be implemented by states or the federal government. These programs are agreements between a taxing authority and a private landholder to trade tax breaks for conservation.



PRIORITIZING WETLANDS

With limited time and money and many wetlands in need of protection or restoration, identifying where to act first can be a challenge. Local Gulfport officials can use a variety of approaches to prioritize wetland preservation projects, summarized below.

- **Biophysical Characteristics** What is the water management goal? If the goal is to address flood or water quality issues, wetlands higher in the watershed should take priority because those improvements manifest downstream. However, if the problem is saltwater infiltration of drinking water supplies, coastal wetlands should be prioritized.
- **Holistic Benefit-Cost Analysis** What is the most cost-effective project? Holistic benefit-cost analysis looks at the full range of social and environmental benefits generated by the wetland, in comparison to the cost of restoring or preserving the wetland.
- **Equity Analysis** Who benefits and who is burdened by the proposed project? An equity analysis can be layered on top of a holistic benefit-cost analysis to not only inform decision-making about which projects make most sense economically but also build racial and social equity.



NEXT STEPS

There are a number of steps the City of Gulfport can take to more proactively restore and preserve its natural wealth of wetland ecosystems.

Partner with community-based organizations to map and take inventory of existing wetlands. Community champions EEECHO have been working on local flooding issues for several years and has valuable local knowledge of areas in need of restoration and protection. Community-based asset mapping is a valuable tool used by cities across the country to take inventory of existing wetland areas and mobilize local community members to collaborate on local projects.

Pursue funding options for wetland restoration and conservation. There are many funding options available to the city for wetland protection. For example, the National Fish and Wildlife Administration (NFWA) administers the Five Star and Urban Waters Restoration Grant Program, which gives grants to local governments and community-based organizations seeking to restore wetlands and other nature-based solutions. The National Coastal Wetlands Conservation Grants (U.S. Fish and Wildlife Service), and the North American Wetlands Conservation Act (NAWCA) Grants also fund local wetland restoration projects. The Hazard Mitigation Grant Program (HMGP) through FEMA also provides significant funding for local governments to pursue hazard projects, which can include wetland protection.

¹ NOAA, 2019. Fast facts—Wetland benefits. <https://coast.noaa.gov/states/fast-facts/wetland-benefits.html>

² Ramsar, 2011. Wetland ecosystem services—an introduction.

³ Narayan, S., et al. 2017. The Value of Coastal Wetlands for Flood Damage Reduction in the Northeastern USA. *Scientific Reports*, 7(9463).

⁴ NOAA, 2019. Coastal wetlands: too valuable to lose. <https://www.fisheries.noaa.gov/coastal-wetlands-too-valuable-lose>

⁵ EPA, 2016. Economic benefits of wetlands. <https://www.epa.gov/sites/production/files/2016-02/documents/economicbenefits.pdf>

⁶ Morandi, L., 2011. Restoring and protecting wetlands—State policy options. National Conference of State Legislatures. http://www.ncsl.org/documents/enviro/Wetlands_brief_811.pdf

⁷ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1332684>

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MAKING THE CASE FOR RECREATIONAL IMPROVEMENTS

AFRICATOWN | MOBILE, ALABAMA



CLEAN, HEALTHY, EDUCATED, SAFE AND SUSTAINABLE (CHESSE) COMMUNITY

THE CHALLENGE: COMMUNITY ACCESS TO LOCAL WATERWAYS

The historic Africatown community in Mobile, Alabama is surrounded by multiple waterways, including the Chickasaw River next to Hogg Bayou. Although located near the water, the Africatown community lacks access to recreational amenities such as docks, boat launches, and waterfront walkways, cutting off access to fishing, boating and swimming opportunities for youths and families. In addition to impaired recreational access for community members, Hogg Bayou also suffers contamination from toxic wastewater discharged by nearby industrial facilities. Resources are needed to make the Chickasaw River a source for recreation as well as health and wellness activities in Africatown. The City of Mobile and other local officials should engage with local residents to develop a multi-functional “blueway” to improve natural assets and build community vitality.



CASE STUDY: Waccamaw River⁴

The Waccamaw River in South Carolina provides clean drinking water, scenic landscapes, diverse fish and wildlife, outstanding recreation, and is economically important to the region. However, the Waccamaw River is under constant threat of poorly planned development. American Rivers, Waccamaw Riverkeeper, Pee Dee Land Trust, and others are improving family-friendly recreation opportunities, such as boating, fishing, and hiking, and protecting riverside land through new ordinances and incentives that emphasize stewardship, conservation easements, and acquisition.

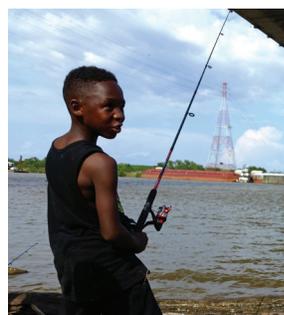
RECREATION POSITIVELY CONTRIBUTES TO BOTH PHYSICAL & MENTAL HEALTH AND **BUILDS A STRENGTHENED SENSE OF COMMUNITY.**

- PHYSICAL HEALTH
- MENTAL HEALTH
- COMMUNITY COHESION
- QUALITY OF LIFE
- JOBS AND TOURISM
- LAND VALUE
- SALES TAX



Benefits of Recreation to COMMUNITY

Recreational opportunities benefit communities in multiple ways. Participation in recreational activities has a direct impact on physical and mental health, improving cardiovascular health and reducing stress and anxiety. Recreational amenities such as parks, trails, and waterways provide places for children and families to connect with nature and with each other. Access to recreational amenities is directly correlated with communities' perceived quality of life.¹



Benefits of Recreation to LOCAL GOVERNMENT

The benefits of recreation to local governments are multifaceted. From an economic standpoint, parks and other recreational resources around the U.S. generate billions of dollars in revenue and directly and indirectly employ millions of people.² In addition to contributing to the health and wellness of citizens and communities, recreational resources also increase land value and promote tourism in local jurisdictions.³

LOCAL SOLUTIONS FOR IMPROVING QUALITY OF LIFE IN AFRICATOWN

CLEANING UP WATERWAYS

There are a number of potential projects and strategies that, if implemented properly, can improve water quality and preserve and enhance aquatic habitats in local communities.

- **Water Quality Testing** Water quality testing is essential to monitoring and improving local water quality. Local government agencies can enlist the help of Africatown residents to participate in water quality monitoring efforts as a starting point for cleaning up the Escatawpa River and Hogg Bayou.
- **Runoff and Pollutant Mitigation** Initiatives to reduce water pollution and manage runoff include community education on preventing pollution and installing green infrastructure projects that capture runoff and filter out pollutants.
- **Dredging and Remediation** Waterways such as the Escatawpa River that have received industrial runoff for several years will require larger-scale investments to remediate and restore aquatic habitat and water safety.

BUILDING A COMMUNITY BLUEWAY

The City of Mobile can work collaboratively with CHES and other community-based organizations to identify and pursue viable funding opportunities to develop a multi-functional “blueway” along the Escatawpa River that achieves multiple benefits for communities and local governments alike.

Examples of funding opportunities include:

- **HUD Section 108 Loan Guarantee Program** The Section 108 Loan Guarantee Program (Section 108) provides communities with low-cost, flexible financing for economic development, housing rehabilitation, public facilities, and other physical infrastructure projects, including those to increase resilience to natural disasters.
- **NRPA 10-Minute Walk Planning Grant** NRPA, with support from the JPB Foundation, offers grants and technical assistance to support planning efforts that help cities increase access to high-quality parks within a ten-minute walk. The main applicant must be a local government agency that builds and/or operates parks, in partnership with local community organizations.⁶
- **Urban Waters Small Grant Program** This EPA program funds community-based water quality sampling projects, green infrastructure projects, and projects that build public access to riverfront areas.



NEXT STEPS

There are number of steps the City of Mobile can take in partnership with local organizations to invest in environmental clean-up and recreational amenities for Africatown residents:

Partner with community members to conduct water quality monitoring and identify water quality improvement projects.

Local residents have on-the-ground knowledge of localized pollution issues that can be harnessed to support larger river clean-up efforts. The City of Mobile can work with CHES and other community-based organizations to monitor and map water quality issues in local waterways and generate data to support investments in green infrastructure and clean-up projects.

Work with community members to identify and design ideas for new recreational amenities.

CHES has already made significant progress designing a vision for a new “blueway” along the Escatawpa River. The City of Mobile can work collaboratively with CHES to design a community-driven installation concept that would be stewarded by the Africatown community in the long-term.

Pursue funding opportunities to support clean-up activities and new recreational amenities.

There are many grant programs that the city can pursue to cover or supplement the costs of new environmental clean-up projects and recreational amenities. The opportunities listed above are just a few of the many resources available to local communities and municipalities.

CHES and other community partners are ready to collaborate with the City of Mobile to identify and pursue opportunities to invest in Africatown’s natural assets in order to generate economic, environmental, and social benefits for decades to come.

¹ National Recreation and Park Association. 2018. Economic Impact of Local Parks.

² Eastern Kentucky University. (n.d.). Importance of Parks and Recreation. <https://recreation.eku.edu/importance-parks-and-recreation>

³ National Recreation and Park Association. 2018. Economic Impact of Local Parks.

⁴ American Rivers (n.d.) Blue Trails: Waccamaw. Accessed from <http://www.bluetrailsguide.org/rivers/waccamaw/>

⁵ HUD Exchange. (n.d.). Section 108 Loan Guarantee Program. <https://www.hudexchange.info/programs/section-108/>

⁶ National Recreation and Park Association. (n.d.). 10-Minute Walk Planning Grant and Technical Assistance. <https://www.nrpa.org/our-work/partnerships/initiatives/10-minute-walk/grants-technical-assistance/>

⁷ Environmental Protection Agency. (n.d.). Urban Waters Small Grants. <https://www.epa.gov/urbanwaters/urban-waters-small-grants>

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EARTH ECONOMICS

THE CASE FOR IMPROVED STORMWATER INFRASTRUCTURE IN HOUSTON, TEXAS



ACHIEVING COMMUNITY TASKS SUCCESSFULLY (ACTS)

THE CHALLENGE: RUNOFF, FLOODING, AND AGING INFRASTRUCTURE

A number of neighborhoods in Houston, including Pleasantville, have seen a historical lack of investment in stormwater infrastructure improvements. As a result, these communities experience repeated flooding and toxic runoff during storm events, resulting in disruption to residents' daily lives and threats to community health and safety. Though Pleasantville is not located in a designated FEMA floodplain, flooding still occurs in the area due to an outdated closed storm sewer system that cannot handle common runoff volumes. Persistent ponding, caused by runoff from the nearby 610 freeway system, is also an issue.

While the City of Houston completed a stormwater system replacement study in 2012, only one phase has been completed, and many needed improvements remain unfunded. Harris County has mobilized funding for flood drainage improvements after Hurricane Harvey, the last major flood event in Pleasantville. Still, there is concern among residents that these funds will be prioritized for improvements in affluent white neighborhoods with higher property values.



The rationale for prioritizing stormwater management improvement investments in under-resourced communities is clear.

Improving stormwater infrastructure requires considerable investment—however, the long-term costs of inaction are significant and are borne by local governments and residents alike. Residents in neighborhoods such as Pleasantville are tax-paying households who are equally entitled to basic public services that protect health and safety. These households not only tend to live in more flood-prone areas with poorer stormwater infrastructure, but also have a more difficult time accessing recovery resources.⁴ While the market value of property in these areas is lower than in more affluent areas, the true damages of flooding cannot be adequately reflected by the replacement cost of property, which is often used as a measure to prioritize flood risk mitigation projects.⁵

LONG-TERM COSTS OF INADEQUATE STORMWATER INFRASTRUCTURE:

- Flooding and associated property damage
- Erosion of streambanks and sedimentation that clogs waterways
- Negative aesthetic impacts, including dirty water, trash and debris, and bad smells
- Economic impacts due to business closures and impairments
- Increased costs of water and wastewater treatment
- Public health and safety impacts from flooding and water contamination⁶
- Loss of community cohesion as households are forced to move due to repeat flooding

LOCAL SOLUTIONS FOR IMPROVING STORMWATER IN HOUSTON, TEXAS

GREEN STORMWATER INFRASTRUCTURE EXAMPLES:

- Rain Gardens
- Street Trees
- Bioretention Ponds
- Permeable Pavement
- Bioswales
- Open Space Preservation
- Constructed Wetlands
- Vegetated Drainage Channels



CASE STUDY: Community-Based Green Infrastructure Planning in Norfolk, Virginia

The predominantly African-American, middle class community of Chesterfield Heights was experiencing flooding during storm events. Local non-profits and universities collaborated with the community to determine the extent of the problem and identify solutions that would maintain the feel of the neighborhood and also increase ecosystem services. A multi-pronged flood prevention solution to holding more water in place was agreed to, featuring rain gardens and a living shoreline to hold water and reduce erosion.

INFRASTRUCTURE IMPROVEMENTS

There are a number of green and gray infrastructure improvements that the City of Houston could make to benefit stormwater drainage and quality:

- Replace and increase capacity of drainage pipes
- Build detention ponds on public & private property
- Install 'green' stormwater infrastructure solutions such as bioswales, rain gardens, and constructed wetlands, that decrease stormwater runoff volume and rates and mitigate the risk of overwhelming existing systems.

Green stormwater infrastructure options naturally filter pollutants out of stormwater, contributing to improved water quality in downstream waterways that support recreation, and provide drinking water and habitat.



NEXT STEPS

There are number of steps the City of Houston can take in partnership with local organizations to invest in much needed stormwater improvements in the Pleasantville neighborhood. ACTS and other community partners are eager to collaborate with local officials to identify and pursue lasting solutions to these long-standing flooding and water quality issues.

Partner with community-based organizations to map local flooding problem areas and identify infrastructure improvement needs. Residents have on-the-ground knowledge of localized flooding patterns that are not captured by official floodplain maps. The City of Houston can work with ACTS and other community-based organizations to determine local flooding issues and identify opportunities for infrastructure improvements.

Identify infrastructure improvement projects on public and private land. Vacant land in the Pleasantville neighborhood could be acquired and repurposed into green stormwater infrastructure such as a bioretention pond; local homeowners could build rain gardens; and tree plantings and swales could be implemented in public right-of-way areas. The City and community members can work together to identify promising project ideas to reduce flooding and improve overall quality of life for Pleasantville residents.

Pursue funding options for green infrastructure improvements. There are many grant programs that the city can pursue to cover or supplement the capital costs of new green infrastructure projects. For example, the Community Development Block Grant program, administered by the Department of Housing and Urban Development (HUD), is designed to provide resources to low-income communities for a variety of neighborhood infrastructure needs, including stormwater infrastructure. Focused on helping underserved communities, the EPA's Urban Waters Small Grants program funds projects that improve the health of urban waterways. The Hazard Mitigation Grant Program (HMGP), administered by FEMA, can also help pay for green infrastructure projects that demonstrate long-term flood mitigation benefits.

¹ Booth, D.B., Jackson, C.R., 1997. Urbanization of Aquatic Systems-- Degradation Thresholds, Stormwater Detention, and the Limits of Mitigation. Journal of the American Water Resources Association, 22(5), 1077-1090. <https://doi.org/10.1111/j.1752-1688.1997.tb04126.x>

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EARTH ECONOMICS

MAKING THE CASE FOR PROTECTING WETLANDS IN GULFPORT, MISSISSIPPI

 ECONOMICS, EDUCATION, ENVIRONMENTAL, CLIMATE AND HEALTH ORGANIZATION (EEECHO)

THE CHALLENGE: FLOODING VULNERABILITY IN COASTAL MISSISSIPPI

Economics, Education, Environmental, Climate and Health Organization (EEECHO) is a nonprofit organization that works to improve the quality of life in the communities of Magnolia Grove, Mississippi City/Handsboro, North Gulfport, Soria City and The Quarters in Gulfport, Mississippi. Located in the coastal area of Mississippi, these communities are vulnerable to hurricane storm surge and flood events. Adding to this vulnerability are frequent industrial and commercial proposals that would destroy the wetlands that serve as a natural defense for the communities by absorbing and retaining stormwater and mitigating flooding. Water management decision-makers must begin to address the need for preserving wetlands and cleaning up the Turkey Creek waterway.

THE ECONOMIC VALUE OF WETLANDS

Coastal wetlands provide critical benefits to local residents -- including protecting life and property, creating and sustaining jobs, and managing stormwater. **A SINGLE ACRE OF WETLANDS GENERATES THOUSANDS OF DOLLARS OF ECONOMIC VALUE.**

THE DOLLAR VALUE OF THE TURKEY CREEK WETLANDS



1 ACRE OF COASTAL WETLAND =
\$9000 GENERATED EACH YEAR



400+ ACRES IN
TURKEY CREEK WETLANDS =
\$3.6 MILLION
GENERATED
EACH YEAR



CASE STUDY: Bon Secour Oyster Bay Wetland Acquisition Project

The City of Gulf Shores, Alabama secured funding through the NFWF Gulf Environmental Benefit Fund to acquire 836 acres of diverse coastal habitat for protection and restoration. The properties will be protected in perpetuity for conservation purposes, and a comprehensive habitat management plan will be developed and implemented.⁷



WETLAND ECOSYSTEMS ARE AMONG THE MOST PRODUCTIVE ON EARTH AND PROVIDE A MULTITUDE OF ECONOMIC BENEFITS TO PEOPLE—FOR FREE.



Flood Control, Shoreline Stabilization, and Storm Protection

Wetlands act as a sponge, helping to control floods by reducing the speed and volume of water entering a drainage. On the coast, wetlands act as a physical barrier against storm surges, by slowing waves, absorbing water, and reducing flooding.¹



Water Purification

Wetlands improve water quality by removing excess nutrients, heavy metals, and other toxics from wastewater and storing them in soils and vegetation.²



Climate Change Adaptation and Mitigation

Wetlands remove carbon from the atmosphere and store it in plants and soil.²



Recreation, Tourism, Food, and Jobs

Wetlands are hubs of biodiversity and sustain many commercially and recreationally valuable species. These wetlands draw a variety of recreational users, from anglers to wildlife watchers to birders.²

LOCAL SOLUTIONS FOR PROTECTING WETLANDS IN GULFPORT, MISSISSIPPI



POLICY & INCENTIVE-BASED TOOLS FOR WETLAND PRESERVATION

Local officials in Gulfport, MS should pursue a range of policy tools for preserving and restoring wetlands:

- **Changing Zoning and Building Codes** Local governments can codify land use and building practices that preserve wetlands and prevent harmful development.
- **Land Acquisition or Exchange** Land Acquisition can permanently preserve wetlands and prevent development. This typically involves a partnership between local government and a land or water trust.
- **Easements and Tax Incentives** Easements can be implemented by states or the federal government. These programs are agreements between a taxing authority and a private landholder to trade tax breaks for conservation.



PRIORITIZING WETLANDS

With limited time and money and many wetlands in need of protection or restoration, identifying where to act first can be a challenge. Local Gulfport officials can use a variety of approaches to prioritize wetland preservation projects, summarized below.

- **Biophysical Characteristics** What is the water management goal? If the goal is to address flood or water quality issues, wetlands higher in the watershed should take priority because those improvements manifest downstream. However, if the problem is saltwater infiltration of drinking water supplies, coastal wetlands should be prioritized.
- **Holistic Benefit-Cost Analysis** What is the most cost-effective project? Holistic benefit-cost analysis looks at the full range of social and environmental benefits generated by the wetland, in comparison to the cost of restoring or preserving the wetland.
- **Equity Analysis** Who benefits and who is burdened by the proposed project? An equity analysis can be layered on top of a holistic benefit-cost analysis to not only inform decision-making about which projects make most sense economically but also build racial and social equity.



NEXT STEPS

There are a number of steps the City of Gulfport can take to more proactively restore and preserve its natural wealth of wetland ecosystems.

Partner with community-based organizations to map and take inventory of existing wetlands. Community champions EEECHO have been working on local flooding issues for several years and has valuable local knowledge of areas in need of restoration and protection. Community-based asset mapping is a valuable tool used by cities across the country to take inventory of existing wetland areas and mobilize local community members to collaborate on local projects.

Pursue funding options for wetland restoration and conservation. There are many funding options available to the city for wetland protection. For example, the National Fish and Wildlife Administration (NFWA) administers the Five Star and Urban Waters Restoration Grant Program, which gives grants to local governments and community-based organizations seeking to restore wetlands and other nature-based solutions. The National Coastal Wetlands Conservation Grants (U.S. Fish and Wildlife Service), and the North American Wetlands Conservation Act (NAWCA) Grants also fund local wetland restoration projects. The Hazard Mitigation Grant Program (HMGP) through FEMA also provides significant funding for local governments to pursue hazard projects, which can include wetland protection.

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