Greauxing Resilience at Home

City of New Orleans, Louisiana: Gentilly Resilience District Projects

GEORGETOWN CLIMATE CENTER

TUN

Authors

Author and editor: Katie Spidalieri, Senior Associate, Georgetown Climate Center (GCC)

Authors:

- Suhasini Ghosh, Justice Fellow, GCC;
- Lillian Zhou, Research Assistant, GCC;
- Noelle Gignoux, Research Assistant, GCC;
- Jesse Elliott, Spring Research Assistant and Summer Research Fellow, GCC;
- Katherine McCormick, Institute Associate, GCC;
- Jennifer Li, Staff Attorney, Harrison Institute for Public Law, Georgetown University Law Center;
- Kelly Cruce, Adaptation Consultant, GCC; and
- Caitlyn Cook, Research Assistant and Summer Research Fellow, GCC.

The following students also provided significant research support: **Maren Kaiser**, Masters of Law in Environmental and Energy Law, Georgetown University Law Center and **Morgan McCue**, Masters in Environmental Meteorology and Policy, Georgetown University.

Acknowledgments

The authors would like to thank the **Doris Duke Charitable Foundation** for its generous support and guidance, and without whom the partnership efforts with Louisiana and Capital Region Planning Commission and this report would not have been possible.

We also appreciate the work of the following individuals who helped us finalize, format, and publish this report: **Brent Futrell**, Director of Design, Office of Communications, Georgetown University Law Center; **Peter Rafle**, Communications Director, GCC; **Caren Fitzgerald**, Communications Associate, GCC; and **Mark Rupp**, Adaptation Program Director, GCC.

Last but certainly not least, we would like to specially thank and acknowledge the following individuals for taking the time to speak with us, review drafts, and provide insights that were invaluable in helping to

inform the development of the Regional Vision and these case studies: Manny Patole, Independent Consultant; Christopher Tyson, formerly Chief Executive Officer, Build Baton Rouge; Gretchen Siemers, Director, Planning and Special Projects, Build Baton Rouge; Lee E. Melancon, III, Director of Community and Economic Development, Mayor's Office of Community and Economic Development, City of Donaldsonville, Louisiana; Bithia Ratnasamy, Director of Housing, Executive Office, Atlanta Housing, City of Atlanta, Georgia; Carolina Rodriguez, Project Manager, Housing and Community Development, Department of City Planning, City of Atlanta, Georgia; Jaren Abedania, formerly Vice President of Real Estate, Westside Future Fund; Bridget Wiles, Chief Operations Officer, APD Urban Planning and Management, LLC; O. Jesse Wiles, Principal and Chief Executive Officer, APD Urban Planning and Management, LLC; Amber Weaver, Sustainability Officer, Office of Sustainability, City of Asheville, North Carolina; Paul D'Angelo, formerly Community Development Program Director, City of Asheville, North Carolina; Stacy Merten, formerly Long-Range Planning Manager, Planning and Urban Design Department, City of Asheville, North Carolina; Vaidila Satvika, Urban Planner, Planning and Urban Design Department, City of Asheville, North Carolina; Marc Coudert, Office of Sustainability, City of Austin, Texas; Erica Leak, Development Officer, Housing and Planning Department, City of Austin, Texas; Erin Wood, Planner, Watershed Protection Department, City of Austin, Texas; Isaac W. Stein, Design Principal, Dept.; Maggie Tsang, Managing Principal, Dept.; Debbie Love, City Planner, City of North Miami, Florida; Christopher G. Miller, President, The Piedmont Environmental Council; John McCarthy, Senior Advisor and Director of Strategic Partnerships, The Piedmont Environmental Council; Cameron Herrington, Living Cully Program Manager, Oregon; Crystal Launder, Housing Planner, Department of Housing and Human Services, City of Boulder, Colorado; René C. Pastorek, formerly Director of Planning and Development, St. John the Baptist Parish, Louisiana; Tara Lambeth, Coastal and Water Management Division Lead, St. John the Baptist Parish, Louisiana;

Jackie Baumann, Chief Engineer, City of Gonzales, Louisiana; Dave Canaan, formerly Charlotte-Mecklenburg Storm Water Services Director, Land Use and Environmental Services Agency, Mecklenburg County, North Carolina; Darryl Neher, Chief Executive Officer, Fauquier Habitat for Humanity; Elizabeth (Betsy) L. Dietel, Senior Partner, Dietel and Partners; Angela Chalk, DHA GIP, Executive Director, Healthy Community Services; Joel Holton, Owner, J.B. Holton and Associates, LLC; Jeremy Sharp, Zoning Administrator, City of Norfolk, Virginia; Christian Kamrath, Adaptation Program Coordinator, Office of Resilience, Miami-Dade County, Florida; Tameika Devine, Possibilities Institute (former City Councilmember and Chair of the Affordable Housing Task Force, City of Columbia, South Carolina); Janet Tharp, Center for Planning Excellence; Lyneisha Jackson, Community Planner, Center for Planning Excellence; Simone Higginbotham, Scotlandville Community Development Corporation, North Baton Rouge, Louisiana; Rinaldi Jacobs, Full Circle Development; and Erica Sims, HDAdvisors, Maggie Walker Community Land Trust (Richmond, Virginia).

No statements or opinions contained within this case study report, the Regional Vision, or Georgetown Climate Center's Adaptation Clearinghouse should be attributed to any individual or organization included in the above Acknowledgements.

©2022, Georgetown Climate Center Georgetown University Law Center 600 New Jersey Avenue, NW Washington, DC 20001

GeorgetownClimate.org

Greauxing Resilience at Home: A Regional Vision

AdaptationClearinghouse.org

Cover Photos:

(background image) Credit: Rachelle Sanderson.

(images from left to right) Credit: **Dee Love**; **Architects Southwest** for Build Baton Rouge in Ardendale Master Plan and Guiding *Principles*; and **Louisiana Sea Grant**.

Full List of Case Studies

1. About This Report

- 2. Miami-Dade County, Florida: Little River Adaptation Action Area Plan
- 3. Mecklenburg County, North Carolina: Charlotte-Mecklenburg Storm Water Services, Risk Assessment/ Risk Reduction (RARR) Tool
- 4. City of New Orleans, Louisiana: Gentilly Resilience District Projects
- 5. City of North Miami, Florida: Good Neighbor Stormwater Park and Repetitive Loss Master Plan
- 6. City of Houston, Texas: Resilient Houston and Affordable Housing and Nature-Based Efforts
- 7. St. John the Baptist Parish, Louisiana: Resilient Planning, Affordable Housing, Environmental, and Funding Initiatives
- 8. City of Asheville, North Carolina: Affordable Housing, Environmental, and Climate Resiliency Initiatives
- 9. City of Atlanta, Georgia: Prioritizing Affordable Housing and Nature in the Face of New Growth
- 10. City of Austin, Texas: Affordable Housing and Green Infrastructure Efforts
- 11. City of Norfolk, Virginia: PlaNorfolk 2030, Norfolk Vision 2100, and Resilience Zoning Updates
- 12. City of Baton Rouge–Parish of East Baton Rouge, Louisiana: Imagine Plank Road Plan for Equitable Development
- 13. City of Baton Rouge–Parish of East Baton Rouge, Louisiana: Ardendale Master Plan and Guiding Principles
- 14. City of Columbia, South Carolina: Columbia Compass: Envision 2036 and Affordable Housing Task Force
- 15. City of Baton Rouge–Parish of East Baton Rouge, Louisiana: Scotlandville Community Strategic Plan
- 16. City of Charlotte, North Carolina: Pilot Naturally Occurring Affordable Housing (NOAH) Subsidy Program
- 17. City of Richmond, Virginia: Maggie Walker Community Land Trust and Richmond Land Bank
- City of Boulder, Colorado: Affordable Housing, Manufactured Housing, and Environmental Plans and Initiatives
- 19. City of Denham Springs, Louisiana: Denham Strong Long-Term Community Recovery Plan
- 20. City of Donaldsonville, Louisiana: Donaldsonville Strategic Plan 2020–2025
- 21. Town of Warrenton, Virginia: Fauquier Habitat for Humanity Haiti Street Neighborhood Revitalization
- 22. City of Gonzales, Louisiana: Gonzales Comprehensive Plan
- 23. City of New Orleans, Louisiana: Resilient Housing Prototype in the Seventh Ward
- 24. City of Portland, Oregon: Planning and Zoning for Manufactured Housing Communities
- 25. Town of Washington, Virginia: Rush River Commons Mixed-Use Development

ABOUT THIS REPORT

Louisiana is one of the hardest-hit areas in the United States as extreme weather events and regular flooding become more frequent and intense.¹ These challenges often fall "first and worst" on Black, Indigenous, and People of Color or "BIPOC" and low-income communities.² This is especially true in the U.S. Gulf Coast region and the state of Louisiana.

Over time, these challenges are being exacerbated by population increases and transitions as climate and non-climate drivers (e.g., people moving out of urban centers into more rural areas) influence where people choose — or are able — to live.

In southeast Louisiana, resilient, affordable housing initiatives are critical to ensuring equitable adaptation that takes into consideration the myriad overlapping challenges facing all Louisianans, but especially those living in communities that have long borne a disproportionate burden of risk.

Over a two-year period between fall 2020 and spring 2022, **Capital Region Planning Commission** and **Georgetown Climate Center** partnered with dozens of people from government, private, and nonprofit sectors and community stakeholders in Region Seven of the **Louisiana Watershed Initiative**.³ The result of that partnership effort is **Greauxing Resilience at Home: A Regional Vision**⁴ (Regional Vision), a resource to inform Region Seven's ongoing work to increase community resilience by promoting affordable housing and nature-based solutions.

Regional and local governments in Region Seven can use the Regional Vision to identify potential legal, planning, and policy tools and projects to increase the affordability and availability of housing and the use of nature-based solutions. In addition, the Regional Vision offers insights for policymakers across Louisiana, throughout the Gulf Coast region, and nationally.

This report is composed of 24 individual case studies developed by Georgetown Climate Center to support the Regional Vision. These case studies describe best and emerging practices, tools, and examples from Louisiana and other U.S. jurisdictions to make progress on these complex and challenging issues. These case studies are intended to provide transferable lessons and ideas for regional and local governments addressing housing and mitigating flood risk as integrated parts of comprehensive community resilience strategies. Collectively, these case studies present a suite, although not an exhaustive list of tools and approaches that can be used to facilitate any of these efforts.

1 STATE OF LA., LOUISIANA CLIMATE ACTION PLAN: CLIMATE INITIATIVES TASK FORCE RECOMMENDATIONS TO THE GOVERNOR 15–16 (Feb. 2022), available at https://gov.louisiana.gov/assets/docs/CCI-Task-force/CAP/ClimateActionPlanFinal.pdf.

2 See id. at 15–17.

3 The Louisiana Watershed Initiative is an effort to create a paradigm shift in floodplain management towards a strategy that approaches flood risk reduction from a nature-based solutions and land-use-based approach. A part of this approach includes identifying eight separate regional watershed management areas to assist in achieving cross-jurisdictional activities.

Region Seven is one of these eight watershed regions. Region Seven encompasses the upper part of the toe of Louisiana's boot. It spans eastward from the Mississippi River near Baton Rouge across the Northshore (i.e., north of Lakes Pontchartrain and Maurepas) to Mississippi and along the Mississippi River to the Bonnet Carré Spillway. The region includes 13 parishes and 45 incorporated municipalities.

4 To reflect their connection to Louisiana's cultural heritage, the project team and members of Region Seven that participated in this process chose to use the word "Greaux," a French-inspired phonetic spelling of the word "Grow," to brand this product. Where possible, all the case studies share a consistent organizational format to allow easier cross-comparison of tools, processes, and takeaways:

- The **Background** section introduces the regional and local context (e.g., location, demographics) for each case study, including the following facing each jurisdiction: extreme weather risks, housing and environmental challenges, and development pressures.
- The **Housing** section focuses on the legal, planning, and policy tools and projects that have been designed and implemented to support the growth and preservation of housing affordability and availability.
- The **Environment** section highlights how vulnerable habitats like floodplains and other open spaces are being restored, conserved, and protected as a part of comprehensive resilience strategies to provide important ecosystem and community benefits like reducing flood risk and creating community assets, such as parks and trails.
- The **Community Engagement** section summarizes how governments have provided different types of public engagement opportunities and how affected residents have contributed to these planning and decisionmaking processes.
- The **Funding** section identifies how the programs, plans, and projects discussed have been funded by federal, state, and local government and private and nongovernmental sources.
- The **Next Steps** section captures the anticipated future actions that featured case study jurisdictions may take in implementing these tools and strategies.
- The **Considerations and Lessons Learned** section concludes with the primary takeaways from each example that other regional and local policymakers and communities may consider when developing or implementing their own housing and resilience strategies using these legal, planning, and policy tools.

A few additional notes about the case studies:

- The case studies selected prioritize relatable and scalable models from places similar to Louisiana: Wherever possible, Georgetown Climate Center aimed to acknowledge and lift up the work of jurisdictions and nongovernmental actors in Region Seven and neighboring watershed regions to inspire peer-to-peer sharing and actions from as close to home as possible. These resources are drawn from 12 states, with an emphasis on regions and local areas in the Gulf and Mid-Atlantic: Colorado, Florida, Georgia, Illinois, Iowa, Louisiana, New York, North Carolina, Oregon, South Carolina, Texas, and Virginia. Examples and lessons drawn from these regions are easiest to apply to a Louisianan context because they feature similar geography or analogous impacts from flooding and other climate effects.
- There are no perfect, "one-size-fits-all" solutions: While the case studies and resource entries informing the Region Vision are instructive for Region Seven and beyond, none of them are "perfect" examples of how to solve these complex and challenging issues. Georgetown Climate Center found no single case study or resource that provides a point-for-point or model for what Region Seven is trying to accomplish. No other jurisdiction identified is currently trying to integrate housing, flooding, equity, resilience, and population changes together in a single plan, ordinance, or policy. However, some jurisdictions are moving in that direction, or are making progress on discrete elements of what will eventually become a more holistic strategy. Therefore, this report and the Regional Vision draw analogous connections and recommendations that can be combined to facilitate more comprehensive planning and land-use efforts.

The case studies in this report were informed by interviews with practitioners and community leaders in charge of designing and overseeing this work. No statements or opinions, however, should be attributed to any individual or organization included in the *Acknowledgements* section of this report.

It is also important to note that the examples described in each case study are ongoing and the content included in this report is current as of spring 2022. For future updates about these and other case studies and the Regional Vision, please visit **Greauxing Resilience at Home: A Regional Vision** and Georgetown Climate Center's **Adaptation Clearinghouse**.

City of New Orleans, Louisiana Gentilly Resilience District Projects

EXECUTIVE SUMMARY

In 2015, the City of New Orleans released its Resilient New Orleans strategy outlining the city's vision and plan for building a more equitable, adaptable, and prosperous New Orleans. The strategy outlines various recommendations, which all go towards one of three main goals: adapting to thrive, connecting to opportunity, and transforming city systems.

One project featured in Resilient New Orleans is the Mirabeau Water Gardens project. Informed by the design and stormwater management features outlined in the Greater New Orleans Urban Water Plan, the Mirabeau Water Gardens project, once completed, will serve as a recreational, environmentally friendly amenity for the community that also reduces flood risk. Specifically, a former convent will be converted into a public green space. This project is part of an overall plan to create the Gentilly Resilience District — a 12-project program designed to make a small neighborhood in New Orleans more resilient to the impacts of climate change and future disaster and flood events. Additional projects a part of the Gentilly Resilience District include the Pontilly Neighborhood Stormwater and the Blue and Green Corridors projects.

Throughout the development of the plans and programs relating to the Gentilly Resilience District, local policymakers offered numerous opportunities for community input. Most of the projects not only increase community resilience, but also offer new spaces for the community to gather, educate residents on the benefits associated with green infrastructure, and incorporate safe walking and biking paths throughout the neighborhood.

BACKGROUND

New Orleans is the largest city located in the state of Louisiana within Orleans Parish.¹ Home to one of the largest international ports, much of the economic focus of the city revolves around shipping, distribution, and manufacturing.² As of 2019, over 390,000 individuals resided within the city-proper.³ Approximately 24 percent of this population falls below the national poverty line, with the median household income at around \$45,600.⁴ In Louisiana, families of four with an

¹ New Orleans, La., INFOPLEASE, <u>https://www.infoplease.com/us/cities/new-orleans-la</u> (last visited July 23, 2021). ² Id.

³ New Orleans, LA, DATAUSA, https://datausa.io/profile/geo/new-orleans-la/ (last visited July 23, 2021).

⁴ Id.

annual household income of \$25,570 are considered "extremely low income."⁵ As of March 2021, for every 100 households that fall under this category, only 49 affordable housing and rental units exist.⁶

Roughly 50 percent of the greater New Orleans area lies below sea level, and the average elevation of the city is roughly six feet below that point.⁷ Accordingly, climate-driven sea-level rise and flooding are some of the biggest threats to New Orleans.⁸ Moreover, low-income households are more likely to be located in these areas.⁹

While the Army Corps of Engineers had built up a system of levees and seawalls to keep the city from flooding over the course of the 1900s, hurricane events still flooded New Orleans in 1915, 1940, 1947, 1965, 1969, and in 2005, with Katrina.¹⁰ On August 29, 2005, Hurricane Katrina slammed into the city, filling some neighborhoods with upwards of 12 feet of water and costing the lives of many.¹¹ Since then, the Army Corps has constructed storm damage risk reduction systems costing upwards of \$14.5 billion.¹²

Despite that, there have still been flooding issues within the city. In 2016, a slow-moving storm system dumped between 20 and 30 inches of rain in certain areas over a three-day period, due primarily to water level rise in the creeks, waterways, and rivers throughout the city.¹³ When Hurricane Ida hit in September 2021, the levees and floodwalls built by the Army Corps post-Katrine held, but the city still had to deal with significant power outages.¹⁴ Additionally, levees outside the city failed — for example, in Lafitte, which is just south of New Orleans, storm surges

⁵ "Extremely low income (ELI) renter households have incomes at or below the poverty level or 30% of the area median income," as per the National Low Income Housing Coalition's tabulations of the American Community Survey's Public Use Microdata Sample. NAT'L LOW INCOME HOUSING COAL., THE GAP: A SHORTAGE OF AFFORDABLE HOMES 9 (Mar. 2021), *available at* <u>https://reports.nlihc.org/sites/default/files/gap/Gap-Report_2021.pdf</u>.

⁶ Id.

⁷ *Hurricane Katrina*, HISTORY (Aug. 9, 2019), <u>https://www.history.com/topics/natural-disasters-and-environment/hurricane-katrina</u>.

⁸ *How Humans Sank New Orleans*, THE ATLANTIC (Feb. 6, 2018), <u>https://www.theatlantic.com/technology/archive/2018/02/how-humans-sank-new-orleans/552323/</u>.

⁹ Lauren Abbattista, et al., *Climate Change and Sea Level Rise in New Orleans, LA*, STORYMAPS ARCGIS (Nov. 11, 2020), <u>https://storymaps.arcgis.com/stories/f0fe108a4f3b42e9919c4cb9e4eda673</u>.

¹⁰ *Hurricane Katrina*, HISTORY (Aug. 9, 2019), <u>https://www.history.com/topics/natural-disasters-and-environment/hurricane-katrina</u>.

¹¹ *How Humans Sank New Orleans*, THE ATLANTIC (Feb. 6, 2018), <u>https://www.theatlantic.com/technology/archive/2018/02/how-humans-sank-new-orleans/552323/</u>. ¹² *Id*.

¹³Advocate Staff Report, *What Caused the Historic August 2016 Flood, and What Are the Odds It Could Happens Again?*, THE ADVOCATE (Aug. 5, 2017), <u>https://www.theadvocate.com/louisiana_flood_2016/article_3b7578fc-77b0-</u>11e7-9aab-f7c07d05efcb.html.

¹⁴ Jake Bittle, *The Levees Worked in New Orleans -- This Time*, CURBED (Sept. 2, 2021), https://www.curbed.com/2021/09/levees-louisiana-hurricane-ida-managed-retreat.html.

topped in some places at around 12 feet.¹⁵ Concerns around flooding from hurricanes still exist, as the levee system was only designed to protect against a 100-year storm.¹⁶

OVERVIEW OF RESILIENT NEW ORLEANS

To mitigate these impacts on New Orleans, the city produced the Resilient New Orleans strategy. The strategy builds on a decade of risk assessments and planning within New Orleans with a commitment to implementation. The Resilient New Orleans plan was developed by the City of New Orleans as part of the Rockefeller Foundation's 100 Resilient Cities Initiative. 100 Resilient Cities (100RC), pioneered by The Rockefeller Foundation, was a nonprofit organization dedicated to helping cities around the world become more resilient to the physical, social, and economic challenges that are a growing part of the 21st century.¹⁷ The program concluded on July 31, 2019, though the Rockefeller Foundation continued to support 100RC network cities and Chief Resilience Officers with an additional \$8 million commitment.

The document is organized according to three visions: adapting to thrive, which requires the city embracing a changing environment; connecting to opportunity, which focuses on remaining an equitable city; and transforming city systems, which will make the city more "dynamic and prepared."¹⁸ There are 14 overarching strategies that are divided to fit under one of the visions. To implement the strategies, the document then identifies and describes a variety of actions that are either already ongoing, or that can be implemented by different agencies and partners across the city.¹⁹ In the document, the city calls for resilience action to be taken across various sectors, including affordable housing, water infrastructure, economic development, and transportation. Many strategy recommendations involve analyzing and amending zoning ordinances and development regulations and incorporating resilience into local planning documents and guidance. This analysis includes the lead and partner agencies that will carry the policy forward, the funding source that will support it, and the current status of the action.

This resource entry describes the ways in which the strategies and projects recommended in the Resilient New Orleans document — particularly those focused on the Gentilly neighborhood — can help improve environmental conditions and the ability to withstand climate impacts, as well as increase affordable housing stock and resilience within the community.

¹⁵ *Id*.

¹⁶ Id.

¹⁷ Georgetown Climate Ctr., *100 Resilient Cities*, ADAPTATION CLEARINGHOUSE (2019), <u>https://www.adaptationclearinghouse.org/organizations/100-resilient-cities.html</u>.

¹⁸ CITY OF NEW ORLEANS, LA., HOUSING FOR A RESILIENT NEW ORLEANS: A FIVE YEAR STRATEGY (2016), *available at* <u>https://www.nola.gov/home/buttons/resilient-housing/</u>.

¹⁹ For example, to achieve the vision of transforming city systems, Resilient New Orleans recommends the strategy of integrating resilience-driven decisionmaking across public agencies. Featured actions to advance this strategy include establishing a Mayor's Office of Resilience and Sustainability, Launching a City Resilience Index, and continuing to use the existing One Stop Shop for City Permits and Licenses, among other actions.

ENVIRONMENT

Green and Blue Spaces

Mirabeau Water Gardens

As part of the actions outlined in the Resilient New Orleans strategy, city leaders, in collaboration with private developers Waggonner & Ball and nonprofit Greater New Orleans, Inc., developed the Mirabeau Water Gardens project.²⁰ The project, which broke ground in Spring 2020, will transform 25 acres of previously open space in the city's Filmore neighborhood into a recreational, environmentally conscious, and educational amenity for the community that will also significantly reduce flood risk. The 25 acres of space that are being developed to house the Mirabeau Water Gardens project was leased to the city by the Sisters of St. Joseph, on the condition that it be used to create an amenity for the community that "evoke[s] a huge systemic shift in the way humans relate with water and land."²¹ Rather than rebuild the convent that had been damaged by Hurricane Katrina in 2005, the nuns decided to lease the land to the city for \$1 on the premise that it be used to protect the environment.²² Located between Bayou St. John and the London Avenue Canal, previously, the land had been an empty, blighted property. Once completed, this project will address the issues of flooding and subsidence within the neighborhood by draining water that the community's drainage infrastructure cannot handle.

Through "innovative site design and stormwater management systems," the project will bring several benefits to the community.²³ The water gardens will provide underground retention for stormwater runoff, as well as recreational, walkable features throughout the park. This will lessen the burden on the city's water infrastructure system, increase home values by decreasing flood risks for surrounding properties, lower air temperatures through increased vegetation, and improve air quality within the community. Additionally, the gardens will serve as a tool to educate the community about how natural processes can be used to filter stormwater and improve water quality.²⁴ Once completed, the gardens are designed to temporarily store upwards of 10 million

²⁰ Mirabeau Water Garden, WAGGONNER & BALL, <u>https://wbae.com/projects/mirabeau-water-garden-2/</u> (last visited May 25, 2022).

²¹ Id.

²² This is an example of a public-private partnership with a faith-based organization. Alex Fox, *Nuns Are Turning a Convent into a Wetland to Fight Flooding in New Orleans*, THE HILL (Jan. 7, 2020), <u>https://thehill.com/changing-america/resilience/smart-cities/477197-nuns-are-turning-a-monastery-into-a-wetland-to-fight</u>.

²³ CITY OF NEW ORLEANS, LA., MIRABEAU WATER GARDEN: DRAINAGE IMPROVEMENTS AND GREEN INFRASTRUCTURE PROJECT (Fall 2019), *available at* <u>https://nola.gov/nola/media/Climate-Action/Progress/MirabeauFactSheet(revised).pdf</u>.

²⁴ Id.

gallons of water in the site's detention pond.²⁵ The entire project is expected to be completed in November 2021.²⁶

Blue and Green Corridors

Another project that focuses on expanding community access to green spaces throughout the Gentilly Resilience District is the Blue and Green Corridors project. Blue corridors refer to the canals running through the neighborhood, while green corridors are the areas of land between roads, canals, and other thoroughfares. The blue corridors portion of the project deals primarily with water management, and is focused on creating a system of canals in larger areas with water features and play spaces that can also serve as neighborhood parks.²⁷ Green corridor projects are focused on land management surrounding the canals or blue corridor, and will create green spaces in smaller portions of areas where vegetation — including trees, plants, and permeable sidewalks — will help with drainage issues.²⁸ The city is essentially adapting "key public assets, including boulevards, parkways/medians, and adjacent park spaces to improve community resilience."²⁹ The two corridor projects will help to create a network of interconnecting passages that will reduce flood risk while also creating safe, green spaces for people to travel and spend time while learning about environmental sustainability. Taken together, this focus on both blue and green corridors provides an example of a holistic approach to stormwater management that has the additional benefit of providing new community assets (e.g., parks, pathways, bike lanes, etc.).

The blue and green corridors will benefit the community in several ways. First, vegetation and green spaces, as well as stormwater canals, will help to reduce neighborhood flooding.³⁰ These stormwater projects will also have the added benefit of improving water quality by using drainage technology and green infrastructure improvements. Neighborhood infrastructure, especially relating to bikeways and safe walkways, will also be improved through these projects. Neighborhood revitalization projects will help "educate the public on the benefits of living in a sustainable community[,] create beautiful areas for the public to visit, congregate in, and enjoy to strengthen a sense of community[, and] demonstrate that green infrastructure can contribute to

²⁵ Residents Hopeful for Mirabeau Water Garden Project Promises, FOX8 (Jan. 15, 2020), <u>https://www.fox8live.com/2020/01/16/residents-hopeful-mirabeau-water-garden-project-promises/</u>.

²⁶ CITY OF NEW ORLEANS, LA., MIRABEAU WATER GARDEN (Aug. 2018), *available at* <u>https://www.nola.gov/resilience-sustainability/resources/fact-sheets/mwg-fact-sheet-9-14-18/</u>.

²⁷ CITY OF NEW ORLEANS, LA., BLUE & GREEN CORRIDOR (Aug. 2018), *available at <u>https://nola.gov/resilience-sustainability/resources/fact-sheets/blue-green-fact-sheet9-14-18_updated/</u>.*

²⁸ Id. ²⁹ Id.

³⁰ CITY OF NEW ORLEANS, LA., BLUE AND GREEN CORRIDORS PROJECT (Feb. 2020), *available at* <u>https://nola.gov/getattachment/Resilient-New-Orleans/NDR-GRD-Projects-Programs/Blue-Green-</u>Corridors/BGC FactSheet 0220.pdf/?lang=en-US.

beautiful and functional public spaces."³¹ Project designs were completed in Summer 2020, and construction is expected to be completed in August 2022.

Stormwater and Flooding Infrastructure

The Pontilly Neighborhood Stormwater Network project is another example being advanced in the Pontchartrain Park and Gentilly Woods neighborhoods as part of the overall Gentilly Resilience District improvements. As a whole, the project includes a variety of different improvements to different parts of the community that work to absorb stormwater, including permeable pavement installation on sidewalks and parking lots and improvements to increase the storage capacity of Dwyer Canal.³² The project is designed to slow and store stormwater in the two neighborhoods, improve water quality, and reduce the burden on the areas' current drainage systems. This area has the potential to store upwards of 8.1 million gallons of stormwater.³³

The goal of this stormwater network is to reduce flood risks in the community, as well as beautify these two neighborhoods through green infrastructure development and canal improvements — which will have the added benefits of adding educational and recreational amenities to the community. Through the creation of a stormwater drainage system, flooding in the communities can be reduced by at least 14 inches during a 10-year rain event.

The project itself has been broken up into two distinct phases. Phase I — the first, which implemented green infrastructure and drainage improvements in April 2021.³⁴ Phase II, which is currently under development, focuses on improvements to the Dwyer Canal that currently divides the two neighborhoods.³⁵

Phase I of the project, which focused on drainage and infrastructure, involved significant stormwater retention installations throughout the community. Project leads included the city Department of Public Works and private developers. Designs for the project were completed in Spring 2019, and construction started in Fall 2020.³⁶ Project examples from Phase I included the redevelopment of certain streets located near Southern University at New Orleans using pervious

³¹ Id.

³² Jeff Adelson, *These Improvements Will Help 2 New Orleans Neighborhoods Capture 8 Million Gallons of Stormwater*, NOLA.COM (Apr. 22, 2021), <u>https://www.nola.com/news/politics/article_c12330e4-a2da-11eb-ac34-3f8ab1d19296.html</u>.

³³ Katherine Hart, *Neighbors Celebrate the Pontilly Stormwater Network: 'It's Been Actually Saving Us from Flooding,'* GENTILLY MESSENGER (Apr. 25, 2021), <u>http://gentillymessenger.com/neighbors-celebrate-the-pontilly-stormwater-network-its-been-actually-saving-us-from-flooding/</u>.

³⁴ Id.

³⁵ CITY OF NEW ORLEANS, LA., PONTILLY PHASE II: DWYER CANAL IMPROVEMENTS (2020), *available at* <u>https://www.nola.gov/getattachment/Resilient-New-Orleans/NDR-GRD-Projects-Programs/Dwyer-</u>Canal/PontillyPhaseII Q12020FactSheet-05062020.pdf/?lang=en-US.

³⁶ *Pontilly Phase II: Dwyer Canal Improvements*, CITY OF NEW ORLEANS, LA., <u>https://www.nola.gov/resilience-sustainability/gentilly-resilience-district/pontilly-neighborhood-ii/</u> (last updated Jan. 6, 2022).

pavement, where the campus has a stormwater retention capacity of around 282,000 gallons.³⁷ Throughout both neighborhoods, 24 street basins were installed, which will hold more than 510,000 gallons of stormwater.³⁸ Existing stormwater lots throughout Pontchartrain Park and Gentilly Woods were upgraded to the point where they can now hold upwards of 3.3 million gallons of stormwater.³⁹ Lastly, several urban bioswales were constructed throughout the communities.⁴⁰ Bioswales are areas of land that are covered in vegetation and designed to collect, treat, and filter stormwater runoff as it travels downstream.⁴¹ They are good examples of green infrastructure that not only slow runoff speeds, but also help to clean the water at the same time⁴² On April 25, 2021, members of the Pontchartrain Park and Gentilly Woods neighborhoods gathered to mark the completion of this phase of the project.⁴³

Phase II of the project, which broke ground in spring 2021, focuses on improving the Dwyer Canal cutting through the two communities. Spearheaded by the city and private partners SCAPE Landscape Architecture and Infinity Engineering, the ultimate goal of this project is to ensure that the canal can better serve as a rainwater detention site and also that new recreational and educational installations will allow the canal to connect, rather than divide and separate, the two communities.⁴⁴ Walking paths and environmental learning opportunities will be spaced along the canal to "enhance the natural beauty of the historic New Orleans neighborhood."⁴⁵ The project is expected to be completed in fall 2021.

³⁷ Katherine Hart, *Neighbors Celebrate the Pontilly Stormwater Network: 'It's Been Actually Saving Us from Flooding*,' GENTILLY MESSENGER (Apr. 25, 2021), <u>http://gentillymessenger.com/neighbors-celebrate-the-pontilly-stormwater-network-its-been-actually-saving-us-from-flooding/</u>.

³⁸ Id.

³⁹ Id.

⁴⁰ Id.

 ⁴¹ Bioswales: Urban Street Design Guide, NAT'L ASS'N OF CITY TRANSP. OFF., <u>https://nacto.org/publication/urban-street-design-guide/street-design-elements/stormwater-management/bioswales/</u> (last visited Oct. 19, 2021).
 ⁴² Id.

⁴³ Katherine Hart, *Neighbors Celebrate the Pontilly Stormwater Network: 'It's Been Actually Saving Us from Flooding,'* GENTILLY MESSENGER (Apr. 25, 2021), <u>http://gentillymessenger.com/neighbors-celebrate-the-pontilly-stormwater-network-its-been-actually-saving-us-from-flooding/</u>.

⁴⁴ CITY OF NEW ORLEANS, LA.., PONTILLY PHASE II: DWYER CANAL IMPROVEMENTS (2020), *available at* <u>https://www.nola.gov/getattachment/Resilient-New-Orleans/NDR-GRD-Projects-Programs/Dwyer-</u>

<u>Canal/PontillyPhaseII_Q12020FactSheet-05062020.pdf/?lang=en-US;</u> Katherine Hart, *Neighbors Celebrate the Pontilly Stormwater Network: 'It's Been Actually Saving Us from Flooding,*' GENTILLY MESSENGER (Apr. 25, 2021), <u>http://gentillymessenger.com/neighbors-celebrate-the-pontilly-stormwater-network-its-been-actually-saving-us-</u>from-flooding/.

⁴⁵ *Pontilly Phase II: Dwyer Canal Improvements*, CITY OF NEW ORLEANS, LA., <u>https://www.nola.gov/resilience-sustainability/gentilly-resilience-district/pontilly-neighborhood-ii/</u> (last updated Jan. 6, 2022).

COMMUNITY ENGAGEMENT

Mirabeau Water Gardens

In 2017, before ground broke on the Mirabeau Water Gardens project, the city presented at a local charter school to community stakeholders and leaders about the problems the community faced due to flooding, options relating to how these problems could be fixed, and benefits the projects could offer to the community.⁴⁶

Blue and Green Corridors Projects

The city and its partners undertook significant community engagement efforts to ensure that the communities' voices would be heard during the development and construction of the Blue and Green Corridors projects. The city used multiple tools to conduct resident outreach. First, the city sent out mailers to affected residents.⁴⁷ In addition, the city held open houses, attended health fairs, conducted door-to-door outreach, and posted signs in public, well-visited places.⁴⁸ Further, since 2018, the city has supported several different outreach forums, including community leadership meetings, visioning workshops, festivals, press conferences, and design review committee meetings.⁴⁹

Throughout the development process, the city presented several times in an online forum, where the public was given time to ask questions about the status of the project, and give commentary on the design aspects of it.⁵⁰ A July 2020 presentation included an overview on which specific projects were most important to the community, which were identified as abundant lighting, fitness equipment, green infrastructure.⁵¹ Continued maintenance of the character of the Gentilly neighborhoods was also identified as a priority. The presentation included a list of concerns from the community, which included flooding, poor lighting, and lack of shade.⁵²

⁴⁶ CITY OF NEW ORLEANS, LA., MIRABEAU WATER GARDEN PROJECT (Aug. 5, 2017), *available at* <u>https://nola.gov/resilience-sustainability/resources/community-outreach/mirabeau-comm/</u>.

⁴⁷ CITY OF NEW ORLEANS, LA., PONTILLY PHASE II: DWYER CANAL IMPROVEMENTS (2020), *available at* <u>https://www.nola.gov/getattachment/Resilient-New-Orleans/NDR-GRD-Projects-Programs/Dwyer-</u>Canal/PontillyPhaseII O12020FactSheet-05062020.pdf/?lang=en-US.

⁴⁸ Id.

⁴⁹ Blue & Green Corridors, CITY OF NEW ORLEANS, LA., <u>https://nola.gov/resilience-sustainability/gentilly-resilience-district/blue-green-corridors/</u> (last visited May 25, 2022).

⁵⁰ Id.

⁵¹ CITY OF NEW ORLEANS, LA., BLUE & GREEN CORRIDORS: 90% DESIGN UPDATE COMMUNITY MEETING (July 2020), available at <u>https://nola.gov/getattachment/Resilient-New-Orleans/NDR-GRD-Projects-Programs/Blue-Green-Corridors/200730-Community-Presentation-(1).pdf/?lang=en-US</u> (PowerPoint presentation).
⁵² Id.

Pontilly Neighborhood Stormwater Network

Significant community engagement and outreach was undertaken during the design stage of both phases of the Pontilly Neighborhood Stormwater Network project. In 2016, the New Orleans Department of Public Works, Office of Resilience and Sustainability, and the Office of Neighborhood Engagement first presented to the community's neighborhood associations with proposed projects, and provided the public with an opportunity to ask questions and provide feedback.⁵³ The city also distributed surveys to project area residents and held forums for community leaders.⁵⁴ Further, before construction on each phase of the project, the city presented to project area residents regarding information on the projects, and offered opportunities for input.⁵⁵

FUNDING

Mirabeau Water Gardens

The Mirabeau Water Gardens project is funded by a Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant (HMGP)⁵⁶ of \$13 million and a \$10.5 million Disaster Recovery grant from the U.S. Department of Housing and Urban Development through the (HUD) National Disaster Resilience Competition (NRDC).⁵⁷

Blue and Green Corridors

The Blue and Green Corridor projects will be funded through a \$28 million grant from the NDRC.⁵⁸

⁵³ Pontilly Neighborhood Stormwater Network, CITY OF NEW ORLEANS, LA., <u>https://nola.gov/resilience-sustainability/(hmgp)-stormwater-projects/pontilly/</u> (last visited May 25, 2022).

⁵⁴ Id.

⁵⁵ Id.

⁵⁶ Georgetown Climate Ctr., *FEMA Hazard Mitigation Program*, ADAPTATION CLEARINGHOUSE, <u>https://www.adaptationclearinghouse.org/resources/fema-hazard-mitigation-grant-program.html</u> (last visited Nov. 19, 2021).

⁵⁷ For more information about the National Disaster Resilience Competition, see Georgetown Climate Ctr., *HUD National Disaster Resilience Competition*, ADAPTATION CLEARINGHOUSE (June 14, 2014), https://www.adaptationclearinghouse.org/resources/hud-national-disaster-resilience-competition.html.

⁵⁸ CITY OF NEW ORLEANS, LA., BLUE & GREEN CORRIDORS PROJECT (Winter 2021), *available at* <u>https://www.nola.gov/getattachment/Resilient-New-Orleans/NDR-GRD-Projects-Programs/Blue-Green-Corridors/BlueGreen2021.pdf/?lang=en-US.</u>

Pontilly Neighborhood Stormwater Network

Phase I of the Pontilly Neighborhood Stormwater Network was funded through a \$15 million hazard mitigation grant from FEMA and a \$3.4 million award through the NDRC.⁵⁹ Phase II of the project was through another NRDC award of \$2.1 million.⁶⁰

NEXT STEPS

These projects, and the Gentilly Resilience District, are worth highlighting because of the extensive amount of community involvement in the creation of many of the plans and programs associated with the district as a whole. Many of the projects integrate innovative green infrastructure, including community rain gardens, permeable pavements and sidewalks, and other stormwater and infrastructure installations. It is important to note, however, that the actual implementation of many of these projects has been extremely delayed, according to community members and stakeholders on the ground in the Gentilly neighborhood. This is due in part to transitions in government leadership, COVID, and the difficulty of cross-agency collaboration.⁶¹

For example, because the projects in the Gentilly Resilience District are, in part, funded by the HUD NDRC, the agency is required to approve any "de-bundling" contracts. De-bundling typically occurs when projects are granted large funds, which must be broken down into smaller projects in order to ensure that smaller, community-led businesses can afford to compete and bid on their design and construction. In this instance, the approval process has resulted in several delays relating to entering the construction phase of many of the projects, though "kick-off" and ground-breaking events began in April 2021.

CONSIDERATIONS AND LESSONS LEARNED

Despite some issues and delays with implementation, Resilient New Orleans and the Gentilly Resilience District provide several takeaways and lessons for local governments and communities seeking to increase resilience and combat flood risk through community-led approaches.

First, it is important to build community resilience around a central plan, as the city did here with the Resilient New Orleans plan, to connect project planning and implementation. Other regional

⁵⁹ CITY OF NEW ORLEANS, LA., PONTILLY NEIGHBORHOOD STORMWATER NETWORK (Fall 2019), *available at* <u>https://www.nola.gov/nola/media/Climate-Action/Progress/PontillyFactSheet.pdf</u>.

⁶⁰ CITY OF NEW ORLEANS, LA., PONTILLY PHASE II: DWYER CANAL IMPROVEMENTS (2020), *available at* <u>https://www.nola.gov/getattachment/Resilient-New-Orleans/NDR-GRD-Projects-Programs/Dwyer-</u>Canal/PontillyPhaseII O12020FactSheet-05062020.pdf/?lang=en-US.

⁶¹ These comments and opinions on implementation were gathered through a number of interviews with individuals working on the ground in the Gentilly Community.

and local policymakers and communities can follow suit to coordinate and leverage funding for projects, especially where they can provide significant benefits for communities.

Second, local governments should work directly with communities to advance resilience in line with their interests and needs. The need for or benefits of unique public-private partnerships e.g., with local faith-based entities like the St. Joseph convent and other organizations, can help to maximize the value of community assets. Local governments designing and building resilience projects should engage consistently and often with any neighborhood or community they are looking to create a plan for, to learn better what problems affect that community, what solutions will work best to address those problems, and what organizations and projects are already operating within the area, so that any solutions can leverage existing resources.

Third, local governments and communities should look to reuse, re-envision, and in some cases, restore vacant and blighted parcels. When undertaking this type of transformation, project leaders can also Look to leverage co-benefits of these projects i.e., community resilience, stormwater retention/reduced flooding, improving water quality to make them more successful.

Fourth, note that funding is key to be able to implement these types of large-scale, expensive projects. Post-disaster funding sources, like those distributed from FEMA and HUD, were used here to build future community resilience against chronic and storm-based flooding, among advancing other community and environmental benefits. Other local policymakers with similar access to these types of federal or state funding opportunities can look to build resilience into grant proposals. However, where these types and amounts of funding are harder to replicate, policymakers and communities can look to alternative sources of funding, public-private partnerships, and smaller-scale neighborhood projects.