Green and Gray Infrastructure for Climate Resilience

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Background/Objectives. Since its settlement in 1718, the City of New Orleans has dealt with more than its fair share of flooding and disasters including devastating Hurricane Katrina and more recent the Gentilly micro-burst storm. These events have resulted in thousands of residents filing FEMA insurance claims. Located at the confluence of the Mississippi River with the Gulf of Mexico, and just south of Lake Pontchartrain, New Orleans is surrounded by water and a substantial portion is situated below sea level, creating a "bowl-shaped" community that is susceptible to internal flooding.

The City currently provides flood and hurricane protection with levees, floodwalls, and a series of sophisticated pumps that remove water from the City as quickly as possible during wet weather events. The City's pumping facilities are some of the largest in the world.
In 2015, the City of New Orleans participated in the US Department of Housing and Urban Development's (HUD) National Disaster Resilience Competition (NDRC) with a proposal to create the City's first Resilience District. As part of this competition, the City was tasked with identifying the biggest threats, risks, and vulnerabilities while presenting opportunities to enhance the resiliency of the City's infrastructure. The City was awarded over $141 million in HUD grant funding.

Approach/Activities. The City of New Orleans' Gentilly Resilience District Blue-Green Corridor project represents a combination and variety of infrastructure projects. Stantec supported this project in the initial visioning as part of the Rockefellers' 100 resilient cities and supported the full detailed planning and design of the project. It is focused on advancing innovative water management while maximizing "triple bottom line" community benefits. The overarching goals of the Gentilly Resilience District are to reduce multi-hazard risks (flood and subsidence), improve the community's quality of life, and to encourage economic and social revitalization. As these complementary projects aggregate to transform the community, Gentilly is designed to serve as a model on how to adapt and thrive in an urban changing environment.
Key activities that contributed to maximizing the resilient potential of the project include integration of diverse community stakeholder through the visioning-planning-design-construction project cycle; expanding project goals to include multiple hazard mitigation; considering current and future conditions including the impacts of climate change; optimizing the use of blue-green infrastructure project elements; completing mile-stone benefit-cost analyses to quantify return-on-investment; and committing to perform long-term social, economic, environmental metric through ongoing subsidence monitoring.

Results/Lessons Learned. Results/lessons learned to be shared include 1) how the project's resilience potential was enhanced due to diverse stakeholder involvement; 2) how the integration of blue-green infrastructure expanded the resilient value of the overall project to the community; 3) how the "triple-bottom-line" benefit cost analysis help decide which project elements advanced to final design and 4) how green and gray infrastructure will contribute to the overall resilience of our communities and Nation.