

LIVING WITH WATER RESILIENCE IN NEW ORLEANS



NEW ORLEANS

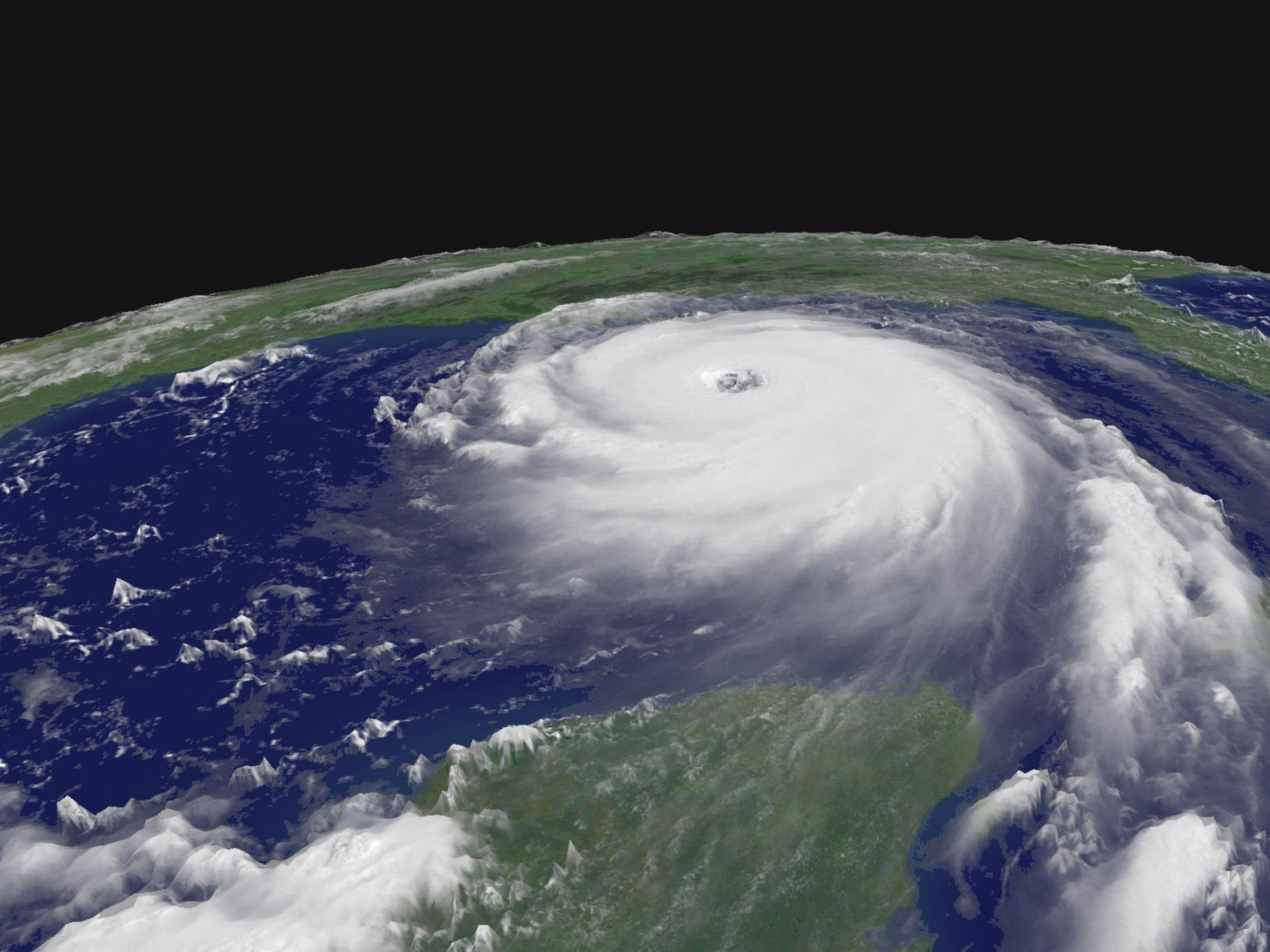
*Presentation to Roma Resiliente
Casa della Città, Roma*

16 March 2015

Jeff Hébert
Chief Resilience Officer
City of New Orleans, USA







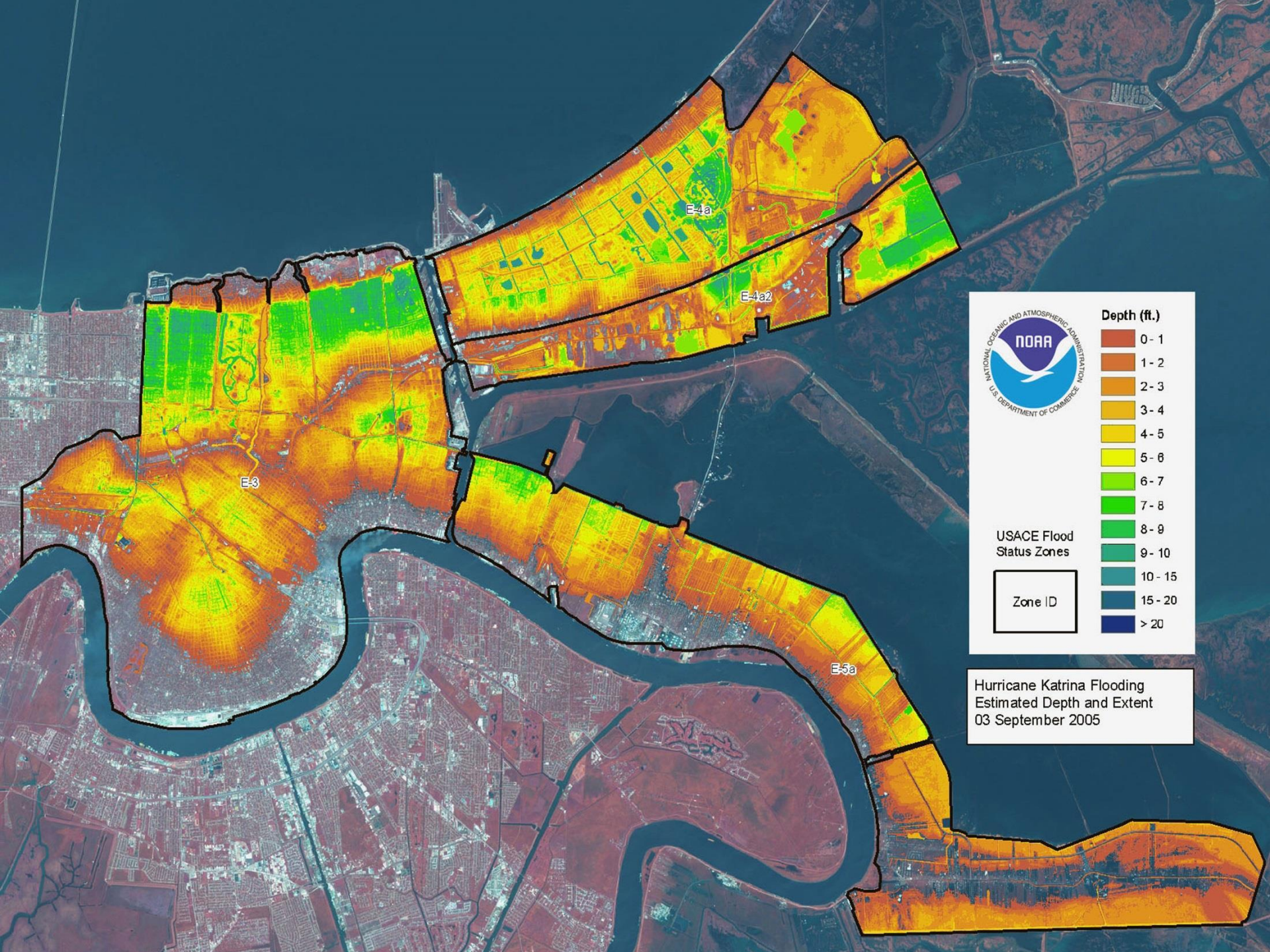


Bourbon

SPORTS

ONE WAY

NO TURN ON RED



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

Depth (ft.)

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- 7 - 8
- 8 - 9
- 9 - 10
- 10 - 15
- 15 - 20
- > 20

USACE Flood Status Zones

Zone ID

Hurricane Katrina Flooding
Estimated Depth and Extent
03 September 2005

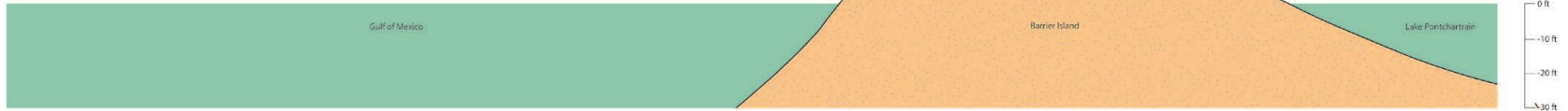
NEW ORLEANS LANDSCAPE OVER TIME

Circa 2300 BC Enclosed Bay

Sea level rise after the last ice age created the Pontchartrain Bay, which was enclosed by barrier islands

Before the Mississippi River built the St. Bernard and Plaquemines deltas, the footprint of the present-day Greater New Orleans area was open sea

1



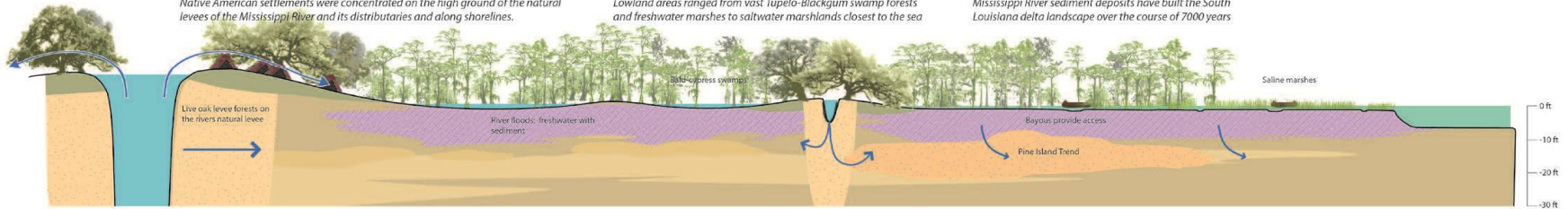
Circa 1000 Delta landscape

Native American settlements were concentrated on the high ground of the natural levees of the Mississippi River and its distributaries and along shorelines.

Lowland areas ranged from vast Tupelo-Blackgum swamp forests and freshwater marshes to saltwater marshlands closest to the sea

Mississippi River sediment deposits have built the South Louisiana delta landscape over the course of 7000 years

2

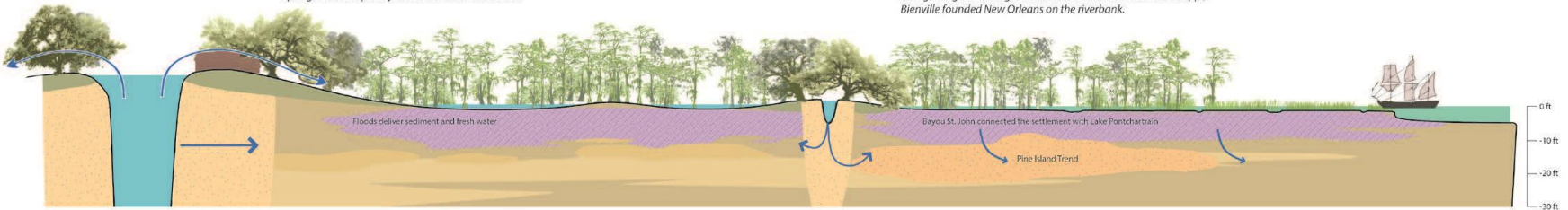


Circa 1718 Founding on the Riverbank

Spring floods frequently flooded the new settlement

Recognizing the strategic location at the mouth of the Mississippi, Bienville founded New Orleans on the riverbank.

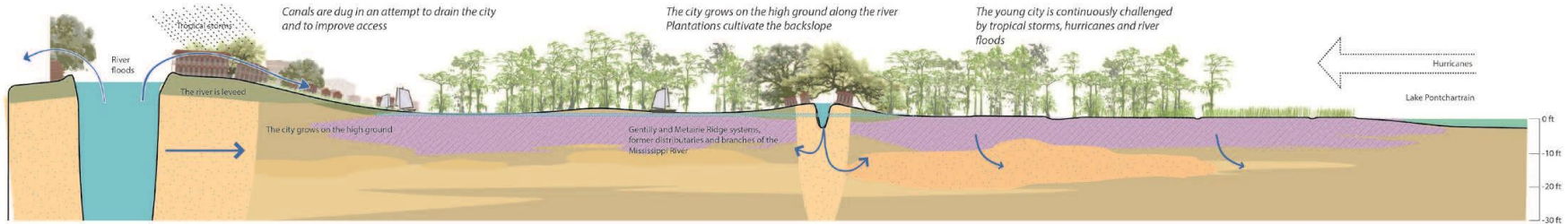
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NEW ORLEANS LANDSCAPE OVER TIME

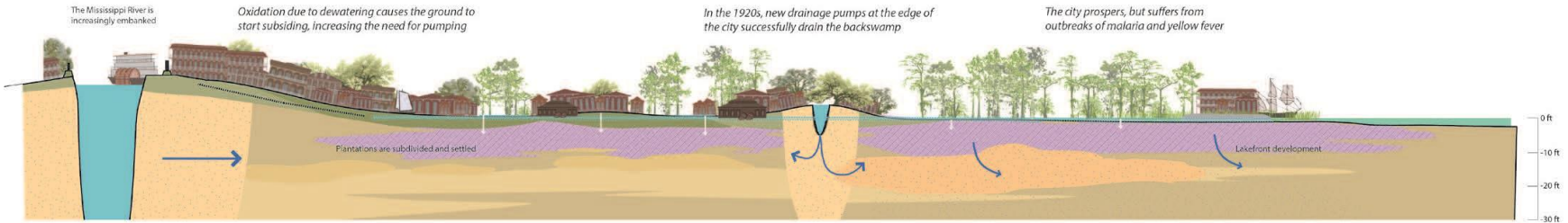
Circa 1800 A Challenging Site

4



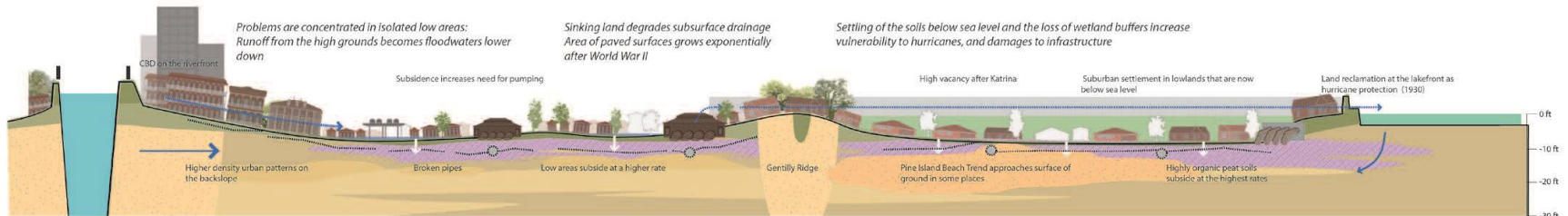
Circa 1895 The Draining of the Backswamp

5

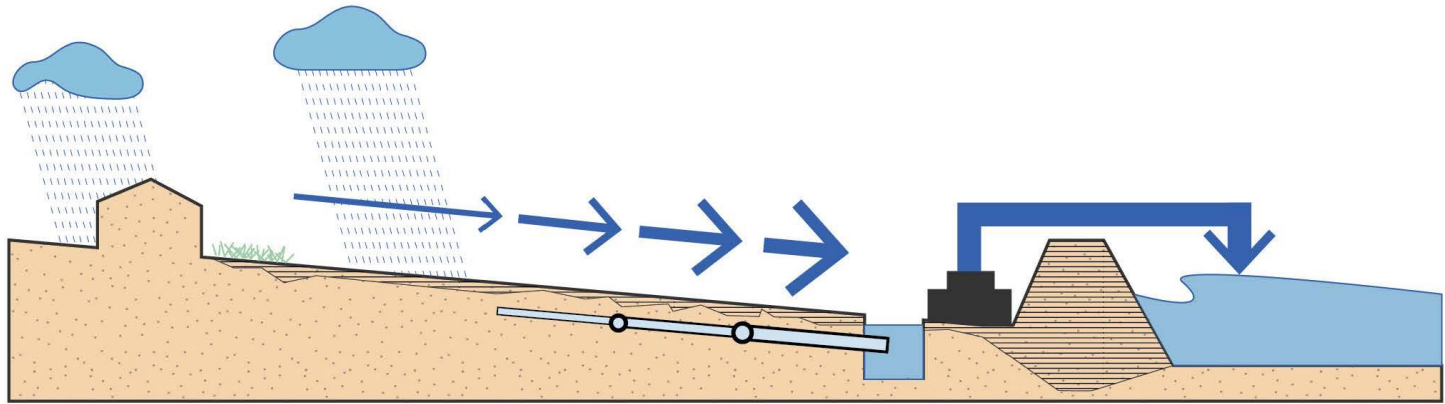


Circa 2000 City Between River and Lake

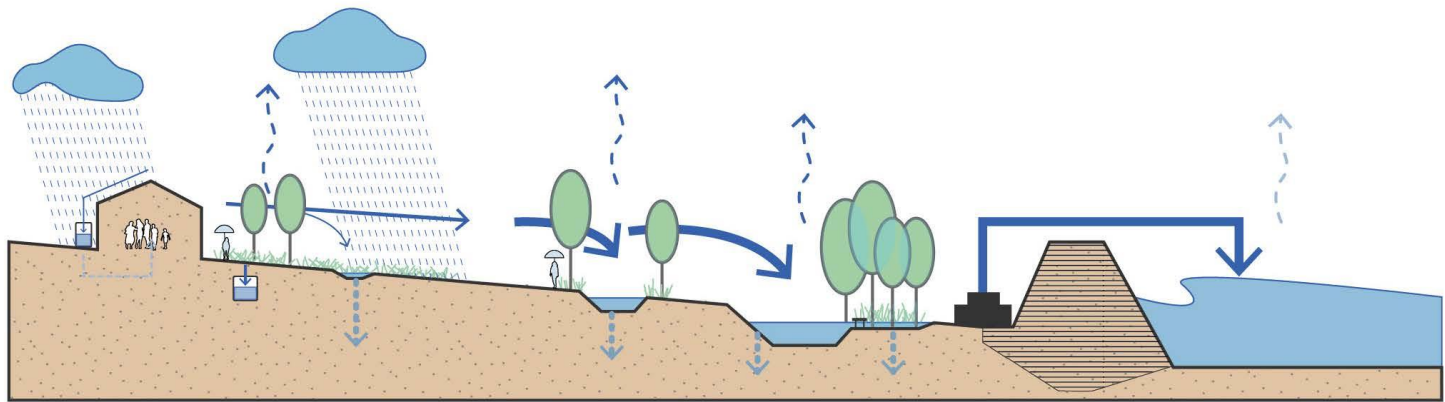
6



GREATER NEW ORLEANS URBAN WATER PLAN WATER MANAGEMENT PARADIGM



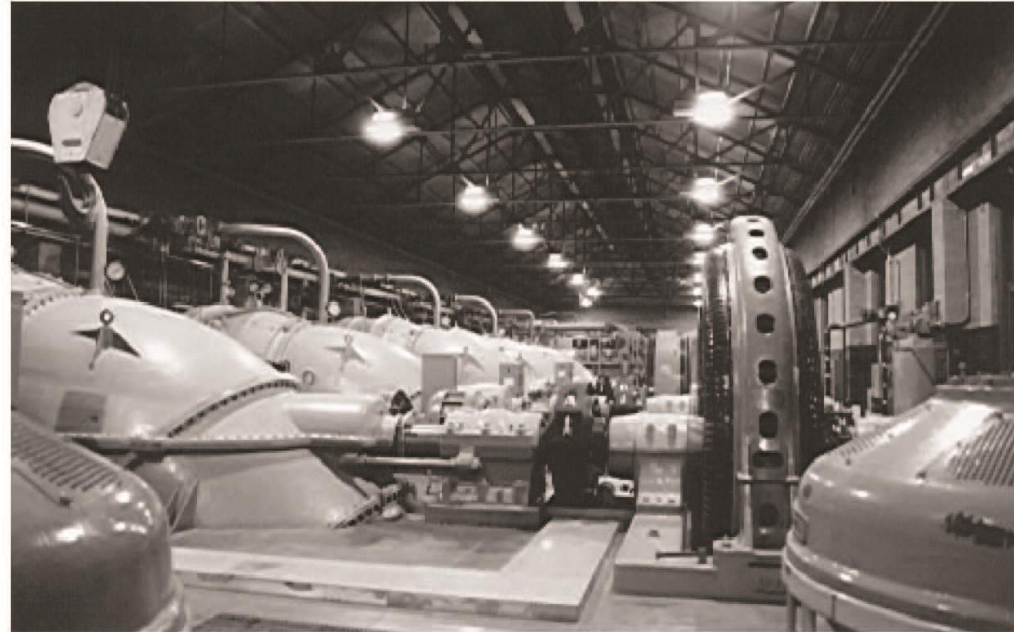
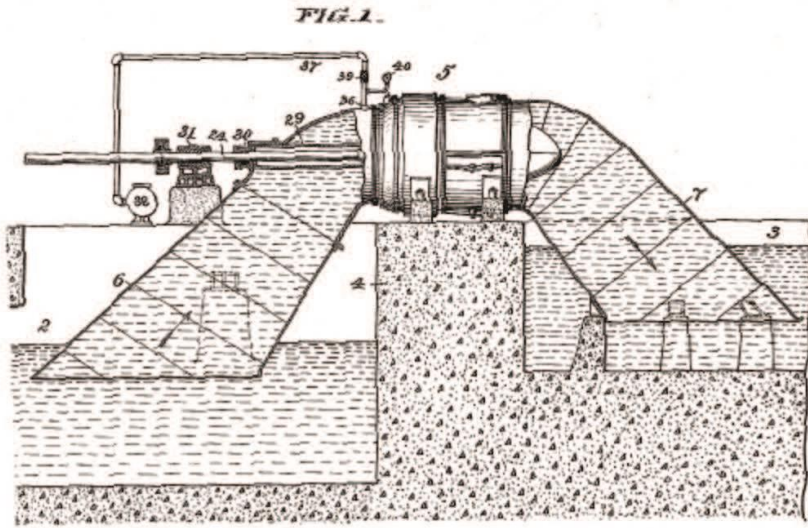
Pump + Drain



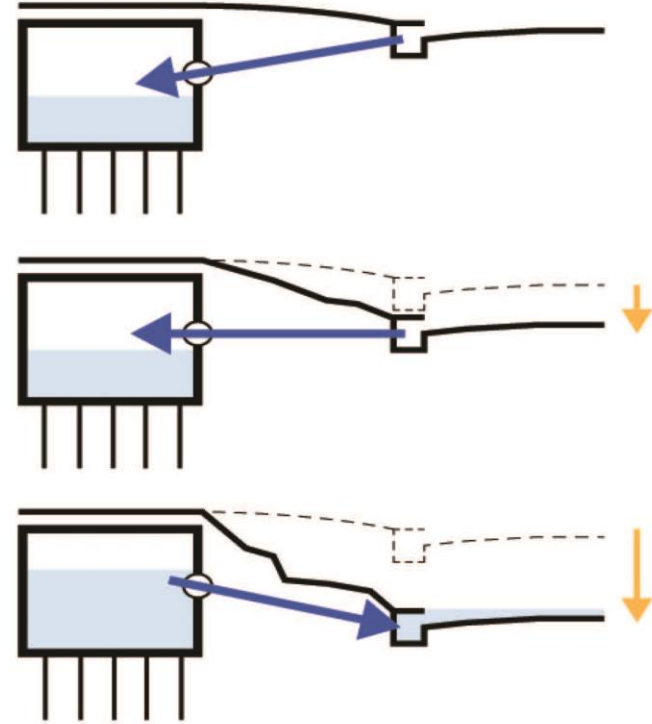
Slow

Store

Drain



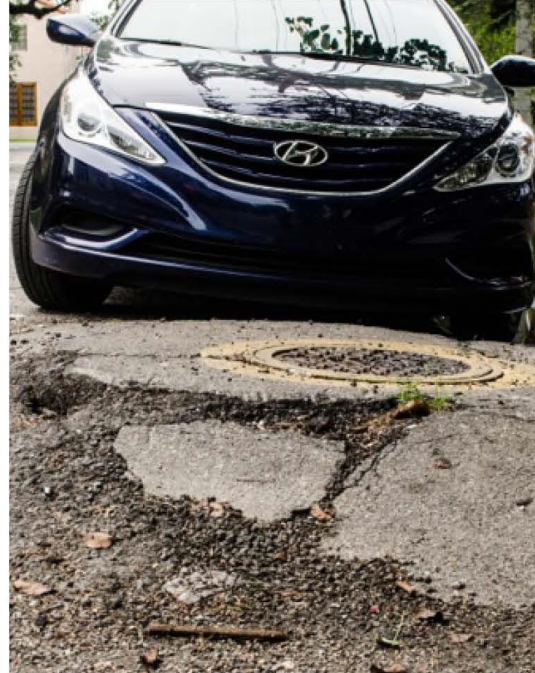
GREATER NEW ORLEANS URBAN WATER PLAN DRAINAGE AND SUBSIDENCE



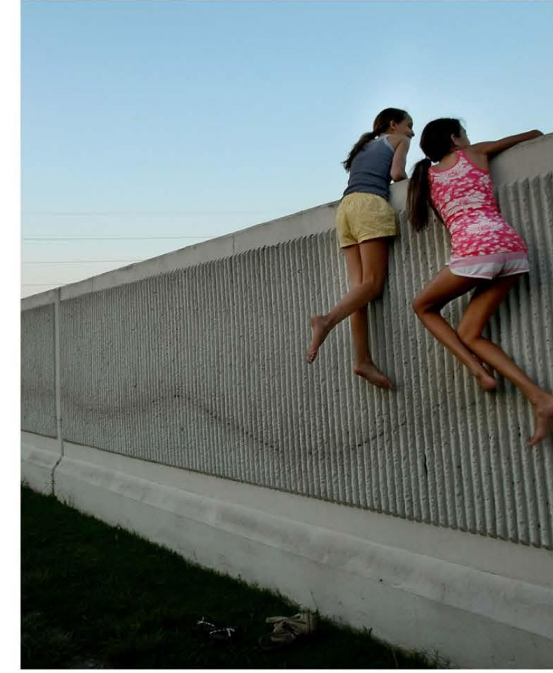
16 March 2015



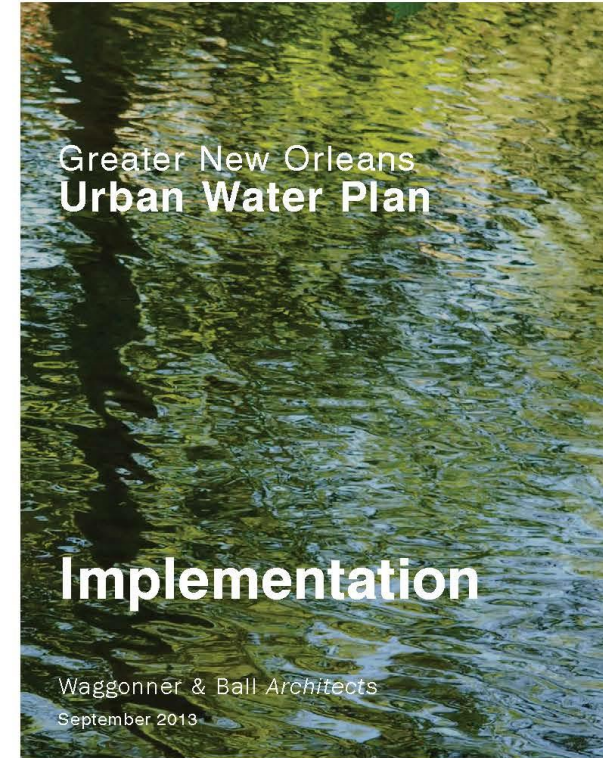
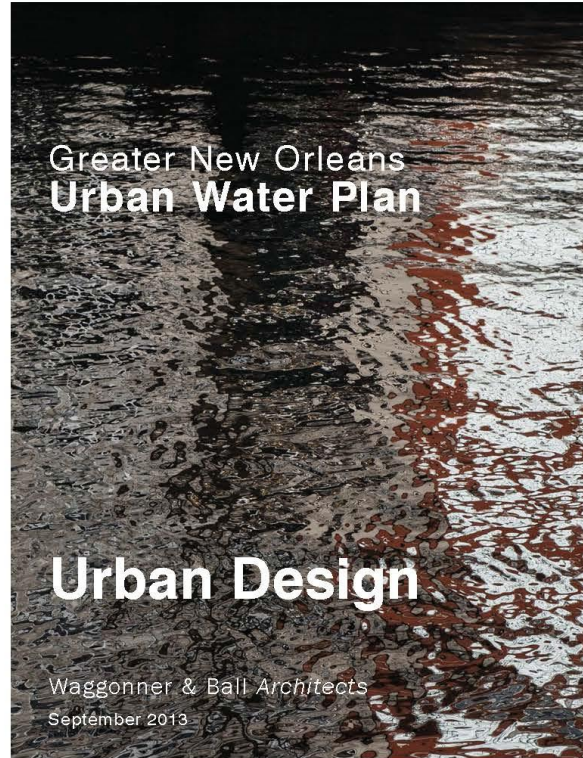
1 Drainage systems are regularly overwhelmed by too much runoff, causing flooding



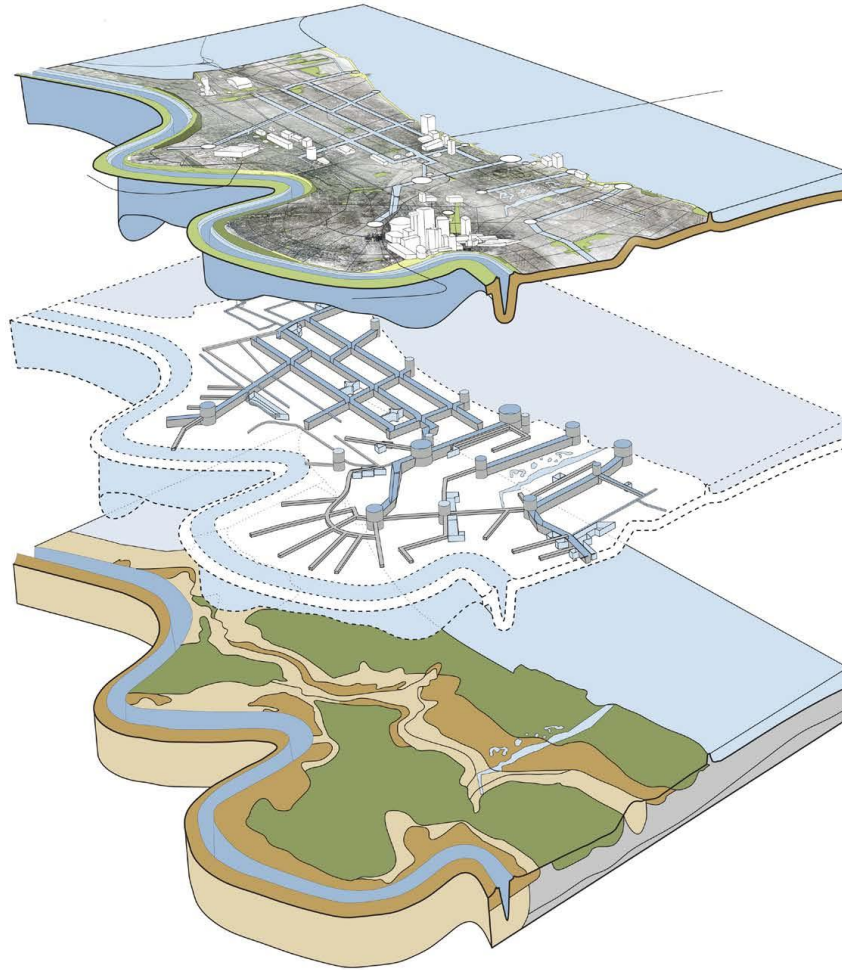
2 Excessive pumping causes the land to sink by lowering groundwater levels



3 Critical water assets are wasted, hidden behind walls, buried underground, or pumped out of the city



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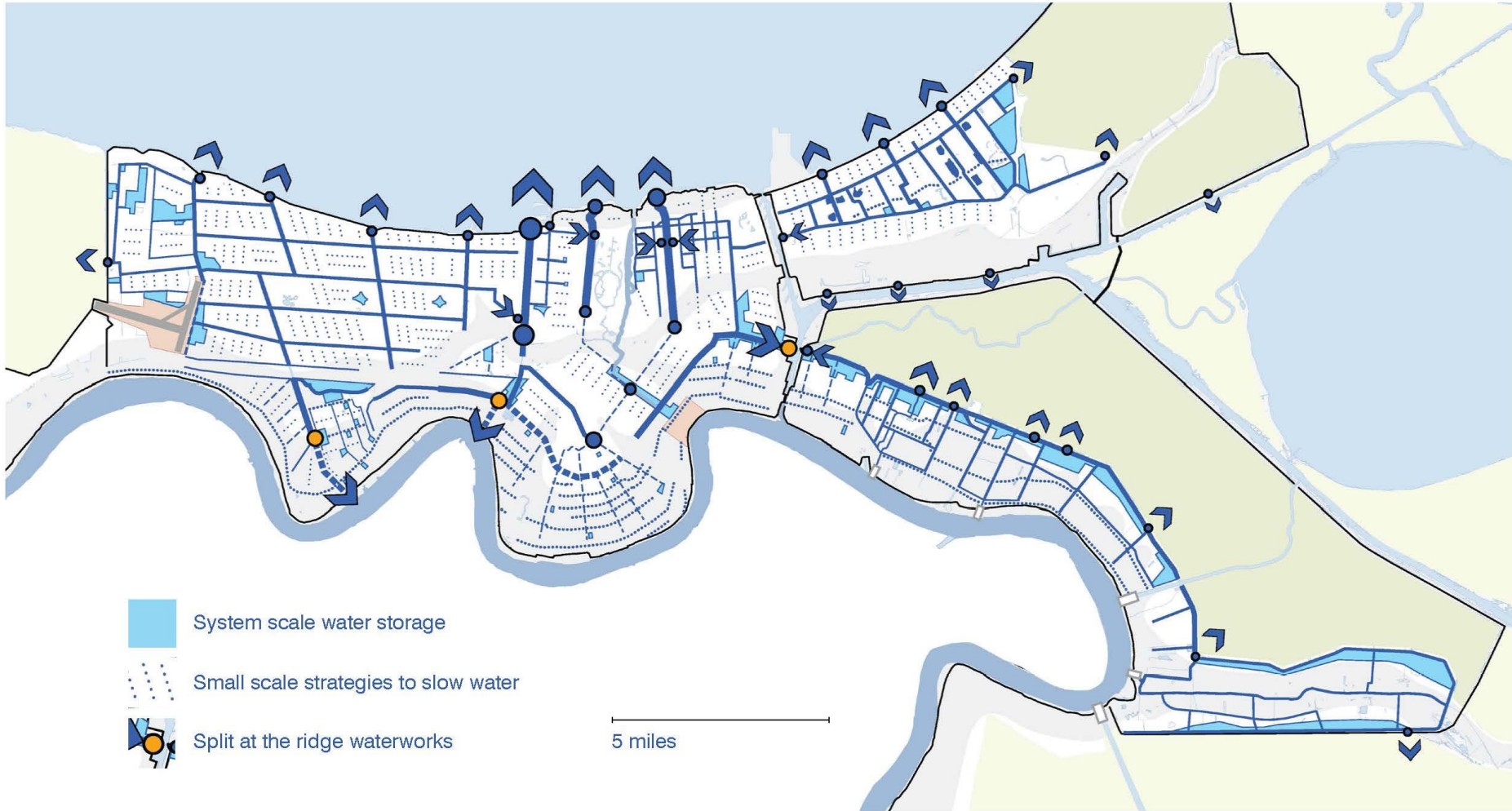


**Inhabitation
Land Cover**

**Infrastructure
Networks**

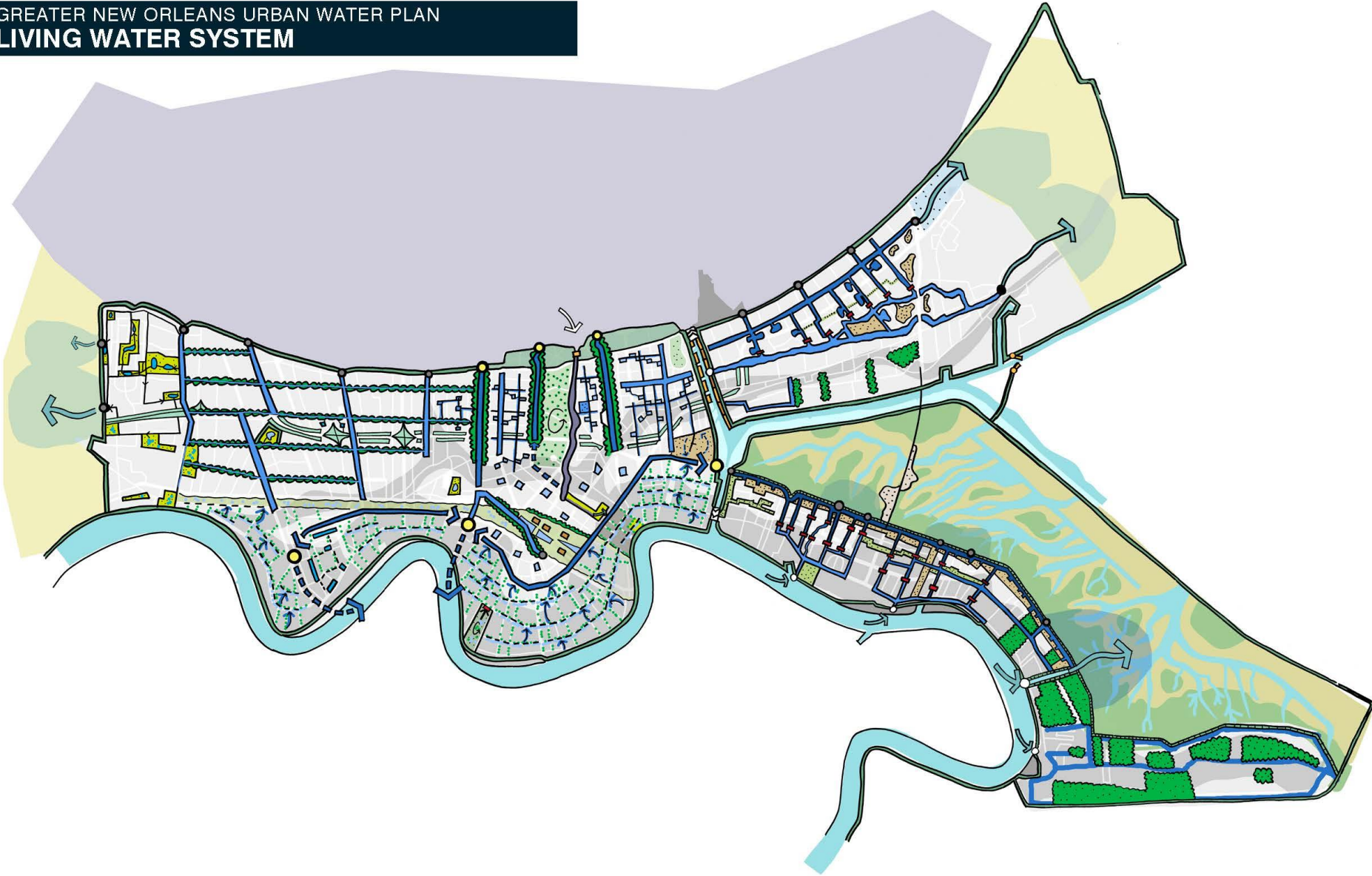
**Soils
Water
Biodiversity**

GREATER NEW ORLEANS URBAN WATER PLAN PROPOSED STORMWATER FLOWS



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GREATER NEW ORLEANS URBAN WATER PLAN
LIVING WATER SYSTEM

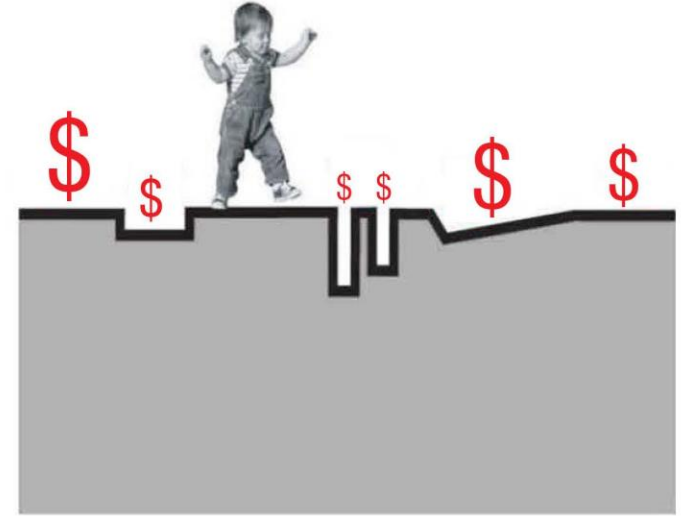
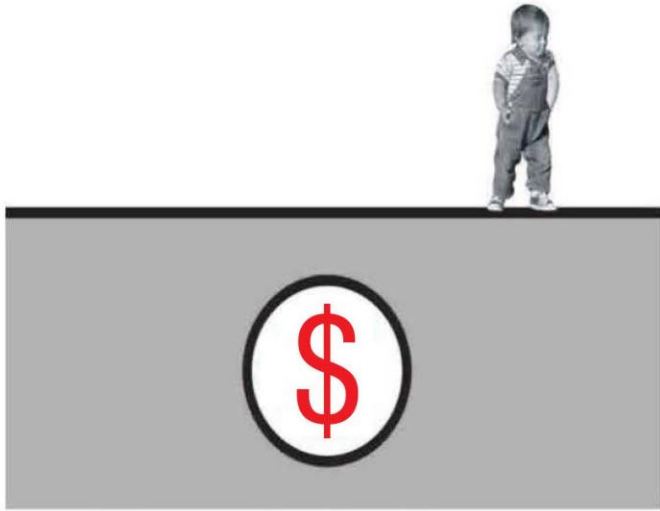


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NEW ORLEANS

GREATER NEW ORLEANS URBAN WATER PLAN
INVESTMENT PARADIGM



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Adaptation will be second nature, as the region, the place which President Jefferson referred to as the "Island of New Orleans," becomes a true delta city.



Economic Impact and Job Creation

The Urban Water Plan introduces a new industry, creating jobs in the design, construction, and maintenance of stormwater management practices. In addition to the wages paid to individual workers, these new jobs create an economic benefit to society in expanding the tax base and reducing poverty-related costs. Intensive implementation of the plan would create up to 101,790 direct and indirect jobs (full and part-time) over the next 50 years and have a regional economic impact of \$11.3 Billion.

\$11.3 Billion

+

Reduced Flooding Cost

Common two-year, five-year, and ten-year storm events in the New Orleans area (with 50%, 20%, and 10% chance of occurring each year, respectively) impose an economic drain on local businesses and property owners. Beyond the structural damage and lost worker productivity, these flood events, over 50 years, produce approximately 600,000 tons of debris and leave over 270,000 households in need of temporary shelter.

\$8.0 Billion

+

Reduced Subsidence Cost

By actively managing the region's groundwater levels, the Plan minimizes land subsidence, thereby reducing damage to structures and infrastructure, including levee improvement costs. Only costs associated with building structural damage are presented here. Infrastructure costs due to subsidence, such as damage to streets, sidewalks, utilities, etc, which are not quantified within the scope of this project, will be significantly higher.

\$2.2 Billion

+

Lower Flood Insurance Premiums

The National Flood Insurance Program allows cities and counties to earn discounts on flood insurance premiums for their residents through the Community Rating System. The CRS awards points to communities that implement technical solutions and outreach campaigns that mitigate flood risk. Analysis of the credits currently earned by Orleans and Jefferson Parish communities, and the range of credits available, reveals that there is potential for significant savings in all three parishes.

\$609 Million

+

Increased Property Values

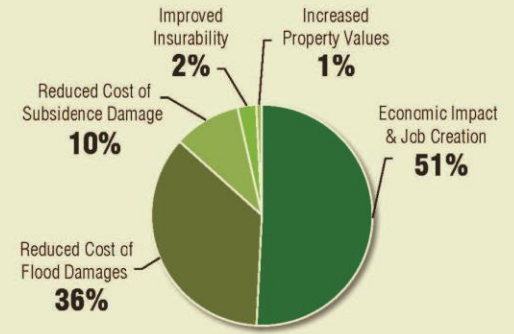
By investing in new open canals, storage areas and green space, the Urban Water Plan stands to have a positive impact on property values and new investment. Over 41,500 properties lie within 200 meters of a proposed intervention or improvement. Using assessed values for these parcels, it is estimated that with intensive implementation, property values would increase by \$183 million.

\$183 Million

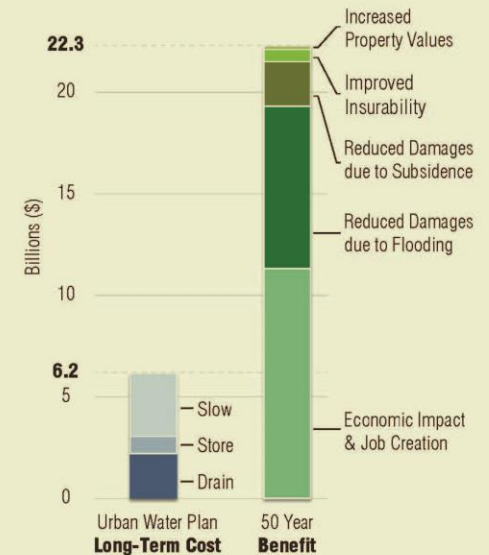
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Investment → \$6.2 Billion

> \$22.3 Billion ← Total Economic Benefit



Quantitative Benefit Ratios



Plan Costs vs. Benefits

“The costs come before the benefits.”
Inscription at the Amsterdam Stock Exchange



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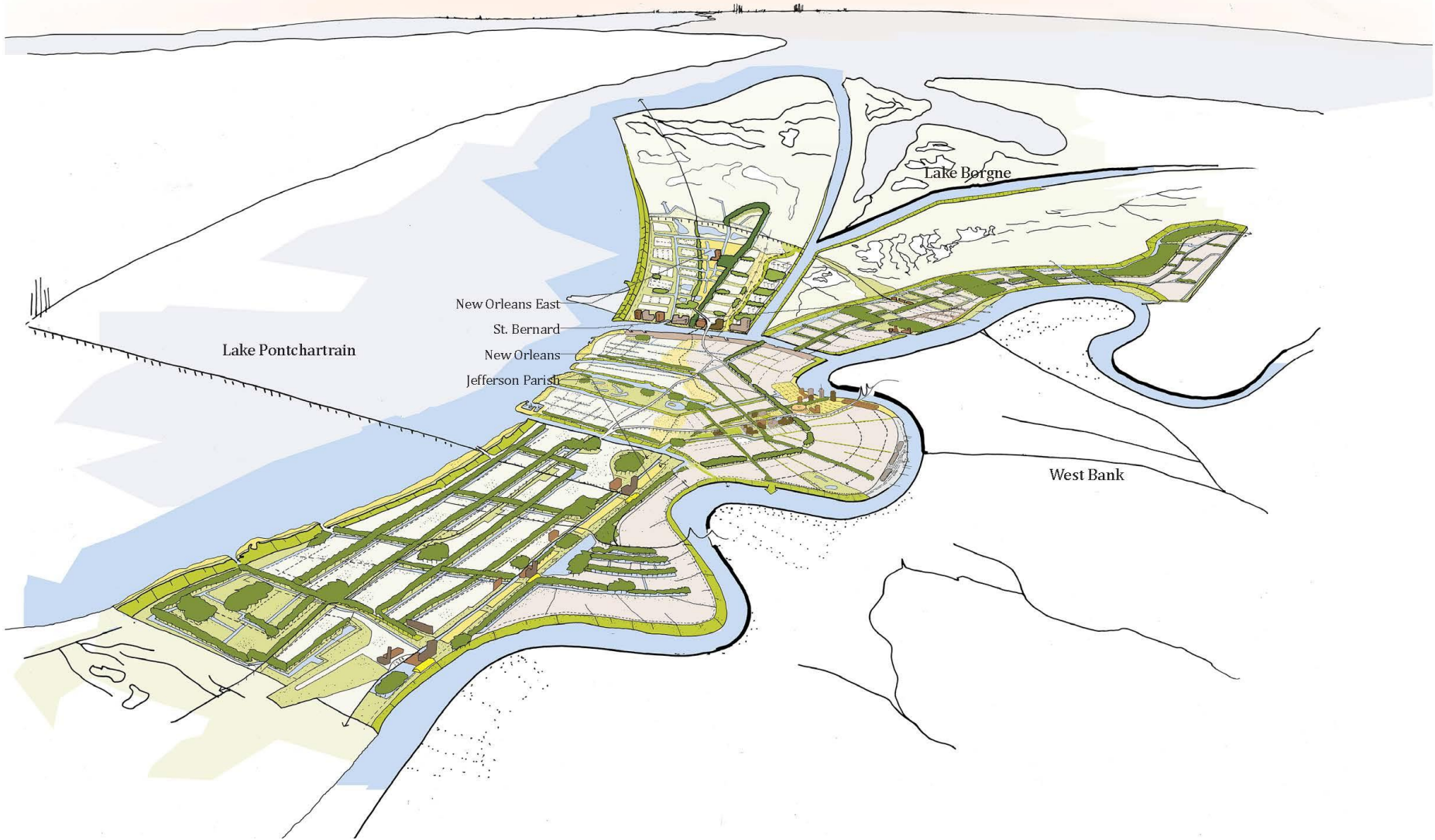


NEW ORLEANS

PLAN PROJECTS



GREATER NEW ORLEANS URBAN WATER PLAN
REGIONAL PLAN

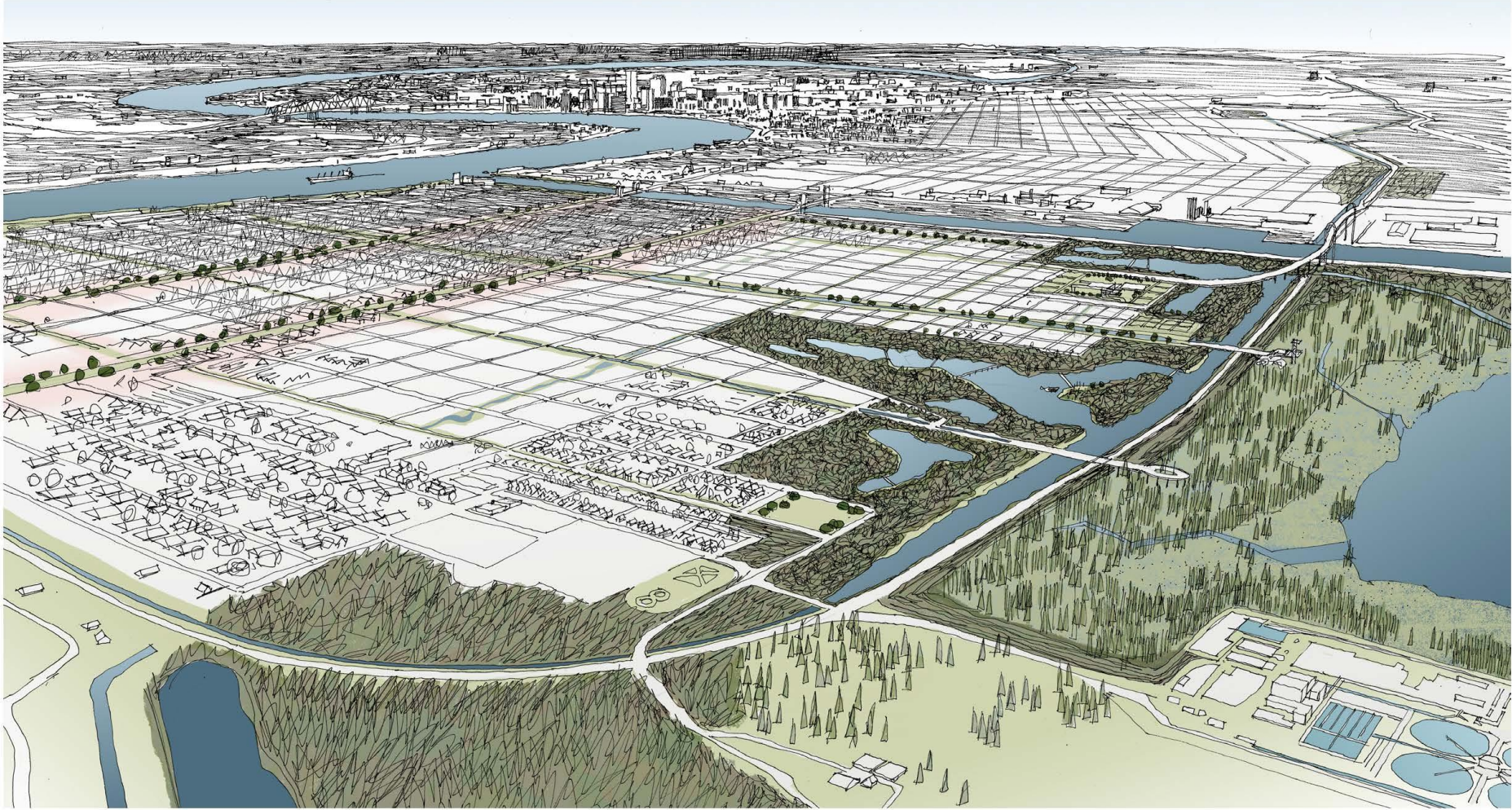


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GREATER NEW ORLEANS URBAN WATER PLAN
LOWER NINTH WARD: ADAPTIVE WETLANDS



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GREATER NEW ORLEANS URBAN WATER PLAN
LOWLAND CANALS: TYPICAL CONDITION



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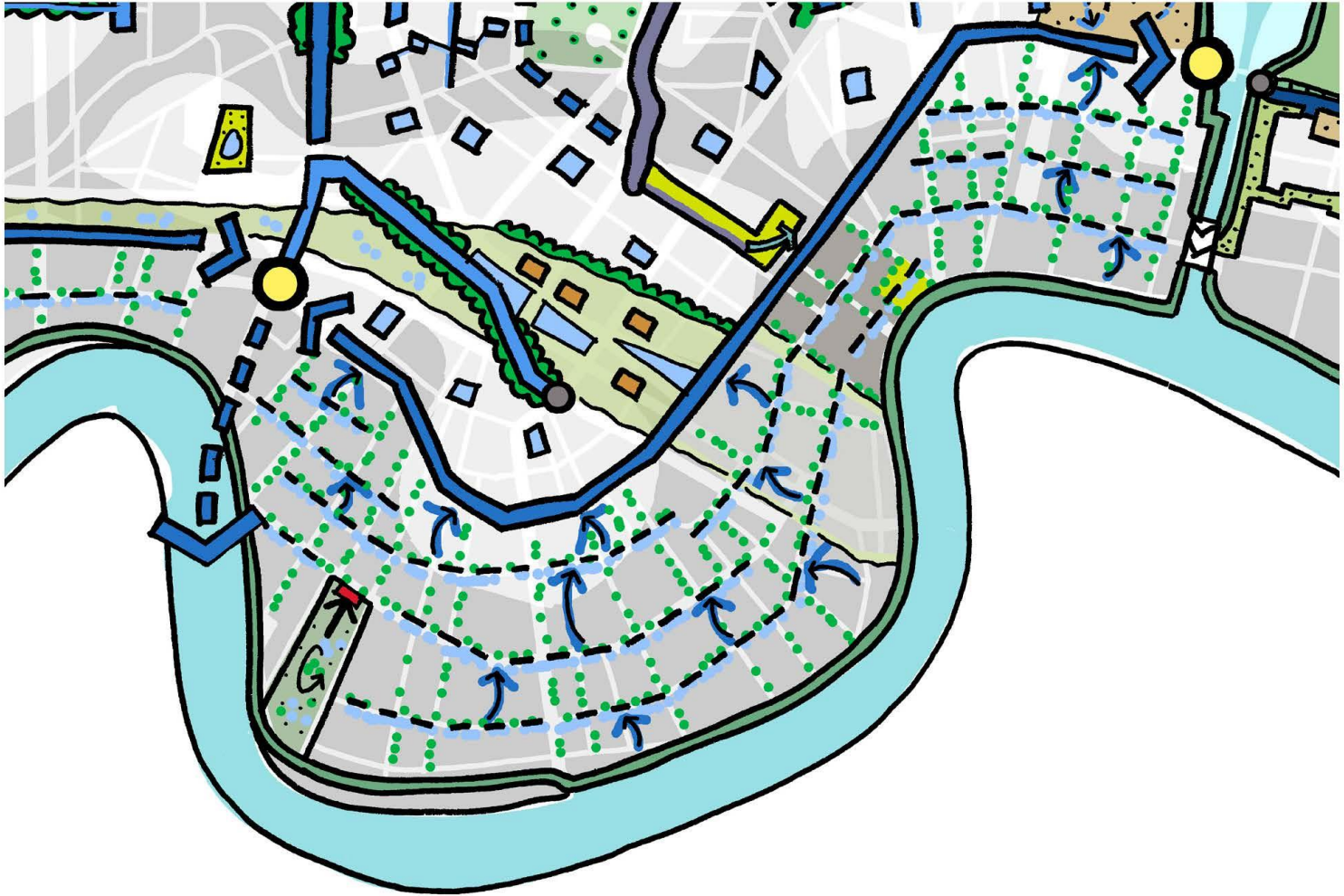
GREATER NEW ORLEANS URBAN WATER PLAN
LOWLAND CANALS: PROPOSED CONDITION



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GREATER NEW ORLEANS URBAN WATER PLAN
INTERCEPTOR STREETS: PROPOSED



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GREATER NEW ORLEANS URBAN WATER PLAN
INTERCEPTOR STREETS: EXISTING



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GREATER NEW ORLEANS URBAN WATER PLAN
INTERCEPTOR STREETS: PROPOSED



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GREATER NEW ORLEANS URBAN WATER PLAN MONTICELLO ENGINEERED PROPOSAL



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**GREATER NEW ORLEANS URBAN WATER PLAN
HOEY'S BASIN/MONTICELLO CANAL**



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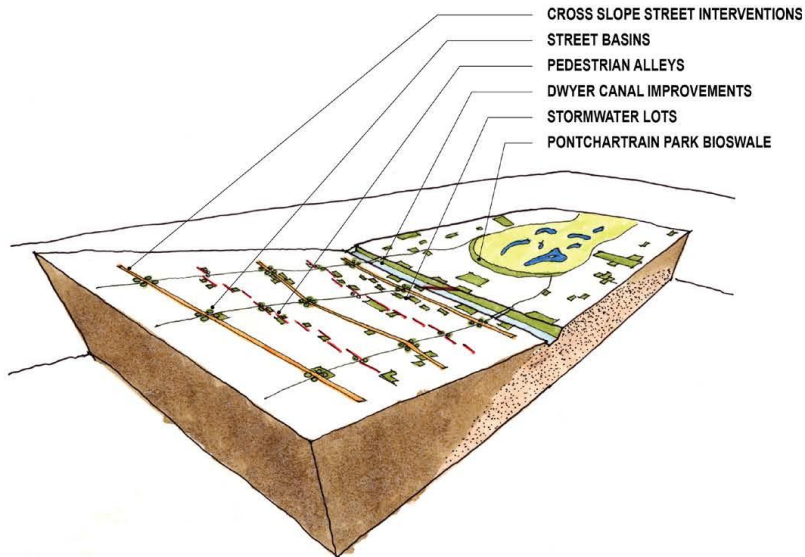
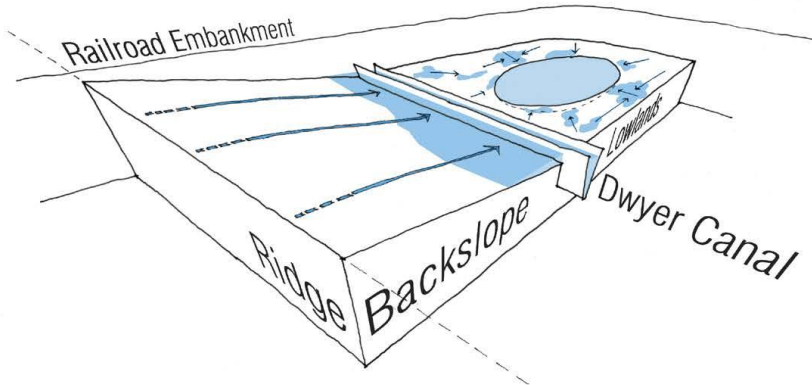


GREATER NEW ORLEANS URBAN WATER PLAN
HOEY'S BASIN/MONTICELLO CANAL



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PONTILLY HAZARD MITIGATION GRANT BACKSLOPE MANAGEMENT



PONTILLY STORMWATER HMGP PLAN MAX CONCEPT



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PONTILLY HAZARD MITIGATION GRANT
URBAN NETWORK



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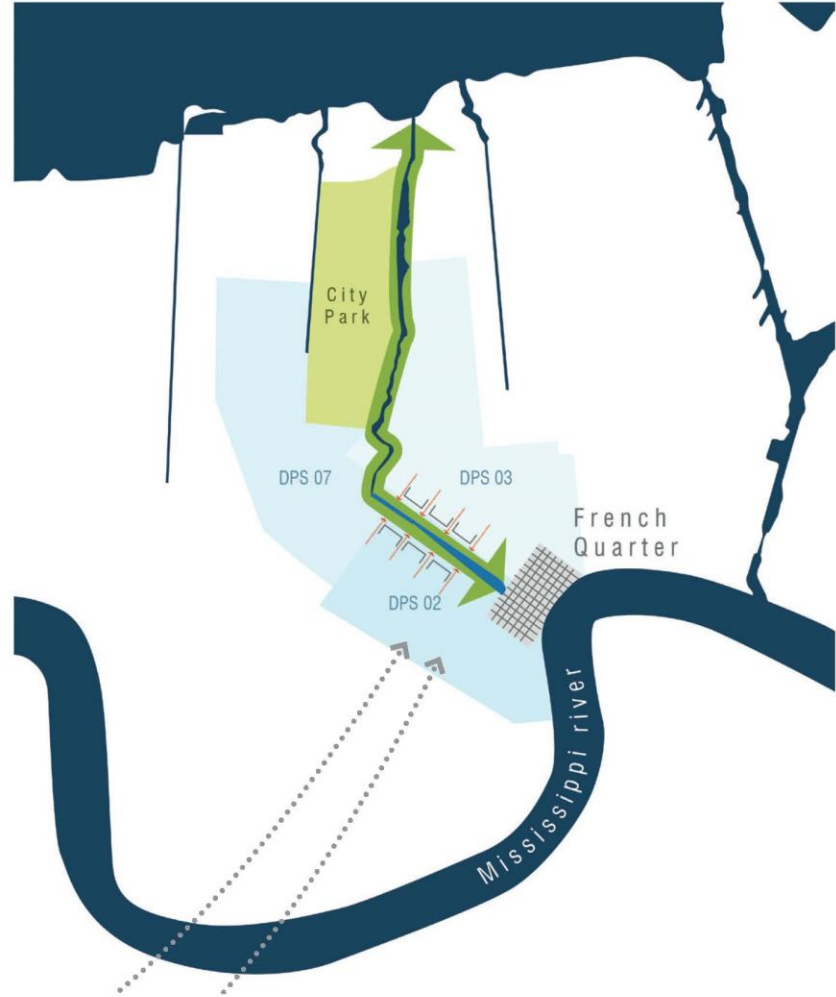


NEW ORLEANS CITY PARK

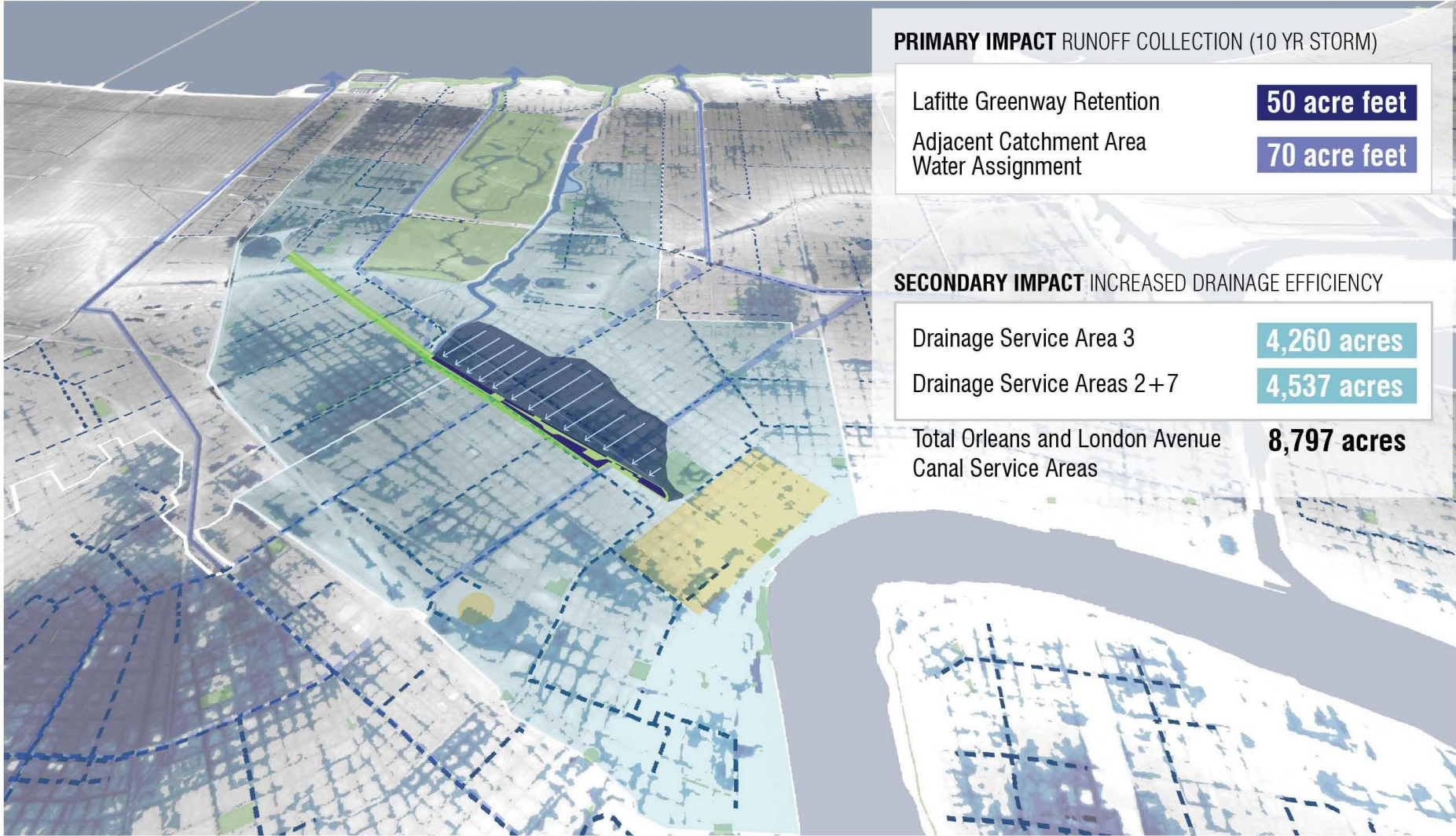


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GREATER NEW ORLEANS URBAN WATER PLAN
LAFITTE BLUEWAY: HISTORIC IDENTITY



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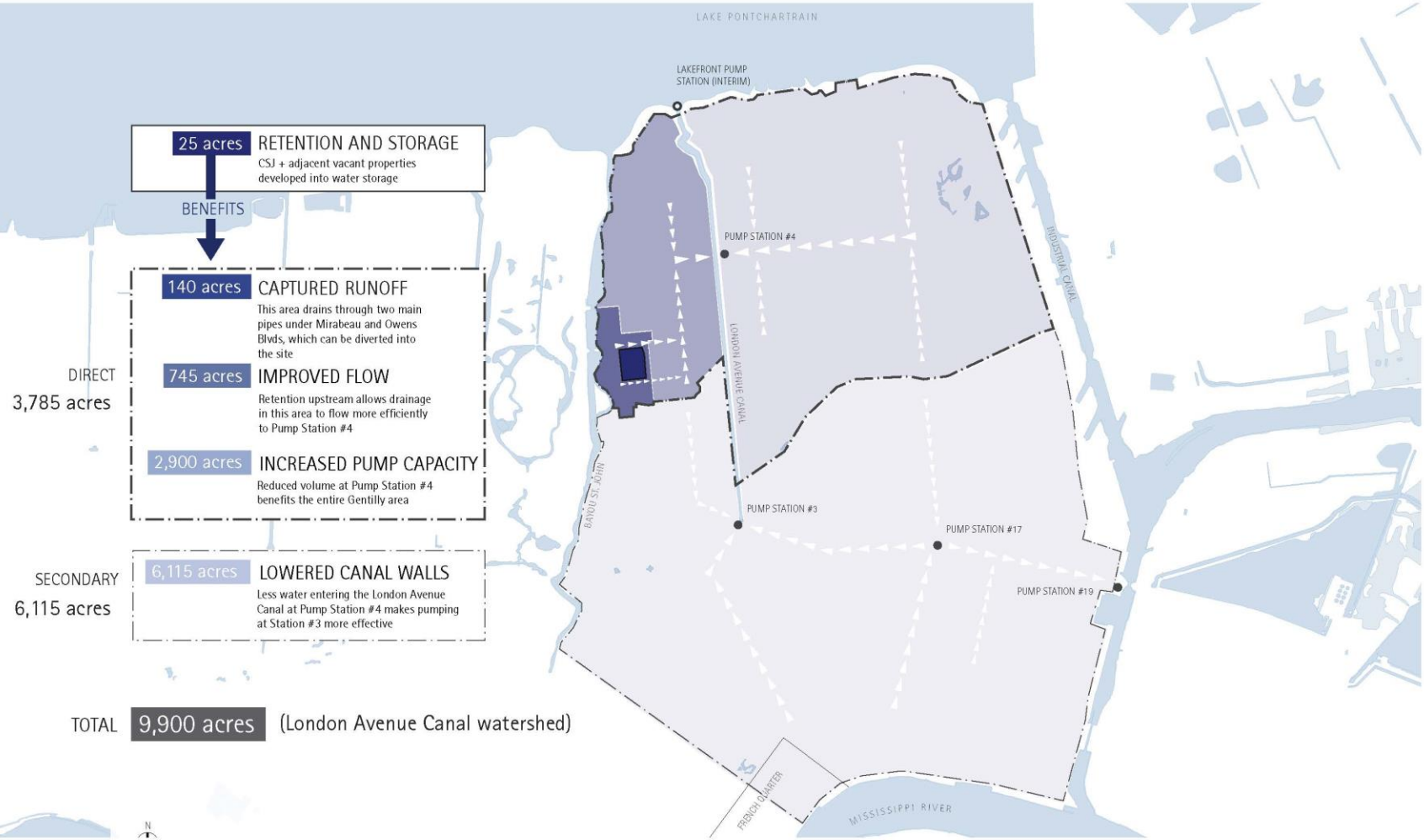






GREATER NEW ORLEANS URBAN WATER PLAN

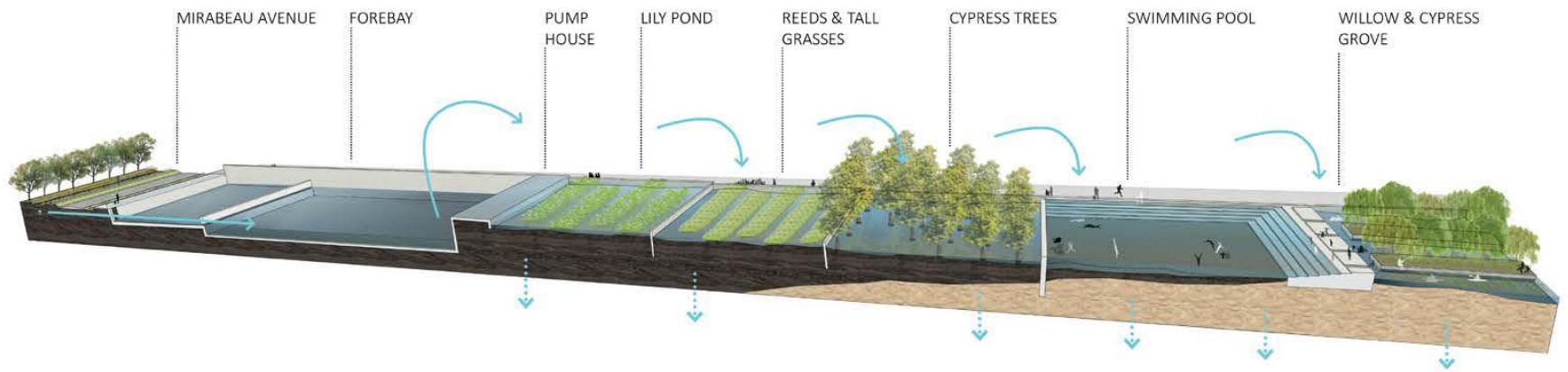
MIRABEAU WATER GARDENS



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NEW ORLEANS





2222 North Broad Street

EDUCATIONAL STORYBOARD

SPACKMAN MOSSOP = MICHAELS

COMPLETED PILOT PROJECTS





NORA GREEN

NEW ORLEANS REDEVELOPMENT AUTHORITY

NEIGHBORHOOD LOT STABILIZATION

VISION

The New Orleans Redevelopment Authority (NORA) is committed to creating a vibrant, sustainable, and resilient community in the Central Business District (CBD) of New Orleans. This project is a key component of the city's long-term vision for a more equitable and thriving urban environment.

SITE ELEMENTS

NEW SERVICES
The project will provide a range of new services, including community programming, job training, and affordable housing. These services are designed to support the economic and social well-being of the neighborhood.

COMMUNITY ART
The project will feature a series of public art installations, including murals and sculptures, that celebrate the local culture and history of the area.

RECREATION SPACES
The project will include a variety of recreation spaces, such as playgrounds, sports fields, and walking paths, to provide residents with opportunities for physical activity and social interaction.

HOUSING MIXTURE
The project will offer a mix of housing types, including single-family homes, townhomes, and multi-family units, to meet the needs of a diverse range of residents.

WATER MANAGEMENT
The project will incorporate sustainable water management practices, such as rainwater harvesting and permeable paving, to reduce runoff and improve water quality.

ENERGY EFFICIENCY
The project will use energy-efficient building materials and technologies to reduce energy consumption and lower utility costs for residents.

TRANSPORTATION
The project will be designed to be easily accessible by public transit and walking, promoting sustainable transportation options.

ENVIRONMENTAL SUSTAINABILITY
The project will use native plants and trees to enhance the local ecosystem and provide shade and cooling for the area.



LIVING WITH WATER RESILIENCE IN NEW ORLEANS



NEW ORLEANS

You belong here

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www.nola.gov/resilience



Waggonner & Ball Architects