

# City of New Orleans Resilience Design Review Committee

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- Welcome to the Webex presentation of the Resilience Design Review Committee. **Please keep your computer and/or phone on mute while the presentation is ongoing.**
- The presentations will be followed by discussion of the Committee Members. Public comment will be requested at the end of the meeting. There are three ways to ask questions:
  - Use the chat feature to chat us a comment at any point during the presentation or email comment to [mkincaid@nola.gov](mailto:mkincaid@nola.gov). Public comment will be read at the end of the Committee discussion.
  - The phone lines will be unmuted during the public comment period to allow for questions and comment.
- **AGENDA**
  - Committee Roll Call
  - Presentation – SWBNO Bayou St John Green Infrastructure Project
  - Presentation – Sankofa Wetland Park
  - Committee Discussion
  - Public Comment



# City of New Orleans Resilience Design Review Committee

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City of New Orleans

2:00 p.m., 2/22/22

# Resilience Design Review Committee

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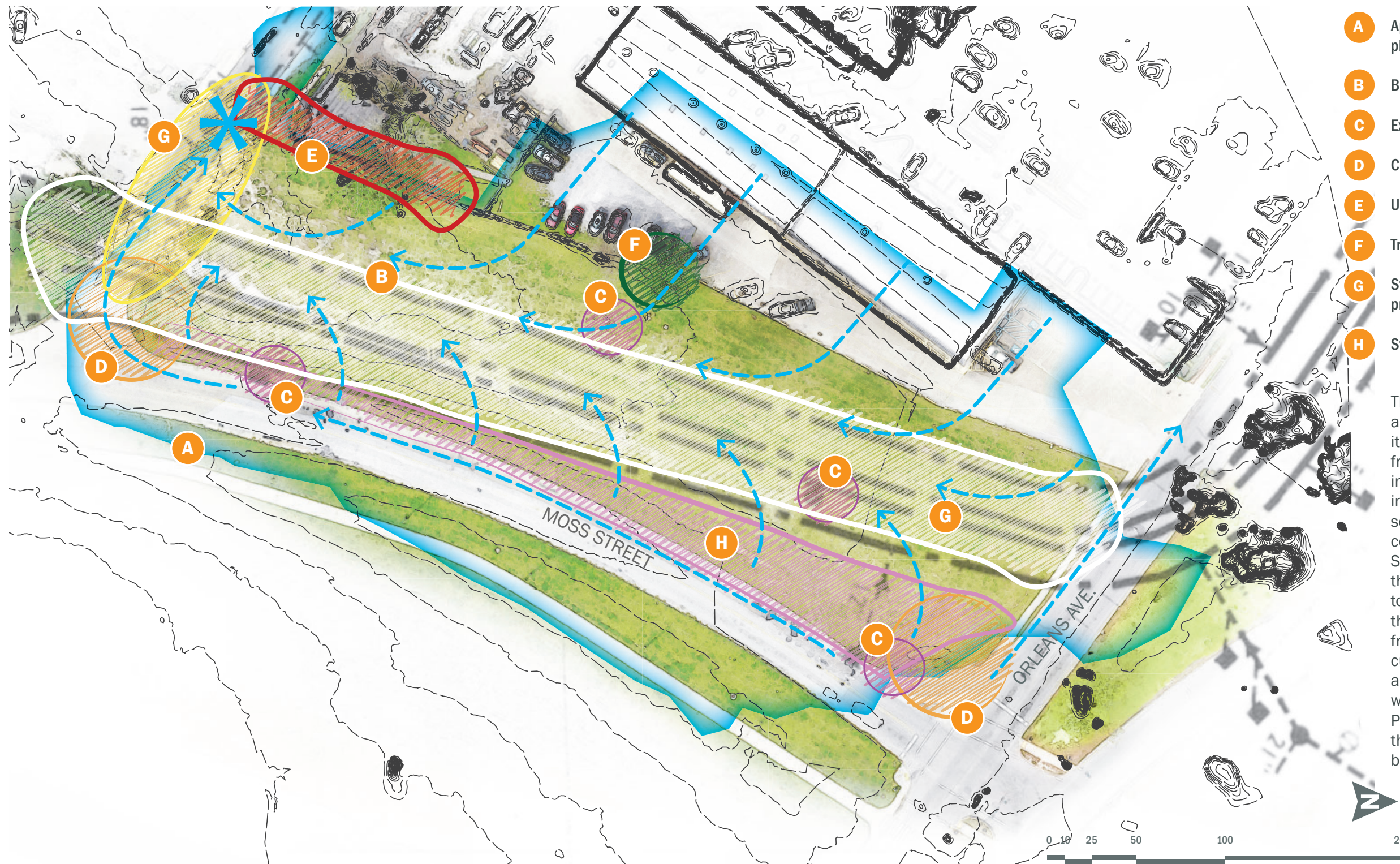
- Created by City Policy Memo 133R to ensure consistency with the Resilience Strategy - <https://nola.gov/resilience-sustainability/>
- Members of the Committee Roll Call
  - Chief Resilience Officer
  - Office of Equity
  - Hazard Mitigation Administrator
  - Capital Projects
  - Parks and Parkways
  - Public Works
  - Planning Commission
- Reviews projects across these categories
  - Location, character, and extent
  - Embodiment of resilience values
  - Equity impacts and outcomes
  - Creative community involvement and engagement
  - Best maintenance design for resilience performance criteria

# RDRC MEETING - 50% CDS



# BAYOU ST. JOHN GREEN INFRASTRUCTURE DEMONSTRATION PROJECT

## SITE ANALYSIS



- A** Approximate watershed based on drone photogrammetry
- B** Box culverts with approximately 4' of cover
- C** Existing catch basins and inlets to tie into
- D** Corners are highly visible for gateway signage
- E** Unsightly overgrown vegetation
- F** Tree to be removed
- G** Street in poor condition & barrier is needed to prevent overflow parking on site
- H** Steep slopes along roadway

The site is located between Toulouse Street and Orleans Avenue, with Moss Street along its eastern border. The site drains gently from north to south and ultimately into an inlet along Toulouse Street. However, two inlets near the middle of the site allow for some portion of runoff to drain, presumably connecting into the box culvert below. Moss Street is much higher than the site and the topography slopes steeply from east to west near the roadway. Analysis shows that the site will be able to capture runoff from the adjacent streets, with simple curb cuts, except the corner of Orleans Avenue and Moss Street which has its own small watershed at an existing catch basin. Portions of the commercial properties to the west slope into the site, although catch basins were seen in very limited numbers.

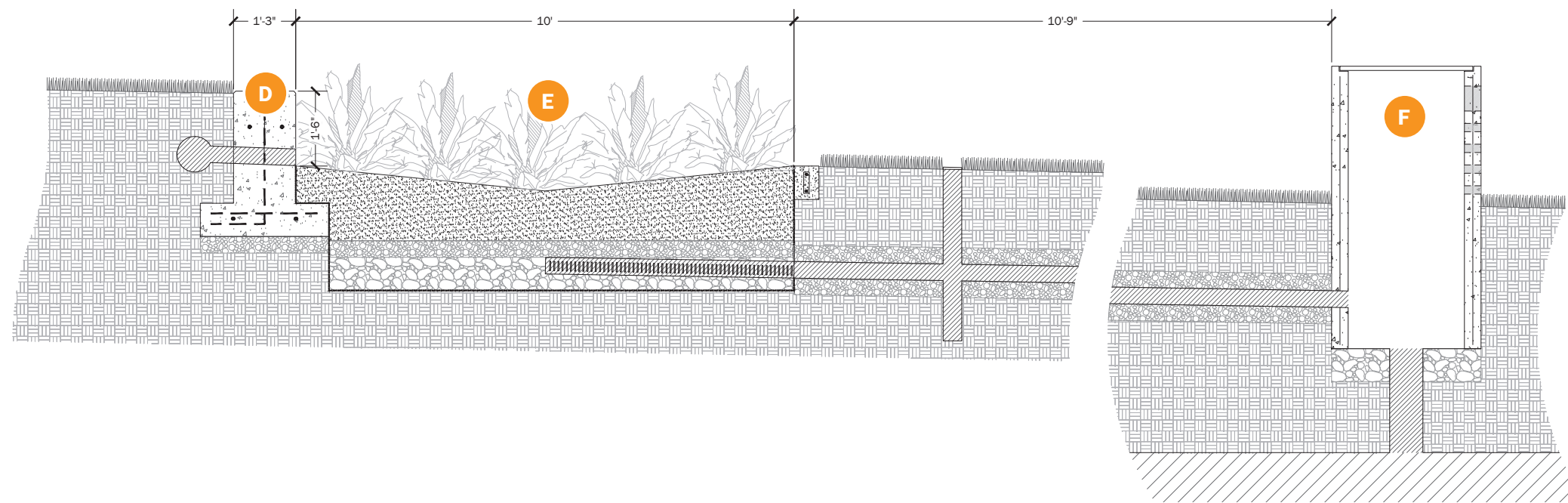


# BAYOU ST. JOHN GREEN INFRASTRUCTURE DEMONSTRATION PROJECT

## PROPOSED SITE DESIGN

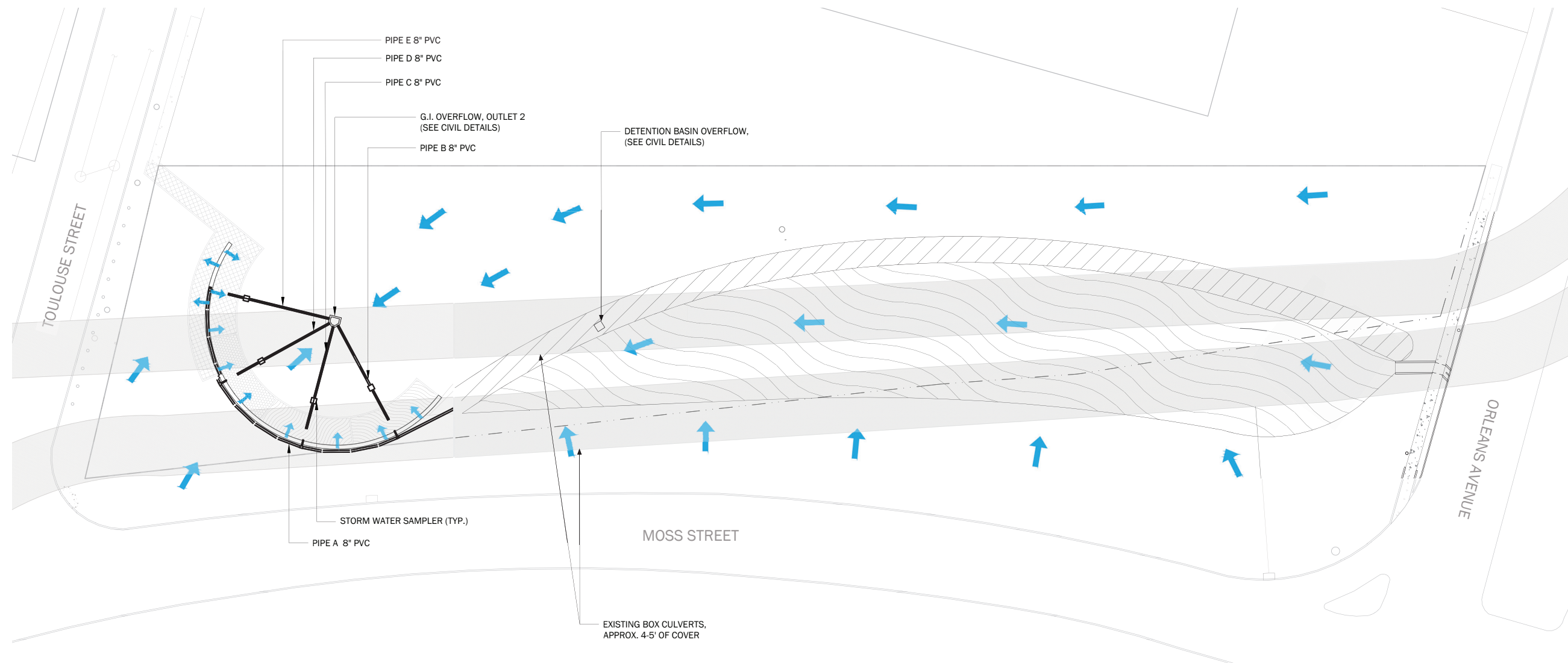


- A** Stormwater runnel to take runoff from street
- B** Site runoff collects in a detention basin
- C** Runoff flows through the basin into singular point for distribution into the GI facilities
- D** Retaining wall/seal wall that disperses water evenly throughout the GI facilities
- E** Four separate green infrastructure facilities
- F** Plinth acts as overflow
- G** Turn existing drain into overflow structure
- H** Additional permeable pavers, capturing runoff from Toulouse Street and acting as an entry plaza



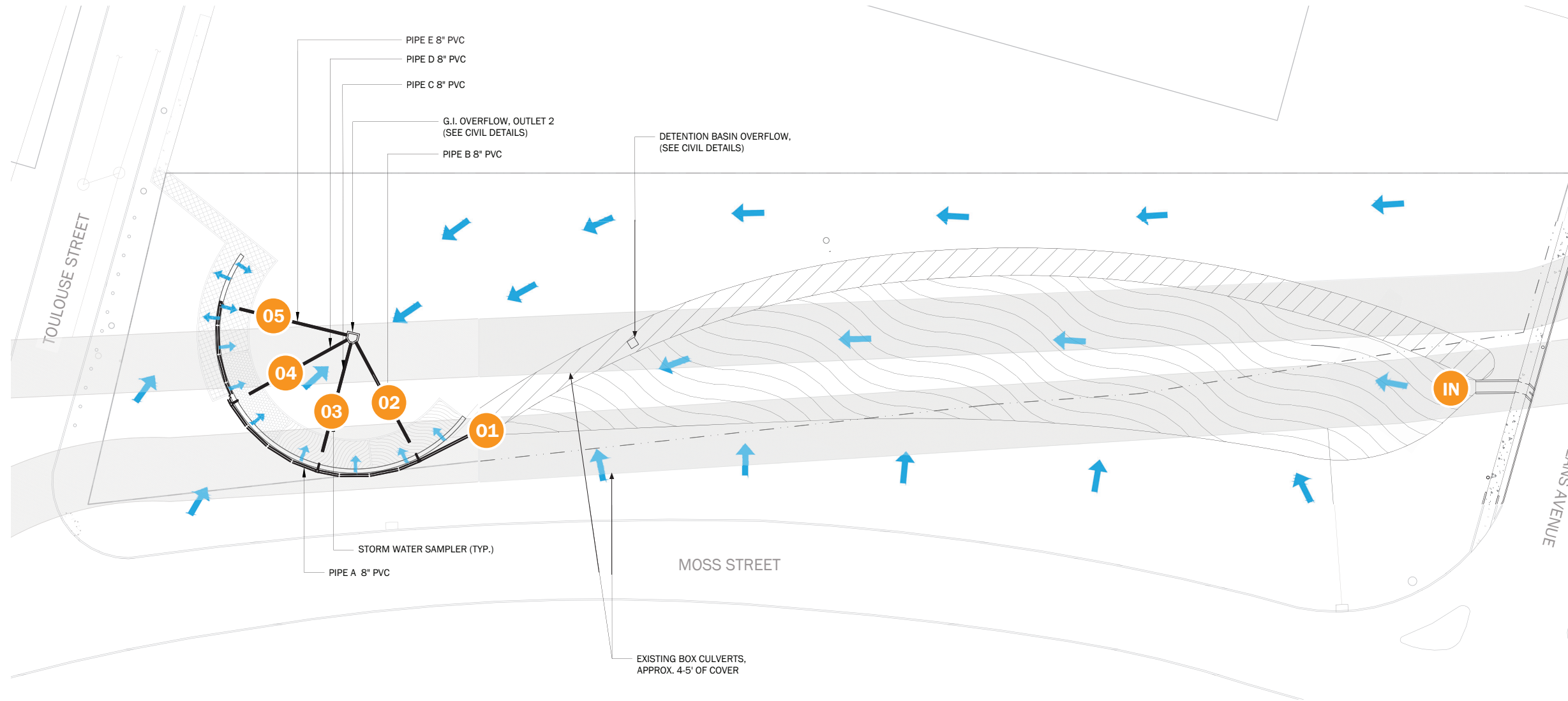
# BAYOU ST. JOHN GREEN INFRASTRUCTURE DEMONSTRATION PROJECT

## DRAINAGE PLAN



# BAYOU ST. JOHN GREEN INFRASTRUCTURE DEMONSTRATION PROJECT

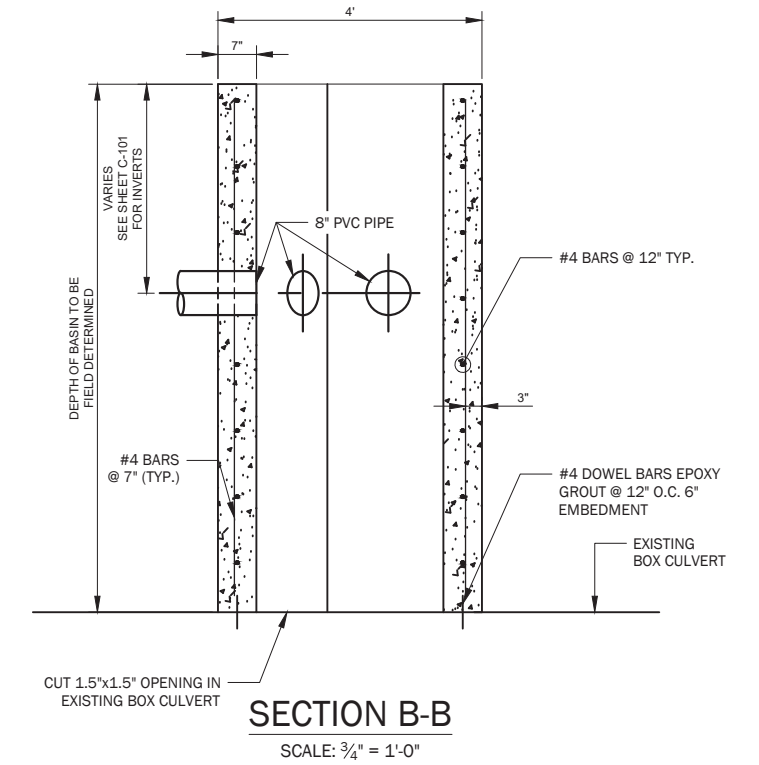
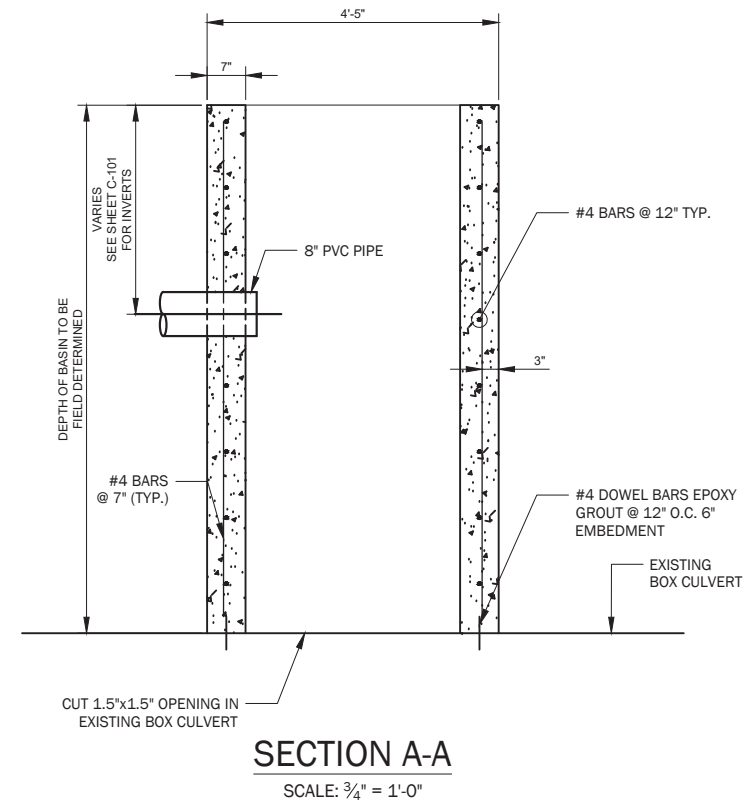
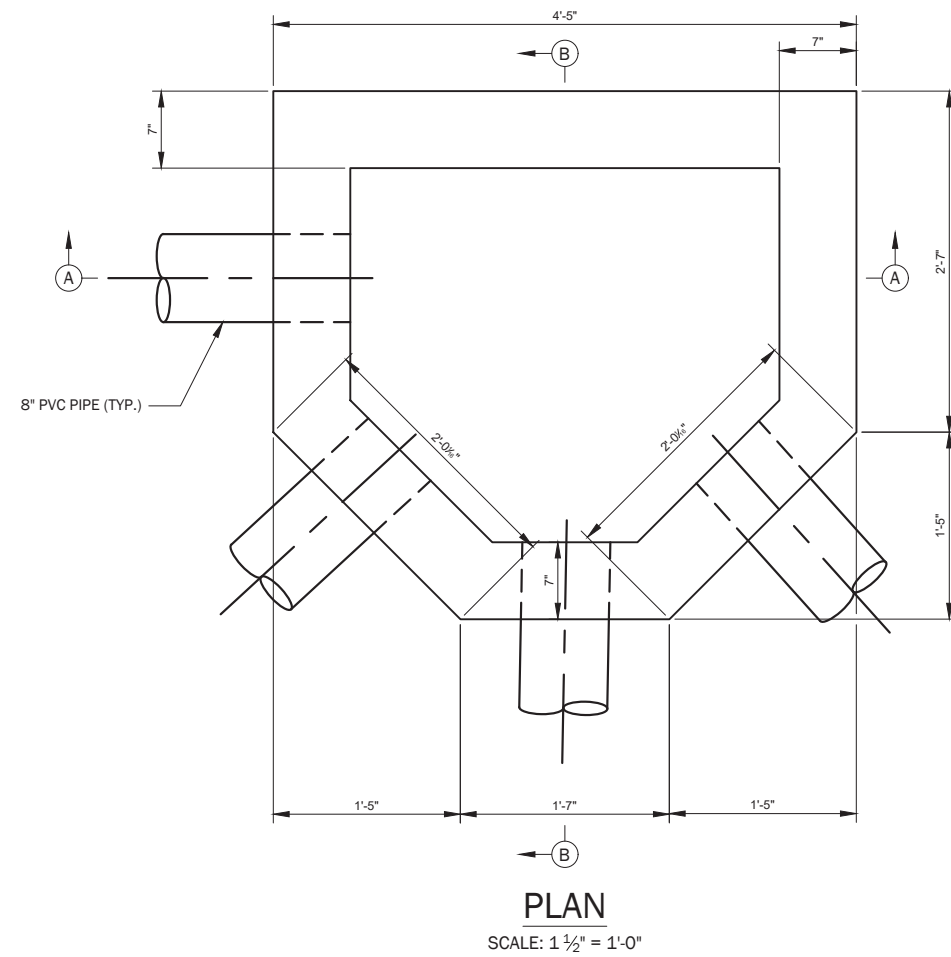
## WATER QUALITY SAMPLING





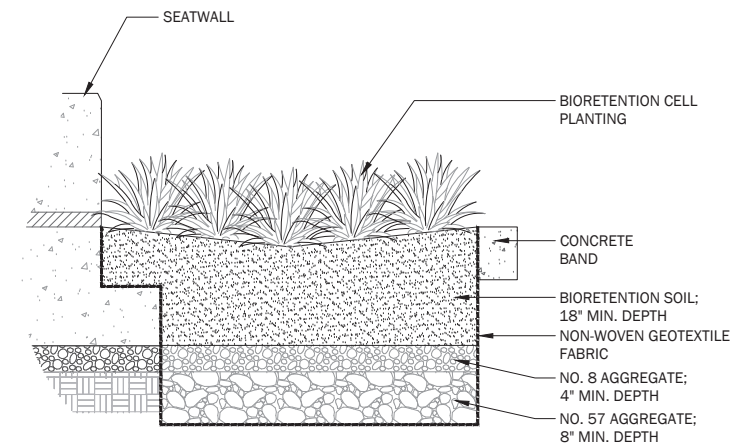
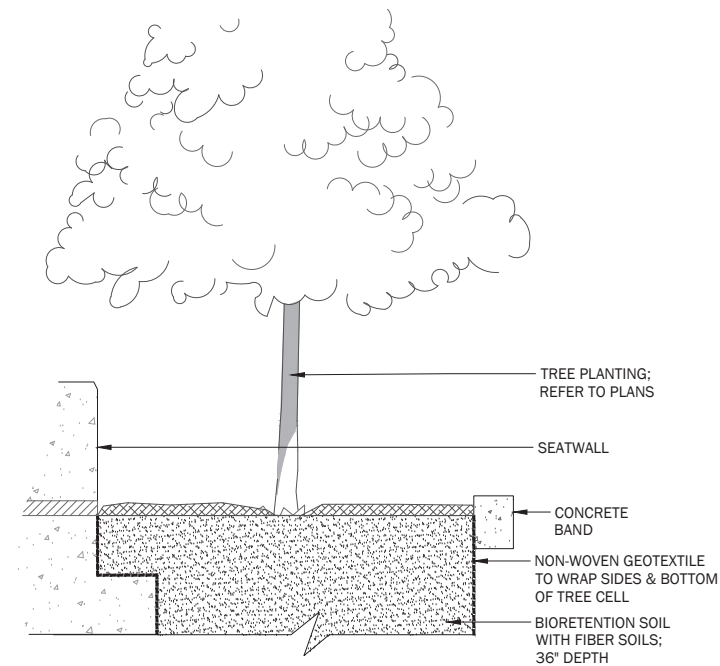
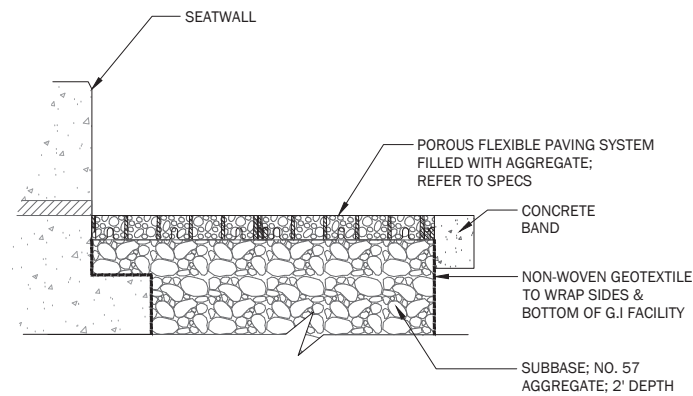
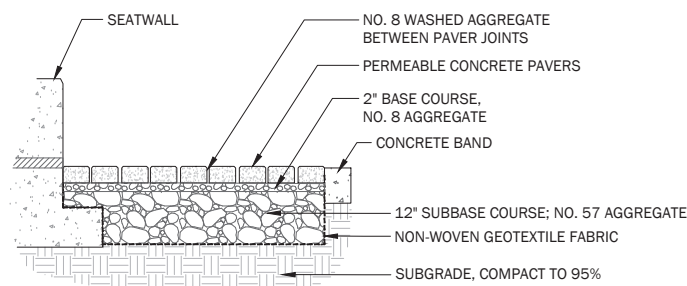
# BAYOU ST. JOHN GREEN INFRASTRUCTURE DEMONSTRATION PROJECT

## OVERFLOW DETAILS



# BAYOU ST. JOHN GREEN INFRASTRUCTURE DEMONSTRATION PROJECT

## GI DETAILS



1 PERMEABLE PAVERS WITH CONCRETE BAND

1/2" = 1'-0"

P-2017-01

2 POROUS FLEXIBLE PAVING

3/4" = 1'-0"

P-2017-02

3 TREE CELL

3/4" = 1'-0"

P-2017-04

4 BIORETENTION CELL

3/4" = 1'-0"

P-2017-03

### SUMMARY - STORAGE VOLUME

	Drainage Area 1	Drainage Area 2	Drainage Area 3	Drainage Area 4	Total
Total Area (acres)	2.012				2.01
Required Storage Volume (cf)	2826				2826
Provided Storage Volume (cf)	10380				10380
Bypass Volume (cf)	0				0
Storage Requirement Met					YES
Bypass Volume <=10%					YES

### SITE INPUT

Land Cover/Land Use	Hydrologic Soil Group	% Impervious	CN	Area (sf)	CN*Area	% Area
Lawns	D	3%	80	49,523	90.95	56%
Commercial Roof	D	100%	98	1,380	3.10	2%
Commercial/Residential Parking	D	100%	98	15,381	34.60	18%
Green Infrastructure (all types)	D	0%	98	16,219	36.49	19%
Landscaping	D	3%	84	2,346	4.52	3%
Other Impervious	D	100%	98	2,804	6.31	3%
				Total Area (Acres)	2.012	
				% Impervious	24.1%	
				Weighted CN (standard)	87	
				Weighted CN (adjusted)		
				<b>CN for Use</b>	<b>87</b>	
				Any disconnected impervious area?		
				Impervious area 30% or less?		
				Use adjusted CN value		
				CN pervious		
				Ratio of unconnected		

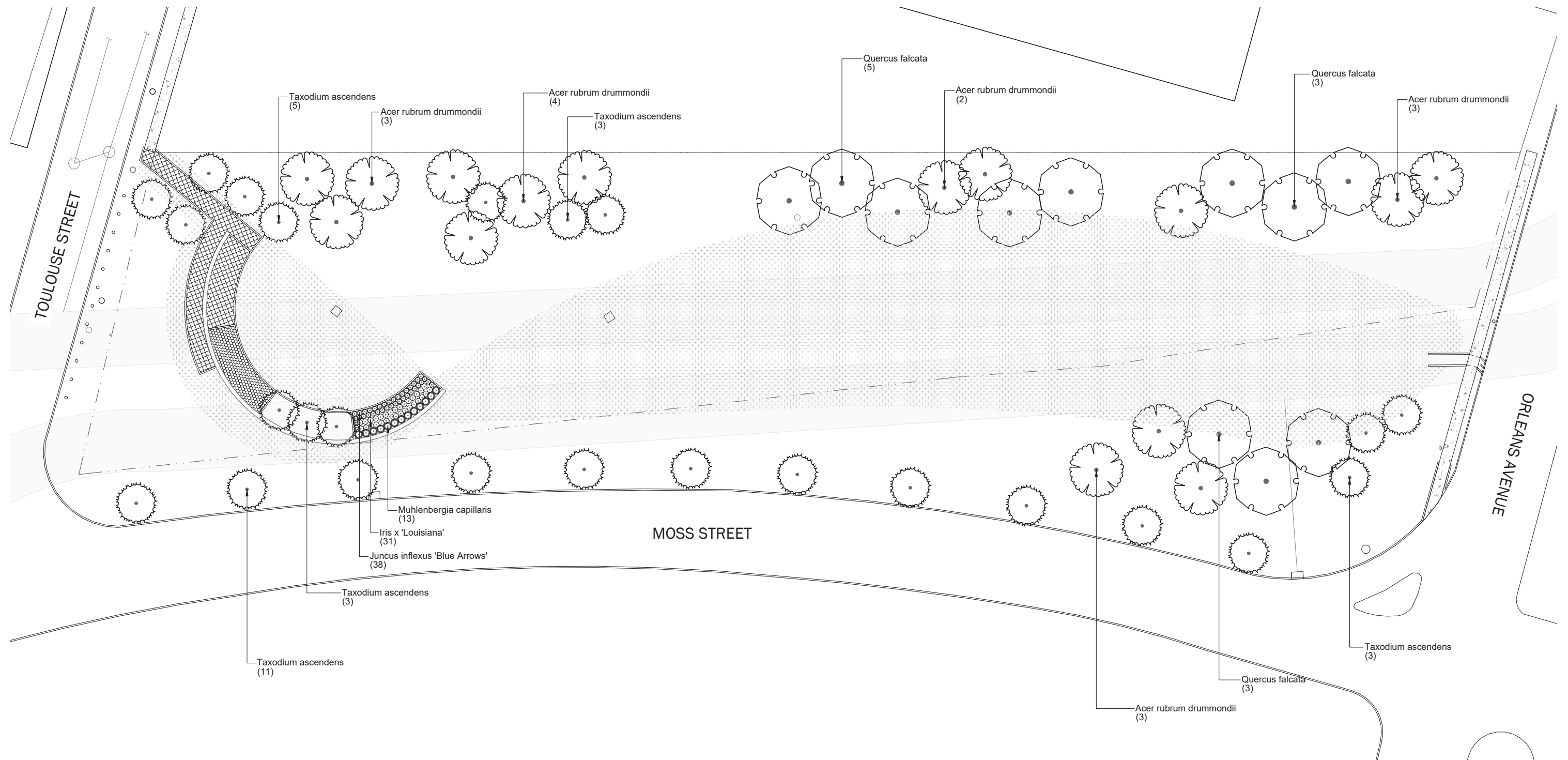
Precipitation for storage volume requirement (in)	1.25
S, max natural retention	1.4
Q, runoff (in)	0.39
<b>Require Storage Volume (cf)</b>	<b>2826</b>

GI in Site Input (sf)	16219
GI Individual Input (sf)	16219
Match	YES



# BAYOU ST. JOHN GREEN INFRASTRUCTURE DEMONSTRATION PROJECT

## PLANTING PLAN



## NEXT STEPS

- Public Workshop #2: March 10
- 100% Construction Documents
- Water Quality Monitoring
- Construction: June 2022





**Committee**

**Discussion**

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City of New Orleans



# Wetland Park & Nature Trail

Community-Led Resilience in the Lower Ninth Ward

# About Sankofa CDC



Building healthier communities for generations to come.

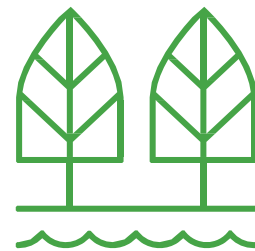
A 501(c)3 non-profit organization founded in 2008 by Lower Ninth Ward residents committed to revitalization of the area

Works with residents and other community stakeholders to identify locally-felt social challenges to address them in thoughtful, culturally-competent ways

Addresses the social determinants of health to create a local environment that promotes positive health outcomes and builds healthier communities for generations to come

# The Sankofa Wetland Park and Nature Trail

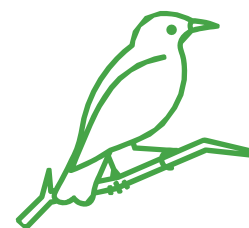
A 40 acre green infrastructure project along Florida Avenue in the Lower Ninth Ward of New Orleans



Part of an effort to address long standing resiliency and community revitalization challenges in the Lower Ninth Ward



A community-driven effort to eliminate blight and blend sustainable community development with environmental resiliency



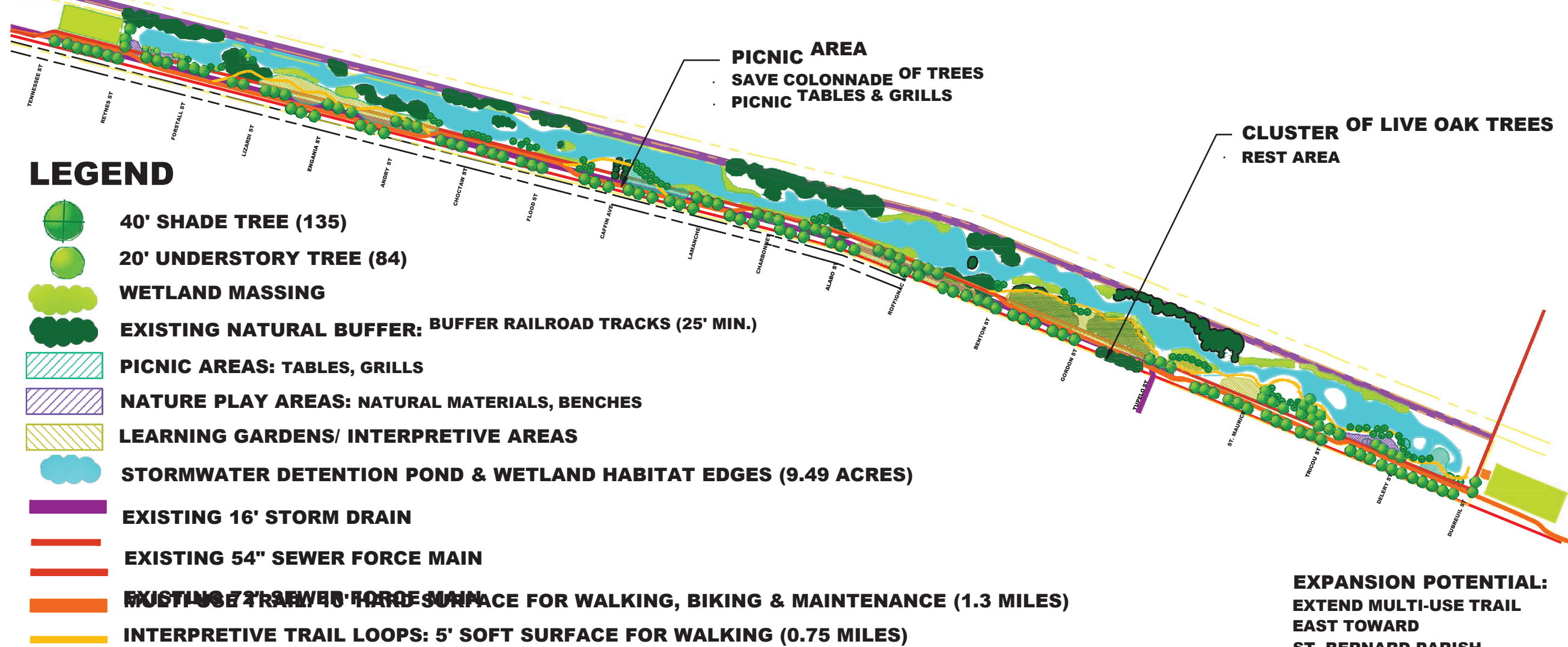


# Sankofa Wetland Park and Nature Trail

## Master Plan Concept

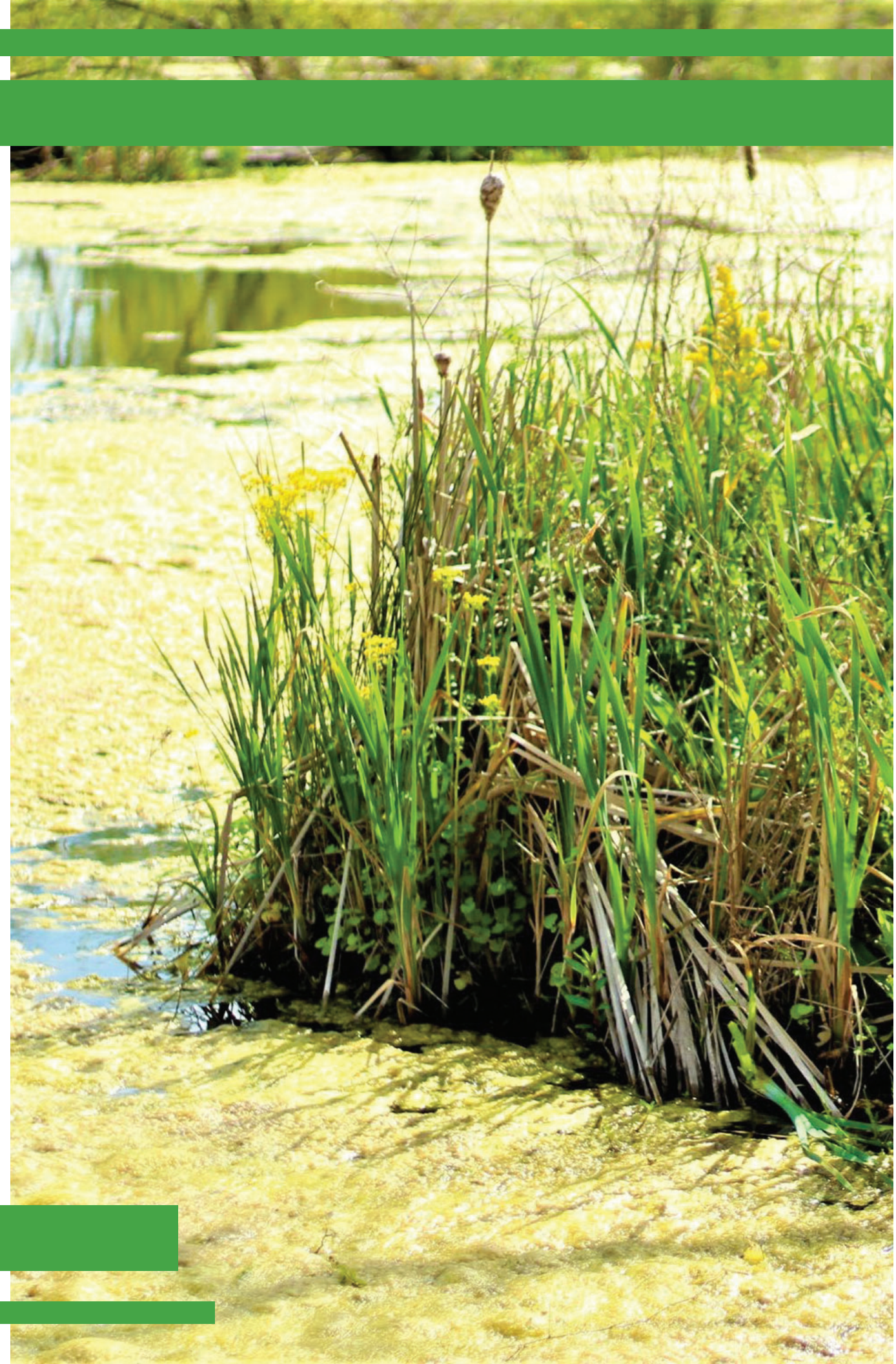
### EXPANSION POTENTIAL:

EXTEND MULTI-USE TRAIL WEST TOWARD CORPS OF ENGINEERS PARCEL AND GO SOUTH ALONG THE INDUSTRIAL CANAL TO CONNECT SANKOFA WETLAND PARK TO MORE OF THE NEIGHBORHOOD



# Stormwater Management

- The Wetland Park acts as a “sponge” that soaks up and cleans the water and keeps the Lower Ninth Ward dry
- Currently, 800,000 gallons of water flow into the wetland area
- The bioretention ponds at the Wetland Park could retain up to 8 million gallons of water and reduce flooding
- Wetlands help to remove pollutants from stormwater runoff because plants in and around the wetlands filter out the toxins and chemicals in the water





# A Flood Protection Strategy

- Wetland restoration and preservation is an important component of a comprehensive flood protection strategy; often more effective and costs less than a system of traditional dikes and levees.<sup>1</sup>
- Freshwater wetlands, like the Sankofa Wetland, typically have more coverage than saltwater wetlands, providing a wider buffer zone against storm surges.<sup>2</sup>

# Wetlands and Hurricane Damage



Image by Diana Robinson, Flickr<sup>3</sup>

- The degradation of the wetlands in the Bayou Bienvenue culminated in the complete inundation of the Lower Ninth Ward by Hurricane Katrina.
- The Wetland Park is designed to restore the once vibrant marsh and increase hurricane protection and floodwater mitigation in the Lower Ninth Ward.

# The Wetland Park and its Impact



- Reduction in property damage during rain events
- Reduction of temporary road closures during rain events
- Increased feelings of safety and security among residents for self and property
- Reduction in flood insurance premiums
- Increased property value

# Wetland Ecologies

- Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs.
- Wetlands create a habitat and provide shelter for thousands of species of plants and animals.
- Trees, plants and other wetland park features (detention basins, bioswales, rain gardens) slow and clean stormwater runoff.
- Plants in the wetland park can clean groundwater, which can reduce the effects of land subsidence.



# Resilience

## Outcomes at the Wetland Park

The Wetland Park project would:

- Store **8 million** gallons of water
  - » Change a 5.37-inch rain event into a 1.58- inch rain event over 2 years of construction
- Remove over **3,000** invasive plant species
- Plant **40** acres of native vegetation with 10,000 cypress and tupelo trees



# Conservation Outcomes at the Wetland Park

## The Wetland Park project would:

- In the Short-Term: Restore 32 acres of the Wetland Park in 2 years
  - » Increase bird, fish, and wildlife species within the wetland park by 25% within 4 years of completion
- In the Long-Term:
  - » Increase the bird population using the park by 85%
  - » Will serve as a stopover location for migratory birds





# Green Spaces and Health



## Access to green spaces:

- Increases physical activity
- Reduces risk of chronic diseases, such as heart disease, diabetes, and cancer
- Builds bone density and increases Vitamin D exposure, which also supports bone health
- Improves sleep quality and ability to fall asleep
- Supports mental health and community and social cohesion

# URBAN TREE PLANTING

## BENEFITS OUTWEIGH COSTS TO PHOENIX

Cities across the globe are seeing rising temperatures, in part, as a result of the Urban Heat Island (UHI) effect.<sup>1</sup> This phenomenon is largely due to urban infrastructure like roads, buildings, and sidewalks re-emitting heat at night that they absorbed throughout the day. Now, more than ever, we need to start bringing Nature's valuable, cooling powerhouse into our cities - trees are back!

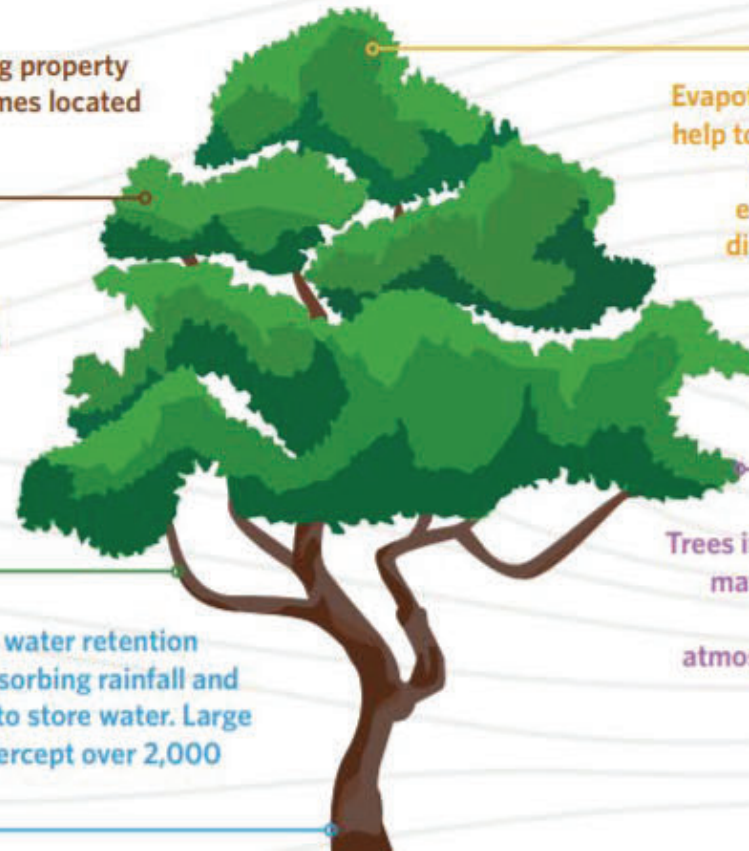
**\$** Healthy trees can increase surrounding property values by 2-10%.<sup>2</sup> Apartments and homes located near a park have even higher values.

**🌡️** Large scale vegetated areas can be as much as 9°F cooler than non-green city centers.<sup>2, 11</sup> Various functions of trees, such as their evaporative cooling effect, help to reduce urban heat island (UHI) effect and heat stress-related illness and fatalities.

**💧** Trees provide significant storm water retention benefits by intercepting and absorbing rainfall and by increasing the ability of soil to store water. Large trees (~37 ft. crown spread) intercept over 2,000 gallons of rainfall annually.<sup>2, 11</sup>

**🌿** Evapotranspiration and shade that trees provide help to cool down buildings and reduce the need for air conditioning, which then decreases energy consumption.<sup>2, 11</sup> Using less energy = direct costs savings for building owners and resource savings for the community.

**🌬️** Trees improve air quality by intercepting particulate matter (PM<sub>10</sub>) and absorbing gaseous pollutants (NO<sub>2</sub>, SO<sub>2</sub>, and O<sub>3</sub>).<sup>2, 11</sup> They also help reduce atmospheric CO<sub>2</sub> levels by capturing and storing it.



# Current Status

- **166 bird species, including:**
  - **131 Louisiana native species**
  - **35 migratory species**
  - **15 species of concern**
  - **54 seed dispersers**
  - **2 pollinators**
- **Fish species include:**
  - **Mosquito fish (Gambusia)**
  - **Large Mouth Bass**
  - **Blue Gill**
- **Diversity of Macroinvertebrate Aquatic Life, including:**
  - **Crawfish**
  - **Dragonfly nymph**
  - **Damselfly nymph**





# Native Plants

- Provide shelter and food for wildlife
- Help reduce air pollution
- Require less water than lawns and help prevent erosion
- Do not require fertilizers and require fewer pesticides than lawns
- Promote biodiversity
- Increase scenic values and beautification
- Trees protect neighborhoods during hurricanes and heavy rain events

## PLANT SCHEDULE

<u>QTY</u>	<u>COMMON NAME</u> <u>BOTANICAL NAME</u>	<u>SIZE /</u> <u>CALIPER</u>	<u>HEIGHT</u>	<u>SPREAD</u>	<u>COMMENTS</u>
<b>SHADE TREES</b>					
106	<u>BALD CYPRESS</u> <i>Taxodium distichum*</i>	1" CAL SAPLING	2'-4'	2'-3'	CONTAINER GROWN, FULL & WELL ROOTED & BRANCHED, STRONG CENTRAL LEADER
133	<u>LAUREL OAK</u> <i>Quercus laurifolia</i>	1" CAL SAPLING	2'-4'	2'-3'	CONTAINER GROWN, FULL & WELL ROOTED & BRANCHED, STRONG CENTRAL LEADER
37	<u>SWEET BAY MAGNOLIA</u> <i>Magnolia virginiana*</i>	1" CAL SAPLING	2'-4'	2'-3'	CONTAINER GROWN, FULL & WELL ROOTED & BRANCHED, STRONG CENTRAL LEADER
77	<u>SWAMP RED MAPLE</u> <i>Acer rubrum</i>	1" CAL SAPLING	2'-4'	2'-3'	CONTAINER GROWN, FULL & WELL ROOTED & BRANCHED, STRONG CENTRAL LEADER
22	<u>TULIP TREE</u> <i>Liriodendron tulipifera</i>	1" CAL SAPLING	2'-4'	2'-3'	CONTAINER GROWN, FULL & WELL ROOTED & BRANCHED, STRONG CENTRAL LEADER
40	<u>RIVER BIRCH</u> <i>Betula nigra</i>	1" CAL SAPLING	2'-4'	2'-3'	CONTAINER GROWN, FULL & WELL ROOTED & BRANCHED, STRONG CENTRAL LEADER
123	<u>WATER TUPELO</u> <i>Nyssa aquatica</i>	1" CAL SAPLING	2'-4'	2'-3'	CONTAINER GROWN, FULL & WELL ROOTED & BRANCHED, STRONG CENTRAL LEADER

<b>WETLAND &amp; AQUATIC</b>					
80,041 SQFT	WETLAND PLUG PLANTING	4" PLUG			
<b>TURF</b>					
18,751 SQFT	<u>COMMON BERMUDA</u> <i>Cynodon dactylon</i>	N/A	N/A	N/A	SOLID SOD, AS SHOWN PER PLAN
264,050 SQFT	<u>STERILE BERMUDA</u> <u>SPRIGGING</u> <i>Botanical name</i>				STERILE SPRIGGING
<b>SEED MIXES</b>					
268,684 SQFT	<u>COASTAL GRASSLAND SEED</u> <u>MIX</u>	N/A	N/A	N/A	GA Coastal Plain FACW Mix # ERNMX-505 FROM ERNST SEEDS; HYDROSEED WITH TACKIFIER AT A RATE OF OF 20 LBS PER ACRE
136,435 SQFT	<u>WETLAND TRANSITION MIX</u>	N/A	N/A	N/A	OBL Wetland Mix #ERNMX-131 FROM ERNST SEEDS; HYDROSEED WITH TACKIFIER AT A RATE OF OF 20 LBS PER ACRE

<b>SHRUBS</b>					
1,148 SQFT	<u>TURK'S CAP</u> <i>Malvaviscus arboreus var. drummondii</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 36" TRIANGULATED SPACING
<b>GRASSES</b>					
2,757 SQFT	<u>GULF MUHLY</u> <i>Muhlenbergia capillaris</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 36" TRIANGULATED SPACING
1,040 SQFT	<u>STARRUSH WHITETOP</u> <i>Rhynchospora colorata</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 36" TRIANGULATED SPACING

<b>PERENNIALS &amp; GROUNDCOVER</b>					
1,250 SQFT	<u>BLANKET FLOWER</u> <i>Gaillardia pulchella</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 18" TRIANGULATED SPACING
1,498 SQFT	<u>SPOTTED BEEBALM</u> <i>Monarda punctata</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 18" TRIANGULATED SPACING
1,463 SQFT	<u>LOUISIANA BLUE-FLAG IRIS</u> <i>Iris virginica</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 18" TRIANGULATED SPACING
1,763 SQFT	<u>NARROWLEAF BLUE-EYED GRASS</u> <i>Sisyrinchium angustifolium</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 12" TRIANGULATED SPACING
1,844 SQFT	<u>STOKES ASTER</u> <i>Stokesia laevis</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 24" TRIANGULATED SPACING
640 SQFT	<u>DENSE BLAZING STAR</u> <i>Liatris spicata</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 24" TRIANGULATED SPACING
516 SQFT	<u>SCARLET ROSEMALLOW</u> <i>Hibiscus coccineus</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 36" TRIANGULATED SPACING



1,933 SQFT	<u>WHITE GAURA</u> <i>Oenothera lindheimeri</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 36" TRIANGULATED SPACING
902 SQFT	<u>EBONY SPLEENWORT</u> <i>Asplenium platyneuron</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 24" TRIANGULATED SPACING
6,687 SQFT	<u>WOOD FERN</u> <i>Thelypteris kunthii</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 36" TRIANGULATED SPACING
535 SQFT	<u>OBEDIENT PLANT</u> <i>Physostegia intermedia</i>	4" PLUG	2"-4"	2"-4"	CONTAINER GROWN, FULL & WELL ROOTED, PLANTED @ 24" TRIANGULATED SPACING

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# Site Design

- Through the creation of the wetlands/wet pond areas, the overall storage capacity of the site will be drastically increased from the existing condition in order to meet and exceed stormwater management requirements.
  - Of the 40 acres Wetland Park, 9.08 acres will consist of wetland/wet pond area which will provide approximately 1,057,265 ft<sup>3</sup> of retention. Much of the areas not included in the pond areas will still be low enough to store onsite during larger storm events due to the site receiving offsite water through it via the underground canal and offsite ditches adjacent to the property. The increase in the storage will better allow for the wetland park to process nutrients and allow settlement of suspended solids prior to being runoff from the site. These changes will enhance the ability of the area to improve the water quality benefits that are currently provided.
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# Pre vs Post Flows

- The pre and post development peak discharges have been computed using the SCS Method as a part of the City of New Orleans Green Infrastructure Calculator. The input parameters include: 10-year precipitation, time of concentration (Tc) in minutes, Runoff Curve Number (CN), and drainage area (acres). Results from the drainage analysis comparing the pre-development flow rates to the post development flow rate are shown below:

Outfall #	Storm Event	Pre-Developed Peak Discharge (cfs)	Post-Developed Peak Discharge (cfs)
1	10 Year	197.57	55.40

# Estimated Pollutant Loads

## Average Annual Loadings

	Units	Pre-Development	Post-Development w/o GI	Post-Development w/ GI	Annual Reduction via GI	Reduction %
TSS	lbs	3314	2632	658	1974	75%
BOD	lbs	272.9	272.9	161.3	111.6	41%
TP	lbs	16.24	106.32	61.02	45.30	43%
TN	lbs	43.54	453.98	220.11	233.87	52%
Pb	lbs	0.65	1.57	0.34	1.24	78%
Zn	lbs	1.95	13.29	6.15	7.14	54%
E.Coli	Billion Colonies	2014.3	5081.7	419.9	4661.8	92%

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# Volume Calculations

- To comply with the Unified Stormwater Code within Chapter 1, Section 121 of the New Orleans Building code: the first one and one quarter (1.25) inches of stormwater from each drainage area must be detained, retained, or filtered on a development site. The total water quality volume needed to comply for this site will be 164,348 ft<sup>3</sup>.
- The total storage provided is 1,057,265 ft<sup>3</sup>. Therefore, the volume provided for the proposed site exceeds the minimum volume required.



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# Floodplain Calculations

- With the creation of the wetlands park, DDG has analyzed the effect to the overall floodplain storage onsite. The existing FEMA BFE for the site is elevation -3. Based on this elevation, the following floodplain calculations were calculated assuming the wetland pond starting WSE is at elevation -7.00'.
- Existing Floodplain storage onsite is 68,614 cubic yards
- Proposed Floodplain Storage onsite is 74,944 cubic yards.



# Floodplain Calculations



## Visible Layers

Effective FIRM  
Bing Hybrid

## Point Coordinates

Point #	Lat., Long.
1	29.9772, -90.0067
2	29.9752, -90.0013
3	29.9786, -90.0164

Flood information in this table is from the: Effective FIRM

Point	Panel ID	Flood Zone	BFE	Ground Elevation	LOMR
1	22071C0232F 9/30/2016	AE, EL -3	-3	-3.9	N/A
2	22071C0232F 9/30/2016	AE, EL -3	-3	-5.5	N/A
3	22071C0232F 9/30/2016	AE, EL -3	-3	-2.8	N/A



**Thank You!**

**Rashida Ferdinand, Sankofa CDC Founder & Executive Director**

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**Tricia LeBlanc, Sankofa Wetland Park Director**

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**Scott Tabary, Duplantis Design Group Business Unit Leader**

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**Committee**

**Discussion**

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City of New Orleans



**Public**

**Comment**

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City of New Orleans