



WORKING WITH NATURE TRAINING SERIES

DEC. 15, 2021

*Designing with nature-based solutions
in urban areas*

LOUISIANA
WATERSHED
INITIATIVE

working together for sustainability and resilience



AGENDA

- Program overview
- Nature-based solutions in urban areas
- Moncus Park case study
- Questions



NATURE-BASED SOLUTIONS PROGRAM OVERVIEW

MAXIMIZE NATURAL FUNCTIONS OF THE FLOODPLAIN

- Fund projects that harness natural features to reduce flood risk and improve water quality
- Provide training and technical resources to advance understanding and adoption of nature-based solutions
- Prioritize nature-based solutions across state programs and projects
- Use tools to quantify benefits and measure performance of nature-based projects



NATURE-BASED SOLUTIONS IN URBAN AREAS



Dana Nunez Brown

PRESIDENT | DANA BROWN & ASSOCIATES

Dana Nunez Brown is one of the most experienced stormwater management design professionals in Louisiana, having designed green infrastructure projects worth tens of millions of dollars throughout her 41 years as a landscape architect and planner.



Designing with nature-based solutions in urban areas

- Where are we?
- What have we been doing for decades?
 - Traditional site planning—clear the land, regrade it, pave it
 - Traditional site design—get rid of water via drainage
 - Traditional maintenance—mow and blow or no maintenance
- Nature-based design solutions
 - Design with nature
 - Low-impact development
 - Stormwater management
- Urban neighborhood retrofits



Traditional site planning

- Clear the land to create a blank canvas
- Grade the land surface, add fill, smooth out hills
- Maximize development of the parcel
- Design traditional drainage system
- Use design storm dictated by jurisdiction
- Creates a system with constrained capacity
- Often includes destruction/filling of wetlands and riparian floodplains
- Seeks to maximize developer's profit
- Does this approach maximize development and profit?



Clearing and grading the land

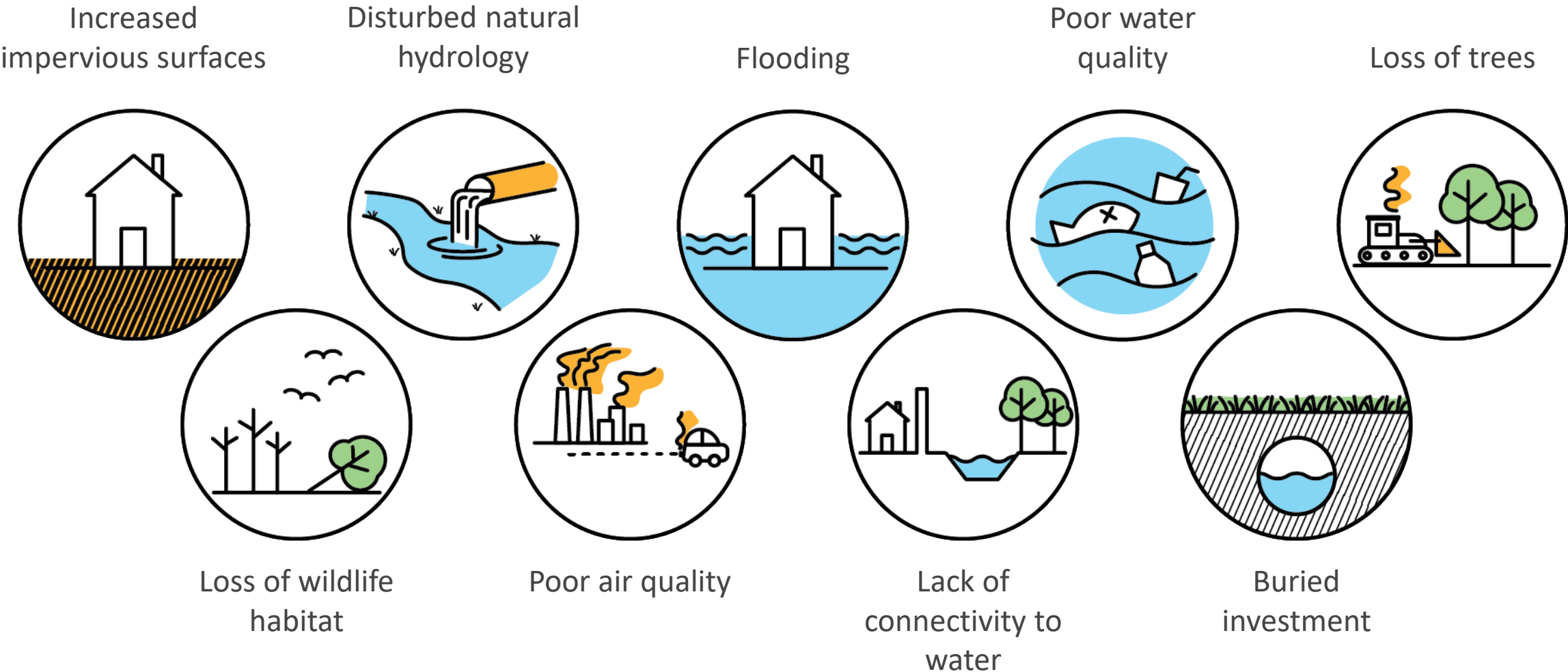


Traditional drainage approach

- Costly to construct, operate and maintain
- Constrained capacity
- Often ugly
- Drainage only—single benefit



What have we been doing?



What should we be doing?

ANALYZE THE SITE AND ITS CONTEXT

Undisturbed sites—not
undeveloped sites



Urban sites &
neighborhoods



Context



Watershed &
subwatersheds



Topography



Hydrology



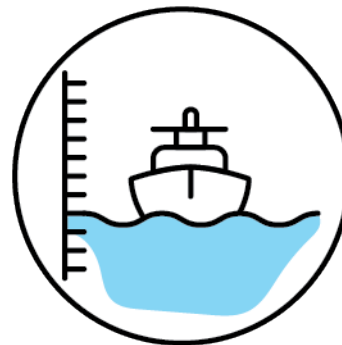
Vegetation



Soils



Existing land uses &
infrastructure



Water bodies &
tidal influences



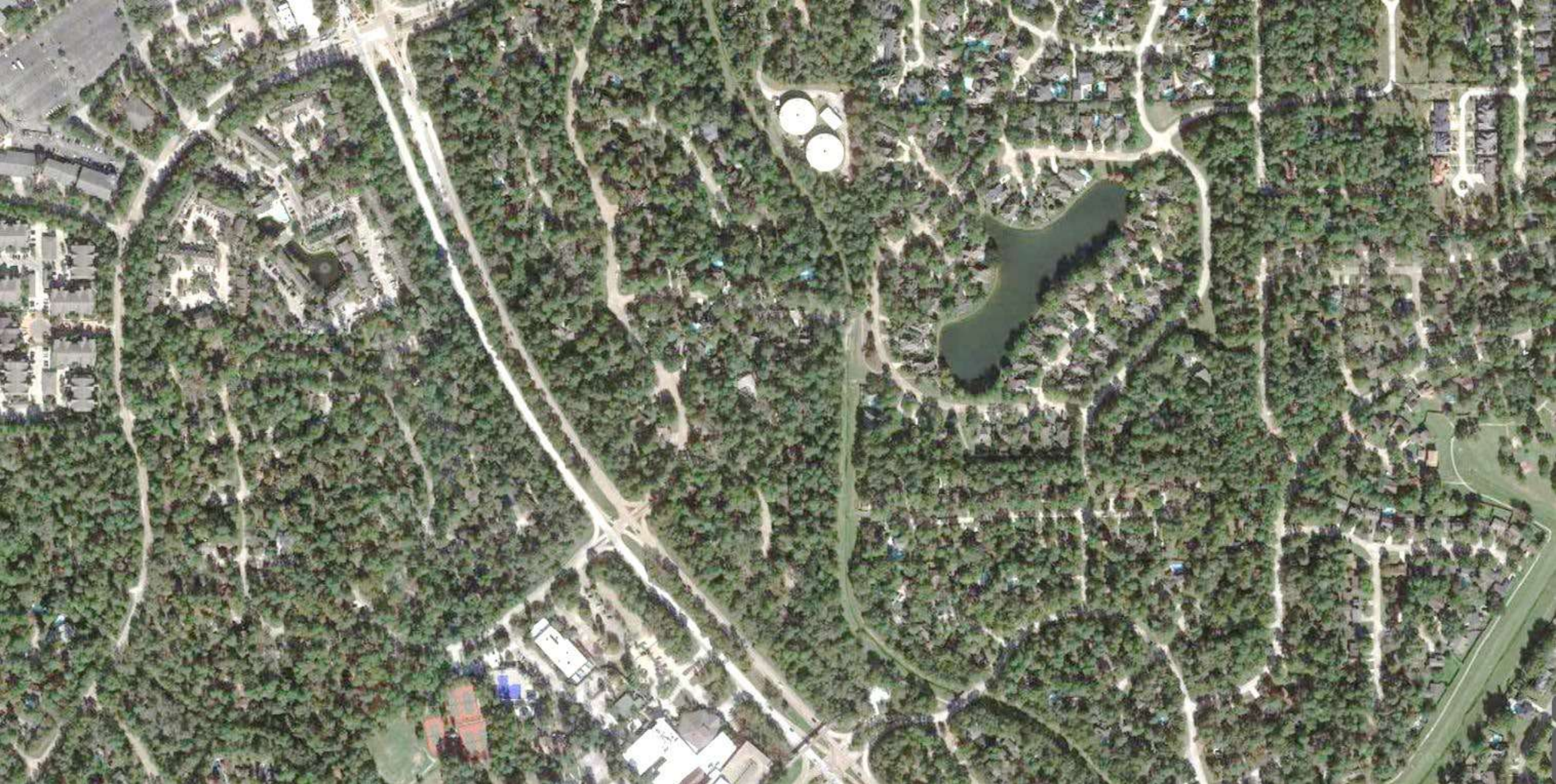
Nature-based solutions

- Mimic natural processes
- Conserve natural areas and processes
- Stormwater management
 - Minimize impact on hydrology
 - Maintain runoff rate and duration
 - Minimize impervious surfaces
- Distribute green infrastructure across site
 - Integrated management practices
 - Decentralized, microscale that infiltrate, store, evaporate and/or detain runoff close to the source
- Works at any scale



The Woodlands: Village of Grogan's Mill





Nature-based solutions

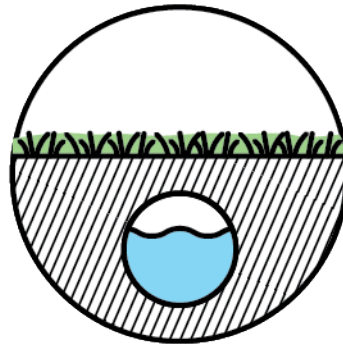
Manage
rainwater where
it lands



Make places for water to
exist in the urban
environment



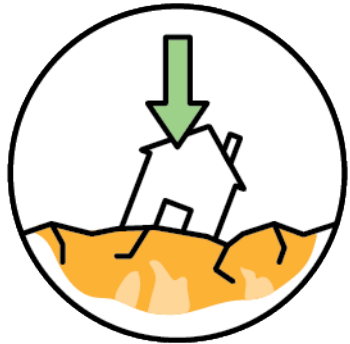
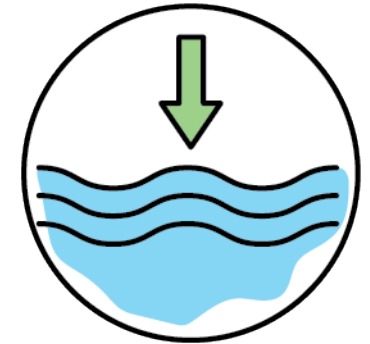
Reduce burden
on grey
infrastructure



Mimic natural
processes



Reduce flooding



Reduce soil
subsidence



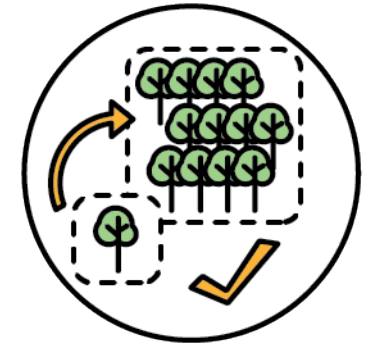
Filter water for
water quality



Improves air
quality



Cools the air



Works at any
scale

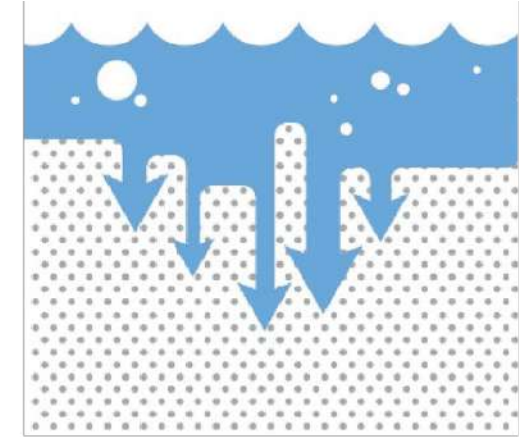


Nature-based stormwater management

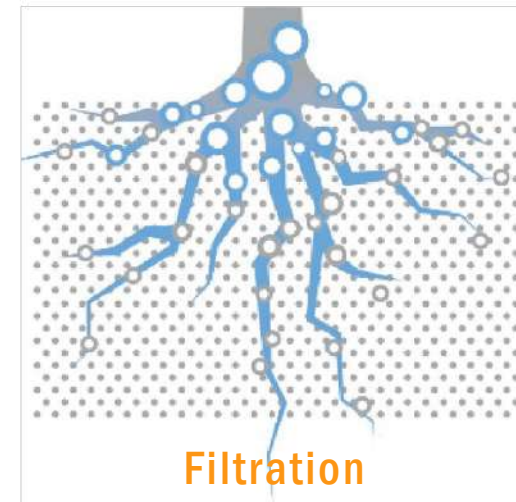
- **Detention**—temporarily store stormwater
- **Infiltration**—allow water time to absorb into soil
- **Filtration**—store and convey runoff to remove pollutants with plants and soil



Detention



Infiltration



Filtration



Types of green infrastructure

- Bioretention cells
- Bioswales
- Detention basins
- Detention/retention basins
- Constructed wetlands
- Stormwater planters
- French drains
- Rain barrels
- De-paving
- Pervious paving
- Land conservation/restoration
- Subsurface storage tanks
- Infiltration columns and pits
- Trees
- Green roofs
- Blue roofs



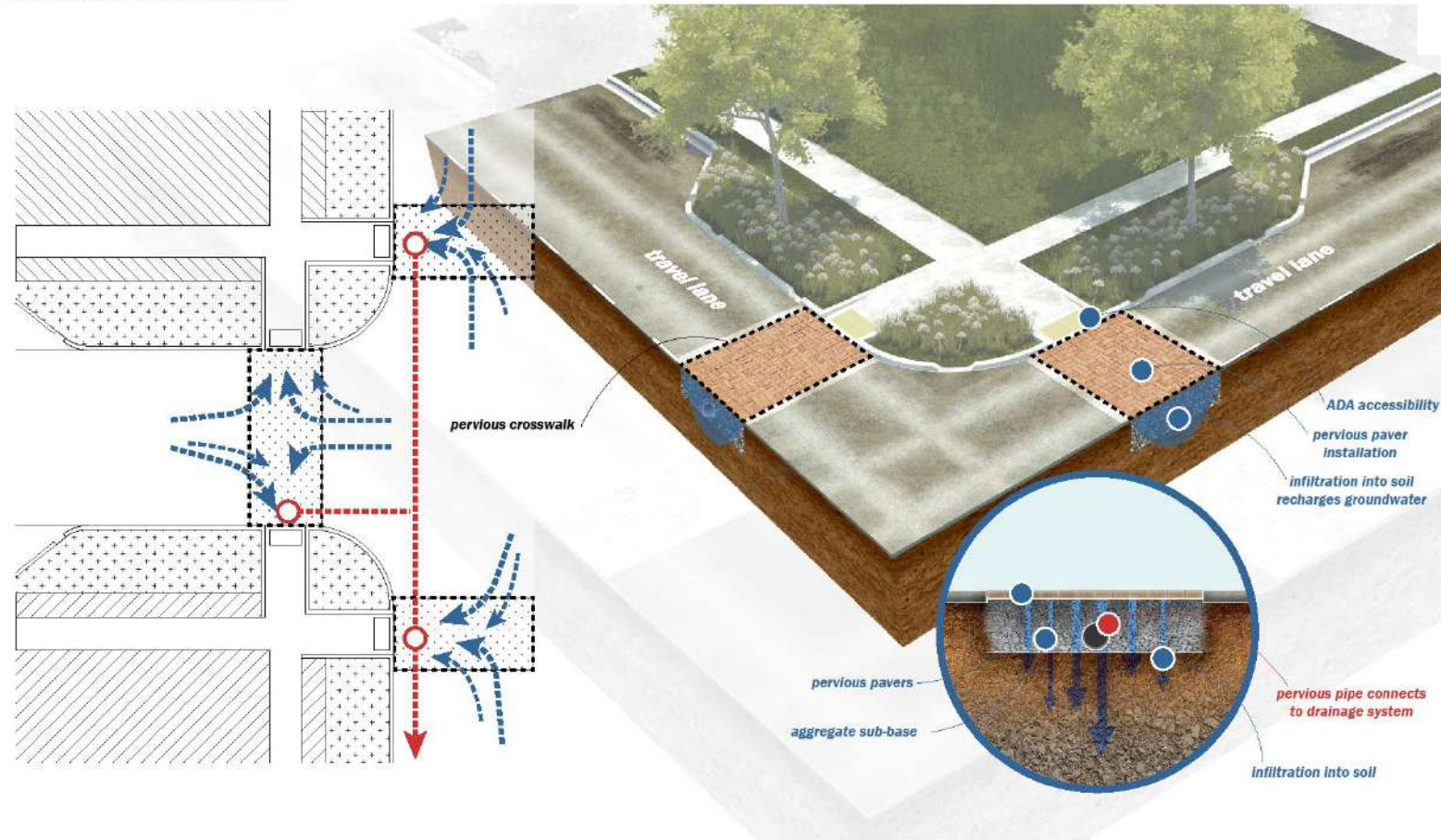
How do we retrofit neighborhoods?

- In the public realm
 - Renovate parking
 - Reconstruct play fields
 - Revise street standards
 - Green space at civic buildings
 - Remnant parcels
 - Interstitial spaces
 - Break sectoral silos
 - Educate the public
 - PPP
- In the private realm
 - Renovate parking
 - Convert green spaces
 - Interstitial spaces
 - PPP



Urban right-of-way

GREEN INFRASTRUCTURE FACILITY PERVIOUS CROSSWALK



Urban right-of-way



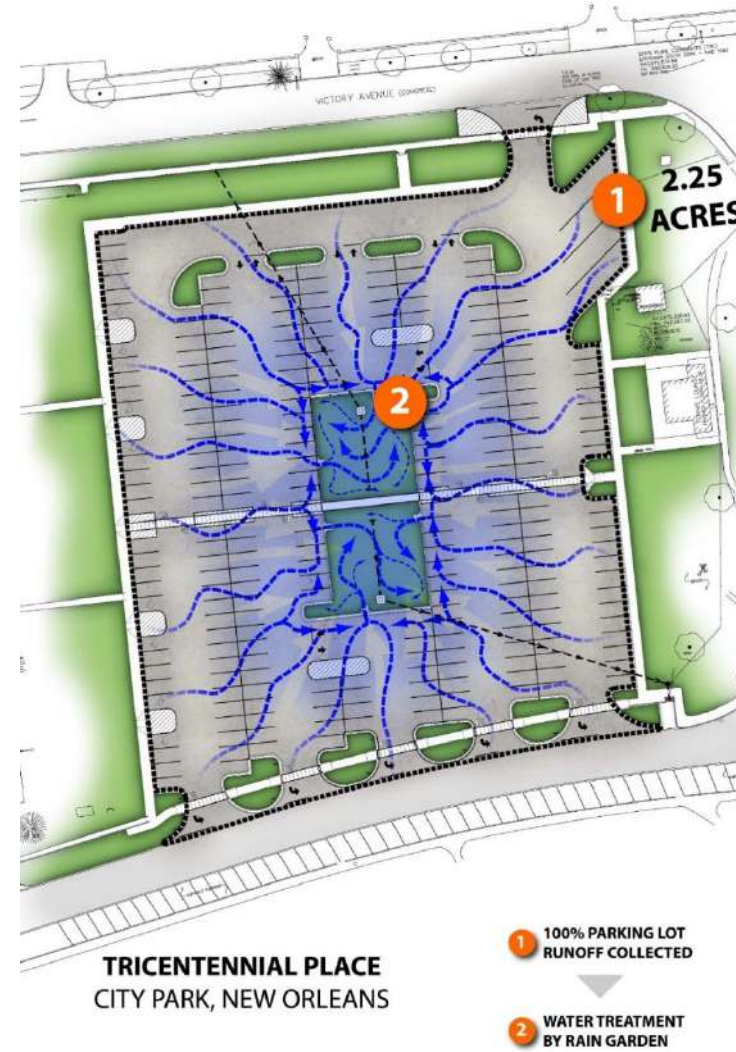
Parking lots



Parking lots



Parking lots



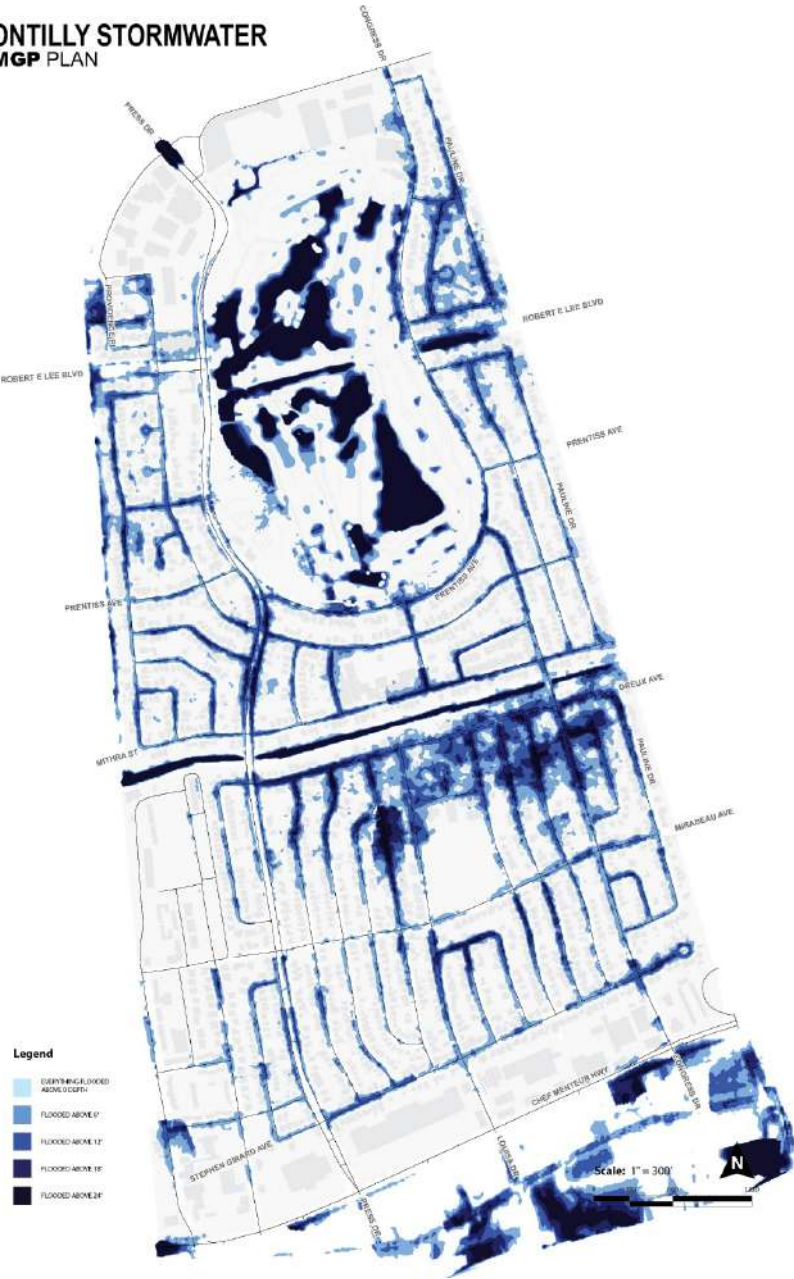
Parking lots



Vacant lots



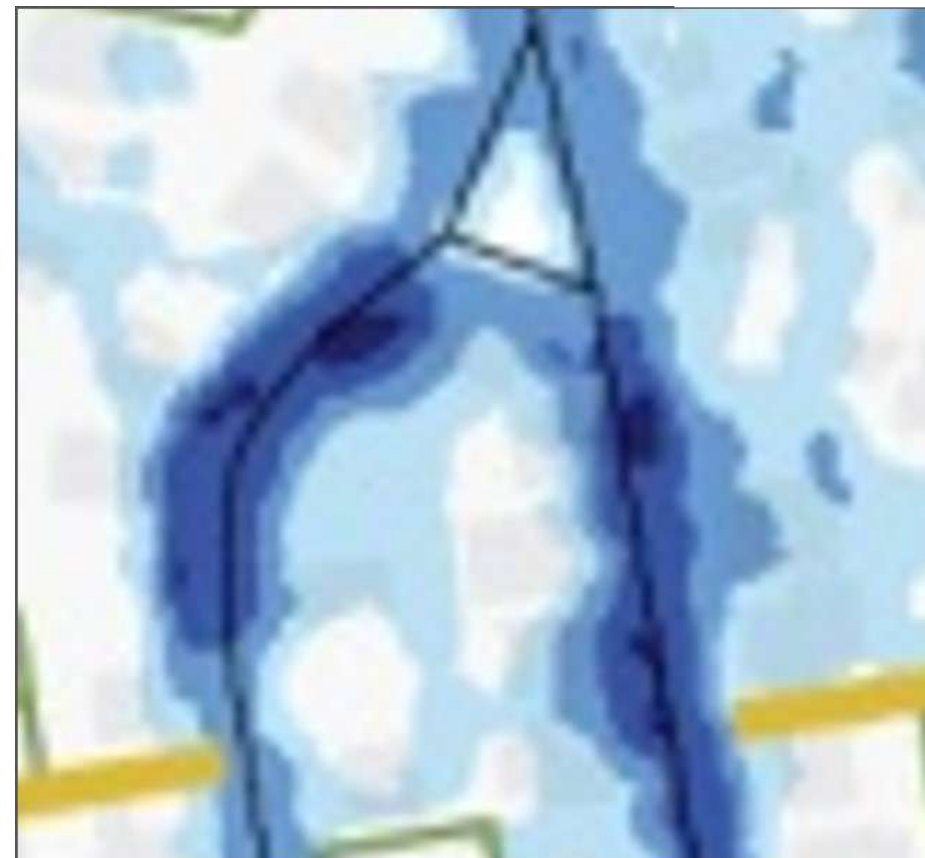
PONTILLY STORMWATER
HMGP PLAN



PONTILLY STORMWATER
HMGP PLAN
MID CONCEPT



Flood risk modeling



Permeable paving



Curb bump-outs and cuts



Open spaces and medians



Parks and golf courses



Parks and golf courses



Parks and golf courses



References

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- [ecologyandsociety.org/vol21/iss2/art39/](#)
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- [wwf.panda.org/projects/one_planet_cities/what_we_do/urban_naturebased_solutions/](#)
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- Pontilly HMGP Project Report. CDM Smith



MONCUS PARK CASE STUDY



Elizabeth “EB” Brooks

FOUNDER | MONCUS PARK

Elizabeth Brooks is the founder of the new 100-acre Moncus Park in Lafayette. After launching a successful campaign to save the greenspace from commercial development in 2005, she earned master’s degrees in community and regional planning and urban design from the University of Texas at Austin. She returned to Lafayette in 2013 to oversee the nonprofit that is developing Moncus Park.



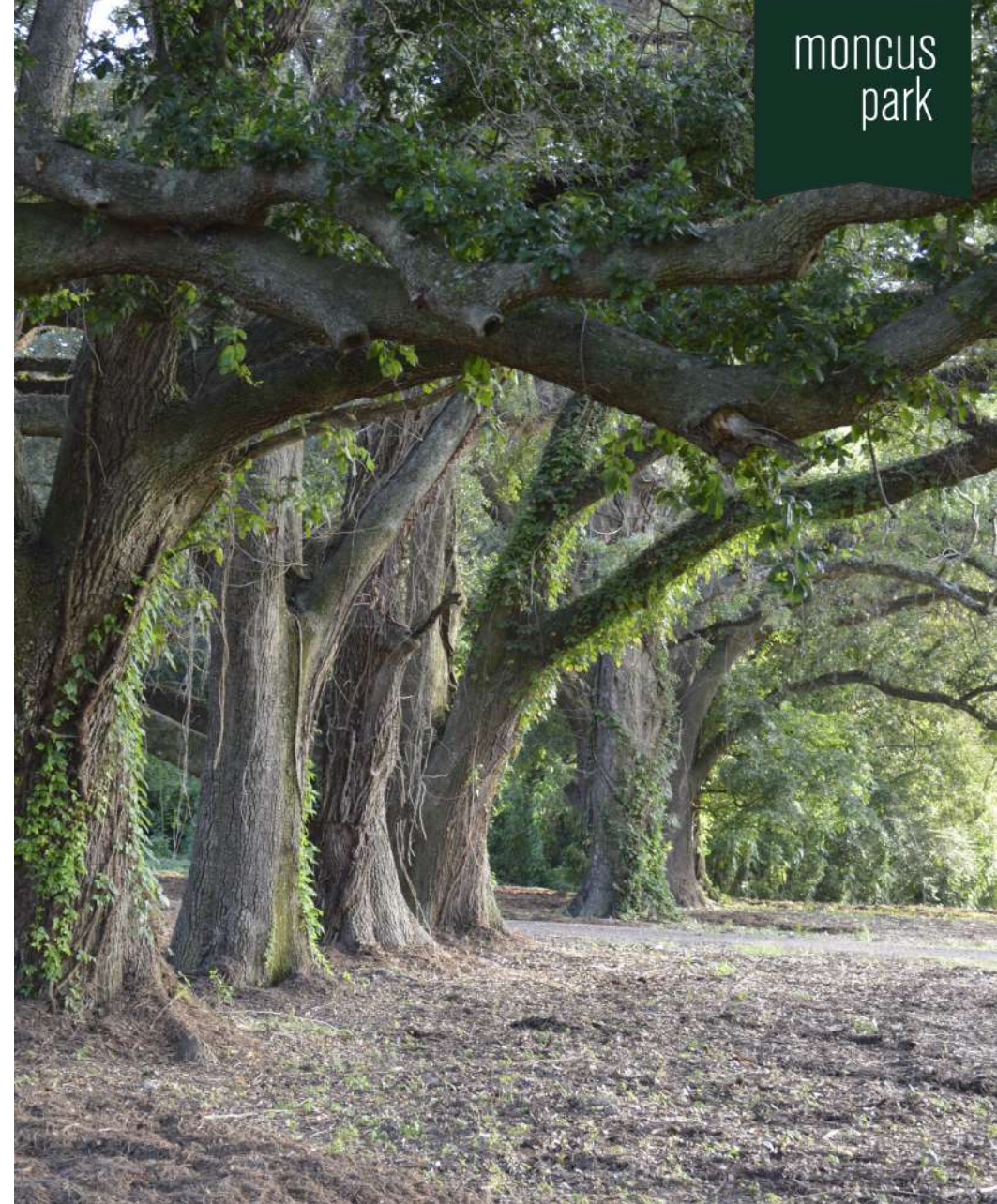


moncus park



Moncus Park (aka Lafayette Central Park)

- 501(c)(3) nonprofit conservancy
- 99-year lease with the city with full control of operations and maintenance
- Organized sports fields and courts prohibited, with intention to create a passive park
- No dedicated local tax dollars for construction, operations or maintenance
- All features built with private dollars (except restrooms)
- Events, programming and membership support ongoing operations.



THE JOURNEY

2005 – 2012

- “Save the Horse Farm” communitywide campaign

2012

- Lafayette Consolidated Government purchases the land from UL Lafayette.

2013 – 2014

- Lafayette Central Park, Inc. forms to plan, design, build and operate the park
- \$2.6 million grant from Lafayette Public Trust Financing Authority
- Nine months of community input, engaging more than 7,400 residents on park features and programming ideas



THE JOURNEY

2014

- Lafayette City-Parish Council unanimously approves the master plan.

2016

- The park is named Moncus Park in honor of lead donor, Mr. Jim Moncus.

2018

- The 99-year lease is enacted, and Phase 1 construction begins.

2021

- Phase 2 construction begins, and opening day is set for Jan. 1, 2022!



Benefits of a world-class park

- Environmental benefits
- Stormwater management
- Economic development and tourism
- Educational opportunities
- Personal and public health benefits
- Childhood development
- Community engagement
- Farmers market's local economic impact
- Fully accessible and inclusive



ECOLOGICAL SERVICES

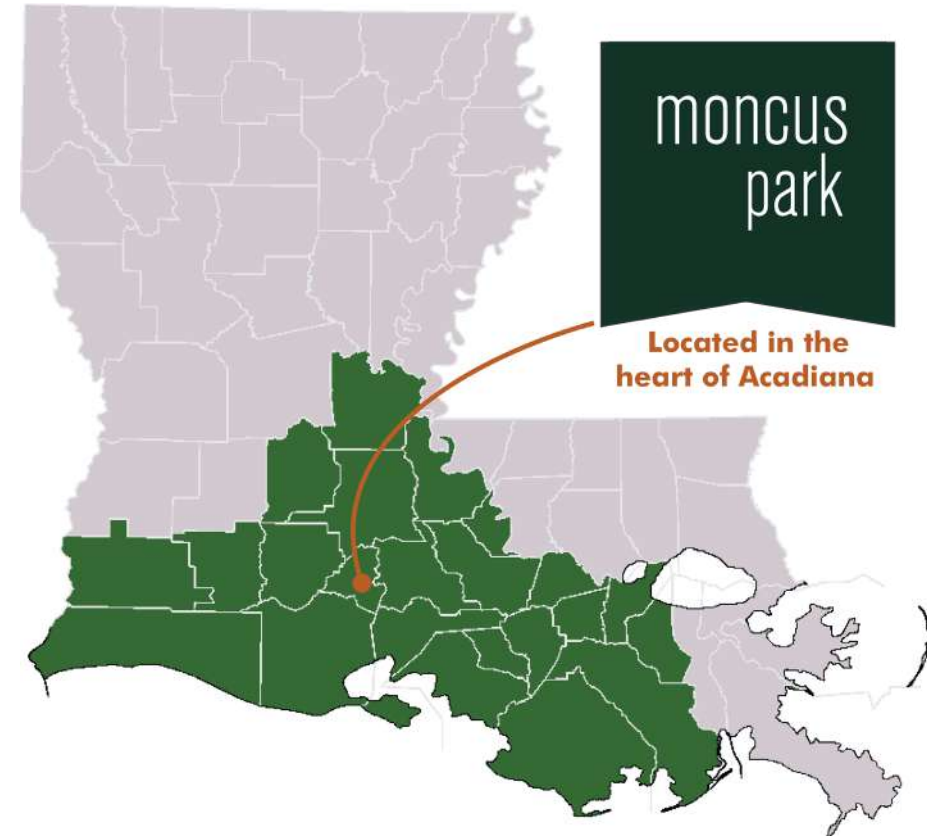


A CENTRAL PARK FOR THE REGION

ACADIANA REGION:
1.3 MILLION RESIDENTS

LAFAYETTE PARISH:
230,000 RESIDENTS

AT THE CENTER OF ACADIANA'S 22 PARISHES



LONG-TERM VISION









PARK PROGRESS

PHASE 1 – DONE

- New entrance and bridge
- Parking lot with rain garden
- 2 miles of trails
- 4-acre lake
- Dog park



PHASE 2

moncus
park



**COMING
SOON**

**INCLUSIVE
PLAYGROUND**



**INTERACTIVE
WATER FEATURE**



TREEHOUSE



VETERANS MEMORIAL



AMPHITHEATER



FUTURE PHASES

- 2022: Farmers market pavilion
- 2022/2023: Prairie pond and detention
- *TBD: Mini-golf and carousel*
- *TBD: Botanic garden and event venue*
- *TBD: Ravine garden and transect boardwalk*



2022: FARMERS MARKET PAVILION

- 4,000-square-foot, open-air pavilion
- Conference room/classroom with air conditioning and catering kitchen
- Rain garden and rainwater harvesting (add alternate)



GREEN INFRASTRUCTURE

- Designed for Sustainable SITES Gold, didn't pursue certification due to cost
- Solar lights made in New Orleans
- Mostly native plantings and installed bat boxes for integrated pest management
- Recirculating water feature
- Reused onsite materials



RAIN GARDEN

- Parking lot stormwater management
- Cascading tiers, gabion boxes for solids
- Drains in less than 72 hours
- Difficult soil specifications



WETLAND POND

moncus
park

- Four acres, 9 feet deep, four pumps
- Filled with diverted neighborhood stormwater
- Source of all irrigation
- Submerged islands (6 inches)
- Louisiana Iris Society's official garden



NEW BRIDGE

LESSONS LEARNED

- Old farm bridge not included in FEMA maps—LCG audit concerns
- \$500,000 bridge → \$3 million → \$1.5 million
- Longer span allowing for pedestrian underpass and park connectivity
- Lost time and money



BACK 20 ACRES



COMPLETED: Woodland buffer, bat boxes, pollinator/wildflower plantings

FUTURE: Wetland pond, coastal prairie and ravine restoration, pavilion, Louisiana Recreational Trails

POTENTIAL: Tiered temporary detention of diverted stormwater from Coulee Mine



COULEE MINE CUTOFF CANAL

moncus
park



VERMILION RIVER



COULEE MINE

REGIONAL OPPORTUNITY

- Drains 16% of the parish
- Concrete panels failing
- Cutoff Canal not concrete
- Modeling for renaturalizing the banks showed potential if Cutoff Canal was cleaned out.



OPENING SEASON



Dec. 16 – Dec. 29

12 NIGHTS OF CHRISTMAS AT MONCUS PARK

Closed Christmas Eve and Christmas Day



NEW YEAR'S DAY

- Gates open! Most of the park will be accessible, including trails around our new 4-acre lake, the dog park, and hiking trails in the woodland ravines

SPRING/SUMMER 2022

- Ribbon-cutting celebrations as construction is completed on Phase 2:
 - Amphitheater
 - Treehouse
 - Inclusive playground
 - Interactive water play
 - Veterans memorial



QUESTIONS?

CONTACT INFORMATION

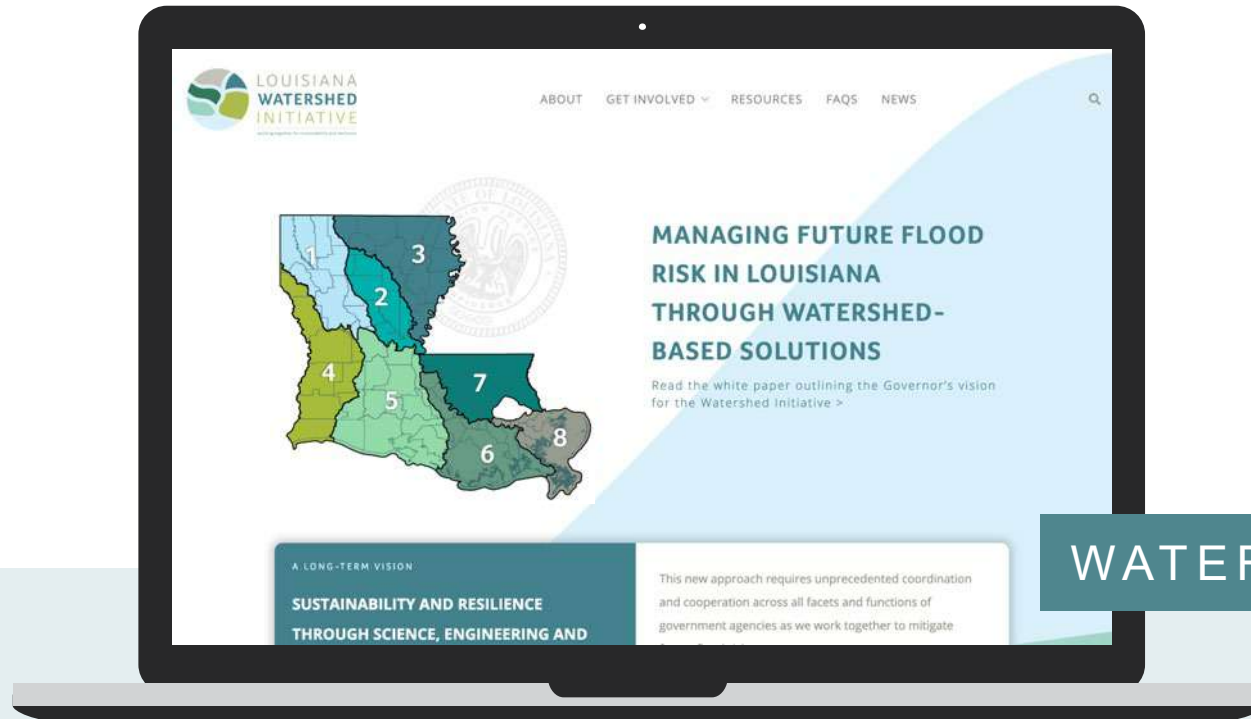
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THANK YOU



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