# Environment and Conservation

# Introduction:
# **Environment and Conservation**

The vision for FUTUREBR is for the Parish to protect its environmental assets, and to foster a green, active, ecologically diverse and economically sound community.

East Baton Rouge Parish has an extensive existing environmental network, most of which is currently held in private ownership. Existing parks, conservation areas, and preserved wetlands include approximately 6,100 acres of land that cannot be developed. However, the majority of the existing park land includes recreation facilities that do not provide wildlife habitat or significantly contribute to the total City-Parish tree canopy. In fact, protected lands constitute only 2 percent of the land area of the entire Parish.

*BREC Bluebonnet Swamp in Spring*

## Core Values and Aspirations of the Vision

A diverse group of residents and stakeholders representing all parts of East Baton Rouge Parish provided input through workshops, open houses, interviews, focus groups and survey discussions. Respondents consistently cited the following core values and aspirations they believed should be the foundation for building a vision for East Baton Rouge Parish.

Core values that relate to environment and conservation:

Strong Neighborhoods and Communities: Neighborhoods in all areas of the City are desirable places to live and have a range of housing types and nearby amenities to serve the City-Parish's residents.

Healthy Environment: Natural resources are protected and conserved to provide active and passive recreational opportunities for current and future residents.

Sustainability: The future reflects the creativity and resiliency of East Baton Rouge's residents and offers a sustainable place for citizens to thrive – with a focus on building a future based on fiscal, physical, environmental, economic and equitable sustainability.

# Part I:

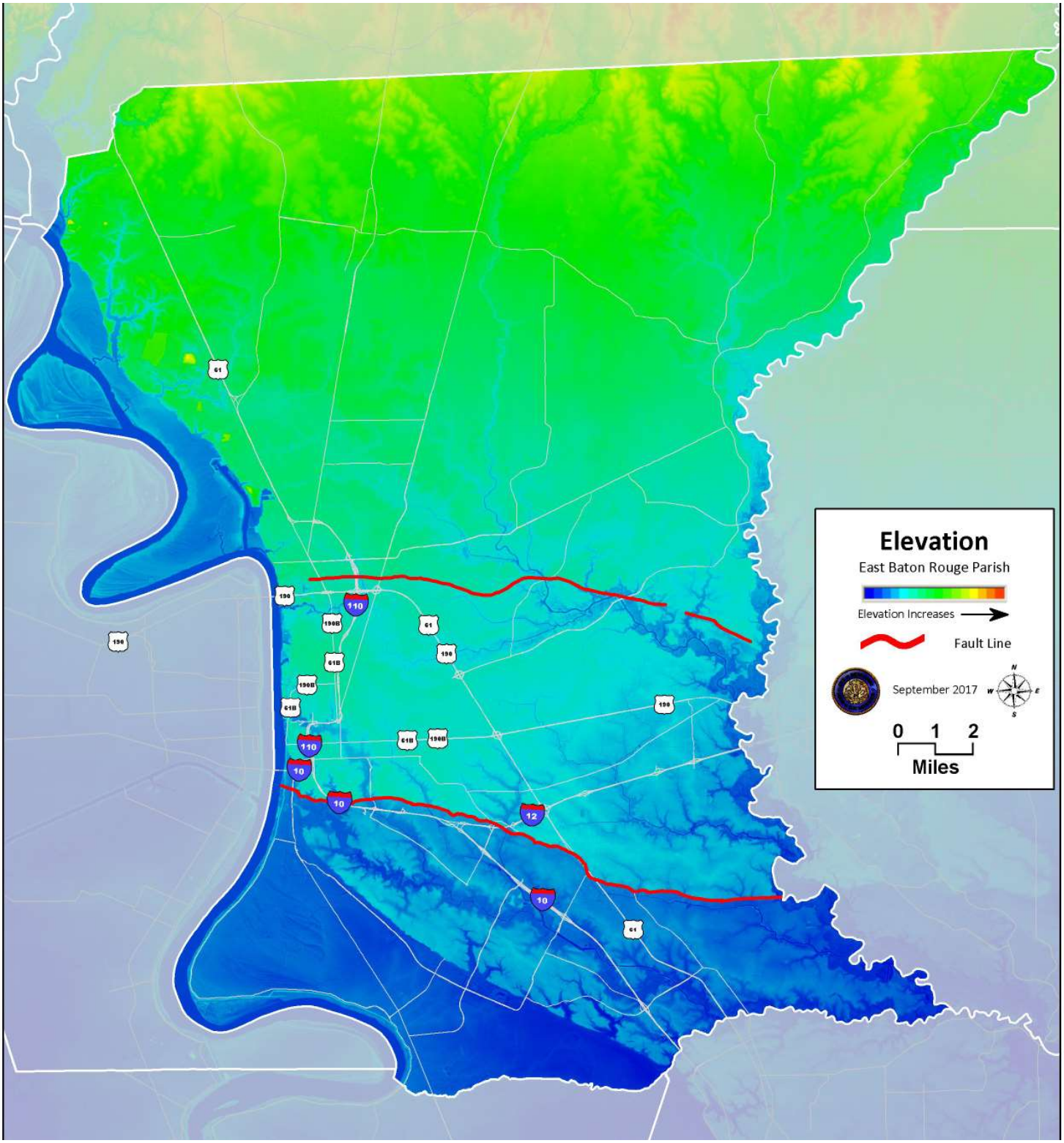
# Environmental Analysis and Recommendations

Recent public outreach and surveys have found that Parish residents are ready for a more proactive approach to local natural resource conservation. A public needs assessment commissioned by the East Baton Rouge Recreation and Parks Commission (BREC) identified the following citizen perceptions:

- Development is negatively affecting plant and animal habitats.
- Areas of archaeological significance are endangered by lack of conservation.
- The amount of farmland is declining.
- Habitat loss is the most significant cause of loss of species diversity.
- Citizens are supportive of conserving natural resources.

*Roseate Spoonbill*

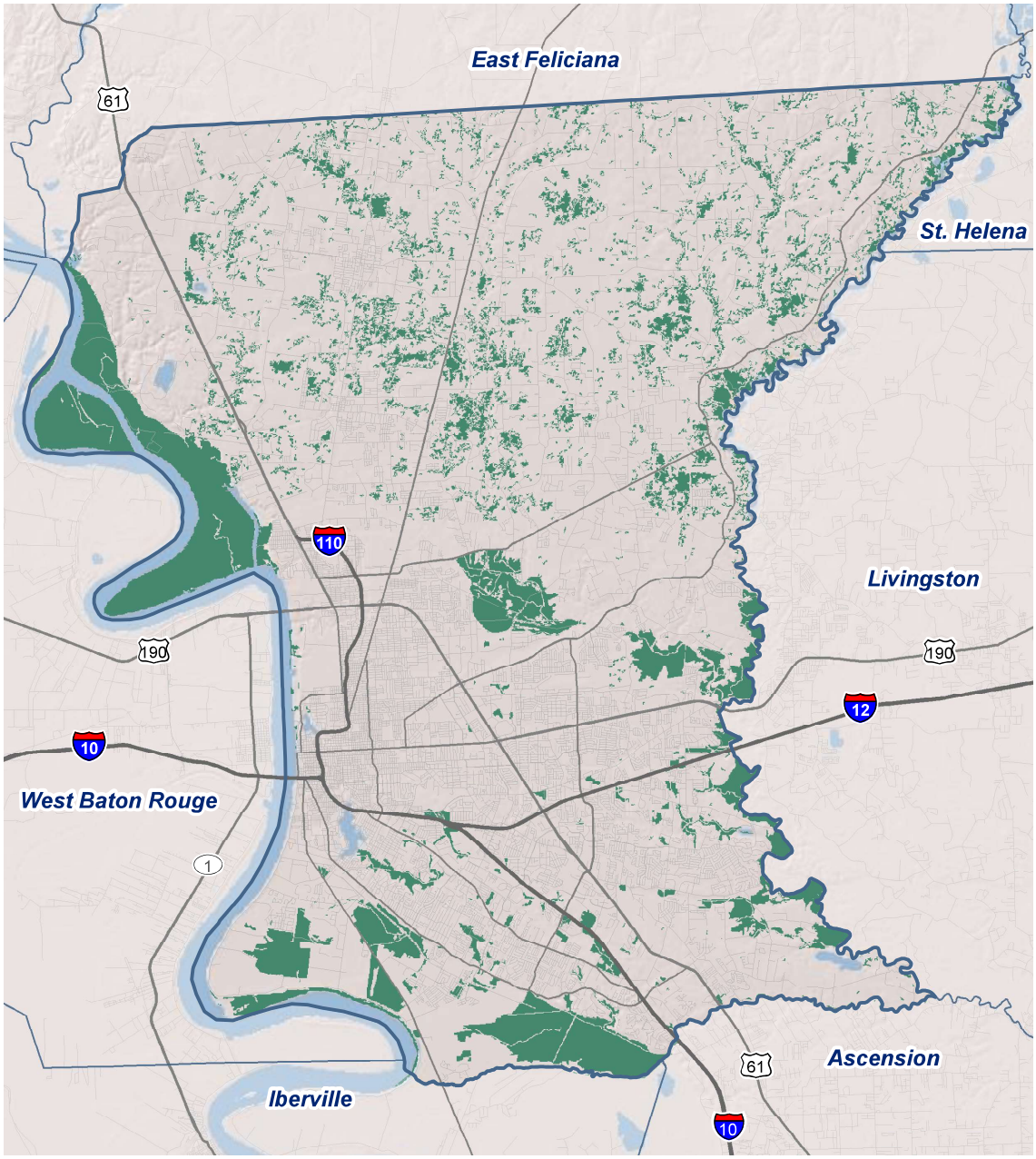
Floodplains, Terraces, and Fault Lines




*Two major east-west fault lines demarcate the upper, middle, and lower topographic terraces. The northern terrace exhibits more topographic relief and better soil drainage.*

## Part 1: **Environmental Analysis**

Existing Wetlands in East Baton Rouge Parish




Wetland

## Water Management

Baton Rouge is strongly influenced by water. Flat topography, heavy rainfall, wetlands and the channelization of the Mississippi River combine to create a unique ecosystem that has been shaped over the last 300 years by both natural and human impacts.

## Watersheds

Watersheds are basin-like landforms defined by highpoints and ridgelines that descend into lower elevations and stream valleys. Even in the relatively flat topography of East Baton Rouge Parish, there are ridgelines that form boundaries between watersheds. East Baton Rouge Parish is within the Lake Pontchartrain Basin and the Lower Mississippi Basin.

Within a watershed, the natural and built systems capture and move precipitation, filter and store water, and control its release over time. Impervious surfaces – anything that prevents rainfall from soaking into the ground, such as buildings, roads, or parking lots – have a significant impact on the watershed functioning because they prevent infiltration and increase stormwater runoff.

Watersheds are nested systems, meaning that many small watersheds make up the larger regional watershed. The hydrology of the Parish naturally divides into three main watersheds, which are subdivided into a total of 704 micro-watersheds. The eastern part of the Parish drains into the Amite River and the southern part of the Parish drains into Bayou Manchac. The northwest portion of the Parish drains into the Mississippi River.

Water management and management of biodiversity and other natural systems is best handled at the watershed level. Remediation or mitigation of such changes, therefore, should take place within the same watershed to achieve ecological benefits and maintain the integrity of the watershed.

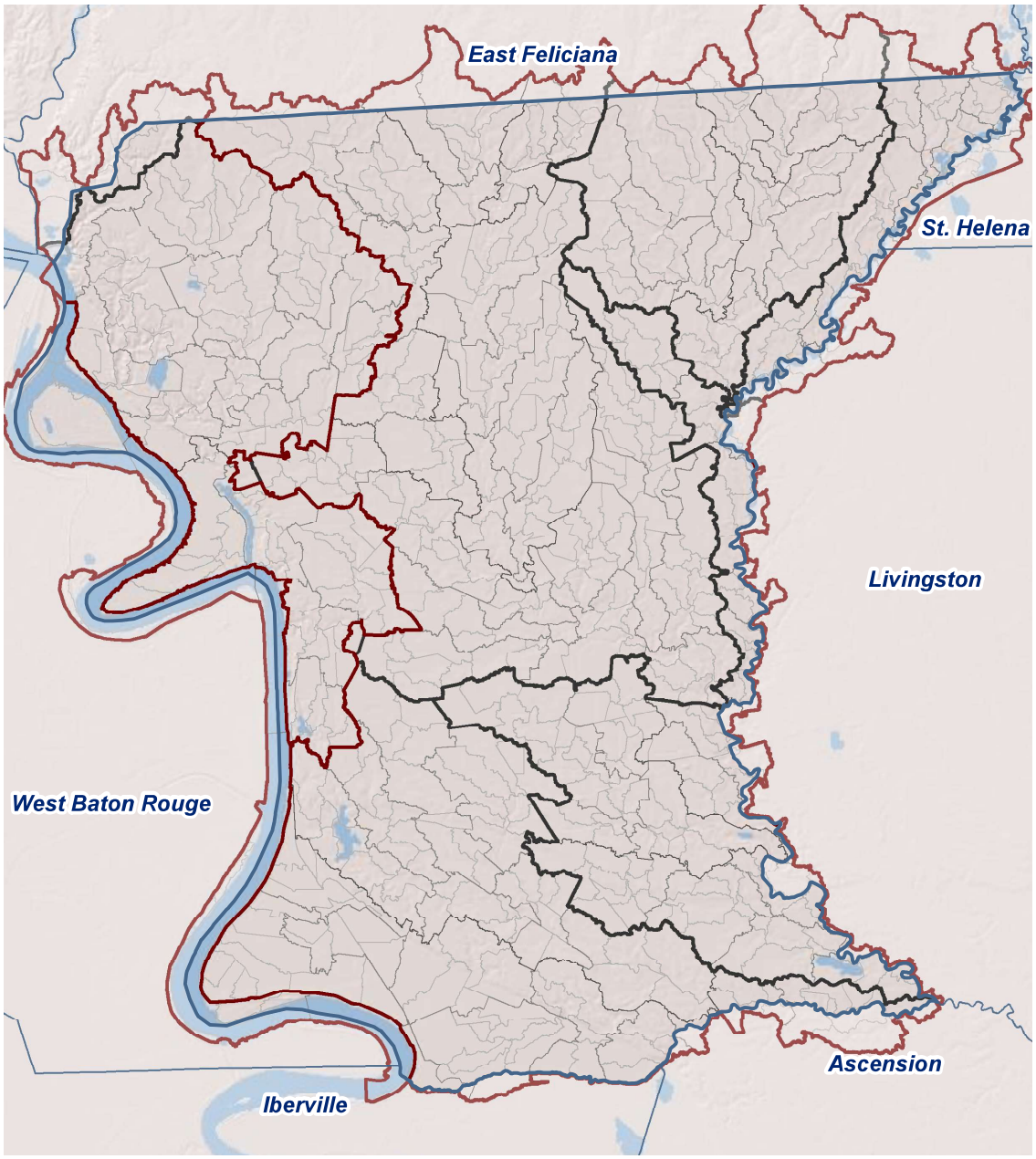
Under the Clean Water Act, waterways on the Impaired Waterbodies List must undergo watershed modeling to assess the loads of each pollutant for which they are listed. Termed “Total Maximum Daily Loads” (TMDLs), these models calculate the reduction in the pollutant that will be necessary for the waterway to be removed from the Impaired Waterbodies List. TMDL calculations performed in the Pontchartrain Basin so far have resulted in substantial reductions in pollutant loads.

In addition, under the Clean Water Act, urban areas are mandated to meet standards of the EPA’s Municipal Separate Storm Sewer Systems (MS4s) Program. The MS4 program requires that urban areas eventually monitor their stormwater discharges as a point source of pollution. Water quality limits must be set on these discharges and urban areas are responsible for meeting the limits.

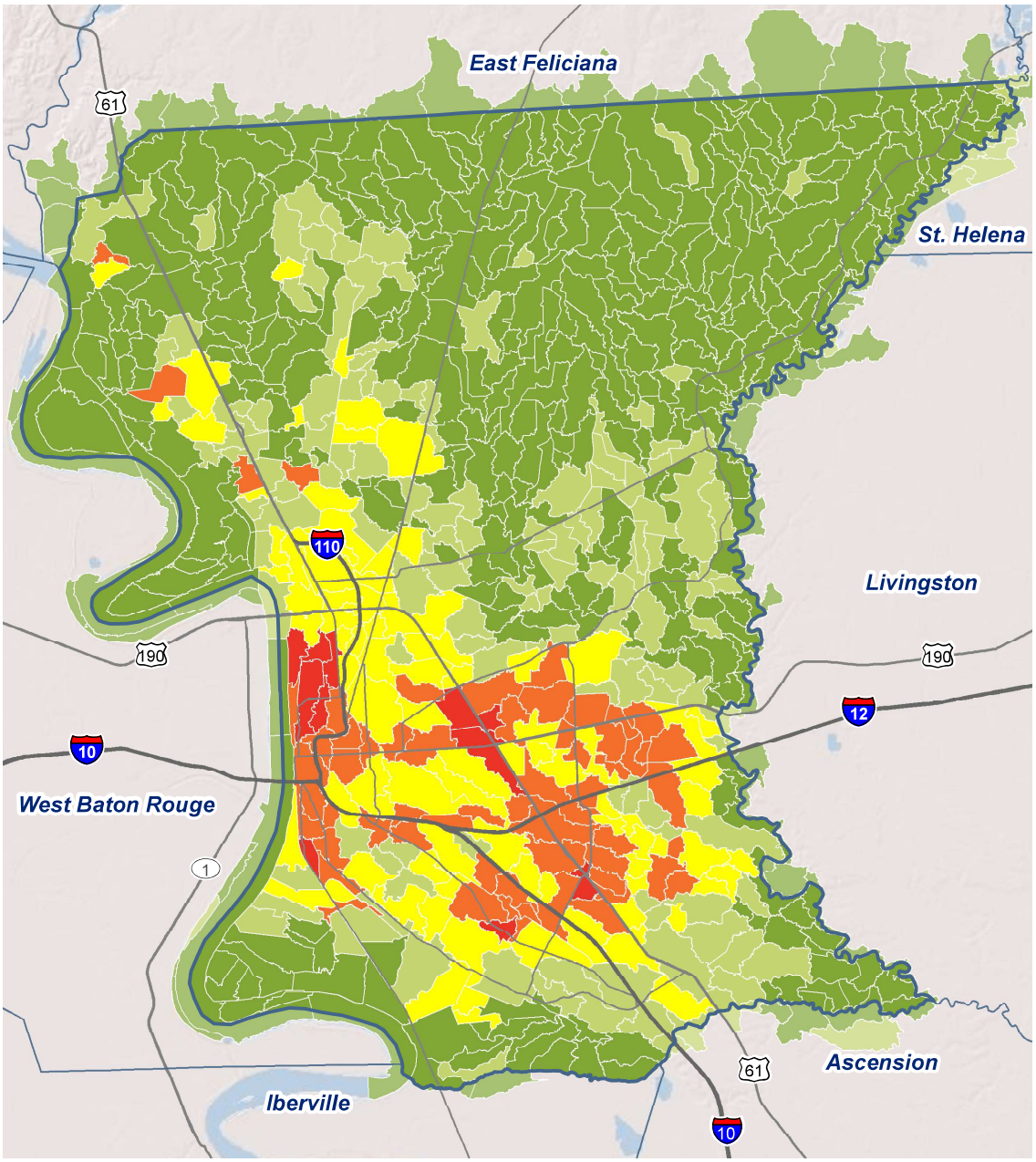
A Water Quality Enhancement Committee was created by the Planning Commission to develop strategies for the implementation of the FUTUREBR plan that relate to protecting and conserving environmental assets.

## Part 1: **Environmental Analysis**

Watersheds of East Baton Rouge Parish (CPPC 2010)



Impervious Surfaces in East Baton Rouge Parish




HUC-16 Watershed Landcover
Impervious Percentage

- 0% - 10%
- 11% - 25%
- 26% - 40%
- 41% - 60%
- 61% - 100%

*Corporation Canal*

## Surface Water

Historically, the focus of storm drainage planning and design throughout the U.S. has been to move stormwater as quickly as possible away from where it falls and into pipes and channels. As a result, many of the urban streams and canals have been made straighter, deeper, and concrete lined to accommodate increased runoff volumes and velocities. Stormwater has been treated as a waste product rather than a resource. Time has proven this to be a flawed approach and has resulted in localized flooding throughout the Parish.

Corporation Canal is an example of this outmoded approach to stormwater management. Before the Corporation Canal was straightened and lined with concrete in 1971, it was known as Bayou Duplantier. The engineered modification did not alleviate the problem and the community continues to experience substantial flooding. The channelization of Bayou Duplantier was a missed opportunity to manage flooding in a more effective manner which would have enhanced the community's connection to the bayou.

As Baton Rouge moves forward, priority should be given to using drainage areas as public space for trails and wildlife corridors. Restoration of waterways should include naturalization of stream banks and lake edges, development of riparian buffers along stream corridors, and reestablishment of wetland systems for better stormwater collection and treatment.

### NATURALIZING THE PARISH'S STREAMS

Naturalization of streams and watersheds is a priority for East Baton Rouge Parish. Concrete channelization of additional waterways within the Parish should be avoided whenever possible. An interdepartmental review of Capital Improvement Projects (CIP) should be conducted whenever drainage improvement or CIP initiatives are in conflict with environment and conservation goals.

### Advantages of natural channel design include:

- Natural channels can be managed to accommodate the water flow of major storm events without channel incision or flash flooding.
- Natural channels can support a healthy ecosystem during both normal, low flows and high flows during storm events.
- A natural riparian buffer maintains higher water quality.

*Monte Sano Bayou - Before and After Restoration. Source: Brown+Danos*

*Cypress Creek, Houston. Source: Brown+Danos in partnership with Lee Forbes, KBR*

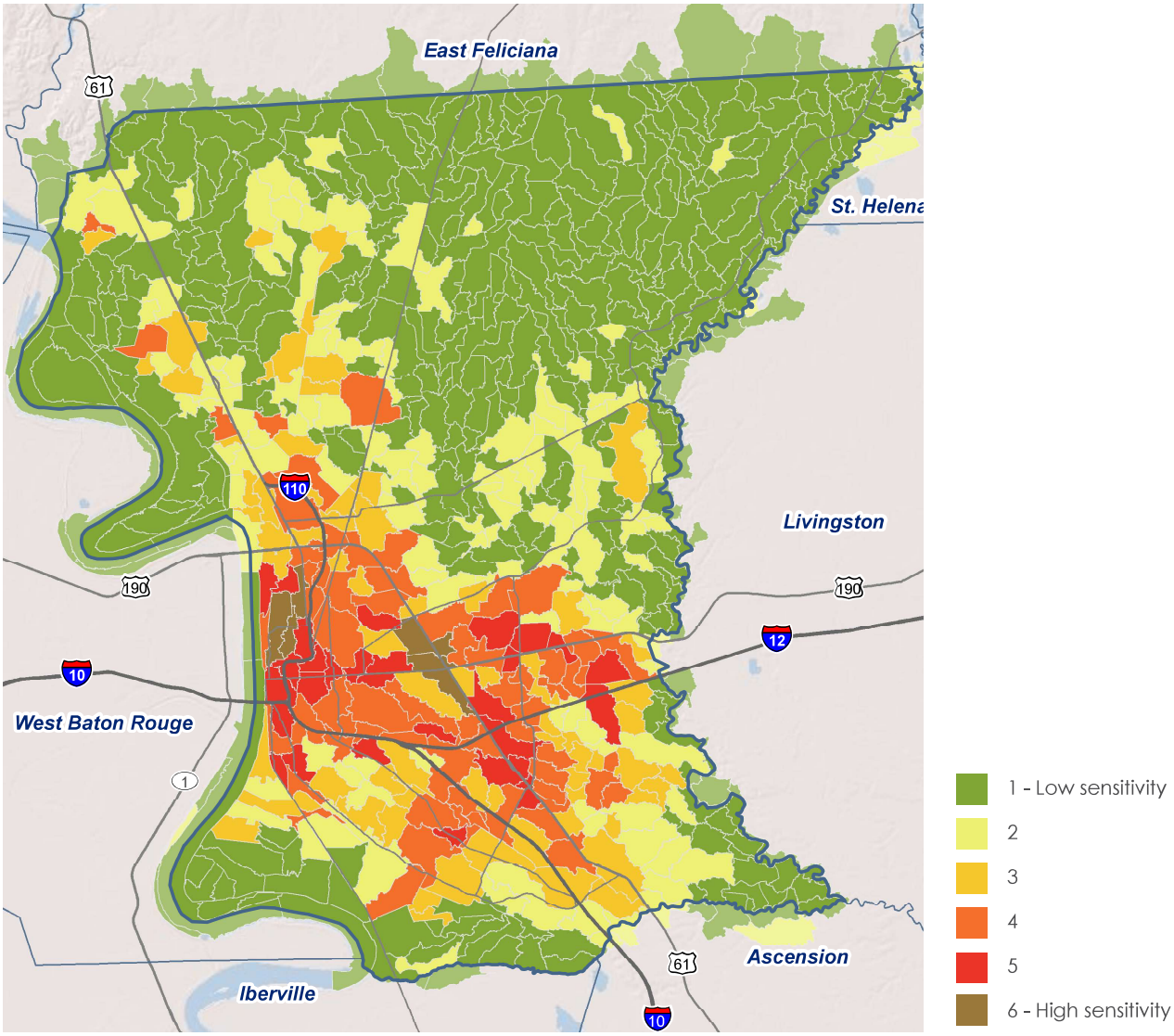
Part 1: **Environmental Analysis**

## Stream Restoration

Parish streams were inventoried and analyzed in 2010. The Stream Restoration Priority Map below illustrates segments that were identified as the highest priority for restoration. Restoration recommendations were based on the following criteria:

- Current degree of channel modification
- Location within the watershed
- Proximity to development

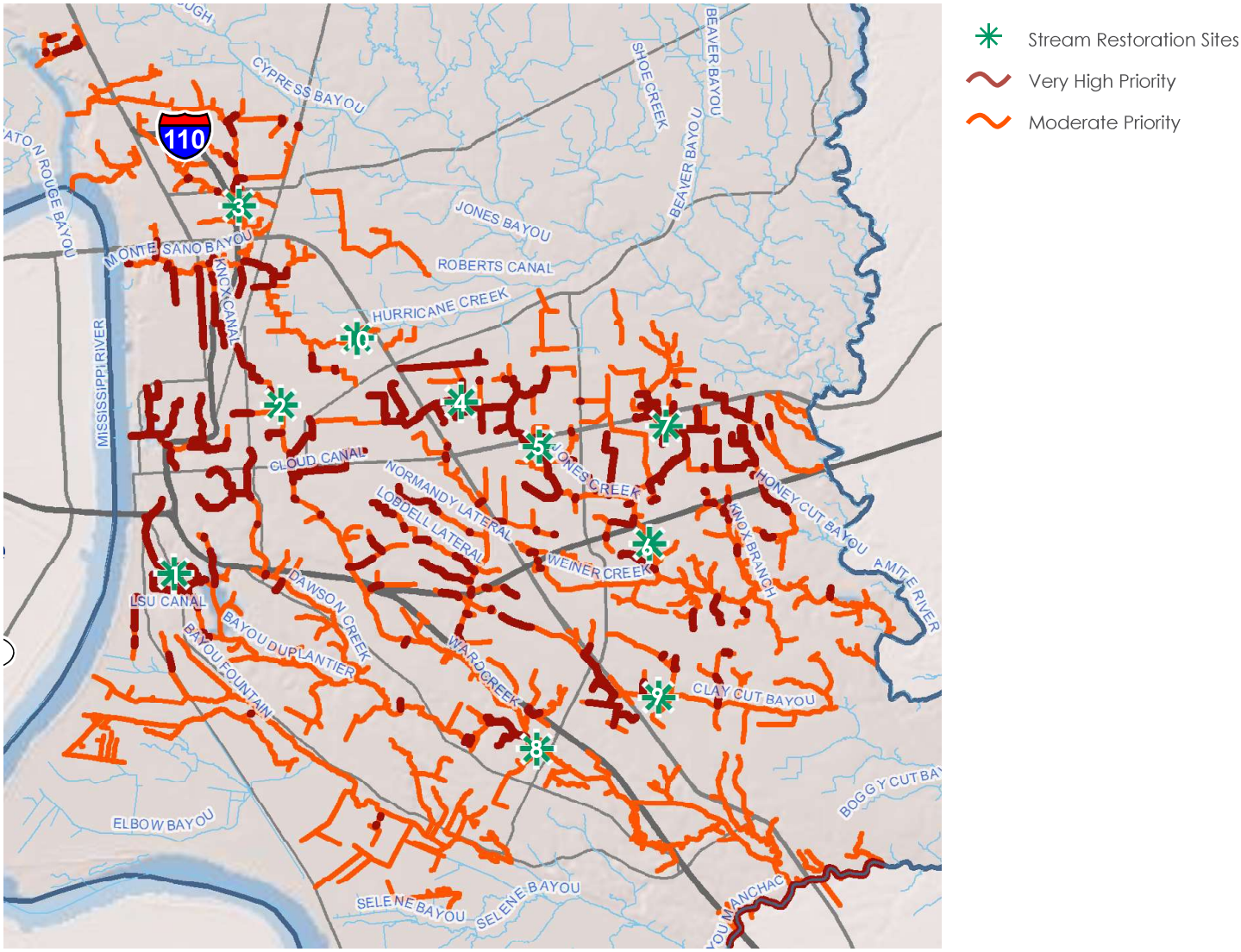
Watershed Sensitivity Map



## Part 1: Environmental Analysis

| # | Restoration Task | Adjacent Stream | Priority | Length (ft) |
|---|---|---|---|---|
| 1 | Stream naturalization, bank widening | Corporation Canal | High | 600 |
| 2 | Stream naturalization | Ward Creek | Moderate | 1,800 |
| 3 | Stream naturalization | Monte Sanyo Bayou | High | 2,000 |
| 4 | Stream naturalization, bank widening, riparian enhancement | Jones Creek | High | 3,500 |
| 5 | Stream naturalization, bank widening, riparian enhancement | Jones Creek | High | 1,500 |
| 6 | Stream naturalization, bank widening, riparian enhancement | Jones Creek | High | 4,000 |
| 7 | Stream naturalization, bank widening, riparian enhancement | Lively Bayou | High | 2,800 |
| 8 | Stream naturalization, bank widening, riparian enhancement | Ward Creek | High | 3,000 |
| 9 | Stream naturalization, bank widening, riparian enhancement | Clay Cut Bayou | High | 2,000 |
| 10 | Stream naturalization, bank widening, riparian enhancement | Hurricane Creek | Moderate | 3,000 |

Stream Restoration Priority Map Inset



Part 1: **Environmental Analysis**

## Floodplain Concerns

Almost half of East Baton Rouge Parish lies within the FEMA-designated base floodplains of one or more of the following creeks and rivers: Mississippi, Amite, Comite, Bayou Manchac, Ward, Dawson, Hurricane, Bayou Duplantier. Most areas in the U.S. regulate development within the base floodplain also referred to as the 100-year floodplain. Building in the floodplain comes with significant risk and it is inherently more expensive to build within because of regulations.

In August 2016, Baton Rouge was impacted by one of the worst natural disasters to have affected the United States. Record rainfall resulted in many areas of the parish inundated with floodwater as the water from this 1,000-year storm quickly exceeded the capacity of the drainage system. Recognizing the importance of assisting with recovery, the Planning Commission worked with the City-Parish departments to revise flood regulations that might otherwise have hindered the recovery effort.

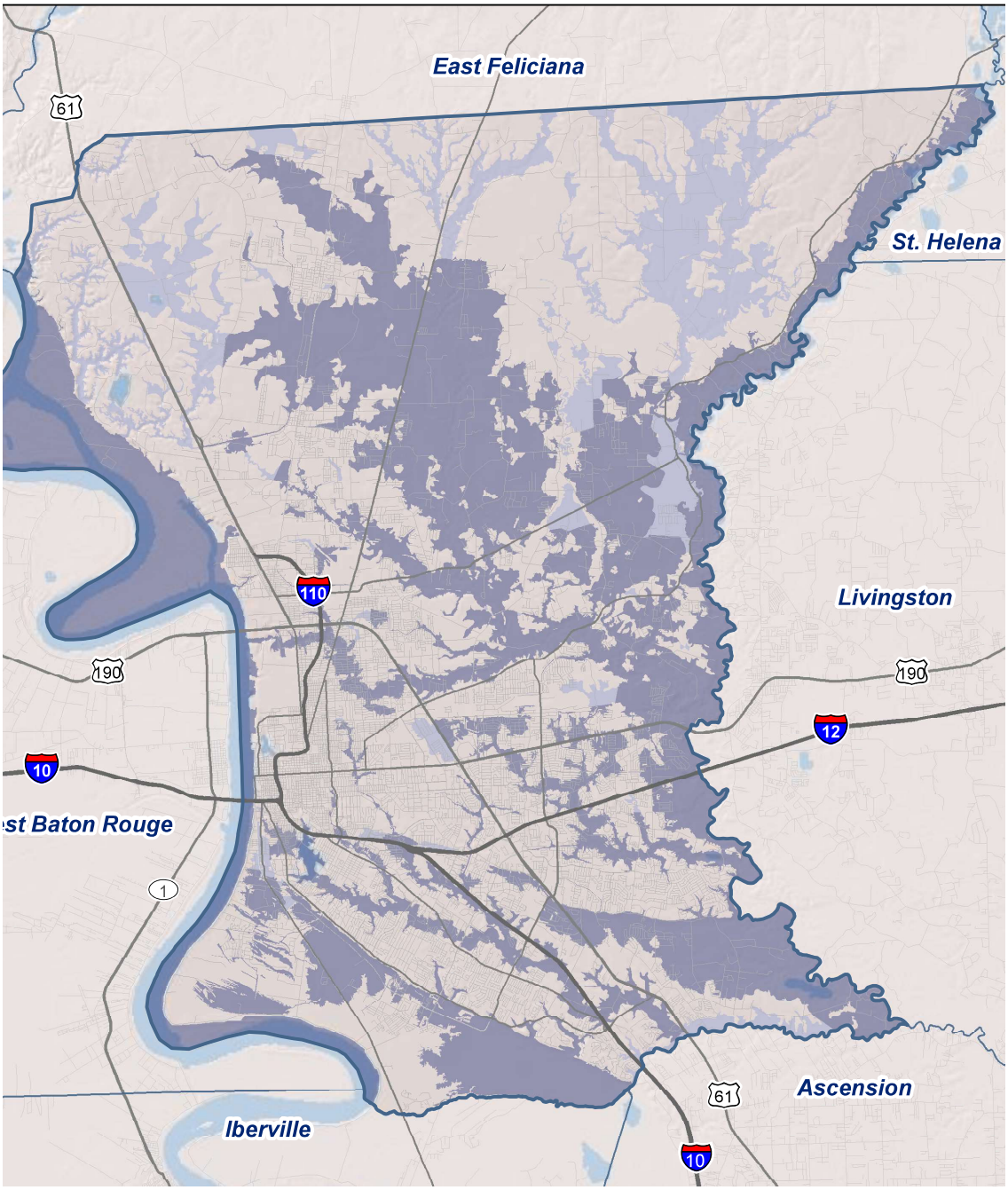
While these efforts were focused on immediate recovery, the City-Parish also began working to examine opportunities to enhance protection from future events. This effort began with meetings with the Planning Commission, LSU's Coastal Sustainability Studio, Louisiana Sea Grant, and the Center for Planning Excellence to assess how well existing regulations performed. As the discussions continued, other entities, including the Stephenson Disaster Management Institute and the Department of Homeland Security joined the discussions with a goal of developing computer models to assess the possibility that storms of this magnitude might return with increasing frequency and, evaluating their potential impact, recommend additional changes to strengthen our flood regulations.

It is important to recognize different types of flooding, and that different parts of the parish may be more or less vulnerable to one type or another. We recognize four different types: 1) flash-flooding--i.e. local neighborhood flooding immediately during/after a rain event; 2) headwater flooding--i.e., flood flow moving rapidly downstream and unaffected by conditions further downstream; 3) backwater flooding—i.e. when downstream conditions impede the flow of water, resulting in water backing up and causing upstream flooding; and 4) coastal flooding caused by wind-driven events. Such events are predicted to increase in frequency and severity.

The floods that impacted East Baton Rouge Parish in August were devastating, but the City-Parish responded to the challenge posed by the flood, helping with recovery efforts and working to look at the issue from a longterm perspective in order to develop the data necessary to enhance our sustainability in the future.

*Near LSU, August 2016 Flood.*

Parish 100-year Floodplain Map




*Source: FEMA 2010*

The 100 year base floodplain is a FEMA-determined geography that is based on elevation and the risk of flooding. This geography has a 1 percent chance of flood in a given year.

No known base flood elevation

Known base flood elevation

## Part 1: Environmental Analysis

### Stormwater Master Plan

Concerns about flooding in Baton Rouge have prompted the city-parish to move forward with creating a stormwater master plan. This plan is expected to outline a list of projects to address drainage. The engineering firm HNTB has been selected to develop the plan, chosen from a group of applicants who responded to requests for qualifications from the city-parish. The projects they come up with are expected to help prevent day-to-day flash floods during heavy rainstorms, along with preventing floods during 50-year and 100-year flood events. The stormwater master plan will look ahead 20 years, and it will also look farther than just Baton Rouge's boundaries. It will include hurricane storm surge-related flooding as well as the types of flooding encountered in the August 2016 event.

### Unified Development Code Revisions

The Metropolitan Council requested the Planning Commission and the Department of Development propose potential amendments to Chapter 15 (Floodways, Floodplains, Drainage and Water Quality) to revise the standards for storm water facilities and protection from flooding with Resolution 53127. As a response, the Planning Office, Department of Development, Department of Transportation and Drainage, Department of Maintenance, the Growth Coalition and local design professionals met as a working group to review Chapter 15 and Chapter 20, Definitions.

*Coursey Boulevard - August 2016*

## Water Quality Concerns

Some of East Baton Rouge Parish's surface waters, which include lakes, rivers, streams, and bayous are among the most adversely affected water bodies in Louisiana. Water quality evaluations from the U.S. Environmental Protection Agency (EPA) and the Louisiana Department of Environmental Quality (LDEQ) have demonstrated that the rate of pollution in the Parish's water bodies is increasing.

Most of the rivers, streams, and bayous in the Parish are listed as impaired and found to be "not supporting" for any of its designated recreational uses or fish and wildlife propagation. The Amite River, Comite River, and Bayou Manchac and its tributaries are severely impaired, at levels that require substantial intervention to remediate to fishable and swimmable conditions. Industrial discharge and stormwater run-off contribute to the impaired water quality in the Parish. Impairment is determined by water quality Total Maximum Daily Load (TMDL) testing and assessments of dissolved oxygen, nitrate, phosphorous, chlorides, sulfates, ammonia, and fecal coliform.

The Water Quality Enhancement Committee obtained an Environmental Protection Agency (EPA) grant to review historical and current watershed data and combine this data with long-term water quality data. This information can then be used to improve storm water quality, flood protection and implementation of targeted Best Management Practices.

A segment of Upper Ward Creek was chosen as the location for conducting this study. Locations were selected to collect water samples over a 24 month period at various flows.

Results indicated that most water quality parameters were at or below the EPA criterion. Preliminary monitoring of fecal coliform was found to exceed acceptable levels. The fecal coliform levels were much higher during a storm event, indicating that sewage systems along the watershed may be susceptible to overflow during a rain event.

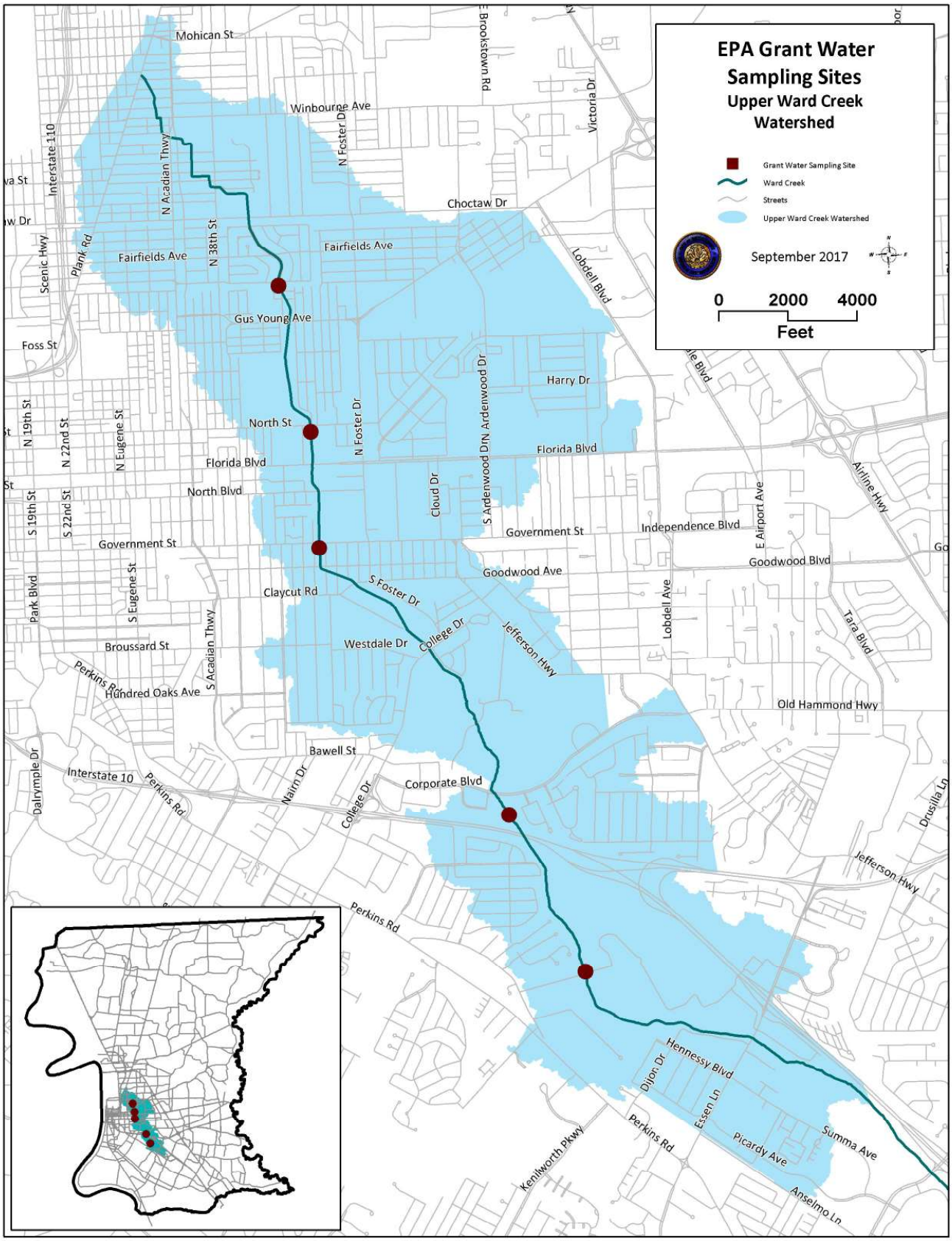
### Sediment, Nitrate and Phosphate

Erosion pollutes water bodies with sediment, which reduces the level of dissolved oxygen that is a life source for aquatic life. At construction sites, federal, state, and local laws require soil stabilization measures such as installation of silt fences and mulching. However, without strict enforcement of these laws, site erosion and sediment washes into nearby surface water. Heavy use of fertilizers on residential lawns are a primary source of high concentrations of nitrate and phosphate.

### Sewage Treatment Systems

The LDEQ has estimated that more than 10,000 individual packaged treatment systems have been installed in East Baton Rouge Parish. Typically individual systems are not maintained to the same standards as municipal systems. Leakage from individual packaged sewage treatment systems enter water bodies and includes fecal coliform, a bacteria dangerous to humans in high concentrations.

When the City-Parish expands its municipal sanitary sewer system, properties with individual systems should be required to migrate to the municipal system. To comply with the Clean Water Act TMDL levels MS4 requirements, the parish requires that new lots within 500 feet of the municipal systems

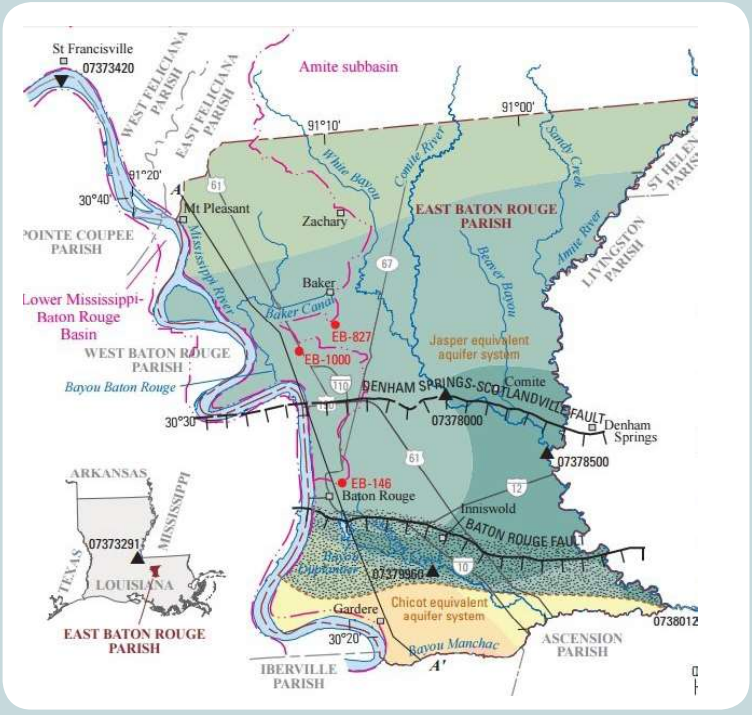

EPA Grant Water Sampling Sites
Upper Ward Creek Watershed
Grant Water Sampling Site
Ward Creek
Streets
Upper Ward Creek Watershed
September 2017
0 2000 4000
Feet
Mohican St
Winbourne Ave
E Brookstown Rd
Victoria Dr
Interstate 110
N Acadian Thwy
N Foster Dr
Choctaw Dr
Fairfields Ave
N 38th St
Scenic Hwy
Plank Rd
Lobdell Blvd
Gus Young Ave
Foss St
Harry Dr
N Ardenwood Dr
North St
N 19th St
N 22nd St
N Eugene St
Florida Blvd
Cloud Dr
S Ardenwood Dr
North Blvd
S 19th St
S 22nd St
Government St
Independence Blvd
E Airport Ave
Airline Hwy
Goodwood Blvd
Goodwood Ave
Park Blvd
S Eugene St
Claycut Rd
S Foster Dr
Lobdell Ave
Tara Blvd
Broussard St
S Acadian Thwy
Westdale Dr
College Dr
Jefferson Hwy
Perkins Rd
Hundred Oaks Ave
Old Hammond Hwy
Bawell St
Dalrymple Dr
Interstate 10
Nairn Dr
Corporate Blvd
Drusilla Ln
Jefferson Hwy
Perkins Rd
Hennessy Blvd
Dijon Dr
Essen Ln
Picardy Ave
Summa Ave
Kenilworth Pkwy
Perkins Rd
Anselmo Ln

are required to connect to the systems to prevent additional individual systems provided there is adequate capacity. Also, new lots further than 500 feet must be larger than the underlying zoning requires to minimize the number of septic systems in an area. The Parish should explore growth management principles outside of the service area of the municipal sanitary sewer system.

Another source of contamination is from untreated runoff and effluent. In some locations, stormwater runoff and treated sewer effluent from wastewater treatment plants are piped directly into the Mississippi River. A wholesale review of the Industrial Areas should be explored to find solutions that would mitigate this issue. From a regional environmental perspective, this practice is not sustainable because the Mississippi River is a source of drinking water for many parishes downstream of East Baton Rouge.

## Groundwater

East Baton Rouge Parish currently obtains virtually all pumped water, for public and industrial consumption, from groundwater sources within the sands of the Southern Hills Aquifer. A 2005 Louisiana DOTD water use report indicated approximately 166 million gallons of groundwater per day was pumped in the Baton Rouge area. Of that, more than 70 million gallons per day is withdrawn for industrial use, this equates to 42 percent of the total water consumption for the Parish for industrial use. Surface water obtained from the Mississippi River accounts for only 12 percent of the total water withdrawals for the Parish; the surface water is used for industrial purposes only.




*Approximate altitude of base of fresh groundwater*

### SALTWATER INTRUSION

Groundwater is the primary source of fresh water in Baton Rouge. Saltwater intrusion threatens the area's groundwater supply.

### AQUIFER DEPLETION

As demand for fresh water increases in the next 20 years, the effects of increased withdrawals on groundwater levels, as well as the need to pump for water from deeper areas are a cause for concern. Water from the aquifer system is being withdrawn at a faster rate than it is being recharged. Recharge, which is the addition of water to the aquifer, occurs by a few pathways including:

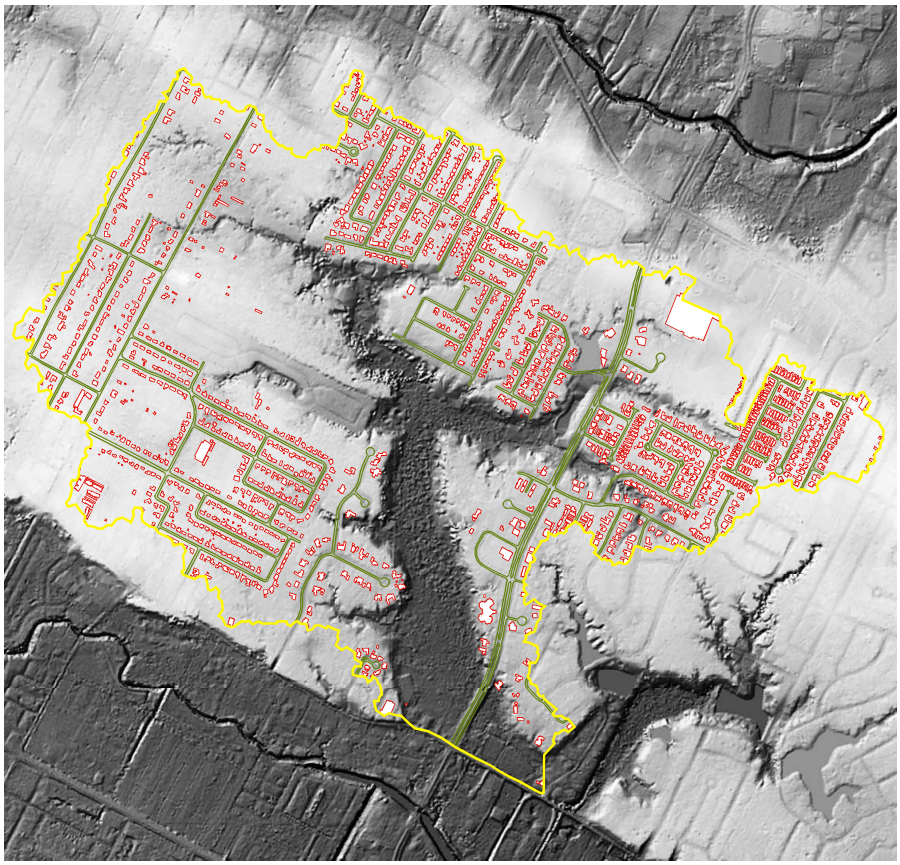
1. Direct infiltration of rainfall in outcrop areas in southwestern Mississippi and northern Florida.
2. Flow between the three aquifers in the system.
3. Movement of water between the aquifers and the Mississippi River.

The increased withdrawal rate is causing inflow of saline groundwater to encroach from the south in several of the sand aquifers. Long-term water level monitoring is essential in order to stop the saline intrusion on potable groundwater. If salt water intrusion into the aquifer becomes substantial, the aquifer water will be rendered unfit for consumption or industrial use. Protecting and conserving existing groundwater resources is the most economically sound and environmentally sustainable response to this problem.

## Wetland Loss

Wetlands continue to be developed in the Parish, significantly modifying the hydrology. Often property owners mitigate wetland loss by purchasing replacement wetlands where land is less expensive, often outside of the watershed or even outside of the state. Over time, this practice results in significant degradation of the hydrology within East Baton Rouge Parish.

Residential Development Near Bluebonnet Swamp




This shaded relief image shows the expansion of residential development – streets in green and buildings in red that are encroaching into the Bluebonnet Swamp in dark grey.

Bluebonnet Swamp, near Perkins Road and Bluebonnet Boulevard, is an example of the detrimental impacts of urbanization in wetland areas. Studies by the City-Parish Planning Commission and Louisiana State University indicate substantially increased sediment levels in Bluebonnet Swamp after residential areas were constructed. High sediment loads impair the swamp's health and productivity – covering vegetation and aquatic animals with silt, reducing light penetration, oxygen content, and overall water storage capacity of the area.

To prevent further wetland loss and to restore the health and value of wetland areas, four main strategies are recommended:

1. Conduct a detailed analysis of the value of existing wetlands. Wetland value is determined by its hydrology and the size of the drainage area. Value is also determined by the health and productivity of vegetation, contiguous size and its shape (a wetland with larger interior area is more valuable than a long, narrow wetland), the type and extent of wildlife species it supports, and the types of surrounding land uses. Conducting a wetland assessment will help develop priorities for conservation and restoration.
2. Protect the highest valued wetland areas from future development. This can be accomplished by purchasing land or establishing easements. Non-profit organizations including the Trust for Public Land and The Nature Conservancy should be partners in this process. Land owners should be encouraged to donate the wetlands for tax purposes or establish property as wetland mitigation banks to generate income.
3. Require wetland mitigation to occur within the same watershed as the affected wetland. Mitigation of wetland impacts are regulated by Section 404 of the Clean Water Act, and mitigation permits are under the exclusive jurisdiction of the U.S. Army Corps of Engineers. Ensuring that mitigation for loss of local wetlands is conducted within the same watershed would require cooperation and collaboration with the Corps.
4. Enhance degraded and low-value wetland areas. A wetland assimilation system should be developed in which treated sanitary wastewater or other approved wastewaters are introduced into suitable wetlands. This would increase overall wetland growth and health, as well as filter the water before it reaches surface water bodies. This technique has proven successful in other areas of South Louisiana, including Houma, Thibodaux, and Mandeville. This strategy supports water quality goals and would be part of the solution to the Parish's sanitary sewer problems.

## Biodiversity

It is vital for East Baton Rouge Parish to protect, restore and enhance existing open space and habitat areas. The Parish has many natural features that provide wildlife habitat, including the Comite River and the Amite River which run north-south through the Parish and meet near Highway 190/Florida Boulevard. In fact, a portion of the Comite River within the Parish is designated natural and scenic by the Louisiana Department of Wildlife and Fisheries.

The Parish also has several contiguous forest tracts. These unfragmented areas are particularly important for many species. The size of habitat area is the best predictor of species diversity as a whole. Large areas of 100 acres or more are more resilient to environmental stresses. Animals have territory requirements—some require extremely large areas and others need only a few acres.

The visual quality and character of the Parish is also enhanced when continuous natural areas are accessible to residents and visitors. In addition, soil in continuous natural areas provides a larger permeable area for infiltration of stormwater, reducing localize flooding.

*Though under private ownership, this large area of open space remains in the southern part of the Parish, providing picturesque views and contributing to infiltration of storm water.*

*BREC preserves and manages several designated conservation areas, including Forest Park, Bluebonnet Swamp, Blackwater Nature Preserve, and Frenchtown Road Conservation Area.*

## Tree Canopy

Preserving and restoring the tree canopy is an important goal for the Parish. It also provides significant credit for saving existing trees of value, depending on species and size. New policies at the City-Parish level reduce site clearing prior to construction. A new development amendment was adopted into the UDC requiring a permit to clear sites, and the documentation showing how much will be cleared. Full enforcement of the UDC's site clearing requirements is critical. There are significant improvement opportunities in this ordinance that would help preserve mature, native trees and the tree canopy within the Parish, including expanding the ordinance to include properties that are less than one acre.

*Tree Canopy Coverage*


### 3 MAIN PLANT COMMUNITIES IN THE PARISH:

- **Longleaf pines:** Historically, the longleaf pine community was found in the northeastern portion of the Parish, but it has been largely replaced with spruce and slash pines.
- **Upland hardwoods:** This community is characterized by large shade-tolerant deciduous trees with an understory of woody shrubs and herbaceous groundcover plants.
- **Bottomland hardwoods and cypresses:** These trees are located primarily along the western and southern edges of the Parish, following the Mississippi River and Bayou Manchac.

Tree canopy

## Air Quality

Air quality is an important health concern for residents of East Baton Rouge. East Baton Rouge Parish does not currently meet the Environmental Protection Agency's primary or secondary ambient air quality standards for ozone. Emissions from industrial plants in northern East Baton Rouge Parish are the primary source of high levels of ozone in the Parish. In Louisiana, ozone is currently monitored at numerous sites, most of which are located within the Baton Rouge metropolitan region.

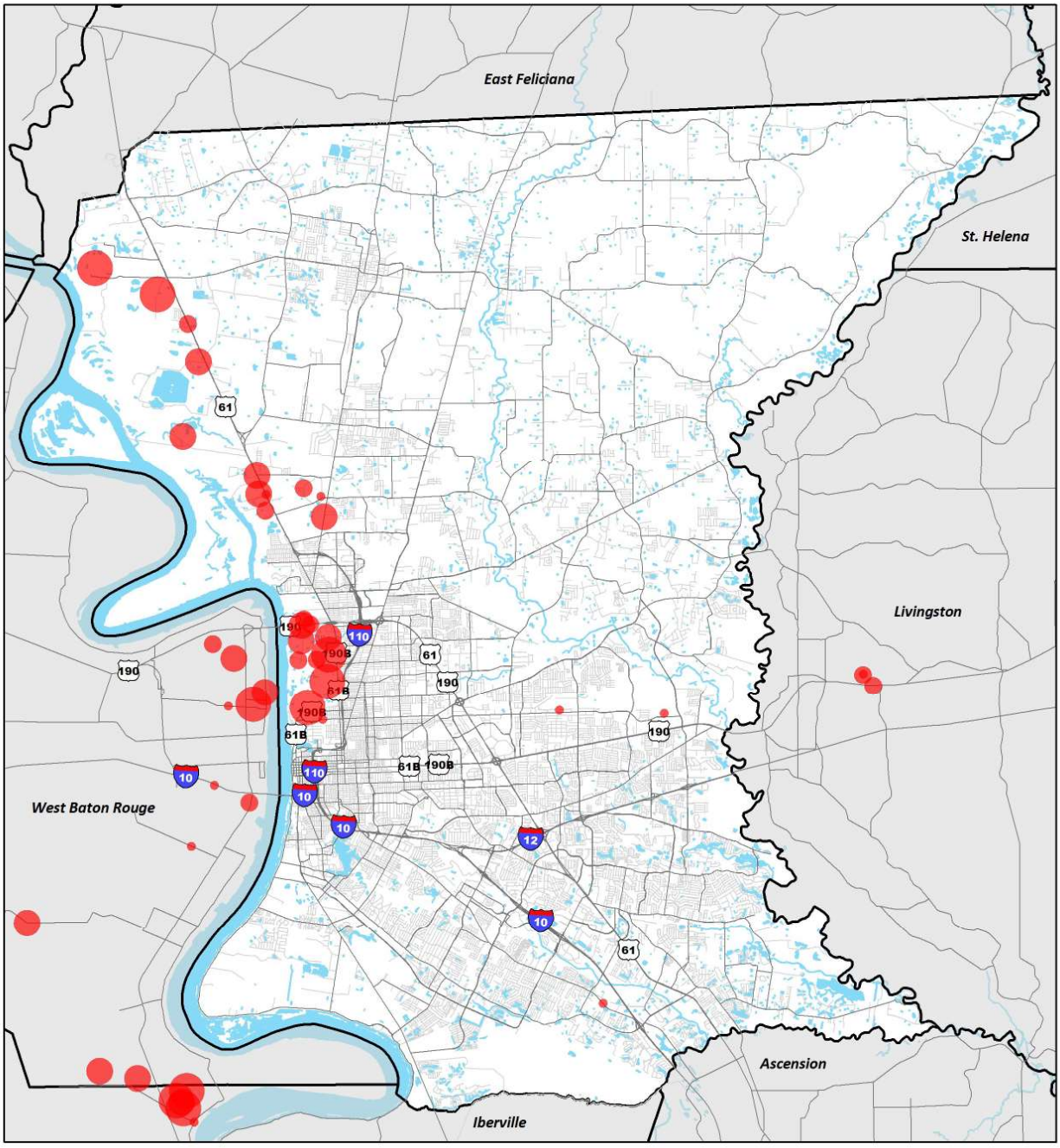
### MONITORED SITES IN THE METROPOLITAN REGION

- Carville
- LSU
- French Settlement
- Grosse Tête
- Dutchtown
- Capitol
- Bayou Plaquemine
- Baker
- Pride
- Port Allen
- New Roads

### IMPROVING AIR QUALITY

The Parish can reduce emissions to meet and surpass clean air standards through a combination of policies and targeted emission reductions such as:

- Reducing stationary source pollution such as buildings and industry.
- Reducing mobile source pollution such as vehicle emissions.
- Instituting new policies such as improved transportation, transit systems and changes in land use development, prohibition of burning and dust abatement during construction.




*Toxic Release Inventory in Millions of T/year*

- 0 to 7,000
- 7,000 to 30,000
- 30,000 to 200,000
- 200,000 to 4,500,000

# ENVIRONMENT AND CONSERVATION

# Part 2: **Goals, Objectives and Actions to Achieve the Vision**

This section details the environment and conservation goals, objectives and actions that will move East Baton Rouge Parish toward the community's Vision.

Goals are the big overarching ideas, changes or practices that are essential to realize the community's Vision.

Objectives establish specific, measurable, attainable and realistic goals that guide how the Comprehensive Plan is implemented in a way that will achieve the Vision.

Actions outline the steps needed to achieve the objectives.

## Environment and Conservation Goals

1. Preserve and enhance environmental assets.
2. Protect watersheds, wetlands, and floodplains.
3. Improve and protect the quality and quantity of surface water and groundwater.
4. Preserve and restore the tree canopy.
5. Improve air quality to meet or exceed national ambient air quality standards.
6. Protect, preserve, and enhance land resources and natural features.

## Environment and Conservation Goal 1

### Preserve and enhance assets.

#### Objective 1.1

Protect the Parish's ecology in the land development process.

#### Actions to support objective 1.1:

1.1.1 Encourage the conservation of open space as part of the land development process. Focus on the preservation of habitat, endangered plant and wildlife habitat,wetlands, floodplains and other natural resources.

1.1.2 Establish buffer requirements for developments that are adjacent to forested habitat, riparian habitat, wetlands, and water bodies.

1.1.3 Establish open space requirements for development based on land use category.

1.1.4 Create incentives to encourage use of native plant materials in meeting the landscape code through outreach program for developers, designers, engineers, and contractors.

#### Objective 1.2

Prioritize protection of open space that is of high ecological value.

#### Actions to support objective 1.2:

1.2.1 Identify, purchase, and manage land or conservation easements in priority ecological areas.

1.2.2 Include identification and consideration of preservation and management of prime agricultural land and significant natural areas in Small Area Planning Programs.

1.2.3 Collaborate with BREC to acquire land and establish conservation lands and continue to implement the BREC Natural Resource Conservation Plan.

### Objective 1.3

Work with other agencies to provide outreach to the public, create guidelines and craft incentive programs to protect the Parish's ecology.

### Actions to support objective 1.3:

1.3.1 Establish procedures for inter-agency coordination to address issues relating to planning, acquisition, exchange and development of conservation lands, stream corridors, tree canopy, and wetlands.

1.3.2 Collaborate with other agencies to provide development or tax incentives for significant land donations.

1.3.3 Partner with East Baton Rouge Parish, Livingston Parish, Ascension Parish, and Iberville Parish to acquire part of the woodland areas for conservation and water quality purposes.

## Environment and Conservation Goal 2

### Protect watersheds, wetlands, and floodplains.

### Objective 2.1

Develop a watershed–based strategy for the region with inter–parish and state agency coordination.

### Actions to support objective 2.1

2.1.1 Continue to analyze watersheds within East Baton Rouge Parish for use in watershed management and water quality improvement.

2.1.2 Consider appointing a watershed coordinator with authority to collaborate with City-Parish agencies and adjacent Parish coordinators to make watershed based policies and decisions.

2.1.3 Develop a Parishwide water management plan at the sub-watershed level.

2.1.4 Improve water quality by monitoring TMDLs on impaired waterways and participating in the MS4s program as mandated in the Clean Water Act

2.1.5 Work with industry near the Mississippi River to encourage use of river water rather than groundwater for circumstances when non-potable water is sufficient for industry needs.

### Objective 2.2

Reduce impacts and restore natural hydrology in sensitive watersheds.

### Actions to support objective 2.2:

2.2.1 Develop stricter water quality requirements for development in prioritized watersheds.

2.2.2 Continue to enforce existing UDC water quality requirements, including the requirement to preserve and utilize existing drainage or enhanced natural drainage on development sites.

2.2.3 Institute stricter penalties for violations to more effectively discourage activities that pollute.

2.2.4 Naturalize bayous, streams, rivers, and creeks that have been channelized, straightened, or lined with concrete, based on the Stream Restoration priority map.

2.2.5 Daylight priority drainage channels that have been covered based on the Stream Restoration priority map.

2.2.6 Seek grants and partner with nonprofit environmental organizations to implement a stream restoration plan.

2.2.7 Work with the Army Corps of Engineers to require wetland impact mitigation to take place within the watershed being adversely affected.

2.2.8 Create or revise the regulatory documents of the City-Parish to address the amount of

impervious surfaces allowed within the area currently served by drainage infrastructure.

2.2.9 Update the inventory of watersheds within the City-Parish that are defined as impaired.

2.2.10 Develop regulations to reduce the amount of impervious surfaces permitted within impaired areas.

### Objective 2.3

Mitigate existing adverse impacts to watersheds and water quality.

### Actions to support objective 2.3:

2.3.1 Identify and purchase land or conservation easements in critical undeveloped areas at confluences of major tributaries to Bayou Manchac.

2.3.2 Identify, restore, and enhance critical wetland areas.

2.3.3 Promote the development of green or living roofs.

2.3.4 Continue to require that post-construction stormwater runoff levels do not exceed pre-construction levels to minimize water quality impacts and hydrologic modifications within a watershed.

2.3.5 Educate the public on water quality and watershed issues through public service announcements, events, and collaboration with media outlets.

### Objective 2.4

Protect the flood storage capacity of the floodplains.

### Actions to support objective 2.4:

2.4.1 Limit development in high hazard flood areas.

2.4.2 Discourage development in floodplains by requiring floodplain mitigation above the level of impact.

2.4.3 Require full mitigation within each watershed of floodplain impacts allowed in the watershed.

2.4.3 Encourage use of design alternatives in development projects to maximize on-site stormwater retention.

2.4.4 Update flood protection and stormwater regulations to ensure they reflect best practices.

2.4.5 Continue to update Chapter 15 in UDC as data becomes available.

## Environment and Conservation Goal 3

### Improve and protect the quality and quantity of surface water and groundwater.

### Objective 3.1

Reduce pollutant discharges to surface and groundwater bodies to meet applicable federal, state and local standards to improve and maintain human health and the environment.

### Actions to support objective 3.1:

3.1.1 Continue to support and participate in state and federal clean water programs, representing the Parish's concerns and assuring affordable and equitably funded wastewater facilities to meet existing and future requirements.

3.1.2 Support continued monitoring and enforcement of the Louisiana Pollutant Discharge Elimination System requirements for wastewater treatment in the Parish.

3.1.3 Prepare and adopt a sedementation erosion control ordinance to reduce

adverse impacts of urban development and redevelopment on surface water quality.

3.1.4 Develop a local groundwater protection strategy for East Baton Rouge Parish consistent with the Louisiana Ground Water Protection Strategy.

3.1.5 Support efforts to clean up and eliminate injection wells and hazardous waste disposal facilities that pose a threat to ground water protection, while enforcing proper siting, construction, maintenance and operation of all wells and waste disposal facilities.

### Objective 3.2

Prevent sanitary sewer overflows and leaks.

### Actions to support objective 3.2:

3.2.1 Continue improvements to the City-Parish sanitary sewer system as required by the consent decree.

3.2.2 Locate and map existing packaged treatment systems that were previously installed throughout the Parish and develop a program for regular inspection and enforcement of maintenance, repair, or replacement requirements.

3.2.3 Minimize permitting of additional individual packaged treatment systems.

### Objective 3.3

Educate the public on water quality issues and resource management to promote the protection of groundwater resources through water conservation programs and incentives for residential and nonresidential uses.

### Actions to support objective 3.3:

3.3.1 Expand and support the wastewater reduction public education program, which encourages commercial and industrial users to reduce wastewater flows and treatment costs and to conserve groundwater.

## Environment and Conservation Goal 4

### Preserve and restore the tree canopy.

### Objective 4.1

Minimize loss of tree canopy through site clearing.

### Actions to support objective 4.1:

4.1.1 Increase penalties for non-permitted site clearing and removal of existing trees.

4.1.2 Provide incentives for preserving and protecting existing trees on development sites.

### Objective 4.2

Enhance the Parish's tree canopy.

### Actions to support objective 4.2:

4.2.1 Identify and prioritize areas for urban reforestation.

4.2.2 Collaborate with Baton Rouge Green and the Louisiana Chapter of ASLA to develop incentives and programs for tree preservation.

4.2.3 Set targets for increasing the urban tree canopy.

4.2.4 Partner with arborists and landscape contractors to promote and train in proper tree care, including pruning to ensure the health and viability of trees in the Parish.

4.2.5 Enforce the requirement that licensed arborists be engaged in the maintenance of identified specimen trees of valued species identified in the UDC.

## Environment and Conservation Goal 5

### Improve air quality to meet or exceed national ambient air quality standards.

#### Objective 5.1

Minimize air pollutant emissions from mobile and stationary sources to reduce emissions and improve air quality.

#### Actions to support objective 5.1:

5.1.1 Collaborate with LDEQ to require reductions in industrial emissions.

5.1.2 Encourage major employers to designate prime parking spaces for low-emission and low-fuel consumption vehicles.

5.1.3 Provide infrastructure for additional transportation modes, including transit, bicycles, and pedestrians (See Transportation element).

5.1.4 Encourage use of alternative modes to reduce vehicle miles traveled and mobile emissions (See Transportation and Land Use elements).

#### Objective 5.2

Increase public awareness and education about air pollution.

#### Actions to support objective 5.2:

5.2.1 Continue support of the Baton Rouge Clean Air Coalition in its efforts to monitor and develop an aggressive ozone reduction program.

5.2.2 Encourage use of renewable energy sources and energy efficient appliances.

## Environment and Conservation Goal 6

(See Land Use Element)

### Protect, preserve, and enhance land resources and natural features.

#### Objective 6.1

Remediate brownfield sites to prevent further pollution and utilize land for other uses.

#### Actions to support objective 6.1:

6.1.1 Continue and expand the highly successful Planning Commission Brownfields Program to encourage infill development and preserve land resources.

6.1.2 Provide incentives for private sector cooperation to reduce the creation of hazardous wastes, the cleanup of brownfield sites, and the return of land to productive uses while establishing appropriate measures for long term environmental protection.

#### Objective 6.2

Develop guidelines for the preservation of view corridors and restoration of natural resources.

#### Actions to support objective 6.2:

6.2.1 Provide incentives for mining site property owners to reclaim and reuse their sites through environmental enhancements such as grading and vegetation renewal.

6.2.2 Coordinate conservation and development of important natural resources by establishing a committee that represents the views of the federal, state, and local agencies involved in these efforts, including private and non profit agencies.

6.2.3 Establish guidelines that preserve significant natural views and vistas, important visual linkages and/or corridors through establishment of landscaping standards, sign control, and other urban design techniques.