

What influence does drainage and levees have on Plaquemines Parish? How will related decisions impact fellow community members and me?

Plaquemines Parish MASTER PLAN



President Billy Nungesser

PURPOSE STATEMENT: (1) To develop a comprehensive understanding of the drainage issues and flood control capacity; (2) With consideration of the planned drainage improvement projects, to determine if the resulting flood control capacity meets the long term needs of the Parish, and (3) To establish a long-range flood control strategy.

Big Ideas

- The largest need for the Plaquemines Drainage Department is to undergo a storm-proofing or hardening program throughout the 21 drainage pump stations, much like the programs that are currently being installed throughout Orleans and Jefferson Parishes. These hardening projects, with an estimated cost of \$46.2 million, would increase the probability of the stations remaining in service during significant storm events. The types of projects would include:
 - Installation of safe houses to protect the operators during severe storms
 - Installation of storm shutters on the buildings
 - Hardening the buildings which are currently rated for 120 mph winds, but not the 150 mph winds of a Category 5 hurricane
 - New floodwalls
 - Mechanical bar screens that would prevent the stations from being clogged
 - Reinforcement and protection of pump station fuel tanks from potential storm related damage
- Adopt a GIS-based drainage management program. Establish Parish-wide flood control level of service currently provided by the existing systems.
- Develop a strategy to enhance the conveyance capacity in parish canals and to add new pump stations. Improve canal maintenance through dredging and cleaning, reshaping, sheet piling, and control structure modifications. Some canal systems need to be extended for improved efficiency.
- Most of the levees are several feet below the authorized elevation set by the USACE. Plaquemines Parish and the USACE are working to bring these levees up to authorized elevations.

Big Decisions & Questions

- What impact do coastal restoration efforts have on the levee and drainage system?

GIS – Geographic Information System

Any scientific effort to combine data to help visualize, analyze, and explore geographically referenced information.

It is estimated that it will cost \$46.2 million to implement the hardening program to protect Parish pump stations from future storms.

Related Big Issues

- ❖ The existing drainage system does not offer adequate flood control desired by residents and businesses.
- ❖ Advisory Base Flood Elevation (ABFE) and the pending FEMA flood maps are critical to the parish's development as zones on the Flood Maps affect the flood insurance.
- ❖ Local flood control improvements should go hand-in-hand with coastal restoration programs to achieve overall flood control benefits.
- ❖ Pursue servitude agreement to bring private drainage ditches into Parish system to ensure proper maintenance and flood protection.

EXISTING CONDITIONS

Drainage System

Flooding in the low-lying areas of Plaquemines Parish can be attributed to a variety of sources including the following: intense rainfall, high tides in the Gulf of Mexico, hurricanes, and tropical storms. In the northern portion of the parish, including Belle Chasse, the predominant flooding source is rainfall runoff, which cannot be discharged by the pumping facilities expeditiously. For the areas in the southern portion, the greater flood threat is due to storm surge inundation resulting from hurricanes or other disturbance in the Gulf.

The drainage system in Plaquemines Parish is operated and maintained by the Parish Drainage Department. It primarily consists of drainage canals and ditches: drainage pipes in urban developed areas and 21 drainage pumping stations. The drainage areas are typically bounded by Mississippi River levees on the river side and hurricane protection levees on the Gulf side. Drainage pump stations play a critical role in flood protection.

Levees

Within Plaquemines Parish, most levees are owned by the U.S. Army Corps of Engineers (USACE) [referred to as federal levees] or Plaquemines Parish [referred to as non-federal levees or back levees]. The levees along the Mississippi River are owned by the USACE, and they function to retain the high waters in the Mississippi River. The levee system maintained by USACE protects less than 4 percent of the land mass in Plaquemines Parish.

Back levees were constructed to protect storm surge from the Gulf, and they provide flood protection from hurricanes and other tropical disturbances. There are 12 levee systems in Plaquemines Parish. Each levee system provides protection to a drainage district. The levee system will also contain drainage pump stations. The 12 levee systems are listed in the inventory below.

Subsidence

It is widely believed that coastal Louisiana sinks at a rate between 0.04 inches and 0.3 inches per year as a collective result of sediment deposition from Mississippi River to the deltaic coast, compaction and oxidation of sediments, oil and water pumping activities, and sea level rise due to climate change.

**Inventory of Levee Systems
Plaquemines Parish**

Drainage District	Existing Levee Grade	Authorized Levee Grade	Miles of Levee
West Bank			
Belle Chasse	10'	14'	28.16
Ollie	7.4'	11.5'	12.34
West Pointe a la Hache	9'	11.5'-12'	2.22
Diamond	7'-11'	12.6'-13'	5.11
Hayes	12.7'	13'-15'	11.75
Gainard Woods	13'	13'-15'	17.58
Sunrise	11'-15'	15.5'	8.94
Grand DeLiard	11.5'	15.5'	12.54
Duvic	14'	15.5'-16.5'	16.06
East Bank			
Braithwaite	9.2'	11.5'	2.96
Scarsdale	9.4'	11.5'	31.23
East Pointe a la Hache	14.1'	17.5'	29.64

DRAFT FOCUS SHEET

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LIVING WITH WATER

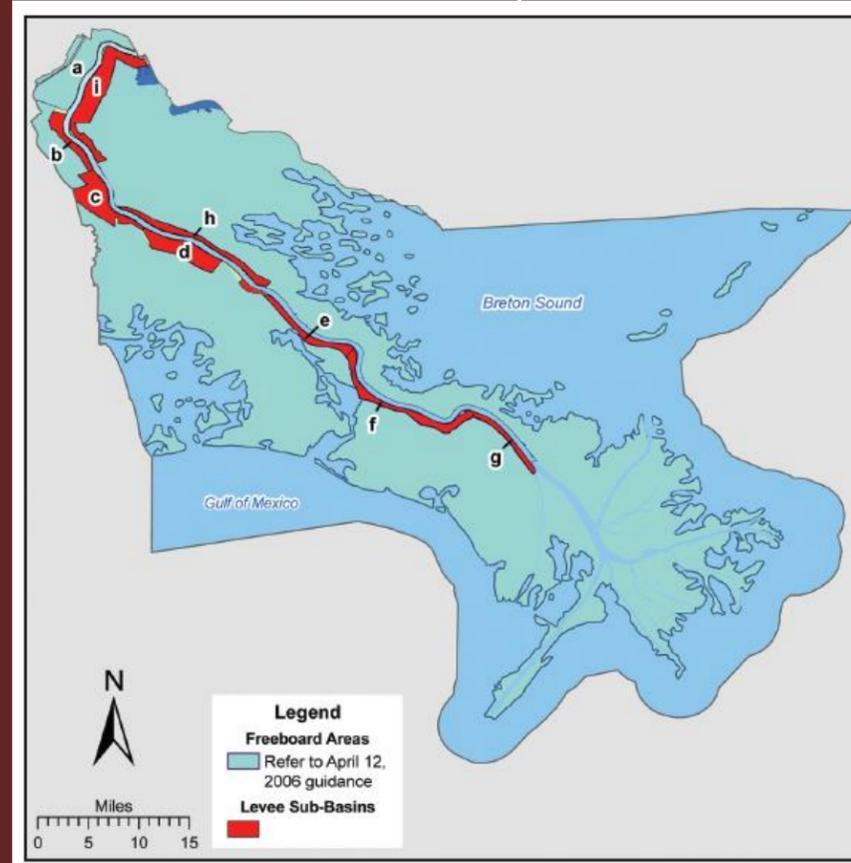
PLANNED INVESTMENTS

- Following Hurricane Katrina, all 21 pump stations underwent at least minor repairs. Eight pump stations underwent major repairs, which involved rebuilding and replacing key components of the pumps. These eight pump stations are Diamond, Hayes, Gainard Woods #2, Sunrise #2, Scarsdale #2, Scarsdale, Bellevue, East and West Pointe a la Hache.
- Five Plaquemines Parish drainage pump stations are being rebuilt to comply with the Advisory Base Flood Elevation (ABFE) standards using 2009 funding assistance provided by the Federal Emergency Management Agency (FEMA). This \$46.5 million investment will add new pump capacity. The pump station investments include: \$7.6 million for Triumph Drainage Pump Station (Upper), \$8.0 million for Braithwaite Drainage Pump Station, \$7.7 million to the Belair Drainage Pump Station, \$7.4 million to the Sunrise #1 Drainage Pump Station, and \$15.8 million to the Gainard Woods #1 Drainage Pump Station. FEMA also provided \$6.5 million for installation of 17 temporary pumps throughout Plaquemines Parish.
- The USACE is currently inspecting all of the levees that are owned by the USACE. The purpose of these inspections is to cite any deficiencies and to prioritize possible repair/improvement projects. The results of these inspections will likely be published in 2011.
- The on-going, USACE's B-2 Levee improvement is scheduled to be completed by December 2011.

Updated Advisory Base Flood Elevation Guidelines, Plaquemines Parish

Parish ABFE Levee Sub-Basin Identification Code	USACE Levee Polder Name	FEMA ABFE Based on USACE SWELs (in feet, NAVD88)
a	Belle Chasse	Refer to April 12, 2006 guidance
b	Plaquemines, Non-Federal, Area 6 West	8 feet
c	Plaquemines, Non-Federal, Area 5 West	9 feet
d	Plaquemines, Non-Federal, Area 4 West	10 feet
e	Plaquemines West Bank, Reach A	12 feet
f	Plaquemines West Bank, Reach B-1	11 feet
g	Plaquemines West Bank, Reach B-2	11 feet
h	Plaquemines East Bank, Reach C	16 feet
i	N/A (non-USACE levee polder on east bank)	18 feet

Sub-basin Locations, Plaquemines Parish



Source: Federal Emergency Management Agency (FEMA), USACE.

Inventory of Existing Pump Stations Plaquemines Parish

	Pump Station	# of Pumps	Capacity (CFS)	Area (Acres)
West Bank				
1	Belle Chasse No. 2	3	990	14,800
2	Barriere Road	1	24	N/A
3	Belle Chasse No. 1	5	3600	14,800
4	Ollie (Upper)	2	130	3054
5	Ollie (Lower)	1	132	3054
6	Ollie (New)	2	149	3054
7	West Pointe a la Hache	3	48	129
8	Diamond	2	256	800
9	Hayes	2	500	1,377
10	Gainard Woods No. 1	2	408	2,754
11	Gainard Woods No. 2	2	580	2,754
12	Sunrise No. 1	2	180	1,450
13	Sunrise No. 2	2	290	1,450
14	Triumph (Upper)	1	130	N/A
15	Grand DeLiard	3	840	2,100
16	Duvic	2	560	1,670
East Bank				
17	Braithwaite	2	110	370
18	Scarsdale	4	1784	8,700
19	Belair	1	130	1,700
20	Bellevue	2	500	4,067
21	East Pointe a la Hache	2	500	4,067



(right) lower: Pump station in Plaquemines Parish.

(below) Federal levee along the Mississippi River

