

## Pump Stations

There are 78 pump stations (Federal and Non-Federal) in the 4-parish area. Following Hurricanes Katrina and Rita, the Corps received authorization and funding for 33 repair projects. All projects are now complete except for 2 that are included in a storm proofing contract in Orleans Parish.

### Pump Station repair projects included:

#### Jefferson Parish (\$2.7 M):

- Eight repair projects at 17 stations

#### Orleans Parish (\$73.2M):

- 14 repair projects at 23 stations and the Carrollton Frequency Changer Building

#### St. Bernard Parish (\$27.6 M):

- Six repair projects at 8 stations

#### Plaquemines Parish (\$26.5 M):

- Five repair projects at 13 stations

## Storm Proofing of Pump Stations

There are 24 funded Storm Proofing projects in Jefferson and Orleans parishes. The program is 91% complete.

#### Jefferson Parish: 16 projects, \$136 M

There are 25 pump stations divided into 16 planned individual Storm Proofing construction projects.

- Two in construction, 11 complete

#### Orleans Parish: 18 projects, \$204 M

There are 24 pump stations divided into 18 planned individual Storm Proofing construction projects.

- Five in construction, Five complete

## Outfall Canals

Construction and installation of the interim closure structures and pump stations at the three outfall canals was performed before the start of the 2006 Hurricane Season. These interim structures provide 100-year level risk reduction and will remain in place until the new, permanent structures are built.

The total maximum pumping capacity today at the three outfall canal pumps is more than 16,000 cubic feet per second (cfs).

<b>17th St. Canal</b>	- 9,200 cfs total pumping capacity
<b>Orleans Ave. Canal</b>	- 2,200 cfs total pumping capacity
<b>London Ave. Canal</b>	- 5,200 cfs total pumping capacity

Supervisory Control and Data Acquisition (SCADA) equipment installed at the outfall canals gives the Corps a remote computerized control system to operate the pumps and gates while monitoring water levels in the canals. The pumps, gates and SCADA equipment performed successfully during Hurricanes Gustav and Ike in 2008, and Hurricane Isaac in 2012.

## Permanent Canal Closures and Pumps

Major construction is well under way on the Permanent Canal Closures and Pumps (PCCP), which will be completed in 2017. The total maximum pumping capacity at the three outfall canal pumps upon completion of the PCCP will be 24,300 cfs.

#### 17th Street PCCP

The PCCP at 17th Street will consist of fifteen generators (2.6 MW each), six 5,000 horsepower (hp) pump motors capable of pumping 1,800 cubic feet per second (cfs), two 2,500 hp pump motors capable of pumping 900 cfs—that is a total pumping capacity of 12,600 cfs.

Station Height: 43.9' | Station Elevation: 52.9'

#### Orleans Avenue PCCP

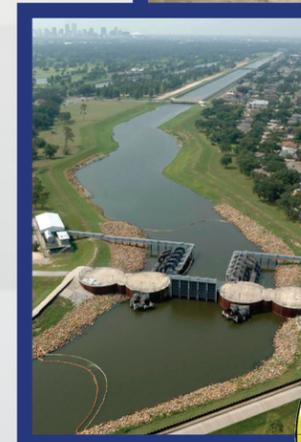
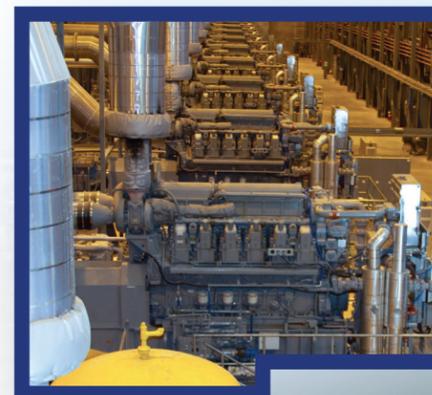
The PCCP at Orleans Avenue will consist of four generators (2.6 MW each) and three 2,500 hp pump motors capable of pumping 900 cfs—that is a total pumping capacity of 2,700 cfs.

Station Height: 40.9 | Station Elevation: 49.9

#### London Avenue PCCP

The PCCP at London Avenue will consist of eleven generators (2.6 MW each), four 5,000 hp pump motors capable of pumping 1,800 cfs, and two 2,500 hp pump motors capable of pumping 900 cfs—that is a total pumping capacity of 9,000 cfs.

Station Height: 43.9 | Station Elevation: 52.9



## Greater New Orleans Hurricane and Storm Damage Risk Reduction System

# Facts and Figures

September 2014

Following Hurricanes Katrina and Rita in 2005, the U.S. Army Corps of Engineers was authorized and funded to design and construct the Hurricane and Storm Damage Risk Reduction System (HSDRRS) for southeast Louisiana.

Over the past nine years, the Corps has strengthened and improved the levees, floodwalls, gated structures and pump stations that form the 133-mile Greater New Orleans perimeter system, as well as approximately 70 miles of interior risk reduction structures. The new HSDRRS includes the world's largest surge barrier of its kind, the IHNC-Lake Borgne Surge Barrier, and the largest drainage pump station in the world, the GIWW-West Closure Complex, among its technically-advanced engineering solutions.

This risk reduction system is stronger and more resilient than it has ever been in the area's history. The new HSDRRS is capable of defending against a 100-year level of storm surge, also known as a storm that has a one percent chance of occurring in a year.

Shared responsibility with and commitment from our partners has enabled our successful completion of the 100-year perimeter system, which has performed as designed in recent storms, such as Hurricane Isaac.



US Army Corps  
of Engineers  
New Orleans District

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## HSDRRS Construction Contracts

Total Program Budget:	~\$14.6 B
Obligated To Date:	~\$12.4 B
Total Construction Contracts:	456
Awarded To Date:	405
(as of September 2014)	

## Levees and Floodwalls

There are 350 miles of levees/floodwalls in the HSDRRS, including interior levees and floodwalls.

### Armoring

- Armoring adds resiliency to a levee and can reduce erosion and scouring of back slopes when wave overtopping occurs.
- After Katrina, the Corps undertook a concerted effort to improve armoring methods, and worked with academia to research various armoring materials. There are two pilot projects ongoing to test the performance and O&M of the proposed armoring materials.
- Approximately 420 transition spots (where a floodwall meets a levee) have already been armored.

### Borrow (levee clay)

- Total amount of borrow required for the HSDRRS was approximately 93 million cubic yards.
- Approximately 229 million cubic yards were approved as suitable for levee construction.

1 Superdome holds 4.4 million cubic yards of borrow

## Major Projects

### West Bank & Vicinity Project (WBV)

- Currently, there are 98 contracts that are substantially complete and nine ongoing construction contracts throughout the WBV Project. There are 20 contracts not yet awarded, six of which are for Armoring and nine for Environmental Mitigation.
- Approximately \$3.7B has been budgeted for construction of the 100-year system for WBV.
- The two major structures for WBV, West Closure Complex and Bayou Segnette Complex, are fully operational—operations and maintenance responsibility has been transferred to the non-Federal sponsor.
- **Gulf Intracoastal Waterway-West Closure Complex**
  - The GIWW-WCC is a major feature of the HSDRRS that provides the first line of defense from storm surge entering the Harvey and Algiers Canals. The WCC significantly reduces the risk to a large area of the West Bank by eliminating 25 miles of levees, floodwalls, floodgates and pumping stations along the canals from the direct impacts of storm surge. The nearly \$1 B project consists of the nation's largest sector gate, the world's largest drainage pump station, floodwalls, sluice gates, foreshore protection and an earthen levee. The project also includes dredging of Algiers Canal, beneficial use of the dredge material and realignment of a portion of Bayou Road in Plaquemines Parish. Construction of this enormous project began in August 2009. The structure is fully operational and has provided the 100-year level of risk reduction since September 2011.

### Lake Pontchartrain & Vicinity Project (LPV)

- Currently, there are 90 contracts that are substantially complete and seven ongoing construction contracts throughout the LPV Project. There are 14 contracts that have not yet been awarded, seven of which are for Armoring and five for Environmental Mitigation
- Approximately \$4B has been budgeted for construction of the 100-year system for LPV.
- The two major structures for LPV, the IHNC Surge Barrier and Seabrook Floodgate Complex, are fully operational—operations and maintenance responsibility has been transferred to the non-Federal Sponsor.

### Inner Harbor Navigation Canal Surge Barrier

- Construction of the massive IHNC Surge Barrier at Lake Borgne, the largest design-build civil works project in Corps history, began in May 2009. The project is a key feature of the HSDRRS, providing the 100-year level of risk reduction to a large portion of Orleans and St. Bernard parishes by reducing the risk of surge entering the GIWW/IHNC corridor from Lake Borgne and the Gulf of Mexico.
- The 1.8 mile barrier, the largest of its kind in the world, includes three gated structures and a barrier wall with a top elevation of 26 feet. The barrier wall and all three gates are complete, and have been operated in a storm event. Operations and maintenance responsibility has been transferred to the non-Federal Sponsor.

### Seabrook Floodgate Complex

- The Seabrook Floodgate Complex is located in the Inner Harbor Navigation Canal and reduces storm surge entering from Lake Pontchartrain. Seabrook works in tandem with the IHNC Lake Borgne Surge Barrier to provide 100-year level risk reduction to the entire IHNC corridor.



### Southeast Louisiana Project (SELA)

- Of the 20 SELA projects in Orleans Parish, 11 are complete, seven are under construction, and two projects are currently in the pre-award phase.
- Of the 59 SELA projects in Jefferson Parish, 45 are complete, 14 are under construction, and none are in the pre-award phase.
- All Orleans and Jefferson Parish contracts are currently scheduled to be complete in 2018.

### Plaquemines Parish

- The Corps of Engineers is engaged in two projects on a concurrent timeline that will reduce risk in Plaquemines Parish below Oakville where the 100-year HSDRRS ends.
- The Plaquemines Parish Non-Federal Levee (NFL) project includes replacing or modifying 34 miles of back levees between Oakville and St. Jude on the West Bank of the Mississippi River. When completed in 2020, these levees will be incorporated into the New Orleans to Venice Federal levee system.
- The New Orleans to Venice (NOV) project includes modifications to river levees and back levees, floodwall fronting protection at six locations, two sector gates on the West Bank, and backflow prevention at two locations on the East Bank. Scheduled for completion in 2020.
- Of the 26 NOV / NFL projects, four fronting protection contracts and two levee contracts have been awarded. One additional contract is scheduled for award in calendar year 2014.

