



US Army Corps
of Engineers
Mississippi Valley Division



Corps Hurricane Response

Task Force Hope Status Report Newsletter

March 13, 2013

Pump Stations...*more than just pumps*



Pump Station 11, Algiers Canal
Repairs and Fronting Protection

Photo by Jerry Baggett

Repaired pump stations in HSDRRS often equipped with storm proofing, safe rooms and/or fronting protection

by Susan Spaht

There are 78 pump stations in the four-parish area of Orleans, Jefferson, St. Bernard and Plaquemines. Since so much of the four-parish area is at or below sea level, the area depends on pump

stations to remove rain and storm water from inland areas to reduce the risk of flooding. During Hurricane Katrina, pump stations, for the most part, were not operating due to prior evacuation of operators, loss of power, or loss of clean cooling water for the pumps. Most of the pump stations around the four-parish area were damaged to some degree by the devastating 2005 hurricane.

Following Katrina, the U.S. Army Corps of Engineers received Con-

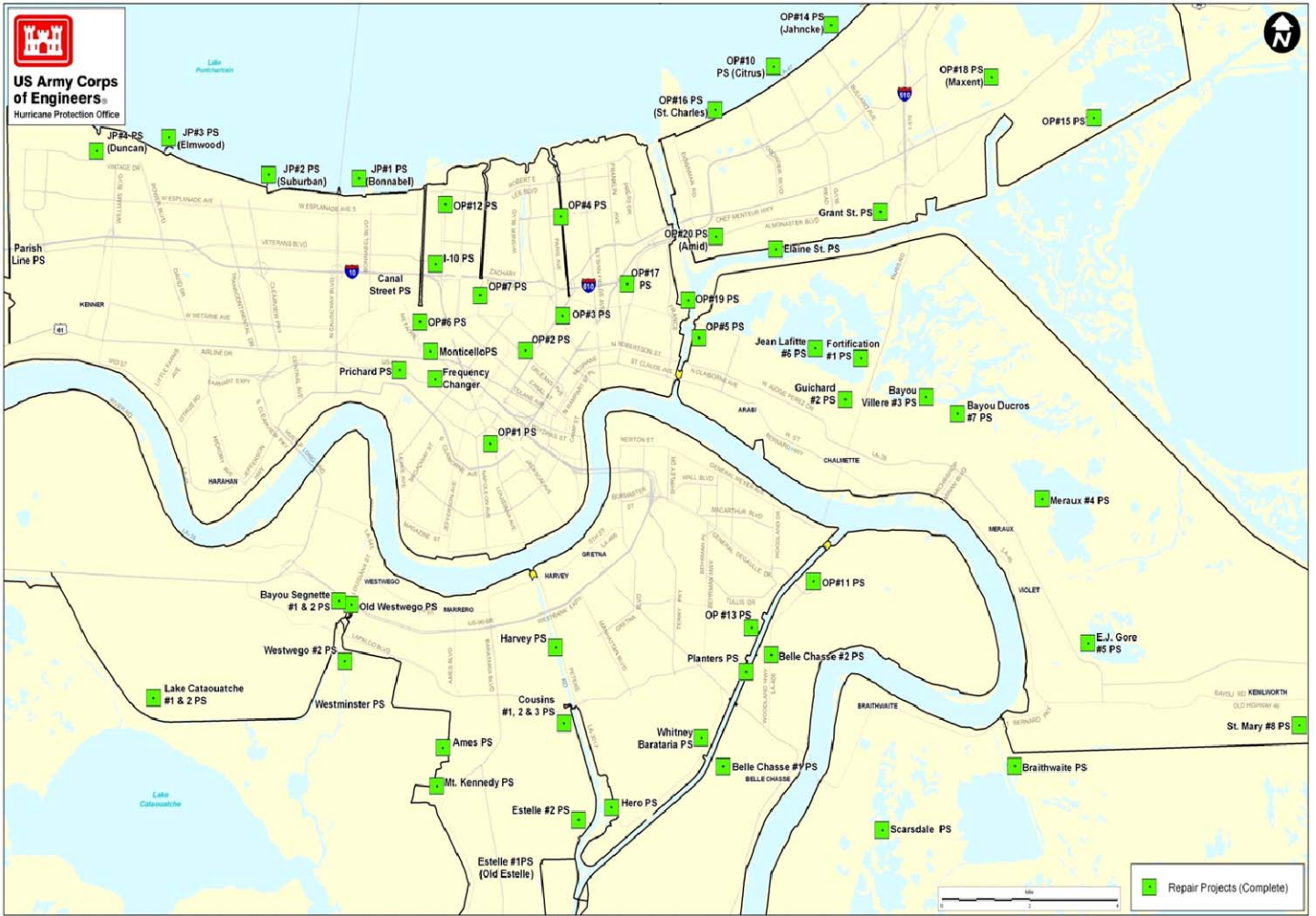
gressional authorization and \$143 million for 34 projects to **repair pump stations** in those four South Louisiana parishes; and \$340 million to **add storm proofing** to the structures, which included \$18.2 million to **construct safe rooms** at some pump stations. Additionally, the

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Pump to River contract awarded.....Pages 8

Pump Stations in Orleans, Jefferson, St. Bernard and Plaquemines Parishes



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Corps received \$644 million to **provide fronting protection** for pump stations located along shore lines. All funding is at 100% Federal expense.

“The Hurricane and Storm Damage Risk Reduction System, the perimeter defense system that the Corps is constructing, reduces the risk of storm surge from flooding inland areas,” explained Dan Bradley, Senior Project Manager, “while pump stations are in place to



Dan Bradley

remove rain water. The two work in tandem and in concert to keep us as dry as possible during storms and tropical events.”

Pump Station Repairs (\$143 M)

The Corps and its contractors have completed all of the initial Federally-funded repairs to the parish pump stations with the exception of one contract for two pump stations in St. Bernard Parish. That contract is scheduled to be awarded in October.

“Some of the pump stations were severely damaged by the 2005 hurricanes,” explained Daniel Bolinger, Senior Project Manager for Non-Federal pump station repairs and storm proofing, “and some sustained

only minor damage. Even though some were operational, their operational reliability was unknown because of saltwater intrusion.”

Repairs to the damaged pump stations included roof and structural repairs, as well as repairing pumps, motors and electrical components.

The Corps repaired 23 pump stations in Orleans Parish. “The pump stations in Orleans Parish are, in many cases, over 100 years old,” Bolinger pointed out, “but these pumps are in great shape because the Sewerage & Water Board has maintained them quite well.”

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Before

Orleans Pump Station #2 , Algiers Canal
Repairs and Fronting Protection

After

Photos by Jerry Baggett

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The huge horizontal pumps were designed and built by the Sewerage & Water Board of New Orleans. "Their simplicity of design and dependability are a tribute to the original engineers," added Bolinger.



Daniel Bolinger

"Repairs to the Orleans Parish pump stations are complete now, and when we finish the storm proofing, these pump stations could serve the public for another hundred years."

The storm damage to Jefferson Parish pump stations was minor, and all of those repairs were completed early on.

Pump stations in St. Bernard Parish sustained severe damage during Katrina. The Corps repaired eight pump stations at a total construction cost of \$22.3 million. Three of these pump stations sustained severe damage during the hurricane, and two were essentially destroyed. Repairs to the pump stations consisted of replacing pumps, diesel engines, lighting, generators and security fencing as well as elevating stations, engines and electrical components.

Plaquemines Parish pump stations were hard hit by the 2005 hurri-

canes. The Corps awarded a total of \$14.2 million for repairs to 16 pump stations in the parish. Repairs to the pump stations included repairing or replacing vacuum pumps, motors, air compressors, generators, fuel systems, domestic water systems and trash screens as well as site work and miscellaneous building repairs to the stations. All repairs are now completed.

Storm Proofing (\$340 M)

Congress authorized and funded \$340 million after Hurricane Katrina to provide storm proofing for pump stations in Orleans and Jefferson parishes. Storm proofing measures

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Orleans 15-megawatt
New Generator Building
Storm Proofing



interior

exterior

Orleans Pump Station #7
New Generator Building
Storm Proofing



USACE Photos

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are designed to help maintain pump station operation during and after storms, and to provide protection against hurricane-force winds and storm surges that might inundate the project area.

Storm proofing features include hardening buildings, providing remote operation to some stations, flood-proofing structures, storm proofing doors and windows, elevating pump drives and switch gears, protection of existing back-up power, adding back-up power, waterproofing electrical and ancillary equipment, providing fresh water wells and constructing safe rooms.

Adjacent to a pump station, a **safe room** is an operational structure to

which pump station operators can take refuge when storm winds surpass 74 mph. All safe rooms are capable of withstanding 250 mph winds. Pump station operators can remotely control the required functions of the pumps from their safe rooms.

Safe rooms are, on average, 25 feet above the ground with support pilings that extend nearly 70 feet below

the ground. Each new safe room can accommodate up to 12 people with food, water, AC, beds, life rafts, medical equipment, communications equipment and back-up electrical generators with five days of fuel.

The Corps of Engineers constructed five new safe rooms for Jefferson Parish. The parish previously had eight safe rooms, and now has a

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Hero Canal Pump Station
New Safe Room,
exterior and interior



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total of 13. The new safe rooms are located at these pump stations: Cataouatche, Estelle, Hero, Planters and Westwego. All five structures were 100% Federally-funded at a cost of \$18.2 million.

Fronting Protection (\$644 M)

In addition to repairing pump stations, adding storm proofing and constructing safe rooms, the Corps is also adding fronting protection to some pump station located along shore lines. Fronting protection describes defensive measures placed in front of pump stations to reduce possible damaging effects of storm surge on pump stations.



Mervin Morehiser

Fronting protection on five structures in the Lake Pontchartrain & Vicinity project was funded at \$210 million at full Federal expense. Work is completed on at the Bayou Trepagnier Complex in St. Charles Parish, and work is finishing up on four pump stations located along Lake Pontchartrain in Jefferson Parish. These pump stations – Duncan, Elmwood, Suburban and Bonnabel - provide roughly 95% of the drainage capacity for East Jefferson. Fronting protection will bring these lakefront pump stations into compliance with the Corps’ new design standards for strength and functional reliability, and will prepare them to better resist hurricane-related storm surge. During Hurricane Katrina, surge waters back flowed to some degree through several of the lakefront pump stations allowing storm water into the interior. The new fronting

protection at these pump stations includes floodgates. According to Mervin Morehiser, Project Manager, “The floodgates can be closed in the unlikely event of a pump shutting down during a storm. These gates would provide further redundancy against lake waters back flowing through the pumps into developed areas, as occurred during Hurricane Katrina.”

Fronting protection was also constructed at Pump Station #15 in New Orleans East as part of the LPV-111 project. This work was completed at a cost of approximately \$5 million in Federal funds.

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Elmwood Pump Station
Fronting Protection and Breakwater features

USACE Photo

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Fronting protection construction also included new **breakwaters** at the Bonnabel and Duncan pump stations along the Lake Pontchartrain shoreline, and improvements to the existing breakwaters at Elmwood and Suburban pump stations.



Julie Vignes

By knocking down waves associated with storm surges, the breakwaters, working in tandem with fronting protection, will provide the 100-year level risk reduction.

In the West Bank & Vicinity project, the Corps and its contractors have

completed fronting protection to 16 pump stations at a cost of \$434 million, all at full Federal expense. "All of these contracts are substantially completed," said Julie Vignes, Chief of West Bank & Vicinity Branch, "and many – but not all – have already been turned over to the non-Federal sponsor for operations and maintenance.

"While not completed yet," Vignes added, "there will be fronting protection work done at additional Plaquemines Parish pump stations as part of the New Orleans to Venice project, although these will not be constructed to the 100-year level."

In Jefferson Parish, the pump stations that have received fronting protection are Hero, Planters, Lake Cataouatche, Bayou Segnette, New

Westwego, Old Westwego, New Estelle, Old Estelle, Westminister, Ames/Mt. Kennedy, and Whitney Barataria.

In Orleans Parish, pump stations that received fronting protection include S&WB #11 and S&WB #13.

In Plaquemines Parish, pump stations receiving fronting protection include Belle Chasse #1 and Belle Chasse #2.

More than pumps

"During Hurricane Katrina, most of the pump stations in the storm's path were not operating," said Mike Park, Chief of Task Force Hope. "The stations either lost power, were inundated, lost clean cooling water for

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The Task Force Hope *Status Report Newsletter* supports the information program for Task Force Hope and its stakeholders.

It also serves as the primary tool for accurately transmitting the Corps' hurricane risk reduction efforts to stakeholders.

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This issue and past issues can be found at:

<http://www.mvn.usace.army.mil/hps>

Comments and questions may be sent to the Status Report Newsletter editor at: b2fwdpao@usace.army.mil

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**Status Report Newsletter**

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Pump Station 11, Algiers Canal
Construction of Repairs
and Fronting Protection



Photos by Jerry Baggett

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the pumps, or were left unmanned by pump operators for safety reasons. Repairing and properly equipping pump stations became a top priority for the Corps after Katrina...and we knew the pump stations needed a lot more than just pumps."

"As part of the Hurricane and Storm Damage Risk Reduction System, we needed to design and equip pump stations to protect our pump operators during future tropical events, and we needed to protect the pump stations themselves from any possible damage or failure.

"We added storm proofing so the

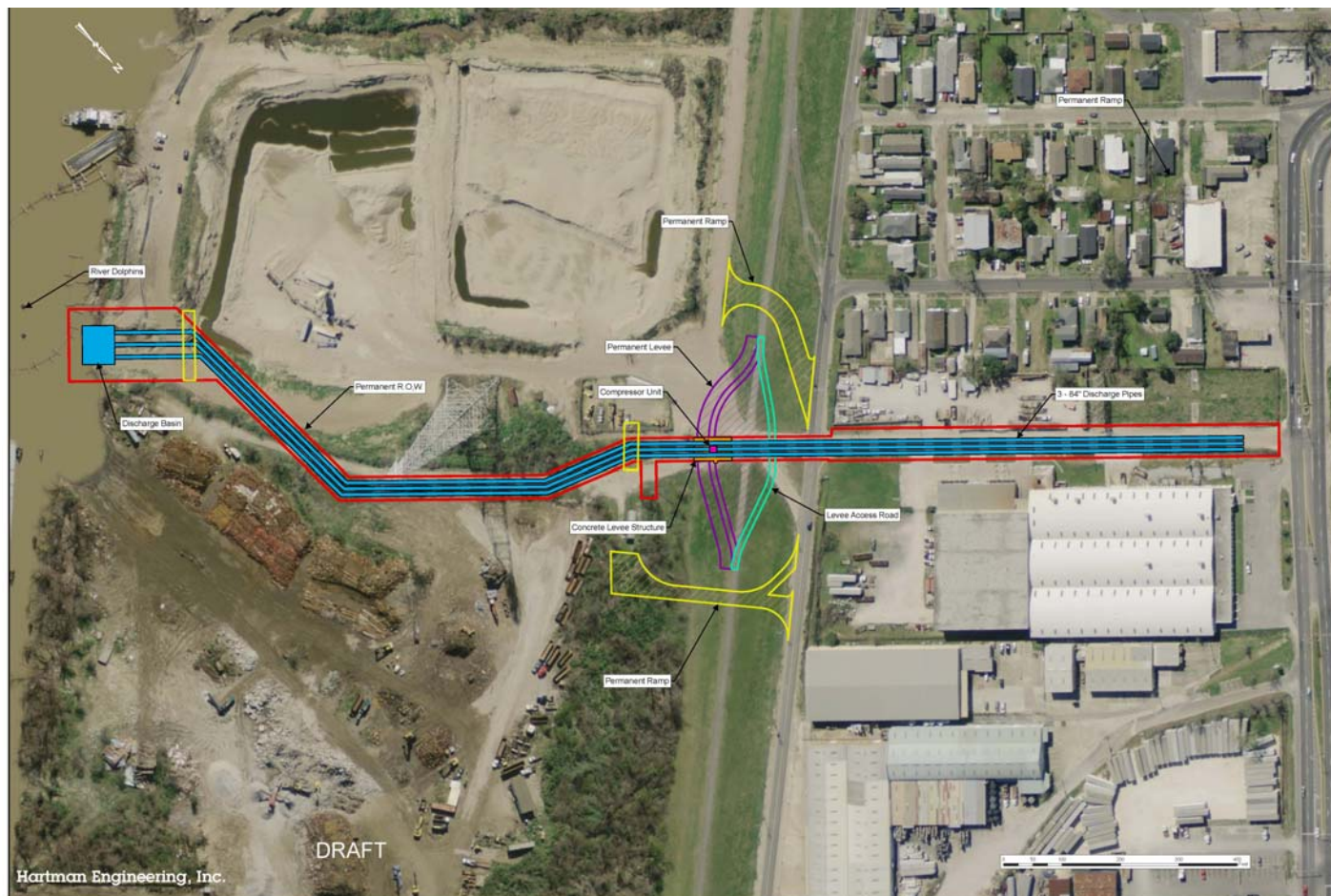


Mike Park

pump stations could withstand the onslaught of a huge hurricane. And where necessary, we added safe rooms so pump station operators would be protected and able to perform their work. For pump stations near a shoreline, we constructed fronting protection to strengthen pump stations against storm surge, again protecting operators and station equipment.

"Though all construction is not 100% completed, our new perimeter system and interior pump stations, working in concert, have already demonstrated their operability and value by reducing the risk of flooding during three hurricanes over the past seven years."





Corps awards contract for *Harahan Pump to the River* project

The U.S. Army Corps of Engineers recently awarded a contract to construct the discharge structure for the Harahan Pump to River project on the east bank of Jefferson Parish. The project is part of the Southeast Louisiana Urban Flood Damage Risk Reduction Project (SELA). When complete, the project will reduce the risk of damages from a 10-year rainfall event, which is a storm that has a 10 percent chance of happening in a given year and equates to approximately nine inches of rain over a 24-hour period for our area.

On March 4, the Corps awarded a \$24.3 million contract to Louisiana-

based B & K Construction. The approximately 30-month contract calls for constructing more than 2,000 feet of three 84-inch diameter pipes between Jefferson Highway and the Mississippi River. The pipes will run underground along Powerline Drive from Jefferson Highway to Riverside Drive and then up and over the Mississippi River levee. The pipes will then be placed underground in the batture area to the river bank. A notice to proceed should be issued by late March and construction should be completed in late 2015 or early 2016.

This is the second of five remaining projects to complete the entire Hara-

han Pump to River project. The design of the remaining three project elements will be completed by the end of 2013; all construction on the Harahan Pump to the River project will be substantially complete by 2017.

A large portion of the work to improve major drainage canals and pump stations on both the east and west banks of Jefferson Parish is already complete. A total of 54 SELA contracts have been awarded to date, with work completed on 45 of those projects. All scheduled SELA work in Jefferson Parish should be substantially finished in late 2017 or early 2018.

