



# Outfall Canal Pumps: Past, Present & Future

**Corps of Engineers responds to speculation and concern about temporary pumps**

*By Susan Spaht*

**O**utfall canal pumps are an integral part of the new Hurricane Protection System that the U.S. Army Corps of Engineers is constructing. These temporary pumps are being installed at 17<sup>th</sup> Street, Orleans Avenue and London Avenue outfall canals.

The temporary pumps have one important mission: In the event that the gated structures are closed at the outfall canals (because of storm surge from Lake Pontchartrain), the pumps will be activated to transport water from the outfall canals, around the gated structures, and into Lake Pontchartrain.

The purpose of the pumps and gates is to protect the weakened hurricane protection structures (floodwalls) along the outfall canals and to enable inspection of those structures during storm events.

The pumps are called “temporary” because they are an integral part of the temporary closure structures that were installed immediately after Hurricane Katrina as an interim storm



**This photo shows one of the temporary pumps performing at a public demonstration last summer at the 17th Street Canal.** (USACE Photo)

surge measure while the permanent pumps and closure structures are being designed and built. The permanent pumps and closure structures are scheduled to be operational for the 2012 Hurricane Season.

Lately, there has been speculation and concern about these temporary pumps. In its continuing effort to remain open and transparent, the Corps offers information – past, present and future - regarding these vital elements of the Hurricane Protection System.

**PAST:**

In 1965, when the Lake Pontchartrain and Vicinity Hurricane Protec-

tion Project was originally authorized, it did not require flood protection improvements along the 17<sup>th</sup> Street, London Avenue or Orleans Avenue Canals. The reason for this was that the proposed barriers at the Rigolets and Chef Passes were intended to keep the design storm surge out of Lake Pontchartrain. Therefore, the existing local protection levees and floodwalls along these canals were considered adequate for hurricane protection pur-

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poses.

In response to the 1977 injunction (due to a lawsuit by Save Our Wetlands) challenging the Corps' Environmental Impact Statement, the Lake Pontchartrain and Vicinity Hurricane Protection Project was re-evaluated. The 1985 Re-evaluation Report by the Corps eliminated the Rigolets and Chef Barriers from the project and, instead, recommended higher levees along the southern lakeshore of Lake Pontchartrain. Since the revised project allowed storm surge to enter the lake, the existing local levees along the outfall canals were no longer adequate.

In the mid to late 1980s, the Corps of Engineers recommended the construction of storm surge gates at the London Avenue and Orleans Avenue outfall canals to block the design storm surge from entering the canals. The gates were part of the overall plan to raise the level of protection for the Lake Pontchartrain and Vicinity Hurricane Protection Project.

"The gates were a cheaper and quicker plan than the installation of floodwalls at the London Avenue and Orleans Avenue outfall canals," said Al Naomi, West Bank Branch Chief with the Corps' Protection and Restoration Office (PRO). "The locals did not want the gates because they were concerned that the gates would



**Al Naomi**

prevent pumping of rain water into the canals."

According to Naomi, a 36-year veteran with the Corps, the addition of outfall canal *pumps* to the gated structures at the lakefront were not seriously considered at that time because "under the Lake Pontchartrain authorizing legislation, interior drainage is the sole responsibility of the local governments."

Ultimately, for the 17<sup>th</sup> Street Canal, the Corps agreed to and recommended construction of the locally-preferred plan which consisted of floodwalls instead of a structure at the mouth of the canal. The Corps agreement was based on the fact that the estimated cost for each alternative was almost equal.

The cost for the gated structures at London Avenue and Orleans Avenue outfall canals was far less expensive than the locally-preferred floodwalls. Therefore, the Corps maintained that the additional costs for construction of those floodwalls would have to be paid by the local sponsor. The local sponsor, the Orleans Levee District, did not want to pay those additional costs.

Finally, Congress passed the Energy and Water Development Appropriations Act (EWDAA) of 1992 that directed the Corps of Engineers to construct floodwalls along London Avenue and Orleans Avenue outfall canals, the locally-preferred plan.



**Brett Herr**

## **PRESENT:**

Hurricane Katrina caused several breaches in the outfall canal floodwalls: one at 17<sup>th</sup> Street, and two at London Avenue.

"The first thing the Corps of Engineers had to do was repair the breaches," said Brett Herr, Branch Chief for Regional Projects Branch in the PRO. "At the same time we were evaluating the rest of the outfall canal floodwalls to determine what kind of storm surge they could withstand." There are 13 miles of floodwalls at the three canals.

According to Herr, the Corps, along with local and state officials, decided that the only feasible solution to restoring hurricane protection for the 2006 Hurricane Season would be to block the canals with temporary gated structures and pumps.

"It was within our emergency authority to repair the damage and restore protection to that area," Herr explained. Congress provided funding with the 3<sup>rd</sup> Emergency Supplemental Appropriations Act, and the Corps began the process to design and construct the temporary gates and pumps.

In January of 2006, the Corps placed an order for 34 60-inch temporary pumps: 12 for 17<sup>th</sup> Street Canal, 12 for London Avenue Canal and 10 for Orleans Avenue Canal. The new pumps began arriving in New Orleans in late Spring, prior to the 2006 Hurricane Season. As soon as the pumps arrived, they were immediately installed by construction crews working 24 hours a day, seven days a week. In addition, the contract was modified in early summer to add six

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more pumps to 17<sup>th</sup> Street Canal, bringing the total for all three canals to 40 pumps.

“We installed the new temporary pumps as fast as we received them,” said Jim St.

Germain, a Senior Project Manager in the Hurricane Protection Office (HPO). “We had crews working at the outfall canals around the clock; they were even doing some of the work at night, under lights,” he said. “We were determined to make our pre-Hurricane Season goal – and we did.”



**Jim St. Germain**

That is not the usual means for manufacturing and installing massive equipment like these pumps. Under normal circumstances, whether for government or private industry, performance tests would be done on the equipment at the factory prior to delivery, without observation by the government. Any operational problems would be repaired or adjusted there, and the equipment would be tested and re-tested until it meets performance expectations. When the performance is satisfactory, then the equipment would be installed in its intended location. That’s what happens under normal circumstances.

Following Katrina, the Corps did not have the luxury of working under normal circumstances. To quickly reduce the public risk, Corps personnel were placed at the factory to

document manufacturer’s tests, resulting in a series of reports regarding the pumps’ capabilities.

“When we installed the new pumps, we knew they were not operating to full effectiveness,” said Col. Jeffrey Bedey, Commander of the HPO.

“We had numerous engineering reports that told us that.

But if we had done this in the traditional manner, it would have taken four to five years to get the pumps in place. Instead, we put the pumps in at the sites in a matter of months,” the Colonel explained.

“To reduce the risk to the community for the next hurricane season, we wanted the pumps on the ground; we decided we would work out the final testing on the pumps in place”.

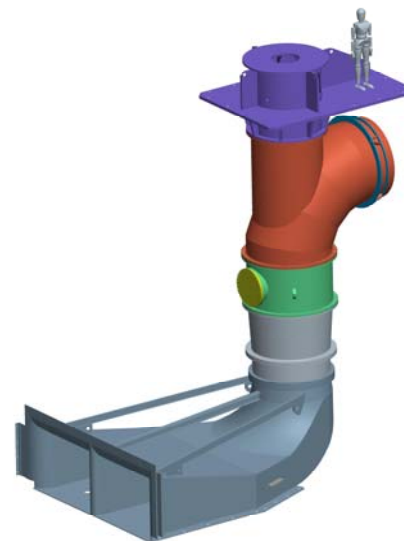
It was reported that the new pumps vibrated when first tested at the outfall canals. “Some of them did,” Bedey said, “but we did not see failure when the pumps vibrated. They would not have operated perfectly, but they would have provided pumping if we needed it in 2006.”



**Col. Jeffrey Bedey**

Bedey compared the pump situation to an automobile. “When you know your car’s engine has a problem, you would prefer to repair it rather than drive it; but if you are in an emergency situation, you will go ahead and drive it and get where you need to be, then fix it when you can.

That’s basically what we did with the pumps.”



**This is a manufacturer’s illustration of the new vertical pumps that are being installed at two of the outfall canals. The pumps are about 25 feet tall—see figure on top for scale.**

(Illustration courtesy Fairbanks Morse)

**“If we had done this in the traditional manner, it would have taken four to five years to get the pumps in place. ...we did it in a matter of months.”**

*– Col. Jeffrey Bedey, Commander, Hurricane Protection Office, on the manufacture and installation of the temporary outfall canal pumps.*

**FUTURE:**

Today, the pump problems are being solved. The pumps are being shipped weekly and they are being installed and successfully tested at the outfall canals.

“The 11 pumps that were retrofitted with stiffer springs in the hydraulic motors are performing well,” said St. Germain, who is directing the field tests on the pumps.

“Installation of the new pumps is going smoothly,” Bedey said. “All 40 hydraulic pumps will be in place for this year’s Hurricane Season.”



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

## Faces of Hope

### Did you know ?

- 97% of all U.S. business firms are small
- Small business accounts for 48% of the non-farm gross national product
- 55% of the U.S. labor force is employed by firms under 100 employees
- Small business accounts for two thirds of all new jobs created in the past 10 years

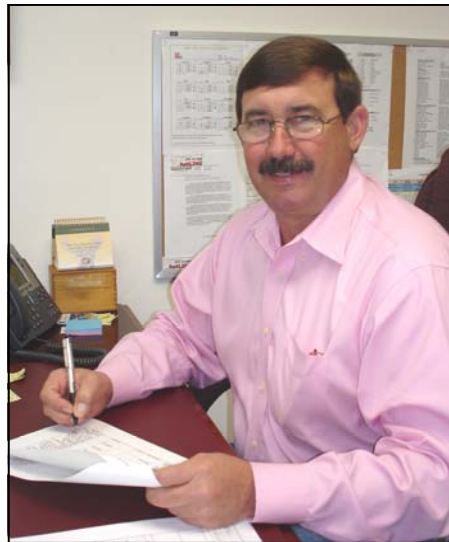
By Susan Spaht

The U.S. Congress recognized that America's small business is "critical to our economic recovery and strength, to building America's future, and to helping the United States compete in today's global marketplace." So, in 1953, Congress created the U.S. Small Business Administration (SBA) as an independent agency of the federal government "to aid, counsel, assist and protect the interests of small business concerns".

The U.S. Army Corps of Engineers has a special office in New Orleans set up for this purpose. The office is headed by Randy Marchiafava, Deputy of Small Business. "One of the prime functions of our office is to help small business acquire federal government contracts," he explained. "It's actually one of our congressional mandates.

"Equally important is our effort within the Corps of Engineers, and within the federal government, to identify projects that can be set aside for small business."

What constitutes a *small business*? The criteria changes with the different types of work and types of businesses. Marchiafava offered, as an



**Randy Marchiafava, Deputy of Small Business, Corps of Engineers.**  
(USACE Photo by Susan Spaht)

example, a heavy equipment contract: "A typical heavy equipment small business contract could be in the range of \$10 million, while a large contract could be in the range of \$50 million."

According to Marchiafava, small businesses are doing the same work as large businesses, "just not the same capacity."

Since Hurricane Katrina, the Corps has awarded an extremely large amount of contract work to small prime contractors. For example:

- In 2004 (pre-Katrina), the Corps of Engineers awarded \$65.3 million in prime contracts to small businesses.
- In 2006 (post-Katrina), the Corps awarded over \$750 million in prime contracts to small businesses. Yes, that's **\$750 million!**

And, it should be noted, that is only *prime* contracts; that figure does not reflect sub-contracts that small businesses received from large prime contractors. No records are available

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on that; but one can assume that many of the large contractors employed small contractors to help with the vast amount of hurricane protection system work that is going on.

No records are available either on how many of those \$750 million in small contracts were awarded to *local* small businesses. But, as Marchiafava noted, "I would say the percentage of local businesses getting these small business contracts is probably about 90%."



## Trees and Fences being removed along London Canal Floodwall to protect levee toe

By John Hall

In another step to protect hurricane levees and floodwalls from trees that undermine their integrity, the U.S. Army Corps of Engineers has begun the removal of 450 trees and stumps along the London Avenue Canal in New Orleans.

All trees and fences within six feet of the levee toe will be permanently removed.

Fence removal is necessary to allow the Orleans Levee District to maintain and inspect the vegetation-free area. Periodic inspections of the levee toe are necessary to identify seepage or other potential problems. Tree and fence removal will be done at federal expense.

Work started last Saturday inside the floodwall north of Robert E. Lee Boulevard. The work will shift outside for fence and tree removal in property owners' yards, beginning at Robert E. Lee on both sides of the canal.

Completion will take several weeks.

### Louisiana law provides for removal

These actions are being taken under right-of-entry granted by the Orleans Levee District. The right-of-entry is based on a Louisiana law that provides for the removal of any objects within six feet of levees that interfere with levee safety or obstruct inspection and maintenance of the levee (Louisiana Revised Statutes 38.225 and Attorney General Opinion 06-0168). Along the London Canal, the floodwalls are anchored in levee embankments.

"Many of these trees are in the backyards of people's homes adjacent to the London Canal, so we recognize our responsibility to take particular care. Only the trees and fences on the levee or within six feet of the levee's toe will be removed," said Michael Stout, a project manager for the U.S. Army Corps of Engineers.

"The root systems of these trees invade the levee section and provide channels for seepage that can threaten the levee.

Additionally, roots ripped out during a tropical storm would worsen the seepage and reduce the stability of the levee, potentially resulting in failure," Stout said.



**Trees and fences too close to the floodwall or levee toe must be removed to protect the integrity of the structure.**

The Corps awarded two contracts under the Small Business Administration's 8(a) program for small and disadvantaged businesses:

**West side of canal.** Three Fold Consultants LLC, New Orleans, got a \$576,400 contract to remove 170 trees and other woody vegetation.

**East side of canal.** Resource One, Lettsworth, La., got an \$840,000 contract to remove 280 trees and other woody vegetation.

The contracts include stump and root

removal and related repairs to Corps standards such as refilling and compacting the holes.

The London Canal tree-removal project will help to protect the Gentilly neighborhood and, beyond it, other areas of New Orleans. The removals will be done on both banks, from Pump Station 3 at the head of the canal to Robert E. Lee Boulevard near where it empties into Lake Pontchartrain.

All of the property owners have been informed, by letter and newspaper notices, at least two weeks prior to work, that the trees and fences will be removed. The owners can rebuild fences beyond six feet of the levee toe, at their own expense. Other structures within six feet, including sheds and garages, will not be removed at present. The Orleans Levee District will evaluate each structure on a case-by-case basis in consultation with property owners. No timetable has been set for these evaluations.

### Survey markers in color

The Corps has designated the area with survey markers where the fences may be rebuilt. To minimize project impact, the contractors and Corps representatives will enter from the canal side of each property.

Colors designate the survey markers' meaning:

--**white** for the levee's toe, where levee meets the ground.

--**blue** for six feet beyond levee's toe.

"The tree and fence removal is part of the Corps' determination to insure that hurricane defenses are improved to the maximum permitted by law," Stout said. "Wherever that restoration is being done, the Corps is implementing lessons learned from Hurricane Katrina."

