



US Army Corps
of Engineers
Mississippi Valley Division

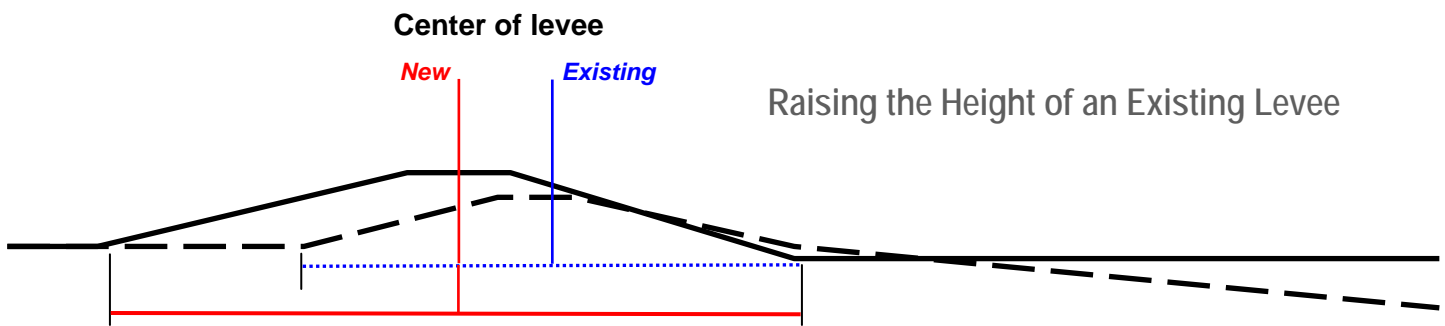


Corps Hurricane Response

Task Force Hope Status Report Newsletter

July 22, 2009

Corps Protecting Levees Under Construction *during Hurricane Season*



This illustration demonstrates the proportion of height to width of a typical raised earthen levee. The dashed black line is the existing levee alignment; the solid black line is the new, raised and wider levee. (USACE Illustration)

by Susan Spaht

The U.S. Army Corps of Engineers is raising the height of more than 130 miles of earthen levees in the Hurricane and Storm Damage Risk Reduction System (HSDRRS) to meet the designated 100-year level. More than 56 miles of levees will be under construction during the 2009 Hurricane Season (June 1 – Nov. 30), and more than 74 miles of levees during the 2010 Hurricane Season.

Corps engineers and construction experts want to get as much protection in place as possible for these under-construction levees in advance of a possible storm event.

Building/Strengthening Levees

Adding height to an existing earthen levee involves adding lifts (layers) in increments of one foot. To raise a levee six feet requires six different lifts. Each lift is “scarified”; the levee surface is stripped of vegetation, and the surface is roughened to allow the existing soil to bond and blend with the new lift.

Each lift is also compacted which gives the levee a “tight core” and makes it more resistant to water damage. Even if the surface of a levee shows damage, the inner core will still be strong.

To properly heighten an earthen levee, it is also necessary to widen it. A taller levee will require a wider

berm (see illustration above) and result in a larger levee. A larger levee is more resistant to damage.

The final step in constructing a levee is the addition of a grass covering which serves to “armor” the levee, providing resiliency should water overtop the levee.

When an earthen levee is in the scarified state, it is vulnerable to water erosion. If a tropical storm or hurricane were to hit the earthen levee during this phase, it could damage that portion of the levee.

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Corps Takes Action

Aware of this vulnerability, and the large amount of levee construction work that will be on-going during 2009 and 2010, the Corps' engineers and construction experts formed a special team with industry to determine a method for minimizing the vulnerability of under-construction levees during a tropical event.

The team consisted of geotech engineers, hydrologists, civil engineers, cost engineers, and quality assurance and field engineers. It also included the Greater New Orleans Construction Task Force, a consortium of local construction contractors who are already involved in Corps work and other area construction.

The goal of the team was to devise a plan that reduces the vulnerability of levees during tropical events, and also addresses the safety needs of levee construction workers.

"We were looking for an effective levee defense method that could be put into place quickly," said Jimmy Gautreaux, the Corps' new Chief of Hurricane Levees. "Since we usually get evacuation orders only 48 to 72 hours before a storm is expected, we had to come up with a plan that allowed our construction workers to prepare the levee in a short timeframe, then safely evacuate with their families."



Jimmy Gautreaux

*"Sealing" and compacting levee surface
reduces vulnerability of under-construction
levees during tropical events*



A tractor-pulled steel drum roller (above) and self-propelled steel drum roller (below) make parallel and perpendicular passes on a levee. A steel roller compacts and "seals" the surface of an under-construction levee. (USACE Photos)



The team's first suggestion was to maximize contractor efficiency in constructing the levees by getting most of the levee construction work in place prior to Hurricane Season.

The coordinated team then developed and considered these protective methods:

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Corps protecting under-construction levees *during Hurricane Season*

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- Placement of a liner fabric that would be rolled out over the landside and floodside of the bare levee, and anchored by sandbags;
- Placement of a liner cover only on the floodside of the levee;
- Research “erosion control” products;
- Shore up the floodside berm with large rocks with wave-breaking capability;
- “Sealing” the clay embankment by rolling a steel drum, a bulldozer, or other mechanical equipment.

The fabric liner with sandbags idea was eliminated because the engineers decided a storm’s wave action could work its way beneath the fabric and do its damage.

Erosion control products, it was learned, are geared mostly toward anchoring seeds to promote grass growth; so these methods were eliminated as the levee would still be under construction.

Placing large rocks on the floodside of a levee to break damaging wave action is a proven levee protection method. However, this idea was eliminated for two reasons: the short time available for crews to place large quantities of rocks, and the lack of availability of large rocks.

The levee-protection alternative the team selected was compacting or “sealing” the exposed levee with a steel drum or other heavy equipment (see photos, page 2). This method can be implemented quickly, usually within 24 hours. Most earthwork contractors have vast experience with this method and are comfortable with the timeframe.



Walter Baummy

Another risk reduction method adopted by the team was limiting the levee construction area to a maximum of 2,000 lin-

ear feet during the peak of Hurricane Season, Aug. 15 to Oct. 15. Contractors normally like to work on 5,000-foot levee stretches. By limiting the work area during this peak storm period, they can limit the levee exposure, thus making it easier to prepare an exposed levee for the possible onslaught of a storm.

“Our outreach to the industry of earthwork contractors, our lab testing of the soils, and the ‘field demonstrations’ we conducted last spring, confirmed that sealing the surface of an under-construction levee provides erosion resistance and can be quickly implemented,” said Walter Baummy, Chief, Engineering Division for the New Orleans District, who led the coordinated team effort.

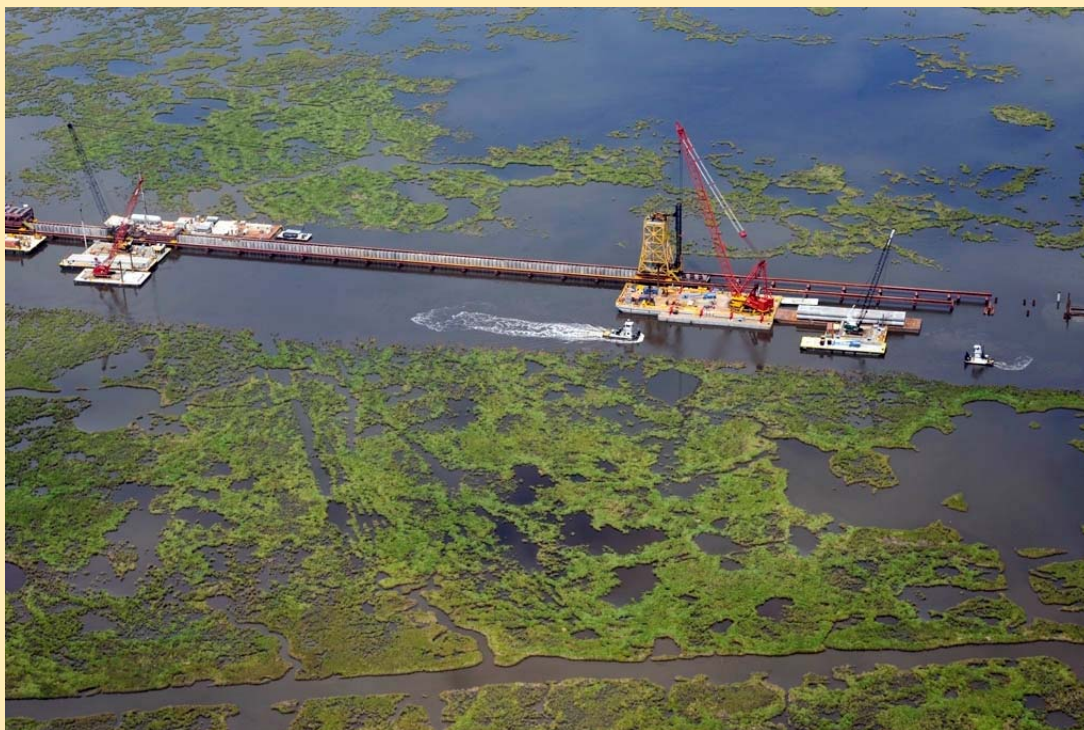
The Corps of Engineers is including levee-protection clauses into earthwork contracts where appropriate. The wording of the contracts will include a detailed plan for sealing the exposed levees from pending storms/hurricanes, as well as the safe evacuation of personnel and equipment from the construction site.

“We have a huge amount of levee work scheduled over the next couple of years to complete the Hurricane and Storm Damage Risk Reduction System,” said Karen Durham-Aguilera, Director of Task Force Hope. “We want to protect the ongoing levee work in case of a storm event; and, of course, we want to protect the levee workers. We are convinced that we’ve found the right way to do both.”



JULY 20, 2009:

- 585 66" piles (46%)
- 202 closure piles (8%)
- 11 batter piles (2%)
- 426 24" barge gate piles (100%)

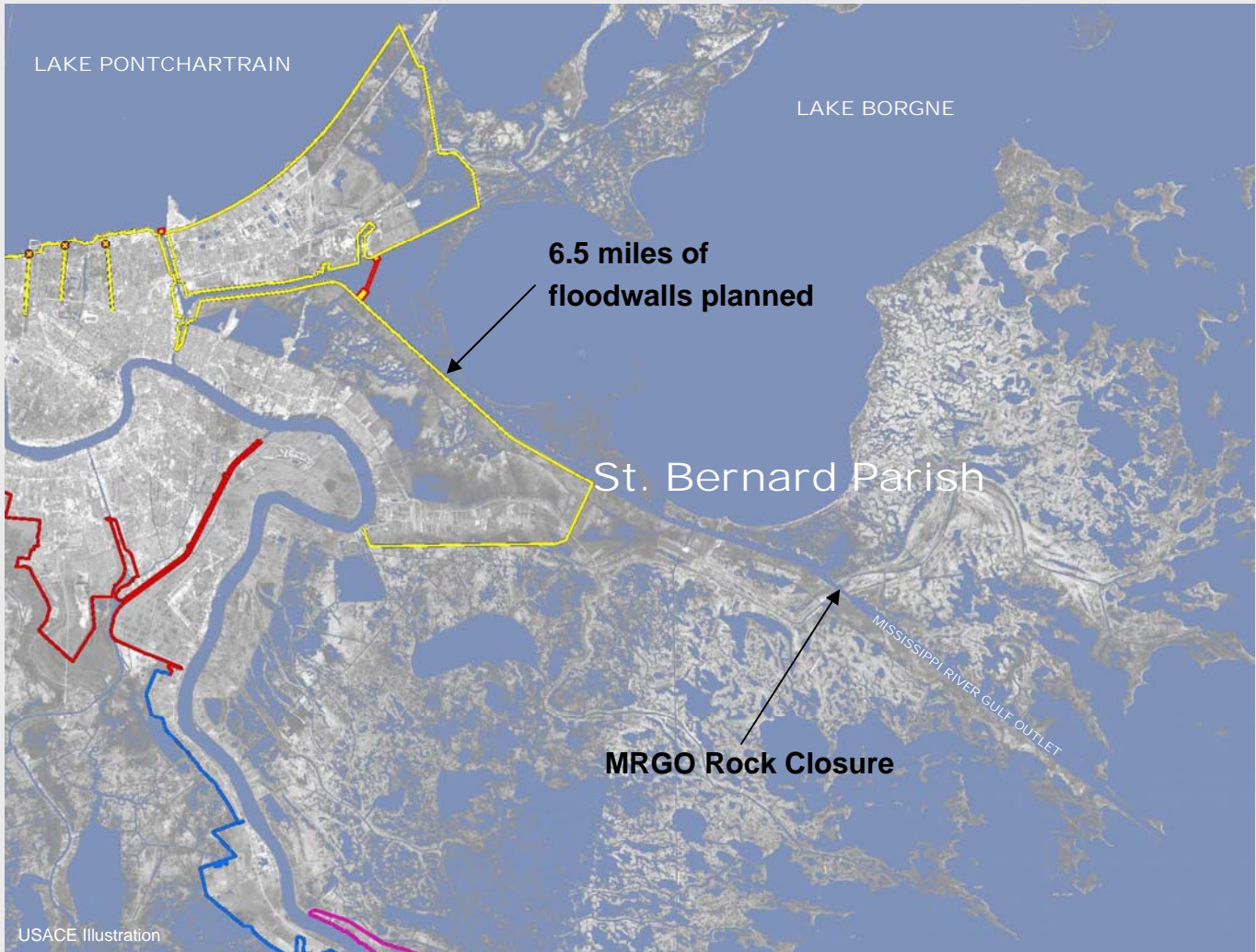


IHNC Surge Barrier construction *progressing at fast pace*



Photos courtesy Shaw

Construction beginning/construction ending *in St. Bernard Parish*



July 9, 2009
Construction ended

MRGO Channel
totally closed
with 352,086 tons of stone

July 15, 2009
Construction beginning

First contract awarded for
pre-construction services of
T-walls planned
along the MRGO

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The *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 recovery work to stakeholders.

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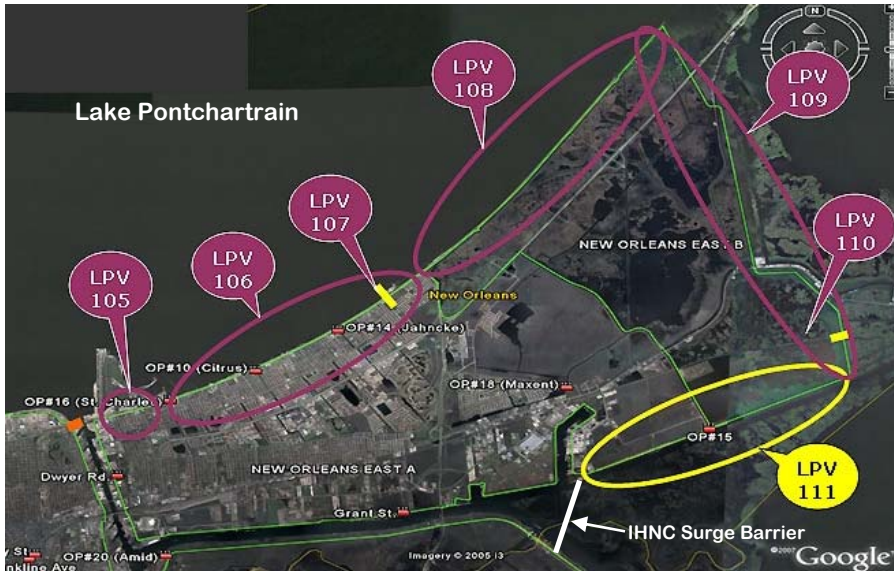
Comments and questions may be sent to the Status Report Newsletter editor at: b2fwdpao@usace.army.mil

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Status Report Newsletter

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Corps using innovative construction contracting for New Orleans East - *and elsewhere*

The U.S. Army Corps of Engineers awarded a \$3.1 million pre-construction services contract on July 6 for Lake Pontchartrain & Vicinity 111 (LPV 111), reaching another pivotal milestone in reducing risk for residences and businesses in New Orleans East. The Early Contractor Involvement (ECI) contract was awarded to Archer Western/Alberici, a joint venture, based on the team's prior experience and technical approach to design, planning and construction.

"This project presents a multitude of challenges, so we felt that a pre-construction services contract would provide an opportunity to make more informed design decisions," said Col. Robert Sinkler, Commander of the Hurricane Protection Office. "This collaboration will be a fundamental part of finalizing designs and improving the efficiency of future construction activities to support the needs in New Orleans East."

The ECI contract includes three op-

tions for construction of "Levee Sections," "Concrete T-wall at Pump Station 15", and "T-wall from end of Earthen Levee to Inner Harbor Navigation Canal tie-in." These options, when awarded, will account for the majority of the estimated \$295 million in project construction costs for the area.

Preconstruction services will run concurrent to the design effort, allowing for valuable collaboration between the design team and Archer Western/Alberici. When complete, this project will reduce impacts from a storm surge event that has a one percent chance of occurring in any given year.

In April, the Corps awarded the base portion of a three-part, ECI contract for preconstruction services and pile load tests for the Gulf Intracoastal Waterway West Closure Project. Additionally, four upcoming contracts in St. Bernard and Orleans parishes will make use of ECI preconstruction services.

