MINUTES OF
SOUTHEAST LOUISIANA FLOOD PROTECTION AUTHORITY-EAST
ENGINEERING ADVISORY COMMITTEE MEETING
HELD ON OCTOBER 6, 2011

PRESENT: Thomas Jackson, Chair
Stephen Estopinal Vice Chair
George Losonsky, Committee Member
Louis Wittie, Committee Member

The Engineering Advisory Committee of the Southeast Louisiana Flood Protection Authority-East (SLFPA-E or Authority) met on October 6, 2011, in the East Jefferson Levee District Conference Room, 203 Plauche Court, Harahan, Louisiana. Chairman Jackson called the meeting to order at 9:30 a.m.

Opening Comments: None

Adoption of Agenda: The agenda was approved as presented.

Approval of Minutes: The minutes of the May 4, 2011 Engineering Advisory Committee meeting were approved.

Public Comments: None.

Old Business:

A. Status update on Task Order 02-03-005, St. Charles/East Jefferson Internal Levee Compartmentalization Study and request to approve Task Order 02-03-008 (next modeling phase).

Robert Jacobsen with Bob Jacobsen PE, LLC, distributed copies of the status report. He explained that the task orders listed on the agenda were assigned to his firm by Taylor Engineering. Task Order (TO) 02-03-005 is the first of a series of tasks outlined in a Community Development Block Grant (CDBG) obtained by the Authority. The tasks under the Compartmentalization Study will consider ways to reduce residual risks in the three main polders. The first TO is for the study of the Metro-St. Charles polder and the potential for the proposed compartmentalization structure at the St. Charles/East Jefferson Parish line. The model has been developed, potential scenarios have been proposed and a stakeholder meeting is needed for feedback. The East Jefferson Levee District (EJLD) will actively participate in the coordination of the stakeholders meeting, which is proposed to be held on November 2nd in the East Jefferson Council Chambers.

Mr. Jacobsen explained that TO 02-03-008 is the extension of the next step in the CDBG. The CDBG anticipates polder modeling for the Metro-St. Charles, New Orleans East and St. Bernard-9th Ward polders. TO 02-03-008 will allow work to commence on the New Orleans East and St. Bernard-9th Ward polders models and on the validation of the models since Hurricane Katrina information is available on inundation in the two

polders. Mr. Jacobsen advised that he will perform this work with staff support from Taylor Engineering.

Mr. Estopinal offered a motion, which was seconded by Mr. Losonsky and unanimously adopted, to recommend that the Board approve TO 02-03-008.

2. Review of USACE Hurricane Surge Return Frequency Analysis (Task Order 02-03-006): Status update, report schedule, and brief review of likely concerns.

Mr. Jacobsen advised that TO 02-02-006 was precipitated by concerns expressed by former Commissioner Goins. The objective of the TO is to provide a review of how the U.S. Army Corps of Engineers (USACE) arrived at its hydraulics numbers for the design of the Hurricane and Storm Damage Risk Reduction System (HSDRRS). The USACE's study has not been produced in a single document. The motivations behind the USACE's Hurricane Surge Return Frequency Analysis (HSRFA) consisted of several different programmatic efforts, such as the forensics study that led to the IPET reports, the need to produce FEMA flood maps, the need to produce a near term design for a 100-year system and the need for information for the Category 5 CPR study. The documentation, methodologies and results of these efforts are not laid out at one point. Pieces of information are still being obtained.

Mr. Jacobsen reviewed and discussed four of the HSRFA steps:

- The probabilistic step of what hurricanes are likely to approach the central-northern Gulf coast, which was prepared almost six years ago.
- Computer simulation of what happens with potential storms of interest and modeling of surges produced by hurricanes. A major step in this process is validation.
- Estimating return frequency by selecting a sample of storms and doing comprehensive statistical work to produce values for a 100-year event. The method selected was JP MOS.
- Evaluating polder inundation.

Mr. Jacobsen explained that his report will include a description of the above four steps, the USACE's methodologies and general methodologies that are available. He stated that the USACE's work in all four areas has advanced the state of the practice significantly; however, the work has been criticized. He advised that his report will inform the Authority about the criticisms, the accuracy of the results and the handling of uncertainties. The report will also include how far the state of the practice has advanced since the USACE's efforts. He discussed the FEMA flood insurance study and associated maps that are being prepared. The FEMA report must be produced for public comment. He noted FEMA's intention to rely on information prepared four to six years ago for its calculations. Copies of the USACE's FORTE model (an Excel spreadsheet that allows level pool routing) have been requested.

3. Additional 2011 Coastal Hydraulics Support: Status update, appropriate hydraulic criteria for resiliency/armoring evaluations and flood-side scour at MRGO Levee/T-wall (Task Order 02-03-007).

Mr. Jacobsen explained that TO 02-03-007 was issued several months ago when he attended meetings on behalf of the Authority. No work has been done under this TO since the end of August. He advised that Robert Turner, SLFPA-E Regional Director, indicated that it is unlikely that additional support will be requested under this TO until after further review of the budget.

4. Discussion of armoring for the HSDRRS.

Stevan Spencer, SLFPA-E Regional Chief Engineer, provided a status report on the USACE's armoring effort. About two-and-a-half weeks ago the USACE had a 210-ft. section of Turf Reinforcement Mat (TRM) installed in the area of Norco, La. The USACE is watering, fertilizing and monitoring the section and is preparing a report on the test section.

Mr. Jackson advised that he and Mr. Turner visited the site about a week-and-a-half ago. The test section is on a part of a St. Charles Parish levee and continues around an outside curb. The Authority wanted the test section to go around an inside curb where potential mowing problems would be experienced. He stated that the TRM was fairly well placed; however, some triangular pieces around the outside curb were not as well placed. The TRM appeared to be well attached and the levee had been graded and was fairly smooth. The manufacturer was questioned about whether the hold-downs could be tightened after being driven. It was pointed out that the USACE recommends that a taller grass be grown on the TRM than is grown on other parts of the levee. Mr. Jackson noted that the proper installation of the TRM is critical. Particular care is needed to ensure that seams do not run in a longitudinal line to the levee and on the placement of the TRM on both outside and inside curbs. Mr. Doody added that the local levee districts have recommended that the USACE have the contractor maintain the TRM for one year (an entire growing season).

Mr. Spencer advised that the USACE has scheduled weekly meetings (Thursdays at 1:00 p.m.) to discuss the status of the HSDRRS armoring project. The USACE is still considering completing the armoring by June 1, 2012; however, the TRM would have to be purchased by October 14th to meet this target date. The project decision document must still be signed by General Walsh. In addition, a synopsis of the project must be prepared, the project bid and the award of contract review conducted. Thus far the USACE has contacted five suppliers and three are approved as responsive for materials. The USACE has also located one million square yards of Bermuda sod. The USACE has not decided whether to place and seed three inches of soil on the TRM or use sod. The USACE has scheduled a technical meeting for October 19th. The USACE is looking into the test section supplier's claim that a full scale model study was performed and that the TRM can be left in place in the event of a future lift. The USACE had previously indicated that the anchors could be left in place in the event of a future lift.

The Committee briefly discussed the options of surcharging levees that will need a lift in the near future and changing the wave berm to reduce overtopping in locations where waves are not an issue.

Mr. Estopinal requested that L'hoist North America be allowed to present information on lime treatment as an alternative method for armoring. He stated that he understood that the USACE tested a levee section with the lime treatment; however, he was not familiar with the parameters of the test. He commented that the representatives of L'hoist indicated that lime treatment may be a way to provide armoring, particular for levees outside of public view, and that he would like for a test section to be done.

Eric Berger, representing L'hoist North America, discussed several projects in which lime was successfully used in hydraulic structures. The first lime application project discussed was the Friant-Kern Canal in California where three or four sections within about eight miles of the canal were lime stabilized in the early 1970's when the clay was sloughing into the canal. The Federal Bureau of Reclamation researched lime stabilization in the 1960's and 1970's. He stated that he visited the Friant-Kern Canal several times and that the lime treated sections have performed better than any other section of the canal and that no maintenance has been required on the lime treated sections. The USACE Vicksburg District has used lime treatment since the 1980's for repairing slip outs on Mississippi River Levee slopes. Lime has also been used since the 1980's to repair slides on the impoundment levees in Lake Livingston in Houston with top soil and grass seeding placed on top of the lime for aesthetic reasons. In 2010 the U.S. Bureau of Reclamation stabilized an irrigation canal in California. The Department of Agriculture Soil Conservation Service routinely uses lime for the construction of small agricultural dams throughout Texas and Oklahoma.

Mr. Berger discussed a trial conducted in Plaquemines Parish last year in which L'hoist participated along with other competitors to raise a levee five feet. He explained that in this case the USACE did not have either the design skill or the equipment to do a project with test sections as large as 500-ft. The soil was mixed on beds in the Bonnet Carre Spillway and trucked about 35 miles to the project site. He explained that part of the struggle was because lime and soil are a very thirsty combination and not enough water was used. However, the USACE realized the situation by the time the levee was being constructed and the water was brought up to the level needed for the placement of the levee. A picture of the levee section was shown. He explained that the layers at the edges of the slope were not particularly well scarified and that the bricking appearance is just superficial. The core of the levee test section was lime treated and one-foot lifts were placed.

Mr. Berger explained how clays treated with lime have improved compactability, workability and bearing capacity. He discussed the results of a five year study completed in 2010 relative to permeability, as well as the results of tri-axial tests, hole erosion tests on internal erosion, mobile jet erosion tests on external erosion and enhanced crumb tests.

Mr. Jackson asked would rainfall running down a levee slope cause the lime to leach alkalinity to adjacent properties and affect vegetation? Mr. Berger replied, no. He

stated that this situation was studied extensively for at least ten years. The impermeability reduces any runoff to about 2 centimeters. In addition, the lime is so chemically active that it reacts immediately with carbon dioxide or any organic debris that it comes across. He discussed the application of lime treatments in condominium developments.

Mr. Estopinal asked for a recommendation on scarifying and adding lime for treating a problem section of levee. Mr. Berger replied that the easier way to do this would be to make the bench as wide as the compactor.

Mr. Berger ending the presentation by stating that the lime treatment of soils significantly improves workability, that the permeability level dramatically improves as long as kneading compaction is used and remains two to three percent above the optimum moisture content, and that mechanical stability and other characteristics are improved. He stated that an English translation of the study is anticipated and offered to distribute a copy to anyone who wished to receive one.

Mr. Estopinal commented that he would like for a wave overtopping test to be conducted with conditions similar to those used in the USACE's Colorado tests. Mr. Berger responded that the Colorado test could be replicated at L'hoist's cost.

New Business:

1. Discussion of the Monticello Levee.

Billy Marchal with the Flood Protection Alliance explained that Royal Haskoning was hired for a study to review overtopping based on the LaCPR Study. The Royal Haskoning study showed that in events beyond the 100-year event that water would come in and inundate St. Charles Parish, flow into Jefferson Parish south between the Airport and the River and then into Orleans Parish along Airline and Jefferson Highways. The Royal Haskoning study ties into the SLFPA-E polder study. The Jefferson Parish Department of Public Works recently received a grant in the amount of $1.5 million to $1.8 million to enhance the culverts at Airline Highway where the Monticello Canal crosses the highway (Orleans/Jefferson Parish line). Depending on the storm event and the location of a potential failure or overtopping, either Orleans or Jefferson Parish could experience flooding because of this pathway. Jefferson Parish is in the process of awarding a contract to redesign the Monticello Canal/Airline Highway interchange from a drainage standpoint. The culverts at Airline Highway are too small for drainage purposes and present a bottleneck for both Jefferson and Orleans Parishes. The current plan is not to reestablish the Monticello Levee. The Monticello Levee currently stops within about 100 feet on either side of Airline Highway. He asked that the Authority support the request for the design study to incorporate the reconnection of the Monticello Levee. Currently, sandbags and Hesco baskets are placed at this location when necessary and ingress and egress are closed off.

The drainage situation at the Airline Highway/Monticello Canal interchange was briefly discussed.

Mr. Jackson explained that, historically, the polder levee was fought for, built and maintained by the Orleans Levee District. Therefore, the Authority would be strongly interested in not only maintaining, but also improving this polder levee, as well as the levee between Jefferson and St. Charles Parishes. He commented on the few escape routes for evacuation and that one of the routes is Airline Highway. He stated that the continued use of sandbags, the construction of a floodgate across Airline Highway or other such features, rather than raising the roadway to provide protection and continued vehicular access, would be bad mistake. He added that other Board members would likely agree and support maintaining and enhancing the protection between the parishes.

Mr. Jackson explained that a recommendation is needed from the Engineering Advisory Committee for the Board to approve the adoption of a resolution to be forwarded at the request of the Flood Protection Alliance to Jefferson Parish, which would not try to attempt to specifically state what project or money should be used, but would inform Jefferson Parish that the position of the Authority and the Orleans Levee District is that the polder not only needs to be maintained, but improved. The resolution would basically inform Jefferson Parish that the construction of the drainage project should not preclude the continuity of the polder levee between Orleans and Jefferson Parishes. A motion was offered by Mr. Estopinal, seconded by Mr. Wittie and unanimously approved, to recommend that the Board approve such a study.

Mr. Jackson advised that an informal meeting would be held with Randy Thompson with Propex immediately after the Committee meeting and invited anyone present who wished to attend the meeting.

There was no further business; therefore, the meeting was adjourned at 11:45 a.m.