



Corps Hurricane Response

Task Force Hope Status Report

December 15, 2006

Corps working on 100-Year Storm Criteria

Unified technical approach to determine 100-year elevations across Gulf Coast

By Susan Spaht

The U.S. Army Corps of Engineers, has repaired 220 miles of levees and floodwalls in the New Orleans metro area since Hurricane Katrina struck the Gulf Coast on Aug. 29, 2005. It has also improved the Hurricane Protection System (HPS) by, among other things, adding pumps and flood-gates at the three major outfall canals.

The Corps is now completing sections of the Hurricane Protection System for which it has received authorization and funding.

But the ultimate goal of the Corps is to reach the 100-year level of protection for this area by 2010. The legislation which authorizes this work reads:

"...provide the levels of protection necessary to achieve the certification required for participation in the National Flood Insurance Program under the base flood elevations..."

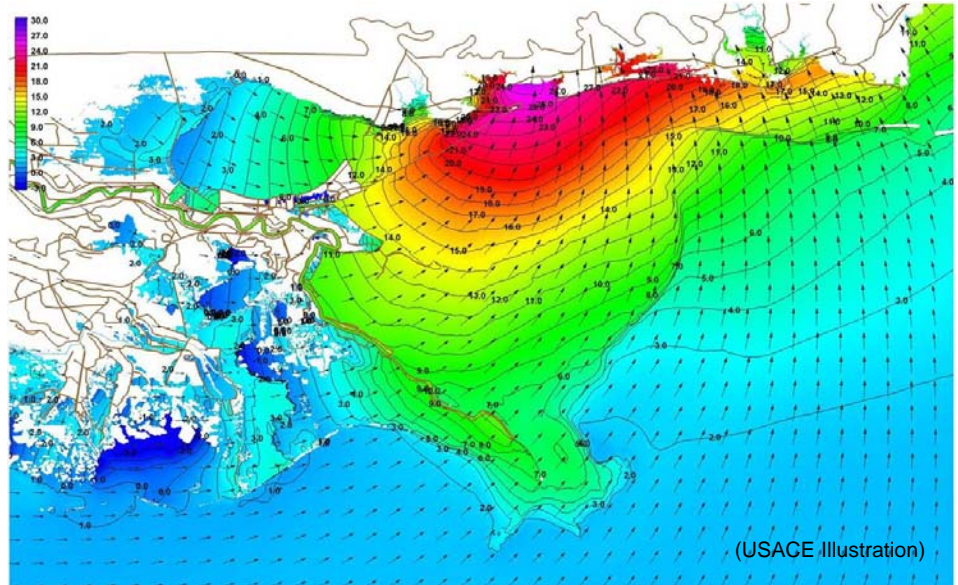
To begin construction of that 100-year

"By 2010 we will have a Hurricane Protection System in place that provides a level of protection against the 1% storm; that is, a storm that has a 1% potential of reoccurring within any given year. It's often referred to as the 100-year storm."

- Dan Hitchings, Director, Task Force Hope

level of protection, the Corps will need to know what elevation the levees and floodwalls should be to certify them to provide the 100-year level of protection.

To find the correct floodwall and levee elevations, the Corps has embarked on one of the most complicated assignments it has ever encountered.



This computer-generated model illustrates storm surge of Hurricane Katrina as it makes shore on the Mississippi coast. The red area indicates about a 20-foot surge, the purple area is about 30 feet. The arrows show wind direction. (USACE Illustration)

Several months ago, the Joint Coastal Surge team was formed. This group consists of experts from the Corps of Engineers, FEMA (Region 4 and Region 6), the National Oceanic and Atmospheric Administration (NOAA), academia and the private sector. The team agreed on the Joint Coastal Surge Analysis procedures in order to provide a unified technical approach to determine the 100-year storm water surface elevations across

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the Gulf Coast.

“Getting this team of experts together to agree on the process to develop the 100-year surge levels for the Gulf Coast is unprecedented,” said Falcolm Hull, the Corps’ production leader for the Joint Coastal Surge team. “The process we are developing for the Gulf Coast study has national implications and will, in fact, be utilized in the near future for the Atlantic Coast.”

“The complete coastal analysis re-study we’re doing right now hasn’t been done since the 1970’s,” said Shawn Vicknair, a Corps Program Manager. “And the technology we’re using was not available then – it is so much more accurate now.” That was the last time FEMA flood insurance maps were developed.

A set of 152 storms was developed by the team by combining historical and “probable” combinations of central pressure, radius to maximum winds, forward speed, angle of track relative to coast-line, and track. All critical factors in determining the 100-year surge and wave elevations were considered.

A storm matrix was developed based on these parameters. The estimated range of storm frequencies using the selected parameters was between the 50-year and 500-year events. A grid of data points was developed that covers the area from the Sabine River to Mobile Bay. The grid will be used for all coastal analysis for Louisiana and Mississippi.

There is so much scientific data involved in the grid that computations can only be accomplished on High Performance Computers. These super computers are available at only a few locations in the United States. One of those is the Engineer Research and Development Center (ERDC) at the Corps of Engineers in

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Corps takes over Household Hazardous Waste Facility



A Corps of Engineers crew sorts and separates toxic materials at the Household Hazardous Waste Facility in New Orleans’ Gentilly area.

By David Harris

On Nov. 22, the U.S. Army Corps of Engineers took control of the Environmental Protection Agency’s Household Hazardous Waste Facility in the Gentilly neighborhood on New Orleans’ east side.

Heading up the transition team is Tim Gouger, Program Coordinator from the Corps’ Omaha District. He has overseen the changeover since earlier this year.

Why switch agencies? “The Corps’ curbside debris removal included collection and transport of household hazardous wastes to EPA consolidation sites,” Gouger said. “Now that we have substantially completed curb-side debris removal, most of the household hazardous waste results from decommissioning houses prior to their demolition.

“It makes sense for one agency to manage both the front end and back end of hazardous waste now that there is less generated, and what is generated results from demolition, which the Corps is already performing,” he added.

Additionally, the Corps has the expertise for management of hazardous waste as well as a contaminated debris management mission under FEMA’s Emergency Support Function #3. Gouger emphasized a high degree of collaboration will be maintained between EPA, the Louisiana Department of Environmental Quality, and within the Corps in order to maintain expectations.

Coming in to oversee the day-to-day operation is the Rapid Response Team from the Corps’ Omaha District. The team is described as the Corps’ “special forces,” a unit that can move in and respond immediately to contain and clean up hazardous materials. The team is working under the direction of Project Manager John Hartley.

The Household Hazardous Waste Facility handles an average of 6,000 pieces a day, down from 25,000 in the early days of Corps debris removal efforts. However, those numbers are expected to increase since Orleans Parish will start ordering involuntary or condemnation demolitions soon.

What kinds of items come in for processing? “Anything you find in the house or garage,” Hartley said. Examples of items collected include: gasoline and other automobile fluids, gasoline tanks, oxygen and propane cylinders, chemical drums, medical waste, and ammunition.



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Vicksburg, Miss. Others are located at the Universities of Florida, Texas and Notre Dame, and those are also being utilized to compute the 100-year storm surge and wave levels.


"We're using three million nodes in the grid," said Vicknair. "The closest comparable study used less than a million."

Here's what the super computers will do:

- Model hurricane wind fields
- Determine resulting storm surge
- Determine far and near shore wave fields
- Determine wave set-up affects
- Determine wave interaction at the shore, over land, and on structures
- Define water elevations risk and probability

The Corps is currently scheduled to receive the 100-year design elevations for the HPS in Feb. 2007.

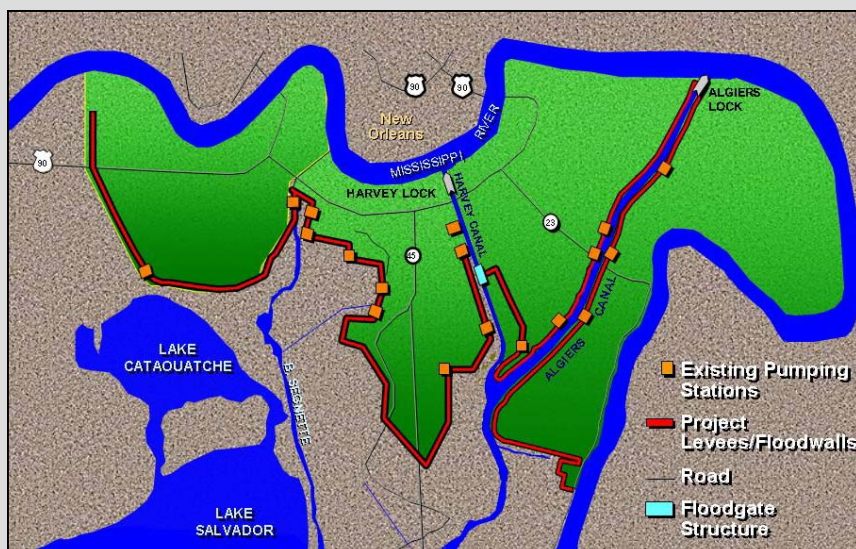
"Once this information is available, the Corps will use it to adjust final designs and construct levees and floodwalls to that height," said Dan Hitchings.

"In the meantime, levees and floodwalls are being designed using conservative estimates of the 100-year flood level so construction impact will be as small as possible." 

Corps of Engineers awards new contract to local company

A supply contract for Empire Floodgate repairs has been awarded to Southern Services & Equipment Co. of St. Bernard Parish in the amount of \$470,884.

Corps to elevate Harvey Canal Floodwalls



Flood gates concept is neither funded nor authorized, and will not delay floodwall design and contracting awards.

By Roger Cawley

The Corps is committed to building in southeast Louisiana one of the most advanced hurricane and flood-damage reduction systems in the world. In delivering upon that commitment, the Corps has embarked upon the floodwall construction program along the West Bank Harvey Canal.


That construction will bring the elevation of the east bank floodwalls to pre-Katrina levels. Additionally, the Corps plans to further elevate the Harvey Canal floodwalls to a higher level of protection. How will the Corps do that?

As part of the lessons learned from Hurricane Katrina, the Corps is continually evaluating construction technologies that deliver the most up-to-date and efficient engineering solutions. It looks to internal and outside expertise to review its design and construction proposals, develop plans, and evaluate project cost, effectiveness and scheduling. The Corps also reviews optional or alternate plans in case the original project can be significantly improved by new technologies, engineering techniques, significant financial advantages or if the project should

face unanticipated obstacles.

In keeping with that review process, the Corps is studying an alternative concept to achieve 100-year protection levels for the West Bank. A critical feature of this alternative plan is that it would still provide floodwalls along Harvey Canal. The proposal would construct hurricane flood gates at the Gulf Intracoastal Waterway west of the junction where the Algiers and Harvey canals intersect.

Compared to the original, this alternate proposal represents only a conceptually different track to the same destination: enhanced hurricane and flood-damage reduction for the West Bank and Vicinity. It is not an approved or funded plan. No ongoing floodwall design or contracting has been held up. In fact, the Corps requested right of entry (ROE) for a section of the Harvey Canal floodwalls last week.

Consideration of this alternate proposal does not delay or obstruct work on the currently scheduled project to raise floodwall elevations on the east bank of the Harvey Canal. 

For more information, visit the District Web site at: www.mvn.usace.army.mil/

Faces of Hope

Corps' GIS team centralizes levee data to speed design processes

By Bridget Weber

Instant access to mapping information that used to take days to generate is now available through Geographic Information System (GIS) software developed by the Engineering Systems and Programming Section at the U.S. Army Corp of Engineers in New Orleans.

The design team for the Levees Enterprise GIS project took the best available data from numerous sources to create a single, authoritative levee centerline geometry from which to create maps and analyze data for internal use by project managers and other Corps personnel.

The core team consists of computer scientists Maik Flanagin and Sam Falchook, as well as geographer and database architect, Michele Aurand, working under the direction of Technical Manager David McDaniel and section chief Denis Beer. Flanagin, an MIT graduate now working on a Ph.D., has contracted with the Corps for the past five years working on GIS systems for a number of different projects.

Newcomers Aurand and Falchook have several years of experience developing national GIS to manage offshore leases, structures, and geological resource inventories for the Department of Interior Mineral Management Service.

Beginning the GIS project three months ago, this resourceful group is credited with completing a highly sophisticated system in a very short amount of time – and making it user-friendly. Almost 200 users are set up with the system so far, and at any given moment 20 people may be tapping into the database.

GIS software is used to store, retrieve, map and analyze geographic data. With the GIS software the team developed,



Computer scientists, from left, Sam Falchook, Maik Flanagin and Michele Aurand developed a highly-sophisticated GIS system that is user-friendly in levee design, map-making and data analysis. (USACE Photo by Bridget Weber)

maps can be created that integrate data from different sources. High resolution imagery of the levee system was created to form the base for layering on information.

Additional information, or data sets, can be added providing maps for analysis. The data sets were created from the latest available information that includes soil boring data, height surveys and a multitude of attributes related to the levees. Drop down menus listing the data sets contribute to the ease of use of the system.

Aurand explained that GIS is "a tool for creating new spatial features based on relationships of existing spatial features." For instance, someone might want to know where pipelines cross the levee system or locate floodgates that are at or below elevation of zero feet. Choosing the pertinent data sets to add to the map will create the end product with the desired information.

The system also is integrated with the Corps' project management database, P3E. Using the Project Master tool, project managers can quickly produce summaries and other useful reports based on the most up-to-date project information.

"With this software, engineers and project managers can look at the levee system as a whole, rather than looking at things piecemeal or having to spend time pulling together separate pieces of data from outside sources," says Flanagin. "With more information available at their fingertips, it should help speed up the design process."

Technical staff may have had access to this type of information and technology previously, but this software brings more data and tools for analysis right to the engineer's desktop. The software is a valuable new tool to assist with the ongoing challenges of the Hurricane Protection System.



Corps monitoring earthen levees

Recently, there have been questions about erosion affects on earthen levees, particularly along recently repaired levees such as Lake Pontchartrain and Vicinity, south of Bayou Dupre which borders the Mississippi River Gulf Outlet.

Post-Katrina levee repairs were built with appropriate levee material and, in most cases, constructed to higher elevations than existed pre-Katrina. Areas of minor erosion due to rainfall runoff are being evaluated and will be addressed as needed.

Most of the minor erosion that has occurred is not a major concern because the levees have been overbuilt to account for future settlement and subsidence. However, as areas of erosion are discovered, each will be investigated and the appropriate actions will be taken.

Generally, as the Corps' contractors are completing the levee embankment work, these areas will be addressed as part of the contractor's obligation to fertilize, seed and mulch the levees.


The Corps is planning to have outside experts review and comment on this work. 



Photo 1 (top right) is an aerial view of the Bayou Dupre floodgate with its adjacent earthen levees.

Photo 2 (above) is a 100-yard view of the north side of the levee.



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New Orleans District work	(504) 862-2201	New Orleans District Public Affairs
Task Force Hope - Overall hurricane protection system restoration, repair and improvement	(504) 862-1836	Task Force Hope Public Affairs
Debris Removal in Louisiana	(504) 681-2317	Louisiana Recovery Field Office

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 hurricane recovery work to stakeholders. This is an online publication and open to public distribution. This issue and past issues can be found at: 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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Photo 3 (above) shows the greatest erosion in the levee to be only three inches.

Pump Capacity Report

17th Street Canal.....4,060 cfs
 London Avenue Canal....2,800 cfs
 Orleans Avenue Canal... 2,200 cfs

As of Dec. 15, 2006

Note: The Status Report Newsletter will give weekly reports on the pump capacity of the three temporary outfall canals under construction. For more details, please visit this Web site:

www.mvn.usace.army.mil/hps/