



Hurricane Katrina – one year later

Hurricane Katrina was one of the largest natural disasters in the history of our country with more than 1,300 lives lost. It struck the Gulf Coast on August 29, 2005 – one year ago.



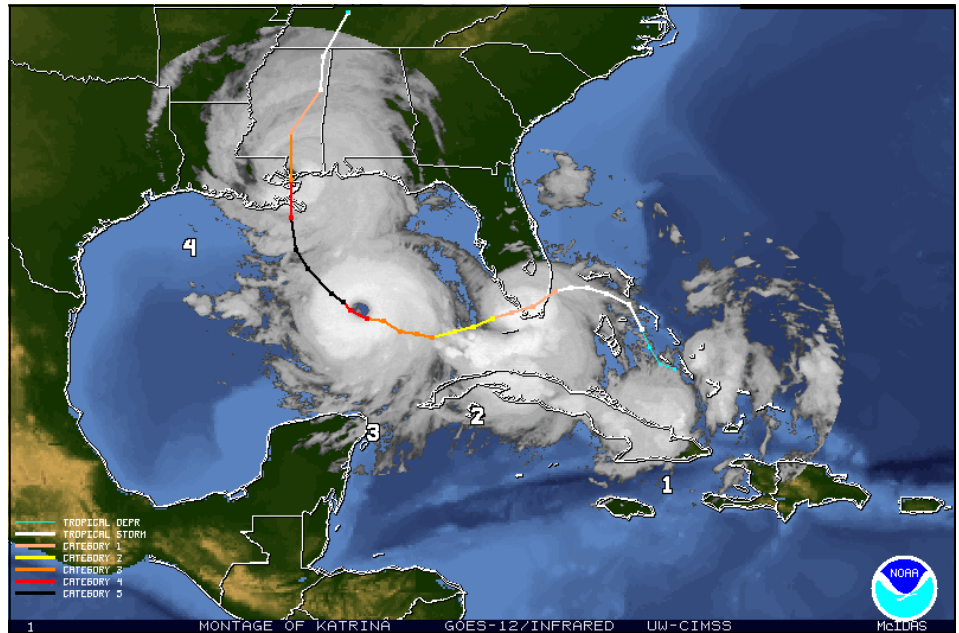
The Mississippi Valley Division (MVD) is responsible for Corps of Engineers water resources programs in a 370,000-square-mile area in portions of 12 states from Canada to the Gulf of Mexico. Its subordinate districts are headquartered in St. Paul, Minn.; Rock Island, Ill.; St. Louis, Mo.; Memphis, Tenn.; Vicksburg, Miss.; and New Orleans, La. The commanding officer for the MVD is

Brigadier General Robert Crear.



BG Robert Crear

For the past 12 months, the Mississippi Valley Division, in conjunction with other federal, state and local partners, has continued an unprecedented, multi-faceted effort to assist



In 2005, Hurricane Katrina marched across the Gulf of Mexico, finally making landfall on the coasts of Mississippi and Louisiana. (NOAA Illustration)

in the recovery and rebuilding of the areas affected by Hurricane Katrina.

Engaging more than 3,800 people at its peak, this is the largest disaster recovery operation in the history of the Corps of Engineers.

Cumulatively, more than 8,000 Corps employees have provided assistance. As a comparison, during the Florida hurricanes in October 2004, approximately 1,500 Corps employees supported the hurricane recovery efforts; while in February 2005, 127 Corps employees were involved.

The Corps of Engineers repaired

and restored 220 miles of floodwalls and levees since September 2005. With a few exceptions, New Orleans had Pre-Katrina flood and storm-level protection by the beginning of this hurricane season, June 1, 2006. This system is in equal or better condition than it was when Katrina hit. For example, new levees were con-

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Katrina Facts

- *More than 1,300 lives were lost*
- *Category 5 strength less than 12 hours before landfall*
- *127 mph winds at Louisiana landfall*
- *Maximum surge of 28 to 30 feet along Mississippi coast*
- *80 percent of New Orleans was flooded*

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structed with erosion-resistant clay and a more stable construction (T-wall versus I-wall).

In addition, new erosion protection has been added at several sites, and a program of tree cutting on existing levees for protection is ongoing. Additional pumping capacity and floodgates have been added at the outfall canals.

The cost of the work totaled more than \$801 million; construction included 59 projects using 26 contractors.

"It's not about statistics," Gen. Crear said. "In the final analysis, as I look back on this disaster, what I am most impressed with is the people. It was a team of teams. They delivered an unheard-of performance in just eight months.

"The locals who participated in this – and that includes New Orleans District (Corps) people – did an amazing job. These people lived behind the levees, too," stated Crear. "Their families were impacted, but they put their lives on hold to help get this work done."

In Mississippi, by the end of August,

the Corps will have completed all tasks assigned by FEMA and local partners. However, Gov. Haley Barbour requested and received a six-month extension of debris removal for the storm surge inundated counties of Hancock, Harrison and Jackson. The new deadline for these counties is Feb. 28, 2007.

In Louisiana, the Corps continues to upgrade the hurricane protection system in order to better defend New Orleans against another massive storm. The Corps will soon begin the process of bringing levees and floodwalls in the Hurricane Protection System up to the FEMA certified level for a 100-year flood.

The Corps' work to upgrade the flood and storm protection will continue through 2010. This work includes stronger levees, floodwalls and interior drainage, including:

- Replacing failed I-wall design floodwalls with stronger T-wall or L-wall design floodwalls.
- Reinforcing the most vulnerable undamaged I-walls and the surge protection closures.
- L-wall structures are used in areas where sufficient land is not available for T-wall design structures.

To date, the federal government has appropriated more than \$5 billion to complete this work.

Congress has directed the Corps to develop a plan to protect the State of Louisiana from damages caused by a Category 5 hurricane. That effort

.....ANNOUNCING.....

U.S. Army Corps of Engineers' Media Center

What: The news media's primary point of contact for the Corps' hurricane protection system work.


When: Opened August 23, 2006

Where: Embassy Suites – Convention Center
700 block of So. Peters
New Orleans, LA 70130
504-452-0149 or
504-613-8386

Monday - Friday
9:00 a.m.- 5:00 p.m.

Why: A "one-stop-shop" where the news media can come for arranged interviews, to get background information or to schedule tours of projects in the Corps of Engineers' hurricane protection system. On display are photos and printed materials, plus maps and charts depicting past, present and future projects.

is underway. The plan is expected to include a combination of structural features, such as levees or gates; non-structural features (which could include enhanced evacuation planning and protocols for more rigorous building codes); and restoration of coastal features, such as wetlands, that can dampen storm surge.

The Corps is required to present the plan to Congress not later than December 2007, although some highly promising components of the plan may be recommended in advance of the complete report. Actual construction of the plan components will require authorization and annual funding by Congress. 

Faces of Hope

Dutchman Brings Expertise in Wave and Hydraulic Modeling to Assist Corps of Engineers

By Gary Younger

Marco Westra is familiar with the threat of flooding. Growing up in The Netherlands makes one aware of the constant battle between the sea and the land.

"In The Netherlands, it is a national security issue," Westra said. If there is a levee or dike rupture, as much as 60 percent of the land can be flooded and as much as 70 percent of the national economy adversely affected. And he should know since he is a hydraulic engineer with Dutch and international experience. And he is using his familiarity and expertise to help the Corps of Engineers design an effective hurricane protection system for the New Orleans area.

Westra (pronounced *Vestra*), is a Royal Haskoning contractor assigned to the Hurricane Protection Office (HPO) in New Orleans. He has worked as a consultant on flooding and water containment projects in Vietnam, Thailand, Iran, Egypt, Russia, British Guyana, Trinidad & Tobago, Costa Rica, Libya and the United States. With HPO he is providing water dynamics consulting. He analyzes water levels and wave conditions and helps with the determination of hydraulic loads on the levees, sea walls and structures.

Westra has done wave modeling and consulting throughout the world. One of his projects was to derive hydraulic boundary conditions along the Dutch coast. Hundreds of wave simulations were carried out and the results were exported for more than 150,000 output locations along the coast and stored into a national data base which is updated



Marco Westra in his HPO office in New Orleans. (USACE Photo by Susan Spaht)

every five years, and provides probabilistic, derived design criteria.

"In the past in areas that flooded, we built to that level and then go a little bit higher," he said. "You should have protection at least as high as a historical event. Since the disastrous flooding of 1953, we use the 1/10,000 criterion for design which is a safer approach than used so far."


Being educated in the Netherlands, he has noticed there are some differences compared to his U.S. trained counterparts. "We have much of the same training," Westra said. "The main difference", he said, "is in ideology."

In the U.S., people are concerned with 100-year flooding and build to that standard. In the Netherlands, Westra said, the standard is 10,000 years for the sea dikes and as low as 1,250 years for more inland levees.

Since the near flooding of the rivers in the 1990s, the Dutch government invested a lot in research and alternative ways to keep the country from flooding and to provide a sustainable place to

live. The flood plans allow for some flooding but only limited levee overtopping. Westra says there is a risk based approach for flood protection being used that accounts for population density and economic importance of an area. It is based on the probability of flooding rather than the probability of meeting certain design conditions. Given that, areas of higher economic importance and population density will have higher levels of protection.

"Marco has been a valuable member of our project delivery team," said John Ashley, the interim Branch Chief for Permanent Pump Stations. "With his worldwide experience in wave and hydraulic modeling, he has brought another perspective to our team."

Westra speaks his native Dutch and English well, and has fluency in French, Spanish, German and Italian. Although the work on New Orleans' permanent pump stations will continue, Westra departs New Orleans on Aug. 30 to return to his wife, Edith, and his work in Ho Chi Minh City, Vietnam. The couple is expecting a baby in October. 

The Chief Has the Last Word.

***LTG Carl A. Strock,
Chief of Engineers and
Commander of the U.S.
Army Corps of Engi-
neers, reflects on
the work of the Corps
past, present and
future.....***

I want to acknowledge that not a day goes by that I do not reflect on the tragic loss of life and property as a result of this devastating storm. And we also, in the Corps of Engineers, recognize how vital it is that we accomplish our missions, to really set the conditions for the full recovery of this area, of the Gulf Coast.

Since the storm passed we have worked tirelessly, literally around the clock, with thousands of people from the federal, state and local level, working with industry partners, thousands of volunteers from across the country, to restore the levee system around New Orleans to pre-Katrina or better conditions. And we've been very successful at doing that.

Since September of 2005, we have restored or repaired 220 miles of the 350 miles of levees in New Orleans. Our initial estimate was 169 miles, but as we began to get into assessing the actual damage, and looking for vulnerable areas that were apparently unaffected, we increased our effort to 220 miles -- a magnificent effort.

We recognize that we're important not only to the physical recovery of the area, but also to the economic recovery of the area. So throughout, we have emphasized that we want to employ local con-



LTG Carl A. Strock

tractors and local people to do this work. Fifty-nine projects were involved in the work to date. Twenty-six contractors and 90 percent of the people involved in that were from the local area.

All work was done with the intent that by the 1st of June, the beginning of hurricane season, we would have the system restored to or better than pre-Katrina levels, and we were largely successful at that.

In addition to repairing the levees, we have isolated the three very vulnerable outfall canals that caused so many problems during Katrina. We've installed interim gated closures there and temporary pumping capacity to operate those during a hurricane surge.

The federal government has been very generous. Working with the President and the Congress, we have been allocated about \$5 billion of funding to spend

in the near and mid-term on enhancing the system even further. By the year 2010, we will have achieved 100-year protection across the entire system. We will have completed all the authorized projects in the New Orleans area. And we will also have completed six major enhancements to the hurricane protection system.

At the same time as this effort was going on, we've had an exhaustive effort to determine what occurred and why it occurred so that we could learn lessons from this that we could incorporate into the repair and restoration of the works, and also incorporate into our longer-term planning.

That effort involved over 150 subject matter experts from across the world, and it resulted in a report of about 6,000 pages that I think is a watershed moment

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for the Corps of Engineers and for the engineering profession in how to do this kind of work. And that will be peer reviewed by the American Society of Civil Engineers and by the National Research Council, to ensure that we looked at the right things in the right ways and got the right answers.

We're also looking longer-range. The Congress has requested the Corps of Engineers by December of 2007 to make a proposal on what it would take to provide category 5 protection for the coast of Louisiana. We produced an interim report in June of this year which lays out the process we intend to follow. And we are developing a process in which we will not wait until the end, if we have a highly promising component of the ultimate solution, that we'll go ahead and propose moving ahead on those solutions with appropriate funding and authorizations.

That will be a very long-term process, but I think we have a good plan to get there.

We also want to recognize that this is not just about the coast of Louisiana and Mississippi; this is a national issue. And we're also in the process of evaluating the flood and storm protection systems across the country to ensure that we're aware of any vulnerabilities that exist elsewhere, and propose solutions to those vulnerabilities.

Katrina has also reinforced the lesson that it is impossible to totally eliminate risk where nature is concerned. So it's critically important that people understand the risks involved, and we're working very hard to make sure that the people in this area understand the residual risks that face them today. And it reminds us that people must heed the state and local officials' advice as we see these storms encroach on our coast.

Carl A. Strock



LTG Carl Strock (left), Chief of Engineers for the U.S. Army Corps of Engineers, and BG Robert Crear, Commander of the Mississippi Valley Division of the Corps of Engineers, fly over the Gulf Coast on an inspection tour in May. The generals perform regular fly-over and onsite inspection tours of the Corps' hurricane protection system improvements. (USACE Photo)

Contact Information		
Topic	Phone	Organization
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
Debris Removal in Mississippi	(601) 631-5065	Mississippi Recovery Field Office
<p>The <i>Status Report Newsletter</i> 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</p> <p>Comments and questions may be sent to the Status Report Newsletter editor at:</p> <p style="text-align: right;">b2fwdpao@usace.army.mil <i>Status Report Newsletter</i> Task Force Hope Public Affairs Office MVD-FWD 7400 Leake Ave., Room #388 New Orleans, LA 70118 (504) 862-1688</p>		