Flood Risk Management Newsletter

December 2011 vol 5 no 2

Table of Contents

Operation Watershed

Robert Anderson, MVD

In late April and early May, rainfall 10 times greater than average over a 200,000-square-mile area within the Mississippi River's watershed combined with melting snow to produce the Great Flood of 2011, which swelled our nation's mightiest river to historic levels. Epic floodwaters required heroic responses to control flows that surpassed even the Great Flood of 1927. The 1927 calamity claimed 500 lives, left 600,000 people homeless and spread its "chocolate tide" in a swath of destruction 80 miles wide and 1,000 miles long, inundating more than 26,000 square miles (16.6 million acres) of land. The epic response required using every flood control resource within the Mississippi River watershed, the third largest in the world, to decrease the height of historic crest levels during the flood's most dangerous hours.

From mid-April to 3 May, reservoirs and lakes along the Ohio, Missouri and Upper Mississippi rivers were filled to capacity and exceeded many historic levels to help keep crests on the lower river from overtopping the Mississippi River and Tributaries (MR&T) system's flood control structures.

"The MR&T is a complex system of waterways, rivers and lakes that USACE engineers must consider as a whole," said Maj. Gen. Michael Walsh, commander of the Mississippi Valley Division (MVD) and president of the Mississippi River Commission (MRC). The reservoirs were not enough to stem the steadily rising river and Walsh faced decisions that no engineer wants to make -- the deliberate flooding of inhabited floodways to relieve pressure on flood protection structures further downstream.

"Making these kinds of decisions was not easy or hard from an engineering perspective because smart engineers made these same decisions more than 70 years ago when the system was designed," Walsh said. "Essentially, the river tells us when it's time to operate the system as designed. The decision to operate was grave, though, because it would lead to loss of property and livelihood, either in the floodway or in an uncontrolled area that was not designed to flood."

One of Walsh's colleagues on the MRC, the R.D. James from Missouri, was personally impacted by the decision to operate the Birds Point-New Madrid Floodway. "My family's land lies within the floodway, and I could not displace from my mind what the decision would mean to my friends and neighbors who live and farm the floodway's 130,000 acres," James said. "But when the National Weather Service issued a forecast of 63 feet on the Cairo, Ill., gage on May 2, I realized that a decision on activation was imminent. As I sat with Maj. Gen. Walsh throughout the day, my position as a member of the commission weighed heavily on my soul," James continued. "I knew the decision points of activation were a part of federal law, and that decision lay with the MRC. I know that Maj. Gen. Walsh withheld his order to activate until the moment there was no choice. When he gave the order, I prayed for the safety of all involved, and for all affected. I applaud his delayed and deliberate approach to giving that order, and support him in doing so."

Activation of the Birds Point-New Madrid Floodway reduced the forecasted crest near Hickman, KY, by 3.8 feet, and prevented the river from overtopping federal levees protecting cities and towns in Illinois, Kentucky, Missouri and Tennessee.

As waters from the Upper Mississippi and Ohio rivers gathered below the confluence at Cairo on 3 May, the river grew to monstrous proportions with flows of more than 2.3 million cubic feet per second (cfs), equal to 25 times the amount of water flowing over Niagara Falls every instant.

The Memphis District, having worked around the clock preparing for operation of the Birds Point-New Madrid Floodway, was still fully engage, their second district-wide flood fight in less than two months. On 10 May, the river crested at 47.8 feet in Memphis after setting new records at New Madrid and Caruthersville, MO. "For the Corps of Engineers, the number one priority is public safety," said Col. Vernie Reichling, Memphis District commander. "We have 150 people out on the levees, walking them, inspecting them and assisting communities."

Along the swollen St. Francis River in Arkansas, a tributary of the Mississippi River, Memphis District operated the Huxtable Pumping Plant (the world's largest storm water pumping station) continuously for almost three consecutive months, approaching the plant's previous operational record of 120 days of non-stop pumping.

Between 3 May and 19 May, the river inundated 6.8 million acres of farmland in unprotected areas between Cape Girardeau, MO, and Head of Passes in Louisiana. About 10,000 people evacuated due to backwater flooding.

Despite giving up some ground to allow the river to flex its power, the flood control system had operated as designed and saved another 9.8 million acres, thousands of homes, more than four million people and billions of dollars in infrastructure from inundation. As the floodwaters moved into the lower Mississippi Valley, two additional decisions were made to protect the integrity of the MR&T system between Baton Rouge and New Orleans – operation of the Bonnet Carré, LA, and the Morganza, LA, floodways.

Walsh ordered the New Orleans District to open Bonnet Carré on 9 May to keep the flows passing New Orleans at 1.25 million cfs. The spillway protects the integrity of the levees and floodwalls that protect New Orleans. 330 of Bonnet Carré's 350 bays were opened, passing a flow of 316,000 cfs. Spillway gates were to remain open until flows passing New Orleans dropped below 1.25 million cfs. On 14 May, Walsh ordered the Morganza Floodway opened. This order called for the structure's deliberate and slow opening, so the resulting inundation would occur gradually over a one-week period. Morganza is 310 river miles above New Orleans; 17 of 125 bays were opened, with a discharge of about 170,000 cfs.

The operation of both Morganza and Bonnet Carré lowered the flood crest at New Orleans and Baton Rouge by 2.5 feet, protecting a 200-mile-long corridor of levees and floodwalls. Mississippi Valley Division also made history with the opening of Morganza because it represented the first time that the three floodways (including the Birds Point-New Madrid floodway) had been operated simultaneously.

"By operating the MR&T system as designed, including the floodways, the value of this investment to our nation can be counted by what we have *not* lost -- lives, critical infrastructure for the energy industry and more than 120 billion dollars in damages to homes and businesses," said Col. Ed Fleming, New Orleans District Commander.

On 19 May, the river crested in Vicksburg, MS, setting a record at 57.1 feet. The river did not overtop the Yazoo backwater levees, sparing some 24,000 acres of rich farmland. "Although we passed the crest today, I believe we're only one-third of the way through this flood event," said Col. Jeff Eckstein, Vicksburg District commander. "We must continue to remain vigilant and keep a close eye on the system until the danger has passed."

MVD worked closely with the U.S. Coast Guard. Navigation was restricted on the flooded river to ensure the integrity of flood control structures. Experienced towboat pilots describe the force of the river's currents as extremely treacherous. Nevertheless, MR&T channel improvements are a critical part of the flood control system in this historic event. Without river bend cutoffs, dikes and revetments, the ongoing flood would have overwhelmed levees and floodwalls and the communities they protect.

From Cairo to Baton Rouge, flood stage records were broken, but where channel improvements had been made at Memphis, Helena and Arkansas City, river crests stayed well below prior record levels, despite flows near or above those experienced during the 1927 and 1937 floods.

“The Corps has never claimed to tame the Mississippi River, only manage it within the confines of the MR&T system,” Walsh said. “All the MR&T’s flood control features – floodways, spillways, backwater levees, channel improvements, levees, gates, pumps, reservoirs and relief wells – are working in concert to pass historic flows while accommodating the natural tendencies of the Mississippi.”

The MR&T System prevented approximately $128 billion in flood damages this year alone, and more than $470 billion since 1928. “The MR&T system is performing as designed, but if this same beast is to be caged in future floods, we must soon begin work to repair, rebuild and reinvest in the infrastructure that saved so much and so many in 2011,” Walsh added. (POC: Robert Anderson, Robert.T.Anderson@usace.army.mil)

Operation Watershed - Recovery
Responding to the Historic Mississippi River Flood of 2011
ASA(CW) Darcy’s Congressional Subcommittee Testimony (12 & 18 Oct 2011)

During the early morning hours of May 1, and with concerns of the rapidly increasing flood waters on the Mississippi and Ohio rivers, Major General Michael J. Walsh, Commander of the Mississippi Valley Division, established Operation Watershed. During the flood event, Operation Watershed concentrated efforts on current, future and recovery operations. Current and future operations focused on planning, preparing and executing safety plans that protected the lives and livelihoods of nearly 4.5 million citizens and Infrastructure. Recovery operations were tracking the damages, documenting the event and projecting the recovery needs.

During the 1927 flood the region only employed a haphazard system of public and private levees as a flood control measure, trying to confine the river within the levee system. The result was 72% of the lower valley was under water. More than 26,000-square-miles or 16.8 million acres were flooded, 500 people dead and another 700,000 left homeless.

After the 1927 flood, the nation authorized and funded the Mississippi River and Tributaries system that included levees supplemented by reservoirs, floodways, backwater areas and channel improvements. During the 2011 event, flood flows were roughly equal or greater than those experienced during the 1927 flood, but because of the MR&T project only 38% of the area that flooded in 1927 flooded during the 2011 event. In other words, only 6.35 million acres flooded, with most of that being the land between the levees. The MR&T, while only 89% complete had room to handle more floodwaters. There were an additional 1.8 million acres designed to "make room for the river" between the unused floodway and the backwater areas that were not used as flood storage during the 2011 event. IT IS IMPORTANT TO NOTE THAT NOT A SINGLE LIFE WAS LOST IN THIS HISTORIC FLOOD EVENT.

While the flood waters have now receded, Operation Watershed Recovery remains in full swing.

Recovery efforts are broken down into four critical components: Interagency Recovery Task Force, Damage assessments, System Performance Evaluation and Constructing Repair/Restore projects.

For the first time, three of the system's floodways were placed in simultaneous operation to help relieve the enormous stress on the levee system and to reduce the danger to people, their homes and the businesses that bolster our economy. A watershed approach was used to keep the system intact, and a watershed approach would be needed to repair and restore it, as well. The creation of the Interagency Recovery Task force was meant to do just that. The Corps invited seven states and ten federal agencies to set priorities and plan a comprehensive approach to restoring the flood protection system. All share a responsibility in the recovery efforts and by pooling resources, talents and expertise, the task force will focus on key elements that protect the lives and livelihoods of millions of Americans, while preparing for spring floods. The Mississippi River is a major artery in America's heartland, and as such is a key element of state and local government economic development and job-creation efforts, which is essential in maintaining economic competitiveness and national security.

Since the day waters started to rise, the Corps and our partners have had "boots on the ground" assessing and documenting flood effects. With recession of flood waters, multidisciplinary teams were deployed to inspect, investigate and record damages to project areas. These teams have now largely completed this effort with careful and voluminous documentation that characterize the location, nature, extent, repair alternatives and preliminary repair cost estimates for hundreds of damaged areas. In early August, a Phase I prioritization was conducted to rank order the most critical "REPAIR" areas, this effort identified nearly one-hundred critical project areas with estimated repair cost of roughly eight hundred million dollars. Currently, we are completing a Phase II prioritization which will similarly rank order several hundred additional "RESTORE" sites that have been inspected, estimated total additional cost will be in the $1.0 to $1.2 billion range.

System performance evaluation is a look at what went wrong and what went right. The purpose of this evaluation would be to assess the Mississippi River & Tributaries system performance, identify and prioritize funding requirements for system components necessary to repair/restore the system for future flood events, and assess areas of improvement for water control communication and coordination across the watershed. The resulting document would be a valuable resource for system management, operation and improvements. It would also serve as a reference guide for future flood risk management.

Currently, only ten of our most critical "Human Life/Safety" repair projects have been funded ($75 million) for construction. These projects will provide some very basic level of repair to reduce risk during the approaching flood season. In most cases, a more comprehensive and permanent fix to these and hundreds of additional areas will still be needed.

Without supplemental funding to address the flood and navigation system repair/restore costs, the Corps is looking at internal funding sources to repair and restore the most critical flood

control projects damaged by this year's event. Under an internally funded scenario it will require nearly a decade to bring the MR&T system back to its pre-flood performance level leaving many lives, infrastructure and livelihoods in position of increased risk or possibly catastrophe from subsequent flood events.

As the Mississippi River Valley rebounds from the 2011 flood, Operation Watershed Recovery the Corps will continue the work that is crucial to the restoration of our region. With the support of our task force members, damage assessments, system performance evaluations and construction crews, the best decisions can be made toward current impacts and future flood risk management in the valley.

Flood damaged MR&T gets emergency repair funds

Robert Anderson, MVD

Presidentially declared disaster areas along the Mississippi River will receive much needed repair funds under the Disaster Relief Appropriations Act signed by President Obama on December 23. The Mississippi Valley Division will receive approximately $802 million of the $1.7 billion appropriated to the U.S. Army Corps of Engineers. The Mississippi River and Tributaries System prevented more than $120 billion in damages during the Great Flood of 2011, the largest recorded flood in the river's history.

"This funding represents a vital investment in the most valuable flood risk reduction system in our nation, perhaps in the world," said Maj. Gen. John Peabody, President Designee of the Mississippi River Commission and Mississippi Valley Division Commander. "Since the Mississippi River and Tributaries program was conceived in 1928, this comprehensive flood risk management system has earned its value many times over, representing over a $30 to $1 return on investment for American taxpayers today."

While damage assessments to levees and operating projects from the 2011 flood are still underway, engineers estimate that repair costs for currently documented damages in the Mississippi Valley region alone are approaching $1 billion. "We've made significant progress in assessing damages up and down the river system," said Mr. Al Lee, Director of Business, "but this is an evolving process that will continue for some time."

"Although the Mississippi River valley flood risk management system performed as designed this past year, the record flood waters inflicted serious damages requiring costly and time-consuming repairs," said Mr. Robert Fitzgerald, Chief of Technical Engineering for the Mississippi Valley Division. He added that even with the new funding available, it will take years to restore the system to its pre-flood conditions.

With river stages significantly above normal and weather forecasts for a wetter-than-usual flood season, the Corps of Engineers is working the entire length of the river to prepare for the possibility of more flooding in the near term. The Corps will use the winter and spring seasons to advance plans and designs for repairs, so it can optimize construction once weather improves.

The effort to repair and restore the system will take time, energy, and cooperation with multiple agencies at all governmental levels. The Corps depends on the experience and expert knowledge contributed by its many partners at the local, state and federal levels. Maj. Gen. Peabody concluded that, "Together, as a team, we'll be able to overcome the challenges from the 2011 flood while preparing for future floods. Our goal is to deliver what American citizens expect from the Corps of Engineers - reliable flood risk reduction." (POC: Robert Anderson, Robert.T.Anderson@usace.army.mil)

MS River Flooding Data Collection Effort by CHL

The ERDC CHL Field Data Collection and Analysis Branch (FDCAB) supported MVK 2-8 June in data collection related to high end Mississippi River processes. On 3 June with the Mississippi River on the falling limb of its hydrograph at ~51 feet on the Vicksburg gage, a FDCAB survey crew conducted its last set of multi-beam surveying of the river below the Mississippi River bridges at Vicksburg to quantify sand wave movement. Simultaneously, an Acoustic Doppler Current Profiler survey boat measured sediment flux at the same site by measuring discharge, sediment induced back-scatter, and by taking suspended sediment samples using a P-6 isokinetic point sampler. POC: Pat McKinney, James.P.McKinney@usace.army.mil.

Ms. Karen Durham-Aguilera Presents to ASCE and AWRA

Stephanie Bray, HQ

On 14 November Ms. Karen Durham-Aguilera, Director of Contingency Operations and Office of Homeland Security at HQUSACE, spoke to a full house at a joint meeting of the National Capital Sections of the American Water Resources Association and the American Society of Civil Engineers. In this presentation, Ms. Durham-Aguilera provided an overview of the Corps' responsibilities in Contingency Operations, Civil Works, and Disaster Support. Ms. Durham-Aguilera also discussed the key tenants of the National Flood Risk Management Program, including life-cycle risk management, shared responsibility in driving down risk, and risk-informed decision making. Use of Silver Jackets teams to operationalize flood risk management was also mentioned.

After providing background information, Ms. Durham-Aguilera discussed in more detail the breadth of the Corps' responsibility to respond to disaster events not just in the United States but world-wide. In 2011 these international events included the Japan earthquake and tsunami, flooding in Australia, and the earthquake in New Zealand. The 2011 United States events mentioned included the spring tornados in Alabama and Missouri, flooding in North and South Dakota, Hurricane Irene, Tropical Storm Lee, and the Northeast snow storm. Finally, an overview of the 2011 floods on the Missouri and Mississippi Rivers was provided. Ms. Durham-Aguilera emphasized the Corps' actions in preparing for and responding to these events, including operation of the dams on the Missouri River and use of the floodways, spillways, and backwater areas on the Mississippi River, including discussion of the next steps in the recovery

effort. The Operation Watershed video, which explains the history of flooding along the Mississippi River and the response to the 2011 flood event, was viewed as well.

Based on the number of questions and follow on discussion from the audience, Ms. Durham-Aguilera had fully engaged her audience and made the event well worth attending. (POC: Stephanie.N.Bray@usace.army.mil)

Alexander Deputy Chief (Acting), Office of Homeland Security

Stephanie Bray, HQ

The USACE Office of Homeland Security is pleased to welcome Mr. Ray Alexander as the Acting Deputy Chief, replacing Mr. Alex Dornstauder. As Acting Deputy, Mr. Alexander provides oversight on all matters associated with Flood Risk Management, Critical Infrastructure Protection and Resilience, and Emergency Management. Prior to this interim appointment, he served as the USACE Deputy Chief of Operations (G3) responsible for the command's programs involving Engineer force structure, current and future operations, plans and concept development, and training and exercises. Mr. Alexander spent 5 years in the private sector with experience in program management, business development, and contingency operations before returning to Federal service in March 2011.

Prior to his time in the private sector, Mr. Alexander completed over 26 years of military service, retiring at the rank of Colonel and commanded at every level from platoon to brigade. His diverse experience includes service as a District Commander in the U.S Army Corps of Engineers; faculty member at the U.S. Army War College; division chief at the U.S. Army Maneuver Support Center where he oversaw the $18 billion Army Engineer program; combat engineer battalion commander in a mechanized Infantry Division; program manager with experience in the Department of Defense's Planning, Programming, Budgeting and Execution System (PPBES) at both Army and Joint Combatant Command staff level; staff experience at the Headquarters of both Department of the Army and U.S. Army Europe; and command and staff experience in combat engineer troop units with service world-wide. Mr. Alexander is a graduate of the U.S. Army War College, the University of Virginia, and the University of Richmond. (POC: Stephanie.N.Bray@usace.army.mil)

Alabama Tornado Recovery Efforts

E. Patrick Robbins, PAO-SAM

On April 27, 2011 Alabama was struck by a massive outbreak of tornados. The most devastating was an EF-5 tornado, over a mile wide, which struck the City of Tuscaloosa and remained on the ground for an unprecedented amount of time.

The Federal Emergency Management Agency (FEMA) tasked the Corps of Engineers Mobile District (SAM) for several recovery missions under ESF-3. The missions received from FEMA included debris removal, temporary housing and temporary critical public facilities.

The District received the mission assignment on 1 May, had its Recovery Field Office operational on 3 May and mobilized the prime contractor on 5 May. Over the next five months, 924 Corps employees from across the nation volunteered to assist in these efforts.

The debris mission assignment included three different types:

- Right of Way (ROW) debris – removal of all debris blocking public rights of ways and debris which could be moved the edge of the ROW for pick up.
- Personal Property Debris Removal (PPDR) –all debris located on personal property except the house itself.
- Wet Debris –debris blown into Lake Martin and Neely Henry Lake.

The ROW mission covered 61 locations within 21 counties in Alabama. Over 5 million cubic yards of debris was removed. PPDR was conducted in 33 locations within 58 localities and involved the removal of 717,644 cubic yards of material. The wet debris mission from the two lakes removed 20,886 cubic yards of material.

The Corps also received two additional missions from FEMA. One, Temporary Housing, provided mobile home facilities for 236 families within the declared disaster areas. The last mission, Temporary Critical Public Facilities, involved the construction of temporary fire and police stations to allow affected communities to get back critical public services. Seven fire stations had been destroyed.

Over 3 million man hours (government and contractor) of work were performed over the recovery period, with no lost time accidents. Of all the subcontracts issued during this recovery operation, 63% went to small business; 22% to Women-Owned; 12% to Small Disadvantaged; 10% to Hub-ZONE and 5% to Veteran Owned. (POC: E. Patrick Robbins, Ervin.P.Robbins@usace.army.mil)

Hurricane/Tropical Storm Irene Follow-up

John Winkelman, NAE

Following Hurricane/Tropical Storm Irene, the National Weather Service (NWS) of the National Oceanographic and Atmospheric Administration (NOAA) began a services assessment of NWS performance, systems, and products leading up to the storm's arrival as well as during the event. The effort is being lead by Dr. Kathryn Sullivan, Assistant Secretary of Commerce for Environmental Observation and Prediction of NOAA. NWS services assessments are conducted following significant weather events in order to gage the performance and products of the NWS and, most importantly, to determine what can be improved upon for future events and what best practices should be continued/promoted.

Typically service assessment teams are comprised only of NWS and NOAA employees, but for this event, NOAA desired the participation of interagency representatives, so fresh and independent views could be provided. Mr. John Winkelman, Senior Coastal Engineer for the

New England District and a Coastal Engineering Regional Technical Specialist for the Corps National Planning Center for Coastal Storm Damage Reduction, was assigned to the NWS assessment team through the Coastal Planning Center at the request of USACE Headquarters. Due to the large geographic area, the assessment team was split into three teams that covered New England, the Mid Atlantic, and the Southeast. Additionally, the US Caribbean territories were covered by a subgroup from the three teams. The assessment has consisted of significant TDY to conduct in-person interviews of the various weather offices, NWS customers and information users, state and federal agencies, etc. Phone interviews continue to be conducted as needed. The report of findings is currently being written. Due to the significant impacts of the storm, the normal assessment schedule has been expedited, requiring significant effort from the assessment team. The draft report is due to Dr. Sullivan in late January. (POC: John Winkelman, John.H.Winkelman@usace.army.mil)

FloodSmart Offers Tools and Resources to Help Communicate Flood Risk

Bruce Bender, FloodSmart

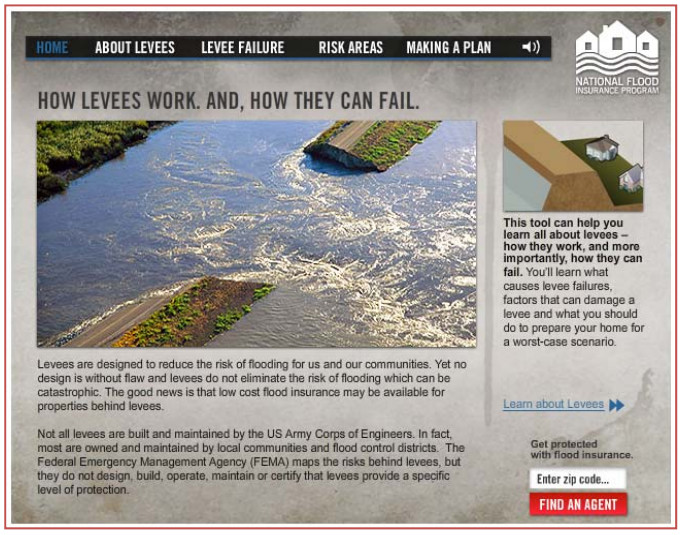
Many citizens are unconvinced they could be susceptible to flooding, often due to misperceptions and miscommunications surrounding why they are at risk and what the financial implications are if they do flood. One of the key goals of USACE's National Flood Risk Management Program (NFRMP) is to improve public awareness and comprehension of both flood hazards and risk. Helping property owners understand their flood risk and getting them to take action to reduce it (e.g., mitigate, purchase flood insurance) remains an ongoing challenge.

Through FloodSmart, the National Flood Insurance Program's (NFIP's) national marketing campaign, a variety of web-based tools and resources have been developed to help stakeholders – such as floodplain managers and other state and community officials – communicate flood risk. These tools and resources can help better explain a community's flood risks and recommended actions, including flood insurance, to reduce the devastating consequences of flooding.

A great resource for flood-related information is NFIP's official website on FEMA's website, http://www.floodsmart.gov/floodsmart/ . Here the public can learn more about flood insurance, about their own flood risk, and about the steps to take to help reduce that risk.

The FloodSmart website has several tools that can be downloaded, shared or posted on community websites for use by citizens. These tools help bring the flood story to life for residents and business owners. The shareable tools include:

- Flood Risk Scenarios -- This online tool illustrates common causes of flooding through animated scenarios. Users can click on a scenario to see examples of how and why it can flood.
- Cost of Flooding -- Users can interact with this tool by choosing how deep the flood waters could be in a home. This tool shows that all it takes is a few inches of water to cause major damage to a home and its contents. It is an excellent way to illustrate the financial consequences of a flood.



- Widgets -- During the year, FloodSmart creates and updates widgets as an interactive way to educate individuals about the risks of flooding and to direct them to where they can learn more. Widgets have been created for a variety of seasons, including winter flooding and hurricane season. All widgets are available from FEMA's widget page
- Levee Simulator -- This online educational tool helps explain in simple terms how levees work and how they can fail. Using illustrated scenarios, users can see different ways that a levee can fail (seepage, breaching) and overtop, and offers tips on how property owners can mitigate against damage.
- Testimonial -- Online videos from people who have experienced flooding provide compelling, first-hand accounts of the consequences of flooding. These testimonials describe floods that occurred in different parts of the nation from a number of sources, including coastal storms and levee failures. They include home and business owners who did and did *not* have flood insurance.

FloodSmart has also developed a series of toolkits community officials can use to promote flood insurance, to assist in communicating the changes in flood risk due to map changes, and to address levee issues. The mapping and levee toolkits contain templated outreach materials and letters designed for communities to customize and use in local outreach. There is also a Spanish language toolkit for communities with Spanish-speaking populations. The toolkits are available for immediate use at http://www.floodsmart.gov/toolkits/ .

Start Using These Now! If you are someone involved with managing flood risk, you know the risk for flooding is real. Consequently, you are an important resource in helping local citizens better understand the risk of flooding and the steps that can be taken to address these risks. These FloodSmart tools and resources can help you do just that. Don't wait— start using them today. For more information about using and downloading these tools to other sites, contact FloodSmart at info@femafloodsmart.com.

Coastal Storm Risk Management NED Manual Published

US Army Corps of Engineers, Institute for Water Resources

U.S. Army Corps of Engineers economists have a new tool in their toolbox – the Coastal Storm Risk Management National Economic Development (NED) Manual. This new issue replaces the 1991 report and is one in a series of NED manuals available at www.corpsnedmanuals.us . It puts a new focus on how to identify the NED plan based on risk-informed decision making.

This manual assists planners and economists in applying policy in a practical manner, and updates practice to a life-cycle approach as well as risk-informed decision making. It reviews the Corps planning process; describes basic coastal processes and coastal engineering principles and models used in evaluating storm and long-term erosion; and presents a discussion of NED benefits and costs as they relate to coastal storm risk management. The manual also presents a framework for economic analysis of coastal projects and includes appendices with definitions of key coastal and planning terms.

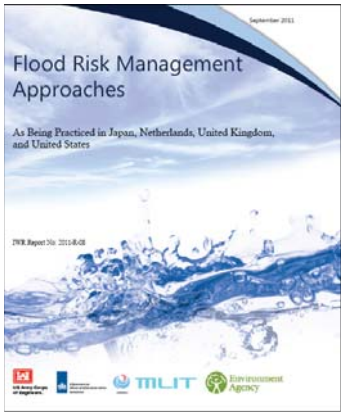
The Coastal Storm Risk Management Manual is primarily designed for economists responsible for preparing economic analyses of USACE coastal storm risk management projects. However, audiences for this manual include planners, project managers, hydrologists, hydraulic engineers, coastal engineers and others involved in shore protection or coastal storm damage issues. All must be able to understand and explain the process of benefit calculation and determine which alternatives are promising enough to carry on to subsequent planning phases.

The National Economic Development manuals are important resource documents for performing economic analysis within the Corps of Engineers planning framework. They are part of the Planning Guidance Improvement Program. This manual was reviewed by the National Planning Center of Expertise for Coastal Storm Damage Reduction, USACE Headquarters, and the Institute for Water Resources. There are two versions: a printable digital copy and an online version (soon to be released). Publication as an online version will allow easy incremental updates to the manual as needs and practices change. For more information, visit www.iwr.usace.army.mil or www.corpsnedmanuals.us

Multi-Lateral Report on Flood Risk Management Approaches

The Corps of Engineers' Institute for Water Resources recently published "Flood Risk Management Approaches as Being Practiced in Japan, Netherlands, United Kingdom, and United States." The report was released in conjunction with the 5th International Conference on Flood Management in Tsukuba, Japan (27-29 September 2011). It is available at www.iwr.usace.army.mil/docs/iwrreports/2011-R-08.pdf .

In 2009 the Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the Dutch Rijkswaterstaat, the United Kingdom Environment Agency, and the U.S. Army Corps of Engineers agreed to develop a document to explore risk-informed approaches as being practiced and developed in primarily those four countries. Although very different in frequency and scale of flooding as well as in cultural and governmental characteristics, each country had significant efforts underway to better orient its practices to flood risk realities, including those induced by altered land use and by climate change and variability. The approaches presented comprise a collective set of best practices among the four countries. The report is not an official position of any government or international organization, but does provide a means for those within the four countries to learn from the others, furthering the ability to bootstrap from others' efforts and incorporate aspects suitable to their own circumstances.



The report, the result of that collaboration, reflects contributions from agencies within the four participating nations. It is organized around a conceptual framework developed to encompass flood risk drivers, risk assessment, and the source-path-receptor concept; the flood risk management cycle with its overarching policies and supporting players and mechanisms; and the adaptive management cycle of maintenance, monitoring, evaluation, and adjustment over time.

The four countries face similar key challenges. These include adapting to new understandings of risk that take into account the impacts of climate change; bridging gaps between land-use decisions and flood risk management considerations; effectively communicating risk to the general public in a way that promotes individual as well as societal responsibility; and aligning planning and actions to identify and meet the most critical risks within a framework that is socially, environmentally, economically, and politically acceptable.

There are also some notable distinctions in approaches among the four countries. These include whether or not national levels of protection are specified and, if so, whether those levels are legislated or aspirational; whether or not the government supports flood insurance programs; and historic practices that influence how flood risk management is delivered in each country.

NFRMP & Silver Jackets Workshop

Stephanie Bray, HQ

The National Flood Risk Management Program and Silver Jackets held their second annual workshop in Nashville, TN from August 15th through 18th. 234 participants from Federal government, state agencies, nongovernmental organizations, and consulting firms attended. The workshop opened with Lt. Colonel James DeLapp, Nashville District Commander and MG Jim Bassham, Director of the Tennessee Emergency Management Agency welcoming the group to Nashville. Senior leadership support was offered for flood risk management from Ms. Karen Durham-Aguilera, Director of Contingency Operations and Office of Homeland Security and Dr. Sandra Knight, Deputy Assistant Administrator of the Mitigation Directorate of FEMA. MG

Meredith W.B. “Bo” Temple, Acting Chief of Engineers, spoke to the group about the importance of the Flood Risk Management and Silver Jackets programs, and handed out awards, along with Ms. Durham-Aguilera and Dr. Knight, for the Flood Risk Manager of the Year, Silver Jackets Coordinator of the Year, and Silver Jackets Team of the Year.

Since the workshop occurred in Nashville, there was significant focus on the Nashville floods of 2010. The keynote luncheon speaker, the Nashville Fire Chief, provided an overview of the flood event and response, including a number of video clips illustrating the impact of the flood. One break-out session focused on the experiences in Nashville. Other break-out sessions focused on Coastal Flood Risk Management, Flood Risk Management through Mitigation, and Interagency Collaboration. Interagency collaboration was a key theme of the workshop, with plenary sessions focusing on examples of interagency collaboration and regional collaboration. A series of training sessions were offered as well, including flood risk communication essentials, flood warning and observation, and getting the most out of flood risk management dollars using Silver Jackets, nonstructural measures, Floodplain Management Services, and Planning Assistance to States. A second set of training sessions focused on economics for flood risk managers, facilitating effective floodplain management plans with project sponsors and communities, and a FEMA programs overview. One plenary session focused specifically of the Silver Jackets teams and their successes and challenges. Other significant plenary sessions focused on FEMA’s RiskMAP effort, climate change issues, and Levee Safety portfolio management. More detailed information about a number of the sessions can be found in the October 2011 Silver Jackets newsletter.

There were several lunch session demonstrations. These included an overview of the National Levee Database and the Watershed Investment Decision Tool. Friday, after the official conclusion of the workshop, a tour of Nashville was offered. The tour highlighted smart recovery efforts in Nashville, successful projects where prior planning efforts realized loss reductions, lessons learned in overcoming obstacles, and local stories for responders and neighborhood groups. Workshop participants were also offered the opportunity to take the exam to become a Certified Floodplain Manager (CFM) during the week, with prior approval from ASFPM. During the workshop, the Silver Jackets pilot projects were introduced as well. The objectives of the pilots were outlined and teams used the evenings and time between sessions to develop ideas for pilot proposals. Photos and presentations from the workshop are posted on the conference website, at www.nfrmp.us/frmpw/. (POC: Stephanie.N.Bray@usace.army.mil)

News Articles from CHL

- ERDC-CHL researchers attended the **NWS annual Marine Program Manager’s Meeting** in Washington, DC, on 18 Oct 2011. The NWS is upgrading their national coastal waters forecast capabilities using ocean wave system partitioning and tracking technology developed by CHL. Using this improved technology, marine forecasters at local weather forecasting offices will report enhanced wave field information that includes a breakdown of individual wind, sea and swell components. (POC: Dr. Jeffrey Hanson, jeffrey.l.hanson@usace.army.mil .)

- The eye of **Hurricane Irene** passed approximately 8km west of the FRF at Duck, NC, on 27 Aug 2011. Meteorological and oceanographic instruments remained operational throughout the storm in both the ocean and sound environments at the FRF. The extensive complement of data (e.g. winds, waves, currents, water level, run-up, morphology) gathered from the northeast quadrant of a category one hurricane is quite rare and may provide unprecedented insight into storm processes as well as critical model validation data. A very preliminary analysis of these data reveals interesting highlights from the event in the areas of storm surge and run-up, winds, waves, currents, seabed changes, and morphology. (POC: Dr. Jessie McNinch, jesse.e.mcninch@usace.army.mil.)

- **USACE Flood Risk Management Consequence Project Delivery Team (PDT) Meeting**. Bill Curtis and Cary Talbot, ERDC-CHL, attended the inaugural USACE Flood Risk Management (FRM) Consequence PDT meeting in Dallas, TX, 2-4 Aug 2011. The purpose of the team is to improve the USACE Asset Management risk ranking process for the FRM Business Line by defining an objective range of consequence rating criteria and identifying existing data and analytical approaches to compute consequences to better inform project investment decisions nationwide. Economic, environmental, and social consequences, initially for reservoir and riverine project operational conditions, were addressed. Over the course of the next five months, the PDT will determine how these data and approaches will be used to calculate FRM project values for the Relative Risk Value Matrix used for FY14/15 budget development and project funding prioritization. The long-term objective of the PDT, working in concert with the USACE Asset Management Program, is to identify and recommend optimal business practices and initiatives to improve efficiencies, enhance delivery of products and services, and standardize national practices for all classes of flood risk management and coastal storm damage reduction projects. (POC: Bill Curtis, william.r.curtis@usace.army.mil.)

- ERDC-CHL Researchers Dr. Joe Letter and Gary Brown participated in the **Workshop on Sea Level Rise and Climate Change Impacts on Florida's Coastal Rivers: Problems and Solutions** 21-22 Jul 2011, in Jacksonville, FL. Sponsored jointly by the Coastal Biology Program at the University of North Florida and the Florida Sea Grant, the workshop was designed for Florida state and local coastal workers to provide insights on sea level and climate change pertinent to potential biological consequences and engineering solutions. Letter and Brown provided four of the eight lectures, concentrating on engineering solutions. Their lectures included "Effects of Sea Level Change on Transport Processes;" "The U.S. Army Corps of Engineers Response to Sea Level Rise;" "Observations, Solutions, and Considerations from Some Real Examples;" and "Tools to Avoid Disaster: Numerical Modeling." (POC: Gary Brown, Gary.L.Brown@usace.army.mil.)

- Drs. Jesse McNinch and Heidi Wadman, ERDC-CHL Field Measurements Branch, recently presented the papers "Storm Lessons: Importance of 'During-Storm' Coastal Observations for Improving Predictions of Infrastructure Damage and Shoreline Change" and "Source to Sink: The Fate of Terrestrial Sediment at the Land-Sea Interface" at the **International Workshop on Coastal Observations and Sediment Transport in Coastal Zones** in Taipei, Taiwan, 27-28 June 2011. Dr. McNinch also presented the paper "Reconstructing Storm History in Coastal Environments: Importance of Long Observational Records for Climate Predictions" as an invited speaker at the Research Center for Environmental

Changes, Academia Sinica, Taipei, Taiwan. Dr. Wadman and David Perkey (ERDC CHL Field Measurements Branch) were collaborators on the Academia Sinica paper. Drs. McNinch and Wadman were invited to present the papers as part of an international research initiative seeking to expand coastal sciences in Asia. Central to this initiative will be the construction of a coastal research pier (National Central University) and facility on the western coast of Taiwan. (POC: Dr. Jesse McNinch, Jesse.Mcninch@usace.army.mil .)

IFRMC Update

The Intergovernmental Flood Risk Management Committee (IFRMC) is a forum of representatives from USACE, FEMA, Association of State Floodplain Managers (ASFPM), National Association of Flood and Stormwater Management Agencies (NAFSMA), and Association of State Dam Safety Officials (ASDSO) that coordinates flood risk management programs and policies, and allows key stakeholder groups, representing the non-federal perspective, to address policy and implementation issues faced at the state and local levels. Lauren Leuck, Institute for Water Resources, has assumed duties as the IFRMC Project Manager. The IFRMC meets on a quarterly basis and composed of USACE, FEMA, Association of State Floodplain Managers (ASFPM), National Association of Flood and Stormwater Management Agencies (NAFSMA), and Association of State Dam Safety Officials. (POC - Lauren Leuck, Lauren.Leuck@usace.army.mil)

PIANC Seeking US Volunteers for Working Groups

PIANC USA is seeking US volunteers for the following PIANC working groups:

- InCom 154: Mitre Gate Design and Operation
- InCom 155: Ship Behaviour in Locks and Lock Approaches
- InCom 156: E-Navigation for Inland Waterways
- EnviCom 157: Environmental Aspects of Dredging and Port and Waterway Construction around Coastal Plant Habitats
- MarCom 158: Masterplans for the Development of Existing Ports
- MarCom 159: Renewable Energy for Maritime Ports
- MarCom 161: Interaction between Offshore Wind Farms and Maritime Navigation

POC: Kelly J. Barnes, Kelly.J.Barnes@usace.army.mil .

Other Links – Information, Newsletters, Fun Stuff

Silver Jackets newsletter is available on the **Silver Jackets** website –

http://www.nfrmp.us/state/

December 2011 issue of the **CIRP Newsletter** –

http://lists.coastal-inlets-research-program.net/scripts/wa-USACECIRP.exe?A2=CIRP-NEWS;d3c67aef.1112p

A link for **Task Force Hope**, on the New Orleans District website:

http://www.mvn.usace.army.mil/hps2/hps_newsletters.asp

A recent **OUR MISSISSIPPI newsletter** that was primarily focused on the Mississippi River Flood Recovery efforts. An electronic copy of this newsletter can be found online:

http://www.ourmississippi.org .

13th Annual CIRP Workshop – March 2012

The 13th Annual (38th Sequential) Coastal Inlets Research Program (CIRP) Technology Transfer Workshop will be held in March 2012. It will be sponsored by the New York (NAN), Baltimore (NAB), and Philadelphia (NAP) Districts and will be held at NAP. Advances in CIRP products and tools such as the CMS, GenCade, CPT, CSMART, RMAP, and others (see http://cirp.usace.army.mil/products/ for a complete listing) will be featured through teaching and hands-on sessions. Contact Mitch Brown, Mitchell.E.Brown@usace.army.mil to be included on the list of potential attendees. More information on this workshop will be posted in the near future at http://cirp.usace.army.mil/workshops/nap12/NAP-Workshop.html. POCs: Mitch Brown, Mitchell.E.Brown@usace.army.mil; Monica Chasten, Monica.Chasten@usace.army.mil.

Calls for Abstracts/Proposals

Restore America's Estuaries 6th National Conference on Coastal and Estuarine Habitat Restoration Restoring Ecosystems, Strengthening Communities

Add your voice, experience and research to coastal and estuarine habitat restoration's national conference. 1 February is the deadline for proposals for Restore America's Estuaries 6th National Conference on Coastal and Estuarine Habitat Restoration. The Conference will be 20-24 October 2012 in Tampa, FL. This Conference is unique for its exclusive focus on coastal and estuarine habitat restoration. It brings together a unique blend of people involved in policy, science, strategy, business, and on-the-ground restoration. The Conference Program will address all

aspects of coastal and estuarine habitat restoration, in all habitats, at all scales, and all regions, including the Great Lakes and international locales. Habitat restoration – the manipulation of the physical, chemical or biological characteristics of a site with the goal of returning self-sustaining natural or historic structure and functions to former or degraded habitat – offers great promise for reversing the trend of habitat loss and degradation, and it is a crucial component of comprehensive ecosystem restoration, protection, and management. In addition, habitat restoration offers a pathway for sustainable job creation and economic growth, both of which are particularly critical at this time.

Visit the Call for Proposals 2012 or the website, www.estuaries.org , for more details on themes and topics and for instructions for submitting a proposal.

Dredging 2012 Conference - Call for Abstracts
40 Years of Dredging and Environmental Innovation

The fourth specialty conference on dredging and dredged material disposal, Dredging 2012, will be held in San Diego, California USA 22-25 October 2012. It has been almost 10 years since the last meeting of this international forum which brings together professionals and practitioners from developed and developing areas of the world. Many new issues have emerged and will be discussed and debated, including the evolution of dredging to incorporate critical engineering and environmental solutions.

The theme of the conference is 40 Years of Dredging and Environmental Innovation. Abstracts are being sought regarding best practices and innovations in the field from North and South America, Europe and Asia. The abstract submission deadline is January 23, 2012. Visit http://dredging12.pianc.us/abstracts.cfm for more information or to submit. Papers are not required.

The deadline for abstract submissions is **January 23**. More than 500 attendees are expected from around the world. Organizers are seeking abstracts providing practical information on effective strategies, techniques and approaches; recent developments; the latest research; and more on a wide-range of critical topics. Share your work with hundreds of your industry colleagues. Visit http://dredging12.pianc.us/abstracts.cfm and submit now!

Dredging 2012 is organized by PIANC USA and the Coasts, Oceans, Ports and Rivers Institute of the American Society of Civil Engineers (COPRI ASCE).

Diagnosing the Marine Transportation System: Measuring Performance and Targeting Improvement
Washington, DC – 26-28 June 2012

The Committee on the Marine Transportation System, the Transportation Research Board and the Marine Board of the National Academies are co-sponsoring the conference, *Diagnosing the Marine Transportation System: Measuring Performance and Targeting Improvement.* This conference will serve as a forum to examine the use of performance metrics in maritime transportation and waterways management. Abstracts are due 31 mar 2012; www.trb.org/conferences/metrics2012.aspx

FY12 PROSPECT Courses

Course Title	Location	Start Date	End Date
Dam Safety	Grenada, MS	6-Feb-12	9-Feb-12
Dam Safety	Grenada, MS	5-Mar-12	8-Mar-12
Wetlands Development and Restoration	Apalachicola, FL	12-Mar-12	15-Mar-12
Streambank Erosion and Protection	Vicksburg, MS	19-Mar-12	23-Mar-12
Advanced Streambank Protection	Grenada, MS	26-Mar-12	30-Mar-12
Nonstructural Measures for Flood Risk	Reno-Sparks, NV	26-Mar-12	30-Mar-12
Dam Safety	Grenada, MS	2-Apr-12	5-Apr-12
Coastal Project Planning	Duck, NC	9-Apr-12	13-Apr-12
Dam Safety	Grenada, MS	30-Apr-12	3-May-12
Risk Analysis For Flood Risk Management	Davis, CA	7-May-12	11-May-12
Risk Analysis For Flood Risk Management	Davis, CA	21-May-12	25-May-12
Coastal Project Planning	Duck, NC	11-Jun-12	15-Jun-12
Flood Frequency Analysis	Davis, CA	23-Jul-12	27-Jul-12
Wetlands Development and Restoration	Olympia, WA	10-Sep-12	13-Sep-12
For more information: http://ulc.usace.army.mil			

Conferences

This listing is for information only and is not a complete list of FRM-related meetings. These meetings are not endorsed by the Corps of Engineers unless specifically stated. If we have failed to list a conference/meeting/symposium that would be of interest to the Flood Risk Management community, please forward the conference details to us.

7 – 10 February 2012 – 2012 North American Environmental Field Conference and Exposition – San Diego, CA - http://www.envirofieldconference.com/

8 – 10 February 2012 - Florida Shore and Beach Preservation Association Conference – Stuart, FL - http://www.fsbpa.com/techconference.htm

28 February – 1 March 2012 – ASBPA Coastal Summit – Washington, DC

5 – 8 March 2012 – 66th Interdepartmental Hurricane Conference – Charleston, SC – http://www.ofcm.gov/homepage/text/spc_proj/ihc.html

12 – 17 March 2012 – Sixth World Water Forum – Marsaille, France - http://www.worldwaterforum6.org/en/

13 – 16 March 2012 – 2012 North American Environmental Field Conference and Exposition – Tampa, FL - http://www.envirofieldconference.com/

23 – 27 April 2012 – 2012 United States Society on Dams Annual Meeting and Conference – 'Innovative Dam and Levee Design and Construction for Sustainable Water Management' – New Orleans, LA - http://ussdams.org/2012conf.html

25 – 27 April 2012 – 1st International Conference on the Design, Construction, Maintenance, Monitoring and Control of Urban Water Systems – New Forest, UK – http://www.wessex.ac.uk/uw2012cfp.html

20 – 25 May 2012 – ASFPM 36th Annual National Conference, "Mission Mitigation" – San Antonio, TX - http://www.floods.org/index.asp?menuid=740.

21 – 23 May 2012 – Global Conference on Oceans, Climate and Security – Boston, MA - http://www.gcocs.org/

30 May – 1 June 2012 – FRIAR 2012 – 3rd International Conference on Flood Recovery, Innovation and Response – Dubrovnik, Croatia – http://www.wessex.ac.uk/friar2012cfp.html

3 – 6 June 2012 – Coastal Society's 23rd International Conference – Miami, FL - http://thecoastalsociety.org/conference/tcs23/index.html

3 – 8 June 2012 – 9th INTECOL International Wetlands Conference – Wetlands in a Complex World – Orlando, FL – http://www.conference.ifas.ufl.edu/intecol/

17 – 21 June 2012 – XIX International Conference on Computational Methods in Water Resources – Champaign, IL - http://cmwr2012.cee.illinois.edu/

26 – 28 June 2012 – Diagnosing the Marine Transportation System: Measuring Performance and Targeting Improvement – Washington, DC – www.trb.org/conferences/metrics2012.aspx

1 – 6 July 2012 - International Coastal Engineering Conference – Santander, Spain - http://www.icce2012.com/index.html

2 – 4 July 2012 – Environmental Impact 2012 – 1st International Conference on Environmental and Economic Impact on Sustainable Development – New Forest, UK – http://www.wessex.ac.uk/impact2012cfp2d.html

10 – 12 July 2012 – Water Pollution 2012 – 11th International Conference on Modelling, Monitoring and Management of Water Pollution – New Forest, UK – http://www.wessex.ac.uk/water2012rem2d.htmll

21 – 22 August 2012 – 2012 Asia Pacific Water and Sewer Systems Modeling Conference – Australia – www.asiapacificwater.com

17 –19 September 2012 – 2nd International Conference on Island Sustainability – Croatia - http://www.wessex.ac.uk/islands2012rem2c.html

19 – 21 September 2012 – Risk Analysis 2012 – 8th International Conference on Simulation in Risk Analysis and Hazard Mitigation – Croatia - http://www.wessex.ac.uk/risk2012cfpc.html

20 – 23 September 2012 – Ocean-2012 – Dalian, China - http://www.bitconferences.com/wco2012/fullprogram.asp

9 – 12 October 2012 – ASBPA National Coastal Conference – San Diego, CA – tba

18 – 20 October 2019 – ASCE 142nd Annual Civil Engineering Conference – Montreal, Quebec, Canada - http://content.asce.org/conferences/annual2012/index.html?utm_campaign=Annual%202012%20Montreal%20-%20Call%20for%20Papers&utm_medium=email&utm_source=Eloqua

22 – 25 October 2012 – Dredging 2012 PIANC-COPRI-ASCE Conference – San Diego, CA – http://www.asce.org/copri/News/Headlines/2011/PIANC-USA-and-COPRI/ASCE-Announce-Dredging-2012/

23 – 26 October 2012 – ATC and SEI of ASCE “Advances in Hurricane Engineering Conference” – Miami, FL – www.atc-sei.org

20 – 24 October 2012 – Restore America's Estuaries (RAE) – 6th National Conference on Coastal and Estuarine Habitat Restoration – Tampa, FL – https://www.estuaries.org/conference/

26 – 28 September 2012 – FSBPA Annual Conference – Naples, FL – www.fsbpa.com

20 – 22 November 2012 – FLOODrisk 2012 – The 2nd European Conference on Flood Risk Management – Rotterdam, The Netherlands – www.floodrisk2012.net

10 – 13 December 2012 – ACES and Ecosystem Markets 2012 – Ft. Lauderdale, FL - www.conference.ifas.ufl.edu/aces

11 – 13 December 2012 – Sustainable Irrigation 2012 – Adelaide, South Australia, Australia – http://www.wessex.ac.uk/irrigation2012rem1.html

9-14 June 2013 – ASFPM 37th Annual National Conference – Hartford, CT – http://www.floods.org

1 – 6 June 2014 – ASFPM 38th Annual National Conference – Seattle, WA – http://www.floods.org

31 May – 5 June 2015 – ASFPM 39th Annual National Conference – Atlanta, GA – http://www.floods.org

Subscribe – Unsubscribe – Feedback

To subscribe/unsubscribe: *http://operations.usace.army.mil/flood.cfm*.

We would love your input – recommended article length is ½ to 1 page. Articles should be submitted to Doyle L. Jones, Canvassing Editor, Doyle.L.Jones@usace.army.mil.

Also, we would appreciate your feedback. Contact Dinah McComas, Managing Editor, Dinah.N.McComas@usace.army.mil or Doyle Jones.