

**DELAWARE RIVER BASIN COMMISSION  
FLOOD ADVISORY COMMITTEE SUMMARY**

**November 7, 2007**

The November 7, 2007 Flood Advisory Committee (FAC) meeting began at 10:00 AM at the Commission office (DRBC) in West Trenton, NJ. Scott Steigerwald of the Pennsylvania Department of Environmental Protection (PADEP) chaired the meeting.

**A. Introductions and Review of the Draft Minutes from the August 22<sup>nd</sup> Meeting**

The minutes were approved without any changes or corrections. The summary, once approved, will be posted on the DRBC web site. Tapes of the meeting may be reviewed upon request.

**B. Hydrologic Conditions Report**

A presentation of the current hydrologic conditions was given by Richard Fromuth, DRBC. The rainfall during the month of October was quite a bit above normal and made some inroads in reducing the dry conditions in the Delaware River Basin, although the severe drought in the south has persisted. A drought watch declared in the state of Pennsylvania earlier in the summer and the last designation was October 6<sup>th</sup> and included most Pennsylvania Counties in the basin except for the far northeast. The state of Delaware declared a drought watch on October 20<sup>th</sup>.

George McKillop reported that NOAA recently announced a new drought portal at [www.drought.gov](http://www.drought.gov), and it is part of the national integrated drought information system. He also reported that a website tracking tropical activity showed that 2007 is expected to turn out to be one of the lowest tropical storm activity years since 1977, which had even less activity than 2007.

The storage in the three New York City Delaware Basin reservoirs as of yesterday was 180.5 bg, which is about 30 bg above normal. This is typically the time of year when storage ends the decline and it starts to increase because of the change of the seasons and less absorption of the run off.

As of November 14<sup>th</sup>, rainfall in the basin has been well above normal over the past month; from 5-8" total. The totals equate to 200-300% compared to normal conditions for NJ and 120-150% compared to normal conditions for the upper basin.

Flash flood guidance from NWS was presented which is the amount of 12 hour precipitation that would need to occur to cause flash flooding. As of November 14<sup>th</sup>, due to antecedent conditions, some areas of the basin would need less than 2" to result in flash floods.

**C. Update on State Chapters of the Association of State Floodplain Managers**

(Laura Tessieri, DRBC)

The Association of State Floodplain Managers (ASFPM) is a respected voice in floodplain management, practice and policy in the United States has a great website at [www.floods.org](http://www.floods.org). They are an 11,000 member organization that has 26 active state chapters. New York and New Jersey have active chapters and Pennsylvania is currently forming a chapter.

The New York State Floodplain and Stormwater Managers Association (NYSFSMA), founded in 2002, brings together New York State professionals to foster awareness, information exchange and cooperation in the floodplain and stormwater management fields. NYSFSMA currently has 120 members representing about 260 people. The last annual meeting was September 24 and 25 in Elmira, NY. Next fall's meeting is planned for the Hudson Valley or Catskills area. The new Chair is Janet Thigpen with the Southern Tier Central Regional Planning Agency. She can be reached at [JThigpen@co.chemung.ny.us](mailto:JThigpen@co.chemung.ny.us) Membership information can be found online at: <http://ny.floods.org/> Bill Nechamen of our FAC is a past chair and founding member of NYSFSMA.

The New Jersey Association for Floodplain Management (NJAFM) was founded soon after the

Burlington County flooding in the summer of 2004. The organization, currently 170 members, is dedicated to reducing loss of life and property damage resulting from floods and promoting sound floodplain management at all levels of government. Last month, NJAFM had a record attendance of over 300 participants at its third annual conference held in Somerset, New Jersey. The new Chair is Laura Tessieri, DRBC, [Laura.Tessieri@drbc.state.nj.us](mailto:Laura.Tessieri@drbc.state.nj.us) and the new Vice Chair is John Scordato, NJDEP. For information on next year's conference, to investigate future training opportunities or to become a member, please visit [www.njafm.org](http://www.njafm.org).

The Pennsylvania Association for Floodplain Management is just getting started and very recently passed a Constitution and a set of By-laws. For membership information, please contact Thomas Mueller at [Mueller@cup.edu](mailto:Mueller@cup.edu)

#### **D. The Flood Project of the Nature Nurture Center, Easton, PA**

(Jane Stanley, Nurture Nature Foundation)

Ms. Stanley reported that the Nurture Nature Foundation (NNF) is establishing a flood museum and resource center in Easton, PA which will be devoted to educating the public about flooding and teaching citizens what can be done to address it. The Flood Project of the Nurture Nature Center will be located in a historic building the NNF has dedicated to the Center. The Flood Project hopes to fill this building with interactive exhibits, educational programs and anything else possible to educate the public about flooding and companion issues. Ms. Stanley read a statement that is available on the Flood Project's website: <http://floodproject.org/>

A video clip by Marshall Frech who is participating in the project was presented. Marshall Frech is a flood educator and film director from Colorado who is a native to the Lehigh Valley. Ms. Stanley is interested in coordinating and partnering with the various members and agencies that make up the Flood Advisory Committee membership in order to ensure that the best available information and resources are available at the museum.

#### **E. Brief Look: Educational Displays at Demonstration Gages**

(Thomas Suro, USGS-NY)

Mr. Suro gave a presentation on educational displays at demonstration streamgages. Photos and information on demonstration gages at West Point and Albany, NY were presented to the FAC.

Mr. Zagone asked if there was anything like that set up in Easton. Bob Hainly said no, they do not have any set up like that, but they do have a gage near Easton. Mr. Zagone mentioned that perhaps an educational display could be set up and displayed at the future flood museum in Easton.

Ms. Tessieri asked how these displays are funded. Mr. Suro said they do not have any specific funding for these gages. The one in Albany is operated in cooperation with NYS DEC.

#### **F. Status Report/Discussion: Flood Inundation Mapping**

(Jason Miller, USACE)

Mr. Miller gave a presentation on the background and the status of the flood inundation mapping project. He mentioned that there are two different components involved in this project which are funded under two separate studies. The first project is partnered with DRBC, to prepare inundation mapping along the Delaware. The second project is a fully federal project to get some structure-specific data. The inundation mapping project is based on a model they did for the Susquehanna River. A few years back, the Corps completed a project on 100 miles of the main stem Susquehanna River where they created inundation mapping combined with structured data, in order to have a planning tool, an emergency management response tool, and a damage estimating tool for structures impacted by floods.

Currently, due to funding limitations, the Corps plans on using best available, existing data which includes existing hydraulic models and the best available base data, topography and orthophotography. With that information, they will create flood inundation maps, for about 100 miles on the main stem

Delaware. These products will be created so as to be incorporated into the National Weather Service AHPS Inundation Enhancement Program.

In addition, they plan to create stand-alone maps that can be used as a GIS environment tool to be used mostly at the County Level. Mr. McKillop asked where the Susquehanna 100 mile stretch is and if it is fully operational. Mr. Miller said yes, there are five counties in the Susquehanna project area that were covered and about three of them use it actively. Luzerne County uses it very actively not only during high water events, but also as a planning tool running different scenarios and putting in different levels of flooding.

### **G. Susquehanna Ice Monitoring Network**

(Peter Jung, NWS State College)

Mr. Jung gave an overview of the Susquehanna Ice Monitoring Network and its history. Although there were a few sporadic ice observers before January 1996, the real serious effort to monitor ice jams began after the ice jam floods of January 1996. The network has grown to over 80 observers and is a multi-agency/utility river monitoring and communications plan. The network has streamlined communications, observation reports and dissemination of data. Triggers of an alert can be issued by any agency.

Mr. McKillop added that while Mr. Jung introduces one type of model that has been successful and has been implemented in the Susquehanna, he knows that northern offices, like Buffalo, Albany, Burlington and New England have different models working with different agencies within those geographical areas where they work on this. Mr. McKillop also added that the Corps of Engineers' Cold Regions Research and Engineering Lab (CRREL) in Hanover, NH has an extensive database and is really the key player as far as the expertise goes in cold region hydrology.

### **H. Overview/Status Report on Recent Quality Improvements to PA Mapping**

(Joe Zagone, FEMA RIII; Mark Roland, USGS-PA; Jason Miller, USACE; Kim Dunn, Dewberry)

Mr. Zagone led a presentation on recent efforts to update Pennsylvania flood maps. Recent efforts include a partnership that FEMA RIII formed with PA-USGS to evaluate the streamgages, regional regression equations and population of the StreamStats website. In addition, the Corps of Engineers has been looking at some of the water surface elevations and the differences in the water surface elevations along the Delaware. And finally, FEMA Region III tasked URS and Dewberry with overseeing some technical efforts and special studies following the June flooding in the Pennsylvania, New Jersey and New York area.

Mark Roland, USGS, spoke to the analysis of flood magnitude and frequency data in the Delaware and Susquehanna River Basins in Pennsylvania. Most recently, the Delaware and North Branch Susquehanna River Basins in Pennsylvania experienced severe flooding as a result of intense rainfall during June 2006. The height of the flood waters on the rivers and tributaries approached or exceeded the peak of record at many locations. Following a presidential disaster declaration in 2006, a multi-agency cooperative agreement was established to analyze flood magnitude and frequency data for streamflow gaging stations on tributaries in the two basins. The partners involved were FEMA Region III, Pennsylvania Department of Community and Economic Development (PA DCED), the Susquehanna River Basin Commission, the Pennsylvania State Association of Township Supervisors and USGS.

Updated flood-magnitude and flood-frequency data for streamflow-gaging stations on tributaries in the Delaware and North Branch Susquehanna River Basins were analyzed using data through the 2006 water year to determine if there were any major differences in the flood-discharge data. Flood frequencies for return intervals of 2, 5, 10, 50, 100, and 500 years (Q2, Q5, Q10, Q50, Q100, and Q500) were determined from annual maximum series (AMS) data from continuous-record gaging stations and were compared to flood discharges obtained from previously published Flood Insurance Studies (FIS) and to flood frequencies using partial-duration series (PDS) data. The analysis included 41 stations and 97 flood insurance study sites. The results of the Mann-Kendall test showed that eight stations exhibited a positive trend (an increase in annual maximum peaks) over the period of record at the 95-percent confidence level.

This positive trend could be attributed to a number of different factors, including increased intensity short-term rainfall, increased impervious surface, or urbanization, within the basin.

The open-file report titled, "Analysis of Flood-Magnitude and Flood-Frequency Data for Streamflow-Gaging Stations in the Delaware and North Branch Susquehanna River Basins in Pennsylvania can be viewed online at <http://pubs.usgs.gov/of/2007/1235/>

Mr. Miller, USACE, explained that following the 2006 flood, FEMA contracted with the USGS to get high water marks set for 160 points in Pennsylvania and New Jersey. They then asked the Corps to look at the high water marks and compare them to the hydraulic profiles and see if there were any anomalies and see how things lined up. Most areas up and down the river were pretty good, but there was one area that was hard to figure out why it was off. For about a one to two mile stretch in Lower Mt. Bethel, Northampton County the profiles seemed too high (RM 194-96, lettered sections AD to AG on FEMA's maps for Northampton County, PA). As part of their detailed analysis, they took three new flood section surveys through the area and compared them to what was in the HEC-II models. There were some differences in the underwater portion of the geometry, so they decided to incorporate the new sections into a revised model and get rid of four sections that seemed to conflict within that same area. The result was a rerun of the 100-year, and it was determined to be 1.7 feet lower than before.

Mr. Miller also explained that the Corps of Engineers, Philadelphia was asked by FEMA RIII to evaluate the hydraulics at Yardley PA. In Yardley, the basis for the revisit was to examine lower flow events (ten and fifty year return period events) and to evaluate if the hydraulic impact changed significantly in light of the new hydrology adopted along the Delaware (revised by Bob Schopp in the USGS, New Jersey Water Science Center and agreed to by the Delaware River Mapping Coordination Team in 2007). The Corps converted their HEC-2 models into HEC-RAS and made sure they were functioning properly. Then they ran the new hydrology (flows). There was a pretty significant difference in the ten year, but the fifty year did not change significantly. FEMA now plans to look for possible increased benefits to mitigation projects (acquisitions, elevations, etc) based on different benefit costs analyses based on the higher water surface elevations using the new hydrology.

Kim Dunn, Dewberry, reported that under the Hazard Mitigation Technical Assistance program, URS and Dewberry had been tasked to ensure consistency and coordination between the many parties involved in flood mapping and on both sides of the river. The other part of the task order that Region III gave to Dewberry and URS was to look at both the whole Delaware Basin within Pennsylvania and also the Susquehanna Basin and for each county to look at what data is available now and a timeline for when additional data will be available to look at alternatives for future mapping needs. Over the next few years Region III states they will be updating many of the flood insurance studies in the eastern part of Pennsylvania and they want to determine what is going to be the most efficient way to incorporate all of this information into those maps.

## **I. Opportunity for Public and Interested Party Comments**

A member of the audience and a resident of Port Jervis inquired whether it was possible to blast an ice jam. He recalled that in 1981, they had an ice jam that occurred quickly and flooded the city.

Kathy Lear, NJOEM, reported that they have received two more grants from FEMA to acquire repetitively flooded structures along the Delaware. They are acquiring one property in Frenchtown and up to twelve structures in Harmony Township. Last year they acquired six structures and elevated two in Harmony, and they acquired two structures in Pohatcong. She mentioned that so long as townships complete their all hazards plan, they will be eligible for grant funds for mitigation.

Jeff Mahood, NRCS, mentioned that the Natural Resources Conservation Service Watershed Program is in danger of not being funded. The Neshaminy program is only about half funded and funding will run out this year if they do not get additional money.

Bob Reiser, USGS - NJ wanted to update everyone on a few new gages that the USGS operates through the New Jersey Water Science Center. They have three stage-only gages that have been installed on the

Delaware River on Delaware River Joint Toll Bridge Commission (DRJTBC) bridges; one at Stockton, one at Lambertville, and one at Frenchtown that have all been installed within the last ten months. They are going to be putting in another gage on Washington Crossing Bridge in another year or so. These gages were funded through NJDEP with operation and maintenance being paid for by the DRJTBC. They also have a new stage-only gage on the North Branch of Rancocas Creek in Mt. Holly. This was as a result of a cooperative program they have with Burlington County. A new rain gage was installed in Shamong Township in Burlington County. In addition, flood summaries including peak stages and flows at the gages, as well as some precipitation data can be found on their website at <http://nj.usgs.gov/>

Alan Tamm, PEMA, mentioned that every three years, the federal government has a requirement of the states to update their hazard mitigation plan. The state of Pennsylvania has just garnered approval of their triennial update, and it is on the PEMA website under all hazard plans. If you would like to look at it and offer suggestions for improvement for the next iteration, they would be happy to consider any comments. The draft plan can be accessed at <http://www.pema.state.pa.us/pema/cwp/view.asp?A=564&Q=277126>

Ms. Tessieri brought to attention two letters from the Delaware River Basin Task Force in support of \$250,000 that is in an appropriation bill for critical flood warning system improvements or enhancements. Clarke Rupert clarified that if the \$250,000 makes it through the legislative process and is assigned into law, it would go to the National Weather Service. It is part of the Commerce, Justice and Science appropriations bill which funds the National Weather Service. The two legislators that were the key in terms of requesting this as an earmark were Congressman Holt from New Jersey and Congressman Charles Dent from the Lehigh Valley in Pennsylvania and both are co-chairs of the congressional task force.

#### **J. Next Meeting**

The next meeting was scheduled for Wednesday, February 6, 2008 at 10:00 am with February 13<sup>th</sup> reserved as a snow date.

**FLOOD ADVISORY COMMITTEE  
ATTENDANCE**

**November 7, 2007**

<b>NAME</b>	<b>AGENCY</b>
BURD, Dave	Lambertville Office of Emergency Management
CHASE, Phil	Upper Delaware Council (UDC)
COLVIN, Mary	Federal Emergency Management Agency (FEMA) – Region 2
DEANGELO, Jim	Baker
DOUGLASS, Bill	UDC
DUNN, Kim	Dewberry
FITZPATRICK, Dan	Pennsylvania Department of Community and Economic Development (PADCED)
FORNEY, Dave	National Park Service – Upper Delaware Scenic and Recreational River (NPS – UPDE)
FROMUTH, Rick	Delaware River Basin Commission (DRBC)
GOULD, A. Chris	New Jersey Department of Environmental Protection (NJDEP)
HAINLY, Bob	United States Geological Survey (USGS) – Pennsylvania
JESPERSON, Eric	Pennsylvania Mapping and Geographic Information Consortium (PAMAGIC)
JUNG, Peter	National Weather Service (NWS) – State College, Pa.
LEAR, Kathy	New Jersey Office of Emergency Management (NJOEM)
MAHOOD, Jeff	Natural Resources Conservation Service (NRCS)
MCKILLOP, George	NWS – Eastern Region Headquarters
MILLER, Jason	United States Army Corps of Engineers
NOBLE, Mary Ellen	Delaware Riverkeeper Network
POLENSKI, Roger	
REISER, Robert	USGS
RIMAWI, Hani	Medina
RODGERS, Ted	NWS – Mid-Atlantic River Forecast Center
ROLAND, Mark	USGS – Pennsylvania
RUGGERI, Joseph	NJDEP
RUPERT, Clarke	DRBC
SCORDATO, John	NJDEP
STANLEY, Jane	Nurture Nature Foundation
STEIGERWALD, Scott	Pennsylvania Department of Environmental Protection (PADEP)
SZATKOWSKI, Gary	NWS
SURO, Thomas	USGS – New York

TAMM, Alan	Pennsylvania Emergency Management Agency (PEMA)
TESSIERI, Laura	DRBC
TUDOR, Bob	DRBC
WESTFALL, Greg	USGS-NRCS
WIECZSEK, M.	Mercer County
ZAGONE, Joseph	Department of Homeland Security – FEMA Reg. 3