

FOCUS ON FLOODS



Nurture Nature Foundation's Flood Education Campaign for the Delaware River Basin

Final Report covering the period September 1, 2009 through December 31, 2010

OVERVIEW: Nurture Nature Foundation, working closely with staff from the National Weather Service at the Middle Atlantic River Forecast Center, Mt. Holly, NJ/Philadelphia Weather Forecast Office, Binghamton, NY Weather Forecast Office and the Northeast Regional Headquarters, developed and distributed a broad variety of multi-media flood education materials throughout the Delaware River Basin. The education campaign, which has already won three awards, was recently recognized with full-page coverage in the Delaware Estuary News, distributed to thousands of readers throughout the Delaware River Basin and beyond. NNF is receiving strong positive feedback from classroom teachers and municipal professionals who are using and planning use of the materials in their work.

The materials focus on the use of NOAA/NWS flood forecasting and warning tools, and include: a website, www.focusonfloods.org, with extensive flood education information, including video tutorials and interviews with flood authorities and experts as well as riverside residents and flood survivors; live river feeds for key communities along the Delaware River; audio and visual public service announcements; downloadable classroom materials; a household flood preparedness checklist and an instructional video on how to receive RSS feeds for various weather alerts, including specifically flood alerts. These materials were also compiled into a DVD-ROM that was packaged in an attractive self-mailer and distributed throughout the basin (dissemination details are included later in the report). Hard copies of classroom posters and an innovative write-on/wipe-off What's Your Number? refrigerator magnet were also printed and distributed broadly throughout the basin and the country upon request, including to NWS offices regionally and nationally. Additionally, NNF hosted four one-hour radio programs on various aspects of flooding, which aired on a public radio station serving the Greater Lehigh Valley region in Pennsylvania and several floodprone counties in New Jersey.

During the campaign, NNF also served as host and co-host for three Flood Warning Users' Forums, which provided critical NWS flood warning system information to more than 140 emergency managers in three flood-prone communities throughout the basin: Easton, Pennsylvania; Lambertville, New Jersey; and Narrowsburg, New York.

Lastly, the campaign produced three exhibits – one a tabletop, What's Your Number? exhibit, the second a traveling exhibit designed for use at locations throughout the basin, and a third, modular exhibit designed firstly for use in NNF's Nurture Nature Center at 518 Northampton Street in Easton, PA.

KEY ADVISORS AND PARTNERS:

National Weather Service: Staff helped develop campaign learning goals, establish primary audience,

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provide technical direction on use of flood warning technology, refine and edit materials, and also assisted with dissemination of materials.

- From the Middle Atlantic River Forecast Center: Peter Ahnert, Hydrologist-in-charge and Patti Wnek, Warning Coordination Meteorologist.
- From the Mt. Holly, NJ Weather Forecast Office : Gary Szatkowski, Raymond Krudzlo and Joseph Miketta
- From the Binghamton, NY Weather Forecast Office: David Nicosia
- From the Northeast Regional Headquarters: Laurie Hogan

Other NOAA/NWS contacts:

- Larry Wenzel, NWS National Hydrologic Outreach Coordinator shared the existing hydrological and flood-related outreach in place by NWS.
- John Bradley, manager of NWS' Advanced Flood Warning System, provided technical instruction on this system

Other organizations:

- From the Delaware River Basin Commission (DRBC): Clarke Rupert and Laura Tessieri. Helped establish learning goals and primary audience; co-hosted emergency management forums; provided network of needed flood advisors as requested.

Other advisors:

- Marshall Frech, Director of the Flood Safety Project in Boulder, Colorado, and principal of Vantage Point Media, Inc., a production company specializing in flood and disaster related films. Mr. Frech has been reporting, studying and document flood disasters for nearly 20 years, and has produced two PBS films about flooding. His company, Vantage Point Media, produced the media pieces for this campaign.
- Dennis Mileti, disaster education researcher from California and previously from the Natural Hazards Research Council, to identify process goals for sharing important preparedness messages. Dr. Mileti's research has indicated critical factors in helping public audiences to prevent losses during natural and other disasters, including flooding. One of the most notable factors adopted for the campaign from this research is the concept that people learn prevention behaviors by viewing prevention behaviors, and, as a corollary, that messages about probability of risk do not inspire people to take action. In essence, the team identified early on that the campaign would provide model examples of preventive activities, rather than focusing on didactic presentations about the probability of risk, in its public education materials. The campaign did, however, provide an in-depth video and text piece (www.focusonfloods.org/flood-science-and-technology) about the factors that affect risk, so that residents and communities at risk for flooding could have an ample education basis upon which to make decisions.
- Tom Fitzpatrick, the developer of NY Alert, to learn from the findings of that organization what has been effective, and what has been less effective, in communicating preparedness and in notifying people in times of acute crisis.
- Tom Maxfield, classroom teacher and artist who specializes his art in nature drawings, botanical drawings and public science education through art, helped conceptualize campaign materials and establish

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relevancy to classroom audiences. He was also contracted to produce the classroom illustrated poster.

- Nicholas Henshue, classroom science teacher, watershed advocate and Eagle Scout, advised on how to engage youth in learning about watersheds and preparedness, and helped NNF to network with Boy Scout audiences in the basin

- John Miller, P.E., C.F.M., water resources engineer, New Jersey, reviewed documents for accuracy and provided resources for more information

- Dru Germanoski, Ph.D., geomorphology professor at Lafayette College, reviewed documents for accuracy and provided input about flood recurrence intervals

DELIVERABLES:

Informal Campaign Title: “Focus on Floods”

This title is the domain name for the project website: www.focusonfloods.org, and also appears on several printed materials. It is a clear, easy-to-remember phrase that helps distinguish the project from other flood education efforts.

Campaign Theme: “Floods Happen. Lessen the Loss.”

This theme was coined by NWS’ Patti Wnek (MARFC) after lengthy discussion of key learning goals and audiences. This theme was the central slogan of the campaign, and appears on numerous printed and web-based materials.

The phrase provided an excellent entry into conversations with public audiences, because it provides two distinct important messages. Firstly, that “floods happen.” This portion allows for conversation about the natural and beneficial functions of floods and floodplains, and also about the inevitability of flooding in floodplains. The second portion, “Lessen the Loss,” allows for practical conversation about ways that people can reduce their risk through preparedness.

Website: www.focusonfloods.org

This website is the repository for the majority of the materials that were produced during the campaign, and is the primary dissemination tool that has been and continues to be accessed for information. Statistics from Google Analytics show the site has received more than 3,000 visits since October 2010, when the final launch of the site was publicly announced, with traffic to the site rising steadily. The report shows a peak of visitors occurring during March 2011 concurrent with widespread spring flooding in the basin. The site has received 1,100 visits during March 2011 alone. Traffic analysis also shows a shift in traffic coming from direct entry of the site address – the primary access when the site was first launched and advertised via postcard throughout the basin - to a larger percentage of visitors being referred by other sites, which indicates that other sites have begun linking to Focus on Floods.

The site includes an innovative “river feed” tool in the upper right hand corner of the homepage, which visitors can customize to reflect the current river level at the stream gage nearest their home or business. This tool also shows the “flood stage” at each gage. This tool could be easily expanded to include more stream gages from this and other watersheds.

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A screen shot of the site is appended as Attachment A.

Classroom Materials:

NNF produced a series of educational posters for use in classrooms and other educational venues. The first poster focuses on the *What's Your Number?* theme developed through the campaign. This theme encourages people to know the “flood stage” at the river gage nearest their home or business, and to monitor the Advanced Hydrologic Prediction Services hydrograph information during flood events.

A second poster, our children's illustrated classroom poster, focuses on six different preparedness messages, and provides ample teaching opportunities for teachers about the natural functions of rivers and floodplains. It is accompanied by six downloadable black and white .pdf coloring sheets, which can be assembled together to “recreate” the full-color poster. The worksheets are accompanied by activities, which can be copied on the back of the coloring sheets or used alone, which provide mazes, word searches, and other activities that encourage students to learn more about flooding and flood preparedness. Students are guided through the activity by the virtual character, “Highwater Mark” and his dog, Noah - clever, cute characters that provide a fun guide for their activities. Highwater Mark and Noah are flexible characters that could be developed further for continued classroom materials. This poster won a Bronze Award during the 2011 Greater Lehigh Valley Ad Club “Addy” Award competition.”

The third poster is a “Flood Terrain” poster that explains how flood terrain affects weather and flood risk. This is part of a teaching theme employed through the campaign to encourage people to understand how the specifics of their property and terrain affect their flood risk.

Images of the magnet and posters are appended as Attachment B.

Professional development and public education materials:

NNF worked with Vantage Point Media, Inc., to develop a series of multi-media educational pieces that highlight the use of NWS flood alerts and also provide ample context about the various factors affecting flood risk.

These pieces include:

- “Understanding Flood Risk in the Delaware River Basin”: This piece includes an introduction and six chapters addressing the various aspects of flood risk and preparedness, including geography, climate, hydrology, land use planning, the use of flood alerts, and citizen preparedness. These videos interview a variety of flood-related professionals and authorities, and include text-based study guides with links to more resources on each topic. These videos and accompanying text chapters are posted at www.focusonfloods.org/flood-science-and-technology.

- Welcome to Focus on Floods: this ten-minute overview, hosted by NNF's Rachel Hogan Carr, introduces viewers to the broad array of issues associated with flooding. It is designed to provide a broad overview of topics and concerns, and to help visitors to [focusonfloods.org](http://www.focusonfloods.org) to navigate the site.

- How to Sign up for Flood Alerts: This video is posted at www.focusonfloods.org/flood-alerts and shows viewers how to sign up for RSS feeds for flood watches and warnings, as well as other weather warnings.

- Audio and visual public service announcements: A series of audio and visual public service announcements are available at www.focusonfloods.org/media.

- Remembering the Flood of 1955 in the Brodhead Creek Watershed: This piece interviews a

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survivor of the 1955 flood in a region that experienced massive devastation and loss of life. This movie is available at www.focusonfloods.org/flood-history.

NNF also worked with Emmy award-winning animation firm Magik World Studios to produce a ten-minute animated film about a community that works together to prepare for flooding. Featuring use of National Weather Service flood alerts, NOAA weather radio, evacuation and readiness plans, and strong communication among friends and families, the members of this community demonstrate how working together and being prepared can help reduce flood losses. This film is available at <http://focusonfloods.org/the-day-of-the-flood>. This film won a Gold Award and the “Best of Show” award during the 2011 Greater Lehigh Valley Ad Club “Addy” award competition, and was forwarded to District II competition for further judging. Results of that judging are pending.

A one-and-a-half minute version of the film, which serves as a trailer for the full-length film or as a stand-alone education piece, is also available at www.focusonfloods.org, in the lower right hand corner.

Radio Shows: NNF entered into a partnership with WDIY FM (88.1) radio for the production of four, one-hour radio shows, dubbed “Focus on Floods,” which aired in a broad region centered around the flood-prone Lehigh Valley, PA and extending into western New Jersey. These shows occurred over an eight-month period in 2010, and each show featured Rachel Hogan Carr interviewing individuals on a distinct flood topic. The first show, *Delaware Floods and Their Impact*, featured Ms. Carr and co-host Marshall Frech, as Director of the Flood Safety Project in Boulder, Colorado, talking with swiftwater rescue trainer Pat Shine and floodplain resident John Mauser of Lower Mt. Bethel Township, PA, about the regional flooding in 2004, 2005, and 2006, and the challenges that face individuals in flood events. On the second show, *The Economic, Social and Environmental Challenges of Recent Floods*, featured City of Easton Director of Planning and Codes Becky Bradley, and water resources engineer and certified floodplain manager John Miller, about the community-wide challenges flooding poses for the region. The third show, *An Interview with Flood Victim Counselors*, featured Linda Frey and Mark Staples of Liberty Lutheran Services and Lutheran Disaster Response, discussing their experiences assisting victims of flooding in the Delaware River Basin and Hurricane Katrina. The fourth show featured an interview with Mary Shafer, the Bucks County-based author of *Devastation on the Delaware: Stories and Images of the Deadly Flood of 1955*, discussing the record flood of 1955 in the region, and what a similar flood today might look like, given new flood forecast technology and expanded development in the floodplain.

These shows are posted on www.focusonfloods.org/radio-program.

Focus on Floods DVD-ROM: High-resolution versions of the above materials, along with a Family Go-Kit Checklist, were compiled into a beautifully packaged DVD-ROM, which was disseminated throughout the Delaware River Basin. Dissemination is detailed later in this report.

The Family Go-Kit Checklist and an image of the DVD-ROM are appended as Attachment C, along with a promotional piece announcing the radio shows.

Exhibits:

NNF completed three different exhibits for the campaign. The first exhibit, a table-top “What’s Your Number?” exhibit, was used throughout the campaign at a variety of conferences and meetings, and has since been requested for use by the NWS MARFC for its booth at the Pennsylvania Farm Show in January 2011. It is designed to be easily portable for short-term presentations, such as smaller one-day conferences.

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The second exhibit is a traveling display comprised of six retractable flags and two tables, which highlight critical flood safety messages with striking graphic images. Six handout cards that correspond to each of the flags are provided as ancillary educational material, and describe each of the messages in greater detail. The exhibit coordinates with the Day of the Flood animated film, which can be shown in an accompanying television with built-in DVD-ROM player. Due to its high quality, low production cost and easy portability, two copies of this exhibit were developed, and one has been delivered to NWS MARFC, who can distribute it among regional WFOs and other offices for NWS use. The other copy is on display presently at the Nurture Nature Center and will be delivered to two Delaware River communities for exhibit this spring, per their request through the Focus on Floods website. Photos of this exhibit are attached. Note that the TV-DVD player unit can also showcase any of the other video materials produced by this campaign or by NOAA and NWS. This exhibit is easily replicated at low cost if needed, and can be used in its entirety, or sites can choose to use only a small number of the banners, if the display location is smaller.

The third exhibit is a larger, heavier exhibit that will be on display at the Nurture Nature Center, and which can also be replicated very easily and quickly if desired, in pieces or its entirety (it is currently on site at NNC but not on display, as there is construction in the building in the area where the exhibit will be displayed later this spring). This exhibit includes approximately 20 panels of 8' height and widths varying from 2' to 4'; the panels interlock with a system of small metal clamps. The exhibit showcases a gorgeous graphic design of a river being used by various people for a variety of recreational purposes; surrounding panels then incorporate quotes from Nurture Nature staff and program participants discussing the challenges and opportunities that flooding presents for riverside life. This exhibit takes a more aesthetic and intellectual approach to encouraging people to consider their relationship to the river and its periodic flooding. This exhibit is also replicable in whole or in part.

Photos of the exhibits are appended as Attachment D.

Outreach and Public Education:

During the campaign, NNF staff attended and hosted a series of events to educate the public about the campaign and about flooding and flood risk. NNF staff also presented its work on this campaign to other professional audiences.

To augment these events, NNF purchased a Floodplain Simulation Table from Ward's Scientific, which proved a very valuable tool for educating the public about how development patterns affect flooding, and how flooding affects a landscape. NNF also developed a "What's Your Number" tabletop exhibit to bring to smaller venues, based on the What's Your Number? theme explained earlier herein.

Outreach for the project tried to involve the gathering of audiences personal experiences. Based on research suggesting that getting people to discuss preparedness with neighbors and families is effective for changing behaviors, NNF solicited flood stories and photos from residents in the region to encourage people to begin discussing their experiences. These materials have been incorporated into our campaign pieces, and provide a cost-free solution to documenting the devastation that floods can bring. Importantly, the solicitation also served to galvanize interest from audiences who might otherwise have felt that flooding was an issue that didn't immediately interest or affect them.

Events hosted and attended by NNF include:

- September 21-23, 2009: NNF Exhibit at New York State Floodplain and Stormwater Managers' Association, 9th Annual Conference, in Latham NY on September 21-23, 2009

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- October 15-16, 2009: Exhibit at New Jersey Association for Floodplain Management 2009 Annual Conference on October 15-16, 2009.
- April 5, 2010: NNF launches “Flood Alert Survey” on its interim version of www.focusonfloods.org. This site asked audiences to answer a series of flood education questions; addresses were used to create a mailing list for the dissemination of the Welcome to Focus on Floods video released in late 2010. Results from this survey were not as strong as anticipated, with a total of approximately 250 individuals throughout the basin responding, but promotion of the survey did serve to drive attention to the campaign generally.
- April 23, 2010 - Exhibited materials at Lehigh University’s Earth Day event, attended by thousands of students.
- May 11, 2010 - Co-hosted a Pints and Policy discussion: “When It Rains: Perspectives on Flooding in the Region” with WDIY 88.1 FM Allentown Radio. Bringing together a panel of community leaders to discuss responses to flood risk in the region. Deputy Director of the Delaware River Basin Commission Bob Tudor joined John Miller, P.E., CFM, a water resources engineer with extensive background in floodplain management leadership and Becky Bradley, Director of Codes and Planning for the City of Easton, in a conversation about responses to, and preparation for, flooding in the Lehigh Valley region. NNF’s Director of Environmental Outreach, Rachel Hogan Carr, moderated the event, which included conversations on individual and community flood preparedness as well as basin-wide planning issues. The event was co-hosted by and held at the Bethlehem Brew Works, 569 Main Street, Bethlehem, PA.
- May 14, 2010 - Rachel Hogan Carr interviewed on WRNJ radio (Hackettstown, NJ, covering Warren, Hunterdon, 40,000 listeners) about flood campaign.
- May 18, 2010 - Attended Delaware River Greenways Partnership “Health of the Delaware Forum” in Stockton, NJ, and distributed materials there.
- July 31, 2010 - Hosted a popular booth at the Boy Scouts of America Jamboree 100th Anniversary celebration at Coca-Cola Park in Allentown, PA. More than 1,200 Boy Scouts and their friends and families came to the event, hosted by the Minsi Trails Council Chapter of the Boy Scouts. The crowd came from a broad region throughout Pennsylvania and New Jersey. NNF’s booth – with its Floodplain Simulation table, Flood Safety Game, and other educational materials about flood preparedness and National Weather Service flood alerts – was highly attended by young people, who learned how storm-water operates in different development scenarios.
- August 1-4, 2010 - Exhibited at the Warren County Farmer’s Fair, annual landmark event for the region, which reaches many thousands of residents in the Delaware River Basin.
- August 18, 2010 - Hosted *Flood of 1955 Commemoration Event*, including release of the second edition of Mary Shafer’s book, “Devastation on the Delaware: Stories and Images of the Deadly Flood of 1955” at the Grand Eastonian Suites Hotel in Easton, PA. Nurture Nature hosted an array of exhibits, including one of historic flood photos from regional floods in 1895, 1902, 1903, 1920, 1936, 1945, 1955, as well as recent flood events. The night included demonstration of NNF’s Floodplain Simulation Table, and other exhibits, including an interactive river basin exhibit designed by computer science students at Lafayette College under the supervision of Professor Chun Wai Liew, and a Flood Safety game designed and built by Easton Area High School students under the supervision of teacher Nick Henshue. NNF staff

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documented oral histories of flood survivors and collected newspapers and flood photos from the audience, for use in exhibits and educational programming undertaken at the Nurture Nature Center.

- August 20, 2010 - Nurture Nature Foundation featured its Table top display and Floodplain Simulation table in the Community Tent at Easton Farmer's Market. Kids and families experienced hands-on fun with this interactive water display by learning how storm water, development patterns and floodplain
- September 21, 22 and 28, 2010: Flood Warning Users Forums held in partnership with the DRBC in Easton, PA; Lambertville, NJ; and Narrowburg, NY, respectively. NNF hosted the Easton event and organized logistics for that event, including hosting New Jersey State Climatologist as the Keynote Speaker. In addition to the keynote, the agenda for this event included a welcome by Congressman Charlie Dent; a short presentation by the City of Easton's Mayor and staff on the floodplain issues and model ordinances adopted by the City; remarks by NNF's Rachel Hogan Carr & Laura Tessieri of the Delaware River Basin Commission; a presentation on USGS Streamgages and Data Collection and Delivery by Bob Hainly of USGS; a presentation on How River Forecasting Works by Patti Wnek of NWS Middle Atlantic River Forecast Center; a presentation on Nurture Nature's Flood Awareness and Safety Campaign by Rachel Hogan Carr; an overview of Current/Future Forecast Products by Gary Szatkowski, of NWS Mt. Holly, NJ WFO; a presentation on the Flash Flood Potential Index by Ray Kruzdlo of NWS Mt. Holly, NJ WFO; a presentation on Inundation mapping by Jason Miller of the US Army Corps of Engineers; a presentation on Inundation mapping on NWS AHPS webpages by Laurie Hogan, NWS Eastern Region headquarters; and a panel session and audience feedback. NNF made presentations at the two other events, which had similar schedules.
- October 2010: NNF presented about campaign and exhibited at 2010 NJ State Floodplain Managers Association Annual Conference. At this event, NJFPM awarded NNF with its Media Award for the work of this flood education campaign.
- November 2010: NNF presented on its work for this campaign at a Natural Flood Protection Workshop hosted by the national river organization, American Rivers in Pittsburgh, PA.

Promotional Materials and Flood Warning Users' Forum agenda are appended as Attachment E.

DISSEMINATION

In addition to disseminating materials at the various educational and outreach events through the campaign, NNF did a formal mailing to announce the launch of the Focus on Floods site and the availability of the DVD-ROM and hard copy posters and magnets.

More than 600 schools along the Delaware River and more than 430 contacts compiled with assistance from the MARFC were contacted with a mailed card, inviting them to use the resources on the Focus on Floods website or to have a packet of materials mailed to them. Additionally, more than 1,000 municipal officials, radio stations, EMS personnel and certified floodplain managers were sent an email announcing the resources available through the Focus on Floods website.

The schools were chosen from high flood risk areas and areas in close proximity to the Delaware River. Response has been excellent, ranging from a nursing school who wants to incorporate flood readiness into their emergency preparedness curriculum to an elementary school preparing to teach weather for the first time.

Response from the postcards was strong. Those who requested materials received a copy of the posters,

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the magnets, and DVD-ROM in quantities appropriate for their use. Requests came from various entities around the country – including from Fargo, North Dakota, in advance of expected flood events there - with the bulk of requests coming from the Delaware River Basin. A large quantity of materials was delivered to MARFC and bulk copies were also sent to other NWS offices.

Video pieces were promoted through YouTube, Facebook and Reddit.com, as well as through www.focusonfloods.org, and have been circulating among users. Public service announcements aired for three months on the local national public radio stations, and radio stations throughout the basin have been mailed copies of the DVD-ROM with instructions for airing the PSAs.

General Notes About the Methods and Intentions of the Campaign:

When NNF began work on this campaign, its early efforts were to identify the learning goals and the primary audience for the campaign. In conversation with NWS staff, as well as staff from the Delaware River Basin Commission, teacher advisors and members of the public, it became apparent that education about flooding needed to happen on at least three levels: to the riverside homeowner and general public, to the municipal and planning professional involved in making floodplain management or emergency management decisions, and to the classroom audience. NNF created materials that could serve all three of these audiences, in a variety of media to satisfy different learning needs. Coloring and activity sheets, and the use of the Wards' Floodplain Simulation Table, satisfied the learning needs of the youngest audiences, while more in-depth explanation of flood risk was designed for floodplain residents and professional audiences.

Additionally, through conversation with emergency managers and others, it emerged that the interface with the National Weather Services' RSS feeds and Advanced Hydrologic Prediction Services online presented some challenges to public audiences. The AHPS site, with its map of the United States and series of green dots for stream gages, was reported as overwhelming by some public members; in response, NNF developed its "river feed" application on the website, to help familiarize public audiences with the idea of stream gages and river stages. At various presentations and public meetings, and during individual phone calls received from riverside residents during flood events, staff used this river feed tool to move the public from that simple application to the more advanced and helpful technology available through AHPS.

Also, recognizing that "push" technology that moves information from NWS out to the public is constantly evolving, NNF decided not to pursue very technical explanations of how RSS feeds are generated and how they can be accessed (one video entitled "How To Sign Up For Flood Alerts" does address these issues). Instead, the project highlighted generally the availability of "flood alerts," a phrase which encompasses the broad array of experimental and existing technologies that individuals can use to find and receive flood watches and warnings, both through AHPS and the Advanced Flood Warning System.

NNF held conference calls with emergency managers at key areas throughout the basin. These managers provided a variety of feedback about their use of the AHPS system. One person expressed concerns about directing mass numbers of public to the site, for fear bandwidth shortages during an acute flood event would prevent emergency managers from accessing the site when it is most needed, and suggested a separate entry for EMs. Another person suggested that the reporting lag between gage readings and real-time conditions sometimes created tension with residents who asked to know which information to heed. Consistently, EMs – and other key flood-related professionals interviewed throughout the project – reported that they either had not, or had difficulty, signing up for the RSS feeds, and were generally unfamiliar with the technology. Those who used AHPS during flood events had positive feedback about its utility to their work, however. One EM noted that technology only works in situations in which power is fully functional, and that communication through bulletin boards and other means was still critical. Based on this feedback, and based on research about the importance of friend and family influence in emergency preparedness planning, NNF made "sharing weather alerts" a critical part of its campaign messages.

Recognizing that flood education is a critical public safety need throughout the country, NNF designed its materials, to the extent reasonable, to be usable outside the Delaware River Basin. NNF has received numerous requests and inquiries about expanding the teaching of this campaign to various regions, including the Passaic River Basin and more broadly, New Jersey areas. NWS staff from other parts of the

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country has already begun using our educational materials, and NNF is interested in helping other communities to increase their use of flood alerts and flood forecast and warning technologies, as well as broader flood education knowledge. During the campaign, NNF explained to communities the importance of knowing not only how to use flood alerts, but to understand the reasons why they should – namely that Floods Happen, but that communities can Lessen the Loss.

NNF has tapped the rich teaching of that simple phrase, and much more could be developed. NNF is interested in continuing to develop a rich body of materials about both the natural and beneficial functions of floodplains, as well as the methods of reducing loss. One area of this campaign that is ripe for further investigation is the theme, ***Flood Terrain: Know Your Land.*** This concept asks people to understand and investigate the terrain around their property to understand how their geographic location, including its natural and geological features, can contribute to their flood risk. NNF developed a large map of the Upper Delaware River basin that shows the various mountain uplifts, escarpments, creeks and river paths that make the area subject to repetitive flash flooding, and has incorporated this map into its video pieces to illustrate how physical formations can contribute to risk in ways that may not be obvious on floodplain maps or merely through proximity to major rivers and streams. Preliminary dissemination of this map has elicited strong interest from academic researchers as well as the Delaware River Basin Commission, which requested a version of the map for the main lobby of its headquarters.

Special Note of Thanks

NNF would like to thank the staff at the Middle Atlantic River Forecast Center, especially Peter Ahnert and Patricia Wnek, as well as the staff at the Mt. Holly, NJ and Binghamton, NY weather forecast offices, and Laurie Hogan, of the Northeast Regional Headquarters, for their excellent input and partnership on this project. Each of them freely shared their technical expertise and their creativity in the presentation of messages to public audiences, as well as their time in crafting specific messages, recording public service announcements (Gary Szatkowski and Peter Ahnert) and in sharing about successes and failures in past efforts at public education. This assistance proved tremendously helpful in streamlining our efforts.

In particular, Patti Wnek at the MARFC worked very hard to help disseminate our materials throughout NOAA and beyond, and helped draw large audiences to the site. We are very grateful for the support.