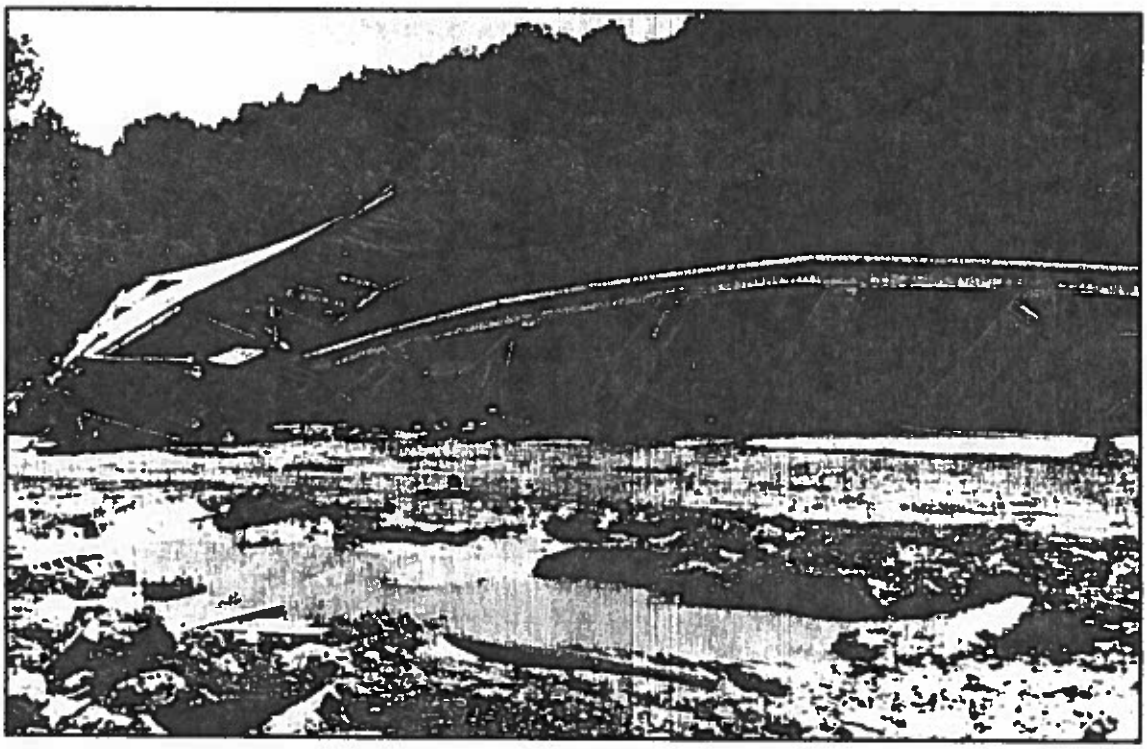
Natural Disaster Survey Report

SHADYSIDE, OHIO, FLASH FLOODS JUNE 14, 1990



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CHAPTER VI

PREPAREDNESS ACTIVITIES

The primary mission of the NWS is the issuance of severe weather warnings. However, the NWS also conducts a preparedness program to go beyond just the issuance of warnings in order to reduce the loss of life, injury and property damage resulting from natural disasters. Preparedness programs are usually composed of at least four major activities: (1) coordination with local agencies to establish good communications, (2) organization and training of severe weather spotter groups and rainfall observers, (3) identification of areas vulnerable to specific weather hazards, and (4) a public hazardous weather education program. Moreover, the successful accomplishment of these programs depends upon the initiatives of NWS personnel along with the interest and initiatives of local government officials, private organizations and the general public.

1. Coordination with Local Agencies to Establish Good Communications

Strong lines of communication are necessary between the NWS and local agencies (such as emergency management, law enforcement and the news media). These local agencies are often the first to either observe severe (including flooding) weather events or to receive severe weather reports from the public. NWS receipt of these severe weather reports provides "ground truth" which can verify previous warnings or be the basis for the issuance of new warnings.

On the other hand, local agencies must receive severe weather forecasts and warnings consistently from the NWS in order to respond to severe weather events. It is important that information flows freely in both directions between the NWS and these agencies.

The Akron NWS office mailed letters on March 1, 1990, to law enforcement agencies and fire departments throughout their CWA. These letters specifically requested dispatchers to call the Akron office whenever storm reports meeting certain criteria were received from either their personnel or from the public. The letter also contained phone numbers for the Akron office.

On the evening of the Shadyside flash flood, significant rainfall and urban and small stream flooding was occurring in other parts of Belmont County as well as in adjacent Jefferson County. Local authorities were aware of reports of heavy rain and of the flooding in these other areas but did not call the NWS.

Several means of communication are used to distribute NWS severe weather information in Ohio. NWS watches, warnings and statements are transmitted over NWR and NOAA Weather Wire Service (NWWS), and can be transmitted by telephone. However, the telephone is considered to be the least efficient and the least preferred of these methods due to the fact that only one person or agency can be contacted at a time.

NWS severe weather information in Ohio is retransmitted across a statewide law enforcement telecommunications system. The Belmont County Sheriff's Office receives watches, warnings and statements on this system. The Shadyside Police Department does not have access to the telecommunications system and, on the night of the flash flood, needed to rely on the radio/TV media and local amateur radio operators for any severe weather information.

The news media in southeast Ohio broadcast the flood watch in a timely manner. In fact, many of the residents interviewed along Wegee and Pipe Creeks were aware that a flood watch was in effect for their local area prior to the onset of the flooding. These residents stated they received the watch through television and commercial radio, but were not inclined to take any immediate action.

2. Organization and Training of Severe Weather Spotter Groups and Rainfall Observers

Severe weather spotter groups and rainfall observers can provide "ground truth" information during severe weather and heavy rain events and can also serve as a source of vital information for local short-fuse community action. In fact, many of the warnings issued by NWS offices are based upon such reports.

The Akron NWS office has a network of spotters covering their CWA which includes 15 counties in eastern Ohio. The Akron NWS office has a listing of eleven volunteer rainfall observers in Belmont County. However, none of the observers in Belmont County were situated in the areas which experienced the flash flooding. Moreover, as many as half of the volunteer observers in the county did not have rain gages.

Spotter training sessions have not been held in Belmont County nor have any been requested in recent years. Two spotter training sessions, however, were held in April 1988 in Steubenville, Jefferson County, immediately to the north of Belmont County at which residents in Belmont County were invited to attend.

3. Identification of Areas Vulnerable to Specific Weather Hazards

Most residents interviewed along the devastated creeks did not think flash floods of this magnitude were possible in their area. One local law enforcement officer said he did not believe the first flash flood reports during the event because he did not think it could happen.

Flash floods in southeastern Belmont County are rare. In fact, none of the residents interviewed on Wegee Creek could remember a significant flash flood during their lifetime. Several instances were recalled, however, of minor flooding of the road alongside the creek and flooding of Wegee Creek did occur in 1936 when the Ohio River backed up. One resident near Pipe Creek recalled a story from his father about a killer flash flood that had occurred on Pipe creek in 1896, but no official records of this event were found.

Although a flash flood warning from the NWS was not issued for Belmont County the evening of the Shadyside flood, a local governmental official stated that he did not think many people would have reacted to the warning due to the lack of knowledge of the immediate threat to life and property. At the very least, it seems that specific information in the body of the warning identifying the location and magnitude of the impending event would have been needed to have elicited an active response from residents in the path of the flash flood.

4. Public Severe Weather Education Program

Three children who were residents along Wegee Creek were asked if they had learned about flash flood safety in their schools. Each indicated they had learned about tornado and fire safety, but could not specifically recall any exposure to safety information related to flash floods.

The NWS and the State of Ohio participate in an aggressive public education program concerning weather hazards. However, due to the tornado outbreaks in 1974 and 1985, the majority of emphasis in public education awareness in recent years for central and southeast Ohio has been directed toward tornado and severe thunderstorm safety. A Tornado Safety Week for Ohio during March 25 through 31, 1990, continued this emphasis but also included some degree of flash flood preparedness. Letters were mailed to emergency management officials within the Akron NWS office's CWA on March 1, 1990, emphasizing the importance of preparedness and offering assistance in developing local preparedness plans.

Finding 6.1:

Residents of the area were unaware of the potential for devastating flash floods on Wegee and Pipe Creeks. This was based in part on no known history of previous severe flash flooding on these streams.

Recommendation 6.1:

The NWS should use this event to develop preparedness material to distribute to emergency managers and the media in similar communities to try to overcome the lack of awareness of flood potential and to promote better community preparedness. Also, lessons learned from this event should be used in educational material for schools and community outreach programs.

Finding 6.2:

The NWS has an active hazards awareness program in Ohio. However, emphasis in recent years has been directed primarily toward severe thunderstorm and tornado preparedness.

Recommendation 6.2:

Using the active preparedness program already in place in Ohio, continue to add emphasis on flash flood awareness and safety.

Finding 6.3:

Although letters and telephone contacts have been made to Belmont County officials by the MIC at the Akron NWS office, personal visits expressly for the purpose of conducting preparedness activities were not made in recent years.

Recommendation 6.3:

Within resources, preparedness-oriented visits should be made at least annually to each county in an office's CWA. This is particularly important for counties without active severe weather spotter groups or local flood warning plans in known flood-prone areas.

Finding 6.4:

Very little real-time information on flooding or heavy rains was relayed to the NWS by local officials. The NWS did not find out about the Shadyside flood until 2 a.m., EDT, on June 15, about 4 hours after the peak of the flood.

Recommendation 6.4:

A more effective method for relaying critical real-time information to the NWS from county and city officials is needed. At the very least, restricted phone numbers should be given to key local officials and be readily posted for their use in critical weather situations.

Moreover, local visits should be conducted annually, as resources permit, by a responsible NWS official to encourage making timely reports to NWS offices. It should be noted one goal of the NWS modernization is use new technology to improve two-way communications between NWS offices and local officials.

CHAPTER VII

DISSEMINATION

Dissemination of important weather information to the Shadyside area of southeast Ohio is primarily accomplished by the commercial media and by teletype and telephone fan-out through county and local official channels. NWS products, including the flood watch issued by WSFO Cleveland, were disseminated on AFOS to the Family of Services and on the NWWS. Local media broadcasting in the Shadyside area received the flood watch and promptly aired the information either by interrupting scheduled programming or via a "crawl" message. All media representatives interviewed commented favorably on the content of the flood watch.

Distribution to state and county officials in Ohio is achieved automatically through direct link via AFOS to the state law enforcement telecommunications system. During the evening of the flood, the flood watch was received by the Belmont County Sheriff's Office in St. Clairsville promptly after it was issued by WSFO Cleveland. The emergency management officials in Shadyside, on the other hand, were not linked directly to the state law enforcement telecommunications system and had to rely on telephone fan-out for dissemination from the county. However, emergency management officials in Shadyside were not contacted by Belmont County officials to notify them of the flood watch. Shadyside officials indicated that they were made aware of the flood watch through media broadcasts.

NWR reception is poor to non-existent in the Shadyside area, but broadcasts can be received by many people elsewhere in Belmont County. This area is on the reception fringe of the nearest transmitter and this is further complicated by the fact that most residents live in the valleys. On the day of the Shadyside flood, the Belmont County emergency management center's radio scanner with capability for receiving NWR was programmed to skip over the broadcast. In addition, other weather radios in the area were not equipped with the "tone alert" capability.

Interviews with residents indicated commercial radio and television was their source of weather information. Many said they received the flood watch on television before the flash flood began. Further interviews with representatives of the local media indicated they were satisfied with the timely information provided by the NWS prior to and during the event.

Information is also disseminated via the Emergency Broadcast System (EBS). Watches were triggered by EBS station WWVA-AM in Wheeling, West Virginia. Moreover watches and warnings issued by WSFO Pittsburgh at 8:54 p.m., 9:14 p.m., 11:24 p.m., and 11:28 p.m., EDT, were broadcast on WWVA-AM. WWVA's companion FM station, WOVK, went off the air due to storm related damage from 8:15 p.m., EDT, and returned to low power operation at 10:05 p.m., EDT. Subsequent re-broadcast of the EBS announcements occurred as weather break-ins to existing programming and/or as periodic weather updates.

WSTV-FM Steubenville indicated they used the high speed Associated Press news wire to receive weather information, and they were alerted by their radio "scanners" which received incidental calls for assistance.

WTOV-TV Wheeling-Steubenville interrupted programming both with a graphic crawl after receiving the watch and again at 9:56 p.m., EDT, when the staff meteorologist updated viewers using radar pictures. The same information was later aired during the late night news at 11 p.m., EDT.

People interviewed in the flood area indicated they saw a flood watch graphic crawl during WTOV-TV's broadcast of a basketball game or heard the announcement on WWVA-AM. Additionally, several people reported local power interruption of their home televisions.

Finding 7.1:

Dissemination of warning information from the NWS to the county level is automated in Ohio. Further dissemination from the county level to local authorities in communities like Shadyside, however, is by telephone from the county office. The Shadyside officials did not receive a notification of the flood watch from Belmont County officials. However, Shadyside officials knew of the watch through commercial television or radio stations.

Recommendation 7.1:

Local emergency management and law enforcement officials must be encouraged to establish timely fan-out procedures which reach all segments of the community that have a need to know critical weather watch and warning information. Routine tests of these procedures should be conducted and documented with the aid of the NWS.

Finding 7.2:

Little if any use was made of NWR in the flood area due in large part to the fact that NWR reception was poor to non-existent in the valleys around Shadyside.

Recommendation 7.2:

An NWR transmitter should be installed or relocated to provide adequate reception to this flood-prone area of southeast Ohio. Also, NWR coverage of flash flood-prone areas should be reviewed nationwide. Emergency management officials should be strongly encouraged to use an NWR with a "tone alert" device instead of relying on scanners in those areas able to receive NWR broadcasts.

Finding 7.3:

Dissemination of weather information by the local commercial media was found to be good. Many residents interviewed stated they knew a flood watch was in effect through television or radio reports, and a local television station relayed the watch through the use of crawls.

Recommendation 7.3:

Continue to encourage the local electronic media to subscribe to NWWS.