

Scale: 1:24,000. Contour interval: 40 feet. National Geographic Vertical Datum of 1985. Digital compilation by Russell H. Campbell and Peter Chivco. Edited by Elizabeth D. Kucner. Digital cartography by D. Paul Mathews and Jordan N. Mitchell.

- EXPLANATION OF MAP SYMBOLS**
- Debris-flow track
 - Flood erosion or deposition
 - Isobars (lines of equal precipitation amount) at 2-inch intervals
 - Storm track and selected time locations—Data collected at 6-minute intervals, eastern daylight saving time (EDT)
 - Boundary of study area
 - Boundary of Shenandoah National Park
 - Rainfall measurement location—Rainfall in inches
 - Location of figure

DISCUSSION

On June 27, 1995, an unusually severe storm wreaked havoc on a small area of about 50 square miles in Madison County, Virginia. During a period of about 16 hours, as much as 30 inches of rain fell in the area of maximum storm intensity, probably about 23 inches fell within a five-hour period over small areas. The results of this extreme rainfall event were: 1) mass wasting of steep hillslopes in the form of soil slides and slumps, rock slides, and numerous debris flows; 2) downstream flooding; and 3) consequent destruction of houses, roads, utilities, livestock, and crops. A general description of landslides and debris flow caused by the storm was reported by Wiczonek and others (1995). A preliminary inventory of the effects of the storm and the extent of the debris flows and floods in the area were reported by Wiczonek and others (1996). A more complete discussion of the debris flows resulting from the storm was reported by Morgan and others (1997). This map shows areas of debris flows, flood erosion and deposition resulting from the storm, and contours of storm rainfall totals (isobars) derived from measurements taken in the area and surrounding areas. The locations of these measurements are recorded on the map as are the approximate times of the position and track of the principal storm as reported by Smith and others (1996).



Figure 1—Time of impact: 10:00-11:30 EDT. (Photograph copyright by Kevin Lamb, published with permission.)

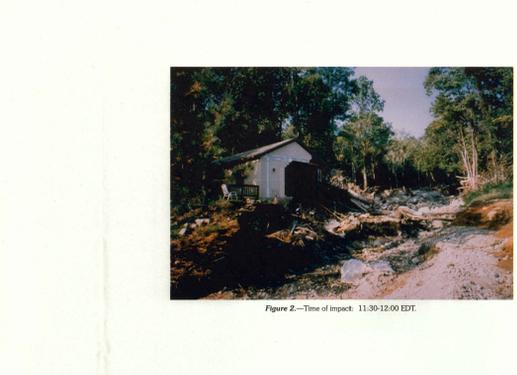
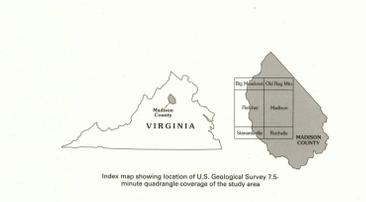


Figure 2—Time of impact: 11:30-12:00 EDT.



Figure 3—Times of impact: 11:30-11:45 to 13:00 EDT. (Photograph copyright by Kevin Lamb, published with permission.)

- REFERENCES CITED**
- Morgan, B.A., Wiczonek, G.F., Campbell, R.H., and Giori, P.L., 1998. Debris flow hazards in areas affected by the June 27, 1995, storm in Madison County, Virginia. U.S. Geological Survey Open-File Report 97-438, 15 p., 2 maps.
- Smith, J.A., Bank, M.L., and Steiner, Matthew, 1996. Catastrophic rainfall from an upstate thunderstorm in the central Appalachians: the Backus storm of June 27, 1995. *Water Resources Research*, v. 32, no. 10, p. 3099-3113.
- Wiczonek, G.F., Giori, P.L., Campbell, R.H., and Morgan, B.A., 1995. Landslide and debris flow hazards caused by the June 27, 1995, storm in Madison County, Virginia. U.S. Geological Survey Open-File Report 95-822, 14 p.
- Wiczonek, G.F., Morgan, B.A., Campbell, R.H., Orendorf, R.C., Burton, W.C., Southworth, C.S., and Smith, J.A., 1996. Preliminary inventory of debris flow and flooding effects of the June 27, 1995, storm in Madison County, Virginia, showing time sequence of positions of storm cell centers. U.S. Geological Survey Open-File Report 96-13, 8 p., 1 map.



MAP OF RAINFALL, DEBRIS FLOWS, AND FLOOD EFFECTS OF THE JUNE 27, 1995, STORM IN MADISON COUNTY, VIRGINIA

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