

1976 Big Thompson Flood, Colorado

In the early evening of July 31, 1976, a large stationary thunderstorm released as much as 7.5 inches of rainfall in about an hour (about 12 inches in a few hours) in the upper reaches of the Big Thompson River drainage. This large amount of rainfall in such a short period of time produced a flash flood that caught residents and tourists by surprise. The immense volume of water that churned down the narrow Big Thompson Canyon scoured the river channel and destroyed everything in its path, including 418 homes, 52 businesses, numerous bridges, paved and unpaved roads, power and telephone lines, and many other structures. The tragedy claimed the lives of 144 people. Scores of other people narrowly escaped with their lives.

The Big Thompson flood ranks among the deadliest of Colorado's recorded floods. It is one of several destructive floods in the United States that has shown the necessity of conducting research to determine the causes and effects of floods. The U.S. Geological Survey (USGS) conducts research and operates a Nationwide streamgage network to help understand and predict the magnitude and likelihood of large streamflow events such as the Big Thompson Flood. Such research and streamgage information are part of an ongoing USGS effort to reduce flood hazards and to increase public awareness.



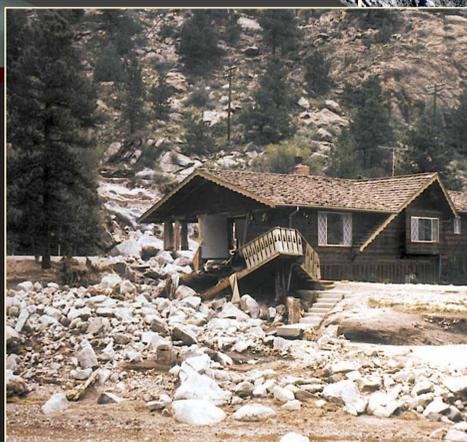
Damaged and destroyed homes along the Big Thompson River. This photograph was taken from the hillside looking downstream at Drake. The river flow is from bottom right to top center.



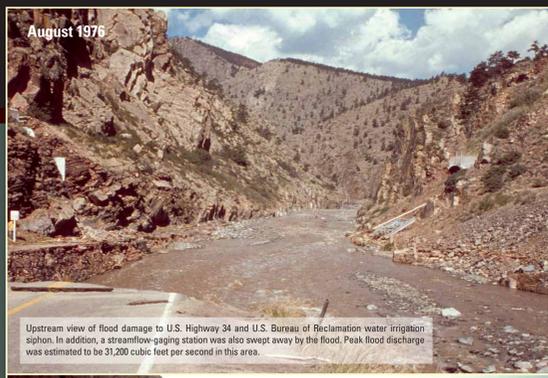
Damaged car and house at the confluence of the North Fork Big Thompson and Big Thompson Rivers in Drake.



Remains of an automobile flattened and wrapped around a large boulder in the North Fork Big Thompson River about 4.5 miles upstream from Drake. Flow is from right to left. The U.S. Army Corps of Engineers removed 137 flood-damaged vehicles in the North Fork Big Thompson and Big Thompson Rivers.

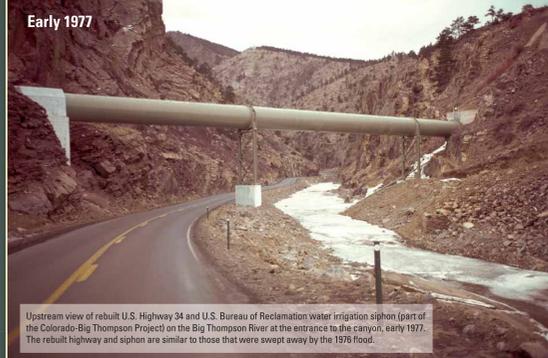


This house was built on an alluvial fan that was produced by sediment discharged from a side canyon. Floodwaters from the side canyon crashed part of the house and pushed it about 4 feet off its foundation. Mile 51.1, Big Thompson River.



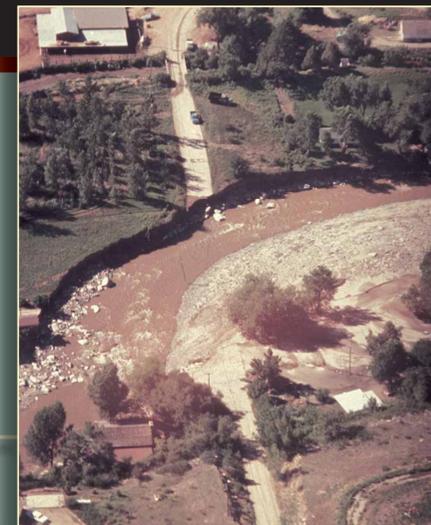
August 1976

Upstream view of flood damage to U.S. Highway 34 and U.S. Bureau of Reclamation water irrigation siphon. In addition, a streamflow-gaging station was also swept away by the flood. Peak flood discharge was estimated to be 31,200 cubic feet per second in this area.



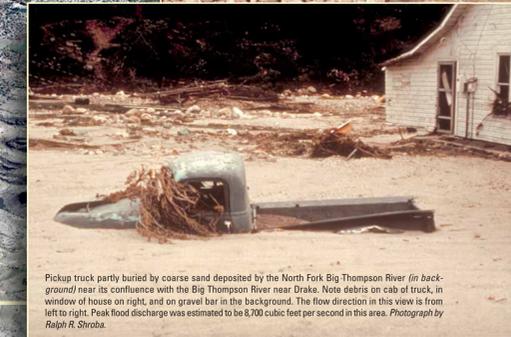
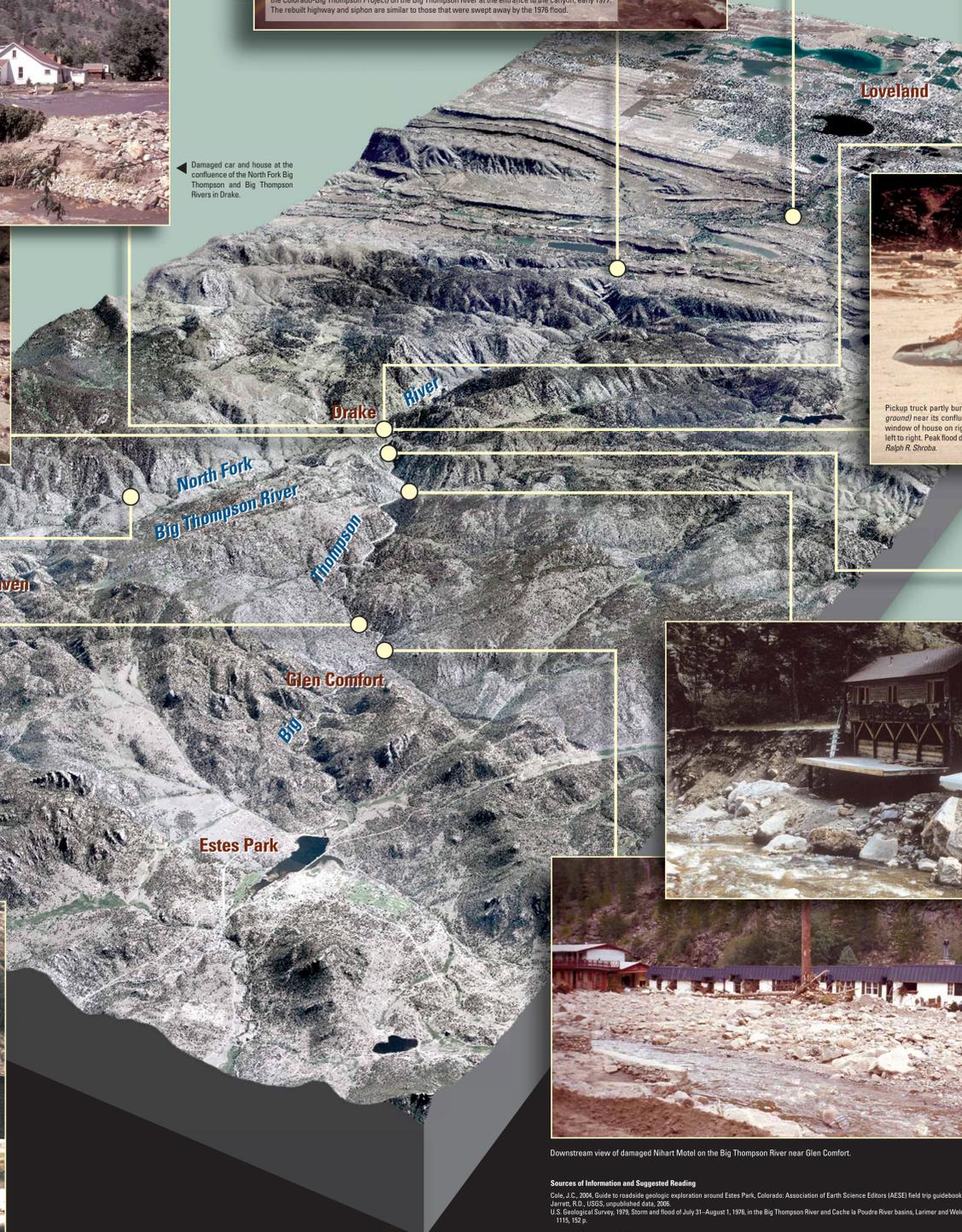
Early 1977

Upstream view of rebuilt U.S. Highway 34 and U.S. Bureau of Reclamation water irrigation siphon (part of the Colorado-Big Thompson Project) on the Big Thompson River at the entrance to the canyon, early 1977. The rebuilt highway and siphon are similar to those that were swept away by the 1976 flood.

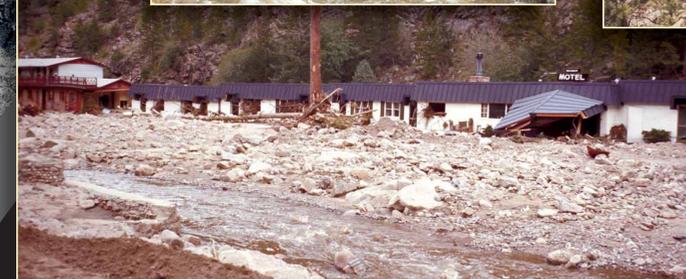
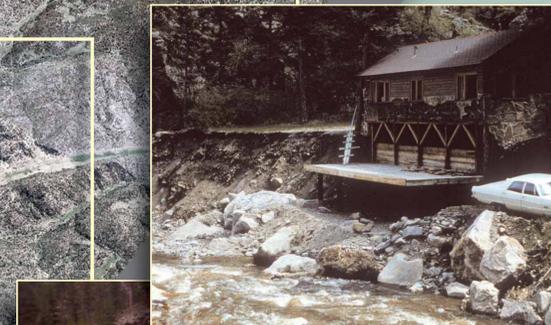


Bridge washout on the Big Thompson River near Loveland as seen from a helicopter. Flow is from right to left.

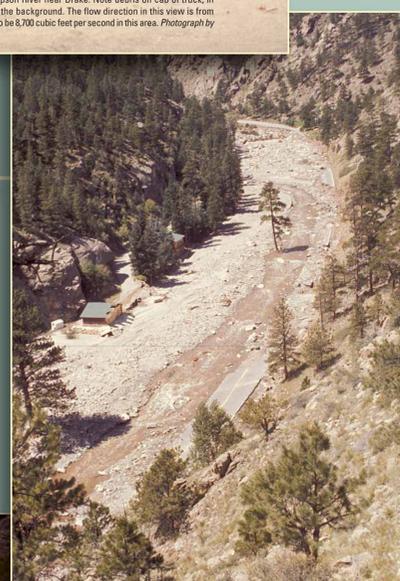
Upstream view of flood-displaced house that is lodged on a bridge. About 0.5 mile downstream from Drake. Peak flood discharge was estimated to be 26,100 cubic feet per second in this area.



Pickup truck partly buried by coarse sand deposited by the North Fork Big Thompson River (in background) near its confluence with the Big Thompson River near Drake. Note debris on cab of truck, in window of house on right, and on gravel bar in the background. The flow direction in this view is from left to right. Peak flood discharge was estimated to be 8,700 cubic feet per second in this area. Photograph by Ralph R. Shroba.



Downstream view of damaged Nihart Motel on the Big Thompson River near Glen Comfort.



(Above, Left) Downstream view of house and debris fan that were eroded during the Big Thompson Flood. Radiocarbon dates of three such truncated fans were used to indicate the rare occurrence of a flood the size of the 1976 flood. Until the 1976 flood, the fans had remained undisturbed for 6,600 to 10,400 years. Photograph by John Costa, USGS.

(Above, Right) Upstream view of Big Thompson River flood damage to U.S. Highway 34 upstream from Drake. The U.S. Geological Survey estimated the flood's peak discharge to be 26,200 cubic feet per second in this area. Flow is from top to bottom.

Source of Information and Suggested Reading
Cole, J.C. 2004. Guide to multimedia geologic exploration around Estes Park, Colorado: Association of Earth Science Editors (AESS) field trip guidebook for 2004 AESS annual meeting, 22 p.
Jarrett, R.D., USGS unpublished data, 2008.
U.S. Geological Survey, 1979. Storm and flood of July 31-August 1, 1976, in the Big Thompson River and Cache la Poudre River basins, Larimer and Weld Counties, Colorado: U.S. Geological Survey Professional Paper 1116, 152 p.
For more information on USGS science: <http://www.usgs.gov>
USGS Surface Water News: <http://water.usgs.gov/news/>
National Flood Summary Information: <http://is.water.usgs.gov/Kanana/floodsummary>
This poster (General Information Product 35) and other publications can be ordered from the USGS Store at <http://store.usgs.gov> or call 1-888-ASK-USGS (1-888-275-8747).

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