

FLOODING FROM THE 1938 NEW ENGLAND HURRICANE



The "Long Island Express" was first detected over the tropical Atlantic on September 13, although it may have formed a few days earlier. Moving generally west northwestward, it passed to the north of Puerto Rico on the 18th and 19th, likely as a category 5 hurricane. It turned northward on September 20 and by the morning of the 21st it was 100 to 150 miles east of Cape Hatteras, North Carolina. At that point, the hurricane accelerated to a forward motion of 60 to 70 mph, making landfall over Long Island and Connecticut that afternoon as a Category 3 hurricane. The storm became extra tropical after landfall and dissipated over southeastern Canada on September 22.

Blue Hill Observatory, Massachusetts measured sustained winds of 121 mph with gusts to 183 mph (likely influenced by terrain). A U.S. Coast Guard station on Long Island measured a minimum pressure of 27.94 in. Storm surges of 10 to 12 ft inundated portions of the coast from Long Island and Connecticut eastward to southeastern Massachusetts, with the most notable surges in Narragansett Bay and Buzzards Bay. Heavy rains before and during the hurricane produced river flooding, most notably within the Connecticut, Thames, and Merrimack River Basins.

This hurricane struck with little warning and was responsible for 600 deaths and \$308 million in damage in the United States.



Hartford, Conn.

When New Englanders think of September 1938, what comes to mind is the great hurricane that struck. It certainly was a major hurricane, producing winds over 100 mph from New London to Fall River and causing a massive amount of

wind damage. In addition, the storm produced major flooding, much of the flooding occurring in the same areas that had record breaking flooding only two years prior in March 1936.

The initial cause of the flooding was not however the hurricane. The rains produced with the hurricane took an existing minor or moderate flood that was already occurring and created the major flooding that eventually occurred in 1938. Rainfall of over an inch occurred on both September 12 and September 15. This did not cause any significant flooding, but it did cause some rises in river levels, groundwater levels, and soil moisture. The stage was set. On September 17-20, a large frontal system produced more than 6-inches of rainfall. This rainfall was sufficient to produce minor to moderate flooding, particularly over many tributary rivers throughout New England. This was followed by the hurricane on September 21 that again produced widespread areas of 6-inch rainfall. The area of maximum precipitation for the entire 5-day period fell over the Thames River basin in eastern Connecticut where areas of over 13 inches of rainfall were recorded. Isolated reports of over 17 inches were also received. The Quinebaug River in the Thames drainage was particularly hard hit. Many of the tributary rivers to the Connecticut River also saw record flows, notably on the Deerfield, Millers, and Chicopee. The resultant flow on the Connecticut River, although not as high as

recorded in 1936, produced major flooding. Within the Merrimack River basin, approximately 10-inches of rain fell as a basin average with some areas also receiving upwards of 17-inches. Eastern portions of the basin only experienced minor flooding, while western tributaries experienced floods approaching, or in some areas exceeding, the severity of the March 1936 flood. The table below shows a selection of areas that were particularly hard hit during the 1938 storm.

No Corps of Engineers flood control dams were constructed prior to this flood event. It was this storm, as well as the previous flood of March 1936, that was the reason for Congress to authorize the Corps of Engineers in New England to begin to design and construct flood control dams. If the 1938 flood were to occur today, the Corps existing infrastructure of 16 flood control dams within the Connecticut River Basin, and 5 flood control dams within the Merrimack River Basin, would have the following result:

Location	Peak Observed (cfs)	Peak Modified (by Corps Dams)
Conn. River at Montague City, MA	195,000	151,800
Merrimack River at Lowell, MA	121,000	66,000

Stream gage Data

River	Location	Flow	cfs/sq mile	Stage
Merrimack	Lowell	121,000 cfs	26.1 csm	--
Contoocook	Penacook	42,400 cfs	55 csm	--
Shetucket	Willimantic	52,200 cfs	129 csm	27.6 ft
Quinebaug	Putnam	20,900 cfs	64 csm	19.5 ft
Deerfield	Charlemont	56,300 cfs	156 csm	20.2 ft *
Connecticut	Thompsonville	236,000 cfs	24 csm	14.4 ft
Connecticut	Hartford	232,000 cfs	22 csm	35.4 ft
Farmington	Tariffville	29,900 cfs	52 csm	14.0 ft
Millers	Erving	29,000 cfs	78 csm	13.4 ft *

Note: * represents flood of record