

Spring Floods of 1987



Knightville Dam, Westfield River, Huntington, Massachusetts

A pair of spring storms occurring in March and April 1987 combined with snowmelt to produce record or major flooding Maine, New Hampshire, and Massachusetts. Fortunately, the heaviest rains for the two storms did not fall over the same area or else more hazardous flooding could have occurred.

February and March had generally been clear and dry. In the days prior to the first storm, temperatures throughout New England had generally been in the 50s and lower 60s. The result was that in southern New England, much of the snowpack from December and January had disappeared except in the higher hills. In Maine however, fairly significant snowpack was still present in many area and the warming temperatures had produced a snowpack ripe for melting. Five to 6 inch snow water equivalents were not uncommon, with some measurements still of 10 inches being recorded at the end of

March.

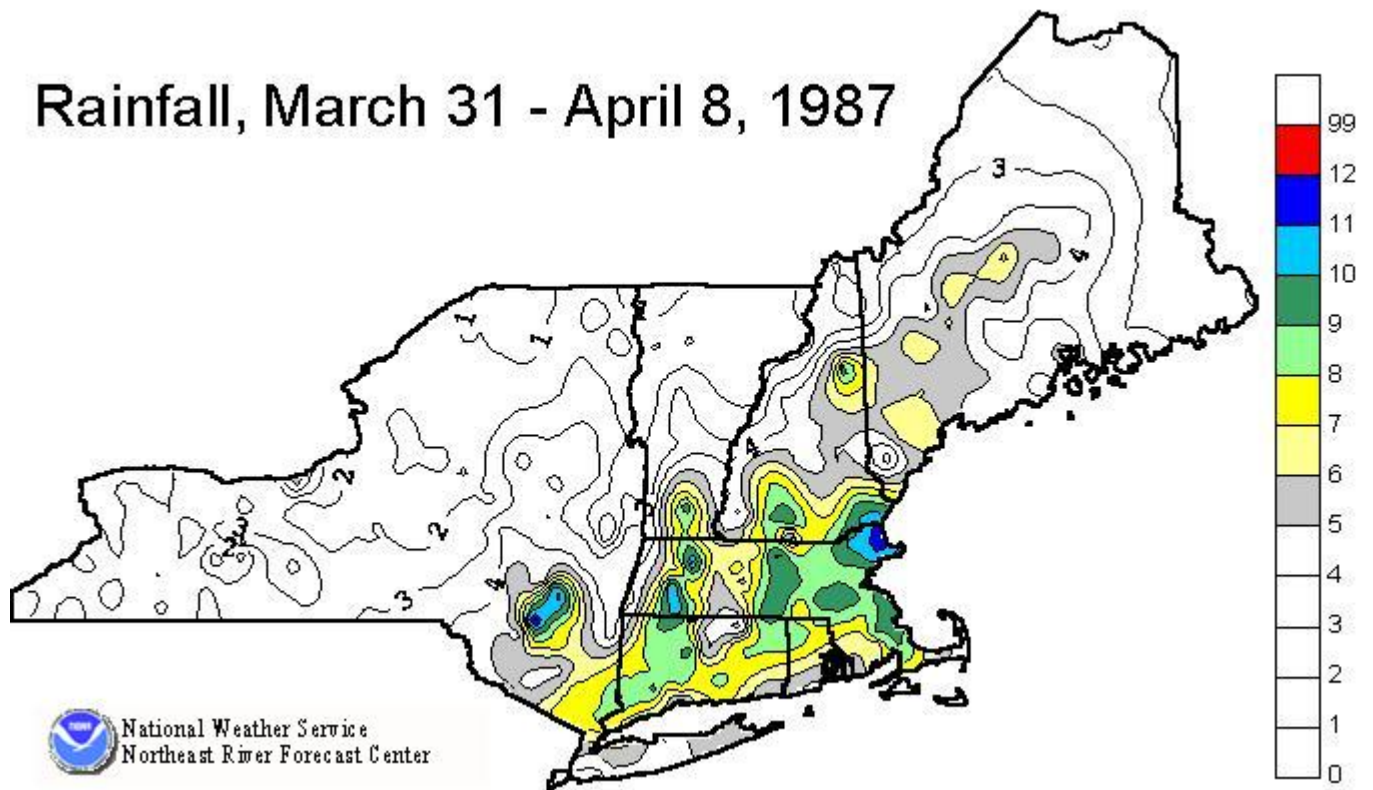
A storm that had lashed the Midwest with heavy snow and winds over the Midwest United States spun off a slow moving low-pressure system that moved across New England. The southeasterly winds produced significant orographic enhancement in the mountains of Maine and New Hampshire significantly increasing the precipitation totals on the east side of these mountain ridges. The highest rainfall accumulations recorded were 8.30 inches at Pinkham Notch, New Hampshire, and 7.3 inches at Blanchard Maine.

The results of this first storm were mainly focused on Maine. The Kennebec River basin was most severely impacted with record flows on the mainstem and its primary tributaries -- the Carrabassett, Sandy, and Sebasticook. The Piscataquis River experienced flows 50% greater than any measured before. Many other rivers in Maine -- Penobscot, Saco, and Androscoggin -- all suffered significant flooding; however, flows were generally below records that had occurred earlier in the century. Total damages in Maine from this first storm were estimated at 74.5 million dollars. Amazingly, only one flood related death was known to occur. In addition to the major flooding in Maine, moderate flooding also occurred within the Merrimack River basin as well the Connecticut River basin

The second storm, following only a few days after the rains from the first storm ended, missed Maine, but delivered tremendous amounts of rain to New Hampshire and Massachusetts. Generally 4 to 7 inch rains occurred over much of this area. Amounts over 8 inches were recorded at stations in northwest Massachusetts as well as along the northeast Massachusetts coast. This rainfall, combined with the already high river conditions caused by the previous storms, produced major flooding in both the Connecticut and Merrimack River basins. However, recorded stages were generally less than those recorded during one or two of the larger events this century. In addition,

several of the Corps of Engineers dams recorded record pool levels, even including uncontrolled spillway flood at six locations.

Rainfall, March 31 - April 8, 1987



During this flood event, six Corps of Engineers flood control dams experienced spillway discharge at Knightville, Ball Mountain, Townshend, Surry Mountain, Otter Brook, and Ed MacDowell Dams. This was such a widespread flood; all Corps dams utilized significant flood control storage. Connecticut River Basin dams utilized between 70% and 100+% storage, Merrimack Basin dams between 80% and 100+%, Thames dams between 45% and 60%, Blackstone dams about 70%, and Naugatuck dams between 30% and 40% storage.

Along the mainstem Connecticut and Merrimack River, Corps dams were effective in mitigating flood flows as follows:

Effect of Corps Dams

Location	Peak Observed (cfs)	Peak Natural (cfs)	% Effective
Conn. River at Montague City, MA	128,000	160,000	20
Merrimack River at Lowell, MA	84,700	103,000	18

Streamgage Data

River	Location	Flow	cfs/sq mile	Stage
Piscataquis	Dover-Foxcroft	33,000 cfs	111 csm	22.6 ft *
Penobscot	Eddington	153,000 cfs	20 csm	23.6 ft *
Kennebec	North Sidney	222,000 cfs	41 csm	39.4 ft *
Carrabassett	North Anson	41,000 cfs	116 csm	25.9 ft *
Androscoggin	Auburn	102,000 cfs	31 csm	23.7 ft
Saco	Conway	43,000 cfs	112 csm	17.1 ft
Pemigewasset	Plymouth	48,100 cfs	77 csm	23.4 ft
Concord	Lowell	5410 cfs	18 csm	9.6 ft *
Merrimack	Lowell	84,700 cfs	19 csm	57.2 ft *
Ipswich	Ipswich	3550 cfs	27 csm	9.4 ft *
Deerfield	W Deerfield	61,700 cfs	111 csm	17.7 ft *
North	Shattuckville	15,300 cfs	172 csm	11.2 ft *
Connecticut	Montague	128,000 cfs	16 csm	35.9 ft

Note: * represents a record flood at this location