

## Appendix I: Flood Events in the Past 100 Years

Date	Location	Event Details	Extent of Damages
06/25/2013— 07/11/2013 (DR-4140 VT)	Orange, Rutland and Windsor Counties; Statewide	A series of heavy rain events caused localized flooding over a two week period.	Route 100 through the Granville Gulf sustained flood damage. \$2,818,588.95 in Public Assistance funding obligated for this disaster declaration period.
08/28/2011 (DR 4022 VT for period of 8/26/2011 – 9/2/2011) Tropical Storm Irene	Addison, Rutland, Orange and Windsor Counties; Statewide	Tropical Storm Irene moved across southeast New York and southwest New England during the morning hours of August 28th and then proceeded to track north along the Connecticut River Valley in Vermont during the afternoon and evening. The main impact from Irene was widespread, devastating flooding, especially for central and southern Vermont. Widespread rainfall amounts of 3-5" occurred across Vermont with 5 to 7+ inches across much of southern, central Vermont and elevations above 1000 feet along the spine of Vermont's Green Mountains and the Worcester range. Flooding along Wells River was extensive, isolating Wells River Village VT. Flooding along the Waits River caused widespread flooding through Corinth VT and downstream to Bradford VT. Heavy rainfall caused devastating flooding along the White and Ottauquechee River and their tributaries. Homes, businesses, and roads were flooded throughout Windsor county. The White River at West Hartford crested at 28.40 feet, about a foot below the record crest of 29.30 feet set in the great flood of 1927."	This flood event will likely rank second to the November 1927 flood in the scope of meteorological and hydrological conditions/impacts as well as loss of life (84 in 1927), but likely first in monetary damage ((approx. \$500 million statewide vs. \$350 million (1927 in 2010 dollars)). There were nearly 2400 roads, 800 homes/businesses, 300 bridges and a half dozen railroad tracks destroyed or damaged from the flooding caused by Irene. Several homes and businesses as well as farms suffered tremendous losses to crops and livestock. A number of towns isolated: Pittsfield, Rochester, Hancock, Granville, and Stockbridge. In the TRORC region, there was extensive flood damage to Routes 4, 12, 12A, 100, 107, 110, 125. County-wide damage from flooding: Addison (\$3.5 million), Orange (\$5 million), Rutland (\$12.5 million) and Windsor (\$35+ million).



**FLOOD EVENTS IN THE PAST 100 YEARS** *(continued)*

Date	Location	Event Details	Extent of Damages
05/26/2011 – 05/27/2011 (DR-4001 VT)	Orange County; Central and northern Vermont	A surface low as well as upper atmospheric energy traveled along a quasi-stationary boundary across northern New York and Vermont during the afternoon and evening of May 26th. The air mass ahead of this boundary was moderately to largely unstable and the combination lead to numerous reports of damaging winds and very large hail (up to 2.5 inches in diameter)25,000+ customers lost power during these storms. Straight-line winds in Orange County. 3 -5"+ of rainfall and severe flash flooding and resultant river flooding.	\$10,581,798.62 in Public Assistance funds obligated.
07/21/2008 - 08/12/2008 (DR-1790 VT)	Addison, Orange and Windsor Counties; Statewide	08/06/2008—Training showers and thunderstorms with very heavy rain across portions of the southern Green Mountains as well as northeast Vermont during the morning into early afternoon hours. 3-5" of rain causing severe localized flash flooding. Robbins and the Hancock Branch of the White River in Hancock were the source of flooding downstream. 08/07/2008—additional slow-moving storms and flooding.	8/6/2008—Numerous road and bridge washouts. The Town of Hancock was particularly hard hit—flood waters caused the failure of the Killoleet Dam and washed out the intersection of Routes 100 and 125. Flash flooding later occurred in Rochester. Portions of Route 100 were flooded in Stockbridge and the road was closed to traffic. 08/07/2008—more scattered flash flooding in Corinth, Chelsea, Sharon (floodwaters covered bridge on Faybrook Road) and in West Norwich. \$4,569,910.02 obligated for DR-1790 VT.
07/09/2007 - 07/11/2007 (DR-1715 VT)	Orange and Windsor Counties. Specific towns referenced include: Braintree, Randolph, Bethel, Stockbridge, Brookfield, Hartland, and Norwich.	A series of severe storms produced high winds, lightning hail and heavy rains. Flash flooding resulted. 5.27" reported in Bethel.	Damage to numerous roads in the region: Routes 12 and 14 washed out in Randolph; Lilliesville Road, River Road, Routes 100 and 107 in Stockbridge and Bethel. Camp structures damaged in area off of Lilliesville Road. \$4,905,985.03 Public Assistance funds obligated for disaster.



**FLOOD EVENTS IN THE PAST 100 YEARS** *(continued)*

Date	Location	Event Details	Extent of Damages
04/15/2007 - 04/21/2007 (DR-1698 VT)	Windsor, Rutland and Orange Counties; Statewide	Severe storms caused heavy rain, snow and high winds. Rain combined with snowmelt caused flooding in the region. Snowfall 4-7" in valleys throughout the county; 13" fell in Randolph.	Nearly \$3.6 million obligated for public infrastructure damages.
09/16/1999 - 09/21/1999 (DR-1307 VT) Remnants of "Hurricane Floyd"	Windsor Rutland and Orange Counties; Statewide	Very large storm—580 mile diameter. Made landfall in North Carolina as a Category 2 hurricane where it dumped up to 20" of rain. 4-7" of rain and strong winds across the state of Vermont. However, due to the dry conditions in Vermont at the time, much of the rain was soaked up and/or flood water dissipated quickly. At a result, flood damage was isolated. <sup>1</sup>	57 deaths attributed to Hurricane Floyd overall, and 1 in Vermont. At the time, the deadliest and most costly hurricane since Hurricane Agnes in 1972. Property damage set at \$1.325 billion. In Vermont, \$1,010,652.61 obligated in Public Assistance grants.
06/27/1998 (Included within DR-1228 VT for the period between 06/17/1998—07/13/1998)	Towns of Randolph and Hartford; Orange and Windsor Counties; Upper Connecticut River Valley; northern and central parts of Vermont and New Hampshire	3-6" of rain. Heaviest rain from Bristol, Vermont on western side of the Green Mountains to Bradford, Vermont to the east. Flash flooding occurred along Connecticut River basins in central Vermont on 06/27/1998. Ayers Brook in Randolph peaked at 4,200 cfs (flow greater than the 100-year flood). The White River in West Hartford was flowing at 34,500 cfs (between a 10 year and 25 year event). Wells River flowing at 989 cfs; Ottauquechee River near West Bridgewater flowing at 542 cfs. <sup>2</sup>	Damage localized. The Town of Randolph was particularly hard hit.
08/09/1976—08/10/1976 Remnants of "Hurricane Belle"	Town of Plymouth; statewide	Struck Long Island as a Category 1 hurricane. Skirted the Vermont/New Hampshire border and was considered a minor storm upon arrival. <sup>3</sup> For some areas of Vermont, the precipitation was very heavy and caused extensive flooding.	Road, culvert and bridge damage in Vermont. 10 associated deaths. Caused \$100 million in damages (1976 dollars)



## FLOOD EVENTS IN THE PAST 100 YEARS *(continued)*

Date	Location	Event Details	Extent of Damages
07/06/1973 (DR-397 VT)	Town of Plymouth; Windsor County; statewide	A west moving frontal system and a moist, southeasterly flow from the Atlantic Ocean joined to produce heavy precipitation in some parts of the state not seen since 1927. <sup>4</sup> 5-8" in Windsor County. Connecticut River at Wells River flowing at 57,100 cfs; Wells River flowing at 5970 cfs.	Three people killed in Vermont. Damage estimated at \$64 million— including extensive damage to crop land and \$10 million in state highway damage. <sup>5</sup> State declared disaster (DR-397 VT).
09/21/1938 "The New England Hurricane of 1938"	Vermont; New England and New York	A Category 5 hurricane, made landfall on Long Island as a Category 3. Hit Vermont as a Category 1. Peak flow on the Black River exceeded the peak flow from the 1927 flood. <sup>6</sup>	Total damage: \$4.5 billion (2007 dollars). Death toll at 682, in New England—564 estimated deaths. Demolished tens of thousands of homes. 2 billion trees lost in NY and New England. <sup>7</sup> In Vermont, 5 dead and hurricane-force winds damaged trees, buildings and power lines. 2,000 miles of public road blocked.
11/03/1927— 11/04/1927 "The Great Flood of 1927"	Statewide, significant rainfall in the TRORC region.	10" of heavy rain fell on frozen ground, caused by remnants of a tropical storm. Flooding in the White River valley was particularly violent, with an estimated 120,000 to 140,000 cubic feet per second (cfs) recorded at West Hartford, Vermont, however, the hardest hit area was likely the Winooski Valley. Areas specifically impacted (with town specific data): Bethel, Chelsea, Hartford, Randolph, Sharon, Stockbridge/Gaysville, and Woodstock.	84 people killed, including the Lieutenant Governor. 1,285 bridges lost. Hundreds of miles of road and railroad track wiped out. Many homes and buildings destroyed (10,000 people left homeless). After the flooding, the U.S. Army Corps of Engineers constructed 3 flood retention reservoirs and dams in Vermont.

## Appendix I Endnotes

1. [?id=IvztCLB6g\\_gC&pg=PA11&lpg=PA11&dq=hurricane+floyd+vermont&source=bl&ots=vbywiC\\_QomVsZJlZgu73QtYFjtAJudXp8&hl=en&sa=X&ei=nzXUUozlOIqwsQT4oICYDA&ved=oCHYQ6AEwDQ#v=onepage&q=hurricane%20floyd%20vermont&f=false](https://www.water.usgs.gov/whatsnew/newsreleases/floods/flood.jun27.98.html)
2. <http://nh.water.usgs.gov/WhatsNew/newsreleases/floods/flood.jun27.98.html>
3. <http://www.purocleanvt.com/hurricane-season-in-vermont-what-are-the-chances/>
4. <http://md.water.usgs.gov/publications/wsp-2375/vt/>
5. <http://md.water.usgs.gov/publications/wsp-2375/vt/>
6. <http://md.water.usgs.gov/publications/wsp-2375/vt/>
7. <http://www.islandnet.com/~see/weather/almanac/arc2008/almo8sep3.htm>