

CHAPTER 8

FLOOD

Flooding can and has caused significant damage in Wyoming and are one of the more significant natural hazards in the state (**Figure 8.1**). It can cause millions of dollars in damage in just a few hours or days. Every county and many communities in the state have experienced some kind of flooding after spring rains, heavy thunderstorms, winter snow thaws, or ice jams.

A flood, as defined by the National Flood Insurance Program (NFIP), is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of waters, unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow. Floods can be slow or fast rising, but generally develop over a period of many hours or days.

Floods can also occur with little or no warning and can reach full peak in only a few minutes. Such floods are called flash floods. A flash flood usually results from intense storms dropping large amounts of rain within a brief period. Floods can occur for reasons other than precipitation or rapidly melting snow. They can also occur because of ice jams or natural and man-made dam failures, both of which have occurred in Wyoming.

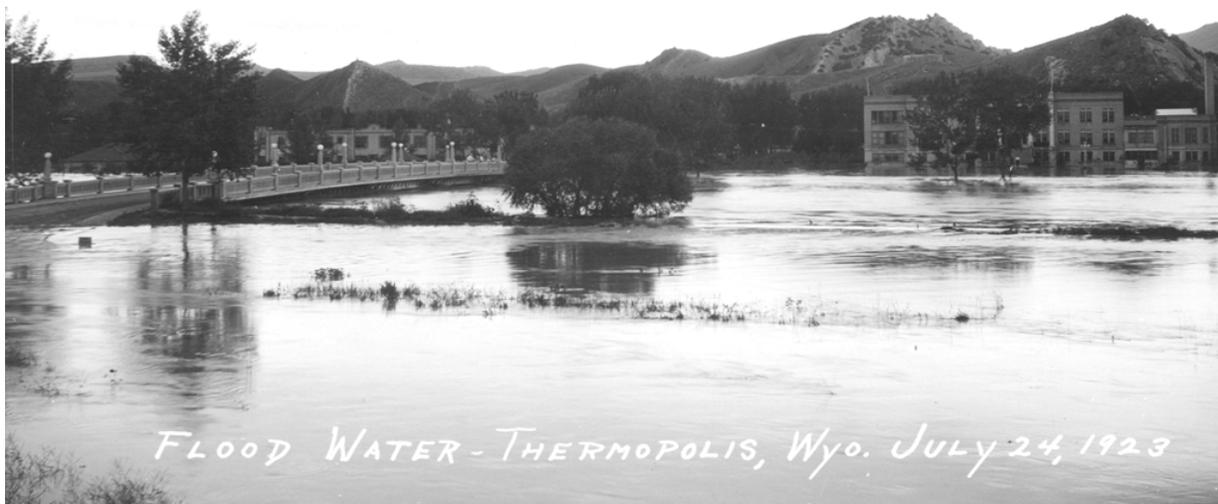


Figure 8.1—Big Horn River at Thermopolis, July 24, 1923. Photograph courtesy of Wyoming State Archives.

Presidential Disaster Declarations – Floods

Wyoming: 1923-2010

<u>Number</u>	<u>Declared</u>	<u>State</u>	<u>Description</u>
1923	07/14/2010	Wyoming	Flooding
740	08/07/1985	Wyoming	Severe Storms, Hail, Flooding
557	05/29/1978	Wyoming	SEVERE STORMS, FLOODING, MUDSLIDES
155	07/04/1963	Wyoming	Heavy Rains, Flooding

State-Level Emergencies (Flood) 2005-2010

Date	Case #	Duration (days)	Location	Event Type	Resource Used	Total Costs	Notes
5/3/2005	05-0002	1	Diamondville	Flood	CAP	\$ 377.92	Photographic mission to assess the extent of flooding expected (<i>Gorny report</i>)
5/11/2005	05-0004	5	Sheridan County	Flood	Nat'l Guard	\$ 333,881.58	WANG, Honor Farm, City of Sheridan, Sheridan County (<i>Gorny report</i>)
6/6/2005	05-0009	9	Albany County Goshen County	Flood	Honor Farm & Guard	\$ 2,850.00	Costs are pmt to Honor Farm only - no cost info avail for Guard. Incident participation was used to replace a drill previously scheduled for Laramie area (<i>Gorny report</i>)
8/15/2006	06-0019	2	(LaGrange)	Flood	CAP	\$ 122.72	Aerial recon
5/20/2008	08-0010	3	Baggs	Flood	Nat'l Guard	\$ 30,705.72	Guard sandbagging, MSV#2
7/3/2009	070609		Natrona County	Flood	WOHS	\$ 21,147.41	State Disaster Declaration

Flood Analysis Provided to the Wyoming Counties

Planning level flood loss estimates were made available for every county in Wyoming with the 2010 update to the Wyoming Hazard Mitigation Plan. FEMA used HAZUS-MH MR2 to model the 100-year floodplain and perform associated building and population risk assessments. HAZUS-MH is FEMA's GIS-based natural hazard loss estimation software. The HAZUS-MH flood model results included analysis for each of the 23 counties modeling streams draining a 10 square mile minimum drainage area, using 30 meter (1 arc second) Digital Elevation Models (DEM). Hydrology and hydraulic processes utilize the DEMs, along with flows from USGS regional regression equations and stream gauge data, to determine reach discharges and to model the floodplain. Losses are then calculated using HAZUS-MH national baseline inventories (buildings and population) at the census block level.

HAZUS-MH produces a flood polygon and flood-depth grid that represents the 100-year floodplain. The 100-year floodplain represents a flood that has a 1% chance of being equaled or exceeded in any single year. While not as accurate as official flood maps, these floodplain boundaries are available for use in GIS and could be valuable to communities that have not been mapped by the National Flood Insurance Program. HAZUS-MH generated damage estimates are directly related to depth of flooding and are based on FEMA's depth-damage functions. For example, a two-foot flood generally results in about 20% damage to the structure (which translates to 20% of the structure's replacement value). The HAZUS-MH flood analysis results provide number of buildings impacted, estimates of the building repair costs, and the associated loss of building contents and business inventory. Building damage can cause additional losses to a community as a whole by restricting the building's ability to function properly. Income loss data accounts for losses such as business interruption and rental income losses as well as the resources associated with damage repair and job and housing losses.

Potential losses derived from HAZUS-MH used default national databases and may contain inaccuracies; loss estimates should be used for planning level applications only. The damaged building counts generated are susceptible to rounding errors and are likely the weakest output of the model due to the use of census blocks for analysis. There could also be errors and inadequacies associated with the hydrologic and hydraulic modeling of the HAZUS-MH model. In rural Wyoming, census blocks are large and often sparsely populated or developed; this may create inaccurate loss estimates. HAZUS-MH assumes population and building inventory to be evenly distributed over a census block; flooding may occur in a small section of the census block where there are not actually any buildings or people, but the model assumes that there is damage to that block. In addition, excessive flood depths may occur due to problems with a DEM or with modeling lake flooding. Errors in the extent and depth of the floodplain may also be present from the use of 30 meter digital elevation models. HAZUS-MH Level II analyses based on local building inventory, higher resolution terrain models, and DFIRMs could be used in the future to refine and improve the accuracy of the results.



Cheyenne during a rain storm, curb and gutter flooding near Carlson Street – August 2008



Lincoln County Flood, 1983



Encampment Flood, June 2008

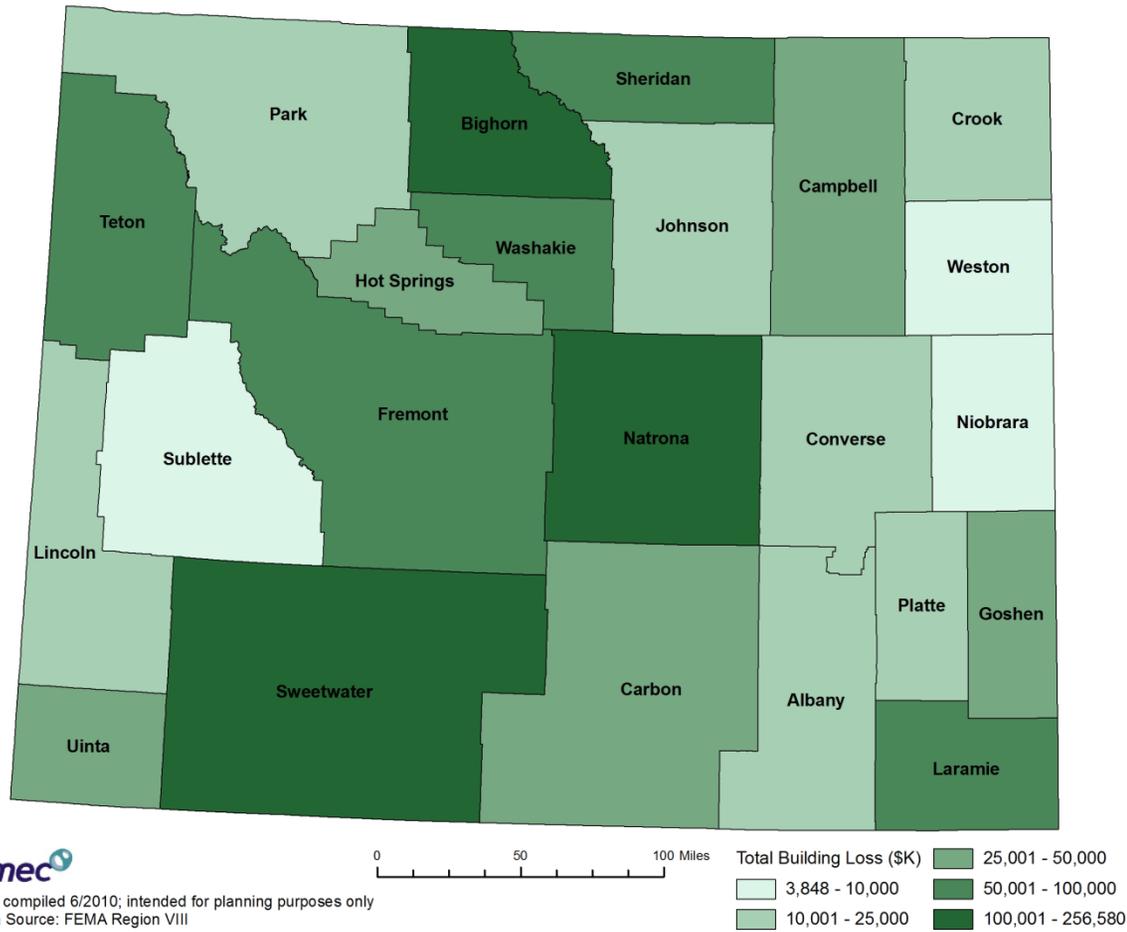
Reports and Maps

A series of maps and analysis results were compiled for the state. The HAZUS Flood Loss by County table (Wyoming Flood Loss by County.xls) includes building and contents value loss estimates, % building damage, per capita loss, and displaced population and shelter needs estimates. The Statewide Floodplain Boundary map shows the statewide flood hazard; this layer was created by appending floodplain boundaries created from each county run. The Statewide Total Building Loss, % Building Damage, Per Capita Loss and Displaced Population maps show flood analysis estimates by county.

When summed together the total estimated statewide flood losses exceed \$1.2 Billion for Wyoming. The HAZUS Flood Loss by County table includes the following loss estimate rankings for each for the 23 counties in Wyoming (largest to smallest): Building Loss, % Building Damage, Per Capita Loss, and Displaced Population. Bighorn and Natrona Counties are both in the top five of each of those lists. Natrona County would suffer the highest economic losses with \$117 million of damage in direct building loss (2.7% building damage), \$3,444 in per capita loss, and have 7,049 displaced people in the event of a countywide 100-year flood event. According to the HAZUS analysis, Bighorn County would suffer \$58.5 million of damage in direct building loss (8.3% building damage), \$10,692 in per capita loss, and have 2,272 displaced people in the event of a countywide 100-year flood event. Other counties with high direct building loss and displaced population are Sweetwater, Sheridan, Teton and Fremont. In addition to Bighorn and Natrona, counties with high % building damage and per capita loss are Hot Springs, Washakie and Sweetwater. These counties in particular may have difficulty recovering from a 100-year flood event. The aforementioned trends are visible on the statewide maps; darker colors indicate higher loss estimates.

Maps and analysis results were also prepared for each of Wyoming's 23 counties and 100 municipalities. The following map was provided for each county and each municipality along with two others: *Flood Hazards* map showing the floodplain boundary, *Flood Depth* map showing the flood depth grid, and a *Building Loss* map showing the total building loss, in dollars, by census block. There are 10 counties that have been mapped entirely or partially by the National Flood Insurance Program and have available Digital Flood Insurance Rate Maps (DFIRMs). For those counties, the .1% Annual Chance and .2% Annual Chance are represented on the Flood Hazards map. The building inventory loss and population needing shelter estimates (which are linked to census block geography) were sorted by each county's incorporated cities, as well as the unincorporated county, to illustrate how the potential for loss varies across that county. The HAZUS Flood Loss Detail by Municipality and the HAZUS Flood Per Capita and % Loss by Municipality tables were compiled for each county.

Wyoming 100-year Flood Assessment: Total Building Loss by County



Wyoming Statewide Flood Analysis - Loss by County

County	2010 Population*	Building Damage Count	Building Loss (\$K)	Building Exposure (\$K)	% Building Damage	Contents Loss (\$K)	Contents Exposure (\$K)	% Contents Loss	Total Loss (\$K)	Per Capita Loss (\$)	Short Term Shelter	Displaced Population	% Short Term Shelter
Albany	36,299	132	\$ 10,653	\$ 2,056,767	0.5%	\$ 13,078	\$ 1,344,027	1.0%	\$24,591	\$ 724	985	1,528	64%
Big Horn	11,668	605	\$ 58,455	\$ 705,984	8.3%	\$ 62,264	\$ 452,818	13.8%	\$123,829	\$ 10,692	1,059	2,272	47%
Campbell	46,133	85	\$ 13,435	\$ 2,012,001	0.7%	\$ 20,567	\$ 1,369,147	1.5%	\$35,791	\$ 814	515	1,029	50%
Carbon	15,885	131	\$ 17,802	\$ 1,142,444	1.6%	\$ 22,622	\$ 714,251	3.2%	\$ 41,672	\$ 2,651	223	1,151	19%
Converse	13,833	50	\$ 8,668	\$ 795,679	1.1%	\$ 7,543	\$ 530,591	1.4%	\$16,547	\$ 1,219	219	590	37%
Crook	7,083	67	\$ 7,195	\$ 390,718	1.8%	\$ 6,862	\$ 256,572	2.7%	\$ 14,355	\$ 2,158	170	425	40%
Fremont	40,123	221	\$ 26,226	\$ 2,053,945	1.3%	\$ 29,941	\$ 1,365,834	2.2%	\$58,223	\$ 1,504	1,140	2,445	47%
Goshen	13,249	201	\$ 15,174	\$ 778,132	2.0%	\$ 15,987	\$ 510,870	3.1%	\$ 32,522	\$ 2,640	770	1,297	59%
Hot Springs	4,812	133	\$ 15,471	\$ 323,208	4.8%	\$ 29,080	\$ 215,957	13.5%	\$45,992	\$ 10,020	375	712	53%
Johnson	8,569	17	\$ 5,540	\$ 483,363	1.1%	\$ 6,271	\$ 309,949	2.0%	\$12,159	\$ 1,425	23	269	9%
Laramie	91,738	157	\$ 25,444	\$ 5,473,047	0.5%	\$ 49,855	\$ 3,600,382	1.4%	\$77,457	\$ 872	755	1,458	52%
Lincoln	18,106	8	\$ 6,465	\$ 1,029,590	0.6%	\$ 10,130	\$ 674,845	1.5%	\$17,338	\$ 1,020	92	603	15%
Natrona	75,450	1866	\$ 117,085	\$ 4,404,651	2.7%	\$ 129,150	\$ 3,053,670	4.2%	\$256,580	\$ 3,444	5,740	7,049	81%
Niobrara	2,484	6	\$ 1,817	\$ 152,928	1.2%	\$ 1,956	\$ 106,095	1.8%	\$ 3,848	\$ 1,626	97	223	43%
Park	28,205	27	\$ 9,420	\$ 1,799,930	0.5%	\$ 8,314	\$ 1,250,484	0.7%	\$ 18,156	\$ 649	82	533	15%
Platte	8,667	16	\$ 5,587	\$ 573,823	1.0%	\$ 5,773	\$ 383,028	1.5%	\$ 11,684	\$ 1,426	92	455	20%
Sheridan	29,116	471	\$ 41,029	\$ 2,382,409	1.7%	\$ 51,995	\$ 1,732,560	3.0%	\$ 96,354	\$ 3,304	2,095	3,566	59%
Sublette	10,247	3	\$ 3,935	\$ 527,497	0.7%	\$ 4,231	\$ 348,364	1.2%	\$8,462	\$ 962	16	300	5%
Sweetwater	43,806	543	\$ 65,079	\$ 2,472,401	2.6%	\$ 96,836	\$ 1,652,214	5.9%	\$171,224	\$ 4,153	1,550	2,230	70%
Teton	21,294	334	\$ 34,103	\$ 1,771,468	1.9%	\$ 34,439	\$ 1,152,087	3.0%	\$ 70,074	\$ 3,384	1,965	2,869	68%
Uinta	21,118	155	\$ 13,764	\$ 1,198,394	1.1%	\$ 14,895	\$ 798,194	1.9%	\$29,564	\$ 1,413	922	1,439	64%
Washakie	8,533	195	\$ 23,666	\$ 527,795	4.5%	\$ 38,086	\$ 363,425	10.5%	\$66,004	\$ 8,343	730	1,278	57%
Weston	7,208	7	\$ 2,172	\$ 396,143	0.5%	\$ 2,124	\$ 267,745	0.8%	\$4,412	\$ 629	13	123	11%
Totals	563,626	5430	\$ 528,185	\$ 33,452,317		\$ 661,999	\$ 22,453,109		\$ 1,236,838		19,628	33,844	

* <http://2010.census.gov/2010census/data/index.php> Accessed 5/3/2011

Loss Estimate Rankings 2010

County	Building Loss (\$K)
Natrona	\$ 117,085
Sweetwater	\$ 65,079
Big Horn	\$ 58,455
Sheridan	\$ 41,029
Teton	\$ 34,103
Fremont	\$ 26,226
Laramie	\$ 25,444
Washakie	\$ 23,666
Carbon	\$ 17,802
Hot Springs	\$ 15,471
Goshen	\$ 15,174
Uinta	\$ 13,764
Campbell	\$ 13,435
Albany	\$ 10,653
Park	\$ 9,420
Converse	\$ 8,668
Crook	\$ 7,195
Lincoln	\$ 6,465
Platte	\$ 5,587
Johnson	\$ 5,540
Sublette	\$ 3,935
Weston	\$ 2,172
Niobrara	\$ 1,817

\$ 528,185

County	% Building Damage
Big Horn	8.3%
Hot Springs	4.8%
Washakie	4.5%
Natrona	2.7%
Sweetwater	2.6%
Goshen	2.0%
Teton	1.9%
Crook	1.8%
Sheridan	1.7%
Carbon	1.6%
Fremont	1.3%
Niobrara	1.2%
Uinta	1.1%
Johnson	1.1%
Converse	1.1%
Platte	1.0%
Sublette	0.7%
Campbell	0.7%
Lincoln	0.6%
Weston	0.5%
Park	0.5%
Albany	0.5%
Laramie	0.5%

County	Per Capita Loss (\$)
Big Horn	\$ 10,692
Hot Springs	\$ 10,020
Washakie	\$ 8,343
Sweetwater	\$ 4,153
Natrona	\$ 3,444
Teton	\$ 3,384
Sheridan	\$ 3,304
Carbon	\$ 2,651
Goshen	\$ 2,640
Crook	\$ 2,158
Niobrara	\$ 1,626
Fremont	\$ 1,504
Platte	\$ 1,426
Johnson	\$ 1,425
Uinta	\$ 1,413
Converse	\$ 1,219
Lincoln	\$ 1,020
Sublette	\$ 962
Laramie	\$ 872
Campbell	\$ 814
Albany	\$ 724
Park	\$ 649
Weston	\$ 629

County	Displaced Population
Natrona	7,049
Sheridan	3,566
Teton	2,869
Fremont	2,445
Big Horn	2,272
Sweetwater	2,230
Albany	1,528
Laramie	1,458
Uinta	1,439
Goshen	1,297
Washakie	1,278
Carbon	1,151
Campbell	1,029
Hot Springs	712
Lincoln	603
Converse	590
Park	533
Platte	455
Crook	425
Sublette	300
Johnson	269
Niobrara	223
Weston	123

History

The documented flood history for Wyoming extends back to July 1895 in Casper, Wyoming. The flood produced a 20-foot-high wall of water sweeping down Garden Creek, wiping out a camp of settlers at present-day Westwood School. Three people drowned.

The most damaging flood in Wyoming's history was the August 1, 1985 flood in Cheyenne. The dollar property loss was \$65 million. In 2010 dollars the damage would be nearly \$132.2 million. Twelve deaths and 70 injuries were associated with that event. The greatest loss of life associated with flooding, however, did not occur in 1985. In September 1923, five days of widespread rainfall caused a 60- to greater than 100-year flood resulting in a railroad bridge being washed out east of Casper. The event took 18 lives on September 27, 1923.

Another significant flood was on May 15, 1978. Heavy wet snow and record rains did very extensive damage to property, crops, and livestock in 12 counties (Park, Big Horn, Campbell, Converse, Crook, Johnson, Natrona, Sheridan, Washakie, Weston, Hot Springs, and Niobrara). Hundreds of homes were damaged, and many totally destroyed. Numerous bridges and sections of roads were washed out power lines were downed, with much damage to cars and personal property. Total estimated damages came to \$15.5 million. In 2010 dollars, damages would be over \$52 million.

In more recent times, on August 27, 2002 the town of Kaycee in Johnson County was inundated by flash flooding from a storm that struck the southern part of the county. The flooding caused significant devastation, with the Wyoming Office of Homeland Security [then WEMA] reporting a final count on Wednesday, August 28, 2002 of \$459,166 in damage, including 19 trailers, 22 houses, and 12 of Kaycee's 15 businesses (**Figure 8.2**).



Figure 8.2—A flash flood on the Middle Fork Powder River west of Kaycee inundated the town on August 27, 2002. This photograph, which was taken two days later, shows standing water in the street. The house in the center was hit hard and along with another house behind it, has been torn down.

The abbreviated flood history below (**Table 8.1**) was in large part derived from the monthly storm data reports generated and released by the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC). Other sources are unpublished reports from the Wyoming Office of Homeland Security, newspaper accounts, and periodicals from public libraries. The table is arranged by county in alphabetical order and represents those floods that have caused damage, injuries, or loss of life in addition to other flooding events.



June 2010 Lander Flood – Filling sandbags at the ‘sandbox’ with sandbags staged and ready for placement. Between 400,000 – 500,000 sandbags were filled and placed in the flooding event.



June 2010 Lander Flood - Path and footbridge overtaken by flood waters.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
5/8/1905		Albany	Spring Creek						Overflowing of the creek caused by thunderstorms occurring throughout the watershed during the spring and summer resulted in flood damaging property and interrupting transportation due to roads being washed out.
6/12/1923		Albany	Laramie River						Snowmelt probably combined with rainfall runoff resulted in a flood 25- to a greater than 100-year flood.
9/1/1938		Albany	Southeast, Central Wyoming						Some damage was reported from the heavy rains to highways and bridges in the southeast and central portion of the state.
6/8/1945		Albany	Laramie						Moderate to heavy storms occurred in Laramie on the 8th and 22nd. These storms resulted in considerable damage to crops, gardens and vegetation.
6/22/1945		Albany	Laramie						Moderate to heavy storms occurred in Laramie on the 8th and 22nd. These storms resulted in considerable damage to crops, gardens and vegetation.
7/28/1953		Albany							A flash flood in northern Albany County destroyed some buildings and machinery.
7/29/1953		Albany	Laramie						Flood caused by a cloudburst and backed up storm sewers (hardest hit area Canby, Gibbon, and 9th Streets). Dirt streets were washed away and caved in from downpour. The event produced 0.88 inch of water in 45 minutes.
7/29/1953		Albany	Northern Albany County, Ashley, Hall, Rock Creek, Spring Creek	1		33,600		33,600	Cloudburst caused a flash flood down canyon where there was damage to roads, ranches, out buildings, fences, haystacks, corrals, and machinery. There was \$1800 total damage to national forest: roads (\$1000), meadows (\$500), and springs (\$300). Major thoroughfare over \$30,000, loss of livestock: cows, calves, and horses. Pioneer residents remembered this as the heaviest rain ever.
7/30/1953		Albany	East of Laramie	1		25,000		25,000	On the afternoon of the 30th, a cloudburst just east of Laramie, sent flood waters roaring down Telephone Canyon. A car was caught on Highway 30, in the canyon, and one of the passengers was drowned. The car itself was tumbled about a half mile by the raging waters. Damage to the highway was estimated at \$25,000.
7/28/1955		Albany	Double Four Ranch						On the 28th, the observer at the Double Four Ranch noted that cloudbursts west of Garrett on the headwaters of the North Laramie River the day before had caused damage, and that the river rose 6 - 8 feet about midnight, washing out a dam and flooding ditches in his locality.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
6/9/1957		Albany	Laramie, Laramie River						Flooding from late spring, slow melt then high temperatures with falling rain channel not kept clear because of drought years; silt deposited and debris collected. This caused quarries to be flooded; bridges, culverts washed out, flooding of homes (west Sheridan); ranch buildings damaged; families evacuated. This was a greater than 50-year flood that had a discharge of 3800 cubic feet per second (CFS) at Pioneer Dam (25 miles southwest of Laramie according to WEMA, Laramie Boomerang, Flood Damage Inventory. Federal Emergency Management Agency (FEMA) Flood Insurance Study October 16, 1996 set the discharge amount to 3250 CFS.
7/23/1984		Albany	Laramie			112,000		112,000	Flash flooding from a late evening thunderstorm in east Laramie did thousands of dollars damage to residences and businesses (NCDC Storm Data). 100-year storm produced 1.04 inches of water in less than 24 hours. Wall of water breached dike, storm sewer overload. Damage to residences and businesses estimated to be thousands of dollars. University of Wyoming damage estimated to be \$100,000. Wyoming School of Gymnastics estimated to be \$12,000. Five percent of Laramie homes damaged. Flood channel damaged with erosion to bridges.
8/15/1984		Albany	Laramie			22,500		22,500	Thunderstorm dumped up to 1.67 inches of rain in an hour-long deluge across Laramie in Albany County. Damage to basements of houses, cars, and a just-completed flood channel.
7/19/1985		Albany				22,500		22,500	Storms dumped up to 1.26 inches of rain in Laramie, causing minor urban flooding. Two unconfirmed funnel clouds were also reported. One was west, and the other southwest, of Laramie at a distance of about 10 miles.
7/2010		Albany	Laramie						Sudden advent of high temperatures caused rapid melt of mountain snowpack resulting in the Laramie River exceeding its banks. The melting snowpack was exacerbated by rainfall.
00/09/1928		Big Horn	Manderson Big Horn River, Cold Creek						Cloudburst caused flooding resulting in the town inundated by water.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
3/9/1929		Big Horn	Greybull, Big Horn River, Sheep Horn Canyon			235,000		235,000	Ice jam (Eight Mile Gorge) in a shallow stretch of river resulting in the river overflowing its banks and causing flooding. The flooding covered streets with up to 4 feet of water; 412 homes and 93 buildings damaged (\$150,000 to \$200,000), 295 families affected (\$9067.77); Midwest oil company (\$15,000); Businessmen stock losses (\$5000 to \$10,000); Burlington tracks washed out (north of Greybull); Fire damage (gas left burning) Fire dept couldn't get out. Loss of livestock: Horse, sheep, hogs, poultry. Response came from local committees, the Red Cross, county commissioners, and state aid.
4/15/1937		Big Horn							Locally heavy rains, accompanied by high temperatures, which caused rapidly melting snow on the 15th, caused considerable flood damage. In the Big Horn Canyon, near the Montana line, washouts occurred and back water left the tracks covered with debris.
7/1/1937		Big Horn	Big Horn Basin						Landslides in the Big Horn Basin destroyed large sections of railroad tracks and washouts swept away a large number of highway bridges. Railroads and highways were washed out and mining property damaged. Heavy flood damage also occurred in the Big Horn Basin, particularly in the Wind River Canyon and in the vicinity of Shoshoni. The damage in the Wind River Canyon resulted from land slides, which took out several sections of highway and railroad. In all highways suffered damage in 12 counties. Severe damage occurred in the Upper Big Horn Basin. There were more than 3,000 feet of railway washed out and much covered by landslides. The highway was badly damaged from Riverton to Thermopolis, and traffic was suspended temporarily. Near Shoshoni traffic was possible only by long detours. Highways were considerably damaged in ten other counties in the eastern half of the State.
5/30/1941		Big Horn	Lower Big Horn Basin near the Montana line						The heaviest hail storms were those that occurred in Crook County on the 27th and in the lower Big Horn Basin near the Montana line on the 30th. This latter storm resulted in considerable damage to crops both by hail and flood waters, as well as damage to bridges.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
2/18/1948		Big Horn	Big Horn Basin, Greybull, Manderson, Washakie, Worland						An early break-up of the ice in the Big Horn River was caused by Chinook winds that melted the snow in the lower elevations. This occurred about the 18th of the month and resulted in considerable flooding in the Big Horn Basin due to ice jams from Worland northward to the Montana-Wyoming border. At Worland the water reached its highest level since 1920. No lives were lost as a result of the flood although some loss of livestock and feed was reported. One bridge was washed out and others slightly damaged as well as considerable damage to property near the river. Minor damage from flood waters was also reported at Manderson, Greybull and Basin.
2/19/1948		Big Horn	Manderson Norwood River						Ice jam caused flooding resulting in the town covered by flood waters.
12/9/1956		Big Horn	Greybull						Soon after midnight of the 9th the Big Horn River overflowed its banks and flooded the northeast part of Greybull in Big Horn County, but receded in about an hour. Cause of the sudden rise and fall was not definitely determined, but it was believed by a water plant superintendent at Basin and officials at Boysen Dam that it could be attributed to a stoppage of normal flow of the river at some point southward between Basin and Boysen Dam. There was no known ice jam.
12/11/1956		Big Horn	Manderson Big Horn River						A flood caused by an ice jam blocked downstream flow, forcing water over banks. Resulted in a basement flooding and forcing one family to evacuate home.
5/12/1957		Big Horn	Otto						Near Otto in the afternoon of the 12th heavy rain produced a flash flood of the Greybull River which damaged an auto, several houses, home furnishings, water supply systems, and other appurtenances. One ranch lost 150 or more sheep.
6/5/1957	6/9/1957	Big Horn	Greybull, Burlington, Otto						The foothills of the Rocky Mountains above Meeteetse were covered by the heaviest snow pack in years. The warm weather on the 4th and 5th which caused rapid melting of snow at higher levels along the northeastern slopes of the Continental Divide, was followed by heavy and sudden downpours of rain and hail. This produced a rapid rise of the Greybull River which flooded twice during the period 5th to 9th. Normally a small stream, the river rose 6 feet above its usual depth for the time of the year, spread to about one-half mile width and extended approximately 50 miles from Meeteetse to the town of Greybull on the Big Horn River. In the vicinities of Burlington and Otto several homes were vacated. Many farms and pasturelands were inundated. Two or more small bridges were destroyed and a power line damaged.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
6/8/1957		Big Horn	Greybull, Greybull River						Flooding caused by three successive very warm days followed by heavy cloud burst forced residents to leave homes and washed out county bridges. There was response from the county sheriff. Long time residents stated that water was highest in 30 to 40 years. Douglas Creek near Fox Park had a discharge of 1630 CFS.
6/11/1957		Big Horn	Greybull, Greybull River						Afternoon cloudburst. Channel blocked south of Greybull by June 8th flood which carried dirt and silt into parts of river, bed choked with weeds during drought of past several years. This caused heavy crop damage, six families forced out, and loss of poultry and livestock. Aid was provided by volunteers and county officers.
6/9/1960		Big Horn	Yellowstone Park and Big Horn Basin			22,500	2,250	24,750	Heavy scattered rainstorm during the evening caused flooding and damaged crops. The flooding washed out bridges and damaged roads in several areas.
7/6/1961		Big Horn	Greybull and vicinity			22,500		22,500	High intensity rain showers with some 1- to 1.5-inch hail caused flash flooding in the Greybull area. Damage was to homes, streets, crops, and farm land.
2/15/1962		Big Horn	Manderson Big Horn River						An ice jam caused the town to be covered by flood waters.
7/13/1962		Big Horn	Northern Big Horn Basin			225,000	2,250,000	2,475,000	Severe thunderstorms with one funnel aloft and heavy rains of 4 to 6 inches with 6 to 9 inches of hail and high gusty winds caused widespread damage and flash flooding in the Cowley, Byron, Penrose and Lovell areas.
6/15/1963		Big Horn	Big Horn Mountains						Flooding from heavy rains caused damage to homes, equipment, crops, irrigation, canals, roads, and bridges. The following are discharge amounts according to WEMA Storm Data: Greybull River near Pitchfork - 8610 CFS, Wood River at Sunshine - 5080 CFS, Greybull River at Meeteetse - 13,600 CFS, Shell Creek above Reservoir - 1870 CFS, South Fork of Shoshone River near Valley - 6610 CFS, Wolf Creek at Wolf - 1130 CFS.
5/4/1978		Big Horn	Lovell (NCDC Storm Data), Emblem, Big Horn River (WEMA Storm Data)			225,000		225,000	Heavy rains caused widespread flooding between Lovell and Emblem, Wyoming. Several homes were damaged with some damage extensive.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/20/1979		Big Horn	Beaver Creek			225,000		225,000	Heavy rain in the Big Horn Mountain area caused Beaver Creek to flood damaging sheds, fences, farm equipment, and ruining hay and corn fields, as well as crops in storage.
6/13/1997		Big Horn	Basin			91,000		91,000	Two very brief tornado touchdowns south of Basin. Path lengths and widths estimated. Extensive flash flooding in Basin.
6/13/1998		Big Horn	10 NE Lovell, Crooked Creek						Flash flooding on Crooked Creek, near Horseshoe Bend area of Bighorn Canyon National Recreation Area. Mud slides across Highway 37. Also, Lovell canal overflowed. Caused by slow-moving thunderstorms producing heavy rain.
7/3/1998		Big Horn	5 NE Hyattville, Medicine Lodge Creek						Medicine Lodge Creek at Taylor Park Campground. Tents lost, campers moved, park road damaged.
6/1/2002		Big Horn	Greybull						Rainfall amounts of 1.25 to 1.75 inches occurred in 20 minutes. There were six basements flooded and a business was flooded. Two cars were washed off Greybull River Road. Also, there was flooding along Greybull River Road.
7/11/1941		Campbell							A number of locally heavy rains and flash floods occurred during the month. Probably the most severe of these were the ones which occurred in southern Campbell and northern Converse Counties on the 11th and on the 27th and 28th. Considerable damage was done to growing crops and hay meadows as well as some loss in livestock.
1/1/1943		Campbell	Northeast portion of the state						Chinook conditions over the northeast portion of the State caused rapid melting of the snow, and as a result, serious floods occurred. The town of Gillette was especially hard hit by a flood on the 22nd. Reports from the Big Horn Basin state that the ice in the river went out on the 22nd causing serious floods to farms near the river.
8/2/1953		Campbell	Northeast Wyoming			50,000	1,000	51,000	A heavy rain the afternoon of the 2nd caused flood and property damage in northeastern Wyoming estimated at \$50,000 and crop damage of \$1,000.
8/27/1955		Campbell	Gillette						Heavy rain with hail occurred in the vicinity of Gillette on the 27th. This caused some local flood damage and also some damage to the corn crop.
7/22/1966		Campbell	Gillette			225,000		225,000	A tornado accompanied by heavy rain and hail did damage, caused flash flooding primarily in south and east Gillette.
7/21/1973		Campbell	Gillette			22,500		22,500	Heavy rain amounting to about 1.5 inches in one hour resulted in flooded streets and basements and damage to new construction.
7/24/1982		Campbell	Gillette			225		225	Brief heavy rains (about one inch) from a thunderstorm caused minor urban flooding. High winds associated with the storm did

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
									some minor damage northeast of Gillette.
7/25/1982		Campbell	Gillette			1,000,000		1,000,000	A thunderstorm produced more than an inch of rain on Gillette in less than 20 min. The storm also brought marble-size hail and winds up to 50 mph. The Gillette area was already saturated from storms of the preceding Wednesday and Saturday. Storm related damages primarily due to flooding approached one million dollars.
5/16/1987		Campbell	Wright			225,000		225,000	A severe thunderstorm downpour dropped over 2.5 inches of rain over the town of Wright in 45 minutes. About 14 homes sustained minor damage and 3 homes had major damage. The 3 homes with major damage had approximately 3 to 14 inches of water in their basements. Two culverts near the damaged homes could not convey the amount of water that occurred in backwater flooding.
7/30/1987		Campbell	Savageton						A very strong thunderstorm developed near Savageton, about 40 miles southwest of Gillette, at 2045 MST. This storm drenched the town with 1.5 inches of rain in 35 minutes along with one and a half inch diameter hail. The storm later moved northeast during the next few hours and damaged structures in the south and east sections of Gillette. As the thunderstorm moved into Gillette, 50 to 60 mile an hour winds raked the area along with 1.5 inches of rain in one hour. This storm destroyed 1 unoccupied home. Other damages included numerous horse stalls destroyed, sections of roofs partially destroyed and many city and state road signs severely damaged. Also, lightning struck a home in Gillette and knocked a hole in the ceiling. Many streets and a few apartments were flooded due to the torrential rains between 2100 and 2200 MST. Later that night the thunderstorm moved into Crook County with heavy rain and one-half inch diameter hail west of Moorcroft.
8/19/1993		Campbell	8 N Rozet	1			23	23	A person working on an oil rig died when he was caught in a flash flood in what usually is a dry creek bed.
6/22/1998		Campbell	Weston						General flooding was reported near Weston with stock ponds overflowing and roads being threatened.
7/1/1998		Campbell	26 W Wright						Heavy rains of six inches in an hour caused a stock dam to breach on the Iberland Ranch and caused flooding along Wyoming Highway 387.
7/2/1998		Campbell	18 SSW Gillette						Flood waters covered Wyoming Highway 50 between mile markers 16 and 20.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
5/28/2001		Campbell	4 S Gillette to Gillette, Donkey Creek			400,000		400,000	Heavy rain began falling over the Donkey Creek drainage south of Gillette around 1700 MST. Rainfall rates over 2 inches per hour were recorded. A National Weather Service spotter recorded a storm total precipitation amount of 7.5 inches during the evening. Donkey Creek quickly rose to flood stage, tearing up paved golf cart paths and a service bridge located at the Gillette Country Club. Water depth was recorded at 4 feet by a water mark on a stop sign at Four J Road near Southern Drive at 1900 MST. In downtown Gillette, several cars were reported floating down the street, and numerous businesses had 1 to 2 feet of water on the first floor. No injuries or fatalities. One man was rescued from a stalled vehicle in chest deep water.
6/24/2005		Campbell	Northern Campbell						Heavy rains north of Rozet resulted in the flooding of Cow Creek Road, about 10 miles north of Rozet, for a short period of time.
8/7/2006	8/7/2006	Campbell	3 E Gillette						A severe thunderstorm developed over the Gillette area, producing large hail and wind gusts around 60 mph. The storm also produced heavy rain, which flooded roads in the area and closed Highway 59 north of Gillette for a short time. The Little Powder River in northern Campbell County rose out of its banks on the morning of the 8th, flooding pasture land near the river.
4/15/1937		Carbon							Locally heavy rains, accompanied by high temperatures, which caused rapidly melting snow on the 15th, caused considerable flood damage. In the northern portion of Carbon County Sage Creek reached the highest known stage, washing out bridges and carrying away farm buildings.
9/1/1938		Carbon	Southeast, Central Wyoming						Some damage was reported from the heavy rains to highways and bridges in the southeast and central portion of the state.
7/4/1950		Carbon	Rawlins						Light damage occurred at Rawlins on the 4th when storm sewers were unable to carry off water from a heavy shower, causing flooding of some basements.
5/1/1952		Carbon	Baggs						Local flooding occurred in a few streams where rapidly melting snow in the mountains caused a few streams to leave their banks. The most important flooding occurred at Baggs where Savery Creek backed flood water into the business section of the town.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
5/12/1984		Carbon	North Platte River, Tributaries near Saratoga, tributaries near Little Snake River						Rain storms combined with snowmelt runoff augmented on Little Snake River when water breached a dam. Damage to rural property in Baggs. Greater than 100-year flood.
5/14/1984		Carbon	Baggs, Savery, Dixon, Little Snake River			5,000,000		5,000,000	High runoff from melting snow in the mountains of southern Wyoming and northern Colorado; Burst small dam, 4-foot wall of water poured down canyon (sudden warm temps & heavy blanket of snow). \$5 million of damage to area; damage to water treatment plant, land crops, fences, irrigation systems, structures, livestock, 26 homes and trailers damaged. Recovery response was from small business administration, Civil Defense, Red Cross, and Army Corps of Engineers. Runoff estimated at 500-year level.
5/16/1984		Carbon	Dixon						A greater than 100-year flood caused by snowmelt runoff augmented by an upstream reservoir failure had a discharge of 13,000 CFS.
8/11/1990		Carbon	Near Saratoga			2,250		2,250	Heavy thunderstorm rains of 1 to 3 inches caused flash flooding mainly in the Snowy Range 15 to 20 miles east of Saratoga. Two campgrounds in the Snowy Range had to be evacuated due to high water on creeks and streams.
5/24/1996		Carbon	Rawlins						Heavy rainfall in a short time caused street flooding in Rawlins. Some roads were closed for a time and some accidents occurred.
5/19/2008		Carbon	Baggs						High temperatures created a rapid melt of mountain snowpack which, in turn, caused the Little Snake River to overflow its banks.
7/27/1941	7/28/1941	Converse							A number of locally heavy rains and flash floods occurred during the month. Probably the most severe of these were the ones which occurred in southern Campbell and northern Converse Counties on the 11th and on the 27th and 28th. Considerable damage was done to growing crops and hay meadows as well as some loss in livestock.
6/26/1952		Converse	Esterbrook						A hail and rain storm at Esterbrook on the 26th caused a flash flood which did considerable damage to fences and bridges.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/24/1955		Converse	Esterbrook						The observer at Esterbrook reported a cloudburst and flash flood at the Fawcett ranch nine miles to the east on the 27th that resulted in considerable damage to corrals, fences, irrigation dams, and ranch buildings. The icehouse and its contents, the springhouse, bridges, the chicken house and some thirty chickens were carried away by flood waters. The residence escaped the flood although it sustained some damage from water.
01/00/1962		Converse	Douglas, Antelope, East Antelope						A flood occurred to inadequate bridge capacity and storm sewer overload. Mostly basements and structures with first floor levels were damaged.
5/14/1965		Converse	Glenrock, Deer Creek			175,000		175,000	Heavy rains, especially in central mountains, on top of heavy snow caused flooding on streams flowing out of Laramie Mountains below Wheatland and Casper. Homes, utilities, park facilities and athletic field, water and sewer services were disrupted, many bridges and culverts destroyed; amount of damage: Glenrock (\$50,000), County (\$125,000); especially heavy damage from Glendo through Douglas to Glenrock. The following are discharge values: Box Elder Creek at Box Elder - 4530 CFS, LaBonte Creek - 8770 CFS, North Platte River near Glenrock - 16,000 CFS, North Platte River at Orin (May 15) - 23,000 CFS.
6/16/1965		Converse	Bill	1		2,250		2,250	Flash flood killed one coal miner on Antelope Creek.
6/12/1970		Converse	Glenrock, Deer Creek			1,000,000		1,000,000	North East residential area flooded, municipal park severely damaged, trailer court, croplands, bridges, fences and farm buildings damaged, amount of damage: \$1 million. The following are discharge amounts: Deer Creek at Glenrock - 14,200 CFS, LaPrele Creek near Douglas - 17,300 CFS.
7/22/1983		Converse	Laramie Range drainage, eastward southwest of Douglas near LaPrele Reservoir						Heavy thunderstorms sat almost stationary on eastern slopes of Laramie Range for hours. Caused widespread flooding along creeks and streams, runoff collapsed the dam sending a 10- to 15-foot high wall of water through nearby ranch, flooding it.
8/1/1984		Converse	Glenrock			2,250		2,250	Thunderstorm dumped two inches of rain in 30 minutes, or 3.2 inches total from 1.5-hour deluge at Glenrock in Converse County. Rain flooded basements of several houses, a car and several businesses. Other minor damage due to flooding and lightning strikes.

Table 8.1a - Wyoming Flood Data									
Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/1/1998		Converse	50 NW Douglas to 30 N Douglas			2,000		2,000	A storm produced up to 6 inches of rainfall from 50 miles northwest of Douglas to 30 miles north of Douglas. Water covered many rural roads in the area.
1/1/1943		Crook	Northeast portion of the state						Chinook conditions over the northeast portion of the State caused rapid melting of the snow, and as a result, serious floods occurred. The town of Gillette was especially hard hit by a flood on the 22nd. Reports from the Big Horn Basin state that the ice in the river went out on the 22nd causing serious floods to farms near the river.
5/17/1944		Crook							A tornado was reported which resulted in considerable damage. This storm occurred during the afternoon and evening of the 17th. It began in the Black Hills Region of South Dakota and moved northwestward across the northeast portion of Crook County. Principal damage in this storm was to ranch buildings, standing timber, and considerable stored grain. Heavy rain and hail accompanying the storm resulted in many bridges and large sections of the highway being washed out. No deaths resulted from the storm, although several persons were injured, none seriously, principally by flying glass.
8/2/1953		Crook	Northeast Wyoming			50,000	1,000	51,000	A heavy rain the afternoon of the 2nd caused flood and property damage in northeastern Wyoming estimated at \$50,000 and crop damage of \$1,000.
6/24/1959		Crook	South of Sundance, MillerCreek			2,250	22,500	24,750	Storm moved down Miller Creek with hailstones to 4 inches in diameter. Some flash flooding from heavy rain.
8/21/1973		Crook	Beuhla 21, Sand Creek			22,500		22,500	A torrential rain caused flash flooding on Sand Creek, washing out some roads and damaging houses. Apparently a pickup truck and a trailer were also washed into a bridge abutment.
6/13/1982		Crook	Oshoto, Sundance, Moskee						A thunderstorm dumped up to 7 inches of rain throughout the southeastern part of Crook County along with hail drifts from two to five feet in some places. The hail ranged from pea size up to one inch in diameter and caused considerable damage. Losses included fences, corrals, water tanks, soil, and stock. The major damage in the Moskee and Oshoto areas was due to flooding.
7/24/1982		Crook	Moorcroft			2,250	2,250	4,500	A thunderstorm dumped 2.3 inches of rain in a short period of time causing local flooding. It was also spawned a tornado and marble-size hail which left a path of destruction in the Buck Miller subdivision north of town and damaged crops in the area.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/11/1987		Crook	1W Alva			22,500	22,500	45,000	A severe thunderstorm swept through north central Crook County after 1715 MST. This storm produced heavy rain and hail from 0.25 inch to 2 inches in diameter near Hulett. Wyoming Highway 24 south of Hulett was closed for a short time due to one- to 2-foot drifts of hail and minor flooding as more than two inches of rain fell in about 30 minutes. Ranchers south of Hulett reported numerous windows shattered and roof and siding damage due to hail. Ranchers north of Aladdin reported washed out fences and the loss of livestock. Grain crops were battered flat by the hailstorm from Alva to Aladdin. The hail one mile west of Alva drifted to a depth from 4 inches to over 12 inches.
6/13/1991		Crook	Sundance						A thunderstorm over Sundance produced nearly 2.72 inches of rain in 45 minutes with street and basement flooding.
5/8/1995		Crook							Moderate to heavy rain caused flash flooding in the Wyoming Black Hills in Crook county. Three to 7 inches of rain fell on the 8th of May. Aladdin (19 miles northeast of Sundance) had 7 inches of rain over the 2-day period. Seventeen roads in the Wyoming Black Hills were reported washed out. A part of Wyoming Highway 24 under construction was washed out by flood waters. The Belle Fourche River rose above flood stage early on the 9th and caused a lot of rural flooding.
6/30/2001		Crook	35 N Sundance, Little Missouri River						Locally heavy rain from thunderstorms overnight produced a flash flood on the Little Missouri River at Government Canyon. A road was washed out and 8 feet of water was covering the roadway.
8/23/2005		Crook & Weston	14 ENE Upton						Severe thunderstorms developed across southern Crook County and western Weston County. The storms produced penny to quarter sized hail between Upton and Sundance. Heavy rains caused some flooding of secondary roads between Moorcroft and Upton. Wagner Road, from Pine Ridge Road to U.S. Highway 16 in south central Crook County, was closed during the evening and nighttime hours.
7/30/1919		Fremont	Horse Creek, Dubois						Heavy rain accompanied by hail resulted in a flash flood along Horse Creek, in Dubois, and along the Wind River at Circle. Barns, fences, and everything close to the creek were destroyed. The event took six lives, including the town doctor. The Dubois bridge across Horse Creek was destroyed.
7/23/1923		Fremont	Big Horn River, Wind River	2		1,000,000		1,000,000	Widespread thunderstorms caused a 25- to a greater than 100-year flood resulting in \$1 million in damage to the Chicago and Northwestern Railway. The event took two lives.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/1/1937		Fremont	Shoshoni, Wind River Canyon						Landslides in the Big Horn Basin destroyed large sections of railroad tracks and washouts swept away a large number of highway bridges. Railroads and highways were washed out and mining property damaged. Heavy flood damage also occurred in the Big Horn Basin, particularly in the Wind River Canyon and in the vicinity of Shoshoni. The damage in the Wind River Canyon resulted from land slides, which took out several sections of highway and railroad. In all highways suffered damage in 12 counties. Severe damage occurred in the Upper Big Horn Basin. There were more than 3,000 feet of railway washed out and much covered by landslides. The highway was badly damaged from Riverton to Thermopolis, and traffic was suspended temporarily. Near Shoshoni traffic was possible only by long detours. Highways were considerably damaged in ten other counties in the eastern half of the State.
7/11/1937	7/12/1937	Fremont	Shoshoni, Wind River Canyon						Heavy flood damage also occurred in the Big Horn Basin, particularly in the Wind River Canyon and in the vicinity of Shoshoni. The damage in the Wind River Canyon resulted from land slides, which took out several sections of highway and railroad. In all highways suffered damage in 12 counties. Crops suffered severely from hail and floods, but there were compensating benefits from the excess moisture.
9/1/1938		Fremont	Southeast, Central Wyoming						Some damage was reported from the heavy rains to highways and bridges in the southeast and central portion of the state.
6/7/1952		Fremont	Lander						Flooding occurred at Lander on the 7th causing damage to yards, streets and basements of homes and business buildings.
7/23/1955		Fremont	Riverton 9 N						The observer at Riverton 9 N reported a flash flood on the 23rd that washed out road crossings and overflowed irrigation ditches with considerable soil washing.
2/10/1962		Fremont	Hudson, Popo Agie River, Little Popo Agie River						Heavy spring runoff, breakup of ice, and ice jamming at old bridge caused major flood damage. Muskrat Creek near Shoshoni had a discharge of 13,300 CFS.
6/15/1963		Fremont	Lander, Middle Popo Agie			90,000		90,000	A greater than 500-year flood from a combination of heavy rain (3 inches) and failure to an earthen reservoir caused minor damage to homes, inundated part of the city, resulting in an estimated \$90,000 in damage according to city officials. The following are discharge amounts: Middle Popo Agie River below the Sinks, near Lander - 4180 CFS, North Popo Agie River near Milford - 4500 CFS, Little Popo Agie River near Lander - 2010 CFS.

Table 8.1a - Wyoming Flood Data									
Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
9/20/1963		Fremont	Crowheart, Dubois						Heavy rains caused flooding, resulting in damage to roads, bridges, crops, and irrigation systems.
9/20/1963		Fremont				22,500		22,500	Heavy rains in the Crowheart-Dubois area caused flash flooding with considerable damage to roads, bridges, crops, and the irrigation system.
9/8/1973		Fremont	Riverton Lander area			22,500		22,500	Rain and hail from a series of thunderstorms, hail mostly small but some to 1.25 inches, along with high water, caused damage primarily to crops but also to some structures, cars and materials.
3/2/1974		Fremont	Hudson			500,000		500,000	A combination of abnormally high temperatures, rain, and strong Chinook-type winds in late February and early March resulted in rapid snow melt and flooding along the Popo Agie River. Hardest hit was the southern portion of Hudson where an ice jam against a highway bridge intensified the flooding and forced nearly 60 families from their homes. Damage was estimated at \$500,000.
6/7/1981		Fremont	North and South Forks of Shoshone and Wind Rivers, Shoshone River, and Upper Snake River						Widespread rainfall combined with snowmelt runoff. Damage to rural property. 40- to 100-year flood (Wyoming Floods and Droughts, National Weather Summary 1988-89). Bridges, campgrounds, highways, personal property damaged (WEMA Storm Data).
7/24/1982		Fremont	Dubois			225		225	A cloudburst caused Tappan Creek north of Dubois to flood and overflow into Pony and Horse Creeks. Mud and debris covered parts of Highway 287 and caused some damage to two homes in the area.
7/27/1982		Fremont	North Portal Area			22,500		22,500	Thunderstorms dumped up to 3 inches of rain in the North Portal Area of northern Fremont County during the evening causing flash flooding and road washouts in some places.
7/29/1990		Fremont	17 SE Riverton			22,500		22,500	A slow-moving thunderstorm produced over 2 inches of rain about 17 miles southeast of Riverton between 1500 and 2000 MST. Flash flooding occurred along State Highway 135, covering the road to a depth of around 4 feet and washing out two sections of the road.
6/7/1991		Fremont	Riverton			225,000	22,500	247,500	Flooding of the Wind River at Riverton resulted in 12 homes being flooded and loss to crops along the river. High water due to past rains and snow melt.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
6/14/1995		Fremont		1					A prolonged episode of flooding occurred in Fremont County as warm temperatures in the mountains brought a rapid snowmelt. The Big Wind River, the Little Wind River, and the Popo Agie River overflowed their banks and caused considerable flooding. The town of Hudson (10 miles northeast of Lander) had some lowland flooding that did some damage to a few homes. Flooding occurred at the Lander City Park as well as at other locations. Five mobile homes had severe damage due to flood waters. The worst flooding at Riverton occurred on the far south side of town and at the Wind River Indian Reservation. A total of 11 homes were damaged with four of them seriously damaged. Some roads were under water for three or four days and some bridge damage was also reported. About 40 people had to be evacuated in Fremont County due to the flooding. As of August 10th, no damage figures were available. There was one fatality due to the flooding.
7/14/1995		Fremont	Crowheart to Riverton, Big Wind River			9,000		9,000	Rain and snowmelt pushed the Big Wind River over flood stage from Crowheart to Riverton. A section of dirt berm gave way in the early morning, allowing water to cross the highways south of Riverton. Trailer homes to the south of Riverton were also flooded.
6/8/1997		Fremont	5 S Riverton						Portion of Highway 789 closed due to water and debris over road. Two homes flooded. Water over Highway 134. Basements flooded.
9/12/1998		Fremont	Dubois						Street flooding and some basements flooded in and around Dubois. Intense, slow-moving thunderstorms.
9/12/1998		Fremont	Riverton						Some streets and sidewalks near downtown under 1 foot of water. Intense, slow-moving thunderstorms.
9/14/2001		Fremont	Lander						One foot of water reported on Main Street, between 1st and 9th streets.
6/17/2003		Fremont	4 W Shoshoni						Water flowing over US Highway 20/26.
7/15/2004		Fremont	9 S Moneta						A NWS Survey team reported Deer Creek had overflowed its banks causing flooding along Buck Camp Road. No damage or injuries occurred.
6/5/2010	6/18/2010	Fremont	Ethete Hudson Lander Riverton						The advent of a sudden warm-up created a faster-than-typical melt of the mountain snowpack. The snow melt was then exacerbated by the onset of rain. The result was the Popo Agie River System exceeded its banks.
9/1/1938		Goshen	Southeast, Central Wyoming						Some damage was reported from the heavy rains to highways and bridges in the southeast and central portion of the state.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/1/1945		Goshen							A heavy rain over southern Goshen County and the extreme eastern portion of Laramie County on August 1st, which resulted in floods in Bear Creek and Horse Creek.
8/26/1946		Goshen	Cheyenne			100,000		100,000	Flash floods occurred at Cheyenne on the 26th. The flood was caused by unusually large amounts of rain falling in a short period of time. The storm at Cheyenne caused approximately \$100,000 damage, confined principally to flooded basements and basement apartments.
6/25/1954		Goshen				2,000		2,000	Flash floods in Goshen and Platte Counties damaged highways and bridges with estimated \$2,000 damage on the 25th.
6/26/1955	6/27/1955	Goshen	North Platte Valley				100,000	100,000	One of the worst series of thunderstorms in the North Platte Valley in recent years occurred June 26th - 27th. A survey of the area by a representative of the U.S. Weather Bureau, in cooperation with other interested agencies, indicated from unofficial reports that there were 6 inches to 8 inches of precipitation. This was one of the worst floods in the upper North Platte Valley in 25 years. On U.S. highway 26, two bridges were washed out between Ft. Laramie and Guernsey. About 75 persons were evacuated from their homes along the North Platte. Torrential rains with hail and consequent high water caused hundreds of thousands of dollars in damage to wheat, bean, and sugar beet crops in the valley. In some fields plantings were total losses. Trees were uprooted by high winds and two farmhouses were destroyed by a small tornado along a path from 2 to 7 miles southwest of Torrington the morning of the 27th. The North Platte River and the Interstate Canal overflowed their banks the evening and night of the 26th at Ft. Laramie. More than 75 percent of the town was inundated by 5 feet of water; 4 to 6 inches of mud was deposited on the floors of three-fourths of the homes and business buildings of the town. The worst bridge washout was at Cottonwood Creek five miles west of Ft. Laramie. Two spans were swept away and piling was torn out of the ground. The grade approach to a railroad bridge was washed out leaving 22 feet of track suspended. South of Chugwater 18 miles of railroad tracks were washed out. Temporary bridges were erected over Bear Creek on U.S. Highway 87. There were reports from four miles west of Torrington of hailstones as large as baseballs. Runoff from the hills north of Torrington flooded the town to a depth of 2 to 3 feet at the height of the storm on the 26th. Many basements in residential and business areas were filled with water and hail. The National Guard was mustered to direct traffic and police the area. A partially built frame house in Torrington collapsed, and a basement wall of another house caved in. A

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
									county road north of Torrington was undercut by the deluge and a 40-foot section washed out.
6/27/1955		Goshen	Torrington, Cherry Creek, North Platte River						A cloudburst caused several hundred driven from homes, sugar beets damaged, and flooded basements. Response included help from the Red Cross.
8/7/1955		Goshen	Ft. Laramie, Lingle						Rainfall between Lingle and Fort Laramie was heavy enough to breach the banks of the Lucerne Ditch in three places and cause some flooding of fields in the area. Crop damage was light.
7/30/1961		Goshen	Torrington and vicinity, Platte River			22,500		22,500	High intensity rain showers with some 1 to 1/2 inch hail caused flash flooding with damage to homes, streets, crops, and farm land.
5/31/1962		Goshen	LaGrange 4 W			22,500		22,500	Severe thunderstorms with considerable small hail caused flash flooding along Bear Creek, damaging property, livestock, roads, and bridges. Flood waters piled hail into 8- to 10-foot drifts.
6/1/1962		Goshen	LaGrange 4 W			225,000		225,000	Severe thunderstorms with heavy rain and 4 to 6 inches of small hail caused damage and flash flooding to the area along Bear Creek and some along Horse Creek.
6/20/1977		Goshen	Lingle 10 SW			225,000		225,000	Tornado touched down briefly. Most all damage was done by heavy rains up to 4 inches unofficially with some small hail, causing low land flooding.
6/7/1986		Goshen	25NW Torrington						A tornado was reported by law enforcement personnel at 1910 MST between Lingle and Fort Laramie about 12 miles northwest of Torrington. Traffic along US Highway 26, between Guernsey and Fort Laramie, was blocked from 1900 MST to 2200 MST due to debris and water up to 4 feet deep. This was about 25 miles northwest of Torrington.
5/28/1991		Goshen	LaGrange						Late afternoon thunderstorms on the 28th in southern Goshen County brought large hail to LaGrange at 1610 MST. Rainfall of 1.21 inches brought local flooding to some basements in LaGrange before 1800 MST.
6/7/1991		Goshen				2,250,000	225,000	2,475,000	More than 7 inches of rain in the past 10 days resulted in flood damage to roads, bridges, and agriculture loss.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
5/24/1997		Goshen	2 SW Yoder to 2 SE Torrington			30,000	30,000	60,000	Heavy rainfall totaling more than 3 inches fell from southwest of Yoder to around Torrington. Four feet of water was reported over State Highway 156 about 2 miles south of Torrington at 1715 MST. The flooding continued through the evening along state highways 156, 154, and 161 in the Torrington, Veteran, and Yoder areas, where water continued to cover highway 161 at 2027 MST. The water subsided by 2130 MST.
7/29/1997		Goshen	30 NW Torrington to 5 NW Torrington			30,000	5,000	35,000	Residential basements flooded and a county road washed out after about 6 inches of rain; Cameron Creek, Rawhide Creek, and Torrington Ditch overflowed just north of U.S. Highway 26.
8/3/2005		Goshen	17 SW Lingle						Water estimated to be 100 yards wide flowing across a county road.
8/3/2005		Goshen	Yoder			73,000		73,000	Significant flooding reported in Yoder, WY, with many streets under several inches of water.
8/14/2006	8/14/2006	Goshen	LaGrange			80,000		80,000	Rainfall from 3 to 4 inches fell over the La Grange, WY. Area and produced street flooding with some water in basements. A county road bridge was also washed out.
6/19/1917		Hot Springs	Thermopolis Big Horn River						Cool weather preserving the heavy snowfall in the mountains until hot weather melted the snow quickly caused flooding according to FEMA Flood Insurance Study March 23, 1999. According to WEMA Flood Damage Inventory the flood caused washed out bridges, destroyed irrigation flumes, and flooded low lying ground. The WEMA Flood Damage Inventory also gave the amount of 19,400 CFS for a discharge and called it a 100-year flood.
6/1/1921		Hot Springs	Thermopolis Big Horn River						A 100-year flood caused washed out bridges and irrigation flumes with a discharge of 20,700 CFS.
7/24/1923		Hot Springs	Thermopolis Big Horn River			100,000		100,000	A 300-year flood producing 4.10 inches of rain was caused by a cloudburst. The cause was cool weather preserving the heavy snowfall in the mountains, when hot weather melted the snow suddenly. Damage was to bridges, irrigation flumes, highways, and railroads. A city pump station was flooded, no water was available to public, and loss of power to city due to severed gas line. Damage estimate was well over \$100,000 (FEMA Flood Insurance Study March 23, 1999). The study agreed with the WEMA Inventory, and added that nearly all downtown businesses reported either leaking or flooded basements. It also said that farmers and ranchers in the vicinity lost livestock, crops, machinery, and personal belongings. A discharge of 29,800 CFS was recorded and at Bad Water Creek at Bonneville the discharge was 18,600 CFS (WEMA flood damage inventory).

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
4/15/1937		Hot Springs						-	Locally heavy rains, accompanied by high temperatures, which caused rapidly melting snow on the 15th, caused considerable flood damage. In the Wind River Canyon, in southern portion of Hot Springs County, land slides carried way railroad tracks or covered them with earth and rocks interrupting traffic for several days.
7/1/1937		Hot Springs	Big Horn Basin						Landslides in the Big Horn Basin destroyed large sections of railroad tracks and washouts swept away a large number of highway bridges. Railroads and highways were washed out and mining property damaged. Heavy flood damage also occurred in the Big Horn Basin, particularly in the Wind River Canyon and in the vicinity of Shoshoni. The damage in the Wind River Canyon resulted from land slides, which took out several sections of highway and railroad. In all highways suffered damage in 12 counties. Severe damage occurred in the Upper Big Horn Basin. There were more than 3,000 feet of railway washed out and much covered by landslides. The highway was badly damaged from Riverton to Thermopolis, and traffic was suspended temporarily. Near Shoshoni traffic was possible only by long detours. Highways were considerably damaged in ten other counties in the eastern half of the State.
7/11/1937	7/12/1937	Hot Springs							Heavy flood damage also occurred in the Big Horn Basin, particularly in the Wind River Canyon and in the vicinity of Shoshoni. The damage in the Wind River Canyon resulted from land slides, which took out several sections of highway and railroad. In all highways suffered damage in 12 counties. Crops suffered severely from hail and floods, but there were compensating benefits from the excess moisture.
6/16/1960		Hot Springs	Lucerne and Thermopolis Big Horn River			22,500	22,500	45,000	Flooding and crop damage together with some livestock loss. Sand Draw near Thermopolis had a discharge 2490 CFS (WEMA Storm Data).
6/16/1963		Hot Springs	Thermopolis Big Horn River						Cool weather preserving the heavy snowfall in the mountains until hot weather melted the snow (FEMA Flood Insurance Study March 23, 1999), augmented by heavy rain caused damage to streets, roads, downtown businesses, flooded basements, loss of livestock, crops, machinery, and personal belongings (WEMA Flood Damage Inventory). Gooseberry Creek at Dickee had a discharge of 1130 CFS. A total of 4.19 inches of rain was recorded (WEMA Flood Damage Inventory)

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
6/8/1987		Hot Springs	Thermopolis			225,000	22,500	247,500	A thunderstorm moved over the city of Thermopolis and drenched part of the city. This heavy rain caused some minor urban flooding to the Red Lane area of Thermopolis.
8/7/1987		Hot Springs	3NW Thermopolis			2,250		2,250	An intense thunderstorm moved over the Sand Draw area of the Cottonwood Creek drainage northwest of Thermopolis. Torrential rains occurred from 1700 to 1800 MST over the draw producing water levels of 5 to 6 feet running through the normally dry Sand Draw. Some culverts in the drainage area could not handle the amount of water and flooded roads in the area to a depth of a foot and a half. Hail 0.25 inch in diameter also fell and accumulated into drifts 2 to 3 feet deep.
8/28/1999		Hot Springs	7 SE Thermopolis						Evidence of flash flooding of washes that feed into Buffalo Creek and in Buffalo Creek proper. Much debris and mud on road in area about 100 yards wide. Estimates of up to 1.5 inches of rain in less than 30 minutes in the area.
7/10/2001		Hot Springs	1 S Thermopolis						Eyewitnesses reported 2 brief touchdowns. Mobile home destroyed and barn damaged, approximately 0.25 mile apart. Property damage amounts unknown. Water at least 3 feet deep caused considerable damage to mobile home and fences. Three horses injured.
7/1/2006	7/1/2006	Hot Springs	4.2 SW Thermopolis						A trained spotter reported Red Canyon Creek flowing out of its banks southwest of Thermopolis. Heavy rain also produced several minor rock and mud slides in the Wind River Canyon. NWS radar estimated two to four inches of rain fell on mountainous slopes above Red Canyon Creek.
6/11/1912		Johnson	Buffalo, Clear Creek						According to WEMA Flood Damage Inventory heavy rain coupled with heavy snowmelt runoff caused flooding. And according to Wyoming Floods and Droughts, National Weather Summary 1988-89 locally intense thunderstorms and snowmelt probably combined with rainfall caused flooding. The flooding according to WEMA Flood Damage Inventory resulted in a building washed down river and it hit a main street bridge, where the water backed up and out onto the street and the bridge collapsed. According to Wyoming Floods and Droughts, National Weather Summary 1988-1989 the event was a greater than 100-year flood.
9/26/1923		Johnson	Buffalo, Powder River			100,000		100,000	A flood noted as the greatest in Powder River history was caused by a cloudburst dumping rain resulting a 20- to 30-foot high wall of water, inundating farms and ranches. The estimated damage was at \$100,000 and a loss of 4500 sheep. Eighteen people were killed when a train crashed due to a weak bridge at Cole Creek south of Casper.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
1/1/1943		Johnson	Northeast portion of the state						Chinook conditions over the northeast Wyoming caused rapid melting of the snow, resulting in serious floods. The town of Gillette was especially hard hit by a flood on the 22nd. Reports from the Big Horn Basin state that the ice in the river went out on the 22nd causing serious floods to farms near the river.
7/28/1953		Johnson	Kaycee						Late in the evening of July 28th, over five inches of rain fell in a half hour period west of Kaycee, resulting in damage to crops and irrigation installations.
8/2/1953		Johnson	Northeast Wyoming			50,000	1,000	51,000	A heavy rain the afternoon of the 2nd caused flood and property damage in northeastern Wyoming estimated at \$50,000 and crop damage of \$1,000.
6/25/1955	6/27/1955	Johnson							In Sheridan and Johnson Counties exceptionally heavy rainfall during the period 25th - 27th caused flood damage along several streams, especially Rock Creek and Prairie Creek. From newspaper clippings and information furnished by Mr. Leo Clapp of the Cheyenne Weather Bureau Office, the following details were obtained: Following torrential rains in the nearby foothills of the Big Horn Mountains, below the Horton ranch, a flash flood roared down Rock Creek, north of Buffalo, late on the 25th, and another during the afternoon of the 26th. It was estimated that 75 percent of the bridges over Rock Creek were destroyed. No lives were lost but several persons abandoned cars and waded through waist-deep water to safety on higher ground. A few calves and many sheep were lost in the first flood on the 25th but livestock was moved to safe ground before the onset of the second flood on the 26th. On the 25th an area about 2 by 5 miles in the vicinity of Rock Creek was covered by hail, in some places 6 inches deep. Rock Creek, normally a tiny stream about 12 feet wide, became for 3 hours a roaring river half a mile across. On U.S. highway 87, about 2 miles north of Buffalo, water surged 3 feet deep across a bridge and over the paving. A new highway bridge under construction over Rock Creek was partially washed out and machinery carried downstream. In Johnson County a bridge northwest of Buffalo was washed out. Water was reported up into several ranch homes, and old-timers said floodwater had never been that high before. At the Rennie ranch mud covered fields, and buildings sustained extensive damage. At the Pabst ranch 150 sheep were lost in the flood. A three-foot wall of water came down McCormick Creek between 7:00 and 10:00 p.m. of the 25th. At the De Pue ranch, southeast of Sheridan, Prairie Dog Creek rose 12 feet the night of the 25th. A utility shed and a brooder house with 175 pullets were swept away, as well as a hayrack, bales of straw, feed racks, and oil drums. Water was

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
									more than two feet deep in the kitchen and utility room at this ranch, and silt one-half inch deep was deposited on the floors. Wagons were floated and scattered throughout the ranch but no livestock was reported lost. At another ranch Prairie Dog Creek cut new channels on opposite sides of the brooder house but no chickens were lost. Southeast of Sheridan, on Highway 14, Prairie Dog Creek covered the highway and a bridge. At the Harper ranch, water was over the highway and mud was deposited on the pavement. Meade Creek also was on a rampage and did considerable damage on the Willey ranch south of Sheridan. Sheds near the creek bank were destroyed, several bridges across the creek were carried away, and six pigs lost. Water was up to the barens but did not reach the ranch residence. The area from the Big Horn junction south of Sheridan to Meade Creek suffered most damage. Severe lightning caused a shutdown for about 2 hours of the main generator of the Acme power plant, which supplies electricity for Sheridan, beginning about 5:30 p.m. on the 25th. Lightning caused further power trouble at 12:30 a.m. the 26th when two transmission lines were parted. At 2:00 a.m. the 27th two substation transformers were burned out by lightning at the Big Horn Coal Co. tippie between Acme and Ranchester. Ash Creek, north of Sheridan, overflowed its banks for about 4 hours starting at 5:30 p.m. on the 27th. Considerable countryside was inundated and water flowed over at least one county bridge but no extensive damage was reported.
6/25/1955		Johnson	Buffalo, Rock Creek						Cloudburst created flooding with a wall of water 14 feet high resulting in damaged ranches and sheep lost.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/27/1956		Johnson	Buffalo			500		500	One of the most violent and unusual summer storms in the memory of Buffalo residents dumped an inch and a half of rain and hail and caused hundreds of dollars in property damage. The storm was accompanied by winds of almost tornado force that brought the water from every angle. The rain came so fast that street gutters could not handle the flow and a torrent of water poured down the streets and sidewalks into basements in low areas and into several stores. Water poured over U. S. Highway 87 south of Buffalo to a depth of one foot as Bull Creek overflowed its banks. An ordinarily dry creek leading into Buffalo on a diagonal line from the west overflowed, and several homes in the northwest part of town were flooded. Tree limbs broke off all over the city. So many trees were blown over that traffic was blocked along roads in the city park. The wind was almost like a "twister" and residents described the storm as a "dry land typhoon". Telephone lines were put out of commission in many parts of town and the power line was temporarily knocked out. The hail was not large, but severe because it was driven by the strong wind. The storm was local in nature and areas a few miles in any direction from the town received very little rain.
5/22/1962		Johnson	Sussex, Powder River			22,500		22,500	Heavy rains in the Sussex area falling on already wetlands caused flash flooding with livestock, hay and personal property losses.
7/13/1962		Johnson	Kaycee			22,500		22,500	Heavy rains west of Kaycee caused flash flooding along the Middle Fork Powder River through Kaycee and vicinity.
6/15/1963		Johnson	Buffalo, Clear Creek						A 250-year flood caused bridges, canal head gates, and siphons to be washed out. Clear Creek near Buffalo had a discharge of 3420 CFS and North Piney Creek near Story had a discharge of 1820 CFS.
7/27/1965		Johnson	Buffalo 15 SE, Crazy Woman Creek			22,500		22,500	Rains of 2 to 3 inches with some 1-inch hail did damage to crops and irrigation structures, caused flooding along Crazy Woman Creek.
6/16/1972		Johnson	Kaycee			22,500		22,500	A heavy thunderstorm with hail to 1.25 inches falling to a depth of 5 inches caused damage to houses, cars, trees and gardens and damage from flash flooding. Storm was 4 to 5 miles wide, lasted 45 minutes, reported heavier east of town.
7/29/1984		Johnson	Buffalo		1	225,000		225,000	Late afternoon thunderstorm caused flash flooding of many of main streets in Buffalo. Up to 100 homes were affected. Several businesses and a hotel were damaged. A boy was swept into culvert and injured slightly before being pulled to safety.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
6/12/1988		Johnson	Buffalo Area			22,500		22,500	During the evening of the 12th and intense thunderstorm produced very heavy rainfall and some small hail in a short period of time west of the town of Buffalo. The rapidly rising waters of Clear Creek forced a road closure in the area. Also, a local rancher east of Buffalo lost a few animals and a cattle guard due to flood conditions. A private bridge was also washed out.
6/21/1992		Johnson							Up to 5.5 inches of rain in and around the town of Buffalo caused some brief flooding of streets and basements. The town of Buffalo recorded 3.72 inches of rain in a 24-hour period.
7/7/1994		Johnson	Kaycee			22,500		22,500	Early on the morning of the 7th, 4 to 5 inches of rain fell southwest of Kaycee causing flash flooding on the Middle Fork of the Power River. Several ranches sustained damage to irrigation equipment and fences. Only minor structural damage was reported from Kaycee.
6/8/1997		Johnson	Barnum						Extensive flash flooding in the southwestern part of Johnson County in the Barnum and Red Wall areas. Beaver Creek. Roads, bridges, culverts, damaged. Damage estimates unavailable. Times estimated.
6/8/1997		Johnson	Buffalo						Flash flooding in northern Johnson County in the Buffalo area. Clear Creek and Rock Creek. KOA campground damaged. No damage estimates. Times estimated.
7/30/1998		Johnson	Southwest part						Mayoworth area. Roads washed out. Also Willow Creek area.
7/10/2001		Johnson	10 N Kaycee			18,000		18,000	Flooding around home-basement full of water. Total rainfall estimated at 6.5 inches since around 1500 MST. Sheriff's deputy reported 6 inches of water on Reno Road approximately 10 miles north of Kaycee. Property damage amounts estimated.
7/10/2001		Johnson	12 N Kaycee						Flooding around home-basement full of water. Total rainfall estimated at 6.5 inches since around 1500 MST. Sheriff's deputy reported 6 inches of water on Reno Road approximately 10 miles north of Kaycee. Property damage amounts estimated.
8/21/2002		Johnson	10 SE Buffalo						The water was reported 6 feet deep along Trabing Road. Also, estimates of 3.5 inches of rain in this area.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/26/2002		Johnson	Kaycee			459,000		459,000	A stationary thunderstorm brought flash flooding and an estimated 3 inches of rain to Kaycee. Most of the rain fell between midnight and 0400 MST. The flooding damaged 19 trailers and 22 houses. In addition, 12 businesses, the post office, the conservation district office, and telephone company were damaged. The force of the water along the Middle Fork of the Powder River resulted in a hotel being broken into three pieces, with one piece carried 75 yards, and two pieces deposited a few hundred yards away on the opposite side of the Middle Fork of the Powder River. By 0715 MST, the Middle Fork of the Powder River was out of its banks and 4 feet of water was reported on Main Street. Total damage from the flash flood was \$459,166.
8/26/2002		Johnson	South Portion						A stationary thunderstorm brought flash flooding and Doppler radar rainfall estimates of 7 to 7.5 inches, along Murphy Creek in southern Johnson County. Also, rain gage measurements in excess of 4 inches were reported in this area. Most of the rain fell between midnight and 0400 MST. A damage survey conducted by the National Weather Service Riverton office determined that Murphy Creek was at one point 300 yards wide and 20 feet deep near Lone Bear Road. This creek eventually comprised the safety of the northbound Interstate 25 bridge over Murphy Creek.
6/19/2003		Johnson	10 S Buffalo			60,000		60,000	Water reported flowing over Tisdale Road, 10 miles south of Buffalo. Flood waters washed out a portion of Trabling Road, 6 miles south of Buffalo. Two motorcyclists clung to a fence 6 miles east of Buffalo, as their motorcycles were washed away. Neither were injured.
8/7/2006	8/7/2006	Johnson	15 NE Buffalo			1,400		1,400	Flash flooding was reported on Tipperary Road between Luddeck Road and Double Cross Road. An estimated 2.5 inches of rain fell in less than two hours. Sheriff's deputies reported that a portion of Tipperary Road was washed out.
7/15/1896		Laramie	Cheyenne, Crow Creek, Dry Creek	Loss of lives					Heavy rain (4.78 inches in 3 hours) caused flooding resulting in extensive damage to buildings, transportation facilities, and utilities (see Figure 8.3)
5/20/1904		Laramie	Cheyenne, Crow Creek	2					A 500-year flood from heavy rain created a 20- to 25-foot wall of water down Crow Creek. Damage to buildings, transportation facilities, utilities, bridges and houses washed from foundations; large numbers of people caught in houses. There was 1.10 inches of rain in one hour and estimated discharge of 7000 CFS. Two children killed.

Table 8.1a - Wyoming Flood Data									
Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
4/23/1929		Laramie	Cheyenne, Crow Creek	1					A 500-year flood was caused by heavy rain producing 3.20 inches in 24 hours. The flood damaged buildings, transportation facilities, and utilities. The event resulted in one death. Crow Creek had a discharge of 8000 CFS.
6/1/1929		Laramie	Cheyenne, Crow Creek	1		500,000		500,000	Flooding was produced by showers near headwaters, ground saturation, and tributaries full of melting snow (WEMA Interagency Hazard Mitigation Report). Flooding was also caused by rainfall combined with snowmelt runoff (Wyoming Floods and Droughts, National Weather Summary 1988-89). The flooding led to bridges, dams, highways, crops, and railroads being damaged at a cost of an estimated \$500,000. There was one death because the individual did not hear warnings to evacuate the area. According to FEMA Flood Insurance Study for March 2, 1994 it was a 500-year flood and the Crow Creek had a discharge of 8000 CFS.
4/15/1937		Laramie							Locally heavy rains, accompanied by high temperatures, which caused rapidly melting snow on the 15th, caused considerable flood damage. In the northwestern portion of Laramie County several hundred yards of railroad track were washed out.
9/1/1938		Laramie	Southeast, Central Wyoming						Some damage was reported from the heavy rains to highways and bridges in the southeast and central portion of the state.
8/1/1945		Laramie							A heavy rain over southern Goshen County and the extreme eastern portion of Laramie County on August 1st, which resulted in floods in Bear Creek and Horse Creek.
8/26/1946		Laramie	Cheyenne			100,000		100,000	Flash floods occurred at Cheyenne on the 26th. The flood was caused by unusually large amounts of rain falling in a short period of time. The storm at Cheyenne caused approximately \$100,000 damage, confined principally to flooded basements and basement apartments.
8/26/1949		Laramie	Dry Creek Basin			100,000		100,000	A severe storm producing 1 inch of rain in 10 minutes led to widespread street and basement flooding at an estimated cost of \$100,000.
9/16/1950		Laramie	Southeast Laramie County						A heavy rain and hail storm occurred over southeast portion of Laramie County on the evening of the 16th causing damage to property and growing crops. Flood waters from the rain washed out growing crops so that replanting of winter grains was necessary. Potatoes were washed from the ground and beans only recently pulled were washed away. The estimated damage from this storm is several thousands of dollars.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
9/6/1951		Laramie	Eastern Laramie County						A damaging rain and hail storm occurred over the eastern portion of Laramie County on the afternoon and evening of the 6th. Flood waters from the storm caused considerable damage to highways and railroads and all crops in the path of the storm were either destroyed or badly damaged.
6/15/1955		Laramie	Cheyenne, Dry Creek, Crow Creek			105,000		105,000	Heavy rain causing flooding washed out railroad tracks, flooded parts of the city, basements, streets crumbled, estimated cost \$105,000 according to WEMA, Laramie Boomerang, and NOAA. Also, according to them 2.4 inches of rain fell. According to FEMA Flood Insurance Study March 2, 1995 Dry Creek had a discharge of 5800 CFS.
6/26/1955	6/27/1955	Laramie	Northern Laramie County				100,000	100,000	South of Chugwater 18 miles of railroad tracks were washed out. Temporary bridges were erected over Bear Creek on U. S. Highway 87. There were reports from four miles west of Torrington of hailstones as large as baseballs. Runoff from the hills north of Torrington flooded the town to a depth of 2 to 3 feet at the height of the storm on the 26th. Many basements in residential and business areas were filled with water and hail. The National Guard was mustered to direct traffic and police the area. A partially built frame house in Torrington collapsed, and a basement wall of another house caved in. A county road north of Torrington was undercut by the deluge and a 40-foot section washed out.
8/2/1957		Laramie	Cheyenne						Though brief, (about 20 minutes duration) this storm was violent and destructive and caused very heavy damage along a southeastward path of 20 miles or more. Hailstones ranged mostly upward in size from one inch in diameter to as large as golf balls. Many people reported stones the size of eggs or large as lemons, tennis balls, etc. In the southwest and southern parts of the city reports of stones at least three inches in diameter and "the size of baseballs" were common. Hailstones 8 inches in circumference were reported at Orchard Valley in the southern part of Cheyenne. In Cheyenne most damage was done to automobiles, homes, and neon signs. Car roofs and windshields were broken, also roofs of houses. There was very little crop damage since the storm passed over little arable land. Some sewers were clogged by hailstones and debris which caused flooding of some basements in Cheyenne.
8/28/1957		Laramie	Cheyenne						A sudden rain and hailstorm at 5:15 p.m. caused a flash flood and lightning damage along a path 15 miles long and 5 miles wide near Cheyenne.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/22/1966		Laramie	Cheyenne			22,500		22,500	Heavy rains up to 2 inches with hail measuring up to 0.75 inch caused flash flooding. Damage mostly in the central and eastern part of Cheyenne.
8/9/1966		Laramie	Meriden			22,500		22,500	Heavy rain with some small hail did damage to drops and caused some flash flooding with small bridges destroyed.
7/19/1973		Laramie	Cheyenne			2,250		2,250	On the 19th, Cheyenne and part of Laramie County received heavy rains resulting in swollen creeks and flooded basements. For Cheyenne, it was the second greatest 24-hour rainfall on record and totaled 3.42 inches. The rains occurred over much of the state but seemed heaviest over the southeast corner.
9/8/1973		Laramie	Cheyenne			225,000		225,000	A nearly 3 inches downpour of rain with small hail caused flash flooding mainly in downtown Cheyenne. Hail caused damage to trees, shrubs and flowers.
5/23/1982		Laramie	Cheyenne			22,500		22,500	Brief heavy rains from 1.43 inches at the weather office to 2.8 inches on the east side of the city combined with soft hail caused local flooding and evacuation of several homes.
7/22/1983		Laramie	Cheyenne, Crow Creek			25,000		25,000	Heavy rain amounting to 3 inches caused a flood where a mobile home park was evacuated and ranches, bridges, roads, and an irrigation system had damage. Estimated damage to bridges was \$25,000. The flooding made a new channel and basements flooded.
7/31/1985		Laramie	Albin			225,000		225,000	Five inches of rain and marble sized hail fell at Albin. Basements were flooded and there was extensive flooding of low-lying areas.
8/1/1985		Laramie	Cheyenne, Crow Creek, Dry Creek	12	70	65,000,000		65,000,000	A nearly stationary severe thunderstorm, or storms, produced the most damaging flash flood on record for Cheyenne and the state. Twelve people lost their lives; 70 were injured; and damage to homes, cars, and businesses were estimated at \$65 million, \$61.1 million (Wyoming Floods and Droughts, National Weather Summary 1988-89), and \$40 million (WEMA). At the NWS Forecast Office near the airport, 6.06 inches of rain fell in just over 3 hours; 3.5 inches fell between 1900 and 2000 MST. Elsewhere in and around Cheyenne, rainfall from the storm totaled between 2 and 6 inches. Around 1900 MST cars and trucks were reported floating down Dry Creek in northwest Cheyenne. By 1930 MST, in addition to blinding rain, hail up to 2 inches in diameter and winds to 70 mph were occurring in the area. Flood waters were at their height from 1900 to 2200 MST. Dry Creek became a raging torrent through north Cheyenne. Ten of the twelve deaths occurred along Dry Creek when people were swept away in their cars as they tried to cross flooded streets. A Sheriff's Deputy and the child he was trying to rescue from a stranded vehicle were swept away. Many streets turned into 2- to 4-foot-deep rivers with

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
									large amounts of hail floating on top. Basements of homes and businesses quickly filled up with water and hail, as flood waters crashed through doors and windows. One man suffered a heart attack and died while bailing out water from his basement. An elderly woman, who had taken shelter in her basement due to an earlier tornado warning, became trapped and drowned when the flood waters came crashing through basement windows and filled to the ceiling. Funnel clouds were observed 5 and 3 miles southwest of the Weather Service Office at 1824 and 1841 MST, respectively. Some basements equipped with drains were still flooded with 2 to 5 feet of hail after the water drained away. In some low-lying areas of Cheyenne, the hail had piled up by flood waters into 4- to 8-foot drifts. Estimated peak discharge at Dry Creek location 5100 CFS (WEMA) and 5880 CFS (FEMA Flood Insurance Study March 2,1994). Estimated peak discharge at Crow Creek 8000 CFS (FEMA Flood Insurance Study March 2,1994).
5/17/1987		Laramie	25W Cheyenne						A thunderstorm developed over the west section of Laramie County during the morning. This thunderstorm marched through Laramie County with locally heavy rain and hail. Rains of over 1 inch were reported west and north of Cheyenne with 0.82 inch of rain reported at the Cheyenne airport. Water got as deep as 3 to 4 feet in areas of Cheyenne. This flooded some parked cars and made a few roads temporarily impassable. Numerous reports of 0.25- to 0.75-inch diameter hail were noted around Cheyenne. Drifts of hail 6 to 8 inches deep were observed about 1.5 miles north of the airport.
7/29/1990		Laramie	Pine Bluffs			2,250		2,250	A thunderstorm produced 3 to 4 inches of rain in the Pine Bluffs area between 1500 and 1600 MST. Minor flooding of streets occurred in the city, with some basements flooded.
7/12/1991		Laramie	Near Cheyenne						Heavy rains with thunderstorms brought 1.70 inches of rain 4 miles west of Cheyenne and 1.95 inches of rain 3 miles north of the airport. Street and some basement flooding was reported in Cheyenne.
7/22/1991		Laramie	3 W Cheyenne						A thunderstorm brought 0.56 inch of rain in 45 minutes with some street and basement flooding.
8/13/1994		Laramie	(CYS) Cheyenne Airport				20,000	20,000	A thunderstorm moved north out of Colorado into southwest Laramie County. This storm produced flash flooding in a few small streams in extreme southwest Laramie County, washing out a couple of roads. Rainfall totaled 3.26 inches in an hour and 0.65 inch in 10 minutes.
7/31/1996		Laramie	Cheyenne			10,000		10,000	Heavy rain caused by thunderstorms caused urban flooding in Cheyenne.

Table 8.1a - Wyoming Flood Data									
Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/15/1996		Laramie	8 NE Cheyenne			10,000		10,000	Heavy rainfall from thunderstorms caused some flooding of creeks in the area.
8/29/1996		Laramie	Cheyenne			30,000		30,000	Heavy rainfall from thunderstorms caused flooding in and near Cheyenne. Some roads had up to 1 foot of water on them and some intersections were closed for a time. Some basements in the north part of town became flooded.
8/16/1997		Laramie	Cheyenne			1,000		1,000	Two to 3 feet of water flooded intersections in southern Cheyenne.
7/9/1998		Laramie	9 ESE Cheyenne to 12 SE Cheyenne						A thunderstorm produced rainfall amounts of up to 3.5 inches, 9 miles east of Cheyenne. Water was flowing over Campstool Road, which runs along Crow Creek.
8/15/2000		Laramie	West Portion			20,000		20,000	Heavy rains fell over parts of Laramie County west of Cheyenne, with estimates of 4 to 6 inches over an area southwest of Federal. Some flooding was reported on Happy Jack Road, with parts of County Road 109 washed out.
6/30/2004		Laramie	5 S Cheyenne						Heavy rain fell over Orchard Valley resulting in flooding of low-lying areas. U.S. Highway 85 was closed for a time just south of Cheyenne, WY due to flooding.
6/3/2005		Laramie	Carpenter						Water up to a foot deep covered roads in and near Carpenter, WY.
7/1/2006	7/1/2006	Laramie	21 WNW Cheyenne			20,000		20,000	A thunderstorm produced very heavy rain over far western Laramie county. Floodwaters produced severe wash-away damage to county roads 110 and 110-A near Happy Jack Road with water reported to have flowed almost a foot deep over Happy Jack Road.
7/2/2006	7/2/2006	Laramie	15 N Cheyenne						Heavy rain resulted in water flowing 12 feet wide and 1 foot deep over county road 128.
7/3/2006	7/3/2006	Laramie	10 W Cheyenne to Cheyenne						A large and slow moving thunderstorm moved over western and central Laramie county and produced significant flash flooding. Cheyenne, WY, recorded nearly 2 inches of rainfall which resulted in widespread street flooding, and flooded the hospital emergency room parking lot. Dry creek was reported flowing over its banks at Dell Range Blvd and Prairie Rd.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
4/15/1937		Lincoln	Kemmerer, Sage						Locally heavy rains, accompanied by high temperatures, which caused rapidly melting snow on the 15th, caused considerable flood damage. The greatest damage occurred in the southern portion of Lincoln County, between Kemmerer and Sage. Kemmerer was cut off and it was necessary to detour traffic for three days. Twin Creek reached the highest known stage inundating 5 miles of right-of-way, washing out considerable roadbed and flooded the town of Sage. It was necessary to rebuild several hundred yards of track.
5/28/1956		Lincoln	7 to 8 miles north and new of Border, western slope of Sublet Range, Bear River Valley						On the 28th a "cloudburst" with hail and strong wind occurred about 7 to 8 miles north and northeast of Border in Lincoln County on the western slope of Sublette Range, and at a few scattered places in the Bear River Valley. Heavy wind and hail accompanied this storm. All ditches and canals overflowed. Some grain fields were washed out but no extensive damage was incurred.
5/17/1984		Lincoln	Auburn, Freedom, Star Valley						During a string of extra hot days a flood inundated several homes (WEMA Summary of floods).
8/16/1990		Lincoln	Near Opal			22,500		22,500	A thunderstorm dropped up to 5 inches of rain in the area around Opal from 1600 to 1800 MST. A flash flood resulted, with water 2 to 4 feet deep across Highway 30 at one time. Several ranches received minor damage, with one ranch losing 200 tons of cut hay.
8/9/1994		Lincoln	La Barge				10,000	10,000	Thunderstorms created flash flooding southwest of LaBarge. Water was 6 to 8 feet deep in the Exxon storage yard. Damage was done to a road, and a telephone pole was carried away in the flood waters.
8/5/1997		Lincoln	Thayne						Star Valley Ranch just east of Thayne. Flooding around trailers and summer homes.
12/15/2005	12/16/2006	Lincoln	4 WSW Etna						Ice jamming caused stretches of the Salt River to flood on the evening of 12/15/2005 through the afternoon of 12/16/2005. The frozen section of the Salt River caused water flow to be diverted to its old channel, Archie's slough, threatening homes in the area. The potential flood areas were sandbagged to protect homes and buildings. No damage was reported.
07/00/1895		Natrona	Casper, Garden Creek	3					Greatest recorded flood produced a 20-foot-high wall of water sweeping down Garden Creek, wiping out camp of settlers at present-day Westwood School. Three people drowned.

Table 8.1a - Wyoming Flood Data									
Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
3/1/1906		Natrona	Casper, North Platte River	12					Flooding resulting from snow/ice melt, a diversion dam giving way, a stream returned to natural channel culvert too small to handle flood, rose against railroad embankment, earth gave way. Twelve were killed in a train wreck and a railroad bridge was damaged.
9/27/1923		Natrona	Big Horn River, Powder River, North Platte River, North Platte River tributaries near Casper	18					Five days of widespread rainfall caused a 60- to greater than 100-year flood resulting in a railroad bridge washed out east of Casper. The event took 18 lives.
5/1/1935		Natrona	North Platte River, near Glendo						Snowmelt and locally intense thunderstorms caused flooding. The flood was 10- to greater than a 100-year flood
9/1/1938		Natrona	Southeast, Central Wyoming						Some damage was reported from the heavy rains to highways and bridges in the southeast and central portion of the state.
7/6/1961		Natrona	Casper and vicinity			225,000		225,000	High intensity rain showers caused considerable flash flooding in Casper and vicinity with numerous houses, cars, and streets damaged. Some crop land damaged.
2/00/1962	6/00/1962	Natrona	Big Horn, North Platte, and Tongue Rivers, Beaver Creek						Snowmelt from warm Chinook winds (February) and rainfall runoff and/or snowmelt (May/June) caused a 25- to greater than 100-year flood.
6/15/1962		Natrona	Casper 30 NW			225,000		225,000	Several inches of 1- to 2-inch hail along with heavy rain caused considerable damage to range land and to flocks of sheep in the area. Flash flooding occurred with resultant damage to roads and bridge.
6/1/1965		Natrona	Glendo						Locally intense thunderstorms produced a greater than 50-year flood.

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Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/15/1967		Natrona	Casper			1,000,000		1,000,000	Over 2 inches of rain in less than 2 hours caused flash flooding in Casper with damage to houses, stores, lawns, cars, etc. Estimated damage \$1 million (WEMA Flood damage inventory).
7/16/1968		Natrona	Casper			22,500		22,500	Nearly 1.5 inches of rain in an hour caused flash flooding in the central part of Casper with damage to houses, lawns, streets, cars, and utilities.
7/6/1971		Natrona	West of Casper						Heaviest damage reported in suburban Red Butte Village. Some homes were demolished
6/23/1974		Natrona	Casper			225,000		225,000	Heavy rain with soft hail up to 2.75 inches caused damage to houses, trees, and cars. Rain caused brief minor flooding in downtown streets and into some stores to a few inches.
6/19/1986		Natrona	Casper			2,250,000		2,250,000	Flash flooding occurred along Casper Creek. Extensive damage was reported just west of Casper. Over 2.5 inches of rain fell on the west side of Casper from 1730 to 1930 MST.
5/8/1995		Natrona	Casper						Moderate to heavy rain fell in two counties. Amounts between 1.5 to 3 inches fell on already saturated soil. This produced some flooding of creeks and streams in two counties. In the Casper area, high water washed out sections of three roads and partially washed out two others.
6/16/2003		Natrona	9 SW Casper						Rocks, boulders, mud, and water were over Wyoming Highway 220 near mile marker 103.
7/13/2004		Natrona	10 W Casper						Minor flooding reported along Poison Spider Creek with water flowing atop Poison Spider Road. No damage or injuries occurred.
7/25/2005		Natrona	Casper			500,000		500,000	A line of strong thunderstorms moved west to east across Natrona County between 4:30 p.m. and 6:30 p.m. These storms originated over the Bighorn Mountains and rapidly intensified near the Natrona County International Airport, 6 miles west of Casper, where a 54 mph wind gust was reported. The airport received nearly an inch of rain between 5:35 p.m. and 6:05 p.m. The storms hit the Casper area between 5:50 p.m. and 6:20 p.m. with similar strong outflow winds followed by reports of up to 1.44 inches of rainfall over this 30 minute period. The brief torrent of rain produced flooding on the north side of downtown Casper, shutting down portions of Interstate 25. Portions of Poplar and McKinley streets near the Interstate were blocked with water and mud, which in some cases flowed into business buildings. The strong outflow winds that preceded the storm snapped the top of a cottonwood tree off of its 18 inch diameter trunk and ripped a sheet metal roof off a RV storage shed.

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Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/3/2005		Natrona	Casper			85,000		85,000	In the early evening hours, a strong thunderstorm and its associated heavy rainfall neared the Casper area dropping a significant amount of rainfall. Within the city of Casper, rainfall totals ranged from 1 to 1.5 inches in less than an hour which led to an area of flash flooding. The rushing water moved cars several feet, approached the doorsteps and flooded the basement of several homes in the Allendale area, and caused an underground drainage pipe to give way causing a 20-foot wide sinkhole.
8/3/2005		Natrona	Casper			85,000		85,000	In the early evening hours, a strong thunderstorm and its associated heavy rainfall neared the Casper area dropping a significant amount of rainfall. Within the city of Casper, rainfall totals ranged from 1 to 1.5 inches in less than an hour which led to an area of flash flooding. The rushing water moved cars several feet, approached the doorsteps and flooded the basement of several homes in the Allendale area, and caused an underground drainage pipe to give way causing a 20-foot wide sinkhole.
8/3/2005		Natrona	Casper			85,000		85,000	In the early evening hours, a strong thunderstorm and its associated heavy rainfall neared the Casper area dropping a significant amount of rainfall. Within the city of Casper, rainfall totals ranged from 1 to 1.5 inches in less than an hour which led to an area of flash flooding. The rushing water moved cars several feet, approached the doorsteps and flooded the basement of several homes in the Allendale area, and caused an underground drainage pipe to give way causing a 20-foot wide sinkhole.
6/1/1938		Niobrara	Cheyenne River						Heavy rain on the 24th caused the Cheyenne River to leave its banks, damaging crops and destroying a number of bridges on secondary roads.
6/7/1945	6/8/1945	Niobrara							Moderate to heavy storms occurred in southern Weston County and northern Niobrara County on the 7th and 8th. These storms resulted in considerable damage to crops, gardens and vegetation.
8/10/1955		Niobrara	4 miles north of old Whitman Post Office						A very heavy rain occurred about 4 miles north of the old Whitman Post office on the 10th. This caused some dams to break. One ranch lost 21 head of cattle in a local flood.
6/11/1960		Niobrara	South of Lusk			2,250	2,250	4,500	The rain caused flooding with some damage to buildings and roads. Some poultry and small livestock were killed by hail.
5/7/1995		Niobrara							Moderate to heavy rain fell during the evening hours. Rainfall between 1.5 to 3 inches occurred in these areas on already saturated soils. This produced flooding of creeks and streams in three counties. In Niobrara county, three bridges were washed out on county roads. Some flooding of farmland was also reported.

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Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/6/2006	8/6/2006	Niobrara	Redbird			40,000		40,000	Heavy rainfall produced flash flooding along Dogie, Spring and Lance creeks, washing out a bridge and road.
5/13/1957		Park	Cody						During the afternoon of the 13th heavy rain with the flash flooding of Sulphur Creek caused considerable property damage at Cody. Damage also occurred along two other small creeks -- Pat O'Hara north of Cody, and Alkali Creek near Ralston -- on the same date.
6/5/1957	6/9/1957	Park	Meeteetse						The foothills of the Rocky Mountains above Meeteetse were covered by the heaviest snow pack in years. The warm weather on the 4th and 5th which caused rapid melting of snow at higher levels along the northeastern slopes of the Continental Divide, was followed by heavy and sudden downpours of rain and hail. This produced a rapid rise of the Greybull River which flooded twice during the period 5th to 9th. Normally a small stream, the river rose 6 feet above its usual depth for the time of the year, spread to about one-half mile width and extended approximately 50 miles from Meeteetse to the town of Greybull on the Big Horn River. In the vicinities of Burlington and Otto several homes were vacated. Many farms and pasturelands were inundated. Two or more small bridges were destroyed and a power line damaged.
7/6/1961		Park	Cody Area			22,500		22,500	High intensity rain showers caused flash flooding in an area 5 to 15 miles southwest of Cody with most of the damage to roads, crops, and farm land.
6/15/1963		Park	Big Horn Mountains						Flooding caused by heavy rains resulted in damage to homes, equipment, crops, irrigation canals, roads, and bridges. The Greybull River at Meeteetse had a discharge of 13,600 CFS and at Pitchfork had a discharge of 8610 CFS.
7/22/1973		Park	Eastern Park County			225,000		225,000	Extremely heavy rain amounting to 2.62 inches in 1 hour and 22 minutes near Cody resulted in flooded streets and basements. Two bridges were also washed out on Cottonwood Creek near Heart Mountain.
6/8/1981		Park	Shoshone River			2,300,000		2,300,000	Roads, bridges, recreation area, campgrounds, and head gates damaged; damage estimated at \$2.3 million.
8/24/1987		Park	30N Cody, Clark						Unusually heavy rainfall occurred over the drainages of the Line Creek and Bennett Creek near Clark. Officials for Park County reported 4 to 5 inches of rainfall over north Park County. This rainfall created many areas of standing water with 4 minor washouts occurring on the Line Creek road. The town of Clark is located 30 miles north of Cody.

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Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/10/1989		Park	Cody						From the early afternoon through the evening, severe thunderstorms packing hail and strong winds moved through western Wyoming. At 1345 MST dime-size hail occurred at the east entrance of Yellowstone National Park. One hour later, the same storm hit Cody and deposited 1.79 inches of rain in 15 minutes along with 0.75-inch hail. Many downtown streets and low spots were flooded. At 1543 MST, thunderstorm winds gusting to 85 mph tore through Basin. Extensive damage done to power lines and poles left the town without electricity for a few hours. There was also damage done to trees, automobiles and roofs. At 1615 MST Worland had a thunderstorm wind gust to 58 mph. Finally, the last report of strong winds from a severe thunderstorm came out of Rawlins, where a gust to 63 mph was logged at 1920 MST.
7/23/1989		Park	Crandall			2,250		2,250	
5/18/1991		Park	11 SW Cody			22,500		22,500	Thunderstorms dropped 1 to 2 inches of rain on parts of the South Fork River Basin, west of Cody during the evening. A county road was washed out in places and was covered with water in other places along Carter Creek.
6/3/1991		Park	Powell			225,000		225,000	At 1500 MST and 1630 MST, 2 inches of rain and small hail fell in Powell, damaging crops and flooding basements.
7/6/1994		Park	10 NE Cody			6,000		6,000	Flash flooding along Deer Creek washed out a road south of Powell. The cost to repair the road was estimated at \$6000. No estimates of rainfall were available due to the lack of population across the effected area.
6/9/1997		Park	22 W Cody						Flash flooding on Canyon Creek. North Fork Highway had to be cleared of debris.
6/14/1997		Park	5NW Cody						Flash flooding at Trail Creek Ranch. Buildings flooded.
6/13/1998		Park	Powell						Flash flood in the Powell area, especially Garland Flats and golf course. At least one home flooded. No damage estimates exist. Caused by slow-moving thunderstorm producing very heavy rain.
5/16/2000		Park	Cody						Almost 2.5 inches of rain in 12 hours between the evening of the 16th and the morning of the 17th caused some flooding of businesses. Nearly one quarter of Cody's annual precipitation fell during the 12-hour period.
6/12/2001		Park	Powell						Heavy rain flooded streets and caused power outages. Amounts ranged up to 3.25 inches. Heavy rain and snow downed power poles and lines on Heart Mountain near Cody.
7/9/2001		Park	23 W Cody						Flash flooding along Green Creek on the north fork of the Shoshone River. Eyewitnesses reported a 3-foot wall of mud and water.

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Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
5/16/1935		Platte	Wheatland, Rock Creek						Heavy rain produced a flood that damaged property, railways, and roadways. The following are discharge amounts: Hartville Canyon - 3800 CFS, Whalen Canyon - 6200 CFS, and Cottonwood Canyon - 5000 CFS.
5/31/1935		Platte	Wheatland, Rock Creek	8		1,250,000		1,250,000	Heavy rain producing a flood killed 8 people and damaged property, roads, and railroads. Estimated damage for three counties of Laramie, Goshen, and Platte was \$1,250,000. Discharge of stream was 14,000 CFS.
5/29/1938		Platte	Wheatland, Rock Creek	Loss of lives					Property, roadway, and railway damage.
9/1/1938		Platte	Southeast, Central Wyoming						Some damage was reported from the heavy rains to highways and bridges in the southeast and central portion of the state.
8/27/1946		Platte	Chugwater						Flash floods occurred at Chugwater on the 27th. The flood was caused by unusually large amounts of rain falling in a short period of time. The storm at Chugwater caused several washouts on the Colorado and Southern tracks, resulting in delays to trains, as well as damage to irrigation dams and bridges.
5/21/1948		Platte	Wheatland	2		100,000		100,000	On the 21st of May, a severe thunderstorm occurred in the Wheatland area with some hail stones at least an inch in diameter. The main part of this storm was a strip about one mile wide extending from about three miles west of Wheatland to about three miles south. In that strip, rain and hail was reported by numerous farmers to be from 3 to 4 inches and fell within a 2 hour period from 6 to 8 p.m. The official weather station just north of Wheatland reported 1.43 inches from the storm. Hail damaged some crops and buildings but the greatest damage was caused by floods and erosion. Water washed out some highway bridges and also a bridge of the C&SRR track, causing a train wreck which killed two railway employees. A flood in the vicinity of Wheatland in May caused approximately \$100,000 damage.
6/9/1949		Platte	Wheatland, Rock Creek	Loss of lives					A flood caused property, railway, and roadway damage as well as interruption of transportation. It also caused loss of lives.
6/3/1952		Platte	Dwyer	1					Floods occurred at Dwyer on the 3rd. One man was killed at Dwyer when flood waters swept through a saw mill camp.
7/2/1953		Platte	Chugwater						Flash Flood occurred. The flood damage came to Chugwater with the hailstorm on the 2nd.

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Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/29/1953	7/30/1953	Platte	Chugwater						A destructive flood occurred at Chugwater on the night of the 29th and 30th. That storm caused much more water damage in the community and washed out railroad and highway bridges nearby, depriving the area of transportation facilities for two days.
6/25/1954		Platte				2,000		2,000	Flash floods in Goshen and Platte Counties damaged highways and bridges with an estimated \$2,000 damage on the 25th.
6/26/1955	6/27/1955	Platte	North Platte Valley				100,000	100,000	One of the worst series of thunderstorms in the North Platte Valley in recent years occurred June 26th - 27th. A survey of the area by a representative of the U.S. Weather Bureau, in cooperation with other interested agencies, indicated from unofficial reports that there were 6 inches to 8 inches of precipitation. This was one of the worst floods in the upper North Platte Valley in 25 years. On U.S. highway 26, two bridges were washed out between Ft. Laramie and Guernsey. About 75 persons were evacuated from their homes along the North Platte. Torrential rains with hail and consequent high water caused hundreds of thousands of dollars in damage to wheat, bean, and sugar beet crops in the valley. In some fields plantings were total losses. Trees were uprooted by high winds and two farmhouses were destroyed by a small tornado along a path from 2 to 7 miles southwest of Torrington the morning of the 27th. The North Platte River and the Interstate Canal overflowed their banks the evening and night of the 26th at Ft. Laramie. More than 75 percent of the town was inundated by 5 feet of water; 4 to 6 inches of mud was deposited on the floors of three-fourths of the homes and business buildings of the town. The worst bridge washout was at Cottonwood Creek five miles west of Ft. Laramie. Two spans were swept away and piling was torn out of the ground. The grade approach to a railroad bridge was washed out leaving 22 feet of track suspended. South of Chugwater 18 miles of railroad tracks were washed out. Temporary bridges were erected over Bear Creek on U.S. Highway 87. There were reports from four miles west of Torrington of hailstones as large as baseballs. Runoff from the hills north of Torrington flooded the town to a depth of 2 to 3 feet at the height of the storm on the 26th. Many basements in residential and business areas were filled with water and hail. The National Guard was mustered to direct traffic and police the area. A partially built frame house in Torrington collapsed, and a basement wall of another house caved in. A county road north of Torrington was undercut by the deluge and a 40-foot section washed out.

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Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
5/19/1957		Platte	North of Meadowdale						During the evening of the 19th a whirlwind accompanying a heavy rain and hailstorm north of Meadowdale in the northeast corner of Platte County caused some property damage. A number of persons, who saw the funnel cloud touch the ground numerous times, considered it a small tornado. Roofs lifted from sheds, a chicken house wrecked, a windmill damaged, and windows broken by wind and hail. Some hail "as big as baseballs" fell. Several persons sought refuge in cellars but no one was injured. There was considerable runoff from this storm and Willow Creek flooded.
7/5/1962		Platte	Platte County			22,500		22,500	Heavy rains and several inches of hail both afternoons caused severe crop damage and flooding of homes and out-buildings in the Wheatland area.
6/14/1965		Platte	Glendo			225,000		225,000	Heavy rains in the mountains west of Glendo resulted in flash flooding of farms and ranches along streams, destroyed highway bridges on both sides of Glendo, and destroyed a railroad bridge north of Glendo.
7/8/1969		Platte	Wheatland, Wheatland Reservoir 1			1,000,000		1,000,000	Dam break with wall of water 50 feet high damaged crops, killed livestock, and forced families to evacuate. Over \$1 million worth of damage.
7/31/1976		Platte	Wheatland 15 W			22,500		22,500	Heavy rains estimated to 9 inches caused flash flooding in Palmer Canyon. One ranch damaged and several bridges, culverts, and stretches of road were washed away or damaged.
8/11/1982		Platte	Glendo			225		225	Local rural flooding occurred when 1.5 to 2.5 inches of rain and small amounts of hail fell in less than 1 hour. Considerable damage to fences was reported.
6/7/1987		Platte	Wheatland			225,000	225,000	450,000	A severe thunderstorm developed over Laramie Peak in the Laramie Mountains after 1815 MST and moved southeast. This severe thunderstorm moved over the town of Wheatland and dumped between 2 to 5 inches of rain over the Wheatland area in a little more than 1 hour. Also hail between 0.75 and 1.75 inches in diameter accompanied these torrential rains. The heavy rains caused flooding mostly along the North Laramie River and Cottonwood Creek, and some if this flooding extended into the town of Wheatland. Many houses in the west section of Wheatland were flooded with between 4 inches to 4 feet of water. Due to the heavy rain, numerous road closures were reported over central and southern Platte County. There was also a report of extensive crop damage to corn and beans. As the severe thunderstorm continued southeast, two funnel clouds were spawned by the storm. The first funnel cloud was spotted about 20 miles south of Wheatland. The second funnel was located 15

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
									miles west of Veteran, in central Goshen Count. Reports from the Emergency Management officials showed that neither of the funnel clouds touched down. This severe thunderstorm also pelted Chugwater with 1.75 inch diameter hail, but no damages were reported. Later, as the storm moved into Laramie County 0.5 inch diameter hail fell 6 miles north of Cheyenne.
8/4/1990		Platte	Glendo and Wheatland						Thunderstorm dropped 1 to 2 inches of rain on parts of Platte County between 1800 and 2100 MST. Water was reported over some roads, mainly near Glendo and southwest of Wheatland.
6/6/1991		Platte	Wheatland			22,500		22,500	Street and basement flooding occurred when 1.5 inches of rain fell in Wheatland in just over 30 minutes. Some people in mobile homes were evacuated for a short period of time.
6/21/1991		Platte	Sybill Canyon			22,500		22,500	By 1990 MST, heavy rains from a thunderstorm in Sybill Canyon had closed State Highway 34 because of bridge and road damage.
8/25/1995		Platte	Orin Junction to Glendo			10,000		10,000	Heavy rainfall from thunderstorms produced flash flooding between Orin Junction and Glendo. Two miles north of Glendo, water was over Interstate-25 to a depth of a foot. In addition, the water over the Interstate caused two accidents.
7/29/1996		Platte	15 SW Wheatland						Heavy rainfall caused flooding 15 miles southwest of Wheatland. Dead Horse Creek went out of its banks in that area and washed out a bridge.
9/14/1996		Platte	10 SW Chugwater			2,000		2,000	South Creek and Polk Creek rose to 5 feet above normal near Wheatland. The high water levels flooded a yard in Wheatland.
9/14/1996		Platte	Wheatland			100,000		100,000	Heavy rainfall from thunderstorms washed out Iron Mountain Road, which is southwest of Chugwater. Two feet of water was flowing over the road.
7/19/1997		Platte	Guernsey			5,000		5,000	Time approximate; road washed out near Platte River.
9/29/1923		Sheridan	Sheridan, Big Goose Creek, Little Goose Creek			500,000		500,000	An overabundance of rain caused flooding resulting in wooden paving blocks washed downstream, flooded basements, and flooded bridges. Also, accumulated debris under bridge caused water backup; amount of damage estimated at \$500,000. Powder River at Arvada had a discharge of 100,000 CFS.
5/1/1938		Sheridan							Heavy snows in Sheridan County caused local damaging floods during the latter part of the month.
1/1/1943		Sheridan	Northeast portion of the state						Chinook conditions over the northeast portion of the State caused rapid melting of the snow, and as a result, serious floods occurred. The town of Gillette was especially hard hit by a flood on the 22nd. Reports from the Big Horn Basin state that the ice in the river went out on the 22nd causing serious floods to farms near the river.

Table 8.1a - Wyoming Flood Data									
Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
6/3/1944		Sheridan	Sheridan, Little Goose Creek, Big Goose Creek						A 15-year flood from an overabundance of rain resulted in flooded basements and bridges. According to WEMA Flood Damage Inventory the Tongue River near Dayton had a discharge of 3400 CFS and according to FEMA Flood Insurance Study January 19, 2001 it had a discharge of 4040 CFS.
6/14/1953		Sheridan	Arvada						A flash flood near Arvada on the Lower Crazy Woman Creek on the 14th followed a rain and hailstorm. There was some damage to roads and meadows which was largely counter-balanced by the beneficial effects of the moisture.
6/27/1953		Sheridan	Sheridan, Prairie Dog Creek						Heavy rain (3.4 inches in one hour) caused flooding, damaging ranches and loss of equipment.
8/2/1953		Sheridan	Northeast Wyoming			50,000	1,000	51,000	A heavy rain the afternoon of the 2nd caused flood and property damage in northeastern Wyoming estimated at \$50,000 and crop damage of \$1,000.
9/4/1954		Sheridan	Clearmont 5 SW			1,000		1,000	An intense hailstorm at Clearmont 5 SW, during the evening of the 4th, caused flood damage of about \$1000 to reservoirs and irrigation ditches.
0/00/1956		Sheridan	Sheridan, Big Goose Creek, Little Goose Creek						A less than 10-year flood caused by heavy rain flooded basements and destroyed crops and gardens. Discharge amount was 3360 CFS.
6/2/1957		Sheridan	Ranchester						A deluge at Ranchester northwest of Sheridan on the 2nd caused flooding by small creeks and irrigation ditches. Power and telephone lines were damaged by lightning. An unofficial measurement of rainfall indicated over three inches of rain in one hour. A local resident reported that the flooding was the worst he had observed in a period of 41 years.
6/15/1962		Sheridan	Sheridan			22,500		22,500	Heavy thundershowers caused flash flooding in Sheridan area.
6/29/1962		Sheridan	Sheridan			22,500		22,500	Flash flooding from heavy rains occurred in Sheridan area.
7/12/1962		Sheridan	Arvada			22,500		22,500	Heavy rains on both afternoons caused flash flooding with damage to crops, reservoirs, and roads in the Arvada vicinity.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
1/15/1963	1/16/1963	Sheridan	Sheridan, Goose Creek, Clear Creek	1					Heavy rains combined with snowmelt runoff, including a storm sewer backing up, caused flooding, resulting in damage to basements and US Army Corps of Engineers Flood Protection project. There was 1 death in Sheridan according to the Wyoming Floods and Droughts, National Weather Summary 1988-90. The following are discharge values from WEMA Storm Data: South Piney Creek near Story (June 15) - 2090 CFS, North Piney Creek near Story (June 15) - 1820 CFS, Piney Creek at Ucross (June 16) - 3570 CFS, East Goose Creek near Big Horn (June 16) - 1230 CFS, Middle Fork Powder River near Barnum (June 16) - 7110 CFS, Largest recorded at Sheridan Gauge (June 16) - 5450 CFS. According to WEMA Storm Data and Flood Damage Inventory it was a 45-year flood and according to Wyoming Floods and Droughts, National Weather Summary 1988-90 it was a 20- to greater than 100-year flood.
6/20/1975		Sheridan	Sheridan			225,000		225,000	Heaviest rainfall was in the city of Sheridan. 2.51 inches of rain - the second greatest 24-hour amount recorded for June - fell at the Sheridan Airport between 2300 MST on the 20th and 1100 MST on the 21st. Many basements were flooded in the city of Sheridan.
7/29/1985		Sheridan	Clearmont to Leiter			22,500		22,500	Very heavy rain from storms caused flooding along Clear Creek from Clearmont to Leiter. Some irrigation equipment was damaged.
2/24/1986		Sheridan	Sheridan, Goose Creek						A 300-foot ice jam along Goose Creek, near Sheridan, blocked the creek, causing water to spill over the banks and into a mobile home park. Two hundred and fifty people were evacuated from the Woodland Park Village Mobile Homes.
5/9/1995		Sheridan							A combination of moderate to heavy rain and snowmelt from the adjacent Big Horn mountains caused some creeks and streams to over flow their banks. In the town of Big Horn (eight miles south of Sheridan), the Jackson Creek flooded several roads. In Story (16 miles south of Sheridan), the North Piney Creek washed out portions of two roads and closed two other roads due to high water.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
6/16/1995		Sheridan							A combination of snowmelt from the Big Horn Mountains and some rainfall led to flooding along the east side of the mountains in Sheridan County. The Big Goose Creek, the Little Goose Creek, and Piney Creek all overflowed their banks and produced flooding. The Big Horn reservoir and the Park reservoir overflowed and this added to the volume of water that roared down those creeks. Flooding of roads and a few homes was reported in Story (16 miles south of Sheridan). Big Horn (8 miles south of Sheridan), and in the town of Sheridan. Some evacuations were necessary due to the flooding. Sheridan City Park was under water and some farmland in Sheridan County experienced flooding. No injuries or deaths occurred. Damage estimates were not available.
8/21/2002		Sheridan	Sheridan						Business owners reported flooded basements downtown.
5/7/2005		Sheridan	Sheridan Foothills						Early Creek and irrigation ditches flooded near Ranchester, as well as basements flooded in Ranchester.
5/8/2005		Sheridan	Sheridan Foothills						Water ran across 5th avenue on the west side of town. Water also filled parking lots.
5/11/2005		Sheridan	Sheridan Foothills						Bridge washed out 25ESE Sheridan on County Road 161 west of Ulm; Big Goose Creek flooded out of its banks; massive flooding occurred 5S Sheridan on U.S. Highway 87 between Sheridan and Big Horn. Water was up to many homes in this area; Water up to car doors at the 2000 block of Main Street; Long Drive in Sheridan was under four feet of water near the hospital. Numerous cars were stalled in the high water.
5/22/1954		Sublette				20,000		20,000	A minor flood on the Hoback River in Sublette County washed out three bridges and damaged fences on the 22nd. Damage was estimated at \$20,000.
8/9/2001		Sublette	Big Piney						Flooding occurred across U.S. Highway 189 just south of Big Piney.
6/27/2004		Sublette	1 W Pinedale						Flash Flood
0/00/1918		Sweetwater	Green River						Fifty-year flood caused by overabundance of snowfall and excessive spring rain, storm sewer backup. Damage confined to street intersections and basements. Peak discharge recorded at 22,000 CFS.
4/00/1924		Sweetwater	Rock Springs, Bitter Creek						Snowmelt lasting nearly a week destroyed bridges and severely damaged or totally destroyed large number of dwellings, driving several hundred residents from their homes.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
07/00/1926		Sweetwater	Rock Springs, Bitter Creek						An intense rainfall caused a flash flood resulting in interrupted rail and highway traffic, damaged bridges, eroded stream banks, and cut communication lines.
8/00/1930		Sweetwater	Rock Springs, Bitter Creek						Intense rainfall damaged bridges, eroded stream banks, and cut communication lines.
7/7/1937	7/8/1937	Sweetwater	Rock Springs						The heavy rains caused a large number of floods, the most destructive being in the vicinity of Rock Springs. In this area floods occurred on the 7th-8th.
7/11/1937	7/12/1937	Sweetwater	Rock Springs, Killpecker Creek, Bitter Creek			100,000		100,000	The heavy rains caused a large number of floods, the most destructive being in the vicinity of Rock Springs. In this area floods occurred on the 11th-12th. During the flood on the 11th-12th more than 500 homes were inundated and more than 2,000 people rendered temporarily homeless. Crops suffered severely from hail and floods, but there were compensating benefits from the excess moisture. The heavy downpour caused severe floods in Sweetwater County that caused great loss of property and interrupted railway and highway traffic. In addition to the damage to homes, highway, railway and mine property was severely damaged, and railway service was suspended for 24 hours. Property damage in Sweetwater County amounted to more than \$100,000.
8/28/1946		Sweetwater	Green River						Flash floods occurred at Green River on the 28th. These flood was caused by unusually large amounts of rain falling in a short period of time. The storm at Green River caused only minor damage, although three-quarters of an inch of rain fell in 35 minutes.
2/1/1950		Sweetwater	Granger						The ice broke up in the Black Fork River and jams near Granger caused slight damage to ranch property near the river.
6/3/1952		Sweetwater	Rock Springs						Floods occurred at Rock Springs on the 3rd. The storm caused considerable damage from flooding and lightning.
0/00/1956		Sweetwater	Green River						Heavy snowfall and excessive spring rain caused a flood resulting in limited damage to basements and street intersections.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/19/1956		Sweetwater	Rock Springs						At Rock Springs, during the afternoon of the 19th, rain and hail followed by a flash flood caused extensive damage, primarily due to flooding in a new section of the city known as White Mountain. Flood waters reached a depth of five feet in some low areas. About 200 telephones were put out of order. Refuse from a nearby garbage dump, and debris from boardwalks and fences littered the streets. In a few places silt was deposited to a depth of 12 to 18 inches.
5/1/1965		Sweetwater	North Platte River tributaries near Glenrock, Douglas, upper Green River, and Laramie River						Widespread rainfall combined with snowmelt runoff caused a 30- to greater than 100-year flood.
9/1/1965		Sweetwater	Green River						Earthen dam holding the reservoir developed a leak, and flood gates were opened to release as much water as rapidly as possible. Discharge from reservoir was 19,100 CFS. (Calculated 100-year flood has a flow of 25,300 CFS).
0/0/1972		Sweetwater	Green River						Runoff coupled with heavy rains caused a flood in Green River. The river was running at 19,100 CFS.
7/4/1975		Sweetwater	Rock Springs-Green River area						Torrential rains caused severe flooding in parts of Rock Springs; damage was especially heavy in the northern part of the city. Several businesses in downtown Rock Springs reported damage from water and mud. Some hail attended the storm.
7/24/1982		Sweetwater	Rock Springs			225		225	A thunderstorm dumped over 2 inches of rain on the city causing local flooding of some streets and a few basements.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
7/12/1989	7/12/1989	Sweetwater	Rock Springs	1	1	2,250,000		2,250,000	Weak upper-level southerly flow, very moist tropical air, and an upper-level disturbance caused a slow-moving torrential rain-producing thunderstorm to hit Rock Springs on the late afternoon and early evening. The heaviest precipitation occurred just south of the town. The Rock Springs airport recorded 0.88 inch of rain along with wind gusts up to 52 mph. Dine-sized hail covered the ground to 1.5 feet deep 5 miles south of the community. As a result of Rock Springs being low relative to the terrain to their south, a tremendous surge of water and mud up to 3 to 4 feet deep invaded the town between 1700 MST and 1830 MST. This surge came northward into the south part of town by way of Dead Horse Canyon Creek. The water and mud rapidly inundated the downtown section of the community. The result was catastrophic losses to homes, businesses, and cars. Vehicles were washed down streets onto lawns, and basements flooded. Not including costs associated with automobiles, a preliminary total damage figure of more than \$1.5 million reported by county and city officials. Rock Springs is located on a 100-year flood plain. At 1815 MST, a storm-related death occurred to a conductor who was on a westbound Union Pacific Railroad engine cab that struck a stationary, empty rail car. The combination of the flooding waters and strong winds caused the car to llean over to the tracks that the engine cab was traveling on.
8/20/1991		Sweetwater	Rock Springs			22,500		22,500	
8/22/1995		Sweetwater				1,000		1,000	Thunderstorms produced heavy rain in Dead Horse Canyon. The rainfall caused minor flooding in Rock Springs. In addition, lightning from the thunderstorms knocked out power to a part of Rock Springs, including the airport, for 2.5 hours.
9/12/1998		Sweetwater	Rock Springs						Primarily western sections of Rock Springs. Water reported to be 4 to 5 feet deep in some areas. Estimated rainfall of 1 to 2 inches in less than an hour over a small area, caused by slow-moving, intense thunderstorms.
6/1/1981		Teton	Countywide upper Snake River			290,000		290,000	One bridge and part of road damaged; levee erosion; dam estimated at \$290,000; total damages prevented by local flood protection projects.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
6/9/1965		Uinta	Mountain View						Combination of rainfall and snowmelt runoff from Uinta Mountains caused heavy flood damage sustained by residents, ranches; several bridges damaged or destroyed. The event exceeded a 50-year flood. The following are discharge amounts according to WEMA Summary of Floods: East Fork of Smith Fork near Robertson (June 10) - 1450 CFS, West Fork of Smith near Robertson (June 10) - 2100 CFS, Burnt Fork near Burnt Fork (June 10) - 3200 CFS, Henry's Fork near Lone tree (June 10) - 2010 CFS, Black's Fork near Ly (June 11) - 7960 CFS. According to FEMA Flood Insurance Study, July 4, 1989, East Fork of Smiths Fork Gage had a discharge on June 10 of 3550 CFS.
6/4/1968		Uinta	Mountain View						Rain and snowmelt runoff caused flooding and damaged property and bridges. It was a greater than 50-year flood. The following are discharge rates: West Fork of Smith Fork near Robertson - 1060 CFS (WEMA Summary of floods), East fork of Smith Fork Gage - 1280 CFS (FEMA Flood Insurance Study July 4, 1989).
0/00/1976		Uinta	Fort Bridger area, Blacks Fork, Little Blacks Fork						Flooding caused by rapidly melting snow caused water to cover roads and damage bridges.
7/22/1985		Uinta	Fort Bridger, Lyman			22,500		22,500	Sudden downpours from storms flooded parts of the Bridger Valley. Minor flood damage was reported at Fort Bridger and Lyman.
7/14/1937		Washakie	Worland						Crops suffered on account of flood and hail. The greatest damage from flood water occurred in the vicinity of Worland.
9/1/1938		Washakie	Southeast, Central Wyoming						Some damage was reported from the heavy rains to highways and bridges in the southeast and central portion of the state.
6/15/1963		Washakie	Big Horn Mountains						Heavy rain causing a flood resulted in damage to homes, equipment, irrigation canals, roads, and bridges.
7/22/1979		Washakie	4 miles Northwest Worland			70,000		70,000	Thunderstorms caused a flash flood 4 miles northwest of Worland, damaging their water supply canal (\$50,000 est.). High winds with this storm also caused another \$20,000 damage to several farm shops and a grain bin.
8/9/1982		Washakie	Worland			3,000		3,000	High wind associated with localized heavy rain and hail blew over an empty pup trailer on a Pepsi semi rig about 4 miles south of Worland causing \$3000 damage. Local urban flooding was reported 6 miles south of the city.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
8/10/1983		Washakie	Washakie Conservation District, Little Gooseberry			38,500		38,500	State Highway, Burlington Northern railroad tracks, the Bluff Canal; amount of damage \$38,500.
6/7/1987		Washakie	Worland (10N)				22,500	22,500	A thunderstorm swept through northern Washakie County north of Worland with drenching rain. A pipeline plant, 7 houses, and numerous crop fields north of Worland were flooded by the rain. The pipeline plant reported 4 foot deep flood waters. A farmer, located north of Worland, said 100 acres of barley and hay were under water,
6/8/1987		Washakie	Worland (10N)			225,000	22,500	247,500	A torrential rainstorm moved west and north of downtown Worland. This rainstorm dumped between 1 to 4 inches of rain over the Worland area in a couple of hours. The sheriff's department reported numerous fields of crops damaged, with a few roads flooded, mainly west and north of Worland. One farmer lost nearly 200 acres of malt barley, alfalfa, and sugar beets. Heavy rain on June 7 and 8 north of Worland helped wash out a good section of an irrigation canal on the night of June 8. Extensive flooding was also noted by the sheriff's department along the Washakie and Big Horn county line later that night.
7/10/2001		Washakie	15 SW Worland						Flash flooding of many creeks and washes with water across the road near Winchester.
6/24/1938		Weston	Hampshire						Damage from wind and floods were reported from Hampshire on the 24th. A number of bridges were washed out as well as a large number of chickens drowned.
1/1/1943		Weston	Northeast portion of the state						Chinook conditions over the northeast portion of the State caused rapid melting of the snow, and as a result, serious floods occurred. The town of Gillette was especially hard hit by a flood on the 22nd. Reports from the Big Horn Basin state that the ice in the river went out on the 22nd causing serious floods to farms near the river.
6/7/1945	6/8/1945	Weston							Moderate to heavy storms occurred in southern Weston County and northern Niobrara County on the 7th and 8th. These storms resulted in considerable damage to crops, gardens and vegetation.

Table 8.1a - Wyoming Flood Data

Start date	End date	County	Location	Deaths	Injury	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
9/20/1955		Weston				500		500	A severe hailstorm in the southwestern part of Weston County between 9 a.m. and 10 a.m. on September 20th covered a strip approximately 3 miles in width and 12 miles in length. The hail was about the size of peas but it lasted long enough to cause appreciable damage to range grass. Wind accompanying the storm was estimated to be as high as 60 m.p.h. Damage to range grass was estimated at \$5,000, and one small dam washed out with a \$500 loss.
8/16/1957		Weston	Upton						Sudden, heavy rain with some hail at Upton caused a flash flood and some damage to gardens.
8/1/1960		Weston	Newcastle						A flood considered to be a 50-year event occurred. Water was reported over Highway 16 near the refinery.
6/1/1961		Weston	Newcastle						A flood considered to be a 50-year event occurred. Water was reported over Highway 16 near the refinery.
7/2/1998		Weston	Four Corners						A stationary storm produced several inches of rain, causing Oil Creek to flood. Oil Creek Road was washed out in several places.
8/12/2005		Weston	Newcastle			100,000		100,000	Heavy rains fell across Newcastle during the early evening hours. Two to four inches of rain fell in about an hour, causing flooding of streets and residences north and west of downtown. Previous rains earlier in the week saturated the soil and may have contributed to more severe flooding. Loose debris and wood clogged culverts, worsening flooding near and along the railroad tracks northwest of downtown Newcastle. Some minor damage was noted as water entered some homes. A beauty shop in downtown Newcastle also reported some minor damage from flooding.
8/23/2005		Weston	14 ENE Upton						Severe thunderstorms developed across southern Crook County and western Weston County. The storms produced penny to quarter sized hail between Upton and Sundance. Heavy rains caused some flooding of secondary roads between Moorcroft and Upton. Wagner Road, from Pine Ridge Road to U.S. Highway 16 in south central Crook County, was closed during the evening and nighttime hours.
7/1/1955		YNP	Yellowstone						Cloudbursts in the Yellowstone Park area washed out a bridge and temporarily closed a road with mud slides.

Table 8.1b—Wyoming Flood Data: Regional Storms.

County	Location	Start date	Deaths	Injuries	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
Eastern two-thirds Wyoming		20-Jun-1947						Unusually heavy rain fell over the eastern two-thirds of the State on the 20th and 21st, and in several cases resulted in local flooding. A number of stations reported 2 to 4 inches of rain during this period.
Niobrara and Goshen		15-Jun-1962			225,000		225,000	Considerable small hail and heavy thundershowers caused flash flooding.
Park, Sheridan, Big Horn, Washakie, Hot Springs, and Fremont		15-Jun-1963			2,250,000		2,250,000	Heavy rains in the Wind River, Absaroka, and Big Horn Mountains caused flash flooding during Saturday and Sunday, the 15th and 16th. Considerable damage done to homes, equipment, crops, irrigation canals, roads, and bridges.
	Central Wyoming	13-May-1965			225,000		225,000	Heavy rains, especially in the central mountains, on top of the heavy snow of the 8th and 9th caused flash flooding on streams flowing out of the Laramie Mountains between Wheatland and Casper. Damage to bridges, roads, crops, and housing was heavy from Glendo through Douglas to Glenrock.
	Southeast Wyoming	10-Jun-1970			2,250,000		2,250,000	Heavy rains up to 6 inches in the Laramie Mountains from Casper to Wheatland caused flooding on the tributaries of the North Platte River. Some of the moisture fell as snow above 7500 feet elevation.
Niobrara and Weston	Niobrara and Weston Counties	21-Jul-1973			225,000		225,000	Torrential rains accompanied by hail caused flash flooding in the area creeks and rivers, making roads impassable in spots and damaging bridges. Several earthen dams went out. Banks of hail 3 to 4 feet high were observed along roads and creeks. Crop and property damage was substantial.
Big Horn and Park	Big Horn and Park Counties	5-Jul-1975			2,250,000		2,250,000	Thunderstorms dumped locally torrential rains over the Absaroka Range during the afternoon and

Table 8.1b—Wyoming Flood Data: Regional Storms.

County	Location	Start date	Deaths	Injuries	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
								evening hours. Cloudbursts swelled the North and South Forks, and the rushing waters did some damage to lodges and ranches in the area. A flash flood, the leading edge of which contained mud and logs 15 to 20 feet long, swept down Libby Creek and caused damage at the Crossed Sabres Ranch. Hail, heavy rains, and wind caused scattered crop losses along the east slopes of the Absarokas. A hail and wind storm struck the Cowley-Lovell area around 1500 MST on the 6th, causing heavy crop losses near Cowley. Farmers in the Heart Mountain area reported a 20 percent loss to some of their crops. Hail measuring up to 1.5 inches in diameter caused damage to hay crops and vegetable gardens along the South Fork. During the early morning hours of the 6th, a power pole near the banks of the Greybull River was felled by a flash flood. Electrical power in Basin was interrupted for an hour.
Park, Big Horn, Campbell, Converse, Crook, Johnson, Natrona, Sheridan, Washakie, Weston, Hot Springs, and Niobrara	Central and North portions of Wyoming	15-May-1978			15,500,000		15,500,000	Heavy wet snow and record rains did very extensive damage to property, crops, and livestock in 12 counties. Hundreds of homes were damaged, and many totally destroyed. Numerous bridges and sections of roads were washed out, power lines downed, with much damage to cars and personal property. Total estimated damages came to \$15.5 million. The following are discharge amounts: Fifteen mile Creek near Worland (May 18) - 4270 CFS, Big Horn River at Worland (May 19) - 17,500 CFS, Nowood River near Ten Sleep (May 19) - 3380 CFS,

Table 8.1b—Wyoming Flood Data: Regional Storms.

County	Location	Start date	Deaths	Injuries	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
								Shoshone River near Lovell (May 18) - 7680 CFS), Elk Creek near Basin (May 19) - 2450 CFS, Shell Creek near Greybull (May 19) - 2150 CFS, Big Horn River near Kane (May 20) - 20,700 CFS, Little Powder River below Corral Creek near Weston (May 18) - 2410 CFS, Little Powder River above Dry Creek near Weston (May 19) - 4460 CFS, Little Powder River above Dry Creek near Weston (May 19) - 5300 CFS, Salt Creek near Sussex (May 18) - 10,200 CFS, Dead Horse Creek near Buffalo (May 18) - 1420 CFS, Powder River near Kaycee (May 18) - 4200 CFS, Powder River at Sussex (May 19) - 24,000 CFS, South Fork River near Kaycee (May 20) - 8200 CFS, Bitter Creek near Garland (May 17) - 552 CFS, Whistle Creek near Garland (May 18) - 2340 CFS, Shoshone River near Garland (May 19) - 4550 CFS, Goose Creek below Sheridan (May 18) - 5430 CFS, Prairie Dog Creek near Acme (May 19) - 3940 CFS, Clear Creek at Ucross 1740 (May 19) - 32,500 CFS, Crazy Woman Creek at Upper Station (May 20) - 2200 CFS, Little Thunder Creek near Hampshire (May 18) - 3030 CFS, Black Thunder Creek near Hampshire (May 18) - 5050 CFS, Turner Creek near Osage (May 18) - 2480 CFS, Beaver Creek near Newcastle (May 19) - 3870 CFS. The event was estimated to be a 20- to greater than 100-year flood.
Park and Fremont		7-Jun-1981			2,300,000		2,300,000	Heavy rains occurring the week of the 7th - 12th caused the flooding on the North and South Forks of the Shoshone River and on the Wind

Table 8.1b—Wyoming Flood Data: Regional Storms.

County	Location	Start date	Deaths	Injuries	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
								River. Many bridges, campgrounds, highways, and pieces of personal property were damaged.
Fremont, Hot Springs, Washakie		10-Aug-1983			2,250	22,500	24,750	A large area of severe thunderstorms rumbled through west central Wyoming. Three-quarter inch hail fell near Thermopolis and just northwest of Worland, causing extensive crop damage especially to beets. The storms also had very intense and frequent lightning, which caused power outages and damages to homes and barns in the Riverton and Worland areas. Minor flash flooding was also reported near Riverton and Worland as 1 to 2 inches of rain fell.
	Southeast corner	22-Jul-1984			2,250	500,000	502,250	Golf ball size hail, wind gusts to 80 MPH and very heavy rain hit area a few miles west of Wheatland in Platte County. Couple houses had 4 to 5 feet of water in them. Severe thunderstorm with golf ball size hail in Burns and Hillsdale area of east Laramie County did over \$500,000 damage to crops, vehicles, and buildings.
Albany and Carbon	35NW Laramie	10-Jun-1986			225,000		225,000	Pierce Dam failed at 1941 MST, spilling its contents into Rock Creek. This was about 35 miles northwest of Laramie along the Albany and Carbon county line. A bridge over Rock Creek along Wyoming Highway 13 was undercut. There was some flooding of buildings and ranch lands where Rock Creek runs into the Medicine Bow River.

Table 8.1b—Wyoming Flood Data: Regional Storms.

County	Location	Start date	Deaths	Injuries	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
	Gillette 8s	30-Jul-1987			225,000		225,000	A very strong thunderstorm developed near Savageton, about 40 miles southwest of Gillette, at 2045 MST. This storm drenched the town with 1.5 inches of rain in 35 minutes along with 1.5-inch diameter hail. The storm later moved northeast during the next few hours and damaged structures in the south and east sections of Gillette. As the thunderstorm moved into Gillette, 50 to 60 mile an hour winds raked the area along with 1.5 inches of rain in 1 hour. This storm destroyed one unoccupied home. Other damages included numerous horse stalls destroyed, sections of roofs partially destroyed, and many city and state road signs severely damaged. Also, lightning struck a home in Gillette and knocked a hole in the ceiling. Many streets and a few apartments were flooded due to the torrential rains between 2100 and 2200 MST. Later that night the very strong thunderstorm moved into Crook County with heavy rain and 0.5-inch diameter hail west of Moorcroft.
Park, Big Horn, and Washakie		7-May-1988			1,000,000	225,000	1,225,000	The winter-like storm system of the 6th and 7th produced heavy snowfall above 6000 feet and drenching rainfall below. Between 1.5 and 5.0 inches of rain fell in less than 24 hours. This damaged the newly planted crops of beets and barley to the extent that 500 acres of beets had to be replanted. Estimated damage from flooded houses, washed out bridges, damaged culverts and canals, damaged roads, and other damage to irrigation works and utility lines ranged from \$500,000 to more than \$1 million.

Table 8.1b—Wyoming Flood Data: Regional Storms.

County	Location	Start date	Deaths	Injuries	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
								Rainfall amounts in less than 24 hours included 1.73 inches at Lovell, while Cowley, Deaver, and Frannie received 2.40, 1.60, and 3.30 inches of rain, respectively. Most of the flood damage occurred in Park County, which was later declared a disaster area. At least 17 bridges or crossings were destroyed and 6 roads washed away by the flood waters in Park County.
Big Horn and Johnson	Medicine Wheel, Lodgepole Creek, Buffalo	23-Jul-1989						From late afternoon through early evening, slow-moving thunderstorms producing mostly heavy rain occurred across northern Wyoming. From 1245 MST to 1315 MST, even though only 0.33 inch of rain fell, flash flooding of Lodgepole Creek caused water and mud damage to a ranch at Crandall. At 1320 MST, quarter size hail was observed in Yellowstone National Park. Heavy rain up to 2.1 inches resulted in flooding of some roads 5 miles southwest of Buffalo and at the Medicine Wheel historic site between 1600 MST and 1800 MST. Finally, from 1700 MST to 1800 MST, 1 foot of "slushy" hail up to marble size covered a few of the roads at the Medicine Wheel landmark.
Albany/Platte	25 SW Wheatland	20-Aug-1990			22,500		22,500	A small but intense thunderstorm dumped up to 4 inches of rain and small hail just east of the Sybille Research Center. Water filled normally dry creeks, with Wyoming Highway 34 covered with up to 4 to 5 feet of water in some spots. Some bridges and corrals were washed out on ranches.

Table 8.1b—Wyoming Flood Data: Regional Storms.

County	Location	Start date	Deaths	Injuries	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
Platte and Goshen		3-Jun-1995						Heavy rain occurred from west-central Platte County to west-central Goshen County during the evening hours. Two to 3 inches of rain fell in west-central Platte County in 2 hours and this produced flash flooding along the North Laramie River in west-central Platte County about 30 miles west of Wheatland. Flooding was also reported along Cottonwood Creek about 27 miles northwest of Wheatland. Heavy rain fell in Wheatland causing flooding of city streets. Water up to 3 feet deep was reported on a couple of city streets. Heavy rain at Guernsey (19 miles northeast of Wheatland) caused flash flooding and a few roads were under water as a result. Even some evacuations were necessary in low-lying areas. A rain gauge site located west of Yoder on the Platte/Goshen county line measured 5 inches of rain during the evening. Reports from this area the next morning (June 4th) revealed nearly 5000 acres of grassland were under water and hail drifts were still 18 inches deep.
	Big Horn Basin	29-Jan-1996			4,000		4,000	Warmer temperatures caused minor ice jam flooding on the Big Horn River from Worland to Manderson.
	Sheridan Foothills	7-Feb-1996			25,000		25,000	Warm temperatures produced flooding in Sheridan County. Some basements were flooded. Some small streams and creeks went over their banks and flooded low lying areas and some streets.

Table 8.1b—Wyoming Flood Data: Regional Storms.

County	Location	Start date	Deaths	Injuries	Property damage (USD)	Crop damage (USD)	Total damage (USD)	Information
	North Big Horn Basin, South Big Horn Basin	13-Mar-1996						Ice jams caused flooding in lowland areas around Greybull on the Big Horn River. Other rivers and streams in the southern part of the Big Horn Basin also had flooding due to ice jams. A 100-foot-long footbridge was washed out between Ten Sleep and Manderson on the Lower Nowood River. Flooding also occurred between Manderson and Basin, shortly after midnight. A factory on the north side of Greybull was flooded. The sewer lagoon for the city was also underwater during this time.
	Laramie Range - Cheyenne Foothills	29-Apr-1999			20,000		20,000	Minor flooding occurred in parts of the Laramie range into the Cheyenne foothills as a result of snowmelt and around 2 inches of rainfall. Flooding was reported along parts of Crow Creek in south Cheyenne with other minor flooding reported along Lodgepole Creek northwest of Cheyenne.
TOTAL (8.1 a and b)					122,623,400	3,980,773	127,604,173	



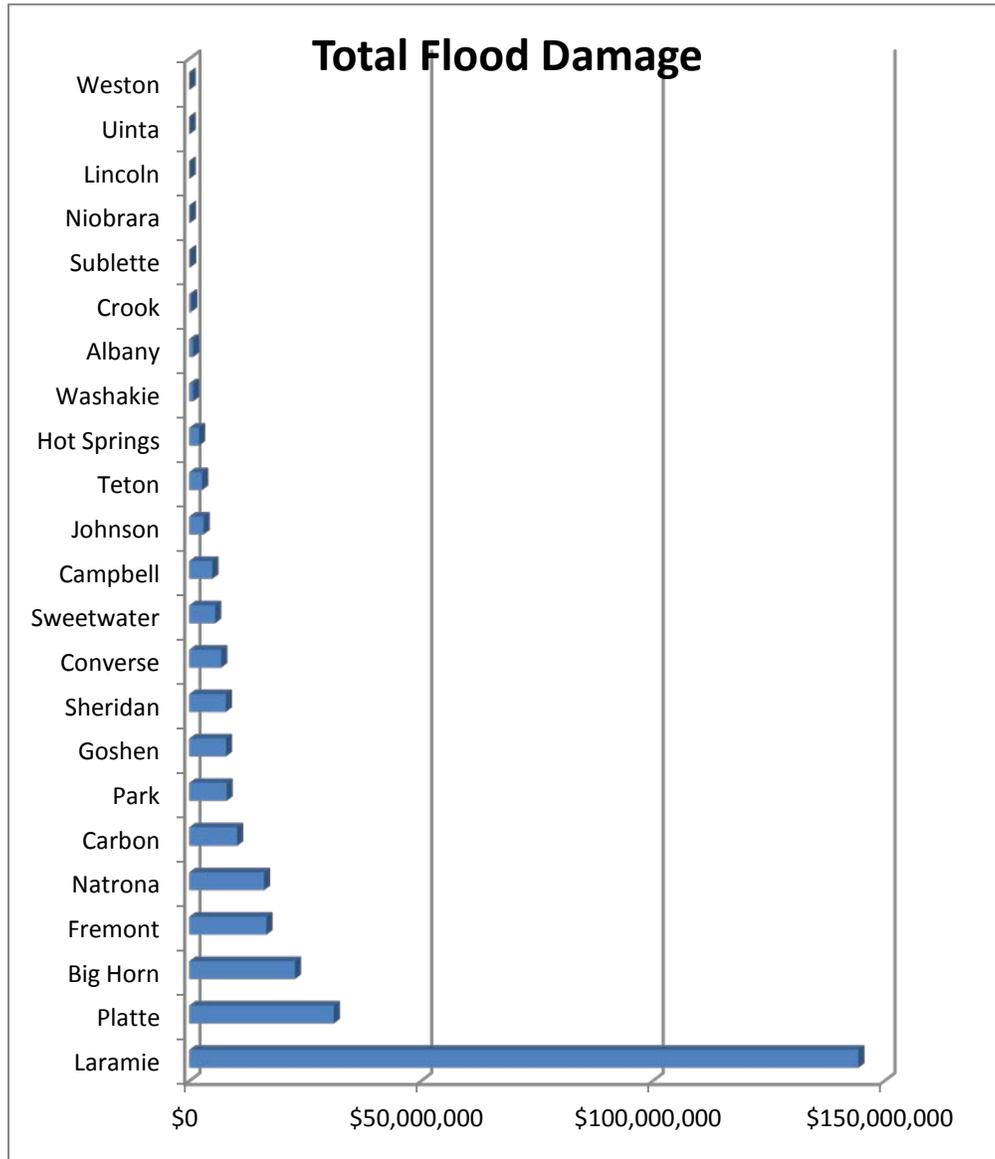
Figure 8.3 – Flood Waters on Capital Avenue, Cheyenne, July 15, 1896. Photograph courtesy of the Wyoming State Archives

Impacts

Floods and flood damage have occurred in every county in Wyoming. **Table 8.2** shows the distribution of the amount of crop, property and total damage in reported dollars (year of event) and in 2010 dollars to adjust for inflation, as well as the number of injuries and deaths associated with floods. The total documented flood damage for 1905 to present is over \$127.6 million. In 2010 dollars the damage would be nearly \$397 million. As documented by the table and bar graph, Laramie County has historically experienced significantly greater flood damage than any other county. **Table 8.2** also shows the ranking of counties based upon dollar damages in 2010 dollars. No obvious regional patterns for floods can be determined from **Table 8.2**.

Table 8.2 - County Rankings by Flood Damage						
County	Total Dollar Damage Year of Event USD	Property Damage Year of Event USD	Crop Damage Year of Event USD	Injuries	Deaths	Total Dollar Damage 2010 USD
Laramie	66,563,000	66,443,000	120,000	70	16	144,393,715
Platte	3,334,225	3,009,225	325,000	0	11	31,171,413
Big Horn	3,298,250	1,046,000	2,252,250	0	0	22,785,613
Fremont	1,936,725	1,914,225	22,500	0	3	16,643,533
Natrona	4,702,500	4,702,500	0	0	33	16,106,747
Carbon	5,002,250	5,002,250	0	0	0	10,295,505
Park	2,803,250	2,803,250	0	0	0	8,041,595
Goshen	3,420,000	3,060,000	360,000	0	0	7,887,442
Sheridan	867,000	866,000	1,000	0	1	7,848,153
Converse	1,181,500	1,181,500	0	0	1	6,865,866
Sweetwater	2,373,725	2,373,725	0	1	1	5,551,427
Campbell	1,923,748	1,922,725	1,023	0	1	4,939,055
Johnson	1,049,900	1,048,900	1,000	1	0	3,077,993
Teton	290,000	290,000		0	0	2,736,667
Hot Springs	394,750	349,750	45,000	0	0	2,087,480
Washakie	381,500	336,500	45,000	0	0	822,215
Albany	215,600	215,600	0	0	2	812,012
Crook	147,750	99,500	48,250	0	0	393,307
Sublette	20,000	20,000	0	0	0	165,008
Niobrara	44,500	42,250	2,250	0	0	77,246
Lincoln	32,500	22,500	10,000	0	0	52,406
Uinta	22,500	22,500	0	0	0	4,579
Weston	100,500	100,500	0	0	0	4,125
Regional	27,498,500	26,751,000	747,500	0		104,081,483
Total	127,604,173	123,623,400	3,980,773	72	69	396,844,585

**County Ranking by Flood Damage*
1950-2010**



*http://webra.cas.sc.edu/hvriapps/sheldus_setup/sheldus_results.aspx Accessed 5/4/2011

NFIP Loss Statistics January 1, 1978 through February 28, 2011 *

COMMUNITY NAME	TOTAL LOSSES	CLOSED LOSSES	OPEN LOSSES	CWOP LOSSES	TOTAL PAYMENTS
ALBANY COUNTY*	2	1	0	1	5,898.71
BAGGS, TOWN OF	15	7	0	8	67,248.82
BIG HORN COUNTY*	1	1	0	0	750.01
BUFFALO, CITY OF	2	1	0	1	7,469.26
CAMPBELL COUNTY *	3	1	0	2	5,958.60
CARBON COUNTY*	6	5	0	1	10,929.19
CASPER, CITY OF	43	18	0	25	93,268.69
CHEYENNE, CITY OF	147	97	0	50	678,990.23
CODY, CITY OF	1	1	0	0	96,060.04
DOUGLAS, CITY OF	2	0	0	2	.00
ELK MOUNTAIN, TOWN OF	4	2	0	2	6,154.91
EVANSTON, CITY OF	1	0	0	1	.00
EVANSVILLE, TOWN OF	1	0	0	1	.00
FREMONT COUNTY *	5	2	0	3	8,971.33
GILLETTE, CITY OF	17	12	0	5	30,779.68
GLENROCK, TOWN OF	4	4	0	0	7,350.78
GOSHEN COUNTY *	3	3	0	0	9,947.60
GREEN RIVER, TOWN OF	1	0	0	1	.00
HUDSON, TOWN OF	1	1	0	0	783.95
JACKSON, TOWN OF	1	0	0	1	.00
JOHNSON COUNTY*	1	1	0	0	2,790.07
KAYCEE, TOWN OF	1	1	0	0	4,695.27
LANDER, CITY OF	4	4	0	0	3,108.74
LARAMIE COUNTY*	12	8	0	4	150,547.32
LARAMIE, CITY OF	9	1	0	8	2,271.01
LINCOLN COUNTY *	3	1	0	2	461.25
MANDERSON, TOWN OF	1	1	0	0	16,540.00
MILLS, TOWN OF	1	0	0	1	.00
MOUNTAIN VIEW, TOWN OF	1	0	0	1	.00
NATRONA COUNTY *	4	0	0	4	.00
NEWCASTLE, CITY OF	1	1	0	0	1,173.60
PARK COUNTY*	15	10	0	5	138,331.92
RANCHESTER, TOWN OF	4	3	0	1	21,461.94
RIVERTON, CITY OF	1	0	0	1	.00
ROCK SPRINGS, CITY OF	17	4	0	13	37,667.62
SARATOGA, TOWN OF	4	2	0	2	16,688.30
SHERIDAN COUNTY *	20	8	0	12	27,043.24
SHERIDAN, CITY OF	20	10	0	10	19,894.69
SUBLETTE COUNTY*	7	0	0	7	.00
TETON COUNTY *	15	11	0	4	28,959.82
THERMOPOLIS, TOWN OF	1	0	0	1	.00
TORRINGTON, CITY OF	2	0	0	2	.00
UINTA COUNTY *	3	1	0	2	10,132.57
WORLAND, CITY OF	3	0	0	3	.00
 TOTAL FOR WYOMING	 410	 223	 0	 187	 1,512,329.16

*<http://bsa.nfipstat.com/reports/1040.htm#56> Accessed 5/3/2011

Design Flood For Future Impacts

The county rankings in **Table 8.2** do not exhibit any distinct patterns that would allow for regional groupings. Laramie County has had the most significant dollar impacts from flooding, and the most costly flood in Wyoming occurred on August 1, 1985 in Cheyenne. The flood had a 1985 cost of \$65 million. In 2010 dollars, the impact would have been nearly \$133.3 million. It is suggested that \$133,302,000 be used as the potential cost of the worst-case future flood in Wyoming. (1985 event damages suggested to be ‘worse case’) Damaging flood events occur on average three times a year in Wyoming based upon analyzing over 300 damaging events in a 100 year period.

Building Values within Floodplains

Another method can be used to rank counties for their flood impact potential. In 2007, the Water Resources Data System at the University of Wyoming estimated the building exposure value for buildings that may occur within a floodplain. All Flood Insurance Rate Maps (FIRMs) for Wyoming have been digitized (**Figure 8.4**). The flood boundaries on the maps have then been digitally crossed with Census block building values. In some cases, a floodplain boundary will dissect a census block. In that case the proportional value of buildings in the census block will be assigned to the floodplain. If a census block is within a floodplain, then the values of all the buildings in the census block is assigned. **Figure 8.4** shows the floodplains that have been mapped on Flood Insurance Rate Maps. **Table 8.3** show the building exposure values estimated for those floodplain areas. No obvious regional patterns for flood impacts can be determined from **Table 8.3**. The table does indicate, however, that there are significant dollar amounts of structures within the floodplains of Wyoming.

Tables 8.2 and **8.3** show significantly different county rankings. Laramie, Platte, Big Horn, Fremont, and Natrona counties have the highest historic flood damages (**Table 8.2**). Laramie, Natrona, Sweetwater, Sheridan and Albany counties have the highest floodplain building exposure values (**Table 8.3**). **Table 8.4** shows a composite ranking of the counties. All counties were assigned a rank from 1 (low) to 23 (high) for both FIRM building exposure and for historic dollar damage (2010 dollars). The values were then summed, resulting in a composite rank.

State Government Property

Historically, from 1985 forward, there have been 28 flooding events in 307 months which have damaged state property. These flood events cost the State \$2.24 million. If we can assume damaging events will continue into the future as they have in the past, the state can expect a damaging flood event every 11 months ($307 / 28 = 10.96$) at an average cost of nearly \$80,000 per incident ($\$2,237,130.33 / 28 = \$79,897.51$). This information makes flood mitigation actions attractive over the long term. Reference State Building Insurance Claims Appendix.

The map below shows the 100-year floodplain throughout the entire state.

Wyoming HAZUS 100-year Flood Assessment: Floodplain Boundary

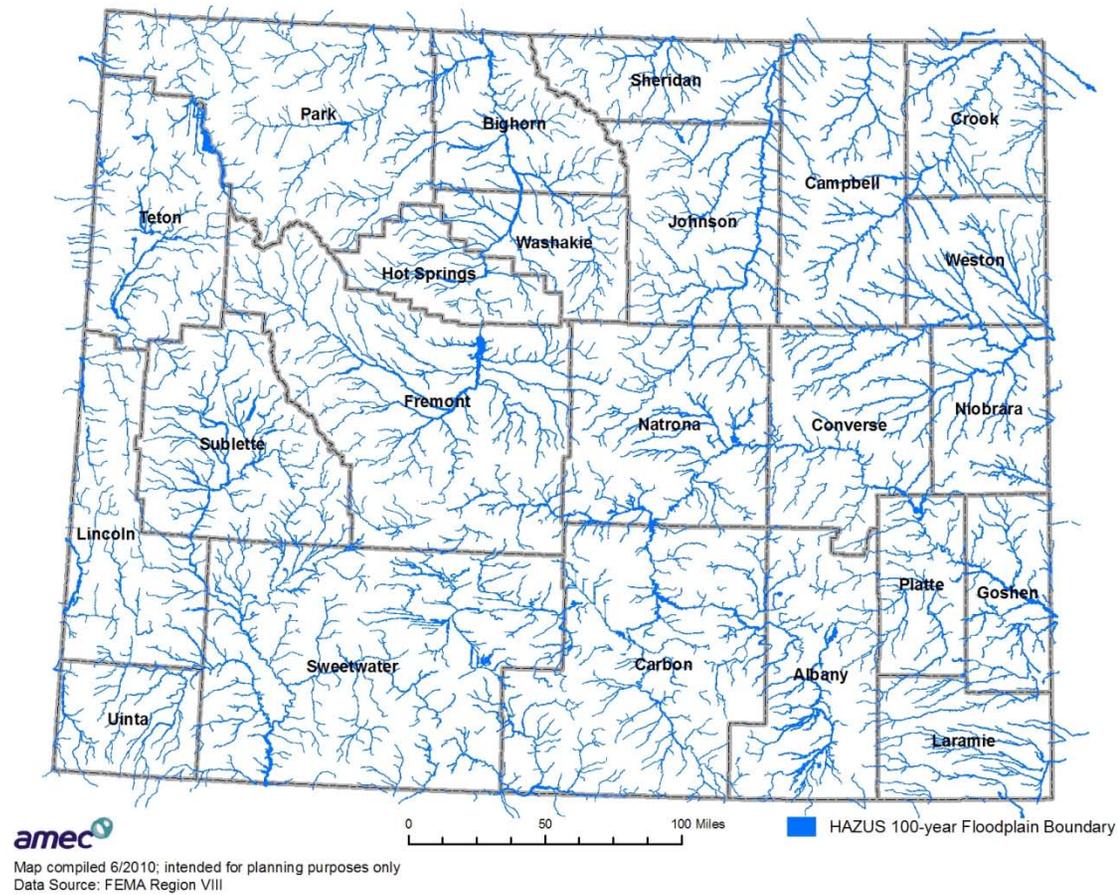


Figure 8.4—Wyoming Flood Insurance Rate Map (FIRM) Coverage - June 2010.

Table 8.3 - Flood-Related Building Exposure Values Ranked by County (HAZUS 2010)	
County	FIRM Building Exposure Value (USD)
Laramie	\$ 5,473,047
Natrona	\$ 4,404,651
Sweetwater	\$ 2,472,401
Sheridan	\$ 2,382,409
Albany	\$ 2,056,767
Fremont	\$ 2,053,945
Campbell	\$ 2,012,001
Park	\$ 1,799,930
Teton	\$ 1,771,468
Uinta	\$ 1,198,394
Carbon	\$ 1,142,444
Lincoln	\$ 1,029,590
Converse	\$ 795,679
Goshen	\$ 778,132
Big Horn	\$ 705,984
Platte	\$ 573,823
Washakie	\$ 527,795
Sublette	\$ 527,497
Johnson	\$ 483,363
Weston	\$ 396,143
Crook	\$ 390,718
Hot Springs	\$ 323,208
Niobrara	\$ 152,928
Total	\$33,452,317

Table 8.4—Composite Ranking of Counties.

County	FIRM Building Exposure (FBE) (USD)	FBE Rank	Damage (2010 USD)	Damage Rank	Composite Rank
Laramie	475,872,824	21	144,393,715	23	44
Natrona	587,434,021	22	16,106,747	19	41
Sweetwater	311,450,629	20	5,551,427	13	33
Teton	597,409,612	23	2,736,667	10	33
Sheridan	128,679,116	17	7,848,153	15	32
Fremont	38,890,385	10	16,643,533	20	30
Converse	108,588,752	16	6,865,866	14	30
Big Horn	29,704,350	8	22,785,613	21	29
Carbon	40,950,298	11	10,295,505	18	29
Park	45,051,824	12	8,041,595	17	29
Platte	22,324,450	5	31,171,413	22	27
Campbell	93,879,876	15	4,939,055	12	27
Albany	178,977,772	19	812,012	7	26
Goshen	26,552,574	6	7,887,442	16	22
Washakie	50,151,680	13	822,215	8	21
Uinta	129,531,065	18	4,579	2	20
Lincoln	76,773,848	14	52,406	3	17
Hot Springs	26,577,959	7	2,087,480	9	16
Johnson	17,477,646	4	3,077,993	11	15
Sublette	36,685,817	9	165,008	5	14
Crook	11,243,224	3	393,307	6	9
Niobrara	1,866,236	1	77,216	4	5
Weston	10,981,061	2	4,125	1	3

**NFIP Risk
Insurance Policies In-Force
As of 2/28/2011***

Community Name	Policies In-force	Insurance In-force whole \$	Written Premium In-force
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AFTON, TOWN OF	1	292,000	2,161
ALBANY COUNTY*	29	4,539,800	25,164
BAGGS, TOWN OF	9	2,197,000	5,959
BIG HORN COUNTY*	13	1,782,900	8,472
BUFFALO, CITY OF	17	3,639,800	17,349
BURNS, TOWN OF	1	210,000	326
CAMPBELL COUNTY *	7	1,109,600	5,264
CARBON COUNTY*	14	2,010,100	9,821
CASPER, CITY OF	330	50,511,200	251,618
CHEYENNE, CITY OF	369	65,855,300	266,993
CODY, CITY OF	4	1,252,500	8,143
COKEVILLE, TOWN OF	2	285,200	960
CONVERSE COUNTY*	19	3,984,000	21,266
DAYTON, TOWN OF	4	675,300	3,395
DIAMONDVILLE, TOWN OF	14	1,794,100	10,379
DOUGLAS, CITY OF	26	4,411,600	20,642
DUBOIS, TOWN OF	11	2,576,200	8,304
EAST THERMOPOLIS, TOWN OF	1	42,000	185
ELK MOUNTAIN, TOWN OF	12	1,095,300	8,169
EVANSTON, CITY OF	14	1,988,200	5,458
EVANSVILLE, TOWN OF	1	280,000	333
FREMONT COUNTY *	23	5,378,800	18,619
GILLETTE, CITY OF	15	4,651,000	8,838
GLENROCK, TOWN OF	7	824,400	4,831
GOSHEN COUNTY *	41	3,366,700	23,568
GREEN RIVER, TOWN OF	48	5,481,900	42,901
GREYBULL, TOWN OF	5	889,000	1,453
GUERNSEY, TOWN OF	2	315,000	600
HOT SPRINGS COUNTY*	6	1,925,000	2,132
HUDSON, TOWN OF	5	486,600	2,924
JACKSON, TOWN OF	58	16,524,000	31,036
JOHNSON COUNTY*	16	4,697,000	5,374
KAYCEE, TOWN OF	12	1,556,100	5,779
KEMMERER, TOWN OF	8	1,123,600	6,514
LANDER, CITY OF	25	7,030,100	9,262
LARAMIE COUNTY*	121	20,021,800	92,522
LARAMIE, CITY OF	60	8,272,500	44,027
LINCOLN COUNTY *	26	5,432,600	11,744
LINGLE, TOWN OF	1	140,000	1,265
LOVELL, TOWN OF	2	210,000	488
LUSK, TOWN OF	2	72,000	530
LYMAN, TOWN OF	1	350,000	365
MANDERSON, TOWN OF	2	58,600	679
MEETEETSE, TOWN OF	4	310,800	2,694
MILLS, TOWN OF	6	597,000	3,582
MOUNTAIN VIEW, TOWN OF	12	2,072,800	7,036
NATRONA COUNTY *	60	15,843,300	55,176
NEWCASTLE, CITY OF	3	118,600	681
PARK COUNTY*	49	7,396,900	36,442
PLATTE COUNTY *	4	140,100	1,299

POWELL, CITY OF	1	42,000	175
RANCHESTER, TOWN OF	9	1,199,600	2,390
RAWLINS, CITY OF	1	350,000	355
RIVERTON, CITY OF	1	210,000	333
ROCK SPRINGS, CITY OF	250	39,598,200	290,591
SARATOGA, TOWN OF	21	4,665,900	19,436
SHERIDAN COUNTY *	115	23,281,000	128,666
SHERIDAN, CITY OF	98	17,930,600	88,078
SUBLETTE COUNTY*	31	7,165,300	39,297
SUNDANCE, TOWN OF	4	732,000	1,270
TEN SLEEP, TOWN OF	2	630,000	721
TETON COUNTY *	380	121,739,900	188,422
THERMOPOLIS, TOWN OF	8	1,260,400	3,491
TORRINGTON, CITY OF	1	28,000	144
UINTA COUNTY *	78	15,688,700	59,860
WASHAKIE COUNTY *	2	357,000	567
WHEATLAND, TOWN OF	4	720,900	2,727
WORLAND, CITY OF	66	6,619,700	44,654
Total for Wyoming	2,594	508,037,500	1,973,899

*<http://bsa.nfipstat.com/reports/1011.htm#WYT> Accessed 5/3/2011

Ice Jam Flood Losses

The U.S. Army Corps of Engineers (USACE) details the following losses as attributable to ice jam flooding. Ice jam flooding is responsible for loss of life, although the number of fatalities in the United States is considerably less than non-ice jam flooding. Ice jams in the United States cause approximately \$125 million in damages annually, including an estimated \$50 million in personal property damage and \$25 million in operation and maintenance costs to USACE navigation, flood control, and channel stabilization structures.

Background

Ice forms in freshwater bodies whenever the surface water cools to 0 degrees Celsius (32 degrees Fahrenheit) or less. USACE reports the following forms of ice.

Sheet ice forms in calm water, such as lakes or reservoirs, or in slow-moving river reaches, where the flow velocity is less than 0.5 m/s (1.5 ft/s).

Frazil ice consists of small particles of ice formed in highly turbulent, super cooled water, such as river rapids or riffles, during cold, clear winter nights when the heat loss from the water to the atmosphere is very high.

Fragmented ice is made up of ice pieces that originated as consolidated frazil ice pans or from the breakup of sheet ice growing at the surface of slow-moving water.

Brash ice is an accumulation of ice pieces less than 1.5 to 2 m (5 to 6 ft) in maximum dimension resulting from the breakup of an ice cover by increasing water flow or by vessel passage.

Types of Ice Jams

An ice jam is a stationary accumulation of ice that restricts water flow. Ice jams cause substantial increases in upstream water levels, while downstream water levels may drop. USACE reports the following types of ice jams.

Freeze-up jams. Freeze-up jams are composed primarily of frazil ice, with some fragmented ice included, and occur during early winter to midwinter.

Breakup jams. Breakup jams occur during periods of thaw, generally in late winter and early spring, and are composed primarily of fragmented ice formed by the breakup of an ice cover or freeze-up jam.

Combination jams. Combination jams involve both freeze-up and breakup jams. For example, a small freeze-up jam forms in a location that causes no immediate damage.

Causes of Ice Jams

The USACE attributes the following as primary causes of ice jams:

- River geometries, weather characteristics, and floodplain land-use practices contribute to the ice jam flooding threat at a particular location.
- Obstructions to ice movement can cause ice jams, for example closely spaced bridge or dam piers. In high runoff situations, a partially submerged bridge superstructure obstructs ice movement and may initiate a jam. In smaller rivers trees along the bank sometimes fall across the river causing an ice jam.
- Some structural or operational changes in reservoir regulation may lead to ice jams.



Sheridan Ice Jam – January 2009

History

The following records list the reported ice jams throughout Wyoming from 1922 through 2005. The recorded ice jams are listed chronologically for all counties, cities, and rivers. The data were provided by the Ice Engineering Group with the U.S. Army Corps of Engineers - Cold Regions Research and Engineering Laboratory (CRREL).

Table 8.5 - Ice Jams in Wyoming			
Date	County	City	River
3/6/1929	Big Horn	Byron	Shoshone River
3/11/1929	Big Horn	Kane	Bighorn River
12/28/1933	Big Horn	Byron	Shoshone River
2/2/1936	Big Horn	Byron	Shoshone River
1/4/1937	Big Horn	Byron	Shoshone River
3/13/1939	Big Horn	Basin	Greybull River
1/27/1940	Big Horn	Byron	Shoshone River
3/12/1942	Big Horn	Kane	Bighorn River
3/26/1943	Big Horn	Basin	Greybull River
2/19/1948	Big Horn	Manderson	Bighorn River
2/19/1948	Big Horn	Manderson	Bighorn River
2/21/1948	Big Horn	Kane	Bighorn River
1/29/1949	Big Horn	Byron	Shoshone River
3/5/1949	Big Horn	Basin	Greybull River
3/18/1949	Big Horn	Kane	Bighorn River
2/4/1951	Big Horn	Byron	Shoshone River
2/27/1951	Big Horn	Basin	Greybull River
1/7/1952	Big Horn	Kane	Bighorn River
1/30/1952	Big Horn	Garland	Bitter Creek
3/9/1952	Big Horn	Greybull	Dry Creek
2/4/1953	Big Horn	Greybull	Dry Creek
1/24/1954	Big Horn	Byron	Shoshone River
3/7/1954	Big Horn	Kane	Bighorn River
1/5/1955	Big Horn	Kane	Bighorn River
2/19/1955	Big Horn	Byron	Shoshone River
3/30/1955	Big Horn	Basin	Greybull River
12/24/1955	Big Horn	Basin	Greybull River
2/6/1956	Big Horn	Manderson	Bighorn River
3/19/1956	Big Horn	Greybull	Dry Creek
1/2/1959	Big Horn	Greybull	Bighorn River
1/6/1959	Big Horn	Byron	Shoshone River
1/9/1959	Big Horn	Kane	Bighorn River
1/12/1959	Big Horn	Basin	Greybull River
3/9/1960	Big Horn	Greybull	Dry Creek
3/21/1960	Big Horn	Basin	Greybull River
2/12/1962	Big Horn	Basin	Greybull River
1/19/1963	Big Horn	Kane	Shoshone River
1/20/1966	Big Horn	Kane	Bighorn River
2/16/1966	Big Horn	Kane	Shoshone River

Table 8.5 - Ice Jams in Wyoming

Date	County	City	River
1/11/1992	Big Horn	Basin	Bighorn River
3/15/1996	Big Horn	Greybull	Bighorn River
?-?-1938	Big Horn	Byron	Shoshone River
4/13/1944	Carbon	Hanna	Medicine Bow River
3/4/1949	Carbon	Hanna	Medicine Bow River
2/26/1950	Carbon	Hanna	Medicine Bow River
4/11/1950	Carbon	Hulett	Belle Fourche River
1/24/1954	Carbon	Hanna	Medicine Bow River
4/9/1955	Carbon	Hanna	Medicine Bow River
3/23/1956	Carbon	Hanna	Medicine Bow River
3/24/1956	Carbon	Dixon	Willow Creek
3/16/1957	Carbon	Hanna	Medicine Bow River
2/1/1959	Carbon	Hanna	Medicine Bow River
4/5/1959	Carbon	Savery	Savery Creek
3/22/1960	Carbon	Dixon	Willow Creek
3/22/1960	Carbon	Hanna	Medicine Bow River
3/15/1961	Carbon	Dixon	Willow Creek
2/12/1962	Carbon	Hanna	Medicine Bow River
4/19/1962	Carbon	Encampment	Battle Creek
4/18/1984	Carbon	Dixon	Willow Creek
1/14/1943	Converse	Orpha	La Prele Creek
4/1/1954	Converse	Orpha	La Prele Creek
3/21/1939	Crook	Hulett	Belle Fourche River
3/14/1945	Crook	Moorcroft	Belle Fourche River
2/18/1947	Crook	Hulett	Belle Fourche River
3/18/1947	Crook	Moorcroft	Belle Fourche River
3/19/1948	Crook	Hulett	Belle Fourche River
3/20/1948	Crook	Moorcroft	Belle Fourche River
3/6/1949	Crook	Moorcroft	Belle Fourche River
3/12/1939	Fremont	Hudson	Little Popo Agie River
2/19/1947	Fremont	Riverton	Wind River
3/20/1948	Fremont	Hudson	Little Popo Agie River
5/1/1948	Fremont	Atlantic City	Sweetwater River
12/21/1949	Fremont	Riverton	Wind River
1/15/1950	Fremont	Lenore	Bull Lake Creek
4/16/1950	Fremont	Atlantic City	Sweetwater River
2/3/1951	Fremont	Lost Cabin	Badwater Creek
5/29/1951	Fremont	Hudson	Little Popo Agie River
12/7/1951	Fremont	Dubois	Wind River
12/11/1951	Fremont	Riverton	Fivemile Creek
12/19/1951	Fremont	Riverton	Wind River
3/23/1952	Fremont	Pavilion	Muddy Creek
3/30/1952	Fremont	Lost Cabin	Badwater Creek
6/9/1952	Fremont	Hudson	Little Popo Agie River
11/29/1952	Fremont	Shoshoni	Fivemile Creek
12/10/1952	Fremont	Riverton	Fivemile Creek
12/28/1952	Fremont	Riverton	Wind River

Table 8.5 - Ice Jams in Wyoming

Date	County	City	River
6/14/1953	Fremont	Hudson	Little Popo Agie River
12/23/1953	Fremont	Shoshoni	Fivemile Creek
12/24/1953	Fremont	Riverton	Fivemile Creek
1/25/1954	Fremont	Lost Cabin	Badwater Creek
1/27/1954	Fremont	Riverton	Wind River
12/27/1954	Fremont	Shoshoni	Fivemile Creek
1/12/1955	Fremont	Riverton	Wind River
1/29/1955	Fremont	Dubois	Wind River
2/10/1955	Fremont	Lander	Little Popo Agie River
2/17/1955	Fremont	Pavillion	Fivemile Creek
4/6/1955	Fremont	Lost Cabin	Badwater Creek
12/16/1955	Fremont	Lander	Little Popo Agie River
12/23/1955	Fremont	Riverton	Wind River
12/23/1955	Fremont	Shoshoni	Fivemile Creek
2/2/1956	Fremont	Riverton	Fivemile Creek
3/15/1956	Fremont	Pavillion	Fivemile Creek
3/22/1956	Fremont	Lost Cabin	Badwater Creek
12/6/1956	Fremont	Shoshoni	Fivemile Creek
12/24/1956	Fremont	Riverton	Fivemile Creek
12/24/1957	Fremont	Shoshoni	Fivemile Creek
1/6/1958	Fremont	Riverton	Fivemile Creek
2/17/1958	Fremont	Pavillion	Muddy Creek
2/19/1958	Fremont	Pavillion	Fivemile Creek
2/20/1958	Fremont	Shoshoni	Muddy Creek
1/3/1959	Fremont	Shoshoni	Fivemile Creek
2/10/1959	Fremont	Lander	Little Popo Agie River
2/26/1959	Fremont	Shoshoni	Muddy Creek
3/19/1959	Fremont	Lost Cabin	Badwater Creek
11/14/1959	Fremont	Riverton	Wind River
11/17/1959	Fremont	Crowheart	Wind River
12/6/1959	Fremont	Pavillion	Fivemile Creek
1/1/1960	Fremont	Shoshoni	Fivemile Creek
2/12/1960	Fremont	Riverton	Fivemile Creek
2/24/1960	Fremont	Lander	Little Popo Agie River
3/11/1960	Fremont	Pavillion	Muddy Creek
3/15/1960	Fremont	Dubois	Wind River
3/21/1960	Fremont	Shoshoni	Muddy Creek
12/8/1960	Fremont	Riverton	Wind River
12/9/1960	Fremont	Lander	Little Popo Agie River
12/10/1960	Fremont	Crowheart	Wind River
12/13/1960	Fremont	Pavillion	Fivemile Creek
2/8/1961	Fremont	Shoshoni	Fivemile Creek
2/12/1961	Fremont	Riverton	Fivemile Creek
2/20/1961	Fremont	Shoshoni	Muddy Creek
2/15/1962	Fremont	Shoshoni	Muddy Creek
3/3/1962	Fremont	Pavillion	Fivemile Creek
3/10/1962	Fremont	Pavillion	Muddy Creek

Table 8.5 - Ice Jams in Wyoming

Date	County	City	River
12/25/1962	Fremont	Shoshoni	Fivemile Creek
3/19/1943	Hot Springs	Thermopolis	Owl Creek
2/18/1948	Hot Springs	Thermopolis	Owl Creek
12/30/1949	Hot Springs	Grass Creek	Gooseberry Creek
3/16/1951	Hot Springs	Neiber	Gooseberry Creek
3/4/1953	Hot Springs	Thermopolis	Owl Creek
3/8/1953	Hot Springs	Neiber	Gooseberry Creek
2/2/1954	Hot Springs	Thermopolis	Owl Creek
3/20/1956	Hot Springs	Grass Creek	Gooseberry Creek
5/12/1957	Hot Springs	Grass Creek	Gooseberry Creek
2/21/1959	Hot Springs	Thermopolis	Owl Creek
11/24/1959	Hot Springs	Dickie	Gooseberry Creek
3/9/1960	Hot Springs	Thermopolis	Owl Creek
3/23/1960	Hot Springs	Anchor	South Fork Owl Creek
4/15/1962	Hot Springs	Anchor	South Fork Owl Creek
12/31/1923	Johnson	Buffalo	Clear Creek
3/25/1943	Johnson	Arvada	Crazy Woman Creek
2/18/1948	Johnson	Kaycee	Powder River
4/8/1950	Johnson	Buffalo	North Fork Clear Creek
1/24/1952	Johnson	Barnum	Red Fork
4/7/1952	Johnson	Buffalo	North Fork Clear Creek
3/30/1955	Johnson	Arvada	Crazy Woman Creek
3/4/1956	Johnson	Kaycee	Powder River
3/20/1956	Johnson	Arvada	Crazy Woman Creek
1/1/1958	Johnson	Buffalo	North Fork Crazy Woman Creek
4/17/1958	Johnson	Buffalo	North Fork Clear Creek
12/7/1958	Johnson	Buffalo	Clear Creek
12/31/1959	Johnson	Buffalo	North Fork Crazy Woman Creek
1/2/1960	Johnson	Buffalo	Clear Creek
2/15/1960	Johnson	Kearney	Piney Creek
3/9/1960	Johnson	Kaycee	Powder River
3/10/1960	Johnson	Greub	North Fork Crazy Woman Creek
3/21/1960	Johnson	Buffalo	North Fork Clear Creek
1/4/1961	Johnson	Buffalo	North Fork Clear Creek
1/28/1961	Johnson	Buffalo	North Fork Crazy Woman Creek
2/9/1961	Johnson	Arvada	Crazy Woman Creek
12/24/1955	Lincoln	Fontenelle	Fontenelle Creek
4/3/1959	Lincoln	Frontier	Hams Fork
2/9/1997	Natrona	Casper	North Platte River
3/8/1960	Niobrara	Van Tassel	Niobrara River
12/6/1960	Niobrara	Van Tassel	Niobrara River
1/31/1963	Niobrara	Van Tassel	Niobrara River
3/4/1989	Niobrara	Van Tassel	Niobrara River
12/12/1947	Park	Pitchfork	Greybull River
1/21/1950	Park	Meeteetse	Greybull River
3/22/1950	Park	Sunshine	Wood River
3/2/1951	Park	Sunshine	Wood River

Table 8.5 - Ice Jams in Wyoming

Date	County	City	River
1/23/1954	Park	Sunshine	Wood River
4/10/1955	Park	Sunshine	Wood River
11/16/1959	Park	Cody	South Fork Shoshone River
12/26/1996	Park	Cody	South Fork Shoshone River
12/31/1996	Park	Cody	South Fork Shoshone River
3/16/1922	Sheridan	Arvada	Powder River
3/7/1929	Sheridan	Arvada	Powder River
3/13/1939	Sheridan	Arvada	Powder River
3/2/1940	Sheridan	Arvada	Powder River
3/12/1942	Sheridan	Arvada	Powder River
3/25/1943	Sheridan	Arvada	Clear Creek
3/25/1943	Sheridan	Arvada	Powder River
3/13/1945	Sheridan	Arvada	Powder River
3/16/1947	Sheridan	Arvada	Powder River
3/17/1947	Sheridan	Arvada	Clear Creek
2/19/1948	Sheridan	Arvada	Powder River
2/28/1949	Sheridan	Arvada	Powder River
3/19/1950	Sheridan	Arvada	Powder River
3/25/1951	Sheridan	Arvada	Powder River
3/29/1952	Sheridan	Arvada	Clear Creek
3/12/1953	Sheridan	Arvada	Powder River
4/5/1955	Sheridan	Arvada	Powder River
3/20/1956	Sheridan	Arvada	Powder River
3/21/1956	Sheridan	Arvada	Clear Creek
1/9/1959	Sheridan	Ucross	Piney Creek
3/18/1959	Sheridan	Arvada	Clear Creek
3/20/1959	Sheridan	Arvada	Powder River
3/19/1960	Sheridan	Arvada	Powder River
3/19/1960	Sheridan	Sheridan	Goose Creek
3/19/1960	Sheridan	Ucross	Piney Creek
2/23/1961	Sheridan	Arvada	Powder River
1/1/1971	Sheridan	Parkman	West Fork Little Bighorn River
2/16/1971	Sheridan	Acme	Prairie Dog Creek
12/3/1923	Sweetwater	Green River	Green River
2/28/1950	Sweetwater	Green River	Blacks Fork
1/5/1955	Sweetwater	Eden	Big Sandy Creek
3/20/1956	Sweetwater	Eden	Big Sandy Creek
2/25/1957	Sweetwater	Eden	Big Sandy Creek
4/6/1961	Sweetwater	Eden	Little Sandy Creek
3/28/1962	Sweetwater	Farson	Pacific Creek
3/15/1997	Sweetwater	Granger	Blacks and Hams Fork
3/21/2001	Sweetwater	Little America	Blacks Fork River
3/12/2005	Sweetwater	Little America	Blacks Fork
3/17/1946	Teton	Moran	Pacific Creek
3/14/1951	Teton	Moran	Pacific Creek
4/5/1955	Teton	Moran	Pacific Creek
4/12/1956	Teton	Moran	Pacific Creek

Table 8.5 - Ice Jams in Wyoming			
Date	County	City	River
3/14/1939	Uinta	Lyman	Blacks Fork
5/3/1945	Uinta	Robertson	West Fork of Smith Fork
3/16/1949	Uinta	Lyman	Blacks Fork
3/5/1950	Uinta	Lyman	Blacks Fork
4/8/1952	Uinta	Lyman	Blacks Fork
3/17/1954	Uinta	Burntfork	Henrys Fork
?-Jan-1984	Uinta	Evanston	Bear River
?-Jan-1985	Uinta	Evanston	Bear River
3/14/1943	Washakie	Winchester	Cottonwood Creek
3/15/1945	Washakie	Winchester	Cottonwood Creek
2/28/1951	Washakie	Tensleep	Nowood Creek
3/9/1953	Washakie	Tensleep	Nowood Creek
2/14/1954	Washakie	Tensleep	Nowood Creek
3/11/1959	Washakie	Worland	Fifteen Mile Creek
3/14/1960	Washakie	Worland	Fifteen Mile Creek
1/29/1996	Washakie	Worland	Bighorn River
1/30/2001	Washakie	Worland	Big Horn River
2/18/1947	Weston	Newcastle	Beaver Creek
3/21/1959	Weston	Newcastle	Beaver Creek
3/22/1960	Weston	Newcastle	Beaver Creek

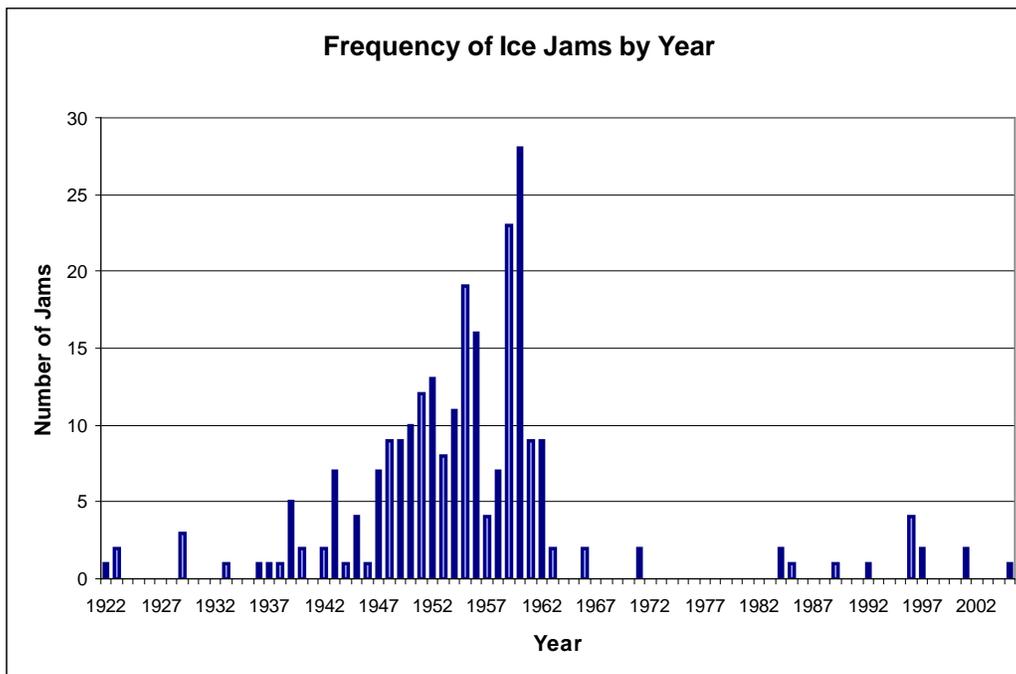


Figure 8.6 Frequency of Ice Jams by Year

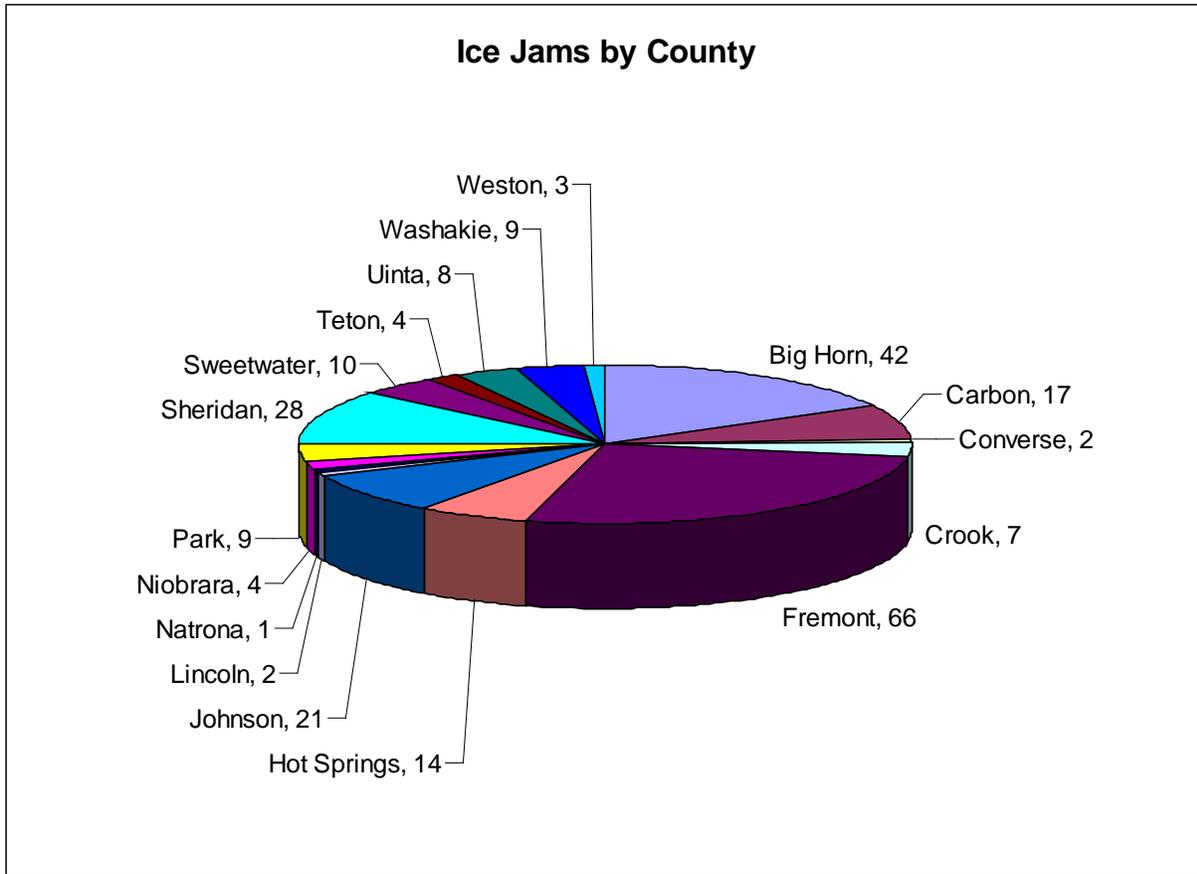


Figure 8.7 Distributions of Ice Jams by County

Future Impacts

The Census Bureau indicates Wyoming has experienced a change in population over the past ten (10) years. While Campbell and Sublette Counties have experienced the most significant percentage of growth, the flooding risk in those counties remains low. Historically they are not subject to flooding and even though they experienced significant growth, they remain rural in nature. Campbell County has the greater population per square mile, but that still represents only 7 people per square mile, with the majority concentrated in the City of Gillette where they may experience flash flooding from spring rain storms, but do not typically experience flooding from snow melt.

Sweetwater, Lincoln, Teton, Johnson, and Crook Counties reflect the next higher percentage of increased population. Again, each of those counties is rural in nature with populations of 3.6, 3.6, 4.6, 1.7, and 2.1 persons per square mile, respectively. Given the rural nature of these counties, flood risk remains low. Additionally, the historical risk of flood damage is these counties rank them 9th, 21st, 20th, 5th, and 13th respectively, and each has experienced significantly less damage than the top two counties of Laramie and Natrona. Johnson County, of the five counties listed is the one with the greatest historical flood damage, with \$114,000 damage as compared with \$5m damage historically in Laramie County. While increased

population certainly impacts the potential losses, they remain low in comparison with other counties in the State.

Below is a chart reflecting the number of historical flooding events in each of the seven counties listed above as detailed in SHELDUS from 1950 through 2010. Even the county with the greatest number of flooding events experienced only 12 flooding events in the past 60 years, about one event every six years. The other counties experienced far fewer flooding events. Again, given this data, flooding risk in those counties with increased development, while certainly impacted, remains low.

Campbell	7
Sublette	2
Sweetwater	5
Lincoln	2
Teton	4
Johnson	12
Crook	3

Local Mitigation Plan Risk Assessments

Local flood vulnerability based on risk assessments contained in each county’s Multi-Hazard Mitigation Plan have been reviewed by the Wyoming Office of Homeland Security. Local plans incorporate risk assessments obtained from the Wyoming State Multi-Hazard Mitigation Plan, GIS maps of 100 and 500 year flood plain maps obtained from the Wyoming Office of Homeland Security and tables related to the National Flood Insurance Program, also obtained from the Wyoming Office of Homeland Security. Because of a lack of resources, the counties rely heavily on the State Mitigation Plan for the majority of their risk assessments and little additional information is included.

The local mitigation plans are available in hard copy at the Wyoming Office of Homeland Security and digitally within the Wyoming Office of Homeland Security’s server system. The local mitigation plans will be duplicated and made available at the Wyoming Emergency Operations Center, expected to be made operational within the next couple weeks. Additionally, the local flood risk assessments are incorporated into the Wyoming Multi-Hazard Mitigation Plan by reference.

Proposed State Mitigation Projects

The following mitigation projects have been proposed by state, federal, and local entities in the process of generating the Wyoming Multi-Hazard Mitigation Plan. Chapter 22 has all proposed mitigation projects.

- Continue to encourage participation in NFIP.
- Locate septic systems in flood prone areas, and work with local jurisdictions to remedy potential problems.

- Study on flood-proofing government buildings and essential/critical facilities in floodplains.
- Active participation in Flood Map Modernization Program.
- Education of floods and on flood insurance.
- Generate and publish summary of Wyoming Department of Transportation hydrologic and flood potential assessments.
- Statewide analysis of areas needing detention ponds, with needs prioritized.
- Precisely locate structures in existing floodplain, and generate cost estimates for raising or removing structures.
- Early warning stream stage continuous recorders with warning function established throughout state.
- Storm-drain inspection and cleaning program.
- Provide all-hazards weather radios to all residences in Wyoming.
- Identify and inspect shelters in hazard prone areas.
- Research feasibility and costs of adding new frontage roads /detour routes to I-80, I-90, and I-25 to prevent significant delay in traffic flow and resultant economic loss and possible loss of life.
- Provide hazards info to shelters, emergency facilities in public buildings, campgrounds, and phone books.
- Provide emergency phones at strategic locations with direct lines to emergency dispatch services.
- Develop reseeding plans for losses due to all hazard events.
- GIS training for local jurisdictions with emphasis on hazards recognition and analysis for application to mitigation planning.
- Investigate opportunities for developing or improving warning systems as a means to reduce loss of life, damage to property, and economic losses.
- Education programs encompassing multi-hazard insurance for business, resident and government application.
- Education programs encompassing multi-hazard mitigation for business, resident and government application.
- Planning studies regarding transportation of essential and/or key personnel during all hazard events.
- Continue outreach to counties on identifying cost effective and feasible mitigation projects.
- Promote Continuity of Operations and Continuity of Government, statewide.
- Maintain and continue to expand hazards databases that were generated for the State Hazard Mitigation Plan. Seek new sources of information.
- Identify, document, and advertise all volunteer agency's locations and contact information.