

The Top Five Iowa Floods

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1. Acknowledgements

The author would like to thank the many people who provided input and suggestions regarding this list of the top five Iowa floods. The time and insights they provided to help identify the top five floods are greatly appreciated. A special thank-you goes to the following people:

- Craig Cogil, Lead Forecaster, National Weather Service WFO Des Moines, Iowa
- Jeff Johnson, Acting Meteorologist-in-Charge and Warning Coordination Meteorologist, National Weather Service WFO Des Moines, Iowa
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2. Introduction

2.a. Methodology

The list of the top five Iowa floods was identified from an initial list of 12 candidate flood events provided by the author and the people listed in Section 1. Once the list of candidate flood events was developed, each person ranked the floods. Each person used a combination of their professional opinions, personal experience and historical information available to them—recognizing the fact that subjectivity would be involved in the scoring. The scorers were asked to rank the floods from a statewide impact perspective.

The author then developed composite rankings based on the input. The scorers were unanimous in identifying the #1 and #2 floods in Iowa. Identification of the #3 flood was not as obvious. Identification of the #4 and #5 floods was even less obvious and involved considerable subjectivity. Although most floods affected a large geographic area of the state, the #4 flood affected a relatively small geographic area but was included because it was the deadliest flood in state history and was especially violent. A two-way tie was ultimately decided for the #5 flood. Although those two floods had different impacts, each of their composite impacts placed them on a similar level.

2.b. Other Floods

Table 1 shows a list of the remaining six floods that did not make into the top five floods list. They are listed in chronological order.

Flood Name and Month/Year	Notes
Missouri River Flood (April 1881)	Affected primarily the Council Bluffs and Omaha area.
Sioux City Flood (May 1892)	Affected the Siouxland area of northwest Iowa. Flooding occurred mainly from the Floyd River. High water on the Missouri River (into which the Floyd River drains at Sioux City) exacerbated the flooding.
Southern Iowa Floods (September 1992)	Flooding began as significant flash flooding and transitioned to major river flooding. At one time all roads leading into the Wayne County seat of Corydon, Iowa were blocked by water.
Northeast Iowa Floods (July 1999)	Flooding began as flash flooding. It transitioned to record river flooding along portions of area streams.
Central Iowa Floods (August 2010)	Flooding lasted over a 3-day period but targeted different areas each night. Hardest hit locations included the Ames, Colfax, Des Moines and Oskaloosa areas.
Missouri River Flood (June-August 2011)	Long term flood which lasted for much of the summer.
Table 1. Other Iowa floods considered for inclusion in the Top Five list.	

3. Iowa Flood #1—The Great Flood of 1993

3.a. Description and Impacts

The Great Flood of 1993 is considered by many to be one of the most defining natural disasters in Iowa history. Flooding resulted in 17 fatalities and around \$2.7 billion in damage (nearly \$4.5 billion in 2013 inflation-adjusted dollars). Over 10,000 people were evacuated from their homes and 21,000 homes were damaged—many destroyed.

During the summer of 1993 some locations saw rain each day for 130 consecutive days. Some areas flooded more than five times. Agricultural yields dropped by 62 percent. Each of Iowa's 99 counties was declared a Federal Disaster Area. When President Clinton surveyed the Des Moines area flooding on July 14th he stated "I have never seen anything on this scale before."

3.b. Causes

Although the worst of the flooding occurred during the summer of 1993, the factors that predisposed the state to flooding began falling into place one year earlier. A cold growing

season in 1992 reduced soil moisture losses and left Iowa soils much wetter than normal by September. The fall season was very wet with record rains in southern Iowa in September and November. The winter of 1992-1993 was long, cold and snowy resulting in one of the greatest snow packs in state history in early March. Heavy early spring rainfall occurred in March which led to widespread flooding including record flooding along some streams. April continued wet, cloudy and very cool across much of Iowa with continued high river levels. This pattern continued into May. Periods of heavy rainfall continued into the summer.

3.c. Other Impacts and Information

Many examples help illustrate flood's severity. One of the most recognized examples was the loss of the public water supply for the Des Moines area. Floodwaters from the Raccoon River overwhelmed flood protection measures at the Des Moines Water Works on July 11th and forced the shutdown of the facility. The water supply to a quarter-million people was cut off. The loss of water lasted for nearly two weeks with enormous economic and human impacts including the shutdown of all downtown Des Moines businesses.

Another example of the flood's severity was flooding at Ames and Iowa State University on July 9th. Heavy rainfall led to record flooding along portions of Squaw Creek and the South Skunk River. Floodwaters from Squaw Creek bisected Ames and flooded Hilton Coliseum—home to Iowa State University basketball, gymnastics, volleyball and wrestling teams—with 14 feet of water. For the first time in Iowa State University history, summer school classes were canceled due to the weather.

Floodwaters from the South Skunk River also forced the closure of Interstates 35 and 80—north and east of Des Moines—respectively. In terms of flood stage, the Great Flood of 1993 officially ended in Iowa on October 10th when the Iowa River at Marshalltown fell below that threshold.

3.d. Photos

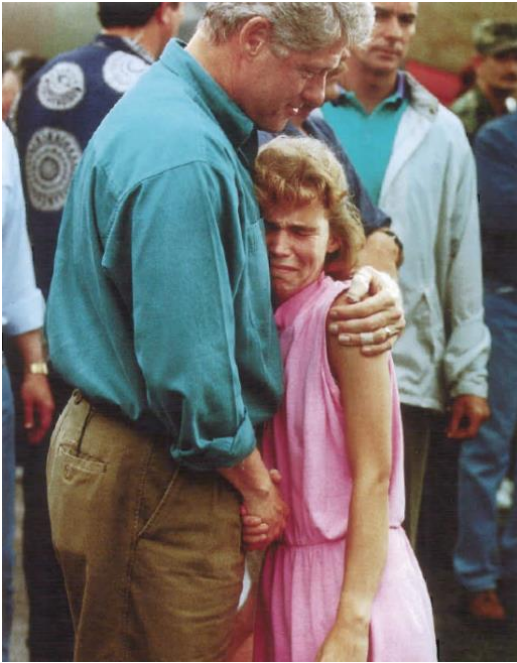


Figure 1. President Bill Clinton comforts a Des Moines, Iowa area resident during his visit to survey the flood damage in Des Moines on July 14, 1993. Photo by the Des Moines Register.



Figure 2. Floodwaters from the Raccoon River inundate downtown Des Moines, Iowa and Des Moines Water Works on July 11, 1993. Photo by Des Moines Water Works.



Figure 3. A two-story house across the Iowa River from Wapello, Iowa was knocked off its foundation after a levee broke in early July 1993. Photo by the Des Moines Register.

For additional photos see also:

- Des Moines Register photo gallery—“Floods of 1993.”
<http://www.desmoinesregister.com/apps/pbcs.dll/gallery?Avis=D2&Dato=20080606&Kategori=NEWS&Lopenr=806060812&Ref=PH> .
- Quad City Times photo gallery—“Historic Quad-City Floods: 1993.”
http://qctimes.com/gallery/news/local/historic-q-c-floods/collection_a832f074-abbb-57fc-b65e-0f01f085bb90.html#0 .
- Refer also to the resources in Section 3.e. Some of those resources also include photos.

3.e. Links

- NOAA/NWS Natural Disaster Survey Report—“The Great Flood of 1993.”
<https://verification.nws.noaa.gov/sats/sa/saDetail.aspx?saFileid=57> .
- USGS reports and related resources: <http://mo.water.usgs.gov/Reports/1993-Flood/> . An especially good resource on that page is “The Great Flood of 1993 on the Upper Mississippi River—10 Years Later” (USGS Fact Sheet #2004-3024).
- NOAA News Web article—“Quiet Beginning Heralded Nation’s Worst Flood in 1993.”
<http://www.noaanews.noaa.gov/stories/s1125.htm> .
- Wikipedia Web article—“Great Flood of 1993.”
http://en.wikipedia.org/wiki/Great_Flood_of_1993 .

4. Iowa Flood #2—The 2008 Flood

4.a. Description and Impacts

Many people agree that from a statewide perspective the Great Flood of 1993 and the 2008 Flood were the worst modern-day floods in Iowa history. Although the 2008 affected a smaller geographic area and did not last for as long as did the Great Flood of 1993 in Iowa, the flooding in 2008 was more focused and intense. Its greatest impacts were felt mainly across eastern Iowa especially within the Cedar and Iowa River basins. In the hardest hit areas, the river levels in 2008 exceeded previous record high levels—many of which were set in 1993.

Eighty-five of Iowa's 99 counties were declared a Federal Disaster Area. Total statewide damage was estimated at \$10 billion (nearly \$10.9 billion in 2013 inflation-adjusted dollars). More than 40,000 people were affected. One fatality occurred. At the height of the flooding in mid-June approximately 2.5 to 3 million acres of corn and soybeans were underwater. An estimated 2.3 million acres (i.e., around 10%) of Iowa's cropland lost at least 20 tons of soil per acre. The hardest-hit locations saw stream flows which exceeded the 500-year (0.2% annual chance) event.

4.b. Causes

Factors that contributed to the Iowa flooding in 2008 began falling into place in 2007. Heavy rainfall in the summer of 2007 and a deep snowpack during the winter of 2007-2008 led to very moist soil conditions and high river levels going into the spring and summer of 2008. Extremely heavy rainfall fell from southwest into northeast Iowa during the first half of June. Amounts of 6 to 8 inches were common some locations reporting 12 to 14 inches over that two-week period. The result was historic flooding in some locations.

4.c. Other Impacts and Information

Cedar Rapids and Iowa City were among the hardest-hit cities. In Cedar Rapids the Cedar River crested nearly 20 feet above flood stage, breaking the previous record crest by over 10 feet. Approximately 1,300 blocks (i.e., 10 square miles)—including most of the downtown area—were inundated. Over 5,200 homes were affected. Mays Island—which is home to Cedar Rapids City Hall, the Linn County Courthouse, the County Jail and the Federal Courthouse—was flooded up to the second floor level.

In the Iowa City area floodwaters from the Iowa River nearly bisected both that town and Coralville. It also caused significant damage at the University of Iowa. The river crested nearly 10 feet above flood stage and 3 feet above its previous record high crest. Twenty buildings on the University of Iowa campus were flooded including Hancher Auditorium. There were over six million sandbags filled in Johnson County. Many other smaller towns in eastern Iowa experienced significant flooding but are too numerous to mention.

Iowa's transportation network also experienced significant damage. Flooding closed various roads and highways including portions of Interstate 80, Interstate 380 and various other Federal, state and local highways especially in eastern Iowa. At one time the main route from Davenport

to Des Moines involved a 115-mile detour.

4.d. Photos



Figure 4. Downtown Cedar Rapids, Iowa on June 13, 2008 as the Cedar River crested more than 11 feet above its previous record. Photo by the Iowa Civil Air Patrol.



Figure 5. The Cedar River floods a neighborhood in Cedar Rapids, Iowa in June 2008. Photo by Scott Olson/Getty Images.



Figure 6. Flooding from the Iowa River inundates the town of Oakville, Iowa after a levee failed on June 14, 2008. Nearly every building was damaged by the six feet of water which rushed into town. Photo by the Des Moines Register.



Figure 7. A railroad bridge is partially swept away by Cedar River floodwaters in downtown Waterloo, Iowa on June 10, 2008 as some people on the opposite river bank look on. Photo by The Waterloo-Cedar Falls Courier.



Figure 8. Significant damage to U.S. Highway 6 becomes apparent after the Cedar River subsides east of Atalissa, Iowa in June 2008. Photo by the Iowa Department of Transportation.

For additional photos see also:

- Des Moines Register photo gallery—“2008 Iowa Floods: Memorable photos.”
<http://www.desmoinesregister.com/apps/pbcs.dll/gallery?Avis=D2&Dato=20130607&Kategori=NEWS&Lopenr=306070801&Ref=PH> .
- Quad City Times photo gallery—“Historic Quad-City Floods: 2008.”
http://qctimes.com/gallery/news/local/historic-q-c-flood-photos/collection_4d91acdf-00ef-5efe-8eb0-ac762d92db0e.html#0.
- Iowa Department of Transportation photo gallery—“Floods of 2008.”
<http://www.iowadot.gov/floods/2008floodgallery.html> .
- Refer also to the resources in Section 4.e. Some of those resources also include photos.

4.e. Links

- NWS national service assessment—“Central United States Flooding of June 2008.”
<https://verification.nws.noaa.gov/sats/sa/saDetail.aspx?saFileid=163> .
- NWS Des Moines local office service assessment—“Central Iowa Floods of 2008.”
http://www.crh.noaa.gov/images/dmx/2008Flood/NWSDesMoines_2008_Flood_Assessment_publicPDF.pdf .
- USGS report—“Floods of May and June 2008 in Iowa.”

<http://pubs.usgs.gov/of/2010/1096/> .

- NOAA/National Climatic Data Center article—“2008 Midwestern Floods.”
<http://www.ncdc.noaa.gov/extremeevents/specialreports/2008-Midwestern-US-Floods.pdf> .
- Des Moines Register Web page—“Remembering & Rebuilding: The 2008 Flood.”
http://www.desmoinesregister.com/section/FLOOD_LOOKBACK .
- Wikipedia Web article—“Iowa Flood of 2008.”
http://en.wikipedia.org/wiki/Iowa_flood_of_2008.

5. Iowa Flood #3—The Great Flood of 1851

5.a. Description and Impacts

Although the Great Flood of 1851 affected a large area of the United States, Iowa was the hardest hit state. Areas of flooding stretched from Nebraska and the eastern Dakotas on the west to the Ohio River valley to the east, and south to the lower Mississippi River basin. The flooding occurred from May to August of 1851 and was the result of record rainfall amounts across the Midwest and Plains.

5.b. Causes

As much as 74.5 inches of rain fell in Iowa in 1851—a record that has remained unbroken since then. (Compare that amount with the long-term statewide average rainfall of nearly 32.5 inches.) The flood demonstrated its severity by the severity of the flooding and impacts despite the relatively low population in Iowa at the time. Iowa had become a state only 4 1/2 years prior.

5.c. Other Impacts and Information

The flooding in Iowa may have also been exacerbated because the Des Moines River basin—where the worst of the flooding occurred in Iowa—had been settled for less than 10 years. Residents there had never previously experienced a major flood. In addition, towns along the river lacked levees and substantial bridges which could withstand significant flooding. Additional flooding occurred that year along other rivers in the state such as the Cedar, Iowa, Skunk and Maquoketa Rivers.

Although the flood occurred a relatively long time ago, there were many accounts of it in historical documents. In fact it was the second-most written about event in Iowa county histories—only behind the winter snowfall of 1856-1857.

From May to July 1851, much of Des Moines was flooded. According to Mills and Company’s publication “Des Moines City Directory and Business Guide for the Year 1866-1867”,

“The Des Moines and Racoon Rivers rose to an unprecedented height, inundating the entire country east of the Des Moines River. Crops were utterly destroyed, houses and

fences swept away. Farms were covered with drift-wood and other debris, so that the entire work of the season was lost.”

Also, according to the Union Historical Company’s publication “The History of Polk County, Iowa”,

“The damage done to the farms in the river bottoms was immense. Some were stripped utterly of their fences; fields under cultivation were washed into ruts by the violence of the water; all hope of a crop for one season being destroyed, not only by what was carried away, but by the debris which was left by the subsiding of the river. It was almost impossible to estimate the losses. Roads were rendered impassable—bridges swept away—the mails stopped, and traveling by land to any distance utterly vetoed. Houses were carried away, mills damaged, timber floated off, and all manner of mischief done by the flood.”

Some local people blamed the Great Flood of 1851 for a temporary population decrease the Des Moines area after the flood.

5.d. Photos

- No photos were easily found.

5.e. Links

- Wikipedia Web article—“Flood of 1851.” http://en.wikipedia.org/wiki/Flood_of_1851 .
- IAGenWeb Web story—“The Flood of 1851.” Taken from “The Palimpsest.” <http://iagenweb.org/history/palimpsest/1934-Jun1.htm> .
- IAGenWeb Web story—“The Flood of 1851.” Taken from “Annals of Iowa.” <http://iagenweb.org/history/annals/1902-Jul.htm> .

6. Iowa Flood #4—The Rockdale Flood of July 4, 1876

6.a. Description and Impacts

Although the Rockdale flood affected a very small geographic area, it is the deadliest known flood in Iowa’s history. Rockdale is now a community located entirely within the City of Dubuque—on the town’s southern side. In 1876 Rockdale was a village located between Dubuque and Key West, Iowa. It was also divided by a ravine through which Catfish Creek flowed toward the Mississippi River around two miles downstream. Rockdale was located along the main vehicle route going south of Dubuque. It was also home to one of the area’s first flour mills.

6.b. Causes

The flood occurred on July 4, 1876 when heavy rain caused Catfish Creek to swell and break the dam upstream of town at the Rockdale Mill. The resulting wall of water was around 20 feet deep and hundreds of feet wide as it swept into town.

6.c. Other Impacts and Information

Around 40 people—nearly every person in town—perished in the flood. The few survivors were found in treetops where the floodwaters had swept them. Only two buildings were left standing—the Rockdale Mill and one house. The village lost a saloon, hotel, two stores, a Post Office, several houses and a blacksmith shop.

One of the most amazing stories of survival involves Charles Thimmesch, a barkeeper. After warning others about the flood he climbed to the roof of the Post Office. He eventually swam naked to higher ground with his money clenched in his teeth.

The village never recovered after the flood. Eventually U.S. Highways 151 and 61 were built and bypassed the area.

6.d. Photos



Figure 9. Antique woodcut engraving titled “Iowa-The Disastrous Flood at Rockdale on the Night of July 4th-5th. Scene Near the Dam the Morning After the Storm.” From a Sketch by A. Simplot. This photo was published in Frank Leslie's Illustrated Newspaper on July 29, 1876.

For additional photos see also:

- Photo from the Center for Dubuque History, Loras College.

http://www.thonline.com/news/tri-state/article_19ed2261-c8dd-5873-b596-6b6d96a4fea7.html?mode=image&photo= .

- Refer also to the resources in Section 6.e. Some of those resources also include drawings and photos.

6.e. Links

- Encyclopedia Dubuque Web article—“Rockdale Flood.”
http://www.encyclopediadubuque.org/index.php?title=ROCKDALE_FLOOD .
- IAGenWeb Web article—“Rockdale Flood-Thirty-Nine Drowned.”
<http://iagenweb.org/boards/dubuque/documents/index.cgi?read=209037> .
- Wikipedia Web article—“Rockdale, Iowa.” [http://en.wikipedia.org/wiki/Rockdale, Iowa](http://en.wikipedia.org/wiki/Rockdale,_Iowa) . See the section titled “The Rockdale Flood.”

7. Iowa Flood #5 (2-Way Tie)—The Mississippi River Flood of 1965

7.a. Description and Impacts

The Mississippi River Flood of 1965 stands as the flood of record for locations along the Mississippi River in Iowa from the Minnesota border down to the Quad Cities. For many of those locations the 1965 river levels exceeded previous records by several feet. To this day those record levels still exceed the second highest river levels by a foot or more at many locations. The flooding resulted in 14 fatalities, drove nearly 15,000 people from their homes and caused around \$125 million dollars of damage (nearly \$1 billion in 2013 inflation-adjusted dollars).

7.b. Causes

This flood had its origins in the fall of 1964. For the Mississippi River basin from eastern Iowa upstream into Minnesota and Wisconsin, temperatures from late November 1964 through Christmas were 3 to 7 degrees below normal. At the same time there was little if any snow on the ground. The combination of cold temperatures and lack of snowpack allowed the frost to penetrate deep into the ground.

Heavy snow fell during March 1965 especially across the Mississippi River basin upstream of Iowa. The hardest hit areas extended from central and southern Minnesota into western Wisconsin where as much as 40 to 60 inches of snow fell. March 1965 also saw much below normal temperatures. Readings were as much as 10 to 15 degrees below normal for the month. These cold temperatures prevented the gradual melting and runoff of the snowpack.

Finally, the combination of the spring warm-up and heavy rainfall from early into mid April 1965 helped unleash the floodwaters. Between April 1 and April 15 of 1965, 2 1/2 to 3 1/2 inches of rain fell across the region. Normally the rain would soak into the ground. However the frozen ground did not allow the rain to soak into the ground. Instead it ran into streams and

rivers. In addition, the rain melted the abnormally deep snow pack resulting in even more water. Streams and rivers rose quickly causing the Mississippi River to reach record flood stages by mid-April of 1965.

7.c. Other Impacts and Information

One of the hardest hit towns was Clinton, Iowa where flooding caused \$5 million in damage (over \$35 million in 2013 inflation-adjusted dollars). The lack of levees helped exacerbate the flooding in some towns such as Clinton and Dubuque. For some towns which either had levees in place or constructed temporary levees—such as Davenport, Iowa—those levees failed after being pounded by the floodwaters. After the floodwaters subsided, additional levees were built to withstand future floods.

7.d. Photos



Figure 10. Floodwaters from the Mississippi River inundate downtown Dubuque, Iowa in April 1965. Photo taken from EncyclopediaDubuque.org (source unknown).



Figure 11. Floodwaters from the Mississippi River affect portions of Clinton, Iowa in April 1965. Photo by the National Weather Service.



Figure 12. Floodwaters from the Mississippi River inundate downtown Davenport, Iowa and John O'Donnell Stadium in April 1965. Photo by the Quad City Times.



Figure 13. Floodwaters from the Mississippi River sweep away a house near Davenport, Iowa in April 1965. Photo by the Quad City Times.

For additional photos see also:

- Quad City Times photo gallery—“Historic Quad-City Floods: 1965.”
http://qctimes.com/gallery/news/local/historic-q-c-floods/collection_1c12a296-fdbc-5577-a735-08d78a658935.html#0 .
- Refer also to the resources in Section 7.e. Some of those resources also include photos.

7.e. Links

- NWS Quad Cities, IA/IL Web article—“Spring Flood of 1965.”
http://www.crh.noaa.gov/dvn/?n=04011965_springflood .
- NWS La Crosse, WI Web article—“Mississippi River Flood of 1965.”
<http://www.crh.noaa.gov/arx/?n=flood1965> .
- USGS report—“Floods of March-May 1965 in the Upper Mississippi River Basin” (Geological Survey Water-Supply Paper #1850-A).
<http://pubs.er.usgs.gov/publication/wsp1850A> .

8. Iowa Flood #5 (2-Way Tie)—The Missouri River Flood of 1952

8.a. Description and Impacts

Around one decade before the 1965 Mississippi River flood, locations on the opposite side of the state—along the Missouri River—experienced one of the most devastating floods in that region’s history. The Missouri River Flood of 1952 stands as the flood of record for locations along the Missouri River from the South Dakota border down to the Council Bluffs and Omaha area.

Significant damage occurred in cities such as Sioux City and Council Bluffs. The flooding caused around \$43 million of damage (nearly \$380 million in 2013 inflation-adjusted dollars). Losses in the agricultural sector accounted for nearly half of that figure. According to some accounts the floodwaters washed out gravel roads, destroyed farm machinery and prevented farmers from planting a crop that year.

8.b. Causes

The flooding along the Missouri River occurred due to a combination of a cold and snowy 1951-1952 winter season followed by a dramatic warm-up in March 1952. This quick warm-up caused the deep snowpack to melt quicker than normal and send large amounts of water into the Missouri River. Although the U.S. Flood Control Act of 1944 approved several flood control-related dams on the Missouri River as well as its tributaries—including the present-day Missouri River reservoir system—many of those structures remained under construction in 1952. Thus those structures were unable to mitigate the flooding.

8.c. Other Impacts and Information

An especially significant—although indirect—impact of the flood was a subsequent polio epidemic in the Sioux City area. A Sioux City Journal article from January 25, 1953 stated that “polio marched through Woodbury County last summer in its most ravaging and destructive epidemic of all times.” Floodwaters disabled the city’s sewage system which may have helped facilitate the local polio epidemic. In 1952 the Sioux City Health Department reported 923 polio cases and 53 deaths. In comparison, in 1951 there were 74 reported cases and 2 deaths; in 1953 there were 86 reported cases and 2 deaths. There were nearly three times as many polio cases in 1952 as were reported in the previous peak year of 1948. During the epidemic, Sioux City area hospitals obtained 11 iron lungs to treat patients who encountered paralysis of their respiratory muscles. See Figure 17 for a picture of one of the iron lungs which were used in 1952.

8.d. Photos



Figure 14. Floodwaters inundate a neighborhood in the Sioux City, Iowa area in April 1952. Photo taken from the Sioux City Public Museum (source unknown).



Figure 15. People observe flooding along the Missouri River in Sioux City, Iowa in April 1952. Photo taken from the Sioux City Public Museum (source unknown).



Figure 16. Floodwaters inundate portions of Council Bluffs, Iowa in April 1952. Photo by the Council Bluffs Public Library Special Collections.



Figure 17. Iron lung used to treat polio patients at St. Vincent Hospital in Sioux City in 1952. Photo taken from the Sioux City Public Museum.

For additional photos see also:

- Flickr photo gallery.
<http://www.flickr.com/photos/cbpl/sets/72157622972065747/detail/?page=9> .
- KTIV Channel 4 Weather Blog—"1952 Sioux City Flood Pictures."
<http://addins.ktiv.com/blogs/weather/2011/06/1952-sioux-city-flood-pictures> .
- Refer also to the resources in 8.e. Some of those resources also include photos.

8.e. Links

- Web article—"Far and Wide: The Omaha-Council Bluffs Levees and the Flood of 2011." <http://ecointheknow.com/tag/missouri-river-flood-1952/> .
- Sioux City History Web article—"Floyd & Missouri River Floods 1952."
<http://www.siouxcityhistory.org/disasters/95-floyd-a-missouri-river-floods-1952> .
- Wikipedia Web article—"History of Sioux City, Iowa."
http://en.wikipedia.org/wiki/History_of_Sioux_City,_Iowa .
- History of Vaccines Blog—"Sioux City Polio Epidemic 1952."
<http://www.historyofvaccines.org/content/blog/sioux-city-polio-epidemic-1952> .
- Nebraska Department of Natural Resources Web article—"Historic Floods on the Missouri River." <http://dnr.ne.gov/floodplain/mitigation/mofloods.html> .

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