

REPORT

to

HON. HAROLD W. BAKER, CITY MANAGER

of a study of

Flood Conditions in the Genesee River

Having Specific Relation to a

CIVIC CENTER

Also to the General Subject of

FLOOD PROTECTION

FOR THE CITY OF ROCHESTER

Together with a Digest of Former Reports—Also
a Reference to the Large Floods of 1935, 1936
and 1937 in the Eastern Part of the United States
1925—1937

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ROCHESTER - NEW YORK

1937

CHAPTER IV

DATA ON PREVIOUS FLOODS

(Taken from the Report of the Rochester Flood Committee of 1905, as given in the Report of Mr. John R. Freeman, Consulting Hydraulic Engineer, to the New York State Water Supply Commission in 1908, also data on Floods since 1904.)

1813—June 20th—

"Rained for three or four days about June 15th to 18th, and on June 19th, rain fell in torrents. Seldom has such a storm been witnessed in the country. Colonel Rochester's sawmill carried away."

1835—October 23rd—

"Greatest flood ever known up to this time. Great damage caused in the Genesee Flats and in Rochester. Water on the flats 6 and 8 feet deep. Maximum rate of flow in Rochester estimated at 36,000 cubic feet per second."

1857—February 8th—

"Flood occurred which carried away Main Street Bridge and the buildings on the north side."

1865—March 17th to 20th—

"Long continued cold weather and heavy snowfall followed by a sudden thaw accompanied by rain. Nearly the entire central portion of Rochester put under water and damages probably exceeded \$1,000,000. Maximum rate of flow at Rochester estimated at 54,000 cubic feet per second."

See Appendix No. 1.

1875—March 16th—

"Ice gorge at Clarissa Street Bridge, Rochester, setting water back in Erie Canal and flooding certain districts. Maximum rate of flow at Rochester not above 25,000 cubic feet per second, except for an hour or two during passage of ice gorge, when it may have reached 35,000 cubic feet per second. Most serious flood ever known at Rochester."

1889—June 1st—

"Day following the Johnstown Flood, water over the flats at Avon, Rush, etc. Maximum rate of flow at Rochester not above 20,000 cubic feet per second. Little or no damage done at Rochester."

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1890—Sept. 10th to 13th—

"Maximum rate of flow at Mt. Morris 20,400 cubic feet per second. From 3 P. M. of 10th to 9 A. M. of 14th, no less than 3.5 billion cubic feet of water passed Mt. Morris."

1894—May 20th to 23rd—

"Maximum rate of flow at Mt. Morris, 42,000 cubic feet per second. Maximum rate of flow at Rochester 21,000 cubic feet per second. Flats between Mt. Morris and Rochester flooded."

Note—Actual records of this flood as measured by the City Engineer's Office, show that the maximum flow over the Johnson and Seymour Dam at Rochester was about 30,000 cubic feet per second.

1896—April 4th—

"Maximum rate of flow at Rochester 35,000 to 36,000 cubic feet per second. Some cellars in Rochester flooded. Flats in valley from Rochester to above Mt. Morris covered with water."

1902—March 3rd—

"Mainly from melting snow. Total rainfall in 3 days previous about one inch. Maximum daily rate of flow at Rochester was 36,500 second-feet on March 3rd. Some cellars flooded and considerable overflow in various parts of City." See Appendix No. 1

1902—July 5th to 9th—

"From a heavy rainfall on ground saturated by previous heavy rains. Precipitation July 6th at Angelica 4.5 inches. Flood above Portage "heaviest ever known". Maximum rate of flow at Mt. Morris probably 40,000 cubic feet per second. Maximum rate of flow at Rochester only about 20,000 cubic feet per second. Great loss of growing crops in Genesee Valley due to flooding over flats."

See Appendix No. 1.

1904—February 6th-7th—

"The flood at this time, while not of very great magnitude, is nevertheless of special interest because of the accompanying heavy ice. This ice jam formed as the result of the thaw of January 22-25, and obstructed the flow of water, due to the thaw of February 6-7. The extreme cold weather, February 8-10, relieved the conditions to an extent which

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without doubt prevented a disastrous flood. On February 10th, the wave passing over Johnson & Seymour Dam was between 6 and 7 feet in depth for at least 20 minutes. Water over dam before breaking of ice gorge was about 3 feet."

(Taken from the City Engineer's Reports.)

1913—March 24th to April 2nd—

Concerning this flood the City Engineer, in his Annual Report of 1916, said:

"In March, 1913, the City of Rochester experienced a flood which was second only to that of the flood of 1865. The quantity of water which passed thru was estimated at 45,000 cubic feet per second. The damage to property on the west side adjacent to the river was considerable, due to the flooding of streets, backing up of sewers and filling basements and cellars with water." See Appendix No. 1.

(See Hydrograph)

1916—March 26th to April 8th—

The following is from the City Engineer's Annual Report of 1916:

"On the last of March, 1916, the city experienced the greatest flood since 1865, if not equalling the one of that year, the crest of the flood being 8.5 feet above the top of the Johnson and Seymour Dam."

"The retaining wall (along the west bank of the river between Central Avenue and the Erie Canal Aqueduct) having been completed the waters were confined in the river channel, except some thru a broken wire glass window in one of the stores in Front Street, also a leakage through the river gates into the tail races in Graves Street, which overflowed the races and flooded the street to some extent, and filled a few cellars with water."

"Also the river alongside the Erie Railroad tracks north of Clarissa Street overflowed the tracks and flooded Exchange Street gorging the sewer to its full capacity."

"A large tunnel, 8 feet in diameter, was being constructed in Main and Front Streets for drainage and sewer purposes, 40 feet below the street surface, some time before the flood connections were made with the Main and Exchange Streets

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sewers allowing the water in the sewers to pass into the tunnel during the flood, thus preventing the flooding of cellars and basements."

"A tunnel has now been constructed in Graves Street 6 feet in diameter connecting all the tail races with the Main and Front Street tunnel, thereby preventing any future overflowing and flooding the street (from Exchange Street to Graves Street)."

(See Hydrograph)

Stutson Street Bridge

From information furnished by Mr. Fred C. Line, Assistant Engineer in charge of the work:

During the March, 1916, flood the Stutson Street bridge over the Genesee River, in the old village of Charlotte, was under construction. The river channel was obstructed by coffer dams and by the contractor's plant of tug and scows. Piles had been driven about 25 feet below the river bed in the easterly pier of the main channel span inside a coffer dam of interlocked steel sheet piling on three sides, 45 feet long. The flood scoured the river bed nearly to the bottom of the foundation piles, took out all the foundation piles, also the interlocked steel sheet piling and spread it over the river bed.

The sheet piling was below the navigation stage and still remains on the river bottom.

The easterly pier was later replaced by piers founded on the rock 100 feet below the water surface.

See Appendix No. 1.

1916—May 15th to 22nd—

"The rainfall producing this flood was larger in the drainage area below Mt. Morris than above."

(From Records in the City Engineer's office.)

1927—Flood of November 30th to December 3rd—

"This flood was caused by a general rainstorm, which lasted only for the day of November 30th, but sufficient water fell to cause a flood with a maximum discharge at Driving Park gaging Station of 30,500 second feet at 8 P. M. December 2nd, and 8 A. M. December 1st."

(See Hydrograph)

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The following was taken from the Report of Mr. John R. Freeman, Consulting Engineer, to the New York State Water Supply Commission, under date of January 31, 1908:

Conclusions Regarding Genesee River Floods

1. Serious freshets caused by heavy rainfall may occur at Rochester and over the Genesee Flats between Rochester and Mt. Morris at any time from March to October, inclusive.
2. Twice in the past century, once in March, 1865, again in July, 1902, the rate of discharge at Rochester has been greater than existing river channel could safely convey and large areas within the city have been inundated, particularly in 1865.
3. The widespread inundation and great damage of 1865 were caused by a flood of much smaller volume than is likely to occur at some future time under a combination of the causes which have heretofore within the historic period come singly, such as exceptionally heavy rainfall on ground previously saturated or rendered impervious by frost.
4. The gagings of rate of flow have apparently been somewhat crude and inexact, but accepting the quoted estimates as correct, it appears that a rate of discharge at Rochester greater than 40,000 cubic feet per second causes great damage, with danger of greater damage than has heretofore occurred as for example, if a jam of trees, ice or debris should occur in the archways of the bridges at Rochester.
5. Floods giving rate of flow of 20,000 cubic feet per second at Rochester may submerge large areas of the flats between Mt. Morris and Rochester.
6. A flood rate which measures 40,000 cubic feet per second as it passes Mt. Morris may become so modified by spreading out over these flats and lakes by its temporary storage and delay thereof, that notwithstanding the drainage area at Rochester is 2.3 times as great, the rate of discharge in cubic feet per second at Rochester may be only about half as great as at Mt. Morris.