

STATE OF ILLINOIS

WILLIAM G. STRATTON, Governor



The Storm of July 18-19, 1952 Rockford, Illinois and Vicinity

Bernt O. Larson, Homer W. Hiser, and Warren S. Daniels

A Cooperative Study of the
Illinois State Water Survey Division
and the
Water Resources Division, U. S. Geological Survey

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ALPINE DAM FLOOD CONTROL RESERVOIR ON KEITH CREEK FILLED FOR THE FIRST TIME SINCE ITS COMPLETION IN 1941. THIS PROJECT PREVENTED UNTOLD DAMAGE IN EAST ROCKFORD

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SUMMARY

1. Extremely heavy rains in Rockford, Illinois, and vicinity in Winnebago County on July 18-19, 1952, exceeded 12 inches in two areas during the first six hours of the storm and exceeded 15 inches in one area for the 36-hour total storm period. These rainstorms produced severe floods that caused the death of two persons and extensive damage to industrial plants, homes, bridges, highways, and farm crops. The six-hour storm produced a discharge rate per square mile on one small creek which exceeded all values determined for any previous flood in Illinois.

2. Antecedent rainfall conditions indicated that the topsoil had a relatively high infiltration capacity' before the July 18 rainfall occurred. Undoubtedly, nearly all of the heavy rainfall on the morning of July 19 became runoff immediately because of the saturated condition of the topsoil, due to the early morning storm of the 18th.

3. The meteorological surface and upper air charts for the early storm period showed that the intense! rainfall resulted from a NE-SW oriented warm air-mass squall zone. The squall zone de-

veloped locally and remained fairly stationary with the individual thunderstorm cells moving from SW to NE. The showers and thundershowers that occurred late on July 18 and early on July 19 were more varied, both in time and space distribution, and generally produced lesser amounts of rain than the early storm of July 18.

4. A total of 53 rainfall observations are included in a detailed tabular presentation of the basic rainfall data. These include three non-recording gages and 50 field observations collected by State Water Survey personnel.

5. Maps and graphs have been prepared to give a detailed picture of the rainfall pattern, including a storm area map, a map showing the location of the point rainfall observations, two isohyetal maps, and area-depth curves for the first six-hour storm.

6. The United States Geological Survey compiled the streamflow data for seven streams in the storm area. The discharge of the small Pelley Road Creek was computed by the slope-area method. The discharge of 1230 cubic feet per second per square mile as computed is the greatest known rate in Illinois.

THE STORM OF JULY 18-19, 1952
ROCKFORD, ILLINOIS AND VICINITY

By Bernt O. Larson, Homer W. Hiser, and Warren S. Daniels

INTRODUCTION

For the second consecutive year, a series of thunderstorms with extremely heavy rains fell on a relatively small area in the State of Illinois during the month of July. On July 18 and 19, 1952, over 11 inches of rain fell in Rockford and vicinity in a 36-hour period. This resulted in extensive damage to industrial plants, homes, highways, bridges and crops. The flash floods resulting from the rain of July 18 caused the death of two persons when their home was completely destroyed as Pelley Road Creek, southwest of Rockford, rose to unprecedented heights (Fig. 1).



FIG. 1. PELLEY ROAD CREEK. IN FOREGROUND FOUNDATION OF HOME THAT WAS SWEEP AWAY

Other small streams in the area reached higher peaks than those previously experienced in North Central Illinois during the July 8, 1951, flood.

The July 8, 1951, storm in North Central Illinois centered on an area covered by 29 recording and 20 non-recording gages operated by the State Water Survey and 21 U. S. Weather Bureau gages. These gages were supplemented by 280 field observations collected by State Water Survey personnel. In addition, data obtained from radar scope photographs were used to supplement the data from the 350 point rainfall observations. These helped immensely in the analysis of this storm¹.

In contrast to the July 8, 1951, raingage coverage, only three non-recording stick gages were in operation in the Rockford area, the region affected by the 1951 flood. Also the 1951 storm was centered over a rural area while the 1952 storm fell on the city of Rockford and the surrounding suburban areas. This made it more difficult to obtain point rainfall observations, since persons living in towns and cities rarely have containers out in unsheltered areas that could accurately sample the precipitation. Also, it was not realized until several days after the storm just how severe and intense it had been. Because of this lapse of time, it was increasingly difficult to obtain many accurate point rainfall observations.

The 1951 storm covered an area of 2000 square miles and was measured in 350 gages. This is the equivalent of one gage or observation for 5.7 square miles. This compares favorably to the Rockford area storm where one observation was made for every 7.5 square miles. The intensities are also somewhat comparable. In the 1951 storm 12 inches to 13 inches was the maximum amount reported whereas the 1952 storm produced a 12-inch plus maximum observation for a similar period of six hours.

Figure 2 is a base map showing the general area of the storm and the names and locations of the streams referred to in the text of the report.

1. The Storm of July 8, 1951 in North Central Illinois. Report of Investigation No. 14, State Water Survey Division, Urbana, Illinois; 1952.

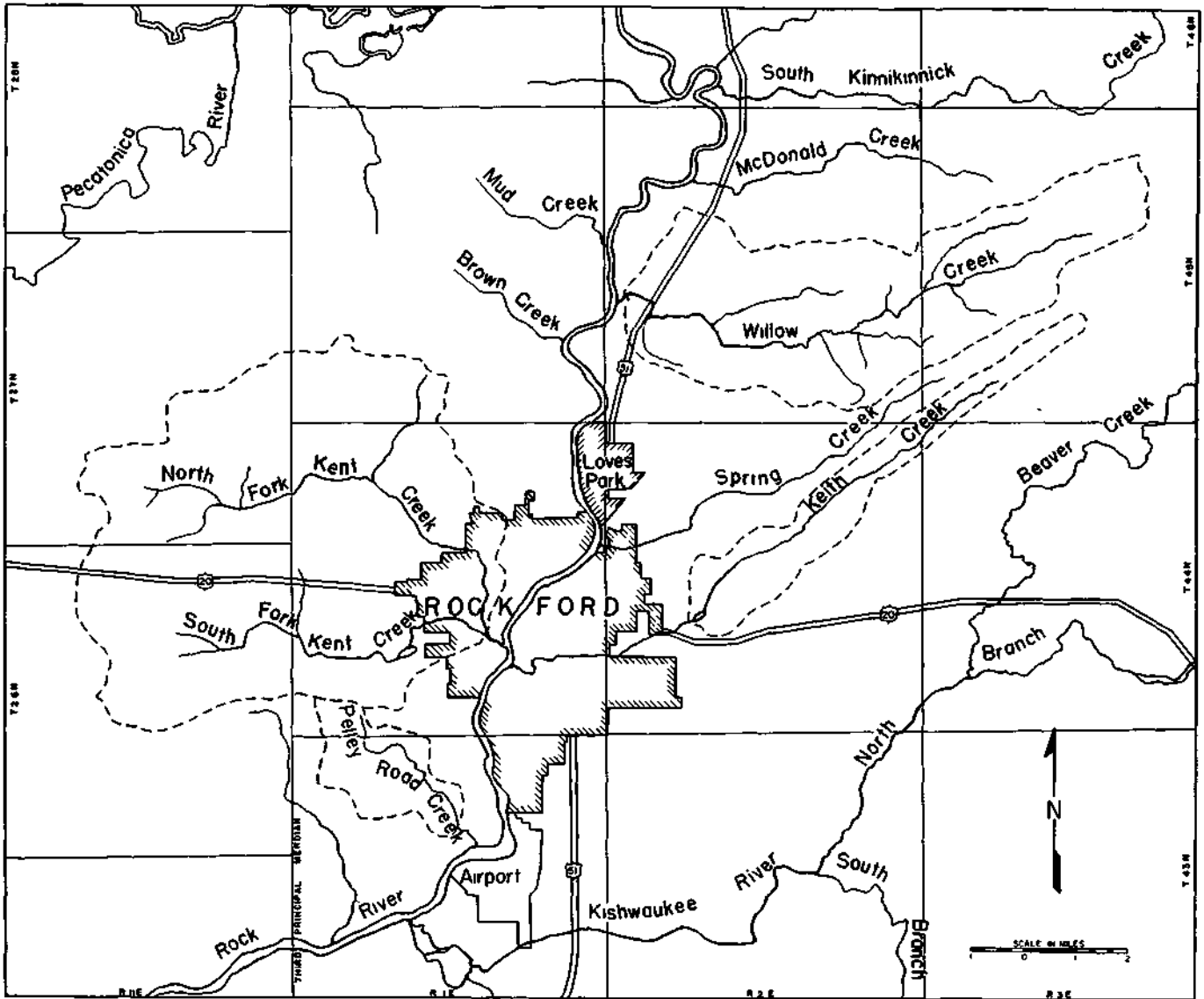


FIG. 2. BASE MAP OF ROCKFORD AND VICINITY

Objective of Report

The unusual nature, the high intensity and the resultant damage to property are reasons for making this storm a public record (Fig. 3 and Fig. 4).



FIG. 3. JEFFERSON STREET BRIDGE AND FAIRGROUNDS PARK

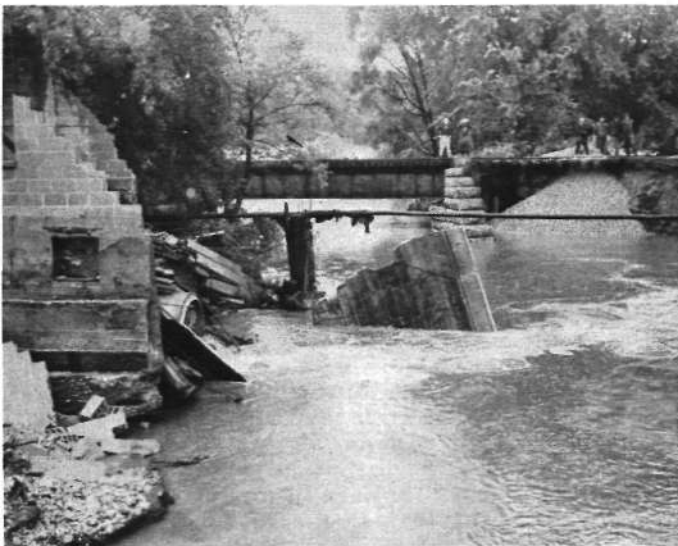


FIG. 4. DESTRUCTION OF CONCRETE BLOCK BUILDING ON SPRING CREEK AND UNDERCUT OF RAILROAD TRACK BED

Scope of Investigation

This report deals with four aspects of the storm: (1) antecedent conditions, (2) meteorological conditions, (3) rainfall data and analysis, and (4) streamflow discussion and data.

ACKNOWLEDGMENT

State Water Survey Division

The Survey's portion of this report was prepared under the direction of A. M. Buswell, Chief, and the direct supervision of H. E. Hudson, Jr., Head, Engineering Subdivision in cooperation with G. E. Stout, Head, Meteorology Subdivision. The authors wish to acknowledge F. A. Huff, Associate Meteorologist for his suggestions.

Geological Survey

The Water Resources Division of the Geological Survey, United States Department of the Interior, collected and computed the streamflow data. W. S. Daniels, Hydraulic Engineer, under the direction of J. H. Morgan, District Engineer of the Champaign, Illinois office, prepared the discussion given in this report.

Others

The editors of the Rockford Morning Star and the Rockford Register-Republic provided pertinent photographs of the storm area that are used in the report.

Mr. A. R. Carter, Winnebago County Highway Superintendent, and W. H. Day, City Engineer, provided county and city maps and photographs, and gave general information that guided the field personnel in the collection of the rainfall observations.

The rainfall data that made this report possible were provided by those persons listed in Table 1.

ANTECEDENT CONDITIONS

Discussion

An examination of antecedent rainfall conditions in the Rockford area shows that June had a total of 6.85 inches, with 3.85 inches of this total coming on June 12 and 1.60 inches on June 23. On July 8, 2.21 inches was recorded with another 0.62 of an inch occurring on the 14th and 15th. The low total of 0.62 of an inch in the 9-day period immediately prior to the storm on the 18th compared to normal infiltration capacities of 3 inches per hour, would indicate that the topsoil had a relatively high infiltration capacity before the July 18 rainfall occurred.

It is probable that the rainfall on the afternoon of July 18 and on the morning of July 19 nearly all became runoff immediately, because of the saturated condition of the topsoil due to the heavy rainfall on the morning of July 18.

METEOROLOGICAL CONDITIONS

The greatest amount of rainfall at Rockford on July 18, occurred during the period beginning around midnight of the 17th and lasting until about 0500 C.S.T. of the 18th. Numerous individuals in the area expressed the opinion that the heaviest rates occurred between 0100 and 0400 C.S.T. This agrees well with the Rockford Airport CAA weather station reports which indicated that the heaviest thunderstorms occurred between 0132 and 0330 C.S.T. with a slight break in intensity around 0230 C.S.T. The official Weather Bureau cooperative station in Rockford showed a total of 7.80 inches for this early morning storm, while the airport station located approximately six miles to the south measured only 4.30 inches for approximately the same period. The highest unofficial readings were two reports of 12.5 inches measured in buckets located east of the city.

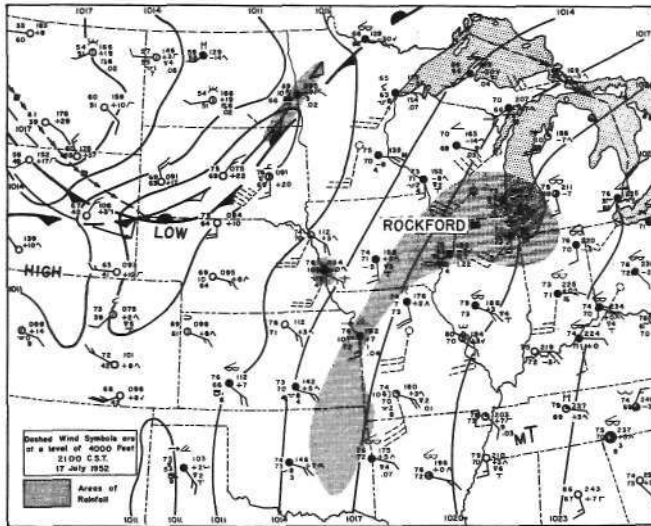


FIG. 5. SURFACE WEATHER MAP FOR 0030 C.S.T. 18 JULY 1952.(U. S. WEATHER BUREAU)

Synoptic Weather Conditions

The U. S. Weather Bureau Daily Weather map for 0030 C.S.T. of the 18th, presented in Figure 5, shows a stationary front and an upper cold front, both orientated NE-SW from northern Minnesota, southwest through central South Dakota then westward into a weak low in northwestern Nebraska. During the next 24-hours the surface front remained nearly stationary across central Minnesota and southeastern South Dakota, while farther northeast it slowly advanced into extreme northwestern Wisconsin as a cold front. By 1230 C.S.T. of the 18th, the upper cold front had become stationary with the surface frontal system.

The heavy rain during the period from around midnight of the 17th to 0500 C.S.T. of the 18th at Rockford appears to have resulted from a NE-SW oriented warm air mass squall zone, approximately parallel to and about 450 miles southeast of the stationary front. A large high pressure system was the dominating feature of the eastern United States giving southwesterly flow over the Rockford area, at least up to 40,000 feet, with little change of direction with height above 3000 feet and slightly more southerly flow below 3000 feet.

Hourly sequence reports from Rockford, Moline, Madison, Bradford, Milwaukee, Joliet, and other stations around the area indicate that the heaviest rain was concentrated along a belt from Moline northeast through Rockford to Milwaukee while practically no rain occurred to the northwest and to the southeast of the storm area during the period 2330 of the 17th to 0530 C.S.T. on the 18th. During this period, Moline to the southwest, upwind from the main storm area, reported light thundershowers totaling 0.48 inch. Milwaukee, to the northeast in a general downwind direction, reported variations from light rainshowers to heavy thundershowers during the period totaling 2.30 inches while Madison, 55 miles north of Rockford near the edge of the rain belt, received 0.67 inch. Stations 50 to 60 miles south and southeast of Rockford reported little or no precipitation on the night of the 17th and morning of the 18th. These reports and the general synoptic picture, which remained practically unchanged during the period, lead to the conclusion that this squall zone developed locally and remained fairly stationary. In this respect it differed from most squall lines or zones.

The individual thunderstorm cells appear to have moved principally from SW to NE in the direction of Milwaukee, as indicated by the sequence reports, and as would generally be expected, parallel to the mean wind in the lower 30,000 feet. This direction of cell movement agrees with unofficial observations by local residents in the area. This also agrees with the downwind extension of the squall zone in the direction of Milwaukee, with the heaviest thundershowers beginning at that station slightly later than in the Rockford area.

Upper Air Conditions

Figures 6, 7, 8, and 9 are upper level charts which show the distribution of pressure, temperature, dew points, and wind. Figure 6 is the 850-millibar constant pressure chart, approximately 5000 feet above sea level, for 2100 C.S.T. on July 17. The solid lines indicate the height of this

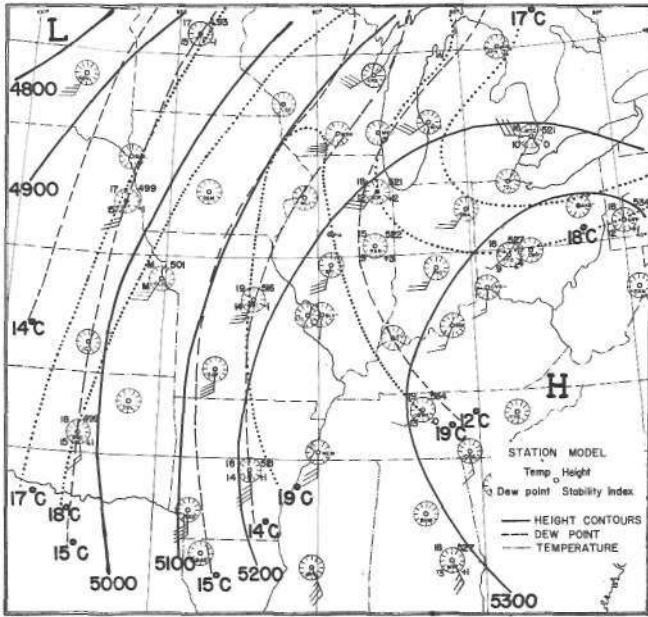


FIG. 6. 700-MILLIBAR CONSTANT PRESSURE CHART WITH 10,000 FOOT WINDS 7-17-52, 2100 C.S.T.

constant pressure surface in feet above sea level. The clotted lines are iso-lines for temperature and the dashed lines are iso-lines for dew points. These temperature and dew point lines show a warm moist tongue extending from the south into Iowa and northwest Illinois. The Showalter Stability Index numbers are plotted at the lower right of each upper air sounding station.

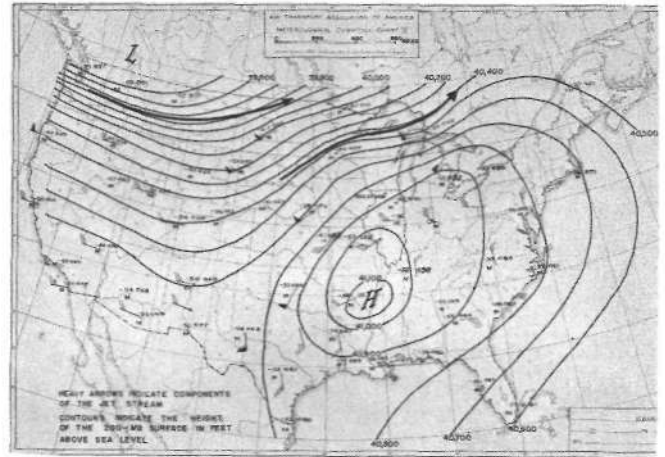


FIG. 8. 200-MILLIBAR CONSTANT PRESSURE CHART WITH 40,000 FOOT WINDS 7-17-52, 2100 C.S.T.

Figure 7 is the 500-millibar constant pressure chart, approximately 19,000 feet above sea level, for 2100 C.S.T. on July 17. The solid lines indicate the height of this constant pressure surface in feet above sea level and show the prominence of the ridge of high pressure to the southeast of Rockford. The 200-MB constant pressure chart, approximately 40,000-foot level, Figure 8, shows the main components of the jet stream. The closest component of the jet stream was about 250 miles to the northwest, over southeastern Minnesota and northern Wisconsin, where it remained through 0300 C.S.T. of the 18th when the storm was in progress. The storm occurred to the west of the 200-MB ridge. Figure 9 shows the wind flow at the 5000-foot level at 0300 C.S.T.

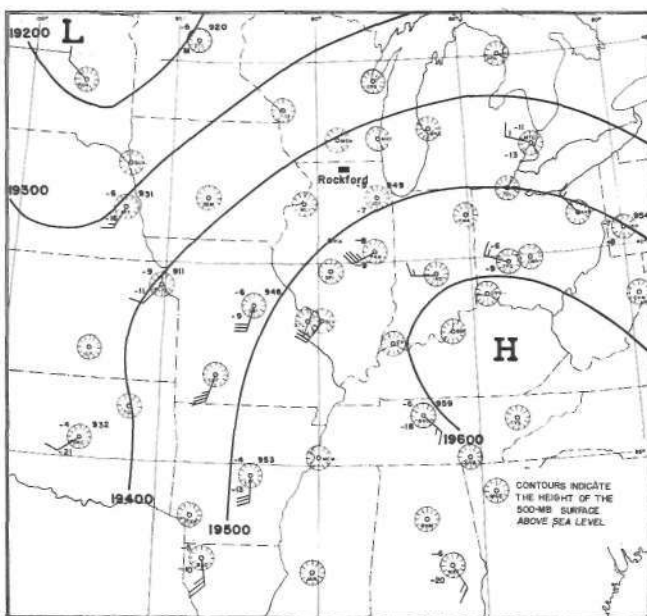


FIG. 7. 500-MILLIBAR CONSTANT PRESSURE CHART WITH 20,000 FOOT WINDS 7-17-52, 2100 C.S.T.

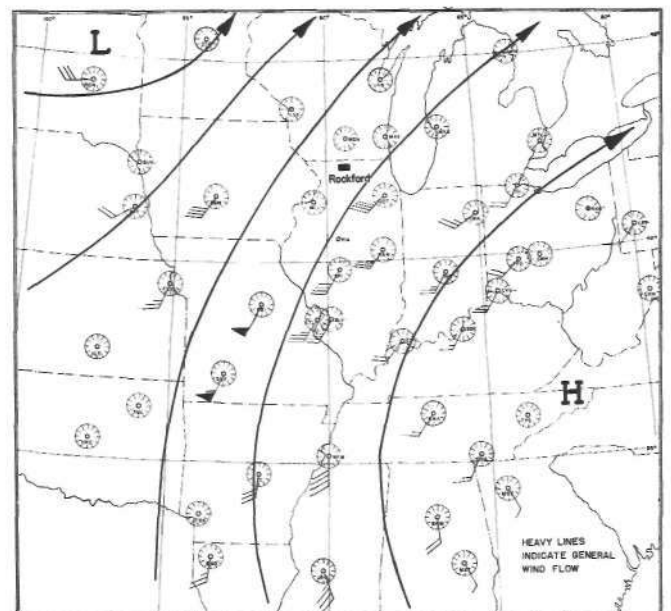


FIG. 9. 10,000 FOOT WINDS 7-18-52, 0300 C.S.T.

on the 18th while the storm was in progress. The flow pattern at this and other levels remained essentially the same as that at 2100 C.S.T. of the 17th except for an increase in wind speed at some middle west stations at the 5000-foot level.

Conditions for Squall Line Development

A comparison was made between the conditions that existed at the time of formation of this storm and the criteria for squall line formation found by Hovde, Chappel, Means, and Porter.² This storm comes closest to their Type I Squall Lines, "Pre-cold Front or Warm Sector".

The following conditions for Type I squall line formation were met:

1. There was a moist warm tongue extending into the Rockford area from the south at the 850-MB level at 2100 C.S.T. of the 17th and the 850-MB dew points were above the required 10° C. Stations up and downwind from Rockford had 13° and 14° C dew points on the 850-MB chart.
2. The squall zone formed near the area of maximum warm air advection.
3. There was only slight anticyclonic curvature at the 500 and 200-MB levels in the Rockford area.
4. The squall zone formed within 300 miles to the right of the 200-MB jet stream looking downstream.
5. The squall zone formed to the west of the 200-MB and the 500-MB ridge and near the inflection point between cyclonic and anticyclonic curvature of the contours.
6. The Showalter Stability Index had -1° values at St. Cloud, Omaha, Columbia, and Sault Ste. Marie while zero or positive values existed at surrounding stations.

The following conditions for Type I squall line formation were not met by the Rockford storm:

1. There was no low level wind jet prior to the formation of this squall zone and only weak evidence of one after the squall zone developed.
2. The contours at 850 and 700-MB at Rockford were curved anticyclonically instead of cyclonic ally.
3. This squall zone did not form near a frontal discontinuity - the nearest front was 350 miles to the northwest.

2. A Study of Conditions Near the Time of Formation of Squall Lines. J. E. Hovde, W. Chappel, L. L. Means, and J. M. Porter, U. S. Weather Bureau, Chicago, Illinois. Paper given at the 131st National Meeting of the American Meteorological Society, Columbus, Ohio, Sept. 10, 1954.

4. This squall zone was not steered by the isothermal flow downstream from the point of formation. It remained practically stationary during its entire life span. However, the ridge aloft and isothermal pattern remained relatively unchanged during the life of this squall zone; therefore, it may not be completely justifiable to apply the isothermal steering rule.

The origin of this localized heavy squall zone can probably be explained by the very high dew points up to 10,000 feet with dryer air at higher levels and favorable wind conditions for divergence aloft in the Rockford area.³ The surface dew points, ranging from 72° F to 74° F, were exceptionally favorable and the 850-MB, or 5000-foot level, dew points ranged from 12 C to 14 C over northwestern Illinois. The dryer air above 10,000 feet made the lower levels convectively unstable. The divergence aloft and ideal temperature and moisture distribution at lower levels appear to have been sufficient to more than compensate for the anticyclonic curvature and lack of good initial conditions for convergence in the lower layers. It is very likely that micro scale meteorologic parameters, not discernable on the weather charts, and local terrain effects caused the storm to develop exactly where it did within the area of generally favorable conditions.

Subsequent Rainfall

The showers and thundershowers that occurred later in the day on the 18th and on the 19th were more varied, both in time and space distribution and produced lesser amounts of rain than the 18th early morning storm. These showers and thundershowers appear to have been purely warm air mass in type and primarily the result of diurnal heating plus a high moisture concentration in the lower atmosphere brought about by evaporation from the preceding heavy rain. Only light showers occurred outside the Rockford-Milwaukee area on the 18th and 19th, indicating that the maritime tropical air on the west side of the high pressure cell and southeast of the stationary front was slightly convectively unstable. The additional moisture available from evaporation of water deposited by the early morning "cloudburst" of the 18th at Rockford probably caused the showers on the afternoon of the 18th and 19th to be heavier at Rockford than in the surrounding areas.

RAINFALL DATA

The basic rainfall data for the July 18 and 19, 1952 storm in the Rockford area have been presented in Table 1. A total of 53 rainfall observations are included in the table.

The table includes the following information: the operator of the raingage (if known); the location of the gage by township, range, and section;

3. Squall Lines. Ivan W. Brunk, Bulletin of the American Meteorological Society, Vol. 34, No. 1, January, 1953.

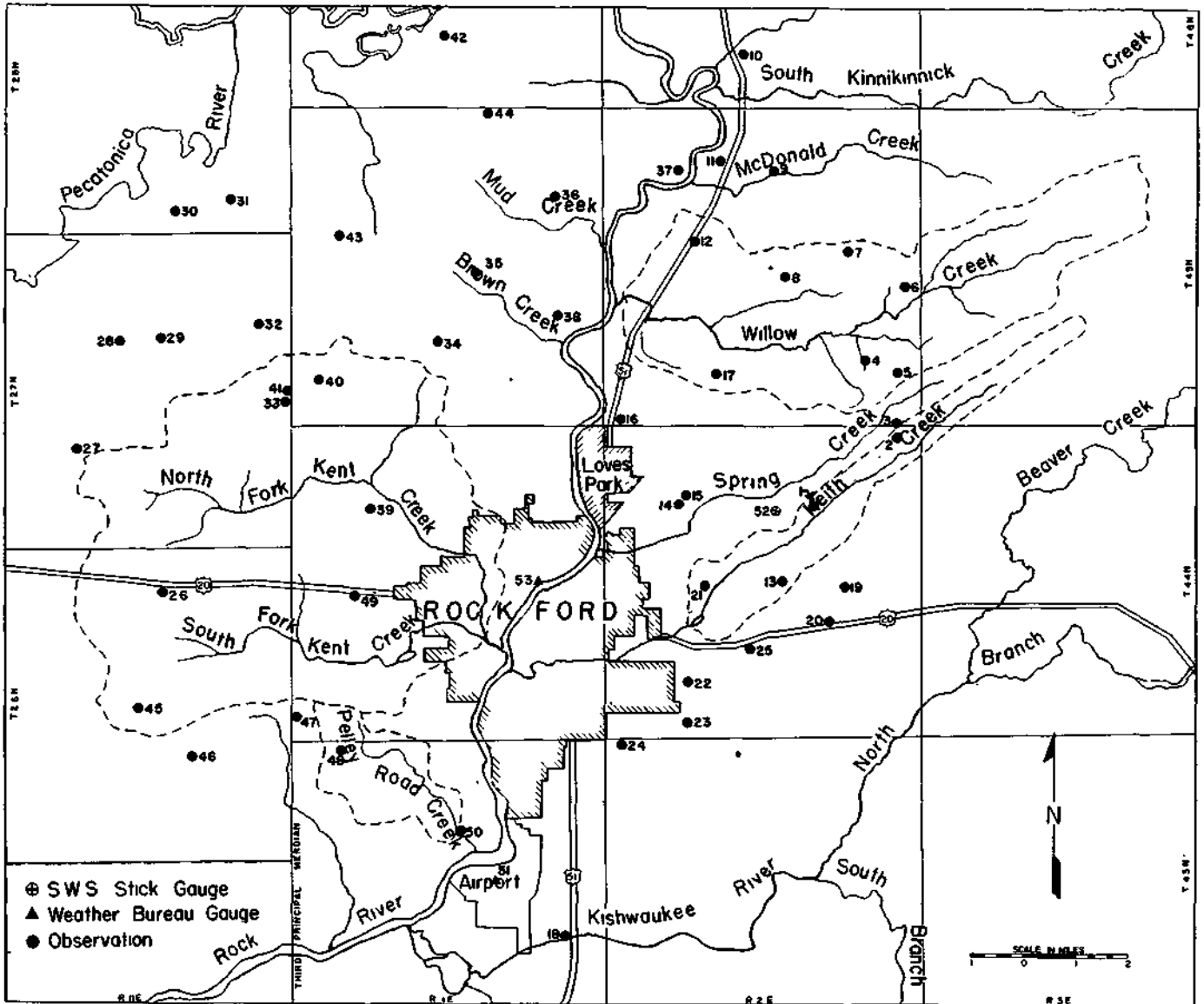


FIG. 10. LOCATION OF 53 POINT RAINFALL OBSERVATIONS LISTED IN TABLE 1.

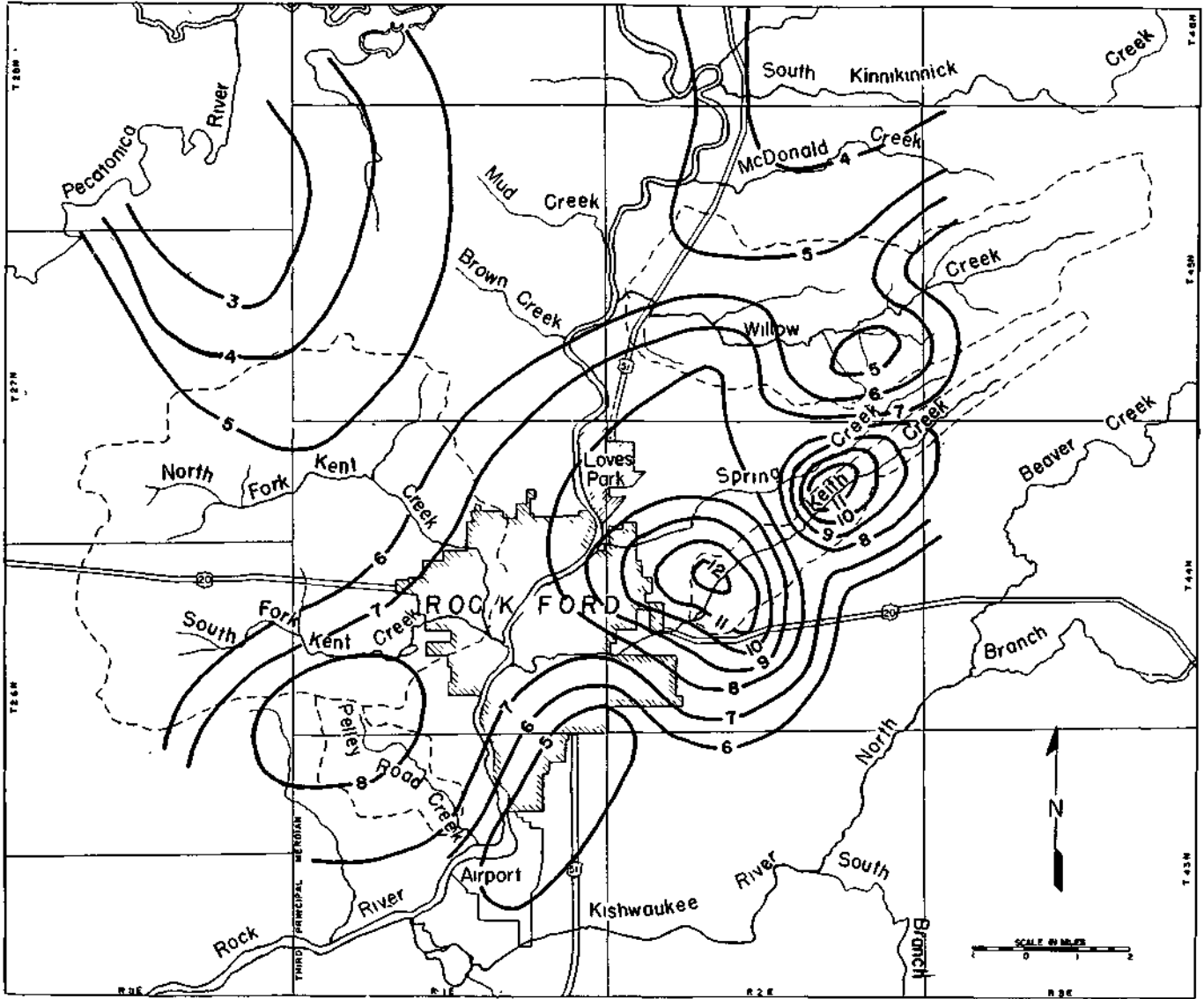


FIG. 11. ISOHYETAL PATTERN FOR THE EARLY SIX HOUR RAINSTORM OF JULY 18, 1952

the known 6-hour storm ending on the 18th; the known July 19th rainfall; the total storm rainfall or that portion that was known; and the reliability of the observation.

A question mark appearing in the column designated "reliability" indicates either that the original observation was questioned by the observer during the field survey or that the magnitude of the observed rainfall differed considerably from adjacent observations when plotted on the base map.

These data include 50 field observations obtained by two members of the Water Survey staff and readings from two stick gages operated by the U. S. Weather Bureau and one stick gage operated by the State Water Survey. Figure 10 shows all the point rainfall observations. In Table 1, note the varied types of gages and containers that were utilized in determining the rainfall amounts. These included a dog dish, garden carts, paint cans, 5 1/2-inch capacity fence-post gages, and assorted vessels. The fence-post gages consist of 3/4-inch diameter glass cylinders, 5 1/2-inches in length, mounted in metal holders that are graduated in inches. These are designed to be mounted on a fence-post for good exposure, and can be found on many farms. Although designed for normal rains, they are excellent for rainfalls up to five inches, and give good results if emptied during lulls in a heavier storm. Many of the farmers who are interested in knowing the amount of rain for a specific storm, empty and record the total amounts that these glass tubes collect. This was especially true for this particular storm.

ANALYSIS OF DATA

Early Storm Rainfall

The isohyetal pattern for the early storm of July 18 is shown in Figure 11. Note the two cells of concentration and the tight isohyetal gradient between the 12-inch and 6-inch lines over the Keith Creek watershed area and the 8-inch maximum over the Pelley Road Creek. The heaviest rates occurred between 0100 and 0400 C.S.T. It was this storm that produced the flash flood which caused the two deaths, destroyed several homes, and washed out the bridge on the Pelley Road Creek. The two cells on Keith Creek produced a runoff that was handled adequately by the Alpine Dam and flood-control reservoir southeast of Loves Park. This reservoir, built by the city of Rockford, was completed in 1941. This was the first storm to produce a discharge over the emergency spillway. Head over the spillway measured approximately 1 1/4 feet. The reservoir undoubtedly prevented extensive damage in southeast Rockford. See Figure 12.

The 36-Hour Storm

Whereas the early 6-hour storm produced the greatest amounts of rain over the Keith Creek and Pelley Road Creek basins, the next 30 hours had more rainfall northwest and west of Rockford on



FIG. 12. VIEW OF ALPINE DAM AND FLOOD CONTROL RESERVOIR ON KEITH CREEK

the basins of the North and South Forks of Kent Creek. The isohyetal pattern for the 36-hour storm is shown in Figure 13. The comments of some of the observers, as shown in Table 1, bear out the fact that the greatest amount of the total precipitation north of the North Fork of Kent Creek occurred on the morning of July 19. Also, since the soils had been completely saturated on July 18, the precipitation on the 19th probably became 100 percent runoff. It was this runoff that caused the flooding in the west and northwest areas particularly in Beverly Park where more than 400 persons were rendered homeless.

Area-Depth Data

An area-depth curve for the 6-hour storm on July 18, was drawn for the storm area. Figure 14 shows a comparison between the area-depth curve for the Rockford area and the area-depth curve for the July 8, 1951 storm for the combined

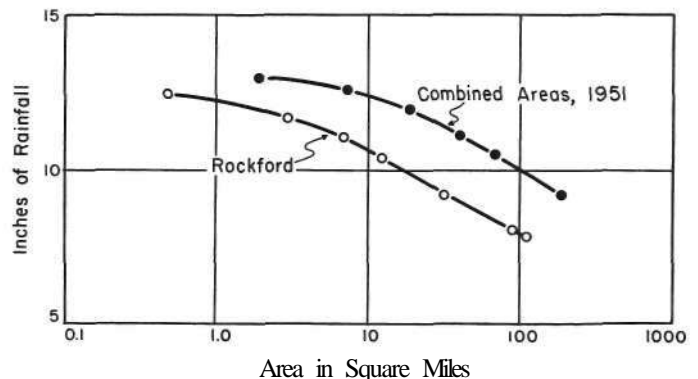


FIG. 14. AREA-DEPTH CURVES

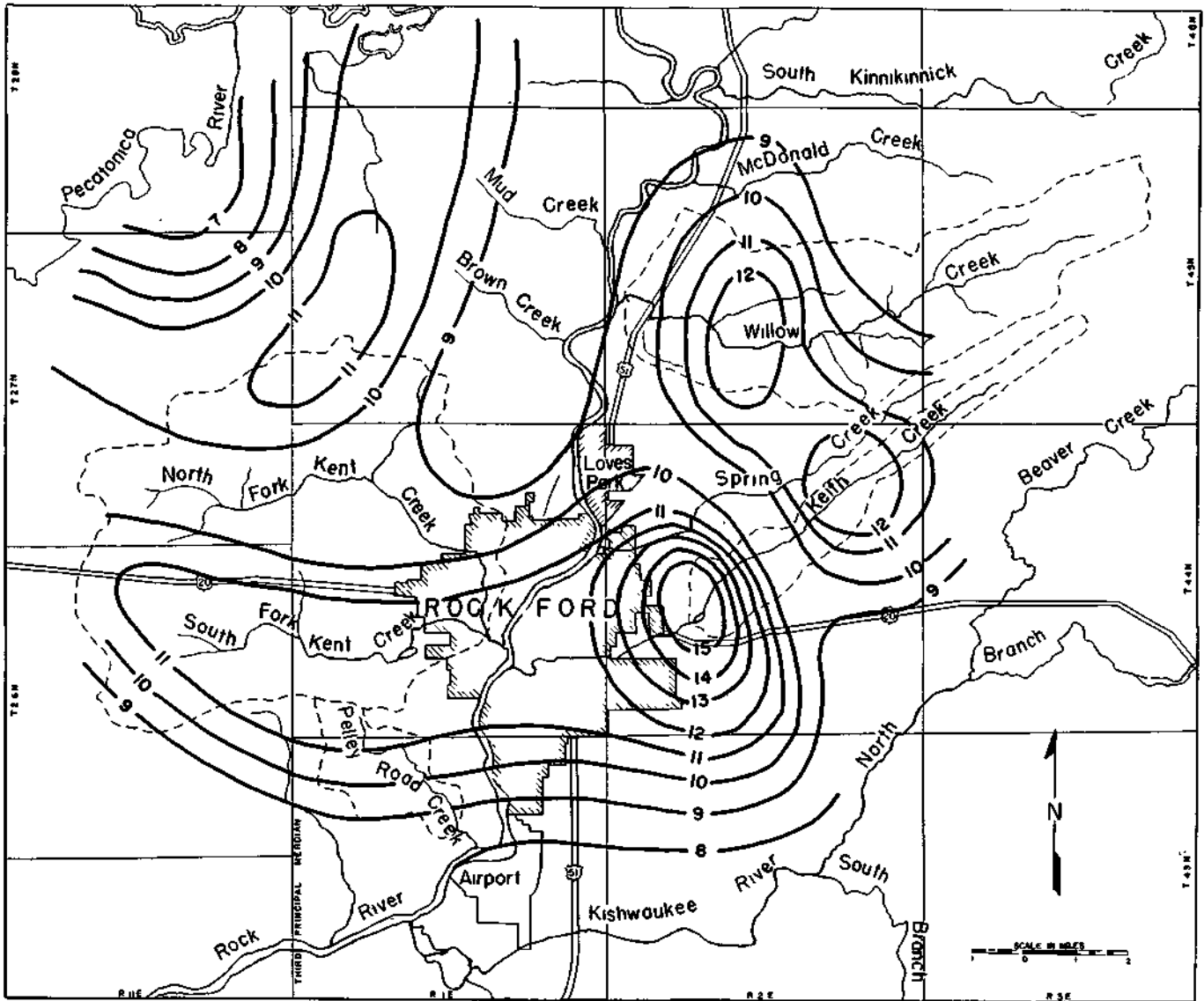


FIG. 13. ISOHYETAL PATTERN FOR THE TOTAL STORM RAINFALL, JULY 18-19, 1952.

watersheds of the Vermilion and Mackinaw Basins.⁴ The two curves appear similar. That portion of the curve for the Rockford storm for points representing the two larger areas may be considered questionable since the positions of the 7 and 6-inch isohyets had to be closed without having a sufficient number of observations.

The same data were used to plot curves of the total rainfall vs. the square root of the area enclosed by the isohyet, after a method discussed by Huff and Stout.⁵ These curves, as reproduced

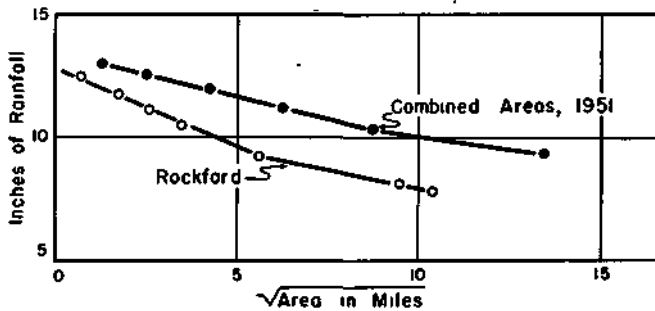


FIG. 15. AREA-DEPTH CURVES

in Figure 15, show a characteristic straight line plot except at the lower extremities. This portion of the curves may not be representative for the reason stated above.

STREAMFLOW DATA FOR STORM PERIOD*

Discussion

No stream-gaging stations were located in the areas of greatest runoff from the storms, but the U. S. Geological Survey had an engineer at Rock-

ford who was able to obtain more data than usually can be obtained on a localized flash flood (Table 2).

Willow Creek, north of Loves Park, had undermined part of the concrete pavement on U. S. Highway 51, but did not cut entirely through or wash out the culvert. The peak discharge measured on July 19 is believed to have been greater than the peak on July 18. The first peak appeared to have done most of the damage to the highway.

The peak discharge measured on Kent Creek at South Main Street bridge in Rockford on July 19 was considerably greater than the peak on July 18. Flooding of the Illinois Central Railroad yards was more extensive on the second day. It is quite probable that much higher rates of discharge in cubic feet per second per square mile occurred upstream on both the North and South Forks of Kent Creek. Much water went into temporary storage as hundreds of basements were flooded and a 50 block area in northwest Rockford was inundated.

The flood-control reservoir on Keith Creek above Alpine Dam was filled by the early A.M. storm of the 18th for the first time since its construction in 1941, and at the peak had 1 1/4 feet of water pouring over the spillway. Field examination at a former gaging station site on Keith Creek at Twentieth Street in Rockford showed that the channel, now a covered conduit, flowed full but did not cause any flooding at the approach to the conduit. Below the covered section, the creek flowed over the top of the flood wall on the right bank.

Engineers of the U. S. Geological Survey were able to find a suitable reach on Pelley Road Creek, near Riverside School on the south side of Rockford, for determining the peak discharge by the slope-area method. This creek caused the loss of two lives, swept away one house, damaged two others extensively, and washed out the bridge on State Highway 2 about four miles south of Rockford. The computed discharge has been carefully reviewed and is believed to be reliable. The discharge of 1230 second-feet per square mile is the greatest known rate in Illinois, exceeding all values determined for the floods of 1943 and the localized floods resulting from the storm of July 8, 1951 in north-central Illinois.

The three gaging stations nearest to Rockford are listed in Table 2, as a matter of interest. The data show that the gaging stations are on much larger drainage areas and had smaller discharge rates per square mile. Peak discharges of the magnitude of those on Leaf River and Killbuck Creek may be expected to recur about once in twelve years. The flood of Pelley Road Creek was a rare occurrence and would not be expected to happen again in a much longer period of time.

4. "The Storm of July 8, 1951 in North Central Illinois", Report of Investigation No. 14, 1952, State Water Survey Division, Fig. 20, p. 15.

5. F. A. Huff and G. E. Stout, "Area-Depth Relations for Small Basins in Thunderstorm Rainfall", Circular No. 39, 1952 State Water Survey Division.

* Published with the approval of the Director, U. S. Geological Survey.

Table 1 - Rainfall Observations

No.	Gage Operated By	Section	Twp.	Range	6 Hr. Storm Ending 0500 July 18	July 19- Storm only-	36 Hr. Total Storm Period July 18-19	Reli- ability	Comments
1	Dale Matheson, Belvidere	NW Cor. SW 1/4 11	44 N.	2 E	12.5 +				Buckets
2	J. R. Greenlee	NW Cor. NE 1/4 1	44 N.	2 E	8	-	-		5 Gal. bucket
3	Don Paulson	SW Cor. SE 1/4 36	45 N.	2 E	7	-	-		4' x 6' stock tank
4	John R. Smith	EC SE 1/4 26	45 N.	2 E	4	-	-		Glass tube
5	Wallace Ralston	Center of SE 1/4 25	45 N.	2 E	-	-	10	High	5 Gal. paint cans
6	Don Wheeler	Center of NW 1/4 24	45 N.	2 E	7	-	-		Pail
7	Louis Greenlee	Center of SE 1/4 14	45 N.	2 E	5	2.7	7.7	Very good	6" glass gage
8	Edward R. Greenlee	SW Cor. SE 1/4 15	45 N.	2 E	5	2.5	11.5		5" 4" July 18 AM and PM
9	Kenneth Ralston	Center of NW 1/4 10	45 N.	2 E	4	-	8.+		4.0+'july 18 PM and July 19, AM
10	Wm, R. Lewis	SW Cor. SE 1/4 28	46 N.	2 E	4+	-	-		Toy Wagon
11	Walter Wince	E. Center of N. Line NW 1/4 9	45 N.	2 E	-	-	8.7 +		10 Qt. Pail. Overflowed
12	E. J. Waterson	Center of S. Line NE 1/4 17	45 N.	2 E	4.5	-	-	Estimate	Farm Wagon Bed
13	Mark Garrett	Center of S. Line SW 1/4 15	44 N.	2 E	-	-	9		Pail
14	Jan Ann Stables Charles Shuey	NE Cor. SW 1/4 8	44 N.	2 E	4+	-	-		1/2 barrel-total unknown
15	John Hendrix	SW Cor. NW 1/4 8	44 N.	2 E	8.75	-	-		10 Qt. Pail
16	Ray Epperhart	Center of S. Line SW 1/4 31	45 N.	2 E	-	-	9.5		5-Gal. paint can
17	R. V. Coleman	N. Line NW 1/4 33	45 N.	2 E	8	4.5 +	12.5 +	?	5-Gal. paint can
18	Clifford Kruse	Rt. 51 S. of New Milford, in Sec. 25	43 N.	1 E	6	-	-		Wash tub, Hearsay not considered
19	Raymond Miller	NW Cor. NE 1/4 23	44 N.	2 E	6.5	-	-		Wash tub
20	Jarl Anderson	Center of SW 1/4 23	44 N.	2 E	6	-	-		5-Gal. paint pail
21	Erwin Smith	NE Cor. NE 1/4 20	44 N.	2 E	-	-	14 +		Overflowed 12 1/2" deep 5-Gal. pails. July 18, AM. 14" deep in Dingy boat.
22	Dave Swanson	Center of S. Line SE 1/4 29	44 N.	2 E	8 +	-	-		Stock tank
23	C. C. Becket	NW Cor. SE 1/4 32	44 N.	2 E	-	-	8 +		16 Qt. pail
24	Mrs. Robert Miller	NE Cor. NW 1/4 6	43 N.	2 E	4.25 +	-	-		Toy Wagon
25	Clarence Hanson	On U. S. Rt. 20 N. Center NE 1/4 28	44 N.	2 E	-	-	11		July 18, PM. Measurement 12" grease bucket
26	John Weerda	SW Cor. SW 1/4 3	26 N.	11 E	-	-	11.4		Emptied 5 1/2" glass tube
27	Josiah Collen	NE Cor. NW 1/4 29	27 N.	11 E	-	-	8		Hearsay
28	Edson J. Miller Farm	Center of N. Line NW 1/4 16	27 N.	11 E	5	6 +	11 +	Good	Emptied 5 1/2" glass tube
29	Morris Hammer	SW Cor. SW 1/4 10	27 N.	11 E	3.5	5.5 +	9 +		5 1/2" glass tube

30	Winter land	N. Center of SW 1/4 34	28 N.	11 E.	-	5.75	-			July 18, Unknown July 19, Bucket
31	J. P. Doyle	SE Cor. NW 1/4 35	28 N.	11 E	2	5	7	Very good		5 1/2" glass tube
32	Maynard Saathoff	SE Cor. SE 1/4 11	27 N.	11 E	3+	3+	6-7			5 1/2" glass tube, reported by wife, estimate
33	L. S. Gilmore	NE Cor. NW 1/4 24 On third Principal Meridian	27 N.	11 E	4.4	6.5	10.9	Very good		5 1/2" glass tube
34	C. Ferguson	SE Cor. NE 1/4 28	45 N.	1 E	-	-	5-6	Estimate		
35		NW Cor. NE 1/4 22	45 N.	1 E	-	-	5.5	Estimate		
36		NW Cor. SW 1/4 12	45 N.	1 E	4	4	8	Estimate		
37	W. Mathieu	NE Cor. NW 1/4 8	45 N.	2 E	5	4	9			5 1/2" glass tube
38	Mrs. Berg	SW Cor. SW 1/4 24	45 N.	1 E	-	-	5	Poor		Garden cart. Adjusted depth
39	Maynard Dewall	Center, 8	44 N.	1 E	-	-	7-9			Bucket
40	Clinton Blacklaws	NW Cor. NE 1/4 31	45 N.	1 E	4.5	6.5	11	Very good		5 1/2" glass tube
41	Reported by Clinton Blacklaws	NE Cor. NW 1/4 24	27 N.	11 E	4.5	6.5	11	Very good		5 1/2" glass tube
42	L. Gleasman	NW Cor. SW 1/4 27	46 N.	1 E	5.5+	5+	10-10.5+			5" glass tube
43	Lee Steward	SE Cor. NE 1/4 18	45 N.	1 E	-	-	10-11	Very good		Bucket
44	Carl Dach	NE Cor. NE 1/4 3	45 N.	1 E	-	-	8-10	Total estimate		Tub
45	Harold Miner	NW Cor. NE 1/4 21	26 N.	11 E	5	4	9	Poor		In dog dish
46	Louis C. Powell	Center of N. Line NE 1/4 27	26 N.	11 E	3.5	5.5	9			5 1/2" glass tube
47	Orville E. Shraeder	NW Cor. SW 1/4 31	44 N.	1 E	8.7	-	-			Pail. July 19, unknown
48	W. A. Newman	NW Cor. NW 1/4 5	43 N.	1 E	-	-	11	High, Fair		Bucket
49	Winnebago Producers Supply	Center of NW 1/4 20	44 N.	1 E	6	5	11			5" Glass tube
50	U. F. Warren	Center of SW 1/4 10	43 N.	1 E	7	-	-			5-Gal. can
51	Rockford Airport G. F. Bernier	W. Center 14	43 N.	1 E	4.7	2.72	7.42			8" stick gage
52	Mrs. D. S. Cummings	Center of N. edge SW 1/4 10	44 N.	2 E	7.23	1.57	8.80			8" stick gage State Water Survey Observer
53	Frank Knowlton	NW Cor. NE 1/4 23	44 N.	1 E	7.80	3.31	11.11			Official Weather Bureau Observer

Probable Rainfall, amounts unknown.

Table 2

Summary of Flood Discharges in Area of Rockford,, Illinois
for the Flood of July 18-19, 1952

Stream and Place of Determination	Drainage Area (Sq. Miles)	Period of Record	Maximum Flood Previously Known				Maximum During Present Flood				Remarks
			Date	Gage Height (feet)	Second- feet	Second- feet per Sq. Mi.	Time	Gage Height feet	Second- feet	Second- feet per Sq. Mi.	
Willow Creek near Loves Park, Illinois	18.5						About 1200 July 19		890	48.0	Discharge Measurement
Kent Creek at Rockford, Illinois	43.7						1700, July 19		4500	103	Discharge Measurement
Keith Creek at Alpine Dam at Rockford, Illinois	7						July 18		750	107	Data furnished by Corps of Engineers, U. S. Army
Pelley Road Creek near Riverside School, near Rockford, Illinois	4.3						About 0300 July 18		5300	1230	Slope-area computation
Kishwaukee River near Perryville, Illinois	1090	1939	Jan. 6, 1946	19.50	16,400	15.0	1100, July 19	14.98	8500	7.8	
Killbuck Creek near Monroe Center, Illinois	114	1939	July 9, 1951	11.41	4,750	41.7	1800, July 19	9.16	3510	30.8	
Leaf River at Leaf River, Illinois	102	1939	Feb. 27, 1948	14.44	6,510	63.8	1300, July 19	13.98	6080	59.6	