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TECHNICAL PAPER NO. 29

Rainfall Intensity-Frequency Regime

Part 4—Northeastern United States

(Rainfall intensity-duration-area-frequency regime, with other storm characteristics, for durations of 20 minutes to 24 hours, area from point to 400 square miles, frequencies for return periods from 1 to 100 years, for the region east of longitude 80° W. and north of latitude 41° N.)

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Rainfall Intensity - Frequency Regime
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INTRODUCTION

1. Authority. This report is the fourth of a series being prepared on a regional basis for the Soil Conservation Service, Department of Agriculture, to provide material for use in developing planning and design criteria for the Watershed Protection and Flood Prevention program (P. L. 566). Parts 1, 2, and 3 [1, 2, 3,] covered the region east of longitude 90°W and south of latitude 40°N.

2. Scope. The point-rainfall analysis is based largely on routine application of the theory of extreme values, with empirical transformation to include consideration of the high values that are excluded from the annual series. Analysis of areal rainfall is a relatively new feature in frequency analysis and is based on the few dense networks that have several years of record and meet other important requirements. Consideration of additional storm characteristics includes portrayal of the seasonal variation in the intensity-frequency regime.

3. Separation of "Analysis" and "Applications". For convenience in practical application of the results of the work reported in this Technical Paper it is divided into two major sections. The first section, entitled "Analysis", describes what was done with the data, gives reasons for the way some things were done, and evaluates the results. The second section, entitled "Applications", gives step-by-step examples for use of the diagrams and maps in solving certain types of hydrologic problems.

4. Relation to Parts 1, 2, and 3. The general techniques in this part are identical to those used in previous parts of the Technical Paper. Discussions of certain subjects have been abridged or omitted entirely, either because they are of secondary interest or because they have been covered adequately in Parts 1, 2, and 3. Topics presented briefly are the discussions of the analyses of the duration, frequency, and area-depth relationships which were given in Parts 1 and 2. Discussions of mass curves of rainfall and 'among storm' rainfall depth-duration-frequency curves and 'within storm' time distribution curves are given in Part 3.

5. Acknowledgments. This investigation was directed by David M. Hershfield, project leader, in the Cooperative Studies Section (Walter T. Wilson, Chief) of Hydrologic Services Division (William E. Hiatt, Chief). Technical assistance was furnished by Leonard L. Weiss; collection and processing of data were performed by Margaret R. Caspar, Donald E. Hiller, Robert B. Holleman, Elizabeth C. I'Anson, Anna E. Larkin, E. Eloise Marlowe, William E. Miller, Carlos E. Noboa, and Samuel Otlin; typing was by Normalee S. Foat and Laura L. Nelson, and drafting by Vivian M. Campbell and Caroll W. Gardner. Coordination with the Soil Conservation Service, Department of Agriculture, was maintained through Harold O. Ogrosky, Staff Hydrologist, of the Engineering Division. Max A. Kohler, Chief Research Hydrologist, and A. L. Shands, Assistant Chief, Hydrologic Services Division, acted as consultants. Lillian K. Rubin of the Hydrometeorological Section edited the text.

SECTION I. ANALYSIS

Climate

6. The region covered by this study lies in the middle latitudes and comes within the influence of the storm systems which move easterly across the United States. The result is a more or less regular succession of storms with intervals of fair weather. Periods of prolonged rainfall result when slow-moving coastal disturbances pass over or near New England. Occasionally, tropical storms in summer or early fall bring heavy rains to the coastal region. A number of the largest 24-hour rainfalls ever observed in this region were associated with the hurricanes of September 21, 1938, and August 18-19, 1955. "Storm Rainfall" [4] lists an 18-hour amount of 35.5 inches for Smethport, Pa., which was associated with the nontropical storm of July 17-18, 1942.

7. The annual precipitation averages vary from about 50 inches in some parts of Pennsylvania to about 30 inches in Northern Maine with variations as large as this occurring in some of the subregions of the Adirondacks. The average annual precipitation at Mt. Washington, N. H., is about 70 inches with extreme individual years and months of more than 100 and less than 20 inches, respectively. Precipitation is rather evenly distributed throughout the year, except in the north and mountain sections, where the winter average is generally half that of summer.

Point Rainfall

Basic data

8. Station data. The sources of data used in this study are indicated in table 1-1. In order to generalize, and to insure proper relationships, it was necessary to examine data from 200 long-record Weather Bureau stations, 20 of which are in the region of interest. Long records were analyzed from 138 stations to define the frequency relationships, and relatively short portions of the record from 824 additional stations were analyzed to define the regional pattern.

Table 1-1

SOURCES OF POINT RAINFALL DATA

Duration	No. of Stations	Average Length of Record (yrs)	Source*
20 min-24 hr	20 recorder (WB first order)	52	5, 6, 7
hourly	198 recorder	14	8, 9, 10
6-hour	198 recorder	14	8, 9, 10
daily	198 recorder	14	8, 9, 10
daily	626 non-recorder	13	8
daily	118 non-recorder	54	8

*These numbers indicate references listed on page 16.

9. Period and length of record. The non-recording short-record data were compiled for the period 1939-1957 and long-record data from the earliest year available through 1957. The recording gage data covers the period 1940-1950 with selected stations processed through 1957. Data from long-record Weather Bureau stations were processed through 1957. No record of less than five years was used to estimate the 2-year values.

10. Station exposures. In refined analysis of mean annual and mean seasonal rainfall data it is necessary to evaluate station exposures by methods such as double-mass curve analysis [11]. Such methods do not apply to extreme values. Except for some subjective selection (particularly for longer records) of stations that have had consistent exposures, no attempt has been made to adjust rainfall values to a standard exposure. The effects of varying exposure are implicitly included in the areal sampling error and are averaged out, if not evaluated, in the process of smoothing the isopluvial lines.

11. Time increments. Some of the hourly data are clock-hour and some are maximum consecutive 60-minute data; correspondingly, some of the 24-hour data are for the maximum consecutive 1440-minute data, whereas others are for a calendar or observation day. Examination of sufficient data has resulted in reliable empirical conversion factors so that the results refer to maximum consecutive n-minute data for all durations.

12. Rain or snow. The term precipitation has been used in reference to the 24-hour data because snow as well as rain is included in some of the 24-hour amounts. This is particularly true for high-elevation stations. About half of the Mt. Washington, N. H., annual maxima for 24 hours contain some snow and in a few instances are composed entirely of snow. The heaviest 24-hour precipitation and all short-duration precipitation is composed entirely of rain.

Duration analysis

13. Duration interpolation diagrams. A generalized duration relationship is portrayed in the diagrams of figure 1-1 in which the rainfall rate or depth can be computed for any duration, from 20 minutes to 24 hours, provided the values for 1, 6, and 24 hours for a particular return period are given. This convenient generalization was obtained empirically from data from 200 first-order Weather Bureau stations and is the same relation presented in previous parts of Weather Bureau Technical Paper No. 29. For example, the 30-minute intensity or 3-hour rainfall depth may be obtained if the 1-hour and 6-hour depths are given, and the 12-hour or 10-hour depth is a simple function of the 6-hour and 24-hour depths. The values are obtained merely by laying a straightedge across the two given values (1 and 6, or 6 and 24 hours) and reading the value for the desired duration. No regional variation is evident in this duration-depth or duration-intensity relationship.

14. The 1-, 6-, and 24-hour values for use in figure 1-1 are obtained from isopluvial maps which will be described later. Two large working copies (figure 2-1) containing diagrams and instructions with examples (table 2-1) for obtaining the desired depth-area-duration-frequency values are furnished in the pocket inside the back cover of this paper.

Frequency analysis

15. Return-period interpolation diagram. The return-period diagram of figure 1-2 is based on data from the long-record Weather Bureau stations and is identical with the return-period diagram in previous parts of Technical Paper No. 29. The shape of the diagram — that is, the spacing of the ordinates — is partly empirical and partly theoretical. From 1 to 10 years it is entirely empirical, based on free-hand curves drawn through plottings of partial-duration series data. For the 20-year and longer return periods, reliance was placed on Gumbel [12] analysis of annual series data [13]. The transition was smoothed subjectively between 10- and 20-year return periods. If values between 2 and 100 years are taken from the return-period diagram of figure 1-2, then converted to annual-series values and plotted on either Gumbel or log-normal paper the points will very nearly define a straight line.

16. Partial-duration vs. annual series. The partial-duration series includes all the high values whereas the annual series consists of the highest value for each year. The highest value of record, of course, is the top value of each series, but at lower frequency levels (shorter return periods) the two series diverge (see figure 1-4 in Part 1 of Technical Paper No. 29).

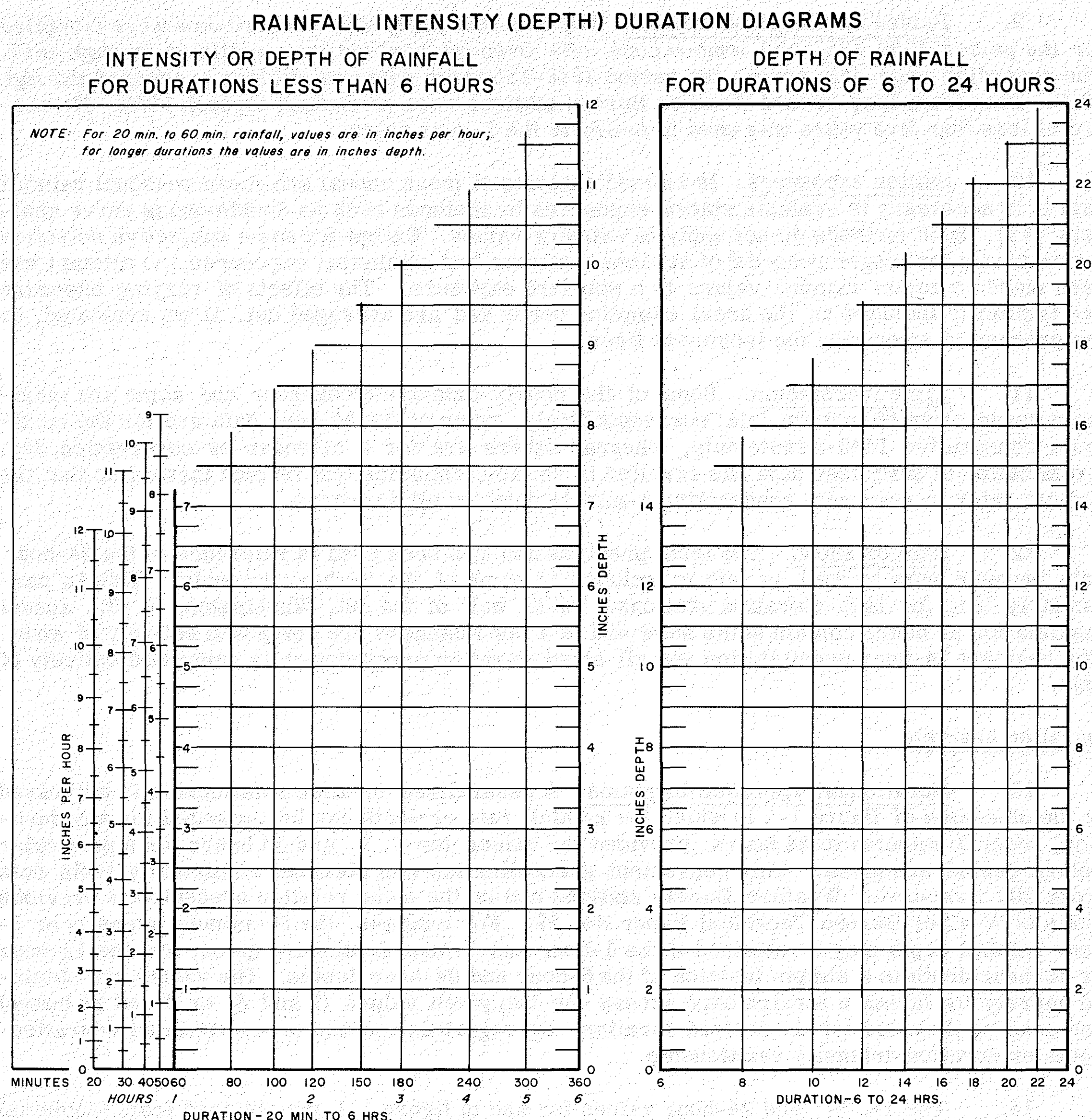

Figure 1-1

The partial-duration series, having the highest values regardless of the year in which they occur, recognizes that the second highest of one year sometimes exceeds the highest of another year. The processing of partial-duration data is very laborious; furthermore, there is no theoretical basis for extrapolating this data beyond the length of record, nor is there a good basis for defining values for return periods approaching the length of record. Table 1-2, based on a sample of 50 widely scattered U. S. stations, gives the empirical factors for converting the partial-duration series to the annual series. Tests with samples of record length from 10 to 50 years, indicate that these factors are not a function of record length.

Table 1-2

EMPIRICAL FACTORS
FOR CONVERTING PARTIAL-DURATION SERIES TO ANNUAL SERIES

Return Period	Conversion Factor
2-year	0.88
5-year	0.96
10-year	0.99

For example, if the 2-, 5-, and 10-year partial-duration series values estimated from the return-period diagram are 3.00, 3.75, and 4.21 inches, respectively, the annual series values are 2.64, 3.60, and 4.17 inches after multiplying by the conversion factors in table 1-2.

17. Use of diagram. The two intercepts needed for the frequency relation in the diagram of figure 1-2 are the 2-year values obtained from the 2-year maps and the 100-year values obtained by multiplying the 2-year values by those given on the 100-year to 2-year ratio maps. Thus, given the rainfall values for both 2- and 100-year return periods, values for other return periods are functionally related and may be determined from the frequency diagram which is entered with the 2- and 100-year values. The 100-year values for the first-order stations were taken from Gumbel analysis of the annual series.

18. General applicability of diagram. The frequency diagram is independent of the units used as long as the same units (inches, tenths of inches, etc.) are used for any given problem. Tests have shown that within the range of the data and the purpose of this paper, the diagram is also independent of duration. In other words, for one hour, or 24 hours, or any other duration within the scope of this report, the 2-year and 100-year values define the values for other return periods in a consistent manner. Studies have disclosed no regional pattern that would improve the diagram of figure 1-2 which thus far appears to have application over the entire region of interest and perhaps the entire United States.

19. The use of short-record data introduces the question of possible secular trend and biased sample. Routine tests with data of different periods of record showed no significant trend indicating that the direct use of the relatively recent short-record data was legitimate. The additional years of data processed for the first-order stations have resulted in slight differences, with no bias, between the results of this paper and Technical Paper No. 25 [14] — the average difference being less than 5 percent for any combination of duration and return period.

20. Storms combined into one distribution. The question of whether the distribution of extreme rainfall is a function of storm type (tropical or nontropical storm) was investigated in a recent study [15]. The results showed that no well-defined dichotomy exists between the hydrologic characteristics of hurricane rainfall and of rainfall having other initial causes. The conventional procedure of analyzing the annual maxima regardless of storm type is to be preferred because it eliminates nonsystematic sampling and avoids having to attach a storm label to the rainfall, which in some cases of intermediate storm types is arbitrary.

Isopluvial maps

21. General. For generalization over the region of interest, three maps have been prepared which show rainfall depths for 1, 6, and 24 hours for a return period of 2 years. Three additional maps show the ratio of 100-year to 2-year rainfall for the same durations. This set of six maps appears as figures 2-2 to 2-7 in Section II of this report. For interpolation among the durations given on these maps, and for return periods other than 2 or 100 years, the diagrams of figures 1-1 and 1-2 are used.

22. Isopluvial analysis. In general, the isopluvials were drawn in a straightforward and fairly objective manner. The 2-year 24-hour pattern is based on more than 900 stations whereas the 2-year 1-hour and 2-year 6-hour patterns are each based on about 200 stations. While the 2-year value is well defined even by short records, there was a tendency in drawing

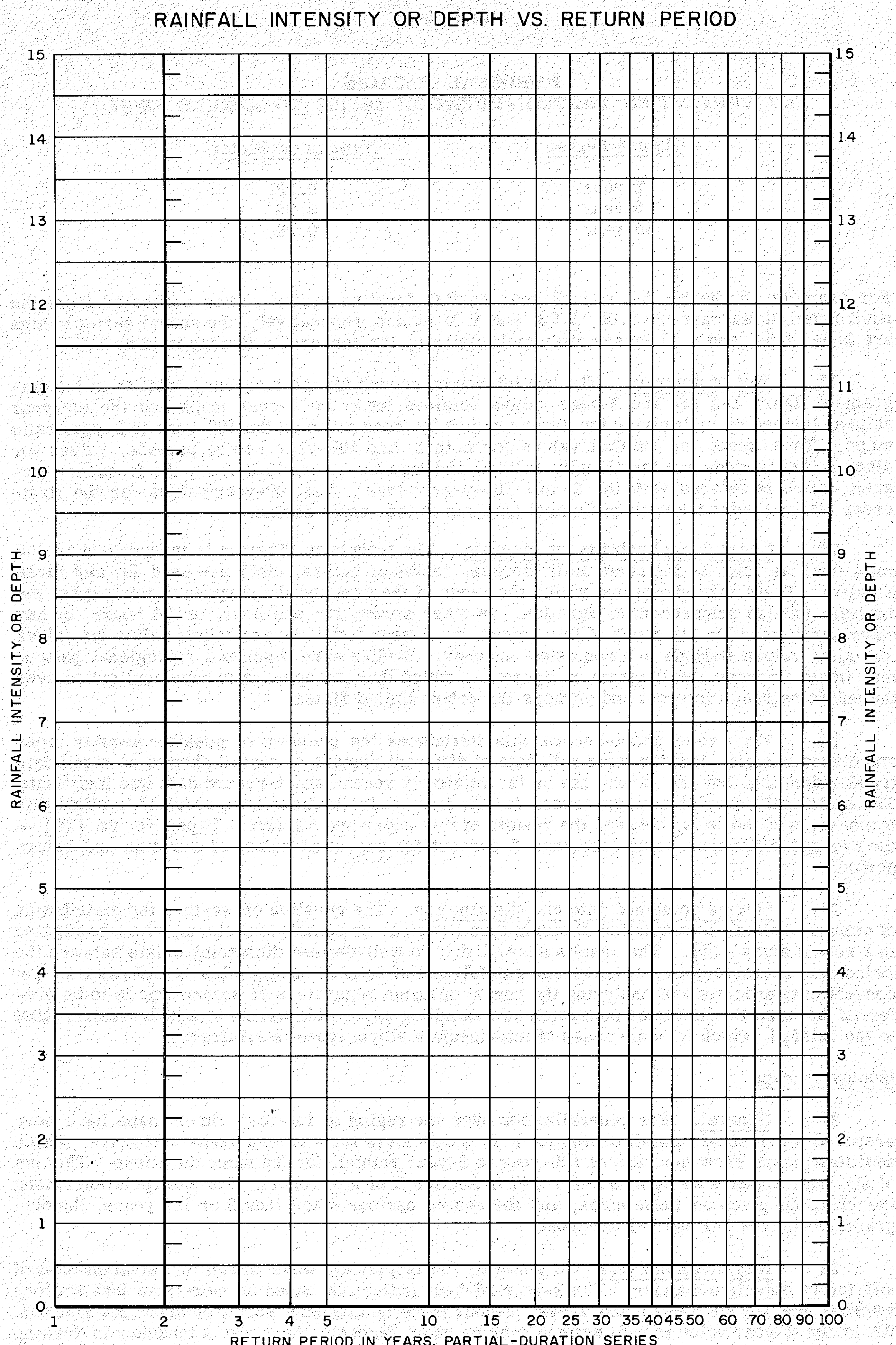
RAINFALL INTENSITY OR DEPTH VS. RETURN PERIOD
RAINFALL INTENSITY OR DEPTH
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
RETURN PERIOD IN YEARS, PARTIAL-DURATION SERIES
1 2 3 4 5 10 15 20 25 30 35 40 45 50 60 70 80 90 100

Figure 1-2

the isopluvial lines to give more weight to the longer-record data. Useful guides in smoothing the 1-hour and 6-hour isopluvials were the knowledge that the ratio of 1-hour or 6-hour values to corresponding 24-hour values for the same return period does not vary greatly over a small region and the standard deviation of point rainfall for the 2-year return period for a flat area of 300 square miles is about 20 percent of the mean values.

23. Evaluation. A subjective estimate of the standard error of the 2-year values ranges from a minimum of about 20 percent, where a point value can be used directly as taken from a "flat" part of one of the 2-year maps, to at least 40 percent, where a value of short-duration rainfall must be estimated for an appreciable area in a more rugged portion of the region. Some significant variation in the 2-year values has undoubtedly been masked as a result of smoothing, as in mountainous areas where large local variations have been obscured.

24. Comparison with Yarnell's maps. Differences between the isopluvial maps of figures 2-2 to 2-7 and earlier maps, such as Yarnell's [16], come from several sources. The maps in this paper are based on longer records and a vastly greater number of stations. Values shown on the maps of this paper are adjusted to partial-duration series and are for maximum n-minutes — that is, the 24-hour values are the maximum for any successive 1440 minutes, not a calendar day. For example, rainfall values for the 2-year return period for partial-duration series and maximum 1440 minutes are about 30 percent greater than for annual series and calendar day.

100- to 2-year ratio maps

25. Limitations of data. Since the 100- to 2-year ratio estimates are from sample data, they are subject to error due to spatial and temporal sampling variability. Spatial variability is a result of the chance occurrence of a storm at one station but not at a nearby station. Similarly, temporal variability results in an unrepresentative sample of storms occurring during a short period. Generally, the addition of one large value to the series results in a much larger change in the numerator than in the denominator and a subsequent increase in the ratio. For example, more than 12 inches was observed in 24 hours at Hartford during the hurricane of August 18-19, 1955 — nearly twice as much as the previously observed maximum. The subsequent increase in the 100-year to 2-year ratio was 36 percent, to 2.67. The ratio increased from 2.2 to 3.1 at Springfield, Mass., a station with 50 years of record.

26. Areal analysis. Rather than indiscriminately prune the effects of this one extreme event, it was considered worthwhile to obtain some perspective about the areal magnitude of this storm. All available 24-hour rainfall records for stations within about a 50-mile radius of Hartford were examined. This amounted to 74 stations with a total of 1,532 station-years of data. Thirteen of the 74 stations had 24-hour rainfalls greater than 10 inches and all were associated with the 1955 hurricane. These rainfalls varied from 60 percent to more than 300 percent as large as the previously observed maximums. Since the numerator or 100-year value is sensitive to extremely rare events, the ratios were increased abnormally. Examination of 508 long-record stations from previous studies revealed that less than 3 percent have ratios as great as 2.7.

27. There is little doubt about the rarity of a storm of such magnitude but how rare is uncertain. The ratios at 14 nearby stations with more than 40 years of record vary from less than 2.0 to greater than 3.0, the average being 2.3. Ten of these stations were not unduly influenced by this one storm. Unfortunately, no measurable orographic or meteorological factors are available for explaining the marked consistent discrepancies between the ratios at nearby stations. It appears then to be a reasonable presumption that a significant part of this discrepancy is due to sampling vagaries.

28. Subjective selection of ratio. A reasonable choice appeared to be either 2.4 or 2.6, both values giving some weight to this one large storm. Actually, 2.6 was used, and the 100-year value was computed to be 8.8 inches with the 12.12 inches assigned a return period of about 1000 years. If 2.4 had been used, the 100-year value would be 7.2 inches and the return period for the 12.12 inch rainfall would be in the neighborhood of 10,000 years. Both of these estimates are well within the margin of error in expressing the data on a frequency basis.

29. Station data tables. In order to make unsmoothed data available to the user, all the observed 2-year 1-, 6-, and 24-hour values are given in table 2-2. The 100-year values for long-record first-order and cooperative observer data are presented in table 2-3. The station names and locations shown in these two tables are those listed in the climatological ublications for the latest year of record used in this study.

Areal Rainfall

Area-depth relationships

30. Construction of area-depth diagram. The area-depth diagram of figure 1-3 is based on data from 20 dense networks of rain gages and is identical with the diagram in previous parts of this paper. The ordinate of the upper curve, for example, is conveniently expressed as a fraction whose numerator is the 2-year 24-hour rainfall over the area and whose denominator is the average of the 2-year 24-hour value for points in the area. The numerator is obtained from an annual series of values, each of which is the maximum average depth for a given area during the year — the times of beginning and ending of the 24-hour duration being the same for each station in the area covered by the dense network. The denominator is the mean of the individual station values, each being the 2-year 24-hour rainfall obtained from the annual series of point values without regard to when the 24-hour period occurs among the stations. The element of simultaneity in the numerator restricts the magnitude of the areal depths to values equal to or less than the average of the point rainfall depths.

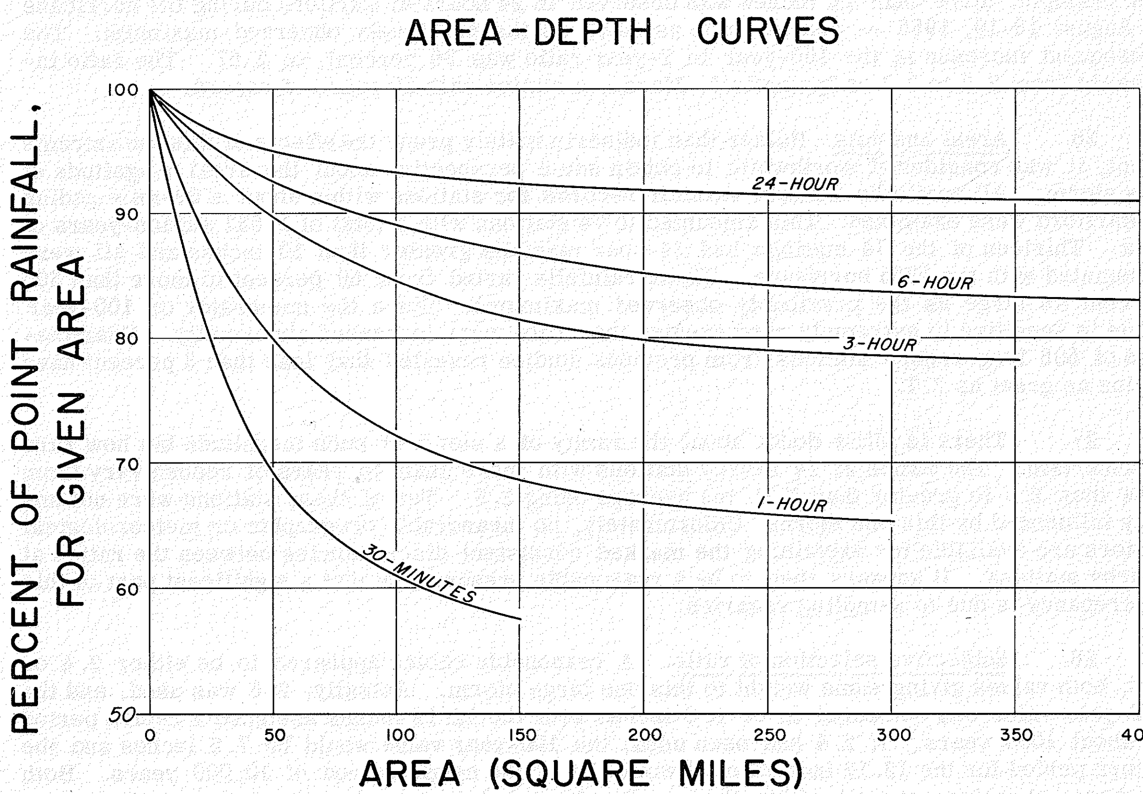

Figure 1-3

31. Generalization. The results from the limited number of widely scattered dense networks were studied in detail and it was found that (1) there was no systematic regional variation of the area-depth relation, (2) the relationship varies with duration as shown in figure 1-3, and (3) storm magnitude is not a parameter. A more complete discussion of the rationale and development of this relationship is given in Parts 1 and 2.

Seasonal Variation

32. Monthly vs. annual series. The frequency analysis so far discussed has followed the conventional procedures of using only the annual maxima or the n-maximum events for n-years of record. Obviously, some months contribute more events to these series than others and, in fact, some months might not contribute at all to these two series. The purpose of this analysis is to show how often these rainfall events occur during part of the year, or a specific calendar month.

33. Basic data. The seasonal variation relationship was developed from 19 first-order stations in the region of interest. The stations and length of record are shown in table 1-3.

Table 1-3

STATIONS USED TO DEVELOP SEASONAL VARIATION RELATIONSHIP

Station	Length of Record (yrs)	Station	Length of Record (yrs)
Hartford, Conn.	53	Canton, N. Y.	41
New Haven, Conn.	53	Oswego, N. Y.	46
Eastport, Me.	55	Rochester, N. Y.	57
Portland, Me.	60	Syracuse, N. Y.	55
Boston, Mass.	61	Scranton, Pa.	57
Nantucket, Mass.	58	Block Island, R. I.	44
Concord, N. H.	48	Providence, R. I.	53
Albany, N. Y.	59	Burlington, Vt.	51
Binghamton, N. Y.	56	Northfield, Vt.	43
Buffalo, N. Y.	56		

Analysis

34. Computation of monthly probabilities. For each of three durations (1, 6, and 24 hours) all the events which make up the partial-duration series — the maximum n events for n years of record — were classified according to month of occurrence and magnitude on the return-period scale. After the data for each station were summarized, the frequencies were computed for each month by determining the ratio, expressed as a percentage, of the number of occurrences equal to or greater than the magnitude of a particular event to the total possible number of occurrences (years of record). The magnitude of any rainfall event is approximately related to the probability of its occurrence in any year. Cases of nonoccurrence as well as occurrence of rainfall events were considered in order to arrive at numerical probabilities. The results were then plotted as a function of return period and season.

35. Construction of seasonal probability diagrams. Some variation exists from station to station, suggesting a slight regional pattern, but no attempt was made to define it because there is uncertainty whether this pattern is a climatic fact or an accident of sampling. Duration seems to be the only parameter having significant effect on the shape of the seasonal probability relationships. The data from all 19 stations were combined, giving 1006 station-years of record, and smoothed isopleths of frequency were drawn for each significant duration: 1, 6, and 24 hours. These isopleths appear as figures 2-8 to 2-10 in Section II of this report. The probability lines in these diagrams were examined to make sure the aggregate probabilities

agreed with the definition of return period; e.g., the 2-year value occurs on the average about 50 percent of the time or once every two years.

36. Application to areal rainfall. To test the applicability of these diagrams for the range of area in this report, a limited amount of areal data was analyzed in the same manner as the point data. The results exhibited no substantial difference from those of the point data, which lends additional confidence for using these diagrams as a guide for small areas.

37. Comparison with monthly probabilities in Parts 1, 2, and 3. The seasonal probability curves in this paper follow the same general pattern as those in Parts 1, 2, and 3. They differ in that they are more peaked for all three durations than the curves of the preceding parts. This means that the larger amounts are relatively more likely to occur during the summer months. There is some regional discontinuity between the curves of the four papers which can be smoothed locally for all practical purposes.

Sixty-Minute Mass Curves of Rainfall

38. A useful tool for the hydraulic engineer is the mass curve which shows the cumulative depth of rainfall with time. The analysis described below discusses the construction of two mass curves.

39. One hundred four 60-minute rainfalls from 52 first-order stations east of the Mississippi were selected for analysis. The criteria of selection were: (1) the total rainfall duration had to be at least 60 minutes. If durations shorter than 60 minutes had been used, there would be no maximum 5-minute amounts occurring in, say, the 12th 5-minute interval; (2) the 60-minute depth had to be at least one inch; and (3) little or no rain occurred immediately before or after the 60-minute rainfall selected for analysis. This method insured the selection of the maximum 60-minute rainfall in the storm and not just a 60-minute period containing the maximum 5-minute rainfall.

40. For each storm, the maximum 5-minute rainfall was plotted versus the 60-minute rainfall that contained it. The unstable relationship is illustrated in figure 1-4 which shows that the 5- to 60-minute ratio varies from 12 to 31 with a mean of 18.5. In addition, no evidence is apparent of any systematic relationship between this ratio and the 60-minute rainfall magnitude. In an attempt to refine this relationship, the points were labeled with a third variable — the 5-minute interval (numbered from 1 to 12) in which the maximum rainfall occurred. No systematic pattern emerged upon which to construct a set of contour lines, which means that the addition of the third variable does not improve the relationship for estimating the dependent variable, viz., the 5-minute rainfall. This analysis emphasizes the large variation that exists in the 5-minute distribution of the 60-minute rainfall.

41. In order to provide the engineer with some relationship between cumulative depth and time, two mass curves were constructed (see figure 1-5). Both are based on the same average 5-minute to 60-minute ratio, 10-minute to 60-minute, etc., as determined from the 104 storms; i.e., 18.5 percent of the 60-minute rainfall was used as the maximum 5-minute increment. The difference between the two curves is a result of the 5-, 10-minute, etc., interval in which these ratios were placed. The curve on the left is based on the modal interval or most likely interval and the curve on the right on the mean interval. The frequency distribution of the maximum 5-minute intervals is shown in the insert of figure 1-4. This distribution supplies a useful picture of the way in which the intervals have varied.

RELATIONSHIP BETWEEN 5- AND 60-MINUTE RAINFALL

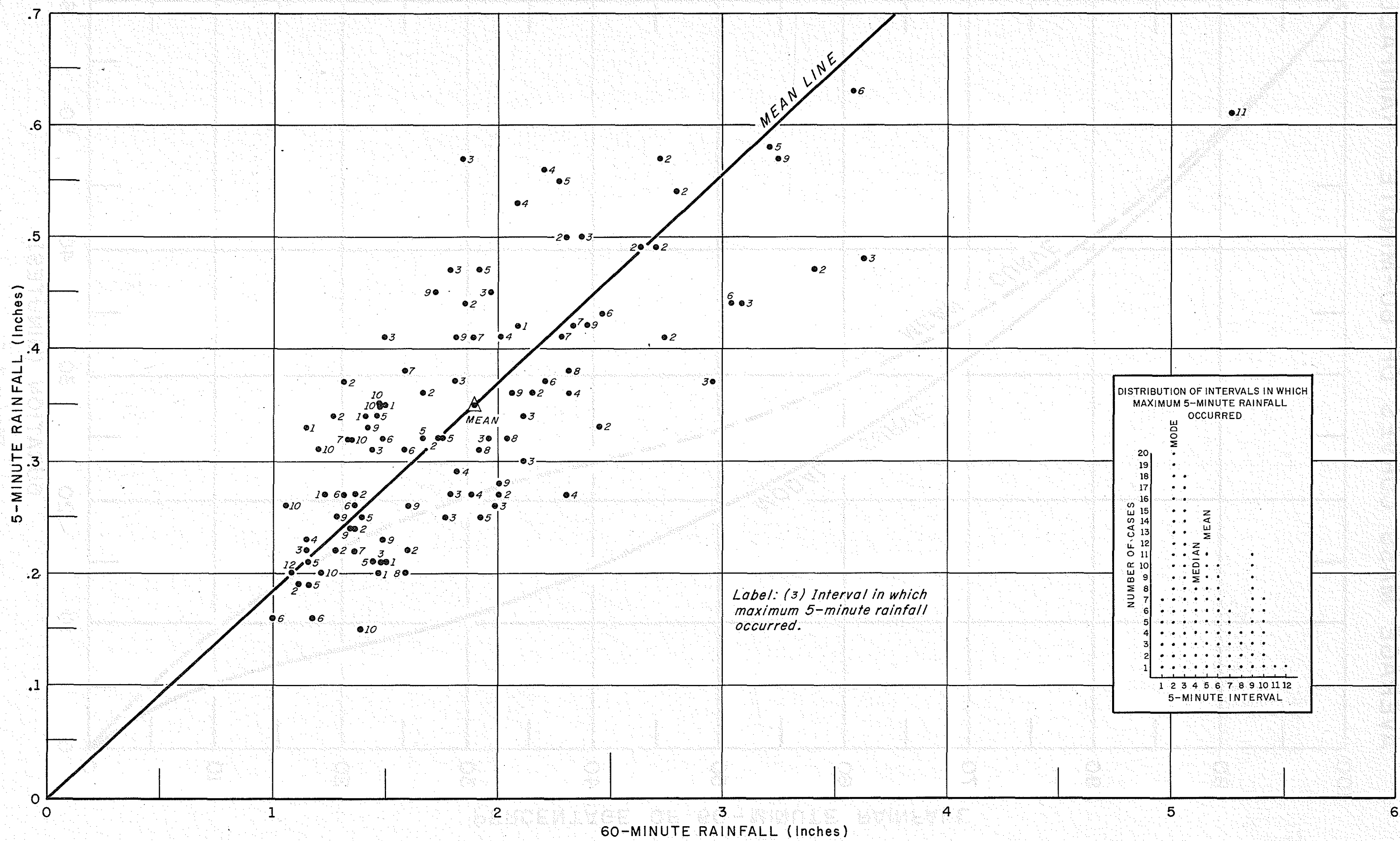

Figure 1-4

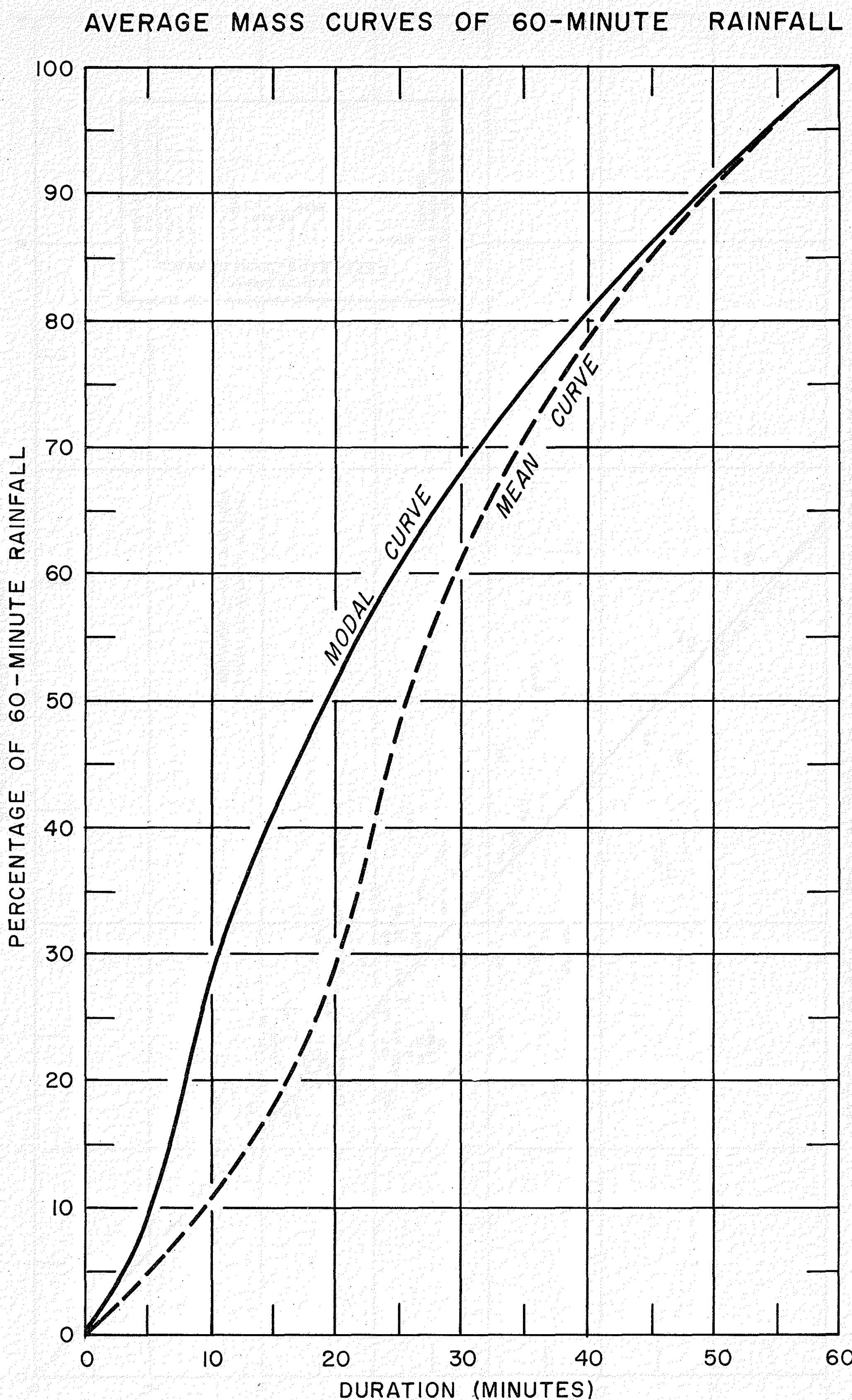
AVERAGE MASS CURVES OF 60-MINUTE RAINFALL
PERCENTAGE OF 60-MINUTE RAINFALL
DURATION (MINUTES)
MODAL CURVE
MEAN CURVE
0
10
20
30
40
50
60
70
80
90
100

Figure 1-5

SECTION II. APPLICATIONS

Introduction

42. This Technical Paper has the primary purpose of presenting rainfall data for hydrologic analysis and design criteria. The degree of detail presently available, and the introduction of areal and seasonal influences, have complicated the field engineer's work so that in many instances he must use a combination of maps and diagrams in a rather long series of operations. After having read how these aids were prepared he is ready to use them, and by having them together in one section of this paper he can easily find them for future use, without having to look through the entire paper each time he needs to refer to the maps or diagrams. Hypothetical examples of a few representative problems are included with the maps and diagrams in this section of the paper.

Use of Maps and Tables

Need for judgment

43. Site location. The tabulated data may be used in conjunction with the isopluvial maps in obtaining the best possible registration of the map with the stations and drainage areas themselves. Where there are steep gradients or complicated patterns in the isopluvials and in the contours of a region, the tabulated station data serve as identifying "bench marks". The station can be located on the ground and tied in with the station as shown on the map. If there are errors of printing registration, or of interpolation in the isopluvial pattern, adjustments can thus be made.

44. Orographic influences. Whether to use the smoothed values from the isopluvial maps, or whether to use the individual station data, or some combination of the two, depends largely upon local physiography. In a plains region there is little question but that the smoothed isopluvials give a better estimate of the rainfall regime of a locality than single station data. In a rugged region, while sampling error exists, much of the variation among nearby stations may be properly ascribed to orographic influences. The assessment of how much of the variation can be ascribed to these influences may have to be made by a person familiar with local conditions who has more information of storm patterns, and who has observed them. He may even be able to transfer a local topographic relation from a mountain slope where there are good data to a similar nearby slope which lacks data.

45. Average depth over an area. The three examples given in table 2-1 include reduction for area. If the particular area of interest is large enough and the isopluvial pattern is complicated enough, there may be a question as to what point in the area should be taken as representative. The point value to which the area-reduction factor should be applied is the average point value in the area. For practical purposes the average point value can be determined adequately by inspection of the isopluvial map or maps.

Table 2-1, with 3 examples, outlines the steps in the order they should be carried through in solving for the required rainfall intensities or depths.

Table 2-1

EXAMPLES OF RAINFALL INTENSITY (DEPTH) DURATION - FREQUENCY - AREA COMPUTATIONS

1.	Location	43° 00' N 72° 00' W	45° 00' N 69° 00' W	42° 00' N 77° 00' W
2.	Required Intensity (Depth) Duration-Frequency-Area	25-Year 3-Hour Rainfall (Inches) for 100 Square Miles	50-Year 12-Hour Rainfall (Inches) for 400 Square Miles	15-Year 30-Min Intensity (In/Hr) for 50 Square Miles
3.	2-Year 1-Hour Rainfall Figure 2-2	1.1 Inches	———	1.3 Inches
4.	2-Year 6-Hour Rainfall Figure 2-3	2.1 Inches	2.0 Inches	1.8 Inches
5.	2-Year 24-Hour Precip. Figure 2-4	———	2.9 Inches	———
6.	Straightedge connecting (3) and (4) or (4) and (5) intersects required duration. Figure 1-1	(2-Year 3-Hour) 1.7 Inches	(2-Year 12-Hour) 2.5 Inches	(2-Year 30-Min) 2.3 In/Hr
7.	100-Year 1-Hour Rainfall / 2-Year 1-Hour Rainfall Figure 2-5	2.2	———	2.1
8.	100-Year 6-Hour Rainfall / 2-Year 6-Hour Rainfall Figure 2-6	2.1	2.3	2.1
9.	100-Year 24-Hour Precip. / 2-Year 24-Hour Precip. Figure 2-7	———	2.5	———
10.	(7) x (3)	(100-Year 1-Hour) 2.4 Inches	———	(100-Year 1-Hour) 2.7 Inches
11.	(8) x (4)	(100-Year 6-Hour) 4.4 Inches	(100-Year 6-Hour) 4.6 Inches	(100-Year 6-Hour) 3.8 Inches
12.	(9) x (5)	———	(100-Year 24-Hour) 7.3 Inches	———
13.	Straightedge connecting (10) and (11) or (11) and (12) intersects required duration. Figure 1-1	(100-Year 3-Hour) 3.5 Inches	(100-Year 12-Hour) 6.0 Inches	(100-Year 30-Min) 4.3 In/Hr
14.	Straightedge connecting (6) and (13) intersects required return period. Figure 1-2	2.8 Inches	5.3 Inches	3.3 In/Hr
15.	Percent of Point Rainfall Figure 1-3	85	87	69
16.	(14) x (15) = (2)	2.4 Inches	4.6 Inches	2.3 In/Hr

46. Examples illustrating use of seasonal probability diagrams.

Example 1

Determine the probability of occurrence of a 5-year 1-hour rainfall for the months May through October. From figure 2-8, the probabilities for each month are interpolated to be 1, 3, 7, 5, 3, and 1 percent, respectively. In other words, the probability of occurrence of a 5-year 1-hour rainfall in May of any particular year is 1%; for June, 3%, etc.

Example 2

Determine the probability of occurrence in July of a 1-hour rainfall with the range of magnitude of the 1- and 2-year values. The 1-year 1-hour value of 0.9 inch for Boston is estimated from a combination of figures 1-2, 2-2, and 2-5. From figure 2-8, the empirical probability that the 1-year 1-hour rainfall will be equalled or exceeded in July of any one year is 27% or 27 chances out of 100. Similarly, the probability that Boston's 2-year 1-hour value of 1.1 inches will be equalled or exceeded in any one July is 16% by interpolation. The difference (27% - 16% = 11%) is the probability of occurrence in any one July of a 1-hour rainfall within the range 0.9 - 1.1 inches, inclusive.

Example 3

Assume the hurricane season to be June through October and determine the probability of getting 2.0 inches or more in 6 hours during this season at a point near Hartford, Conn. For a first approximation, determine from the isopluvial map the 2-year 6-hour value near Hartford to be 2.3 inches. Referring to the seasonal probability chart for 6 hours for the 2-year return period, it may be seen that for June through October there is about a 42% chance of getting 2.3 inches or more for 6 hours (corresponding to the 2-year 6-hour return period) during the hurricane season. Since the chance of equalling or exceeding 2.0 is obviously greater than for 2.3 inches, use the return-period diagram for a second approximation to get a rainfall value for the 1-year return period. At the point of interest near Hartford, (referring to the map of figure 2-6) we find that the ratio of 100-year to 2-year rainfall is about 2.2. Multiplying 2.3 inches by the ratio, 2.2, to get the 100-year value, we then enter the return-period diagram of figure 1-2 with the 2-year value, 2.3, and 100-year value, 5.1, and estimate 2.0 inches to be the 1.3-year value. Interpolating along the 1.3-year line of figure 2-9 gives 8, 15, 16, 13, and 8 as the probabilities for June through October, respectively, or a total of 60%. In other words, the probability of 2.0 inches or more rain in 6 hours during the hurricane season is 60%; this depth of rainfall will be equalled or exceeded in six seasons out of ten.

Example 4

As an example where interpolation between durations is necessary, consider the first example of table 2-1 where the 25-year 3-hour rainfall is estimated to be 2.8 inches. If the probability of occurrence for July is required, 1.3 and 0.9% are estimated from the 1- and 6-hour seasonal probability charts, respectively. The 3-hour probability is then interpolated to be 1.1% or 11 chances in 1,000 of equalling or exceeding a 3-hour rainfall of 2.8 inches in July of a particular year.

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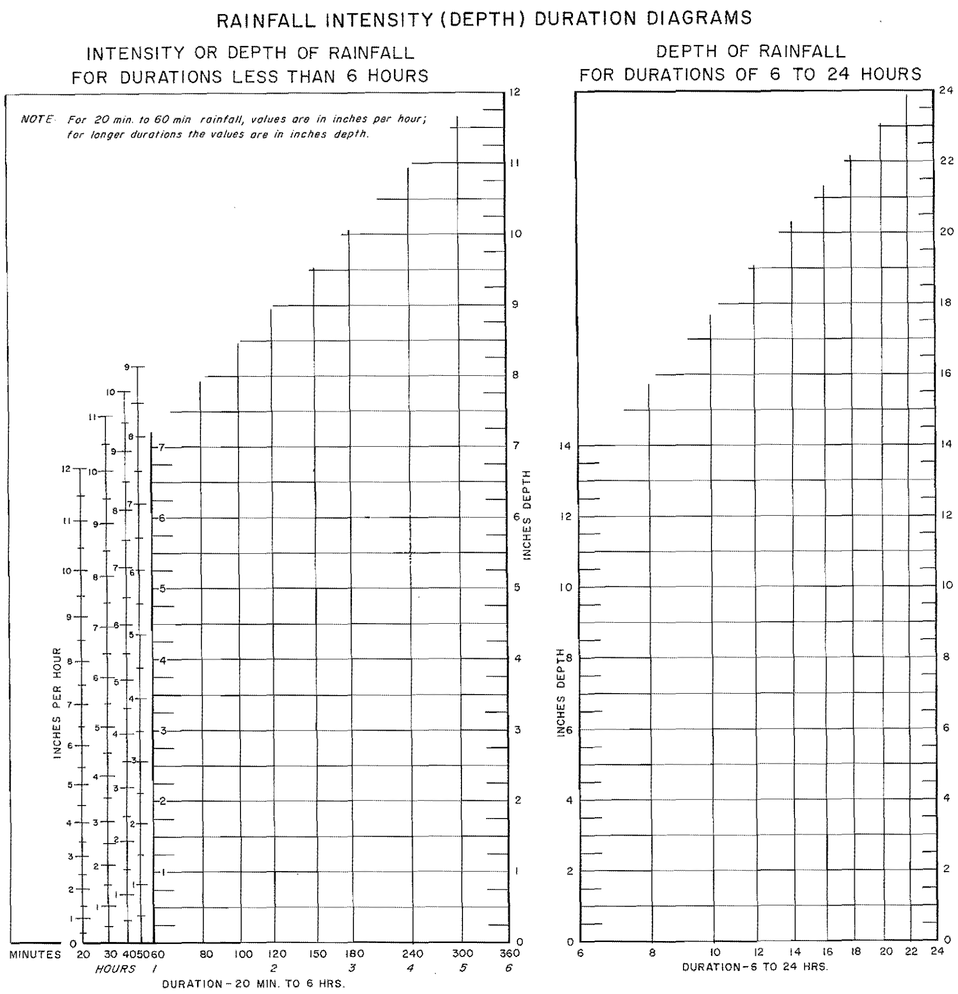


FIGURE 1-1

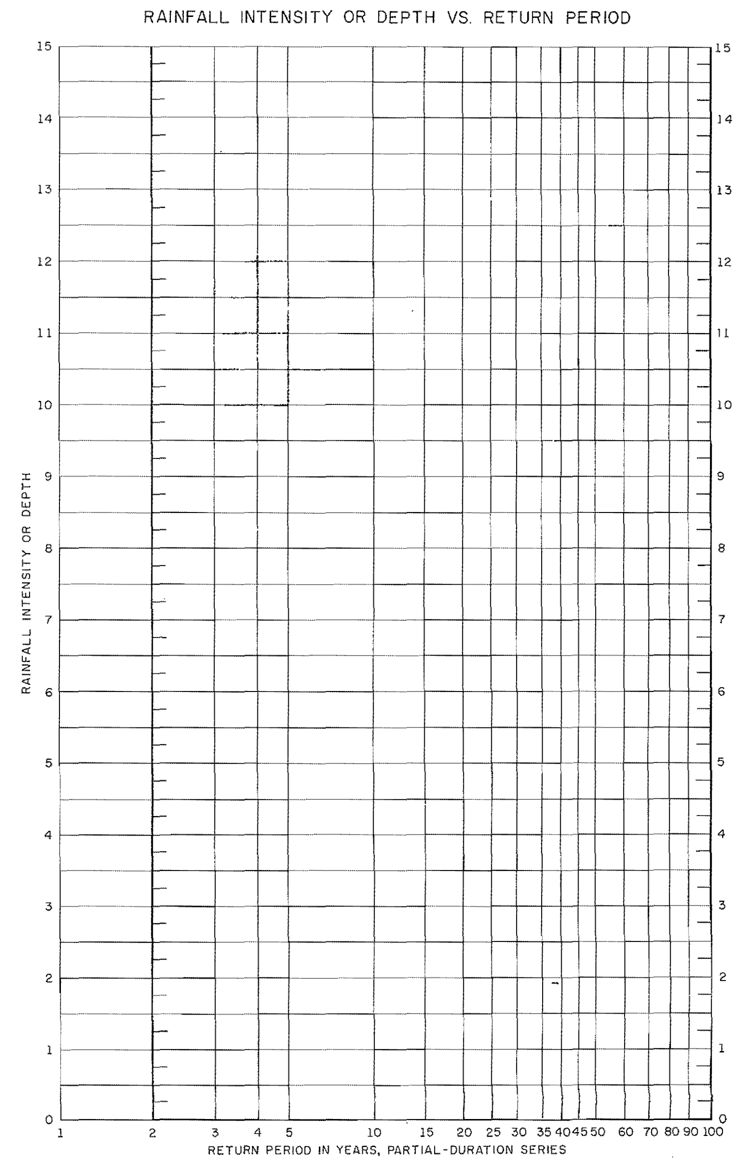


FIGURE 1-2

Table 2-1, with three examples, outlines the steps in the order they should be carried through in solving for the required rainfall intensities or depths.

TABLE 2-1

1.	Location	43° 00' N 72° 00' W	45° 00' N 69° 00' W	42° 00' N 77° 00' W
2.	Required Intensity (Depth) Duration-Frequency-Area	25-Year 3-Hour Rainfall (Inches) for 100 Square Miles	50-Year 12-Hour Rainfall (Inches) for 400 Square Miles	15-Year 30-Min Intensity (In/Hr) for 50 Square Miles
3.	2-Year 1-Hour Rainfall Figure 2-2	1.1 Inches	————	1.3 Inches
4.	2-Year 6-Hour Rainfall Figure 2-3	2.1 Inches	2.0 Inches	1.8 Inches
5.	2-Year 24-Hour Precip. Figure 2-4	————	2.9 Inches	————
6.	Straightedge connecting (3) and (4) or (4) and (5) intersects required duration. Figure 1-1	(2-Year 3-Hour) 1.7 Inches	(2-Year 12-Hour) 2.5 Inches	(2-Year 30-Min) 2.3 In/Hr
7.	100-Year 1-Hour Rainfall / 2-Year 1-Hour Rainfall Figure 2-5	2.2	————	2.1
8.	100-Year 6-Hour Rainfall / 2-Year 6-Hour Rainfall Figure 2-6	2.1	2.3	2.1
9.	100-Year 24-Hour Precip. / 2-Year 24-Hour Precip. Figure 2-7	————	2.5	————
10.	(7) x (3)	(100-Year 1-Hour) 2.4 Inches	————	(100-Year 1-Hour) 2.7 Inches
11.	(8) x (4)	(100-Year 6-Hour) 4.4 Inches	(100-Year 6-Hour) 4.6 Inches	(100-Year 6-Hour) 3.8 Inches
12.	(9) x (5)	————	(100-Year 24-Hour) 7.3 Inches	————
13.	Straightedge connecting (10) and (11) or (11) and (12) intersects required duration. Figure 1-1	(100-Year 3-Hour) 3.5 Inches	(100-Year 12-Hour) 6.0 Inches	(100-Year 30-Min) 4.3 In/Hr
14.	Straightedge connecting (6) and (13) intersects required return period. Figure 1-2	2.8 Inches	5.3 Inches	3.3 In/Hr
15.	Percent of Point Rainfall Figure 1-3	85	87	69
16.	(14) x (15) = (2)	2.4 Inches	4.6 Inches	2.3 In/Hr

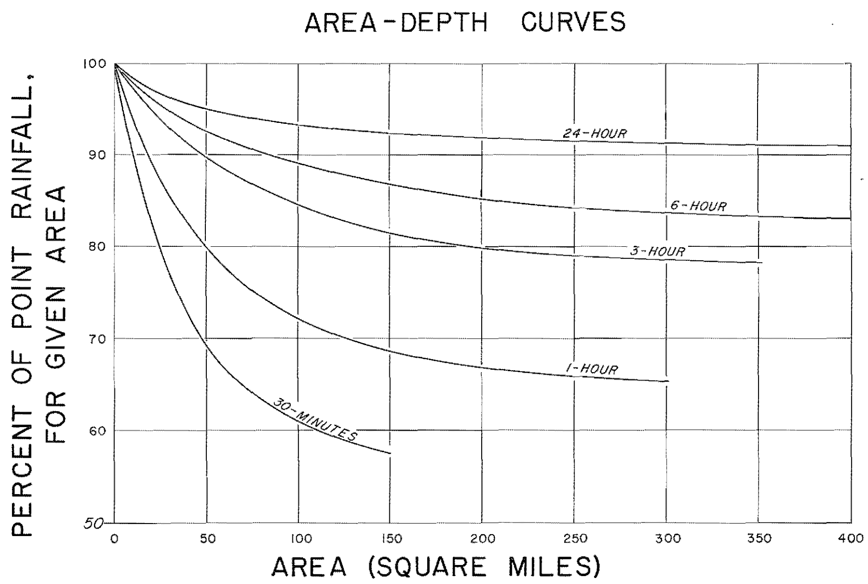


FIGURE 1-3

503414 O - 59 (In pocket)

FIGURE 2-1. DURATION, FREQUENCY, AREA-DEPTH DIAGRAMS, AND EXAMPLES OF COMPUTATION FOR WEATHER BUREAU TECHNICAL PAPER NO. 29, PART 4 (PREPARED DEC., 1958)

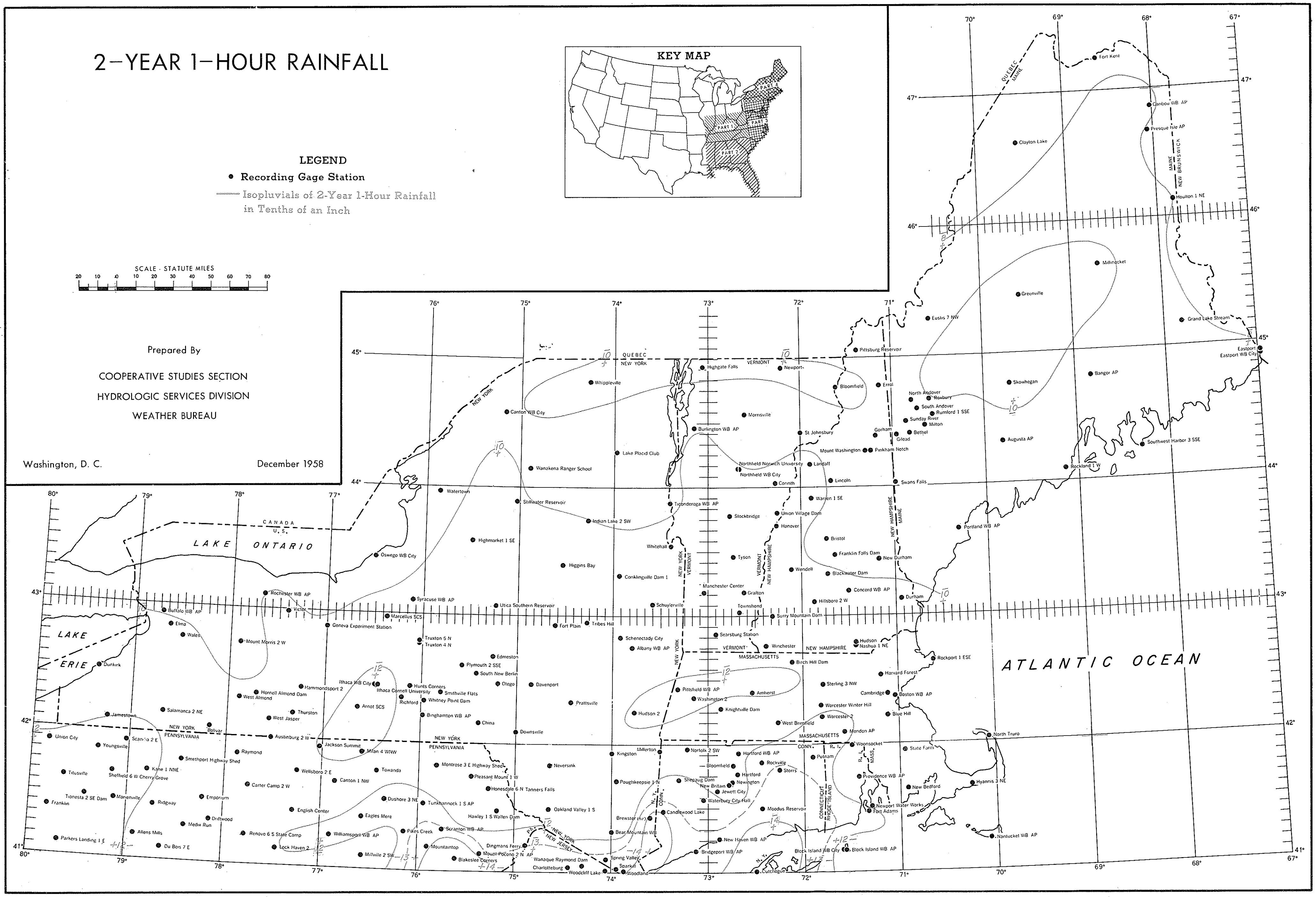


Figure 2-2

503414 O - 59 (Face p. 16) No. 1

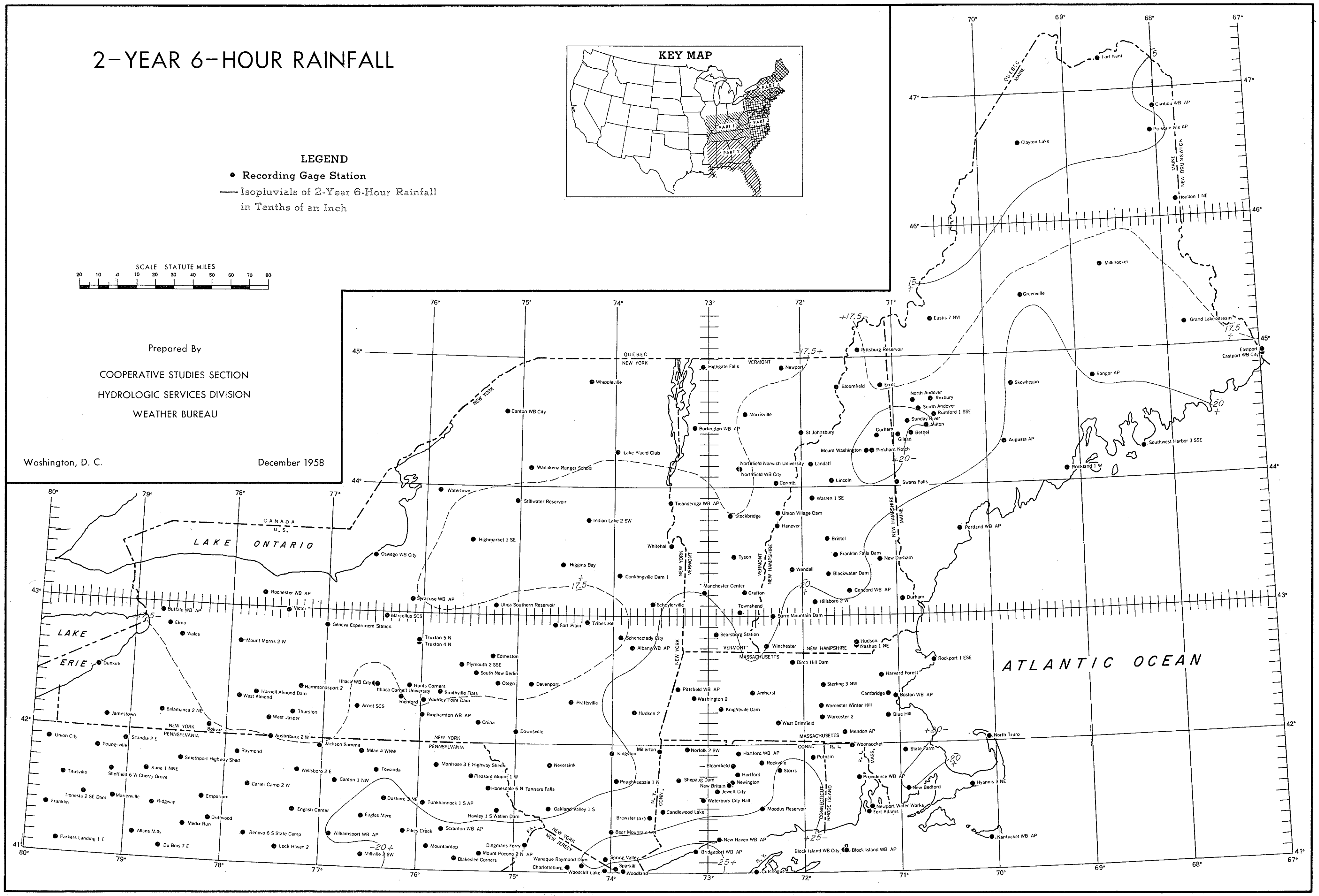


Figure 2-3

503414 O - 59 (Face p. 16) No. 2

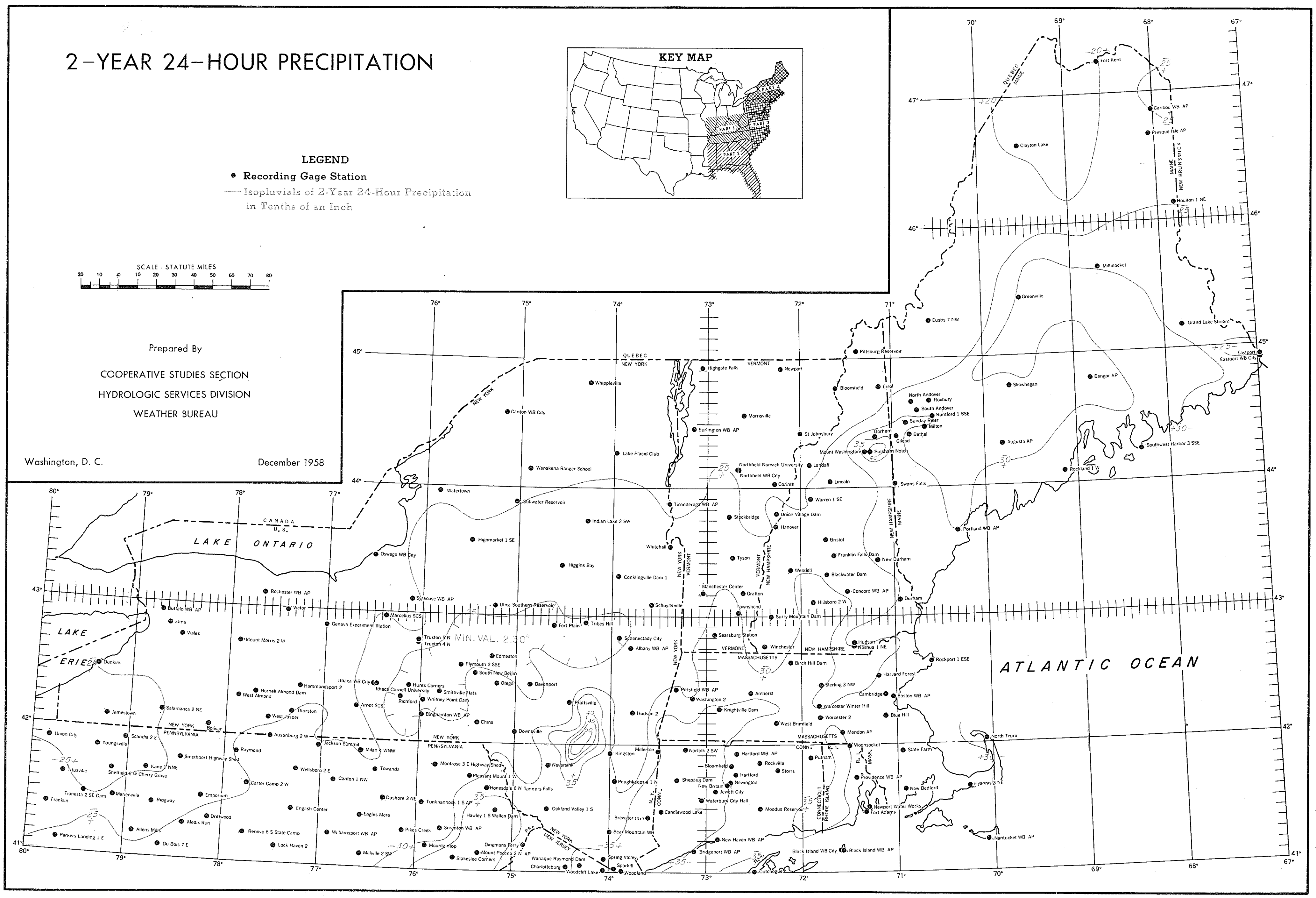


Figure 2-4

503414 O - 59 (Face p. 16) No. 3

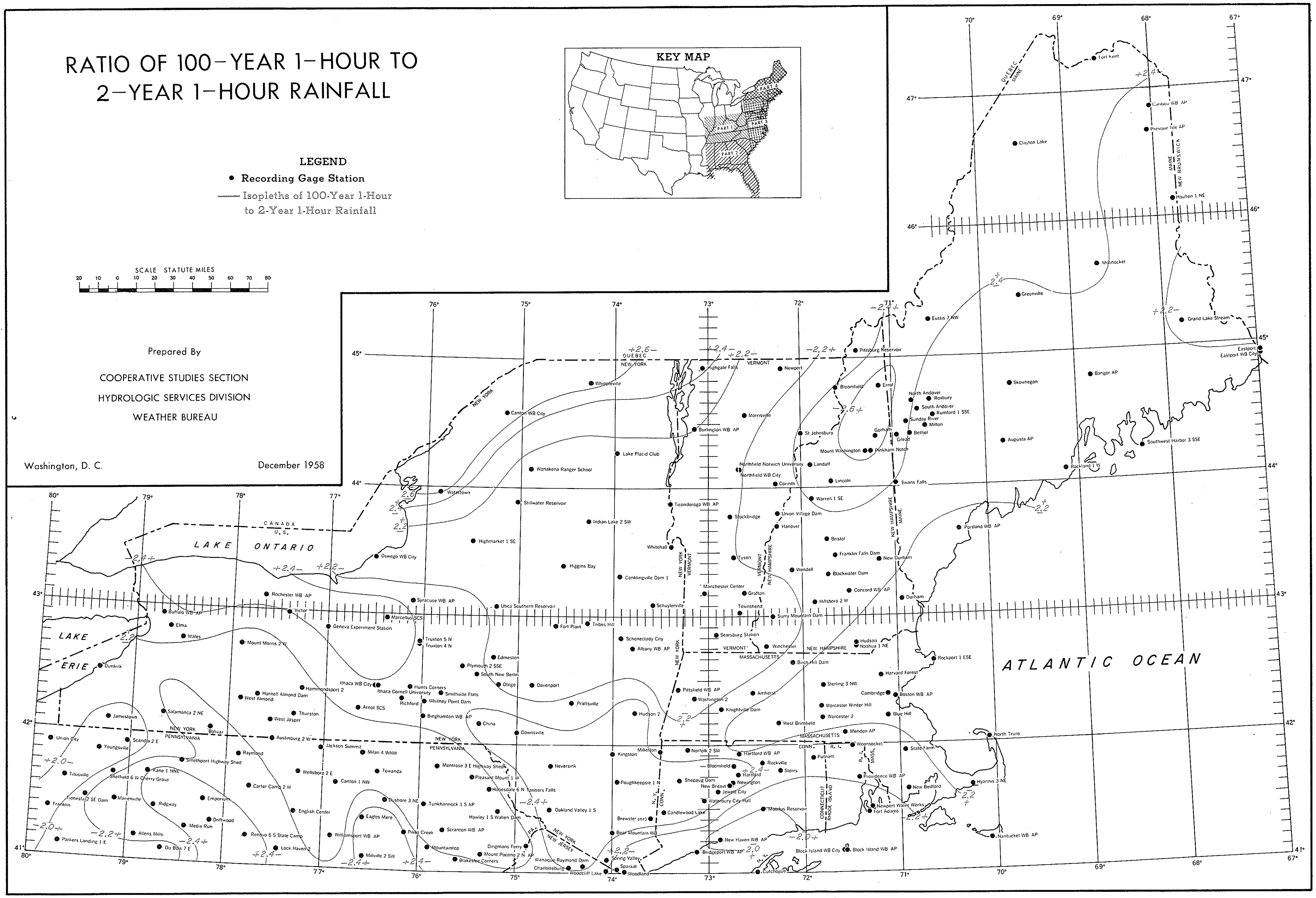


Figure 2-5

503414 O - 59 (Face p. 16) No. 4

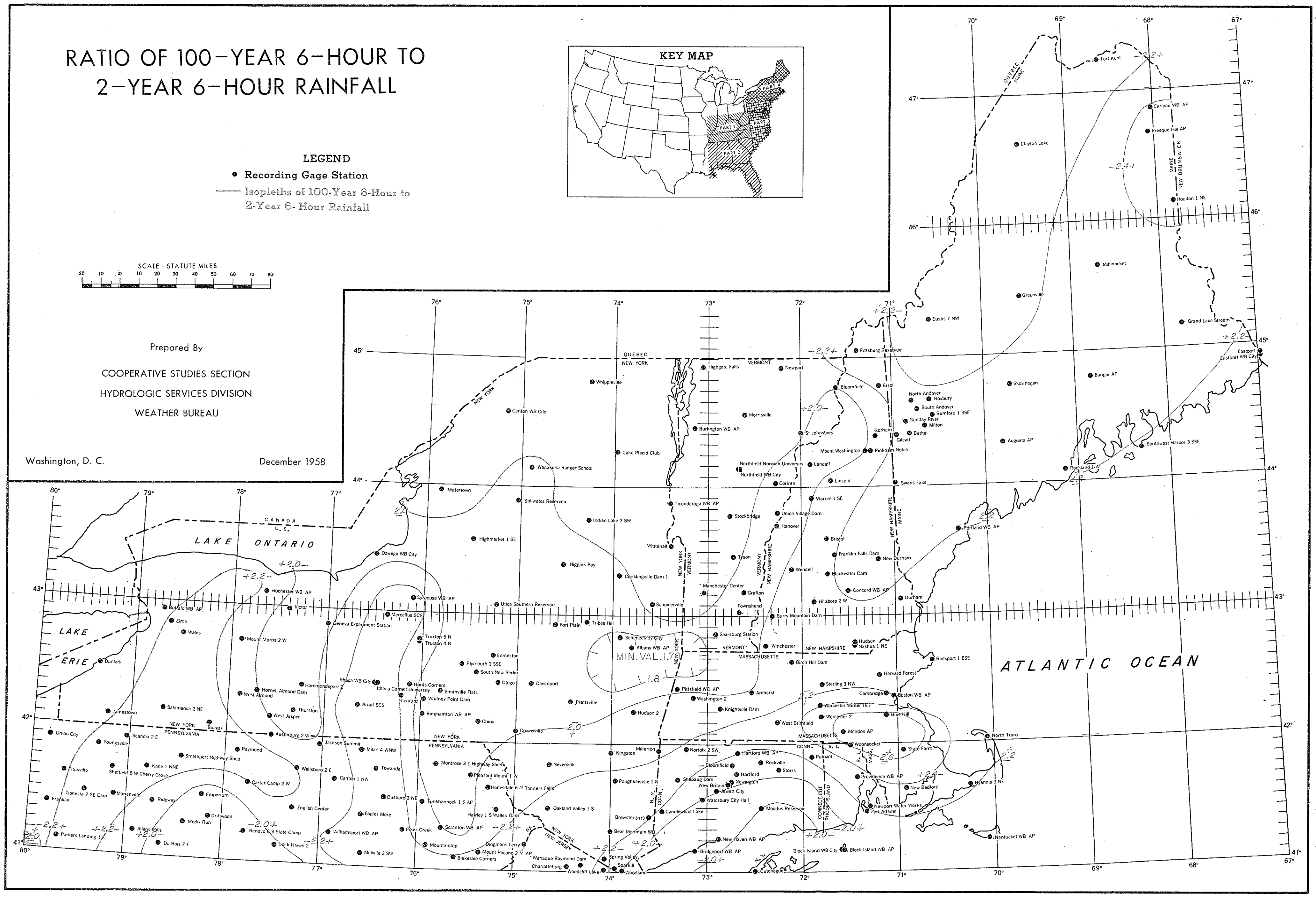


Figure 2-6

503414 O - 59 (Face p. 16) No. 5

Table 2-2. Station Data 2-Year 1-, 6-, and 24-Hour

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
CONNECTICUT							
Ansonia	41 20	73 05	1948-57	10			3.98
Bakersville	41 50	73 02	1948-57	10			4.41
Baltic	41 37	72 06	1942-57*	14			3.44
Barkhamsted	41 56	72 57	1941-57	17			3.97
Bloomfield	41 50	72 44	1941-57*	16	.87	2.14	3.17
Bridgeport	41 12	73 12	1897-51*	47			3.41
Bridgeport WB AP	41 10	73 08	1949-57	9	1.32	2.56	3.21
Bristol 3 W	41 41	72 59	1941-56	16			3.95
Bulls Bridge Dam	41 39	73 29	1948-57	10			3.62
Burlington	41 48	72 58	1940-57	18			4.34
Candlewood Lake	41 29	73 28	1941-57	17	.92	1.89	2.82
Canton	41 50	72 50	1896-22	27			4.26
Cockaponset Ranger Station	41 28	72 31	1942-57*	14			3.70
Colchester	41 34	72 17	1896-57*	57			3.31
Collinsville 1 S	41 48	72 56	1940-54	15			3.58
Cream Hill	41 52	73 20	1897-57	61			3.06
Danbury	41 23	73 28	1942-57*	14			3.67
Dawson Lake	41 22	72 59	1941-57*	16			3.78
East Hartland	42 00	72 55	1916-41*	22			3.85
East Haven	41 17	72 52	1948-57*	7			3.42
Easton Lake Reservoir	41 14	73 15	1948-57	10			3.61
Falls Village	41 57	73 22	1942-57	16			3.62
Greenwich	41 05	73 42	1948-53	6			3.32
Groton	41 21	72 03	1948-57	10			3.74
Hartford	41 46	72 42	1941-57	17	1.18	2.35	3.27
Hartford WB AP	41 56	72 41	1905-57	53	1.20	2.20	3.20
Hemlocks Reservoir	41 14	73 16	1949-57	9			3.95
Jewett City	41 38	71 54	1942-57	16	1.33	2.55	3.22
Lake Konomoc	41 24	72 11	1942-57*	11			3.41
Laurel Reservoir	41 10	73 33	1948-57	10			4.22
Manchester	41 46	72 29	1941-57*	16			3.13
Mead Pond Reservoir	41 12	73 31	1948-57	10			3.55
Middletown 4 W	41 33	72 43	1896-57*	22			2.53
Milford	41 12	73 05	1948-57*	9			3.60
Mohawk Ranger Station	41 50	73 18	1948-57	10			4.15
Moodus Reservoir	41 30	72 26	1940-57	18	1.08	2.48	3.27
Mount Carmel	41 25	72 55	1940-57	18			3.53
Natchaug Ranger Station	41 53	72 05	1948-57	10			3.05
Nathan Hale State Forest	41 46	72 21	1950-57	8			3.52
New Britain	41 41	72 46	1941-47	7	1.33	2.10	2.64
New Hartford	41 53	72 57	1941-57*	16			3.25
New Haven WB AP	41 16	72 53	1905-57	53	1.33	2.51	3.43
Newington	41 42	72 44	1941-57	17	1.09	2.23	2.91
New London	41 21	72 06	1897-55*	57			3.13
Norfolk 2 SW	41 58	73 13	1946-57	12			3.90
Norfolk 2 SW	41 58	73 13	1941-57	17	1.15	2.51	3.84
North Branford	41 20	72 46	1941-57*	16			3.40
North Guilford	41 23	72 43	1941-57*	16			3.35
Norwalk Gas Plant	41 07	73 25	1896-57*	55			3.47
Norwich Public Utility Plant	41 32	72 04	1948-57*	9			3.48
Pauchaug Forest	41 35	71 51	1948-57*	9			2.89
Peoples Ranger Station	41 56	73 00	1941-57	17			3.77
Prospect	41 30	72 57	1941-57*	16			3.84
Putnam	41 54	71 54	1939-57	19			3.41
Putnam	41 54	71 54	1940-57	18	1.33	2.44	3.08
Putnam Lake	41 05	73 38	1948-57	10			3.83
Rockville	41 52	72 26	1942-57	16	1.29	2.38	3.22
Rocky River Dam	41 35	73 26	1948-57	10			3.70
Round Pond	41 18	73 32	1948-57	10			3.73
Salisbury	41 59	73 27	1942-57	16			3.52
Saugatuck Reservoir	41 15	73 21	1948-57	10			3.62
Shepaug Dam	41 43	73 18	1941-48	8	1.21	2.43	3.50
Shuttle Meadow Reservoir	41 39	72 49	1941-57	17			3.80
Southington	41 35	72 51	1897-21	25			3.62
Stafford Springs	41 58	72 18	1941-56*	14			3.65
Stamford 5 N	41 08	73 32	1948-57	10			3.86
Stevenson Dam	41 23	73 10	1948-57	10			3.49
Storrs	41 48	72 15	1939-57	19			3.62
Storrs	41 48	72 15	1940-57	18	1.35	2.72	3.55
Thompsonville	42 00	72 36	1941-56	14			3.56
Torrington	41 48	73 07	1948-57	10			3.95
Torrington 2	41 48	73 08	1948-57	10			4.57
Trap Falls Reservoir	41 17	73 09	1948-57	10			4.39
Wallingford	41 28	72 51	1910-15	6			3.46
Washington	41 38	73 19	1947-53	7			3.20
Waterbury	41 33	73 02	1896-53*	57			3.44
Waterbury City Hall	41 34	73 02	1941-48	8	1.24	2.77	3.86
Wepawaug Reservoir	41 18	73 02	1948-57*	9			3.82
Westbrook	41 18	72 26	1942-57	16			3.42
West Hartford	41 45	72 47	1942-57	16			3.68
West Hartland	42 09	72 58	1941-57	17			4.05

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
CONNECTICUT (continued)							
Whigville Reservoir	41 44	72 57	1941-57	17			4.14
Whitney Lake	41 20	72 55	1941-57*	16			3.60
Wigwam Reservoir	41 40	73 08	1948-57*	9			4.27
Willimantic	41 43	72 14	1948-57	10			3.49
Windsor Locks CAA AP	41 56	72 41	1942-53*	9			3.18
Wolcott Reservoir	41 37	72 56	1942-57	16			4.44
Woodbury 3 W	41 34	73 16	1948-57	10			3.55
MAINE							
Augusta AP	44 19	69 48	1942-57*	14	.97	1.99	2.67
Augusta CAA AP	44 19	69 48	1946-57	12			3.17
Bangor	44 48	68 48	1942-52	11			2.46
Bangor AP	44 48	68 49	1941-47	7	.88	1.91	2.56
Bangor Dow Field	44 48	68 49	1953-57	5			3.20
Bar Harbor	44 23	68 12	1942-57	16			3.08
Belfast	44 24	69 00	1947-57	11			3.52
Bethel	44 25	70 48	1947-51	5	.83	1.80	2.61
Brassua Dam	45 40	69 50	1942-57	16			2.33
Brunswick	43 55	69 57	1942-46	5			3.11
Caribou WB AP	46 52	68 01	1941-57	17	.95	1.81	2.57
Clayton Lake	46 37	69 32	1943-57*	14	.73	1.29	1.91
Corinna	44 57	69 13	1948-57	10			2.63
Eastport	44 55	66 59	1953-57	5	.67	1.79	2.33
Eastport WB City	44 54	56 59	1896-52*	55	.83	1.72	2.50
East Sangerville 5 SE	45 08	69 16	1948-57	10			2.29
East Winthrop	44 19	69 54	1942-57	16			2.72
Ellsworth	44 32	68 26	1939-57	19			2.72
Eustis	45 13	70 29	1939-51*	12			2.30
Eustis 7 NW	45 17	70 35	1941-57*	13	.91	1.59	2.32
Farmington	44 40	70 09	1897-57*	60			2.88
Fort Fairfield	46 48	67 46	1942-57	16			2.53
Fort Kent	47 15	68 36	1939-57*	18			2.26
Fort Kent	47 15	68 36	1941-57*	16	.61	1.30	1.88
Gardiner	44 13	69 47	1896-57	62			2.84
Gilead	44 24	70 58	1948-57	10			3.42
Gilead	44 24	70 58	1947-51	5	.79	2.39	3.32
Grand Lake Stream	45 11	67 48	1942-57	16	.87	1.87	2.57
Greenville	45 27	69 35	1907-57	51			2.90
Greenville	45 27	69 35	1941-57	17	1.14	2.00	3.01
Hiram 2 S	43 51	70 48	1942-57	16			3.54
Houlton CAA AP	46 07	67 48	1949-57	9			2.76
Houlton 1 NE	46 08	67 50	1902-57*	55			2.26
Houlton 1 NE	46 08	67 50	1942-57	16	.84	1.71	2.46
Jackman	45 37	70 16	1939-57	19			2.29
Jonesboro	44 39	67 39	1949-57	9			2.76
Lewiston	44 06	70 14	1896-57	62			2.91
Machias	44 43	67 28	1942-57	16			3.47
Madison	44 48	69 54	1905-57	53			2.72
Middle Dam	44 47	70 55	1942-57	16			2.41
Millinocket	45 39	68 42	1903-57	55			2.82
Millinocket	45 39	68 42	1941-57	17	1.04	1.83	2.49
Millinocket CAA AP	45 39	68 41	1948-57	10			2.72
Millinocket Dam	46 17	68 55	1949-55	7			1.96
Milo	45 17	69 01	1939-49	11			2.84
Milton	44 27	70 39	1947-51	5	.90	2.01	2.95
Moosehead	45 35	69 43	1942-57	16			2.83
North Andover	44 39	70 47	1947-51	5	.86	1.99	2.83
North Bridgton	44 08	70 43	1896-53*	56			3.15
Old Town	44 56	68 39	1939-56	18			2.88
Old Town CAA AP	44 57	68 40	1949-57	9			2.80
Orono	44 52	68 42	1942-57*	13			2.06
Portland	43 40	70 15	1939-57	19			3.50
Portland WB AP	43 39	70 19	1897-57*	60	.98	2.17	3.01
Prentiss	45 27	68 10	1949-54	6			2.96
Presque Isle	46 39	68 00	1910-57*	46			2.24
Presque Isle AP	46 41	68 03	1940-48	9	.67	1.42	2.10
Ripogenus Dam	45 53	69 11	1939-57	19			2.51
Rockland	44 06	69 07	1942-57	16			3.28
Rockland 1 W	44 06	69 08	1941-57	17	1.11	2.40	3.22
Roxbury	44 40	70 36	1948-57	10			2.71
Roxbury	44 40	70 36	1947-51	5	1.08	1.62	2.54
Rumford 1 SSE	44 33	70 33	1900-57	58			2.98
Rumford 1 SSE	44 33	70 33	1941-57*	16	.95	1.94	2.90
Rumford 3 SW	44 31	70 34	1949-57	9			3.07
Skowhegan	44 46	69 43	1941-57	17	1.06	2.02	2.96
South Andover	44 36	70 44	1948-57*	9			2.44
South Andover	44 36	70 44	1947-51	5	.84	1.95	2.83
Southwest Harbor 3 SSE	44 14	68 18	1941-57	17	.93	2.23	2.94
Squa Pan Dam	46 32	68 20	1948-57	10			2.68
Sunday River	44 30	70 52	1947-51	5	1.04	2.37	3.53
Swans Falls	44 02	70 59	1941-57	17	1.00	1.96	3.10

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
MAINE (continued)							
The Forks	45 20	69 58	1939-57	19			2.48
Upper Dam	44 52	70 52	1942-57	16			2.30
Vanceboro	45 34	67 26	1942-48	7			2.51
Winslow	44 33	69 38	1905-57*	52			2.85
Woodland	45 09	67 24	1939-57	19			2.84
MASSACHUSETTS							
Adams	42 39	73 06	1941-57	17			3.22
Amherst	42 24	72 32	1896-39	44			3.15
Amherst	42 24	72 32	1940-57	18	1.30	2.01	2.86
Ashburnham	42 39	71 53	1948-57	10			3.85
Ashland	42 18	71 28	1942-57	16			3.67
Athol 3 E	42 35	72 10	1948-57	10			3.10
Beechwood	42 13	70 49	1942-57	16			4.02
Belchertown	42 17	72 21	1948-57	10			3.96
Birch Hill Dam	42 38	72 07	1948-57	10			2.90
Birch Hill Dam	42 38	72 07	1940-57	18	1.08	2.12	2.94
Blue Hill	42 13	71 07	1896-57	62			3.30
Blue Hill	42 13	71 07	1940-57	18	1.14	2.23	3.28
Boston WB AP	42 22	71 02	1896-57*	61	1.11	2.18	3.13
Boylston	42 21	71 43	1942-57*	15			3.17
Brockton	42 03	71 01	1942-57	16			3.52
Cambridge	42 23	71 07	1940-57*	16	.93	2.21	3.31
Chatham Light Station	41 40	69 57	1945-57*	9			2.58
Chester	42 17	72 59	1942-56	15			4.13
Chesterfield	42 23	72 51	1939-57	19			3.43
Chestnut Hill	42 20	71 10	1942-57	16			3.61
Clinton	42 24	71 41	1906-57	52			2.86
Cohasset	42 16	70 50	1948-57	10			3.20
Colbrook	42 23	72 03	1948-57	10			3.50
Concord	42 27	71 22	1939-49	11			2.75
East Wareham	41 46	70 40	1939-57	19			3.32
Edgartown	41 23	70 31	1946-57	12			3.23
Fall River	41 42	71 10	1897-57	61			3.19
Fitchburg 2 S	42 34	71 46	1896-57	62			3.20
Framingham	42 17	71 25	1896-57*	53			3.00
Franklin	42 06	71 24	1939-57*	17			3.76
Gardner	42 35	71 59	1942-57	16			3.16
Gloucester	42 37	70 39	1942-46	5			3.36
Groton	42 36	71 35	1942-57	16			2.94
Hardwick	42 21	72 12	1939-57*	18			3.29
Harvard Forest	42 32	72 11	1940-53	14	1.40	2.44	3.13
Hatchville	41 37	70 32	1940-57	18			3.55
Haverhill	42 46	71 04	1909-57*	45			2.73
Heath	42 40	72 49	1942-57	16			3.43
Holyoke	42 13	72 36	1942-57	16			3.86
Hoosac Tunnel	42 41	72 58	1942-57	16			3.05
Hubbardston	42 29	72 00	1939-57	19			3.04
Hyannis 3 NE	41 41	70 15	1896-57*	56			3.35
Hyannis 3 NE	41 41	70 15	1942-57	16	1.14	2.28	3.21
Ipswich	42 40	70 52	1939-57	19			3.16
Jefferson	42 22	71 54	1942-57*	14			3.25
Knightville Dam	42 17	72 52	1948-57	10			3.58
Knightville Dam	42 17	72 52	1940-57	18	1.14	2.30	3.27
Lake Cochituate	42 19	71 23	1942-57	16			3.68
Lawrence	42 41	71 10	1942-57	16			3.19
Lowell	42 39	71 18	1898-57*	56			2.90
Mansfield	42 03	71 12	1942-57	16			3.50
Mendon AP	42 06	71 34	1940-49	10	1.43	2.41	2.95
Middleboro	41 53	70 54	1942-57	16			3.46
Middleton	42 36	71 01	1942-57	16			3.25
Milford	42 10	71 31	1942-57	16			3.72
Millbury	42 12	71 45	1942-57	16			3.29
Montague City	42 35	72 35	1942-57	16			3.02
Nantucket WB AP	41 15	70 04	1897-57*	58	1.15	2.22	3.05
New Bedford	41 39	70 55	1896-57*	55			3.21
New Bedford	41 39	70 55	1940-57	18	.91	2.00	3.11
Newburyport	42 50	70 55	1948-57	10			3.32
New Salem	42 28	72 20	1949-57	9			3.35
Newton	42 18	71 13	1948-54	7			2.88
Northbridge	42 07	71 40	1942-57	16			3.83
North Truro	42 02	70 04	1944-50	7	.88	1.86	2.61
Pelham	42 23	72 24	1948-57	10			3.16
Pembroke	42 01	70 49	1942-57	16			3.34
Peru	42 27	73 04	1942-57	16			3.44
Petersham 4 N	42 32	72 11	1942-57*	12			3.64
Pittsfield	42 27	73 15	1939-48	10			3.17
Pittsfield WB AP	42 26	73 17	1947-57	11	1.45	2.23	2.95
Plainfield	42 31	72 55	1942-57	16			3.53
Plymouth	41 59	70 42	1905-57	53			3.16
Princeton	42 27	71 52	1942-57*	14			3.22
Provincetown 3 N	42 04	70 13	1899-57*	51			2.87

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
<u>MASSACHUSETTS</u> (continued)							
Quabbin Intake	42 22	72 17	1948-57	10			3.16
Rockport 1 ESE	42 39	70 37	1902-57*	54			3.21
Rockport 1 ESE	42 39	70 37	1942-57	16	1.05	2.20	3.28
Sandwich	41 46	70 30	1946-57	12			3.31
Segreganset	41 50	71 07	1942-57*	14			3.32
Shelburne Falls	42 36	72 44	1942-57	16			3.18
Southbridge 3 SW	42 03	72 05	1939-57	19			3.49
South Egremont	42 10	73 25	1939-57	19			3.59
Spot Pond	42 27	71 06	1942-57	16			4.28
Springfield Armory	42 06	72 35	1900-57*	48			3.22
State Farm	41 57	70 57	1940-55	16	1.26	2.38	3.21
Sterling	42 27	71 48	1942-57	15			2.94
Sterling 3 NW	42 28	71 48	1947-57	11	1.07	2.04	3.16
Stockbridge	42 17	73 19	1942-57	16			2.88
Swampscott	42 28	70 54	1942-56	15			3.14
Taunton	41 54	71 04	1896-57*	44			3.11
Turners Falls	42 36	72 33	1903-57	55			2.90
Walpole	42 11	71 15	1949-57	9			4.04
Ware	42 17	72 17	1948-57	10			4.01
Ware 2	42 16	72 18	1942-57	16			3.36
Washington 2	42 22	73 09	1940-57	18	1.23	2.14	3.10
Webster	42 03	71 53	1942-57	16			3.30
West Brimfield	42 10	72 16	1941-57*	15	1.04	1.96	2.82
West Cummington	42 29	72 58	1942-57*	10			3.18
Westfield	42 06	72 42	1942-57	16			4.30
Weston	42 23	71 19	1942-57	16			3.47
West Otis	42 11	73 09	1939-57	19			3.48
West Rutland	42 22	71 59	1942-57	16			3.59
Williamstown	42 43	73 12	1939-45*	5			2.46
Winchendon	42 42	72 03	1896-57*	46			3.11
Worcester	42 18	71 49	1896-57	62			2.97
Worcester WB AP	42 16	71 52	1948-57	10			3.53
Worcester Winter Hill	42 18	71 49	1941-45	5	1.12	2.04	2.35
Worcester 2	42 13	71 48	1941-48	8	1.36	2.31	2.69
<u>NEW HAMPSHIRE</u>							
Alexandria	43 39	71 53	1947-53	7			3.43
Bath 2 SW	44 09	71 59	1948-57	10			2.06
Benton	44 06	71 53	1948-57*	9			2.46
Berlin	44 29	71 10	1898-57*	49			2.70
Bethlehem	44 17	71 42	1942-57	16			2.77
Blackwater Dam	43 19	71 43	1949-53	5			2.57
Blackwater Dam	43 19	71 43	1945-57	13	1.22	2.06	2.92
Bow Garvins Falls	43 10	71 31	1948-57	10			2.59
Bradford	43 15	71 58	1949-57	9			3.04
Bristol	43 36	71 43	1940-57	18	.91	1.84	2.93
Bucks Corner	43 44	71 59	1949-57	9			3.13
Campton	43 52	71 38	1948-57	10			2.81
Cannon Mountain	44 10	71 42	1952-57	6			2.70
Center Harbor	43 43	71 28	1948-57	10			2.54
Claremont	43 23	72 21	1948-57	10			2.93
Concord WB AP	43 12	71 30	1905-57*	48	1.07	1.89	2.80
Dixville Notch	44 52	71 20	1942-57	16			2.45
Dublin	42 54	72 04	1948-57	10			2.75
Durham	43 08	70 56	1896-57	62			3.10
Durham	43 08	70 56	1941-57	17	1.05	2.25	2.99
East Deering	43 04	71 49	1948-57	10			3.17
Eastman Falls Dam	43 27	71 40	1948-57	10			2.90
Errol	44 47	71 08	1942-57	16			2.40
Errol	44 47	71 08	1941-57	17	.82	1.63	2.30
Fabyan	44 16	71 27	1949-57	9			3.13
First Connecticut Lake	45 06	71 17	1939-57	19			2.45
Fitzwilliam	42 47	72 09	1942-48	7			2.98
Fitzwilliam 3 SW	42 45	72 11	1948-57	10			2.78
Franklin Falls Dam	43 28	71 39	1949-57	9			2.93
Franklin Falls Dam	43 28	71 39	1945-57	13	.97	1.96	2.96
Franklin 1 NW	43 27	71 40	1907-57	51			2.86
Gilmanton	43 25	71 25	1948-57	10			2.44
Glencliff	43 59	71 54	1942-53	12			3.24
Gorham	44 23	71 11	1947-51	5	.88	2.14	3.36
Hanover	43 42	72 17	1896-57	62			2.51
Hanover	43 42	72 17	1940-57	18	.96	1.78	2.51
Hillsboro 2 W	43 07	71 57	1940-57	18	.98	2.11	3.11
Hudson	42 47	71 26	1951-57	7	1.18	2.40	3.18
Jefferson	44 25	71 28	1948-57	10			2.58
Keene	42 56	72 17	1896-57	62			2.64
Lakeport	43 33	71 28	1942-57	16			3.11
Lakeport 2	43 32	71 28	1949-57	9			2.70
Lancaster	44 29	71 34	1948-57	10			2.02
Landaff	44 11	71 54	1940-37	18	1.03	1.68	2.30
Lebanon CAA AP	43 38	72 19	1944-57*	13			2.52
Lincoln	44 03	71 40	1939-57*	18			2.98

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
NEW HAMPSHIRE (continued)							
Lincoln	44 03	71 40	1940-57*	17	.97	1.90	2.91
Manchester	43 00	71 28	1942-57	16			3.11
Massabesic Lake	42 59	71 24	1948-57	10			3.12
Meriden	43 33	72 16	1948-57*	8			2.46
Milan 7 N	44 40	71 13	1942-57	16			2.46
Milford	42 49	71 39	1948-57	10			2.64
Mount Washington	44 16	71 18	1940-57	18	.88	2.20	3.61
Nashua 1 NE	42 46	71 26	1942-50	9	1.08	2.23	3.09
Nashua 3 N	42 48	71 29	1939-57	19			3.13
New Castle	43 04	70 43	1944-53*	9			3.13
New Durham	43 26	71 10	1939-50*	7			2.95
New Durham	43 26	71 10	1941-57	17	.96	2.05	3.03
New London	43 25	71 59	1947-55	9			2.81
Newport	43 22	72 10	1939-57	19			2.76
North Chichester	43 15	71 23	1948-57*	6			2.54
North Stratford	44 45	71 38	1942-57	16			2.51
North Village	42 56	71 55	1948-53	6			2.84
Peterboro 2 S	42 51	71 57	1948-57	10			3.08
Pinkham Notch	44 16	71 15	1942-57	16			4.14
Pinkham Notch	44 16	71 15	1947-57	11	1.07	2.99	4.32
Pittsburg Reservoir	45 03	71 23	1940-57	18	1.01	1.90	2.45
Plymouth 1 WNW	43 46	71 43	1896-57	62			2.69
South Danbury	43 29	71 53	1948-57	10			2.86
South Lyndeboro	42 53	71 47	1948-57	10			3.07
South Weare 1 SE	43 03	71 42	1948-57*	9			2.52
Sunapee	43 23	72 05	1948-53	6			2.66
Surry Mountain Dam	43 00	72 19	1949-57	9			2.56
Surry Mountain Dam	43 00	72 19	1941-57	17	.97	1.90	2.76
Walpole 2	43 05	72 26	1949-57	9			2.77
Warren 1 SE	43 55	71 53	1948-53	6			2.22
Warren 1 SE	43 55	71 53	1941-57	17	1.08	1.93	2.84
Wendell	43 22	72 07	1940-53*	12	1.06	1.70	2.49
Wentworth	43 52	71 55	1948-53	6			2.39
West Lebanon	43 38	72 19	1947-57	11			2.28
West Rumney	43 48	71 51	1948-57	10			2.90
Whitefield	44 23	71 36	1948-57	10			2.40
Wilmot	43 27	71 55	1948-57	10			2.88
Winchester	42 46	72 23	1940-57	18	1.14	2.00	2.93
Windham	42 47	71 19	1948-57	10			3.52
Wolfeboro Falls	43 36	71 12	1942-57	16			3.20
Woodstock	43 59	71 41	1947-57	11			3.17
York Pond	44 30	71 20	1942-57	16			2.53
NEW JERSEY							
Canistear Reservoir	41 07	74 30	1941-57	17			3.66
Charlotteburg	41 03	74 26	1897-56	60			3.53
Charlotteburg	41 02	74 26	1941-48*	6	1.39	2.34	3.14
Culvers Lake	41 10	74 47	1902-53*	48			3.04
Greenwood Lake	41 09	74 20	1941-57	17			3.79
Layton 3 NW	41 15	74 51	1900-56*	56			3.12
Macopin Intake	41 01	74 24	1941-57	17			3.97
Milton	41 01	74 32	1941-57	17			3.37
Newton	41 03	74 45	1897-56*	57			3.12
Oak Ridge Reservoir	41 02	74 30	1941-57	17			3.76
Ringwood	41 08	74 16	1941-57	17			3.47
Sussex 3 N	41 14	74 35	1901-56*	51			3.11
Wanaque Raymond Dam	41 03	74 18	1945-57	13			3.98
Wanaque Raymond Dam	41 03	74 18	1942-57	16	1.44	2.52	3.63
Woodcliff Lake	41 01	74 03	1939-57	19			3.58
Woodcliff Lake	41 01	74 03	1940-57	18	1.27	2.42	3.34
NEW YORK							
Addison	42 06	77 14	1942-57	16			2.92
Albany WB AP	42 45	73 48	1899-57	59	1.07	1.75	2.62
Albion 3 NE	43 16	78 08	1939-57	19			2.14
Alcove Dam	42 28	73 56	1942-57	16			3.18
Alexandria Bay	44 20	75 55	1939-57	19			2.47
Alfred	42 15	77 47	1890-57*	56			2.47
Allegany State Park	42 06	78 45	1939-57	19			2.52
Amawalk	41 17	73 45	1948-57	10			3.62
Amsterdam Lock 10	42 55	74 08	1948-57	10			2.44
Andes	42 12	74 47	1948-57	10			2.78
Andover	42 09	77 48	1939-47	9			2.23
Angelica	42 18	78 02	1889-57*	66			2.30
Arcade	42 32	78 25	1943-57	15			2.26
Arena	42 07	74 44	1948-57	10			3.00
Arkville	42 09	74 37	1948-57	10			2.44
Arnot SCS	42 16	76 39	1935-50*	14	1.22	1.90	2.75
Auburn Water Works	42 54	76 32	1939-57	19			2.14
Avon	42 55	77 45	1939-57*	14			2.51
Bainbridge	42 18	75 29	1911-57*	46			2.58
Bakers Mills	43 36	74 05	1948-57	10			2.76

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
NEW YORK (continued)							
Baldwinsville	43 09	76 20	1942-57	16			2.47
Balsam Lake	42 02	74 36	1948-57	10			3.74
Barker 4 NE	43 22	78 29	1942-57	16			2.21
Batavia	43 00	78 11	1942-57	16			2.30
Bear Mountain WB	41 19	74 00	1941-50	10	1.18	2.07	3.19
Beaver Falls	43 53	75 26	1939-57	19			2.23
Bedford Hills	41 14	73 43	1897-56*	59			3.30
Bennetts Bridge	43 32	75 57	1945-57	13			2.99
Big Moose 3 E	43 49	74 52	1939-57	19			2.69
Binghamton	42 06	75 55	1951-57	7			3.13
Binghamton WB AP	42 13	75 59	1901-57*	56	1.12	1.84	2.52
Black River 1 SW	44 00	75 49	1948-57	10			2.16
Bolivar	42 03	78 11	1943-51*	8			2.66
Bolivar	42 03	78 11	1938-57	20	1.08	1.74	2.48
Boonville 2 N	43 31	75 21	1939-57	19			2.80
Boonville 2 SSW	43 27	75 21	1950-57	8			2.68
Bovina	42 16	74 44	1948-57	10			3.13
Boyds Corners	41 27	73 44	1948-57	10			3.96
Bradford	42 22	77 06	1948-57	10			2.50
Brewerton Lock 23	43 14	76 12	1942-57	16			2.81
Brewster (nr)	41 26	73 36	1941-47	7	1.67	2.18	3.10
Bristol Springs	42 43	77 22	1942-57	16			2.14
Broadalbin	43 05	74 10	1948-57	10			2.63
Brockport 2 NW	43 15	77 58	1904-57*	48			2.10
Buffalo WB AP	42 56	78 44	1898-57*	56	1.02	1.60	2.19
Burdett 1 NE	42 25	76 50	1942-57	16			2.30
Bushnellsville 1 NE	42 10	74 24	1948-57	10			2.89
Butternut Brook	41 55	74 40	1948-57	10			3.41
Cairo	42 19	74 01	1939-57	19			3.32
Callicoon	41 46	75 03	1949-57	9			2.83
Camden	43 20	75 44	1947-57	11			2.75
Canajoharie	42 54	74 34	1942-57	16			2.53
Canandaigua 3 S	42 51	77 17	1943-57	15			2.05
Canastota 1 SW	43 04	75 45	1942-57	16			2.96
Candor	42 14	76 21	1948-57	10			2.20
Canisteo	42 16	77 37	1949-57	9			2.15
Canton	44 36	75 10	1890-57*	60			2.33
Canton WB City	44 35	75 10	1907-50*	41	.98	1.64	2.38
Carmel 1 SW	41 25	73 42	1939-57	19			3.77
Cayuga Lock 1	42 57	76 44	1942-57	16			2.42
Chasm Falls	44 45	74 13	1942-57	16			2.28
Chazy 3 E	44 53	73 23	1904-57*	51			2.17
Chemung	42 00	76 38	1942-57	16			2.35
Cherry Plain	42 37	73 25	1943-49	7			3.91
Cherry Valley 2 NNE	42 50	74 45	1949-57	9			2.88
China	42 10	75 24	1935-50*	15	1.05	1.85	2.59
Cincinnatus	42 32	75 54	1942-57	16			2.78
Claryville 3 SW	41 53	74 36	1948-57	10			3.16
Cleveland	43 14	75 53	1942-51	10			2.65
Clyde Lock 26	43 04	76 50	1942-57	16			2.32
Cobleskill	42 40	74 30	1946-55	10			2.38
Cohocton SCS	42 28	77 30	1948-57	10			2.36
Cold Brook	42 01	74 16	1948-57	10			4.70
Colton 3 N	44 35	74 57	1939-57	19			2.46
Conklingville Dam 1	43 19	73 56	1939-57	19			2.86
Conklingville Dam 1	43 19	73 56	1941-57	17	1.09	1.81	2.96
Conklingville Dam 2	43 19	73 55	1948-57	10			2.84
Constantia	43 15	76 00	1952-57	6			3.18
Cooperstown	42 42	74 55	1890-57*	67			2.54
Copenhagen	43 54	75 41	1939-45	7			2.50
Corning	42 08	77 03	1942-57	16			2.72
Cortland	42 36	76 11	1892-57	66			2.54
Craigie Clair	41 58	74 52	1948-57	10			2.82
Cross River	41 16	73 41	1948-57	10			3.94
Croton Falls 1 NE	41 21	73 40	1948-57	10			4.00
Croton Lake	41 14	73 48	1948-57	10			3.76
Cutchogue	41 01	72 29	1899-56*	46			3.38
Cutchogue	41 01	72 30	1940-50	11	1.13	2.58	3.64
Dannemora	44 43	73 43	1906-57	52			2.21
Dansville	42 34	77 42	1939-57*	17			2.24
Dansville CAA AP	42 35	77 43	1948-53	6			2.04
Davenport	42 28	74 51	1945-50	6	.86	1.68	2.34
Delhi	42 16	74 55	1939-57	19			2.87
Delta	43 17	75 27	1942-57	16			2.74
Derby 2 NW	42 42	79 01	1945-57	13			2.40
De Ruyter 4 N	42 49	75 53	1942-57	16			2.64
Dobbs Ferry	41 01	73 52	1946-57	12			3.74
Dolgeville	43 05	74 46	1939-57	19			2.42
Downsville	42 05	75 00	1948-57	10			3.01
Downsville	42 06	75 00	1941-49	9	1.51	2.20	2.67
Dunkirk	42 29	79 21	1941-57	17	1.15	1.88	2.41
Dunkirk CAA AP	42 30	79 17	1948-53	6			2.09

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
NEW YORK (continued)							
Eagle Bay	43 46	74 49	1953-57	5			3.07
Eagle Falls	43 54	75 11	1939-57	19			2.47
East Branch	41 24	73 35	1948-57	10			4.32
East Delhi	42 17	74 55	1948-54	7			3.18
East Homer 2	42 43	76 07	1949-57	9			2.60
East Jewett	42 15	74 11	1948-57	10			3.79
Edgewood	42 08	74 14	1948-57	10			4.45
Edmeston	42 41	75 15	1940-50*	10	.90	1.47	2.38
Elizabethtown	44 13	73 36	1942-57*	14			2.34
Elka Park	42 10	74 10	1948-57	10			5.30
Ellenburg Depot	44 54	73 48	1947-57	11			2.12
Ellenville	41 43	74 24	1948-57	10			3.70
Elma	42 51	78 39	1943-57*	9			2.24
Elma	42 51	78 39	1945-50	6	.95	1.70	2.33
Elmira	42 05	76 48	1939-57	19			2.40
Elmira CAA AP	42 10	76 54	1948-57	10			2.18
Ephratah	43 01	74 32	1948-57	10			2.60
Fishs Eddy	41 58	75 11	1953-57	5			2.33
Forestport	43 26	75 13	1942-57	16			2.90
Fort Plain	42 56	74 37	1941-50*	9	1.01	1.58	2.17
Frankfort	43 04	75 07	1942-57	16			2.68
Franklinville	42 21	78 27	1939-57*	14			2.42
Fredonia	42 26	79 22	1914-57	44			2.44
Freeville 2 NE	42 32	76 19	1948-57	10			2.77
Friendship 5 SW	42 10	78 12	1952-57	6			2.23
Frost Valley	41 58	74 31	1948-57	10			3.72
Fulton	43 19	76 25	1942-57	16			2.09
Gabriels	44 26	74 11	1939-48*	7			2.02
Geneva Experiment Station	42 53	77 00	1889-57*	49			2.30
Geneva Experiment Station	42 53	77 00	1940-57	18	1.11	1.65	2.22
Glenford	42 01	74 08	1948-57	10			4.22
Glenham	41 31	73 56	1939-57	19			3.31
Glens Falls CAA AP	43 21	73 37	1948-57	10			2.64
Glens Falls Farm	43 19	73 44	1943-57	15			3.17
Glens Falls Feeder Dam	43 17	73 40	1948-55	8			2.99
Glens Falls Fire Station	43 19	73 39	1942-56	15			2.62
Gloversville	43 03	74 21	1892-57	66			2.56
Gloversville Pecks Pond	43 06	74 26	1948-57	10			2.94
Gouverneur	44 20	75 28	1939-57	19			2.38
Gowanda State Hospital	42 29	78 56	1946-57	12			2.34
Grafton 1 NW	42 47	73 28	1951-57	7			2.81
Grahamsville	41 51	74 33	1948-57	10			3.38
Grand Gorge	42 22	74 30	1948-57	10			3.12
Gravesville 2 N	43 16	75 07	1950-57	8			2.47
Greene	42 20	75 46	1939-57	19			2.47
Greenfield Center	43 07	73 50	1939-54	16			2.60
Halcott Center 2 NNE	42 13	74 28	1948-57	10			2.93
Hale Eddy 4 NNW	42 04	75 26	1953-57	5			2.11
Hamilton	42 49	75 32	1939-57*	17			2.50
Hammondsport 1 S	42 24	77 13	1942-57	16			2.42
Hammondsport 2	42 24	77 15	1936-46*	9	1.12	1.48	2.25
Harpursville	42 09	75 37	1948-55	8			2.46
Harvard	42 01	75 07	1948-57	10			2.88
Haskinville	42 25	77 34	1896-57*	61			2.23
Hemlock	42 47	77 37	1904-57	54			2.32
Higgins Bay	43 24	74 32	1943-48	6	1.30	2.07	2.82
High Falls	41 50	74 08	1939-57	19			3.01
Highmarket	43 35	75 31	1939-57	19			3.06
Highmarket 1 SE	43 35	75 30	1940-57	18	1.03	1.90	2.90
Highmount	42 09	74 29	1948-57	10			3.42
Hilton	43 17	77 47	1946-57	12			2.11
Hinckley	43 18	75 07	1942-57	16			3.31
Hoffmeister	43 23	74 43	1939-57	19			3.30
Honk Falls	41 45	74 23	1939-52	14			3.01
Hooker	43 41	75 45	1945-57*	10			2.15
Hope	43 21	74 16	1939-57	19			3.34
Hornell Almond Dam	42 21	77 42	1940-57	18	1.02	1.43	2.11
Hudson 2	42 15	73 47	1941-57*	15	1.31	2.18	2.90
Hunts Corners	42 26	76 07	1940-57	18	1.08	1.73	2.59
Indian Lake 2 SW	43 45	74 17	1900-57	58			2.57
Indian Lake 2 SW	43 45	74 17	1942-57	16	1.00	1.98	2.84
Inghams	43 04	74 46	1948-57	10			2.53
Ithaca Cornell University	42 27	76 28	1889-57	69			2.62
Ithaca Cornell University	42 27	76 28	1943-50	8	1.16	2.05	2.70
Ithaca WB City	42 27	76 29	1911-42*	28	1.23	1.89	2.71
Jacksonburg	43 01	74 56	1942-57	16			2.40
Jamestown	42 06	79 15	1939-57	19			2.76
Jamestown	42 06	79 15	1938-57	20	1.19	2.02	2.56
Jeffersonville	41 47	74 56	1939-47	9			2.71
Johnsonville	42 55	73 31	1948-57	10			2.76
Kendall	43 20	78 02	1941-50*	8			2.00

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
NEW YORK (continued)							
Kingston	41 56	74 00	1941-57	17	1.09	1.86	2.88
Knapp Creek	42 00	78 31	1939-50	12			3.29
Kortright	42 24	74 48	1948-57	10			2.45
Lackawack	41 47	74 26	1948-57	10			3.61
Lake Delaware	42 15	74 54	1948-57	10			3.25
Lake Hill	42 04	74 11	1948-57	10			4.45
Lake Placid Club	44 17	73 59	1398-57*	50			2.27
Lake Placid Club	44 17	73 59	1942-57	16	.87	1.64	2.46
Lawrenceville	44 45	74 40	1939-57	19			2.27
Letchworth Park	42 35	78 02	1939-51	13			2.27
Lewbeach	41 57	74 50	1948-57	10			3.56
Lewiston 1 N	43 11	79 03	1939-57	19			2.26
Lexington 1 SE	42 14	74 20	1948-57	10			3.56
Liberty	41 49	74 45	1950-57	8			3.02
Linden	42 52	78 10	1942-57	16			2.17
Lisle	42 21	76 00	1953-57	5			2.51
Little Falls City Reservoir	43 04	74 52	1897-57	61			2.52
Little Falls Mill Street	43 02	74 52	1939-57	19			2.41
Little Valley	42 15	78 48	1942-57	16			2.93
Locke 4 W	42 40	76 28	1942-57	16			2.54
Lockport 2 NE	43 11	78 39	1891-57*	64			2.17
Lowville	43 48	75 29	1890-57*	67			2.43
Lyons Falls	43 37	75 22	1939-57	19			2.88
Macedon	43 04	77 18	1942-57	16			2.15
Manorkill	42 23	74 18	1948-57	10			3.54
Marcellus SCS	42 59	76 23	1940-57	18	1.10	1.71	2.39
Mary Smith	42 03	74 49	1948-57	10			3.25
Massena CAA AP	44 56	74 50	1949-57	9			2.28
Massena 1 NE	44 56	74 53	1940-57	18			2.40
Mays Point Lock 25	43 00	76 46	1942-57	16			2.18
McKeever	43 37	75 06	1939-53*	14			3.06
Mechanicville	42 53	73 41	1911-57	47			2.59
Middle Branch Reservoir	41 23	73 39	1948-57	10			3.85
Middleburg 4 SW	42 34	74 19	1943-57	15			2.56
Middletown 2 NW	41 27	74 27	1952-57	6			3.95
Millbrook	41 51	73 37	1942-57	16			2.88
Millerton	41 57	73 31	1940-57	18	1.11	1.96	2.99
Mohonk Lake	41 46	74 09	1897-56*	57			3.29
Mongaup Valley	41 40	74 47	1948-57*	9			3.07
Morrisville A. & T. Institute	42 54	75 39	1912-57*	45			2.47
Mount Lebanon	42 28	73 28	1944-57	14			2.80
Mount McGregor	43 12	73 45	1939-45	7			2.62
Mount Morris 2 W	42 44	77 54	1949-57	9			2.06
Mount Morris 2 W	42 44	77 54	1943-50	8	.98	1.68	2.21
Neversink	41 50	74 39	1948-57	10			3.28
Neversink	41 50	74 39	1941-49	9	1.27	1.78	2.72
New Albion	42 17	78 53	1952-57	6			2.68
Newark	43 03	77 06	1942-57	16			2.10
New Berlin	42 37	75 20	1939-57	19			2.39
Newcomb	43 59	74 14	1940-57	18			2.75
New Kingston	42 12	74 41	1948-57	10			2.88
New London Lock 22	43 12	75 37	1942-57	16			2.59
Norfolk	44 48	75 00	1948-57	10			2.30
North Lake	43 32	74 57	1939-47*	8			2.99
Norwich 1 WNW	42 32	75 32	1907-57*	49			2.55
Oak Hill	42 24	74 09	1948-57	10			3.23
Oakland Valley 1 S	41 30	74 39	1938-57	20	1.18	1.99	3.07
Ogdensburg Hospital 3 NE	44 44	75 27	1895-57	63			2.14
Old Forge 2 SW	43 42	75 00	1948-57	10			2.44
Olean	42 05	78 27	1914-57*	37			2.40
Oneonta	42 27	75 04	1895-57*	61			2.71
Oneonta 3 SE	42 27	75 00	1948-57*	9			2.23
Orient 2 E	41 09	72 16	1942-57	16			3.26
Ossining Sing Sing	41 09	73 52	1941-57	17			3.84
Oswego Teachers College	43 27	76 32	1953-57	5			2.02
Oswego WB City	43 27	76 31	1907-52	46	.93	1.45	2.11
Otego	42 28	75 12	1940-49	10	1.06	1.92	2.41
Ovid	42 40	76 50	1942-57	16			2.48
Parishville 1 WNW	44 38	74 50	1948-57	10			2.23
Parkston	41 54	74 49	1948-57	10			3.46
Paul Smiths	44 26	74 15	1949-57	9			2.23
Peekamoose	41 56	74 23	1948-57	10			5.62
Penn Yan	42 39	77 04	1939-57	19			2.50
Peru 3 SW	44 34	73 34	1939-57	19			2.23
Phoenicia	42 05	74 19	1948-57	10			4.96
Piseco	43 27	74 31	1949-57	9			3.10
Plattsburgh	44 42	73 28	1946-57	12			2.23
Pleasantville	41 08	73 46	1948-57	10			3.58
Plymouth 2 SSE	42 36	75 35	1940-57	18	1.04	1.81	2.48
Port Henry	44 03	73 27	1948-57	10			2.63
Port Jervis	41 23	74 41	1897-56	60			3.26
Poughkeepsie	41 41	73 56	1939-57	19			2.95

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
NEW YORK (continued)							
Poughkeepsie CAA AP	41 38	73 53	1949-57	9			2.94
Poughkeepsie 1 N	41 43	73 56	1941-57	17	1.16	1.98	2.80
Prattsburg 2 NW	42 32	77 18	1948-57	10			2.74
Prattsville	42 19	74 26	1948-57	10			3.26
Prattsville	42 19	74 26	1942-57	16	1.02	1.90	2.82
Preston Hollow	42 26	74 12	1948-57	10			2.90
Pulaski	43 34	76 08	1948-57*	7			2.98
Raquette Lake	43 49	74 40	1939-51	13			2.56
Relay	42 19	74 38	1948-57	10			3.12
Richford	42 21	76 12	1940-53	14	.96	1.64	2.35
Rifton 1 N	41 51	74 03	1939-57	19			3.14
Rochester WB AP	43 07	77 40	1896-57*	57	1.03	1.58	2.13
Rockdale	42 23	75 24	1943-57	15			2.50
Rome Griffiss Field	43 14	75 25	1948-57	10			2.86
Roxbury	42 17	74 34	1939-57	19			2.57
Sabattis 3 NE	44 07	74 40	1939-57	19			2.20
Salamanca 2 NE	42 10	78 41	1938-57	20	1.08	1.78	2.60
Salem	43 10	73 20	1943-57	15			2.58
Salisbury	43 09	74 51	1939-57	19			2.66
Saranac Lake	44 19	74 07	1948-57	10			2.42
Saratoga Springs 4 NW	43 06	73 50	1942-51	10			2.69
Schaghticoke 1 W	42 54	73 36	1948-57	10			2.93
Schenectady	42 50	73 55	1951-57	7			2.78
Schenectady City	42 50	73 55	1943-50	8	1.27	1.75	2.53
Schroon Lake	43 51	73 46	1949-57	9			2.59
Schroon River	43 57	73 44	1948-57*	9			2.65
Schuylerville	43 06	73 35	1942-57	16	1.06	1.97	2.93
Schuylerville Lock 5	43 07	73 35	1948-57	10			3.54
Scio	42 10	77 59	1939-57	19			2.16
Scotia	42 49	73 59	1942-57	16			2.38
Seager	42 03	74 33	1948-57	10			3.71
Sharon Springs 1 N	42 48	74 36	1939-53	15			2.50
Sharon Springs 2 SW	42 47	74 40	1939-51	13			2.44
Sherburne	42 40	75 30	1939-57	19			2.39
Sherman	42 10	79 36	1952-57	6			2.83
Shokan Brown Station	41 57	74 13	1948-57	10			4.04
Shrub Oak	41 19	73 49	1950-57	8			4.58
Skaneateles	42 57	76 26	1895-57*	61			2.29
Slide Mountain	42 01	74 25	1948-57	10			5.51
Smiths Basin	43 22	73 30	1942-57	16			2.45
Smithville Flats	42 24	75 48	1940-57	18	1.01	1.64	2.31
Sodus 2 SSW	43 13	77 04	1939-57	19			2.22
South Edwards 1 E	44 16	75 12	1939-57	19			2.44
South New Berlin	42 32	75 26	1935-50*	15	1.05	1.66	2.37
South Wales Emery Park	42 43	78 36	1939-57	19			2.30
Sparkill	41 02	73 56	1940-50	11	1.31	2.55	3.18
Speculator	43 30	74 22	1949-57	9			2.39
Spencer	42 13	76 29	1945-57	13			3.11
Spencertown	42 20	73 33	1943-57	15			3.02
Spier Falls	43 14	73 45	1902-57	56			2.88
Spring Valley	41 07	74 03	1940-50	11	1.38	2.75	3.64
Sprite Creek	43 08	74 40	1948-57	10			2.36
Stafford	42 59	78 05	1939-57	19			2.16
Stamford	42 24	74 37	1948-57	10			2.94
Stewart Field	41 30	74 06	1948-57	10			3.29
Stewarts Landing	43 08	74 36	1948-57	10			2.75
Stillwater Reservoir	43 53	75 02	1939-57	19			2.54
Stillwater Reservoir	43 53	75 02	1940-57	18	1.01	1.68	2.59
Suffern Water Works	41 07	74 09	1941-57*	15			3.54
Sundown	41 53	74 28	1948-57	10			4.08
Syracuse WB AP	43 07	76 07	1903-57	55	1.15	1.76	2.46
Tannersville	42 11	74 10	1948-57	10			5.16
Terry Clove	42 08	74 54	1948-57	10			2.78
Theresa	44 13	75 47	1948-57	10			2.54
Thurston	42 12	77 20	1940-50*	10	.91	1.66	2.42
Ticonderoga	43 51	73 26	1941-57*	16			2.45
Ticonderoga WB AP	43 53	73 24	1940-48	9	.96	1.92	2.61
Titicus	41 20	73 39	1948-57	10			3.89
Trenton Falls	43 16	75 09	1939-57	19			3.26
Tribes Hill	42 57	74 17	1910-57	48			2.38
Tribes Hill	42 57	74 17	1942-57	16	.98	1.67	2.44
Troupsburg 4 NE	42 04	77 29	1948-57	10			2.75
Truxton	42 43	76 02	1948-57*	8			2.27
Truxton 4 N	42 46	76 02	1933-49	17	1.20	1.93	2.61
Truxton 5 N	42 47	76 02	1941-50	10	1.10	1.56	2.32
Tupper Lake Sunmount	44 14	74 27	1939-57	19			2.14
Unadilla	42 19	75 19	1943-57*	11			2.50
Utica CAA AP	43 09	75 23	1951-57	7			2.65
Utica Harbor Point	43 07	75 14	1939-48	10			2.81
Utica Southern Reservoir	43 05	75 14	1889-57*	40			2.41
Utica Southern Reservoir	43 05	75 14	1941-57	17	1.12	1.75	2.63
Valhalla 2 E	41 04	73 46	1948-57	10			3.82

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
NEW YORK (continued)							
Vestal	42 06	76 03	1942-56	15			2.48
Victor	42 59	77 25	1943-49*	5	.97	1.41	2.10
Walden 2 NE	41 34	74 10	1939-57	19			3.30
Wales	42 45	78 31	1940-50	11	1.14	1.66	2.14
Walton 5 NE	42 14	75 05	1946-55	10			2.94
Wanakena Ranger School	44 09	74 54	1910-57	48			2.26
Wanakena Ranger School	44 09	74 54	1942-57	16	.91	1.74	2.39
Wappinger Falls	41 37	73 53	1939-50	12			2.65
Warrensburg	43 30	73 46	1948-55	8			2.65
Warsaw 5 SW	42 41	78 12	1953-57	5			2.76
Warwick	41 16	74 22	1939-57	19			3.20
Waterloo	42 54	76 52	1942-57	16			2.63
Watertown	43 58	75 52	1893-57*	64			2.56
Watertown	43 58	75 52	1940-57	18	.98	1.76	2.54
Watertown CAA AP	44 00	76 01	1949-57	9			2.40
West Almond	42 18	77 53	1940-49	10	1.00	1.62	2.52
Westerlo	42 31	74 03	1948-57	10			2.80
Westfield 2 SW	42 17	79 37	1942-57	16			3.06
West Jasper	42 09	77 34	1940-57	18	1.01	1.61	2.30
West Kill	42 12	74 23	1948-57	10			3.40
West Point	41 23	73 57	1897-56*	53			3.18
West Shokan 3 SW	41 57	74 19	1948-57	10			5.28
Whippleville	44 49	74 16	1940-57	18	1.07	1.53	2.14
Whitehall	43 33	73 24	1939-57*	18			2.46
Whitehall	43 33	73 24	1942-57	16	1.06	1.79	2.58
White Plains AP	41 04	73 43	1948-57	10			4.03
White Pond	41 30	73 45	1948-57	10			4.19
Whitney Point	42 20	75 58	1939-57*	18			2.39
Whitney Point Dam	42 20	75 58	1944-50	7	1.04	1.61	2.45
Wilson 2 NE	43 19	78 47	1942-57	16			2.10
Windham North Settlement	42 21	74 17	1948-57	10			3.47
Windham 2 E	42 18	74 15	1948-57	10			3.59
Wiscoy	42 30	78 05	1940-57	18			2.54
Wolcott	43 14	76 49	1941-57	17			2.15
Woodland	41 01	73 51	1944-50	7	1.20	2.44	3.22
Yorktown Heights	41 16	73 46	1943-49	7			3.52
PENNSYLVANIA							
Allens Mills	41 12	78 55	1938-56	19	1.18	1.78	2.52
Ansonia 2 W	41 45	77 28	1939-46	8			2.11
Austinburg 2 W	42 00	77 32	1939-56	18	.90	1.51	2.21
Avoca CAA AP	41 21	75 44	1939-54	16			3.49
Barnes	41 40	79 02	1949-57	9			3.08
Berwick	41 04	76 15	1946-57	12			3.18
Blakeslee Corners	41 06	75 36	1938-50	13	1.48	2.73	3.94
Bradford Central Fire Station	41 57	78 39	1910-54*	24			2.30
Bradford 4 W Reservoir	41 57	78 44	1935-57	23			2.63
Brookville CAA AP	41 09	79 06	1899-57*	53			2.44
Canton 1 NW	41 40	76 52	1942-57	16			2.54
Canton 1 NW	41 40	76 52	1941-55	15	1.01	1.66	2.56
Carter Camp 2 W	41 37	77 45	1945-57	13			2.58
Carter Camp 2 W	41 37	77 45	1938-56	19	1.00	1.80	2.60
Cedar Run	41 31	77 27	1942-57	16			2.78
Clarion 3 SW	41 12	79 26	1902-57*	43			2.54
Clearfield	41 01	78 26	1908-56*	48			2.57
Cogan Station 2 N	41 21	77 06	1950-55	6			2.96
Corry	41 55	79 39	1917-57*	36			2.54
Coudersport 3 NW	41 49	78 03	1939-57*	18			2.86
Coudersport 7 E	41 46	77 53	1947-54*	7			2.41
Covington 2 WSW	41 44	77 07	1939-57	19			2.60
Curwensville WB AP	41 03	78 35	1943-51	9			2.50
Custer City 2 W	41 55	78 41	1948-57	10			2.42
Dingmans Ferry	41 13	74 52	1942-48	7			3.01
Dingmans Ferry	41 13	74 52	1938-56	19	1.29	2.38	3.40
Dixon	41 34	75 54	1949-57	9			2.64
Driftwood	41 20	78 08	1938-50	13	.98	1.74	2.60
Du Bois 7 E	41 06	78 38	1939-57*	15			2.59
Du Bois 7 E	41 06	78 38	1938-56	19	1.18	1.71	2.51
Dushore 3 NE	41 33	76 21	1949-57	9			2.84
Dushore 3 NE	41 33	76 21	1938-55	18	1.25	2.09	2.87
Eagles Mere	41 24	76 35	1942-57	16			3.17
Eagles Mere	41 24	76 35	1941-56*	15	1.40	2.26	3.24
Emporium	41 30	78 13	1938-50	13	1.07	1.79	2.72
Emporium 1 E	41 31	78 13	1888-56	69			2.40
English Center	41 26	77 17	1949-57	9			2.94
English Center	41 26	77 17	1938-50*	12	1.02	1.80	2.58
Equinunk 2	41 51	75 13	1946-57	12			3.35
Franklin	41 23	79 49	1897-56	60			2.34
Franklin	41 23	79 49	1938-50	13	1.21	1.75	2.28
Freeland	41 01	75 54	1914-57	44			3.46
Galeton	41 44	77 39	1939-57	19			2.62
Gifford	41 51	78 36	1948-57*	9			2.41
Glen Hazel 2 NE Dam	41 34	78 36	1943-54*	8			2.42

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
<u>PENNSYLVANIA</u> (continued)							
Gouldsboro	41 15	75 27	1914-57*	43			3.36
Hawley	41 29	75 10	1939-57	19			3.60
Hawley 1 S Dam	41 28	75 11	1948-57	10			4.09
Hawley 1 S Wallen Dam	41 28	75 11	1930-50*	19	.92	1.65	2.60
Hollisterville	41 23	75 26	1939-57	19			3.52
Honesdale 4 NW	41 37	75 19	1948-57	10			3.23
Honesdale 6 N Tanners Falls	41 39	75 17	1940-49*	9	1.14	2.46	3.42
Hop Bottom 2 SE	41 43	75 43	1945-57	13			2.34
Jackson Summit	41 57	77 01	1940-50	11	1.26	1.81	2.53
Kane 1 NNE	41 41	78 48	1932-57	26			2.58
Kane 1 NNE	41 41	78 48	1938-56	19	1.20	1.96	2.83
Karthaus	41 07	78 07	1942-57	16			2.45
Lafayette McKean Park	41 48	78 40	1948-55	8			2.28
Lakeville 1 NNE	41 27	75 16	1939-57*	18			3.84
Lawrenceville 2 S	41 59	77 07	1897-56	60			2.39
Le Roy	41 41	76 43	1948-57	10			2.64
Lewis Run 3 SE	41 50	78 39	1948-57	10			2.46
Lock Haven	41 08	77 27	1888-56*	66			2.61
Lock Haven 2	41 08	77 27	1937-50	14	1.22	1.98	2.80
Long Pond 2 W	41 03	75 30	1948-57	10			3.79
Marienville	41 28	79 07	1938-50	13	1.24	1.81	2.33
Matamoras	41 22	74 42	1914-57	44			2.98
Mayburg	41 36	79 13	1949-57	9			3.08
Medix Run	41 17	78 24	1949-57	9			2.38
Medix Run	41 17	78 24	1942-56	15	1.25	1.92	2.76
Milan 4 WNW	41 56	76 35	1940-56	17	1.28	1.78	2.49
Milanville	41 40	75 04	1946-57	12			3.07
Millville 2 SW	41 06	76 34	1949-57	9			2.24
Millville 2 SW	41 06	76 34	1938-56	19	1.06	1.90	2.63
Monroeton 2 S	41 42	76 28	1942-48	7			3.10
Montrose 1 E	41 50	75 51	1904-56*	52			2.64
Montrose 3 E Highway Shed	41 50	75 49	1938-50	13	1.02	1.91	2.84
Mountaintop AP	41 11	75 53	1942-46	5	1.64	2.64	3.43
Mount Pocono 2 N AP	41 09	75 22	1915-56*	40			3.80
Mount Pocono 2 N AP	41 08	75 22	1941-50*	9	1.30	2.57	4.08
Orwell 3 N	41 55	76 16	1943-57	15			2.33
Parker	41 05	79 41	1893-56	64			2.55
Parkers Landing	41 06	79 41	1939-51	13			2.47
Parkers Landing 1 E	41 06	79 41	1938-50	13	1.22	1.65	2.32
Paupack 2 WNW	41 24	75 14	1939-57*	14			4.19
Pecks Pond	41 17	75 06	1946-57	12			4.27
Pikes Creek	41 18	76 08	1951-57	7			2.95
Pikes Creek	41 18	76 08	1938-50	13	1.25	2.05	2.91
Pimple Hill	41 02	75 30	1950-57	8			4.25
Pleasant Mount 1 W	41 44	75 27	1948-57	10			2.63
Pleasant Mount 1 W	41 44	75 27	1938-56	19	1.17	2.01	3.07
Port Allegany	41 49	78 16	1943-51	9			2.34
Raymond	41 52	77 52	1938-50	13	1.18	2.03	2.86
Renovo	41 20	77 46	1896-56*	59			2.54
Renovo 6 S State Camp	41 14	77 46	1938-50	13	1.03	1.67	2.86
Retreat 1 SW	41 12	76 06	1939-53*	9			2.90
Rew	41 54	78 32	1948-57	10			2.30
Ridgway	41 26	78 44	1938-50	13	1.12	1.74	2.62
Ridgway 3 W	41 25	78 47	1893-56*	49			2.42
Rush	41 47	76 03	1943-57	15			2.45
Rushville	41 47	76 07	1949-57	9			2.22
Scandia 2 E	41 55	79 01	1942-56	15	1.33	2.25	2.92
Scranton WB AP	41 20	75 44	1901-57	57	1.21	2.01	2.83
Sheffield 6 W Cherry Grove	41 41	79 09	1938-50	13	1.27	1.92	2.72
Smethport Highway Shed	41 48	78 27	1938-56	19	1.07	1.92	2.70
Stump Creek	41 01	78 50	1948-57	10			2.58
Susquehanna	41 57	75 36	1939-57*	18			2.74
Tamarack 2 S Fire Tower	41 24	77 51	1942-57*	15			2.42
Tionesta 2 SE Dam	41 29	79 26	1942-57	16			2.69
Tionesta 2 SE Dam	41 29	79 26	1941-56	16	1.16	1.89	2.64
Titusville	41 38	79 40	1938-56	19	1.35	1.96	2.70
Titusville Water Works	41 38	79 42	1944-57	14			2.59
Towanda	41 46	76 26	1895-56	62			2.56
Towanda	41 46	76 26	1937-50	14	.95	1.83	2.68
Tunkhannock 1 S AP	41 32	75 57	1942-48	7	1.30	1.71	2.64
Union City	41 54	79 50	1939-57	19			2.65
Union City	41 54	79 50	1938-56	19	1.22	1.94	2.54
Warren	41 51	79 08	1893-56	64			2.56
Wellsboro 2 E	41 45	77 15	1940-50	11	1.07	1.73	2.46
Wellsboro 3 S	41 43	77 16	1888-56*	67			2.70
Wilkes-Barre	41 15	75 52	1890-56*	66			2.79
Williamsport	41 15	77 01	1895-49	55			2.95
Williamsport WB AP	41 15	76 55	1944-57	14			3.00
Williamsport WB AP	41 15	76 55	1938-56	19	1.30	2.09	2.96
Williamsport 4 SE	41 13	76 57	1942-48	7			2.89
Youngsville	41 51	79 19	1938-50	13	1.20	1.71	2.59

*Breaks in Record

Table 2-2, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	2-Year 1-Hour Rainfall (inches)	2-Year 6-Hour Rainfall (inches)	2-Year 24-Hour Precipitation (inches)
RHODE ISLAND							
Austin	41 36	71 39	1948-56	9			3.64
Block Island WB AP	41 10	71 35	1951-57	7	1.45	3.27	4.08
Block Island WB City	41 10	71 36	1903-48*	44	1.14	2.24	2.97
Fort Adams	41 28	71 20	1940-47	8	1.27	2.23	3.01
Greenville	41 53	71 34	1947-57	11			3.59
Kingston	41 29	71 32	1896-57	62			3.55
Newport Water Works	41 30	71 18	1950-57	8	1.12	2.04	3.01
Providence WB AP	41 44	71 26	1905-57	53	1.17	2.19	3.04
Woonsocket	41 59	71 29	1941-57*	15	1.05	2.32	3.05
VERMONT							
Barre	44 14	72 33	1948-57	10			2.11
Bellows Falls	43 08	72 27	1942-57	16			2.76
Bennington 2 NW	42 54	73 13	1941-57*	14			2.89
Bethel	43 50	72 38	1943-55	8			2.32
Bloomfield	44 46	71 36	1907-57	51			2.48
Bloomfield	44 46	71 36	1940-57	18	1.08	1.83	2.43
Burlington WB AP	44 28	73 09	1906-57*	51	1.00	1.37	2.30
Canaan	45 00	71 32	1943-57	10			2.00
Cavendish	43 23	72 35	1903-57	55			2.82
Chelsea	43 59	72 27	1896-57	62			2.47
Chittenden	43 41	72 57	1948-57	10			2.52
Corinth	44 02	72 17	1940-57	18	1.04	1.73	2.29
Cornwall	43 57	73 13	1896-57*	59			2.25
Dorset 1 S	43 14	73 06	1942-57	16			2.96
East Barnet	44 20	72 02	1942-57	16			2.47
Enosburg Falls	44 52	72 45	1896-57*	58			2.33
Essex Junction	44 30	73 07	1948-57	10			2.51
Gilman	44 25	71 43	1942-57	16			2.28
Grafton	43 11	72 37	1940-57	18	.99	1.81	2.64
Highgate Falls	44 56	73 03	1941-57	17	1.16	1.95	2.36
Lemington	44 54	71 31	1944-57*	13			2.34
Manchester Center	43 11	73 02	1942-57*	15	1.00	2.00	2.83
Marshfield	44 25	72 16	1948-57	10			2.14
Mays Mill	42 45	72 45	1942-57	16			3.17
McIndoe Falls	44 15	72 03	1944-57	14			2.69
Middlesex	44 18	72 40	1948-57	10			2.46
Morrisville	44 34	72 36	1942-57	16	.95	1.87	2.39
Newport	44 56	72 12	1939-57	19			2.42
Newport	44 56	72 12	1941-57	17	1.01	1.68	2.33
Northfield Norwich University	44 08	72 40	1896-57	62			2.41
Northfield Norwich University	44 08	72 40	1944-57	14	.89	1.60	2.44
Northfield WB City	44 08	72 40	1899-43*	43	1.00	1.61	2.42
Peru	43 14	72 54	1948-57	10			2.89
Plymouth Union	43 32	72 44	1948-57*	6			3.07
Randolph Center	43 57	72 36	1948-57*	7			2.51
Reading Hill	43 31	72 34	1948-57	10			3.00
Readsboro 1 SSE	42 45	73 02	1942-57	16			3.20
Rochester	43 52	72 48	1942-57	16			2.82
Rutland	43 37	72 58	1939-57	19			2.93
St. Albans Bay	44 48	73 10	1940-57	18			2.42
St. Johnsbury	44 25	72 00	1896-57	62			2.34
St. Johnsbury	44 25	72 00	1940-57	18	.89	1.76	2.37
Salisbury	43 54	73 06	1948-57	10			2.26
Searsburg Mountain	42 50	72 57	1942-57	16			3.50
Searsburg Station	42 52	72 55	1942-57	16			3.37
Searsburg Station	42 52	72 55	1942-57	16	1.02	2.14	3.41
Somerset	42 58	72 57	1912-57	46			3.30
South Londonderry	43 11	72 49	1948-57*	8			3.02
Springfield	43 16	72 27	1948-55*	7			2.88
Stockbridge	43 47	72 45	1940-57*	17	.87	1.65	2.60
Townshend	43 02	72 40	1948-56	9			2.95
Townshend	43 02	72 40	1941-56*	11	.78	1.88	2.84
Tyson	43 28	72 42	1940-57	18	1.11	1.97	2.79
Union Village Dam	43 48	72 16	1951-57	7	1.27	2.08	2.91
Vernon	42 46	72 31	1896-57*	44			2.90
Wardsboro	43 03	72 47	1948-57	10			3.53
Waterbury 3 NNW	44 22	72 46	1942-57	16			2.56
West Burke	44 38	71 58	1939-57	19			2.39
West Danville	44 24	72 09	1948-55	8			2.62
West Hartford	43 43	72 25	1942-57	16			2.63
Weston 2 S	43 17	72 48	1948-55*	7			3.17
West Topsham	44 08	72 18	1948-56*	7			2.59
White River Junction 1 N	43 39	72 19	1942-57	16			2.50
Whitingham 3 W	42 47	72 55	1941-57	17			3.53
Wilder	43 41	72 18	1942-57	16			2.38
Woodstock 3 ENE	43 38	72 28	1896-57	62			2.77

*Breaks in Record

Table 2 - 3. Station Data 100-Year 1-, 6-, and 24-Hour

STATION	Lat.	Long.	Period of Record	Length of Record (years)	100-Year 1-Hour Rainfall (inches)	100-Year 6-Hour Rainfall (inches)	100-Year 24-Hour Precipitation (inches)
CONNECTICUT							
Bloomfield	41 50	72 44	1941-57*	16	3.52	6.72	9.62
Bridgeport	41 12	73 12	1897-51*	47			7.20
Candlewood Lake	41 29	73 28	1941-57	17	2.52	5.00	7.77
Canton	41 50	72 50	1896-22	27			9.02
Colchester	41 34	72 17	1896-57*	57			6.07
Cream Hill	41 52	73 20	1897-57	61			6.18
Hartford	41 46	72 42	1941-57	17	2.47	6.00	8.97
Hartford WB AP	41 56	72 41	1905-57	53	2.67	4.57	8.54
Jewett City	41 38	71 54	1942-57	16	2.74	5.17	5.93
Moodus Reservoir	41 30	72 26	1940-57	18	2.08	4.97	6.50
New Haven WB AP	41 16	72 53	1905-57	53	2.60	4.73	7.17
Newington	41 42	72 44	1941-57	17	3.74	5.86	6.54
New London	41 21	72 06	1897-55*	57			6.25
Norfolk 2 SW	41 58	73 13	1941-57	17	2.74	6.82	12.90
Norwalk Gas Plant	41 07	73 25	1896-57*	55			8.05
Putnam	41 54	71 54	1940-57	18	2.51	5.66	6.52
Rockville	41 52	72 26	1942-57	16	2.45	7.09	9.86
Southington	41 35	72 51	1897-21	25			8.03
Storrs	41 48	72 15	1940-57	18	3.12	6.21	7.94
Waterbury	41 33	73 02	1896-53*	57			7.10
MAINE							
Caribou WB AP	46 52	68 01	1941-57	17	2.15	5.43	6.94
Eastport WB City	44 54	66 59	1896-52*	55	1.89	3.61	5.39
Farmington	44 40	70 09	1897-57*	60			5.58
Fort Kent	47 15	68 36	1941-57*	16	1.81	2.65	4.01
Gardiner	44 13	69 47	1896-57	62			6.02
Grand Lake Stream	45 11	67 48	1942-57	16	1.89	4.55	5.95
Greenville	45 27	69 35	1907-57	51			6.99
Greenville	45 27	69 35	1941-57	17	2.70	4.15	7.92
Houlton 1 NE	46 08	67 50	1902-57*	55			4.18
Houlton 1 NE	46 08	67 50	1942-57	16	1.94	4.68	6.69
Lewiston	44 06	70 14	1896-57	62			6.73
Madison	44 48	69 54	1905-57	53			5.03
Millinocket	45 39	68 42	1903-57	55			6.32
Millinocket	45 39	68 42	1941-57	17	3.02	4.68	6.15
North Bridgton	44 08	70 43	1896-53*	56			6.84
Portland WB AP	43 39	70 19	1897-57*	60	2.08	4.78	6.14
Presque Isle	46 39	68 00	1910-57*	46			4.97
Rockland 1 W	44 06	69 08	1941-57	17	2.67	6.59	7.97
Rumford 1 SSE	44 33	70 33	1900-57	58			6.49
Rumford 1 SSE	44 33	70 33	1941-57*	16	2.25	4.75	6.23
Skowhegan	44 46	69 43	1941-57	17	2.44	4.94	7.03
Southwest Harbor 3 SSE	44 14	68 18	1941-57	17	1.95	5.06	6.02
Swans Falls	44 02	70 59	1941-57	17	2.45	4.56	6.30
Winslow	44 33	69 38	1905-57*	52			6.48
MASSACHUSETTS							
Amherst	42 24	72 32	1896-39	44			6.75
Amherst	42 24	72 32	1940-57	18	2.87	3.70	6.82
Birch Hill Dam	42 38	72 07	1940-57	18	2.42	4.92	6.22
Blue Hill	42 13	71 07	1896-57	62			7.66
Blue Hill	42 13	71 07	1940-57	18	2.39	6.62	10.83
Boston WB AP	42 22	71 02	1896-57*	61	2.29	4.75	7.03
Cambridge	42 23	71 07	1940-57*	16	2.81	7.12	10.34
Clinton	42 24	71 41	1906-57	52			6.63
Fall River	41 42	71 10	1897-57	61			6.85
Fitchburg 2 S	42 34	71 46	1896-57	62			7.14
Framingham	42 17	71 25	1896-57*	53			7.37
Haverhill	42 46	71 04	1909-57*	45			6.31
Hyannis 3 NE	41 41	70 15	1896-57*	56			6.99
Hyannis 3 NE	41 41	70 15	1942-57	16	2.19	5.32	6.97
Knightville Dam	42 17	72 52	1940-57	18	2.66	4.97	9.73
Lowell	42 39	71 18	1898-57*	56			6.08
Nantucket WB AP	41 15	70 04	1897-57	58	2.30	4.41	5.71
New Bedford	41 39	70 55	1896-57*	55			6.42
New Bedford	41 39	70 55	1940-57	18	2.16	5.98	6.91
Plymouth	41 59	70 42	1905-57	53			6.77
Provincetown 3 N	42 04	70 13	1899-57*	51			8.01
Rockport 1 ESE	42 39	70 37	1902-57*	54			7.15
Rockport 1 ESE	42 39	70 37	1942-57	16	2.94	5.79	8.53
Springfield Armory	42 06	72 35	1900-57*	48			9.33
State Farm	41 57	70 57	1940-55	16	3.06	6.81	9.57
Taunton	41 54	71 04	1896-57*	44			6.95
Turners Falls	42 36	72 33	1903-57	55			5.87
Washington 2	42 22	73 09	1940-57	18	2.03	4.31	7.60
West Brimfield	42 10	72 16	1941-57*	15	2.17	6.85	13.32
Winchendon	42 42	72 03	1896-57*	46			7.34
Worcester	42 18	71 49	1896-57	62			7.33

*Breaks in Record

Table 2-3, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	100-Year 1-Hour Rainfall (inches)	100-Year 6-Hour Rainfall (inches)	100-Year 24-Hour Precipitation (inches)
NEW HAMPSHIRE							
Berlin	44 29	71 10	1898-57*	49			6.29
Bristol	43 36	71 43	1940-57	18	2.02	4.01	5.38
Concord WB AP	43 12	71 30	1905-57*	48	2.50	4.26	5.93
Durham	43 08	70 56	1896-57	62			7.35
Durham	43 08	70 56	1941-57	17	2.03	4.79	5.70
Errol	44 47	71 08	1941-57	17	2.41	3.62	4.63
Franklin 1 NW	43 27	71 40	1907-57	51			6.02
Hanover	43 42	72 17	1896-57	62			4.76
Hanover	43 42	72 17	1940-57	18	2.26	3.19	4.71
Hillsboro 2 W	43 07	71 57	1940-57	18	2.43	5.07	6.93
Keene	42 56	72 17	1896-57	62			4.65
Landaff	44 11	71 54	1940-57	18	2.43	3.37	4.51
Lincoln	44 03	71 40	1940-57*	17	2.36	3.82	5.79
Mount Washington	44 16	71 18	1940-57	18	2.37	4.39	6.53
New Durham	43 26	71 10	1941-57	17	2.14	5.35	6.36
Pittsburg Reservoir	45 03	71 23	1940-57	18	2.80	5.25	5.88
Plymouth 1 WNW	43 46	71 43	1896-57	62			5.17
Surry Mountain Dam	43 00	72 19	1941-57	17	1.77	3.51	5.07
Warren 1 SE	43 55	71 53	1941-57	17	2.88	6.79	7.64
Winchester	42 46	72 23	1940-57	18	2.46	4.30	6.02
NEW JERSEY							
Charlotteburg	41 03	74 26	1897-56	60			6.97
Culvers Lake	41 10	74 47	1902-53*	48			5.93
Layton 3 NW	41 15	74 51	1900-56*	56			6.95
Newton	41 03	74 45	1897-56*	57			7.40
Sussex 3 N	41 14	74 35	1901-56*	51			6.53
Wanaque Raymond Dam	41 03	74 18	1942-57	16	4.72	6.89	8.20
Woodcliff Lake	41 01	74 03	1940-57	18	2.66	4.67	6.32
NEW YORK							
Albany WB AP	42 45	73 48	1899-57	59	2.16	3.02	4.68
Alfred	42 15	77 47	1890-57*	56			5.64
Angelica	42 18	78 02	1889-57*	66			4.88
Bainbridge	42 18	75 29	1911-57*	46			5.18
Bedford Hills	41 14	73 43	1897-56*	59			6.84
Binghamton WB AP	42 13	75 59	1901-57*	56	2.57	3.51	4.98
Bolivar	42 03	78 11	1938-57	20	2.47	3.86	6.62
Brockport 2 NW	43 15	77 58	1904-57*	48			3.88
Buffalo WB AP	42 56	78 44	1898-57*	56	2.43	3.60	4.14
Canton	44 36	75 10	1890-57*	60			4.83
Canton WB City	44 35	75 10	1907-50*	41	2.57	3.82	4.70
Chazy 3 E	44 53	73 23	1904-57*	51			4.12
China	42 10	75 24	1935-50*	15	2.74	3.56	6.03
Conklingville Dam 1	43 19	73 56	1941-57	17	1.97	3.12	5.59
Cooperstown	42 42	74 55	1890-57*	67			5.32
Cortland	42 36	76 11	1892-57	66			6.73
Cutchogue	41 01	72 29	1899-56*	46			7.06
Dannemora	44 43	73 43	1906-57	52			3.90
Dunkirk	42 29	79 21	1941-57	17	2.36	4.21	5.19
Fredonia	42 26	79 22	1914-57	44			5.84
Geneva Experiment Station	42 53	77 00	1889-57*	49			4.92
Geneva Experiment Station	42 53	77 00	1940-57	18	2.80	3.27	4.33
Gloversville	43 03	74 21	1892-57	66			4.59
Haskinville	42 25	77 34	1896-57*	61			3.94
Hemlock	42 47	77 37	1904-57	54			5.08
Highmarket 1 SE	43 35	75 30	1940-57	18	2.20	3.75	4.80
Hornell Almond Dam	42 21	77 42	1940-57	18	2.02	3.09	4.26
Hudson 2	42 15	73 47	1941-57*	15	3.52	4.55	5.76
Hunts Corners	42 26	76 07	1940-57	18	2.62	3.35	5.13
Indian Lake 2 SW	43 45	74 17	1900-57	58			5.00
Indian Lake 2 SW	43 45	74 17	1942-57	16	2.06	4.31	5.79
Ithaca Cornell University	42 27	76 28	1889-57	69			5.38
Ithaca WB City	42 27	76 29	1911-42*	28	2.91	4.79	7.85
Jamestown	42 06	79 15	1938-57	20	2.37	4.60	5.33
Kingston	41 56	74 00	1941-57	17	3.00	4.11	6.44
Lake Placid Club	44 17	73 59	1898-57*	50			4.27
Lake Placid Club	44 17	73 59	1942-57	16	1.82	3.21	4.72
Little Falls City Reservoir	43 04	74 52	1897-57	61			4.80
Lockport 2 NE	43 11	78 39	1891-57*	64			4.54
Lowville	43 48	75 29	1890-57*	67			4.92
Marcellus SCS	42 59	76 23	1940-57	18	2.86	3.70	4.00
Mechanicville	42 53	73 41	1911-57	47			5.54
Millerton	41 57	73 31	1940-57	18	2.65	4.24	8.89
Mohonk Lake	41 46	74 09	1897-56*	57			6.64
Morrisville A. & T. Institute	42 54	75 39	1912-57*	45			4.79
Norwich 1 WNW	42 32	75 32	1907-57*	49			5.94
Oakland Valley 1 S	41 30	74 39	1938-57	20	2.89	4.63	7.86
Ogdensburg Hospital 3 NE	44 44	75 27	1895-57	63			4.07
Olean	42 05	78 27	1914-57*	37			5.51
Oneonta	42 27	75 04	1895-57*	61			6.14

*Breaks in Record

Table 2-3, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	100-Year 1-Hour Rainfall (inches)	100-Year 6-Hour Rainfall (inches)	100-Year 24-Hour Precipitation (inches)
NEW YORK (continued)							
Oswego WB City	43 27	76 31	1907-52	46	1.88	2.89	3.80
Plymouth 2 SSE	42 36	75 35	1940-57	18	2.41	3.73	5.76
Port Jervis	41 23	74 41	1897-56	60			7.68
Poughkeepsie 1 N	41 43	73 56	1941-57	17	2.62	4.53	7.14
Prattsville	42 19	74 26	1942-57	16	2.27	3.50	5.91
Rochester WB AP	43 07	77 40	1896-57*	57	2.52	3.62	4.23
Salamanca 2 NE	42 10	78 41	1938-57	20	2.61	3.72	5.10
Schuylerville	43 06	73 35	1942-57	16	2.83	5.81	7.18
Skaneateles	42 57	76 26	1895-57*	61			4.95
Smithville Flats	42 24	75 48	1940-57	18	1.67	2.91	4.45
South New Berlin	42 32	75 26	1935-50*	15	2.38	4.49	7.02
Spier Falls	43 14	73 45	1902-57	56			6.88
Stillwater Reservoir	43 53	75 02	1940-57	18	2.07	3.14	5.09
Syracuse WB AP	43 07	76 07	1903-57	55	2.73	4.25	4.94
Tribes Hill	42 57	74 17	1910-57	48			4.40
Tribes Hill	42 57	74 17	1942-57	16	1.79	3.26	4.43
Truxton 4 N	42 46	76 02	1933-49	17	2.50	4.45	5.32
Utica Southern Reservoir	43 05	75 14	1889-57*	40			5.18
Utica Southern Reservoir	43 05	75 14	1941-57	17	2.61	3.05	4.95
Wanakena Ranger School	44 09	74 54	1910-57	48			4.32
Wanakena Ranger School	44 09	74 54	1942-57	16	1.94	3.06	3.63
Watertown	43 58	75 52	1893-57*	64			5.39
Watertown	43 58	75 52	1940-57	18	2.64	6.01	6.74
West Jasper	42 09	77 34	1940-57	18	2.32	3.27	5.30
West Point	41 23	73 57	1897-56*	53			6.64
Whippleville	44 49	74 16	1940-57	18	2.80	2.81	3.77
Whitehall	43 33	73 24	1942-57	16	2.44	4.16	5.52
PENNSYLVANIA							
Allens Mills	41 12	78 55	1938-56	19	2.74	3.59	5.21
Austinburg 2 W	42 00	77 32	1939-56	18	1.72	2.84	5.00
Brookville CAA AP	41 09	79 06	1899-57*	53			4.07
Canton 1 NW	41 40	76 52	1941-55	15	2.06	3.07	4.39
Carter Camp 2 W	41 37	77 45	1938-56	19	2.32	4.33	5.99
Clarion 3 SW	41 12	79 26	1902-57*	43			5.00
Clearfield	41 01	78 26	1908-56*	48			4.83
Corry	41 55	79 39	1917-57*	36			5.05
Dingmans Ferry	41 13	74 52	1938-56	19	2.82	5.33	7.43
Du Bois 7 E	41 06	78 38	1938-56	19	2.18	3.40	4.64
Dushore 3 NE	41 33	76 21	1938-55	18	2.70	5.00	6.93
Eagles Mere	41 24	76 35	1941-56*	15	3.50	6.69	7.55
Emporium 1 E	41 31	78 13	1888-56	69			4.79
Franklin	41 23	79 49	1897-56	60			4.40
Freeland	41 01	75 54	1914-57	44			8.40
Gouldsboro	41 15	75 27	1914-57*	43			9.33
Hawley 1 S Wallen Dam	41 28	75 11	1930-50*	19	2.03	3.53	5.74
Kane 1 NNE	41 41	78 48	1932-57	26			5.54
Kane 1 NNE	41 41	78 48	1938-56	19	3.01	4.80	5.86
Lawrenceville 2 S	41 59	77 07	1897-56	60			5.01
Lock Haven	41 08	77 27	1888-56*	66			5.16
Matamoras	41 22	74 42	1914-57	44			7.13
Medix Run	41 17	78 24	1942-56	15	3.09	3.17	5.11
Milan 4 WNW	41 56	76 35	1940-56	17	2.74	3.91	4.95
Millville 2 SW	41 06	76 34	1938-56	19	2.68	5.06	6.18
Montrose 1 E	41 50	75 51	1904-56*	52			4.87
Mount Pocono 2 N AP	41 09	75 22	1915-56*	40			6.75
Parker	41 05	79 41	1893-56	64			5.17
Pleasant Mount 1 W	41 44	75 27	1938-56	19	2.45	4.46	6.37
Renovo	41 20	77 46	1896-56*	59			5.03
Ridgway 3 W	41 25	78 47	1893-56*	49			4.09
Scandia 2 E	41 55	79 01	1942-56	15	2.65	4.74	5.05
Scranton WB AP	41 20	75 44	1901-57	57	2.48	3.70	5.51
Smethport Highway Shed	41 48	78 27	1938-56	19	2.04	4.89	7.35
Tionesta 2 SE Dam	41 29	79 26	1941-56	16	2.59	4.72	5.40
Titusville	41 38	79 40	1938-56	19	2.66	4.56	5.54
Towanda	41 46	76 26	1895-56	62			4.43
Union City	41 54	79 50	1938-56	19	2.74	3.48	4.58
Warren	41 51	79 08	1893-56	64			5.06
Wellsboro 3 S	41 43	77 16	1888-56*	67			6.76
Wilkes-Barre	41 15	75 52	1890-56*	66			5.75
Williamsport	41 15	77 01	1895-49	55			6.02
Williamsport WB AP	41 15	76 55	1938-56	19	2.51	4.59	6.06
RHODE ISLAND							
Block Island WB City	41 10	71 36	1903-48*	44	2.31	4.28	5.43
Kingston	41 29	71 32	1896-57	62			7.62
Providence WB AP	41 44	71 26	1905-57	53	2.72	5.03	6.58
Woonsocket	41 59	71 29	1941-57	15	2.52	6.34	7.97
VERMONT							
Bloomfield	44 46	71 36	1907-57	51			5.82

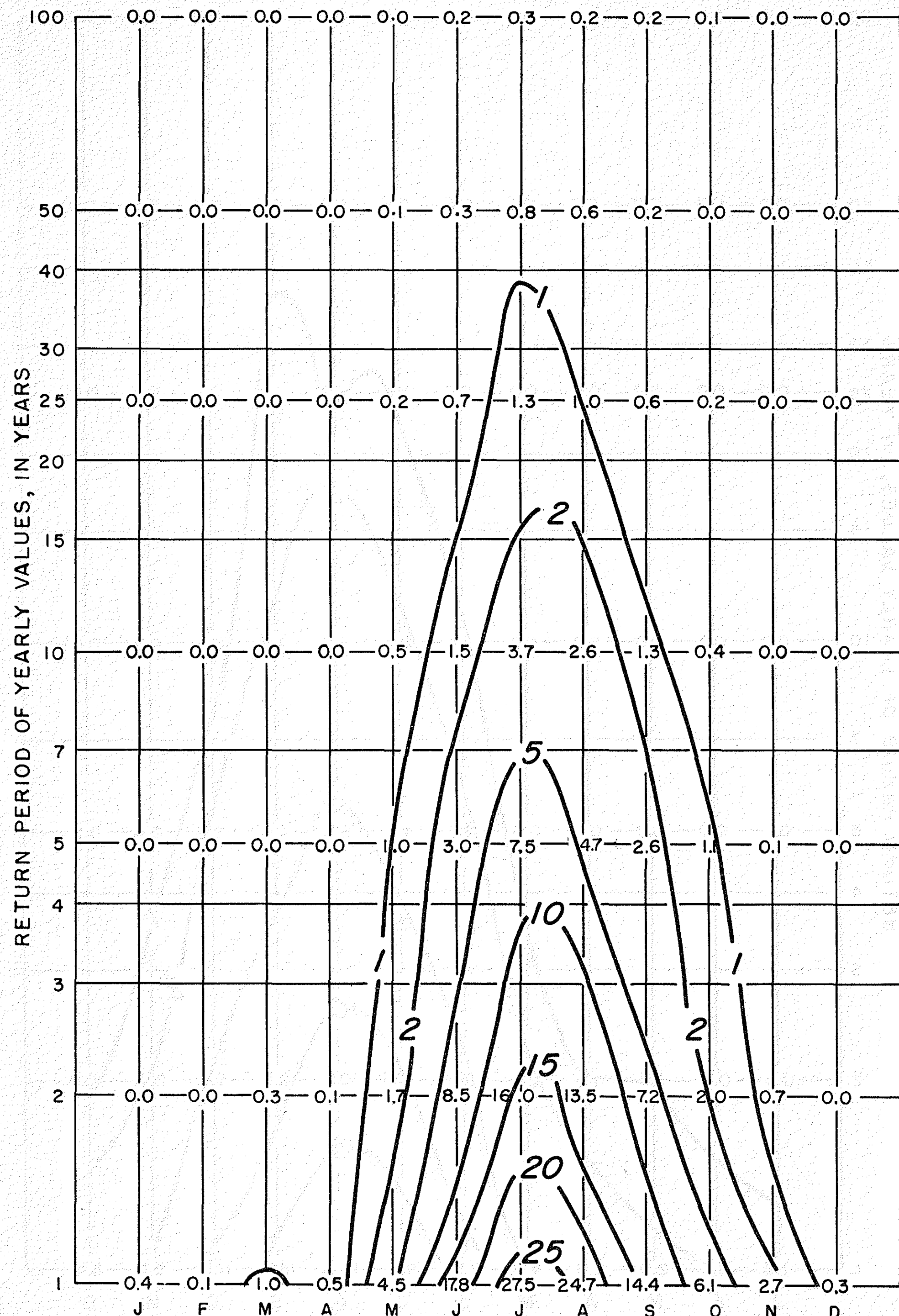
*Breaks in Record

Table 2-3, cont.

STATION	Lat.	Long.	Period of Record	Length of Record (years)	100-Year 1-Hour Rainfall (inches)	100-Year 6-Hour Rainfall (inches)	100-Year 24-Hour Precipitation (inches)
VERMONT (continued)							
Bloomfield	44 46	71 36	1940-57	18	2.44	3.77	4.44
Burlington WB AP	44 28	73 09	1906-57*	51	2.20	2.80	4.82
Cavendish	43 23	72 35	1903-57	55			5.33
Chelsea	43 59	72 27	1896-57	62			4.90
Corinth	44 02	72 17	1940-57	18	2.06	3.28	4.46
Cornwall	43 57	73 13	1896-57*	59			4.29
Enosburg Falls	44 52	72 45	1896-57*	58			4.41
Grafton	43 11	72 37	1940-57	18	1.63	3.16	4.90
Highgate Falls	44 56	73 03	1941-57	17	3.43	4.15	4.65
Manchester Center	43 11	73 02	1942-57*	15	2.37	4.78	5.81
Morrisville	44 34	72 36	1942-57	16	1.95	4.18	5.36
Newport	44 56	72 12	1941-57	17	2.05	3.54	4.96
Northfield Norwich University	44 08	72 40	1896-57	62			5.47
Northfield WB City	44 08	72 40	1899-43*	43	2.22	3.51	5.84
St. Johnsbury	44 25	72 00	1896-57	62			5.48
St. Johnsbury	44 25	72 00	1940-57	18	2.21	3.56	4.45
Searsburg Station	42 52	72 55	1942-57	16	2.10	3.99	6.09
Somerset	42 58	72 57	1912-57	46			8.32
Stockbridge	43 47	72 45	1940-57*	17	1.68	3.17	5.20
Tyson	43 28	72 42	1940-57	18	2.57	4.39	5.27
Vernon	42 46	72 31	1896-57*	44			5.47
Woodstock 3 ENE	43 38	72 28	1896-57	62			5.08

*Breaks in Record

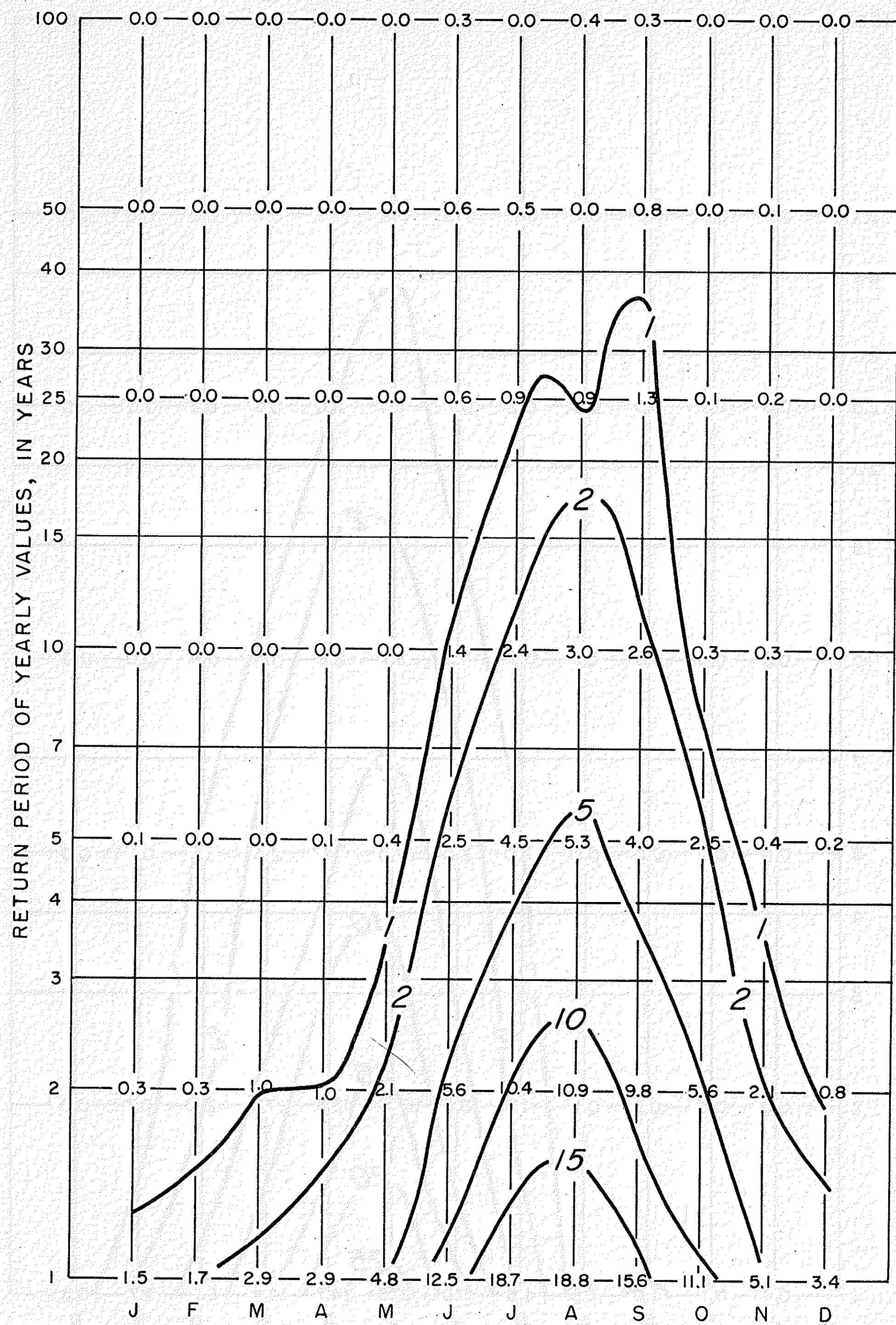
SEASONAL PROBABILITY OF INTENSE RAINFALL
1-HOUR DURATION



Probability in percent of obtaining a rainfall in any month of a particular year equal to or exceeding the yearly return period values taken from the isopluvial maps and diagrams.

Figure 2-8

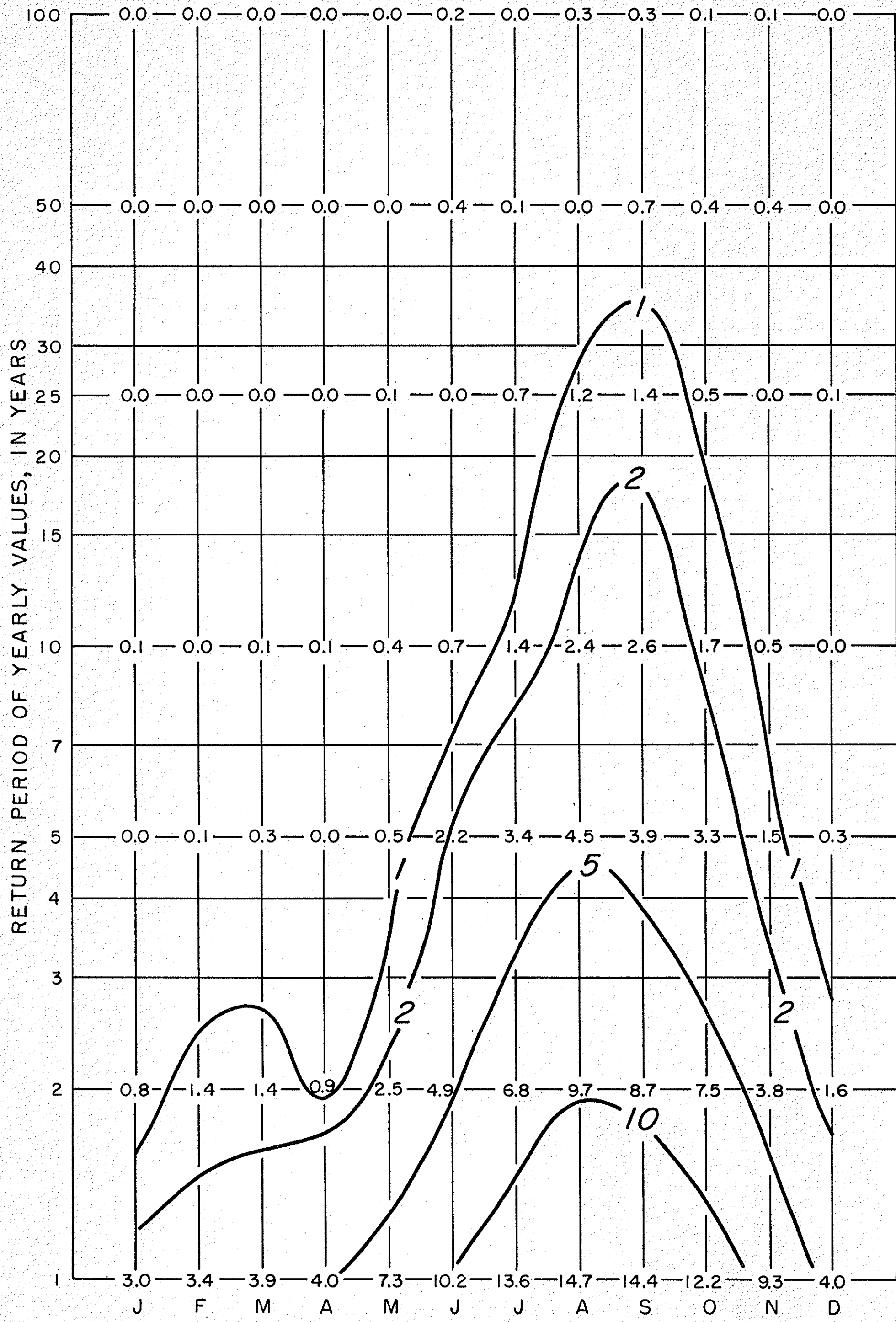
SEASONAL PROBABILITY OF INTENSE RAINFALL
6-HOUR DURATION



Probability in percent of obtaining a rainfall in any month of a particular year equal to or exceeding the yearly return period values taken from the isopluvial maps and diagrams.

Figure 2-9

SEASONAL PROBABILITY OF INTENSE PRECIPITATION
24-HOUR DURATION



Probability in percent of obtaining a precipitation in any month of a particular year equal to or exceeding the yearly return period values taken from the isopluvial maps and diagrams.

Figure 2-10

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