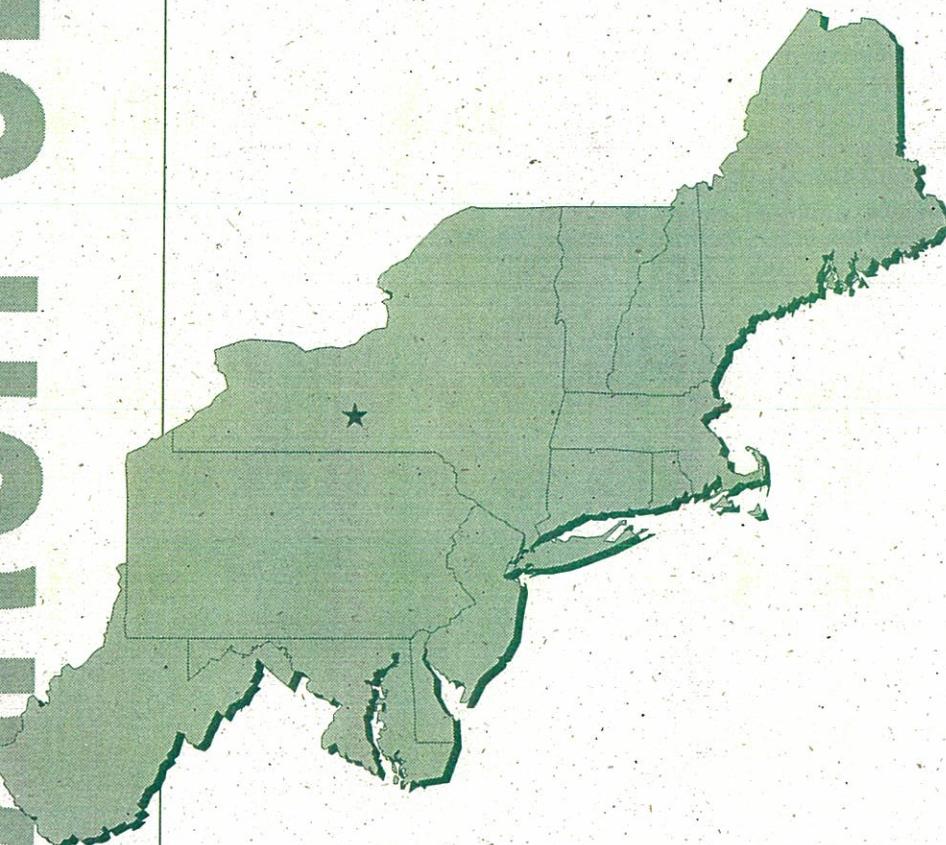


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NORTHEAST REGIONAL CLIMATE CENTER

Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada

Daniel S. Wilks
Richard P. Cember



Cornell University
Ithaca, New York
Publication No. RR 93-5
September 1993

The mission of the Northeast Regional Climate Center (NRCC) is to facilitate and enhance the collection, dissemination and use of climate data as well as to monitor and assess climatic conditions and impacts in the twelve-state, northeastern region of the United States. Implementing this mission involves three programmatic objectives: 1) the development and management of regional climate data bases, 2) the dissemination of information and educational services regarding climate and its impacts, and 3) the performance and support of applied climate research.

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INTRODUCTION

Extreme precipitation events have the potential to produce localized or widespread flooding, with concomitant damage to property and potential loss of life. The climatology of these very large precipitation events is therefore an important component of engineering design for structures and facilities that must withstand or protect against such events.

The most widely used atlas of precipitation extremes in the U.S., *Rainfall Frequency Atlas of the United States* (Hershfield 1961), also known as Technical Paper 40, is now more than thirty years old. This standard work was based on fitting the Gumbel probability distribution to extreme rainfall data from relatively few stations, with average record length of only 22.6 years. Operationally, it has been found that Technical Paper 40 often underestimates the largest extreme precipitation events (Angel and Huff 1991). It is not clear to what extent this systematic underestimation results from inadequacy of the Gumbel distribution for extrapolation to the important rare events (Jenkinson 1955), or from the insufficient length of record available in 1961. However, it is widely agreed that updating and revision of that document is warranted.

This atlas presents updated statistics of extreme precipitation for the 12-state region designated as the northeastern states for purposes of the Regional Climate Centers program of the National Weather Service, National Oceanic and Atmospheric Administration. These states are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and West Virginia. Data from the states of Ohio, Kentucky, Michigan and Virginia, as well as from the Canadian provinces of Ontario, Quebec, and New Brunswick, have also been included in this project to complete the representation of the mapped fields within the map rectangle encompassing the northeastern U.S.

USING THE ATLAS

The maps in this atlas express extreme precipitation amounts using isohyets corresponding to "average return periods" for 1-day, 2-day, 5-day, and 10-day precipitation totals. That is, it is estimated that precipitation events as large or larger than the magnitudes shown on the maps will be separated, on average, by the number of years given by the return period. It is important to realize that the actual times between two precipitation events of a particular magnitude are not expected to correspond exactly to the return period. Rather, over the course of centuries, the average of the separation times between pairs of these events should be close to the specified return period. Thus the "hundred-year storm," or precipitation amount corresponding to the one hundred year return period, might not occur in a given century, but could occur more than once in some other century. In a hypothetical average over many centuries, however, one would expect about as many occurrences of the hundred-year event at a given location as the number of centuries being averaged.

The data records for most of the stations on which this atlas is based are shorter than one hundred years. This fact implies that the precipitation estimates for the one hundred year return period have been extrapolated beyond the observed data. These extrapolations have been achieved by fitting a theoretical probability function to the observed extreme precipitation data at each station. Precipitation amounts corresponding to shorter (i.e., not necessarily extrapolated) return periods have also been computed using the fitted probability functions, in order to smooth out sampling irregularities in the observed data. The extreme amounts corresponding to particular return periods are computed using equations, given below in the "Technical Details" section, relating probabilities of rare events to the average return periods.

In all cases, the observed data have been represented using the Beta-P distribution (Mielke and Johnson 1974), which was found in exploratory work to give the best results among many candidate distributions for extreme precipitation data in the northeastern U.S. (Wilks 1993). For all stations used to construct the atlas, the underlying data consist of once-daily precipitation measurements. Of the many daily precipitation observations actually available for each station, Beta-P distributions were fit only to the "partial-duration" data, with sample sizes approximately equal to the number of years in each station's data record. That is, the n largest precipitation amounts observed at each station were used, where n equals approximately the number of years of precipitation data available for that station.

Separate maps are presented for 1-day, 2-day, 5-day, and 10-day precipitation accumulations. For the 1-day maps, the once-daily observations appearing in the climatological records for each station were used directly. For the remaining maps, the daily observations were totaled over pairs, sequences of five, and sequences of ten days, respectively. When constructing the partial-duration data for the 2-day, 5-day and 10-day accumulations, care was taken to exclude any overlapping sequences from the analysis. That is, the precipitation observation for any single day can be included in at most one of the sequences making up the partial-duration data for a given accumulation period. When constructing the data for the 2-day accumulation, for example, a day on which a very large precipitation amount was received would make up a pair with either the preceding day or the following day, whichever had the larger precipitation observation. The analysis would not produce two precipitation amounts in the partial duration data that both included a day in common.

Precipitation is routinely observed at a fixed time each day at a given location, which results in a somewhat arbitrary division of time into 24-hour slices. When an important storm is in progress at the scheduled daily observation time, that precipitation will be reported to have occurred over two (or possibly more) days. Many users will find it more meaningful to think in terms of 24-, 48-, 120- and 240-hour precipitation events, rather than the 1-, 2-, 5-, and 10-day accumulations directly available from the climatological record and reported here. One might like to know, for example, the 100-year precipitation for the wettest consecutive 24 hours, regardless of when those hours happened to occur in relation to the standard observation time.

While it is not possible to determine exactly the relationship between, say, the wettest 24 hours and the wettest 1-day precipitation observation for a given storm on the basis of the available daily data, the average relationship can be estimated using the empirical factors given in Table 1, taken from Hershfield (1961). It is important to realize that these empirical factors have *not* been incorporated into the maps in this atlas, in order that the maps reflect only results for the data as observed. The conversion factors in Table 1 are provided for those users who may require estimates of the larger precipitation accumulations that would have been reported if the

Table 1. Empirical adjustment factors that can be used to transform precipitation amounts pertaining to calendar day observations, to estimates of maximum precipitation regardless of observation time. From Hershfield (1961).

To convert from precipitation <u>over this many days</u>	To maximum precipitation <u>over this many hours</u>	<u>Multiply by</u>
1	24	1.13
2	48	1.05
5	120	1.01
10	240	1.01

Table 2. Empirical adjustment factors that can be used to transform precipitation amounts pertaining to 24-hour accumulations to estimates of precipitation for shorter time periods. From Huff and Angel (1992).

To estimate maximum precipitation over	Multiply the precipitation amount from the 1-day maps by
18 hours	1.06
12 hours	0.98
6 hours	0.85
3 hours	0.72
2 hours	0.66
1 hour	0.53
30 minutes	0.42
15 minutes	0.31
10 minutes	0.24
5 minutes	0.14

observations were not constrained to occur at fixed times. Notice that these empirical conversion factors decrease quite sharply for the longer accumulation periods, indicating that a substantial fraction of the precipitation in the wettest 24 hours is expected on average to be distributed over a second daily observation, but that the 5- and 10-day periods are long enough that there is usually very little difference between calendar-day observations and arbitrarily located observation windows of the same lengths.

Similarly, many users will require estimates of extreme precipitation amounts occurring over periods shorter than 24 hours. While these can not be obtained directly from daily observations, they can be estimated using the empirical adjustment factors given in Table 2. These factors have been taken from Huff and Angel (1992), and correspond closely to those given in Hershfield (1961).

Example: Suppose the 100-year, 1-day precipitation for a location of interest, from Map 6, is 5.00 inches. The corresponding 100-year 24-hour precipitation (i.e., the estimated 24-hour, hundred-year precipitation regardless of the observation time) would be obtained by multiplying by the factor 1.13 from Table 1, yielding $5.00 \times 1.13 = 5.65$ inches. The estimated 100-year event for a 1-hour precipitation accumulation at this same location would be obtained, using Table 2, as $5.00 \times 0.53 = 2.65$ inches.

Finally, it should be realized that the maps in this atlas are likely to exhibit a bias in regions containing large topographic variations. This is because the places where the precipitation measurements have been made tend to be locations where people live and work, which are generally valley locations in preference to those at higher elevations. Cember and Wilks (1993) found that the existing station locations effectively underestimate average elevations in mountainous areas of the northeastern U.S. by about 500 feet.

Therefore, the mapped quantities in this atlas should accurately reflect climatological conditions at locations typical of the observing stations, but should be expected to underestimate extreme precipitation amounts at elevations substantially above the local settlements.

THE UNDERLYING DATA

This atlas has been prepared using daily precipitation data for the 1473 stations listed in Table 3. These data were obtained from the archives of the Northeast Regional Climate Center (Ithaca, New York), the National Climatic Data Center (Asheville, North Carolina), and the Canadian Climate Centre (Downsview, Ontario). The locations of most of the stations listed in Table 3 are shown in Figure 1, on the same base map used to represent the precipitation extremes in this atlas. Those stations not shown in Figure 1 were included in the analysis to improve the representation at the edges of the maps. They are located within about 1° of longitude of the map rectangle to the east and west, within about 2° of latitude to the north, and extend to the southern borders of Virginia and Kentucky to the south.

Data from climatological stations within the domain of this atlas were included only if they contained at least 30 years of record. That is, a station was included only if at least 10,958 daily observations passing quality-control screening existed in its record. The average record length of included stations was 51.3 years, with more than 100 years being available at a few stations. The maps have been constructed in a way that gives more weight in the spatial analysis to stations with longer data records.

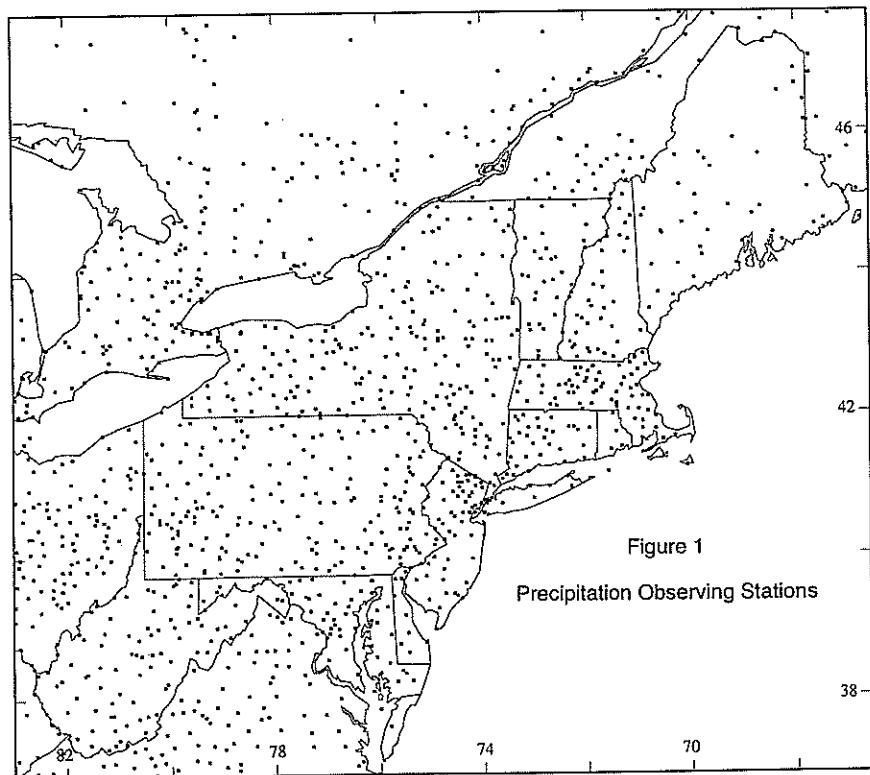


Figure 1
Precipitation Observing Stations

TECHNICAL DETAILS

The Beta-P Distribution and Computation of Return Periods. Smoothing and extrapolation of the observed extreme precipitation data for all stations was done by fitting the Beta-P distribution (Mielke and Johnson, 1974). The probability density function for this distribution is

$$f(x) = \frac{\alpha\theta}{\beta} \left(\frac{x}{\beta}\right)^{\theta-1} \left[1 + \left(\frac{x}{\beta}\right)^{\theta}\right]^{-(\alpha+1)}, \quad (1)$$

where x is the random variable (here, partial-duration precipitation amounts), which must be nonnegative. The distribution has three parameters: α and θ are dimensionless shape parameters, and β is a scale parameter having the same physical units as the random variable. The three parameters are constrained to be positive. The distributions were fit to data for each station by maximum likelihood, using the Levenberg-Marquardt method (Press et al. 1986), as described in Wilks (1993). One convenient feature of the Beta-P distribution is that it is analytically integrable, so that its cumulative distribution function can be written in closed form. That is, Beta-P probabilities can be obtained using

$$F(x) = \Pr\{X \leq x\} = \int_0^x f(x) dx = 1 - \left[1 + \left(\frac{x}{\beta}\right)^{\theta}\right]^{-\alpha}. \quad (2)$$

Average return periods, R , relate to cumulative probabilities, F , of the distributions of partial-duration data according to

$$R = \frac{1}{\omega [1 - F(x)]}, \quad (3)$$

where ω is the average frequency with which the partial-duration data samples the full record of daily observations, in years⁻¹. For the present analysis, the average sampling frequency was chosen to be close to 1 yr⁻¹, but because individual data records may start and stop on different dates and may contain different numbers of missing data, ω varies slightly from station to station. Let N represent the number of daily observations passing the quality control screening that are available for a particular station. The partial-duration data were then constructed to consist of the largest n precipitation accumulations, where n is the greatest integer not exceeding $N/365.25$. This convention results in the average sampling frequency being

$$\omega = \frac{365.25 n}{N} \text{ yr}^{-1}. \quad (4)$$

Precipitation amounts, x , corresponding to specified return periods are obtained by inverting Equation 2 (i.e., solving it for x), and substituting the expression $F(x) = 1 - 1/\omega R$ obtained by rearrangement of Equation 3. These operations yield the expression for precipitation amounts as a function of return period, and of the parameters of the fitted Beta-P distribution,

$$x = \beta [(\omega R)^{1/\alpha} - 1]^{1/\theta}. \quad (5)$$

Quality Control Procedure. Quality control of extreme precipitation amounts is difficult, owing to the high spatial and temporal variability of this quantity. Daily amounts larger than 5 inches were screened here for coherence with nearby locations. To be considered valid, precipitation amounts of 10 inches or more had to be corroborated by occurrence of at least 5 inches of precipitation at each of at least two

stations within 200 miles on the same day, the previous day, or the following day. Precipitation amounts between 5 inches and 10 inches were considered valid if corroborated by at least two stations within 200 miles reporting at least 3 inches of precipitation on the same day, the previous day, or the following day.

In the data-sparse regions of the northwestern and northeastern corners of the domain, these criteria were relaxed to allow corroboration if only one station within the 200 mile radius reported a large precipitation amount as specified above. Early in the climatological record, the station density is too sparse to allow spatial comparison of precipitation amounts in this way. The quality control procedure was implemented beginning in 1927 for stations in the U.S., in 1871 for stations in Ontario, in 1883 for stations in Quebec, and in 1891 for stations in New Brunswick. All reasonable data values for records preceding these dates have been accepted into the analysis.

Interpolation, Gridding, Smoothing and Contouring. This atlas has been prepared by first gridding individual station values, and then producing the contour maps from the gridded fields by automated means.

Precipitation amounts corresponding to the specified return periods were cast into a 54 x 82 (latitude x longitude) grid, with points spaced at 0.2° intervals. This grid is confined to the map rectangle, but stations outside the rectangle were also used to improve the representation at the map edge, as noted above. The gridding algorithm finds the smallest circle around each gridpoint that encloses at least two stations, where the circle radius is an integer multiple of 0.2 great circle degrees. If the circle has a radius of 1.4° or less, the grid point is assigned a weighted average of the station values enclosed. Otherwise, the grid point is assigned a missing value code.

Each grid point value is computed as

$$z_g(\lambda_g, \phi_g) = \frac{\sum_{i=1}^I w_i(\lambda_g, \phi_g, \lambda_i, \phi_i) z_i(\lambda_i, \phi_i)}{\sum_{i=1}^I w_i(\lambda_g, \phi_g, \lambda_i, \phi_i)}, \quad (6)$$

where w_i is a modified McLain (1974) weighting function

$$w_i(\lambda_g, \phi_g, \lambda_i, \phi_i) = \frac{\sqrt{N_i} \exp\left[-\frac{\cos^2 \phi_0 (\lambda_g - \lambda_i)^2 + (\phi_g - \phi_i)^2}{d_{\text{scale}}^2}\right]}{f + \frac{\cos^2 \phi_0 (\lambda_g - \lambda_i)^2 + (\phi_g - \phi_i)^2}{d_{\text{scale}}^2}}. \quad (7)$$

Here z represents precipitation amount, λ is longitude, ϕ is latitude, the subscript g refers to the grid point, the subscript i distinguishes among the I individual stations within each circle, and N_i is the sample size of the precipitation data at station i . The parameter $d_{\text{scale}} = 1.2^\circ$ is a scaling distance, $\phi_0 = 42.45^\circ$ is a reference latitude, and $f = 10^{-6}$ is a small constant used to prevent division by zero.

The gridded fields were smoothed using the moving average in a 3 x 3 cell window, i.e., by an unweighted averaging of each grid point with its eight adjacent neighbors. These smoothed gridded values were contoured and plotted using the NCAR Graphics software package, version 3.00 (Clare and Kennison 1989).

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REFERENCES

- Angel, J.R., and F.A. Huff, 1991. Development of new rainfall frequency relations for nine midwestern states. *Preprints, 7th Conference on Applied Climatology*, Salt Lake City. American Meteorological Society, Boston, MA, 131-135.
- Cember, R.P., and D.S. Wilks, 1993. *Climatological Atlas of Snowfall and Snow Depth for the Northeastern United States and Southeastern Canada*. Northeast Regional Climate Center Research Publication RR 93-1. 216 pp.
- Clare, F., and D. Kennison, 1989. *NCAR Graphics Guide to New Utilities Version 3.00*. National Center for Atmospheric Research, Boulder CO.
- Hershfield, D.M., 1961. *Rainfall Frequency Atlas of the United States*. U.S. Department of Commerce, Weather Bureau Technical Paper 40, 115 pp.
- Huff, F.A., and J.R. Angel, 1992. *Rainfall Frequency Atlas of the Midwest*. Illinois State Water Survey, Champaign IL, Bulletin 71, 141 pp.
- Jenkinson, A.F., 1955. The frequency distribution of the annual maximum (or minimum) values of meteorological elements. *Quarterly Journal of the Royal Meteorological Society*, 81, 158-169.
- McLain, D.H., 1974. Drawing contours from arbitrary data points. *ComputerJournal*, 17, 318-324.
- Mielke, P.W., Jr., and E.S. Johnson, 1974. Some generalized beta distributions of the second kind having desirable application features in hydrology and meteorology. *Water Resources Research*, 10, 223-226.
- Press, W.H., B.P. Flannery, S.A. Teukolsky, and W.T. Vettering, 1986. *Numerical Recipes: The Art of Scientific Computing*. Cambridge University Press, 818 pp.
- Wilks, D.S., 1993. Comparison of 3-parameter probability distributions for representing annual extreme and partial-duration precipitation series. *Water Resources Research*, 29, 3543-3549.

Table 3. List of stations used, their locations, and digitally available periods of record.

Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends	Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends						
CONNECTICUT																	
060299	BARKHAMSTED	41.92	72.95	1948	1993	174566	LEWISTON	44.10	70.22	1926	1993						
060806	BRIDGEPORT WSO AP	41.17	73.13	1948	1993	174781	LONG FALLS DAM	45.22	70.20	1953	1993						
060918	BROOKLYN	41.78	71.95	1950	1983	174878	MACHIAS	44.72	67.47	1948	1993						
060961	BULLS BRIDGE DAM	41.65	73.48	1948	1993	174927	MADISON	44.80	69.88	1948	1993						
060973	BURLINGTON	41.80	72.93	1937	1993	175261	MIDDLE DAM	44.78	70.92	1948	1993						
061488	COCKAPONSET RANGER STN	41.47	72.52	1948	1993	175304	MILLINOCKET	45.65	68.70	1948	1993						
061689	COVENTRY	41.80	72.35	1957	1992	175460	MOOSEHEAD	45.58	69.72	1948	1993						
061715	CREAM HILL	41.90	73.32	1926	1972	176430	ORONO	44.90	68.67	1948	1993						
061762	DANBURY	41.38	73.47	1948	1993	176905	PORTLAND WSMO AP	43.65	70.32	1920	1993						
062658	FALLS VILLAGE	41.95	73.37	1948	1993	176937	PRESQUE ISLE	46.65	68.00	1926	1993						
063207	GROTON	41.35	72.05	1948	1993	177174	RIPONGENUS DAM	45.88	69.18	1948	1993						
063451	HARTFORD BRAINARD FLD	41.73	72.65	1920	1993	177250	ROCKLAND	44.10	69.12	1937	1976						
063456	HARTFORD WSO AP	41.93	72.68	1954	1993	177325	RUMFORD 1 SSE	44.53	70.53	1948	1993						
064488	MANSFIELD HOLLOW LAKE	41.75	72.18	1952	1993	177330	RUMFORD	44.55	70.55	1926	1959						
064767	MIDDLETOWN 4 W	41.55	72.72	1948	1993	177479	SANFORD 2 NNW	43.47	70.78	1953	1993						
065077	MOUNT CARMEL	41.40	72.90	1936	1993	178398	SQUA PAN DAM	46.55	68.35	1948	1993						
065445	NORFOLK 2 SW	41.97	73.22	1942	1993	178942	UPPER DAM	44.87	70.87	1948	1993						
065893	NORWALK GAS PLANT	41.12	73.42	1956	1989	179151	WATERVILLE PUMP STN	44.55	69.65	1958	1993						
065910	NORWICH PUB UTIL PLANT	41.55	72.07	1956	1993	179314	WEST BUXTON 2 NNW	43.70	70.62	1953	1993						
066655	PUTNAM LAKE	41.08	73.63	1948	1993												
066966	ROCKY RIVER DAM	41.58	73.43	1948	1993												
067002	ROUND POND	41.30	73.53	1948	1993												
067157	SAUGATUCK RESERVOIR	41.25	73.35	1948	1993												
067373	SHEPAUC DAM	41.72	73.30	1948	1993												
067432	SHUTTLE MEADOW RESVR	41.65	72.82	1948	1993												
067970	STAMFORD 5 N	41.13	73.55	1955	1993												
068065	STEVENSON DAM	41.38	73.17	1948	1993												
068138	STORRS	41.80	72.25	1888	1993												
068436	TORRINGTON	41.80	73.12	1948	1993												
068911	WATERBURY CITY HALL	41.57	73.03	1926	1958												
069067	WESTBROOK	41.30	72.43	1940	1978												
069162	WEST HARTFORD	41.75	72.78	1948	1993												
069568	WIGWAM RESERVOIR	41.68	73.15	1948	1993												
DELAWARE																	
071330	BRIDGEVILLE 1 NW	38.75	75.62	1948	1985	180015	ABERDEEN PHILLIPS FLD	39.47	76.17	1948	1993						
072730	DOVER	39.15	75.52	1948	1993	180193	ANNAPOLIS POLICE BRKS	38.98	76.50	1951	1993						
073570	GEORGETOWN 5 SW	38.63	75.45	1948	1993	180465	BALTIMORE WSO AP	39.18	76.67	1948	1993						
075320	LEWES	38.77	75.13	1948	1993	180470	BALTIMORE WSO CI	39.28	76.62	1893	1993						
075852	MIDDLETOWN 1 WSW	39.43	75.75	1952	1988	180700	BELTSVILLE	39.03	76.88	1948	1993						
075915	MILFORD 2 WSW	38.90	75.47	1948	1991	180732	BENSON POLICE BARRACKS	39.50	76.38	1948	1993						
076410	NEWARK UNIV FARM	39.67	75.73	1948	1993	181032	BOYDS 2 NW	39.22	77.33	1953	1991						
079595	WILMINGTON WSO AP	39.67	75.60	1948	1993	181125	BRIGHTON DAM	39.20	77.02	1948	1991						
079605	WILMINGTON PORTER RESVR	39.77	75.53	1948	1993	181385	CAMBRIDGE WTR TRMT PLT	38.57	76.07	1948	1992						
KENTUCKY																	
150254	ASHLAND	38.45	82.62	1932	1991	181627	CENTREVILLE	39.67	77.55	1948	1993						
150381	BARBOURVILLE	36.87	83.88	1948	1991	182096	EMMITSBURG 2 SE	39.68	77.30	1956	1993						
150450	BAXTER	36.85	83.33	1948	1991	183348	FREDERICK POLICE BRKS	39.42	77.43	1948	1993						
151120	BURDINE 2 NE	37.22	82.58	1952	1991	183555	FREDERICK 3 E	39.40	77.37	1948	1990						
151576	CLAY CITY WATER WORKS	37.87	83.93	1955	1991	183675	GLENN DALE BELL STN	38.97	76.80	1948	1993						
152791	FARMERS 2 S	38.12	83.55	1932	1991	183975	HAGERSTOWN	39.65	77.73	1948	1993						
152903	FLEMINGSBURG	38.42	83.73	1948	1991	184030	HANCOCK FRUIT LAB	39.70	78.18	1948	1993						
153046	FREEBIRD 2 SW	37.55	82.17	1951	1987	184780	KEEDYSVILLE	39.48	77.70	1923	1960						
153052	FRENCHBURG 2 W	37.95	83.67	1948	1991	185080	LA PLATA 1 W	38.53	77.00	1948	1993						
153714	HAZARD WATER WORKS	37.25	83.18	1950	1991	185111	LAUREL 3 W	39.10	76.90	1949	1993						
153741	HEIDELBERG LOCK 14	37.55	83.77	1932	1991	185894	MERRILL	39.60	79.08	1951	1993						
154196	JACKSON	37.55	83.38	1948	1984	185985	MILLINGTON 2 WNW	39.27	75.87	1948	1993						
154255	JEREMIAH 1 S	37.15	82.93	1948	1991	186350	NATIONAL ARBORETUM DC	38.90	76.97	1948	1993						
154946	LOUISA 2 SW	38.12	82.63	1951	1991	186620	OAKLAND 1 SE	39.40	79.40	1948	1993						
155111	MANCHESTER 4 W	37.15	83.82	1951	1991	186770	OWINGS FERRY LANDING	38.68	76.67	1948	1993						
155243	MAYSVILLE SEWAGE PLANT	38.68	83.78	1948	1991	186844	PARKTON 2 SW	39.63	76.70	1953	1986						
155389	MIDDLESBORO	36.60	83.73	1928	1991	187330	PRINCESS ANNE	38.22	75.68	1948	1993						
155640	MOUNT STERLING	38.07	83.93	1948	1991	187705	ROCKVILLE 1 NE	39.10	77.10	1948	1993						
156028	ONEIDA	37.27	83.65	1957	1991	187806	ROYAL OAK 2 SSW	38.72	76.18	1948	1993						
156136	PAINTSVILLE 1 E	37.82	82.78	1933	1991	188000	SALISBURY	38.37	75.58	1948	1993						
MAINE																	
170275	AUGUSTA FAA AP	44.32	69.80	1948	1993	188005	SALISBURY FAA AP	38.33	75.52	1948	1993						
170355	BANGOR FAA AP	44.80	68.82	1953	1993	189408	BARRE FALLS DAM	42.45	72.03	1959	1993						
170371	BAR HARBOR 3 NW	44.42	68.25	1948	1982	190535	BEDFORD	42.48	71.28	1957	1993						
170480	BELFAST	44.40	69.00	1948	1993	190551	BECHWOOD	42.23	70.82	1948	1993						
170600	BINGHAM WYMAN DAM	45.07	69.90	1957	1993	190562	BELCHERTOWN	42.28	72.35	1948	1993						
170814	BRASSUA DAM	45.67	69.82	1948	1993	190666	BIRCH HILL DAM	42.63	72.12	1948	1993						
170833	BRIDGEWATER	46.42	67.85	1957	1993	190736	BLUE HILL WSO	42.22	71.12	1926	1993						
170844	BRIDGTON 3 NNW	44.08	70.73	1955	1993	190770	BOSTON WSO AP	42.37	71.03	1920	1993						
170934	BRUNSWICK	43.90	69.93	1952	1993	190801	BOYLSTON	42.35	71.72	1948	1985						
171175	CARIBOU WSO AP	46.87	68.02	1939	1993	190860	BROCKTON	42.05	71.00	1948	1993						
171628	CORINNA	44.92	69.27	1948	1993	190998	BUFFUMVILLE LAKE	42.12	71.90	1959	1993						
172426	EASTPORT	44.92	67.00	1926	1993	191436	CHESTERFIELD	42.38	72.85	1948	1993						
172620	ELLSWORTH	44.53	68.43	1948	1993	191447	CHESTNUT HILL	42.33	71.15	1948	1986						
172765	FARMINGTON	44.68	70.15	1926	1993	191561	CLINTON	42.40	71.68	1948	1985						
172868	FORT FAIRFIELD 5 NE	46.80	67.77	1936	1980	192107	EAST BRIMFIELD LAKE	42.12	72.13	1962	1993						
172878	FORT KENT	47.25	68.58	1945	1993	192451	EAST WAREHAM	41.77	70.67	1926	1993						
173046	GARDINER	44.22	69.78	1948	1993	192501	EDGARTOWN	41.38	70.52	1948	1993						
173261	GRAND LAKE STREAM	45.18	67.78	1948	1993	192806	FITCHBURG 4 SE	42.55	71.75	1948	1978						
173555	GREENVILLE	45.47	69.60	1920	1975	192975	FRAMINGHAM	42.28	7								

Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends	Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends						
MASSACHUSETTS (continued)																	
193505	HAVERHILL	42.77	71.07	1948	1993	275712	NASHUA 2 NNW	42.78	71.48	1948	1993						
193549	HEATH	42.67	72.82	1948	1993	275868	NEWPORT	43.37	72.18	1948	1993						
193624	HINGHAM	42.23	70.92	1960	1993	276234	NORTH STRATFORD	44.75	71.63	1948	1993						
193702	HOLYOKE	42.20	72.60	1948	1994	276550	OTTER BROOK LAKE	42.95	72.23	1958	1993						
193772	HUBBARDSTON	42.48	72.00	1948	1980	276697	PETERBORO 2 S	42.85	71.95	1948	1992						
193821	HYANNIS	41.67	70.30	1926	1993	276818	PINKHAM NOTCH	44.27	71.25	1948	1993						
193876	IPSWICH	42.67	70.87	1948	1993	276945	PLYMOUTH 1 E	43.77	71.67	1951	1993						
193985	KNIGHTVILLE DAM	42.28	72.87	1948	1993	277967	SOUTH DANBURY	43.50	71.90	1948	1981						
194105	LAWRENCE	42.70	71.17	1926	1993	278081	SOUTH LYNDDEBORO	42.88	71.78	1948	1993						
194313	LOWELL	42.65	71.37	1948	1993	278539	SURRY MOUNTAIN LAKE	43.00	72.32	1948	1993						
194449	MANSFIELD	42.05	71.20	1948	1993	279474	WEST RUMNEY	43.80	71.85	1948	1986						
194711	MIDDLEBORO	41.88	70.92	1948	1993	279940	WOODSTOCK	43.98	71.68	1948	1980						
194744	MIDDLETON	42.60	71.02	1948	1993	279966	YORK POND	44.50	71.33	1948	1993						
194760	MILFORD	42.17	71.52	1948	1993												
195246	NEW BEDFORD	41.63	70.93	1948	1993	NEW HAMPSHIRE (continued)											
195285	NEWBURYPORT	42.83	70.92	1948	1993	275712	NASHUA 2 NNW	42.78	71.48	1948	1993						
195306	NEW SALEM	42.45	72.33	1948	1993	275868	NEWPORT	43.37	72.18	1948	1993						
196251	PELHAM	42.40	72.40	1948	1990	276234	NORTH STRATFORD	44.75	71.63	1948	1993						
196262	PEMBROKE	42.02	70.82	1948	1991	276550	OTTER BROOK LAKE	42.95	72.23	1958	1993						
196322	PETERSHAM 3 N	42.53	72.18	1948	1993	276697	PETERBORO 2 S	42.85	71.95	1948	1992						
196414	PITTSFIELD	42.43	73.28	1925	1970	276818	PINKHAM NOTCH	44.27	71.25	1948	1993						
196425	PLAINFIELD	42.52	72.92	1948	1993	276945	PLYMOUTH 1 E	43.77	71.67	1951	1993						
196486	PLYMOUTH	41.95	70.67	1948	1993	277967	SOUTH DANBURY	43.50	71.90	1948	1981						
196659	QUABBIN INTAKE	42.37	72.28	1948	1991	278081	SOUTH LYNDDEBORO	42.88	71.78	1948	1993						
196783	READING	42.52	71.13	1960	1993	278539	SURRY MOUNTAIN LAKE	43.00	72.32	1948	1993						
196938	ROCHESTER	41.78	70.92	1951	1993	279474	WEST RUMNEY	43.80	71.85	1948	1986						
196977	ROCKPORT 1 ESE	42.65	70.60	1948	1983	279940	WOODSTOCK	43.98	71.68	1948	1980						
197627	SOUTHBRIDGE 3 SW	42.05	72.08	1948	1993	279966	YORK POND	44.50	71.33	1948	1993						
198046	SPRINGFIELD	42.10	72.58	1926	1984	NEW JERSEY											
198154	STERLING	42.45	71.82	1948	1985	280311	ATLANTIC CITY WSO AP	39.45	74.57	1958	1993						
198181	STOCKBRIDGE	42.30	73.33	1948	1985	280325	ATLANTIC CITY	39.38	74.43	1948	1993						
198367	TAUNTON	41.90	71.07	1948	1993	280346	AUDUBON	39.88	75.08	1950	1990						
198573	TULLY LAKE	42.63	72.22	1949	1993	280690	BELLEPLAIN STA FOREST	39.25	74.87	1926	1993						
198793	WARE	42.27	72.25	1948	1993	280729	BELVIDERE	40.83	75.08	1926	1981						
199191	WESTFIELD	42.12	72.70	1948	1993	280907	BOONTON 1 SE	40.90	74.40	1926	1993						
199316	WEST MEDWAY	42.13	71.43	1957	1993	280927	BOUND BROOK 2 W	40.55	74.57	1956	1993						
199360	WESTON	42.38	71.32	1929	1968	281327	CANISTEAR RESERVOIR	41.12	74.50	1948	1993						
199371	WEST OTIS	42.17	73.15	1948	1993	281335	CANOE BROOK	40.75	74.35	1931	1993						
199923	WORCESTER WSO AP	42.27	71.87	1948	1993	281351	CAPE MAY 2 NW	38.95	74.93	1948	1993						
199928	WORCESTER	42.30	71.82	1926	1962	281582	CHARLOTTEBURG RESERVOIR	41.03	74.43	1926	1993						
MICHIGAN																	
200230	ANN ARBOR UNIV OF MICH	42.30	83.72	1901	1991	282644	ELIZABETH	40.67	74.23	1931	1970						
200417	BAD AXE	43.82	83.00	1925	1991	282662	HAMMONTON 2 NNE	39.65	74.80	1948	1990						
201299	CARO REGIONAL CENTER	43.45	83.40	1928	1991	282662	HAMPTON 2 NNE	39.65	74.80	1948	1990						
202015	DEARBORN	42.32	83.23	1952	1991	282728	MOORESTOWN	39.97	74.97	1926	1993						
202423	EAST TAWAS	44.28	83.50	1931	1991	283175	NEW BRUNSWICK EXP STN	40.47	74.43	1912	1968						
202846	FLINT WSO AP	42.97	83.75	1948	1991	283175	NEW MILFORD	40.95	74.03	1948	1993						
203477	GROSSE POINTE FARMS	42.38	82.90	1950	1991	283516	NEW MILFORD	40.95	74.03	1948	1993						
203529	HALE LOUD DAM	44.47	83.72	1948	1991	283581	NEWTON ST PAUL'S ABBEY	41.03	74.80	1948	1993						
203585	HARBOR BEACH 1 SSE	43.83	82.63	1931	1991	283640	OAK RIDGE RESERVOIR	41.03	74.50	1948	1993						
203947	HOWELL WWTP	42.60	83.93	1948	1991	283683	PEMBERTON 3 S	39.93	74.70	1948	1993						
204655	LAPEER	43.05	83.35	1931	1991	283694	PHILLIPSBURG	40.68	75.18	1931	1977						
205452	MILFORD GM PROVING GROU	42.58	83.70	1931	1991	283709	PLAINFIELD	40.60	74.40	1931	1993						
205488	MILLINGTON 3 SW	43.23	83.57	1948	1991	283713	PLEASANTVILLE 1 N	39.42	74.52	1926	1958						
205558	MONROE WATERWORKS	41.92	83.40	1931	1991	283728	PRINCETON WATER WORKS	40.33	74.67	1949	1986						
205650	MOUNT CLEMENS ANG BASE	42.60	82.83	1948	1991	283739	RHWAY	40.60	74.27	1948	1993						
206658	PONTIAC STATE HOSPITAL	42.65	83.30	1948	1991	283757	RINGWOOD	41.13	74.27	1948	1993						
207350	SANDUSKY	43.42	82.83	1948	1991	288194	SOMERVILLE 3 NW	40.60	74.63	1931	1993						
207419	SEBEWAING	43.73	83.45	1948	1991	288402	SPLIT ROCK POND	40.97	74.47	1948	1993						
207820	STANDISH 5 SW	43.95	84.03	1948	1991	288644	SUSSEX 1 SE	41.20	74.60	1948	1993						
209014	WILLIS 5 SSW	42.08	83.58	1948	1983	288816	TOMS RIVER	39.95	74.22	1948	1993						
209188	YALE	43.15	82.80	1948	1991	288883	TRENTON	40.22	74.77	1931	1993						
NEW HAMPSHIRE																	
270690	BERLIN	44.45	71.18	1926	1993	288899	TUCKERTON	39.60	74.35	1948	1993						
270703	BETHLEHEM	44.28	71.68	1948	1993	289187	WANAQUE RAYMOND DAM	41.05	74.30	1948	1993						
270741	BLACKWATER DAM	43.32	71.72	1948	1992	289363	WERTSVILLE	40.45	74.80	1956	1991						
270910	BRADFORD	43.25	71.97	1948	1993	289608	WEST WHARTON	40.90	74.60	1959	1990						
271683	CONCORD WSO AP	43.20	71.50	1921	1993	289832	WOODCLIFF LAKE	41.02	74.05	1948	1993						
272023	DIXVILLE NOTCH	44.87	71.33	1948	1993	289910	WOODSTOWN	39.65	75.32	1948	1993						
272174	DURHAM	43.15	70.95	1926	1993	NEW YORK											
272842	ERROL	44.78	71.13	1948	1993	300023	ADDISON	42.10	77.22	1948	1991						
272999	FIRST CONN LAKE	45.08	71.28	1948	1993	300042	ALBANY WSO AP	42.75	73.80	1938	1993						
273024	FITZWILLIAM 2 W	42.78	72.18	1948	1992	300047	ALBANY	42.65	73.75	1922	1970						
273182	FRANKLIN FALLS DAM	43.47	71.65	1948	1993	300055	ALBION 2 NE	43.28	78.17	1948	1993						
273530	GRAFTON	43.57	71.95	1955	1993	300063	ALCOVE DAM	42.47	73.93	1948	1993						
273850	HANOVER	43.70	72.28	1926	1993	300085	ALFRED	42.25	77.78	1926	1993						
274399	KEENE	42.92	72.27	1926	1993	300093	ALLEGANY STATE PARK	42.10	78.75	1948	1993						
274475	LAKEPORT	43.55	71.47	1948	1982	300183	ANGELICA	42.30	78.02	1926	1993						
274480	LAKEPORT 2	43.55	71.47	1948	1993	300220	ARCADE	42.53	78.42	1948	1993						
274556	LANCASTER	44.48	71.58	1948	1993	300254	ARKVILLE 2 W	42.13	74.65	1948	1993						
274656	LEBANON FAA AIRPORT	43.63	72.32	1948	1993	300321	AUBURN 2 NE	42.93	76.53	1926	1993						
275013	MACDOWELL DAM	42.90	71.98	1950	1993	300331	AURORA RESEARCH FARM	42.73	76.65	1956	1993						
275150	MARLOW	43.12	72.20	1951	1993	300343	AVON	42.92	77.75	1948	1993						
275211	MASSABESIC LAKE	42.98	71.40	1948	1993	300360	BAINBRIDGE	42.28	75.45	1948	1993						
275400	MILAN 7 NNW	44.67	71.22	1948	1981	300379	BALDWINSVILLE	43.15	76.33	1948	1993						
275412	MILFORD	42.82	71.65	1948	1993	300443	BATAVIA	42.98	78.18	1948	1993						
275500	MONROE 5 NNE	44.32	72.00	1948	1993	300448	BATH	42.35	77.35	1953	1993						
275629	MOUNT SUNAPEE	43.33	72.08	1957	1993	300452	BATTENVILLE	43.10	73.43	1955	1993						
						300500											

Table 3 (continued)

Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends	Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends
NEW YORK (continued)											
300608	BENNETTS BRIDGE	43.53	75.95	1948	1993	304952	MACEDON	43.07	77.30	1948	1993
300641	BERLIN 5 S	42.62	73.37	1955	1993	305032	MANORKILL	42.38	74.32	1948	1993
300668	BIG MOOSE 3 SE	43.80	74.87	1948	1993	305134	MASSENA FAA AP	44.93	74.85	1948	1993
300687	BINGHAMTON WSO AP	42.22	75.98	1951	1993	305171	MAYS POINT LOCK 25	43.00	76.77	1948	1993
300691	BINGHAMTON	42.10	75.92	1926	1968	305276	MERRIMAN DAM	41.80	74.43	1961	1993
300785	BOONVILLE 2 SSW	43.45	75.35	1949	1993	305310	MIDDLETOWN 2 NW	41.45	74.45	1951	1993
300870	BREWERTON LOCK 23	43.23	76.20	1948	1993	305334	MILLBROOK	41.85	73.62	1948	1993
300889	BRIDGEHAMPTON	40.95	72.30	1930	1993	305377	MINEOLA	40.73	73.63	1948	1993
300929	BROADALBIN	43.05	74.20	1948	1993	305426	MOHONK LAKE	41.77	74.15	1948	1993
300937	BRICKPORT 2 NW	43.25	77.97	1950	1993	305512	MORRISVILLE 3 S	42.85	75.65	1926	1993
301012	BUFFALO WSCMO AP	42.93	78.73	1922	1993	305597	MOUNT MORRIS 2 W	42.73	77.90	1948	1993
301110	CAMDEN 2 NW	43.37	75.78	1948	1993	305604	MT PLEASANT FARM	42.45	76.37	1957	1993
301152	CANADAIGUA 3 S	42.85	77.28	1948	1993	305639	NARROWSBURG 4 SE	41.57	75.02	1956	1993
301160	CANASTOTA	43.08	75.77	1948	1983	305673	NEW ALBION	42.30	78.90	1948	1993
301168	CANDOR	42.23	76.33	1948	1993	305679	NEWARK	43.05	77.08	1948	1993
301173	CANISTEO 1 S	42.27	77.62	1949	1993	305687	NEW BERLIN	42.62	75.33	1948	1993
301185	CANTON 4 SE	44.57	75.12	1922	1993	305714	NEWCOMB 3 E	43.97	74.10	1959	1993
301207	CARMEL 1 SW	41.42	73.70	1926	1993	305743	NEW KINGSTON	42.23	74.70	1948	1989
301265	CAYUGA LOCK 1	42.95	76.73	1948	1993	305751	NEW LONDON LOCK 22	43.22	75.65	1948	1993
301387	CHASM FALLS	44.75	74.22	1948	1993	305796	NEW YORK AVE V BROOKLYN	40.60	73.98	1948	1993
301401	CHAZY	44.88	73.43	1926	1993	305801	NY CNTRL PK WSFO CI	40.78	73.97	1976	1993
301413	CHEMUNG	42.00	76.63	1948	1993	305804	NEW YORK LAUREL HILL	40.73	73.93	1922	1983
301424	CHEPACHET	42.92	75.12	1957	1993	305811	NY LAGUARDIA WSO AP	40.77	73.90	1948	1993
301436	CHERRY VALLEY 2 NNE	42.82	74.73	1949	1993	305821	NY WESTERLEIGH STAT IS	40.60	74.17	1948	1992
301492	CINCINNATI	42.53	75.90	1948	1993	305869	NORFOLK	44.80	75.00	1948	1993
301521	CLARYVILLE	41.92	74.57	1948	1993	305925	NORTH CREEK	43.67	73.90	1948	1993
301580	CLYDE LOCK 26	43.07	76.83	1948	1993	306062	NORTHLVILLE	43.23	74.17	1955	1993
301593	COBLESKILL 2	42.68	74.48	1955	1986	306085	NORWICH	42.53	75.53	1926	1993
301623	COLDEN 1 N	42.67	78.68	1957	1993	306164	OGDENSBURG 4 NE	44.73	75.43	1926	1993
301664	COLTON 2 N	44.58	74.95	1948	1993	306184	OLD FORGE	43.72	74.98	1948	1993
301708	CONKLINGVILLE DAM	43.32	73.93	1948	1993	306196	OLEAN	42.08	78.45	1948	1993
301752	COOPERSTOWN	42.70	74.92	1926	1993	306314	OSWEGO EAST	43.47	76.50	1926	1993
301799	CORTLAND	42.60	76.18	1948	1993	306411	PARISHVILLE 1 WNW	44.63	74.83	1948	1981
301966	DANNEMORA	44.72	73.72	1926	1993	306441	PATCHOGUE 2 N	40.80	73.02	1948	1993
301974	DANSVILLE	42.57	77.70	1941	1993	306464	PAVILION	42.88	78.03	1956	1992
302036	DELHI 2 SE	42.25	74.90	1926	1993	306510	PENN YAN	42.67	77.07	1948	1984
302060	DEPOSIT	42.07	75.43	1962	1993	306538	PERU 2 WSW	44.57	73.57	1948	1993
302079	DE RUYTER 4 N	42.82	75.88	1948	1984	306567	PHOENICIA	42.08	74.33	1948	1993
302129	DOBB'S FERRY	41.02	73.87	1948	1993	306623	PISECO	43.45	74.53	1948	1993
302137	DOLGEVILLE	43.08	74.77	1948	1993	306659	PLATTSBURGH AFB	44.65	73.47	1948	1993
302169	DOWNSVILLE DAM	42.08	74.97	1959	1993	306674	PLEASANTVILLE	41.13	73.77	1948	1993
302234	EAGLE BAY 3 SE	43.75	74.77	1953	1993	306745	PORTAGEVILLE	42.57	78.05	1956	1993
302554	ELIZABETHTOWN	44.22	73.60	1948	1993	306774	PORT JERVIS	41.38	74.68	1926	1993
302574	ELLENBURG DEPOT	44.90	73.80	1948	1993	306817	POUGHKEEPSIE	41.68	73.93	1928	1971
302582	ELLENVILLE	41.72	74.40	1948	1993	306820	POUGHKEEPSIE FAA AP	41.63	73.88	1948	1993
302610	ELMIRA 2 SE	42.08	76.78	1926	1993	306831	PRATTSBURG 2 NW	42.53	77.30	1948	1986
302829	FISHES EDDY	41.97	75.18	1953	1993	306839	PRATTSVILLE 3 N	42.35	74.45	1948	1993
303010	FRANKFORT LOCK 19	43.07	75.12	1948	1993	307134	RIVERHEAD RESEARCH FARM	40.97	72.72	1948	1993
303025	FRANKLINVILLE 1 SSW	42.33	78.47	1949	1993	307167	ROCHESTER WSO AP	43.12	77.67	1926	1993
303033	FREDONIA	42.45	79.30	1926	1993	307195	ROCKDALE	42.38	75.40	1948	1993
303050	FREEVILLE 1 NE	42.52	76.33	1948	1993	307274	ROSENDALE 2 E	41.85	74.05	1956	1993
303076	FROST VALLEY	41.97	74.55	1948	1981	307317	ROXBURY	42.28	74.57	1926	1972
303138	GARDINER	41.68	74.15	1956	1987	307329	RUSHFORD 1 W	42.40	78.27	1954	1993
303144	GARDNERVILLE	41.35	74.48	1956	1993	307348	SABATTIS 3 NE	44.12	74.67	1948	1979
303177	GENEVA EXP STATION	42.88	77.00	1921	1968	307405	SALEM	43.17	73.32	1948	1993
303259	GLENHAM	41.52	73.93	1948	1993	307413	SALISBURY	43.17	74.87	1926	1975
303284	GLENS FALLS FARM	43.33	73.73	1948	1993	307484	SARATOGA SPRINGS 4 SW	43.03	73.82	1955	1993
303294	GLENS FALLS FAA AP	43.35	73.62	1948	1993	307497	SCARSDALE	40.98	73.80	1948	1991
303319	GLOVERSVILLE	43.05	74.33	1948	1993	307513	SCHEECTADY	42.83	73.92	1943	1985
303346	GOVERNEUR 3 NW	44.35	75.52	1948	1993	307633	SETAUKEET	40.97	73.10	1926	1993
303354	GOWANDA PSYCHIATRIC CTR	42.48	78.93	1948	1993	307705	SHERBURNE 2 S	42.65	75.48	1948	1993
303360	GRAFTON	42.78	73.47	1950	1993	307713	SHERMAN	42.17	79.60	1951	1993
303365	GRAHAMSVILLE	41.85	74.53	1948	1993	307721	SHOKAN BROWN STATION	41.95	74.20	1953	1993
303444	GREENE	42.32	75.77	1948	1993	307772	SINCLAIRVILLE	42.27	79.27	1959	1993
303464	GREENPORT POWER HOUSE	41.10	72.37	1958	1993	307780	SKANEATELES	42.95	76.43	1948	1993
303507	GRIFFISS AIR FORCE BASE	43.23	75.40	1961	1993	307799	SLIDE MOUNTAIN	42.02	74.42	1948	1993
303722	HASKINVILLE	42.42	77.57	1948	1993	307818	SMITH'S BASIN	43.35	73.50	1948	1993
303773	HEMLOCK	42.78	77.62	1926	1993	307842	SODUS CENTER	43.20	77.02	1948	1993
303851	HIGHMARKET	43.58	75.52	1948	1993	308058	SOUTH WALES EMERY PARK	42.72	78.60	1931	1982
303889	HINCKLEY 2 NE	43.32	75.12	1948	1993	308088	SPENCER 1 SW	42.18	76.50	1948	1993
303961	HOOKER 4 N	43.75	75.73	1948	1993	308160	STAMFORD	42.40	74.63	1948	1993
303970	HOPE	43.30	74.25	1948	1993	308248	STILLWATER RESERVOIR	43.88	75.03	1948	1993
303983	HORNELL ALMOND DAM	42.35	77.70	1950	1993	308322	SUFFERN WATER WORKS	41.12	74.15	1956	1993
304025	HUDSON CORRECTIONAL FAC	42.25	73.80	1957	1993	308383	SYRACUSE WSO AP	43.12	76.12	1922	1993
304102	INDIAN LAKE 2 SW	43.75	74.28	1948	1993	308455	THERESA	44.22	75.80	1948	1979
304174	ITHACA CORNELL UNIV	42.45	76.45	1893	1993	308578	TRENTON FALLS	43.27	75.15	1948	1993
304206	JAMESTOWN	42.10	79.25	1926	1960	308586	TRIBES HILL	42.95	74.28	1948	1993
304473	KORTRIGHT 2	42.42	74.80	1960	1993	308594	TROUBPSBURG 4 NE	42.07	77.48	1948	1993
304525	LAKE DELAWARE	42.25	74.90	1948	1981	308600	TROY LOCK AND DAM 2	42.75	73.68	1932	1993
304555	LAKE PLACID 2 S	44.25	73.98	1948	1993	308631	TUPPER LAKE SUNMOUNT	44.23	74.43	1948	1993
304647	LAWRENCEVILLE	44.75	74.65	1948	1993	308737	UTICA FAA AP	43.15	75.38	1950	1993
304731	LIBERTY 1 NE	41.80	74.73	1950	1993	308739	UTICA 3 W	43.10	75.28	1948	1991
304772	LINDLEY	42.03	77.13	1953	1993	308902	WALDEN 2 NE	41.57	74.17	1926	1959
304791	LITTLE FALLS CITY RES	43.07	74.87	1926	1993	308936	WALTON	42.17	75.13	1956	1993
304796	LITTLE FALLS MILL ST	43.03	74.87	1926	1993	308944	WANAKENA RANGER SCHOOL	44.15	74.90	1926	1993
304808	LITTLE VALLEY	42.25	78.80	1948	1993	308959	WARRENSBURG 4 NW	43.55	73.80	1948	1993
304836	LOCKE 2 W	42.67	76.47	1948	1993	308962	WARSAW 5 SW	42.68	78.20	1952	1993
304844	LOCKPORT 2 NE	43.18	78.65	1926	1993	308987	WATERLOO	42.90	76.87	1948	1993
304849	LOCKPORT 4 NE	43.20	78.63	1961	1993	309000	WATERTOWN	43.97			

Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends	Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends						
NEW YORK (continued)																	
309189	WESTFIELD 3 SW	42.28	79.60	1948	1993	335406	MOHICANVILLE DAM	40.73	82.15	1949	1987						
309250	WEST MILTON	43.03	73.93	1955	1986	335505	MOSQUITO CREEK LAKE	41.30	80.77	1948	1993						
309292	WEST POINT	41.38	73.97	1948	1993	335535	MT GILEAD LAKES PARK	40.55	82.82	1952	1993						
309389	WHITEHALL	43.55	73.40	1932	1993	335718	NELSONVILLE 1 W	39.47	82.25	1951	1993						
309425	WHITESVILLE	42.03	77.77	1954	1993	335747	NEWARK WATER WORKS	40.08	82.42	1936	1993						
309437	WHITNEY POINT	42.35	75.97	1944	1993	335857	NEW LEXINGTON 2 NW	39.73	82.22	1942	1993						
309507	WILSON 2 NE	43.32	78.80	1948	1993	335894	NEW PHILADELPHIA	40.50	81.45	1948	1993						
309516	WINDHAM 2 E	42.30	74.22	1948	1993	335904	NEW PHILADELPHIA 1 A	40.50	81.45	1949	1990						
309544	WOLCOTT 3 NW	43.25	76.87	1948	1993	335947	NEW STRAITSVILLE	39.58	82.25	1951	1990						
OHIO (continued)																	
330058	AKRON-CANTON WSO AP	40.92	81.43	1948	1993	336118	NORWALK WST WTR TRT PL	41.27	82.62	1900	1993						
330083	ALEXANDRIA 4 WSW	40.08	82.68	1948	1988	336136	NORWICH 1 E	39.98	81.78	1948	1986						
330141	AMESVILLE	39.40	81.97	1953	1988	336196	OBERLIN	41.27	82.22	1936	1993						
330256	ASHLAND 2 SW	40.83	82.35	1936	1993	336389	PAINESVILLE 4 NW	41.75	81.30	1950	1993						
330264	ASHTABULA	41.85	80.80	1951	1993	336405	PANDORA	40.95	83.97	1949	1993						
330274	ATHENS 5 NW	39.38	82.18	1948	1980	336600	PHILO 3 SW	39.83	81.92	1948	1993						
330279	ATHENS	39.35	82.10	1948	1991	336616	PIEDMONT LAKE	40.18	81.22	1949	1987						
330298	ATWOOD LAKE	40.52	81.28	1949	1987	336630	PIKETON AEC PUMP STN	39.07	83.02	1948	1993						
330430	BARNESVILLE-FRIENDS SCH	39.98	81.15	1940	1993	336702	PLEASANT HILL LAKE	40.62	82.33	1949	1987						
330493	BEACH CITY LAKE	40.63	81.57	1948	1987	336729	PLYMOUTH 2 WSW	40.98	82.70	1935	1982						
330563	BELLEFONTAINE SEWAGE	40.35	83.77	1936	1993	336781	PORTSMOUTH	38.75	82.88	1936	1993						
330823	BOLIVAR DAM	40.65	81.43	1949	1987	336786	PORTSMOUTH US GRANT BR	38.73	83.00	1948	1993						
330854	BOURNEVILLE 1 SSW	39.27	83.17	1986		336882	PUT IN BAY PERRY MON	41.65	82.80	1936	1993						
330862	BOWLING GREEN SEWAGE PL	41.38	83.62	1936	1993	336949	RAVENNA 2 S	41.13	81.28	1948	1993						
331057	BUCKEYE LAKE 2 WNW	39.93	82.52	1956	1993	337120	RIPLEY EXP FARM	38.78	83.80	1959	1993						
331072	BUCYRUS	40.82	82.97	1936	1993	337255	ROSEVILLE	39.82	82.07	1961	1993						
331152	CADIZ	40.27	81.00	1903	1993	337447	SANDUSKY	41.45	82.72	1936	1993						
331178	CALDWELL 6 NW	39.82	81.60	1936	1990	337476	SAYRE	39.68	82.05	1948	1989						
331197	CAMBRIDGE WATER PLANT	40.02	81.58	1948	1993	337538	SEDLIA	39.73	83.48	1948	1993						
331245	CANFIELD 1 S	41.02	80.77	1917	1993	337559	SENECAVILLE LAKE	39.92	81.43	1940	1987						
331315	CARROLLTON 3 NNE	40.62	81.07	1948	1987	337932	SPRINGFIELD WW TREAT PL	39.92	83.85	1952	1988						
331399	CENTERBURG	40.30	82.70	1948	1981	338025	STEUBENVILLE	40.38	80.63	1941	1993						
331404	CENTERBURG 2 SE	40.30	82.65	1950	1993	338148	SUMMERFIELD 2 NE	39.82	81.30	1948	1987						
331458	CHARDON	41.58	81.18	1945	1993	338240	TAPPAN LAKE	40.35	81.23	1949	1987						
331466	CHARLES MILL LAKE	40.73	82.37	1939	1987	338313	TIFFIN	41.12	83.17	1936	1993						
331523	CHILLICOTHE	39.33	82.97	1936	1972	338357	TOLEDO EXPRESS WSO AP	41.58	83.80	1955	1993						
331541	CHIPPEWA LAKE	41.07	81.90	1936	1993	338366	TOLEDO BLADE	41.65	83.53	1948	1993						
331592	CIRCLEVILLE	39.62	82.95	1942	1993	338378	TOM JENKINS LAKE	39.55	82.07	1953	1987						
331642	CLENDENING LAKE	40.27	81.28	1948	1987	338534	UPPER SANDUSKY	40.83	83.28	1936	1993						
331657	CLEVELAND WSO AP	41.42	81.87	1948	1993	338552	URBANA SEWAGE PLANT	40.10	83.78	1936	1993						
331778	COLUMBUS OHIO STN UNIV	40.00	83.02	1900	1957	338560	UTICA	40.25	82.45	1948	1993						
331781	COLUMBUS SULLIVAN AVE	39.95	83.12	1952	1983	338769	WARREN 3 S	41.20	80.82	1936	1993						
331783	COLUMBUS VLY CROSSING	39.90	82.90	1948	1993	338794	WASHINGTON COURT HOUSE	39.52	83.42	1936	1993						
331786	COLUMBUS WSO AP	40.00	82.88	1948	1993	338830	WAVERTLY	39.12	82.98	1936	1993						
331858	COOPERSDALE	40.22	82.07	1948	1993	338951	WESTERVILLE	40.13	82.95	1952	1993						
331890	COSHOCOTON SEWAGE PLANT	40.25	81.87	1936	1993	339211	WILLS CREEK LAKE	40.15	81.85	1949	1987						
331905	COSHOCOTON AGR RSCH STN	40.37	81.80	1956	1993	339219	WILMINGTON 3 N	39.48	83.82	1936	1993						
332119	DELAWARE	40.28	83.07	1936	1993	339312	WOOSTER EXP STATION	40.78	81.92	1900	1993						
332124	DELAWARE LAKE	40.37	83.07	1949	1987	339361	XENIA 6 SSE	39.62	83.90	1956	1993						
332251	DORSET	41.68	80.67	1956	1993	339406	YOUNGSTOWN WSO AP	41.25	80.67	1948	1993						
332272	DOVER DAM	40.57	81.42	1949	1987	339417	ZANESVILLE FAA AP	39.95	81.90	1946	1993						
332599	ELYRIA 3 E	41.38	82.07	1949	1993	PENNSYLVANIA											
332626	ENTERPRISE	39.57	82.48	1948	1993	360022	ACMETONIA LOCK 3	40.53	79.82	1948	1993						
332786	FINDLAY FAA AP	41.02	83.67	1948	1993	360106	ALLENTOWN WSO AP	40.65	75.43	1918	1993						
332791	FINDLAY SEWAGE PLANT	41.05	83.67	1936	1993	360134	ALTOONA HORSESHOE CURVE	40.50	78.48	1926	1967						
332956	FREDERICKTOWN 4 S	40.42	82.53	1948	1993	360313	AUSTINBURG 2 W	42.00	77.53	1948	1981						
332974	FREMONT	41.33	83.12	1948	1993	360355	BAKERSTOWN 3 WNW	40.65	79.98	1948	1990						
333021	GALION WATER WORKS	40.72	82.80	1948	1993	360409	BARNES	41.67	79.03	1948	1991						
333029	GALLIPOLIS	38.82	82.18	1936	1993	360457	BEAR GAP	40.83	76.50	1948	1993						
333393	GREER	40.52	82.20	1948	1993	360475	BEAVER FALLS 1 NE	40.77	80.32	1948	1993						
333730	HIGGINSPORT	38.78	83.97	1948	1982	360482	BEAVERTOWN 1 NE	40.77	77.15	1948	1993						
333758	HILLSBORO	39.20	83.62	1900	1993	360488	BECHTELVILLE 1 ENE	40.38	75.62	1958	1993						
333780	HIRAM	41.30	81.15	1900	1993	360529	BETHLEHEM	40.62	75.38	1948	1981						
333874	HOYTVILLE 2 NE	41.22	83.77	1952	1993	360634	BETHLEHEM LEHIGH UNIV	40.60	75.37	1926	1964						
333915	HUNTSVILLE 3 N	40.48	83.82	1948	1993	360763	BLOSERVILLE 1 N	40.27	77.37	1948	1993						
333971	IRONTON	38.53	82.68	1900	1982	360821	BOSWELL 1 SW	40.15	79.03	1960	1991						
333987	IRWIN	40.12	83.48	1941	1993	360861	BRADDOCK LOCK 2	40.40	79.87	1948	1993						
334004	JACKSON 2 NW	39.07	82.65	1936	1991	360865	BRADFORD FAA AIRPORT	41.80	78.63	1957	1993						
334189	KENTON	40.65	83.60	1900	1993	360867	BRADFORD CNTRL FIRE STN	41.95	78.65	1948	1993						
334363	LAKEVIEW 3 NE	40.52	83.88	1948	1983	360868	BRADFORD 4 W RES 1	41.95	78.73	1948	1993						
334383	LANCASTER 2 NW	39.73	82.63	1936	1993	361002	BROOKVILLE FAA AIRPORT	41.15	79.10	1926	1962						
334409	LA RUE	40.58	83.38	1948	1991	361033	BRUCETON 1 S	40.30	79.98	1948	1993						
334434	LAURELVILLE	39.47	82.73	1951	1993	361087	BUFFALO MILLS	39.95	78.65	1948	1993						
334473	LEEVILLE LAKE	40.47	81.20	1949	1987	361105	BURGETTSTOWN 2 W	40.38	80.43	1948	1989						
334616	LITHOPOLIS 2 S	39.78	82.82	1951	1988	361130	BUTLER	40.87	79.90	1927	1965						
334681	LONDON WATER WORKS	39.88	83.45	1936	1993	361234	CARLISLE	40.20	77.22	1926	1980						
334728	LOUISVILLE	40.83	81.25	1948	1993	361255	CARROLLTON 2 SSE	40.58	78.70	1948	1990						
334865	MANSFIELD WSO AP	40.82	82.52	1948	1993	361301	CEDAR RUN	41.52	77.45	1948	1986						
334874	MANSFIELD 5 W	40.77	82.62	1948	1993	361342	CHADDS FORD	39.87	75.62	1948	1993						
334924	MARIETTA LOCK 1	39.42	81.45	1948	1993	361354	CHAMBERSBURG 1 ESE	39.93	77.63	1948	1993						
334942	MARION 2 N	40.62	83.13	1936	1993	361377	CHARLEROI LOCK 4	40.15	79.90	1948	1993						
334967	MARSHALLVILLE 1 SSW	40.88	81.73	1948	1993	361480	CLARENCE	41.05	77.93	1950	1993						
334979	MARYSVILLE	40.23	83.37	1936	1993	361485	CLARION 3 SW	41.20	79.43	1948	1993						
335029	MC ARTHUR	39.25	82.48	1957	1993	361505	CLAUSSVILLE	40.62	75.65	1948	1993						
335041	MC CONNELLSVILLE LOCK 7	39.65	81.85	1900	1993	361512	CLAYSVILLE 3 W	40.12	80.47	1926	1971						
335199	MIDDLEBOURNE	40.05	81.33	1948	1987	361519	CLEARFIELD	41.02	78.45	1926	1993						
335297	MILLERSBURG	40.55	81.92	1936	1993	361534	CLERMONT 4 NW	41.73	78.53	1961	1992						
335315	MILLPORT 2 NW	40.72	80.90	1936	1993	361589	COATESVILLE 1 SW	39.97	75.83	1948	1982						
335356	MINERAL RIDGE WATER WKS	41.															

Table 3 (continued)

Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends	Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends						
PENNSYLVANIA (continued)																	
361737	CONSHOHOCKEN	40.07	75.32	1948	1993	366762	PAUPACK 2 WNW	41.40	75.23	1948	1993						
361749	COOKSBURG	41.33	79.22	1955	1991	366889	PHILADELPHIA WSCMO AP	39.88	75.23	1948	1993						
361773	CORAOPOLIS NEVILLE IS	40.50	80.08	1948	1989	366904	PHILADELPHIA SHAWMONT	40.03	75.25	1926	1957						
361790	CORRY	41.92	79.63	1926	1993	366916	PHILIPSBURG FAA AP	40.90	78.08	1948	1993						
361806	COUDERSPORT 4 NW	41.83	78.07	1956	1986	366927	PHOENIXVILLE 1 E	40.12	75.50	1948	1992						
361833	COVINGTON 2 WSW	41.73	77.12	1956	1993	366933	PIITTSBURGH WSCMO2 AP	40.50	80.22	1952	1993						
361881	CREEKSIDE	40.68	79.20	1948	1992	366997	PIITTSBURGH WSO CI	40.45	80.00	1926	1979						
362013	DANVILLE	40.97	76.62	1948	1993	367029	PLEASANT MOUNT 1 W	41.73	75.45	1948	1993						
362108	DERRY 4 SW	40.30	79.33	1926	1993	367116	PORT CLINTON	40.58	76.03	1948	1979						
362116	DEVAULT 1 W	40.08	75.55	1951	1988	367229	PUTNEYVILLE 2 SE DAM	40.93	79.28	1948	1993						
362183	DONEGAL 2 NW	40.13	79.40	1948	1993	367310	RAYMOND	41.87	77.87	1948	1992						
362190	DONORA 1 SW	40.17	79.87	1926	1993	367318	READING WB CITY	40.33	75.97	1926	1973						
362221	DOYLESTOWN	40.30	75.13	1948	1993	367409	RENOVO	41.33	77.73	1948	1993						
362260	DU BOIS FAA AP	41.18	78.90	1962	1993	367477	RIDGWAY	41.42	78.75	1926	1993						
362343	EAGLES MERE	41.40	76.58	1948	1987	367727	RUSHVILLE	41.78	76.12	1949	1993						
362466	EBBENSBURG	40.48	78.72	1926	1963	367782	SALINA 3 W	40.52	79.55	1953	1993						
362644	ENGLISH CENTER	41.43	77.28	1948	1984	367846	SAXTON	40.20	78.25	1948	1993						
362662	EPHRATA	40.17	76.17	1948	1984	367863	SCHENLEY LOCK 5	40.68	79.67	1948	1993						
362671	EQUINUNK 2 WNW	41.87	75.27	1957	1993	367902	SCRANTON	41.42	75.67	1926	1975						
362682	ERIE WSO AP	42.08	80.18	1926	1993	367931	SELINSGROVE 2 S	40.77	76.87	1926	1993						
362721	EVERETT	40.02	78.37	1943	1993	367978	SHAMOKIN	40.80	76.55	1948	1993						
362814	FARRELL-SHARON	41.22	80.52	1948	1980	368073	SHIPPENBURG	40.05	77.22	1948	1993						
362942	FORD CITY 4 S DAM	40.72	79.50	1943	1993	368145	SINNEMAHONING	41.32	78.10	1951	1993						
363028	FRANKLIN	41.38	79.82	1926	1993	368184	SLIPPERY ROCK 1 SSW	41.05	80.07	1949	1993						
363056	FREELAND	41.02	75.90	1926	1989	368244	SOMERSET'	40.00	79.08	1949	1993						
363130	GALETON	41.73	77.63	1948	1993	368249	SOMERSET MAIN ST	40.02	79.08	1926	1958						
363200	GEORGE SCHOOL	40.22	74.93	1926	1978	368308	SOUTH MOUNTAIN	39.85	77.50	1948	1993						
363218	GETTYSBURG	39.83	77.23	1926	1982	368379	SPRING GROVE	39.87	76.87	1948	1993						
363311	GLEN HAZEL 2 NE DAM	41.57	78.60	1953	1993	368449	STATE COLLEGE	40.80	77.87	1926	1993						
363321	GLENMORE	40.10	75.78	1959	1993	368560	STOYSTOWN	40.10	78.95	1961	1992						
363343	GLENWILLARD DASH DAM	40.55	80.22	1948	1993	368570	STRAUSSSTOWN	40.48	76.18	1948	1993						
363394	GOULDSBORO	41.25	75.45	1948	1987	368596	STROUDSBURG	41.00	75.18	1926	1993						
363437	GRATERFORD 1 E	40.23	75.43	1960	1993	368692	SUSQUEHANNA	41.95	75.60	1948	1993						
363503	GREENSBORO LOCK 7	39.78	79.92	1948	1993	368758	TAMAQUA	40.78	75.98	1948	1993						
363526	GREENVILLE 2 NE	41.42	80.37	1926	1993	368763	TAMAQUA 4 N DAM	40.85	75.98	1948	1993						
363662	HANOVER	39.80	76.98	1948	1993	368873	TIONESTA 2 SE LAKE	41.48	79.43	1948	1993						
363699	HARRISBURG FAA AP	40.22	76.85	1926	1993	368888	TITUSVILLE WATER WORKS	41.63	79.70	1954	1993						
363758	HAWLEY	41.48	75.17	1926	1993	368893	TORYHANNA	41.18	75.42	1961	1993						
364008	HOLLISTERVILLE	41.38	75.43	1948	1993	368905	TOWANDA 1 ESE	41.75	76.42	1926	1993						
364019	HOLTWOOD	39.83	76.33	1948	1993	368959	TROY 1 NE	41.78	76.78	1951	1993						
364043	HONESDALE 4 NW	41.62	75.32	1948	1993	369042	UNION CITY FILT PLANT	41.90	79.82	1950	1993						
364047	HONEY BROOK 1 S	40.08	75.83	1957	1993	369050	UNIONTOWN 1 NE	39.92	79.72	1926	1993						
364159	HUNTINGDON	40.50	78.02	1974		369128	VANDERGRIFT	40.60	79.55	1948	1988						
364166	HUNTSDALE	40.10	77.30	1948	1986	369298	WARREN	41.85	79.15	1926	1993						
364190	HYNDMAN	39.82	78.73	1948	1993	369367	WAYNESBURG 1 E	39.90	80.17	1948	1993						
364214	INDIANA 3 SE	40.60	79.12	1948	1993	369408	WELLSBORO 3 S	41.70	77.27	1926	1993						
364325	JAMESTOWN 2 NW	41.50	80.47	1948	1993	369464	WEST CHESTER 1 W	39.97	75.63	1948	1991						
364385	JOHNSTOWN	40.33	78.92	1926	1993	369507	WEST HICKORY	41.58	79.40	1952	1993						
364432	KANE 1 NNE	41.68	78.80	1948	1993	369555	WHITESBURG	40.73	79.40	1948	1993						
364481	KEGG	39.98	78.72	1951	1991	369702	WILKES-BARRE	41.23	75.88	1948	1993						
364611	KITTANNING LOCK 7	40.82	79.53	1951	1993	369714	WILLIAMSBURG	40.45	78.20	1949	1989						
364672	KRESGEVILLE 2 W	40.90	75.53	1948	1990	369728	WILLIAMSPORT WSO AP	41.25	76.92	1948	1993						
364758	LANCASTER 2NE PUMP STN	40.05	76.28	1926	1974	369823	WOLFSBURG	40.05	78.53	1950	1993						
364778	LANDISVILLE 2 NW	40.12	76.43	1952	1993	369933	YORK 3 SSW PUMP STN	39.92	76.75	1926	1993						
364853	LAURELTON STATE VILLAGE	40.90	77.22	1948	1993	369950	YORK HAVEN	40.12	76.72	1948	1993						
364873	LAWRENCEVILLE 2 S	41.97	77.13	1926	1974	369995	ZIONSVILLE 3 SE	40.47	75.45	1950	1993						
364934	LEHIGHTON	40.83	75.72	1948	1993	RHODE ISLAND											
364972	LE ROY	41.68	76.72	1948	1993	370896	BLOCK ISLAND WSO AP	41.17	71.58	1948	1993						
364992	LEWISTOWN	40.58	77.58	1948	1993	374266	KINGSTON	41.48	71.53	1926	1993						
365104	LOCK HAVEN	41.13	77.42	1926	1977	375215	NEXTWORT	41.52	71.32	1957	1993						
365160	LONG POND 2 W	41.05	75.50	1948	1993	376698	PROVIDENCE WSO AP	41.73	71.43	1948	1993						
365336	MADERA	40.83	78.43	1949	1990	379423	WOONSOCKET	41.98	71.50	1948	1993						
365381	MAPLETON DEPOT	40.40	77.93	1948	1993	VERMONT											
365390	MARCUS HOOK	39.82	75.42	1948	1993	430499	BELLOWS FALLS	43.13	72.45	1948	1993						
365408	MARION CENTER 2 SE	40.75	79.03	1948	1993	430661	BETHEL 4 N	43.88	72.63	1958	1993						
365470	MATAMORAS	41.37	74.70	1948	1993	431081	BURLINGTON WSO AP	44.47	73.15	1920	1993						
365573	MC KEESPORT	40.35	79.87	1948	1993	431213	CANAAN	45.00	71.53	1948	1993						
365606	MEADVILLE 1 S	41.63	80.17	1948	1993	431243	CAVENDISH	43.38	72.60	1948	1993						
365651	MERCER	41.22	80.23	1950	1993	431360	CHELSEA	43.98	72.45	1948	1993						
365662	MERCERSBURG	39.83	77.90	1948	1990	431433	CHITTENDEN	43.70	72.95	1948	1993						
365686	MEYERSDALE 2 SSW	39.78	79.05	1963	1993	431580	CORNWALL	43.95	73.22	1926	1993						
365790	MILLHEIM	40.88	77.48	1949	1993	431786	DORSET 1 S	43.25	73.10	1948	1993						
365817	MILLVILLE 2 SW	41.10	76.57	1950	1992	432769	ENOSBURG FALLS	44.92	72.82	1948	1993						
365902	MONTGOMERY LOCK AND DAM	40.65	80.38	1961	1993	433341	GILMAN	44.42	71.72	1948	1993						
365915	MONTROSE	41.83	75.87	1926	1993	434052	HUNTINGTON CENTER	44.28	72.97	1955	1993						
365956	MORGANTOWN	40.15	75.90	1951	1986	434882	MANCHESTER	43.17	73.07	1948	1992						
366055	MOUNT POCONO 2 N	41.15	75.37	1926	1960	435278	MONTPELIER FAA AP	44.20	72.57	1948	1993						
366126	MYERSTOWN	40.37	76.30	1948	1993	435416	MOUNT MANSFIELD	44.53	72.82	1954	1993						
366151	NATRONA LOCK 4	40.62	79.72	1948	1993	435542	NEWPORT	44.93	72.20	1930	1993						
366194	NESHAMINY FALLS	40.15	74.95	1948	1993	435733	NORTHFIELD	44.17	72.65	1926	1974						
366233	NEW CASTLE 1 N	41.02	80.37	1926	1993	436355	PERU	43.25	72.90	1948	1993						
366246	NEWELL	40.08	79.90	1926	1980	436761	READSBORO 1 SE	42.75	72.93	1948	1993						
366289	NEW PARK	39.73	76.50	1948	1993	436893	ROCHESTER	43.85	72.80	1948	1993						
366297	NEWPORT	40.48	77.13	1948	1992	436995	RUTLAND	43.60	72.97	1948	1993						
366310	NEW STANTON 1 SW	40.20	79.63	1952	1993	437054	SAINT JOHNSBURY	44.42	72.02	1926	1993						
366526	NEW TRIPOLI 4 E	40.68	75.68	1948	1982	437098	SALISBURY	43.93	73.10	1948	1993						
366370	NORRISTOWN	40.12	75.35	1948	1987	437152	SEABURG STATION	42.87	72.92	1948	1993						
366622	ORWELL 2 NW	41.92	76.30	1961	1993	437617	SOUTH LONDONDERRY	43.18	72.82	1948	1984						

Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends	Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends						
VERMONT (continued)																	
438556	UNION VILLAGE DAM	43.80	72.27	1950	1993	447033	RAPIDAN	38.30	78.07	1931	1981						
438600	VERNON	42.77	72.52	1948	1993	447201	RICHMOND WSO AP	37.50	77.33	1948	1993						
438644	WAITSFIELD 2 WSW	44.18	72.85	1955	1993	447285	ROANOKE WSO AP	37.32	79.97	1948	1993						
438815	WATERBURY 2 SSE	44.32	72.75	1958	1992	447312	ROCKFISH	37.80	78.75	1948	1990						
439099	WEST BURKE	44.65	71.98	1948	1993	447338	ROCKY MOUNT	37.00	79.90	1948	1993						
439735	WHITINGHAM 1 W	42.80	72.92	1948	1993	447501	SALTVILLE	36.88	81.77	1930	1962						
439984	WOODSTOCK 2 WSW	43.62	72.55	1948	1987	447971	SPEEDWELL	36.82	81.17	1948	1985						
VIRGINIA																	
440135	ALLISONIA 2 S	36.90	80.75	1952	1993	448022	STAFFORDSVILLE 3 ENE	37.27	80.72	1951	1993						
440166	ALTAVISTA	37.10	79.30	1948	1993	448062	STAUNTON SEWAGE PLANT	38.15	79.03	1948	1993						
440193	AMISSVILLE	38.68	78.02	1948	1982	448192	SUFFOLK LAKE KILEY	36.73	76.60	1948	1993						
440243	APPOMATTOX	37.37	78.83	1948	1993	448323	TANGIER ISLAND	37.83	76.00	1952	1991						
440327	ASHLAND	37.75	77.48	1948	1993	448396	THE PLAINS 2 NNE	38.90	77.75	1954	1993						
440385	BACK BAY WILDLIFE RFG	36.67	75.92	1953	1993	448448	TIMBERVILLE 3 E	38.65	78.72	1948	1990						
440551	BEDFORD	37.35	79.52	1948	1993	448547	TROUTDALE	36.67	81.40	1948	1993						
440670	BERRYVILLE	39.15	77.98	1948	1987	448600	TYE RIVER 1 SE	37.63	78.93	1948	1993						
440720	BIG MEADOWS	38.52	78.43	1948	1993	448737	VIENNA DUNN LORING	38.90	77.22	1948	1993						
440766	BLACKSBURG 3 SE	37.18	80.42	1952	1993	448829	WALKERTON 2 NW	37.75	77.05	1932	1993						
440792	BLAND	37.10	81.10	1951	1993	448837	WALLACETON LK DRUMMOND	36.60	76.43	1930	1993						
440993	BREMO BLUFF	37.70	78.30	1948	1993	448888	WARRENTON 3 SE	36.68	77.77	1951	1993						
441082	BROOKNEAL	37.03	78.95	1950	1986	448894	WARSAW 2 NW	37.98	76.77	1951	1993						
441121	BUCHANAN	37.53	79.68	1950	1993	448902	WASHINGTON 3 SSW	38.67	78.18	1948	1981						
441136	BUCKINGHAM	37.55	78.55	1948	1993	448906	WASH NATL WSCMO AP	38.85	77.03	1948	1993						
441159	BUENA VISTA	37.73	79.35	1948	1993	449025	WEST POINT 2 SW	37.52	76.83	1954	1993						
441209	BURKES GARDEN	37.08	81.33	1948	1993	449151	WILLIAMSBURG 2 N	37.30	76.70	1948	1993						
441585	CHARLOTTE COURT H 3 W	37.07	78.70	1948	1993	449186	WINCHESTER 3 ESE	39.18	78.12	1948	1993						
441593	CHARLOTTESVILLE 2 W	38.03	78.52	1948	1993	449215	WISE 1 SE	36.97	82.57	1955	1993						
441598	CHARLOTTESVILLE 1 W	38.03	78.52	1950	1971	449263	WOODSTOCK 2 NE	38.90	78.47	1930	1993						
441606	CHASE CITY	36.83	78.47	1949	1993	449272	WOOLWINE	36.72	80.28	1951	1993						
441614	CHATHAM	36.82	79.40	1930	1993	449301	WYTHEVILLE 1 S	36.93	81.08	1930	1993						
441746	CLARKSVILLE	36.62	78.57	1948	1993	WEST VIRGINIA											
441801	CLIFTON FORGE	37.82	79.80	1948	1983	460094	ALBRIGHT	39.48	79.63	1953	1993						
441929	COLUMBIA 2 SSE	37.73	78.15	1930	1986	460102	ALDERSON	37.73	80.63	1948	1993						
441955	CONCORD 5 S	37.28	78.97	1950	1993	460355	ATHENS CONCORD COLLEGE	37.43	81.00	1948	1993						
441999	COPPER HILL 1 NNE	37.10	80.13	1948	1993	460527	BAYARD	39.27	79.37	1926	1993						
442009	CORBIN	38.20	77.37	1959	1993	460580	BECKLEY V A HOSPITAL	37.78	81.18	1948	1993						
442041	COVINGTON	37.80	80.00	1948	1993	460582	BECKLEY WSO AP	37.78	81.12	1963	1993						
442044	COVINGTON FILT PLANT	37.80	80.00	1960	1993	460633	BELINGTON	39.03	79.95	1948	1993						
442155	CULPEPER	38.47	78.00	1930	1990	460687	BENS RUN 1 SSE	39.47	81.10	1948	1985						
442208	DALE ENTERPRISE	38.45	78.93	1948	1993	460921	BLUEFIELD FAA AIRPORT	37.30	81.22	1959	1993						
442237	DANTE	36.98	82.28	1927	1958	460939	BLUESTONE LAKE	37.65	80.88	1948	1993						
442245	DANVILLE (BRIDGE ST)	36.58	79.38	1948	1993	461075	BRANCHLAND 1 N	38.23	82.20	1948	1993						
442368	DIAMOND SPRINGS	36.90	76.20	1948	1980	461083	BRANDONVILLE	39.67	79.62	1948	1989						
442504	DRIVEN 4 NE	36.88	76.48	1948	1986	461204	BRUSHY RUN	38.83	79.25	1948	1984						
442729	ELKWOOD 6 SE	38.15	77.77	1948	1983	461215	BUCKEYE 1 SE	38.17	80.13	1952	1993						
442790	EMPIORIA 1 WNW	36.68	77.55	1948	1993	461220	BUCKHANNON 2 W	39.00	80.27	1948	1993						
442941	FARMVILLE 2 N	37.33	78.38	1914	1993	461282	BURNSVILLE LAKE	38.85	80.63	1949	1993						
443071	FLOYD 2 NE	36.93	80.30	1948	1993	461328	CAIRO 3 S	39.17	81.17	1948	1981						
443192	FREDERICKSBURG NAT PK	38.32	77.45	1930	1993	461363	CAMDEN ON GAULEY	38.37	80.62	1948	1993						
443213	FREE UNION	38.08	76.13	1955	1993	461393	CANAAN VALLEY	39.05	79.43	1948	1993						
443267	GALAX RADIO WBOB	36.67	80.92	1948	1993	461526	CENTRALIA	38.62	80.58	1951	1993						
443397	GLEN LYN	37.37	80.87	1930	1993	461570	CHARLESTON WSFO AP	38.37	81.60	1948	1993						
443470	GOSHEN	37.98	79.50	1948	1993	461575	CHARLESTON 1	38.35	81.65	1926	1974						
443640	GRUNDY	37.27	82.08	1948	1993	461677	CLARKSBURG 1	39.27	80.35	1926	1993						
443991	HILLSVILLE 1 S	36.73	80.73	1948	1993	461696	CLAY 1 SW	38.45	81.08	1948	1993						
444044	HOLLAND 1 E	36.68	76.78	1948	1993	461723	CLENDENIN 1 SW	38.48	81.37	1951	1993						
444101	HOPEWELL	37.30	77.30	1930	1993	462054	CRESTON	38.95	81.28	1948	1993						
444128	HOT SPRINGS	38.00	79.83	1948	1991	462462	DRY CREEK	37.87	81.47	1961	1993						
444148	HUDDLESTON 4 SW	37.13	79.53	1950	1993	462718	ELKINS WSO AP	38.88	79.85	1926	1993						
444234	INDEPENDENCE 2	36.65	81.17	1953	1989	462920	FAIRMONT	39.47	80.13	1926	1993						
444414	JOHN H KERR DAM	36.60	78.28	1951	1993	463072	FLAT TOP	37.58	81.10	1931	1993						
444565	KERRS CREEK 6 WNW	37.85	79.58	1948	1993	463215	FRANKLIN 2 NE	38.67	79.32	1948	1993						
444676	LAFAYETTE 1 NE	37.23	80.22	1951	1993	463353	GARY	37.37	81.55	1926	1989						
444720	LANGLEY AIR FORCE BASE	37.08	76.35	1930	1993	463561	GASSAWAY	38.67	80.77	1951	1993						
444768	LAWRENCEVILLE 5 W	36.77	77.93	1948	1993	463544	GLENVILLE 1 ENE	38.93	80.82	1926	1993						
444876	LEXINGTON	37.78	79.43	1948	1993	463798	HACKER VALLEY	38.65	80.38	1960	1993						
444909	LINCOLN	39.12	77.72	1930	1993	463846	HAMLIN	38.28	82.10	1948	1993						
445050	LOUISA	38.03	78.00	1948	1993	464128	HICO 1 SE	38.10	81.00	1956	1993						
445096	LURAY 5 E	38.67	78.38	1948	1993	464200	HOGSETT GALLIPOLIS DAM	38.68	82.18	1948	1993						
445120	LYNCHBURG WSO AP	37.33	79.20	1930	1993	464378	HUNTINGTON 1	38.42	82.37	1926	1957						
445213	MANASSAS 3 NW	38.78	77.50	1950	1985	464393	HUNTINGTON WSO AP	38.37	82.55	1961	1993						
445300	MARTINSVILLE FILT PL	36.70	79.88	1948	1993	464408	IAEGER	37.47	81.82	1948	1993						
445455	MEADOWS OF DAN 5 SW	36.67	80.45	1950	1993	464763	KEARNEYVILLE WSO	39.38	77.88	1930	1993						
445685	MONTEBELLO 2 NE	37.88	79.13	1948	1991	464816	KERMIT	37.83	82.40	1948	1985						
445698	MONTEREY	38.42	79.58	1948	1990	465002	LAKE LYNN	39.72	79.85	1948	1993						
445851	MOUNT WEATHER	39.07	77.88	1948	1993	465224	LEWISBURG 2 SSW	37.77	80.47	1948	1993						
446012	NEW CASTLE	37.50	80.10	1948	1985	465353	LOGAN	37.85	82.00	1948	1993						
446046	NEWPORT 2 NNW	37.32	80.52	1948	1993	465365	LONDON LOCKS	38.20	81.37	1936	1993						
446054	NEWPORT NEWS PRESS BLDG	37.02	76.45	1948	1980	465563	MADISON	38.05	81.82	1948	1993						
446139	NORFOLK WSO AP	36.90	76.20	1948	1993	465621	MANNINGTON 1 N	39.55	80.35	1926	1979						
446475	PAINTER 2 W	37.58	75.82	1955	1993	465626	MANNINGTON 6 NW	39.57	80.45	1948	1993						
446491	PALMYRA 1 E	37.87	78.25	1957	1993	465672	MARLINTON	38.22	80.08	1926	1993						
446593	PEDLAR DAM	37.67	79.28	1948	1988	465707	MARTINSBURG FAA AP	39.40	77.98	1926	1993						
446626	PENNINGTON GAP	36.75	83.05	1931	1993	465739	MATHIAS	38.87	78.87	1948	1993						
446692	PHILPOTT DAM 2	36.78	80.03	1953	1993	465871	MC ROSS	37.98	80.75	1955	1988						
446712	PIEDMONT RESEARCH STN	38.22	78.12	1948	1993	465963	MIDDLEBOROUGH 2 ESE	39.48	80.87	1948	1993						
446723	PILOT 1 ENE	37.07	80.35	1948	1985	466163	MOOREFIELD 2 SSE	39.03	78.97	1948	1993						
446906	POWHATAN	37.55	77.93	1950	1993	466202	MORGANTOWN FAA AP	39.65	79.92	1948	1993						
446955	PULASKI 2 E	37.05	80.75	1948	199												

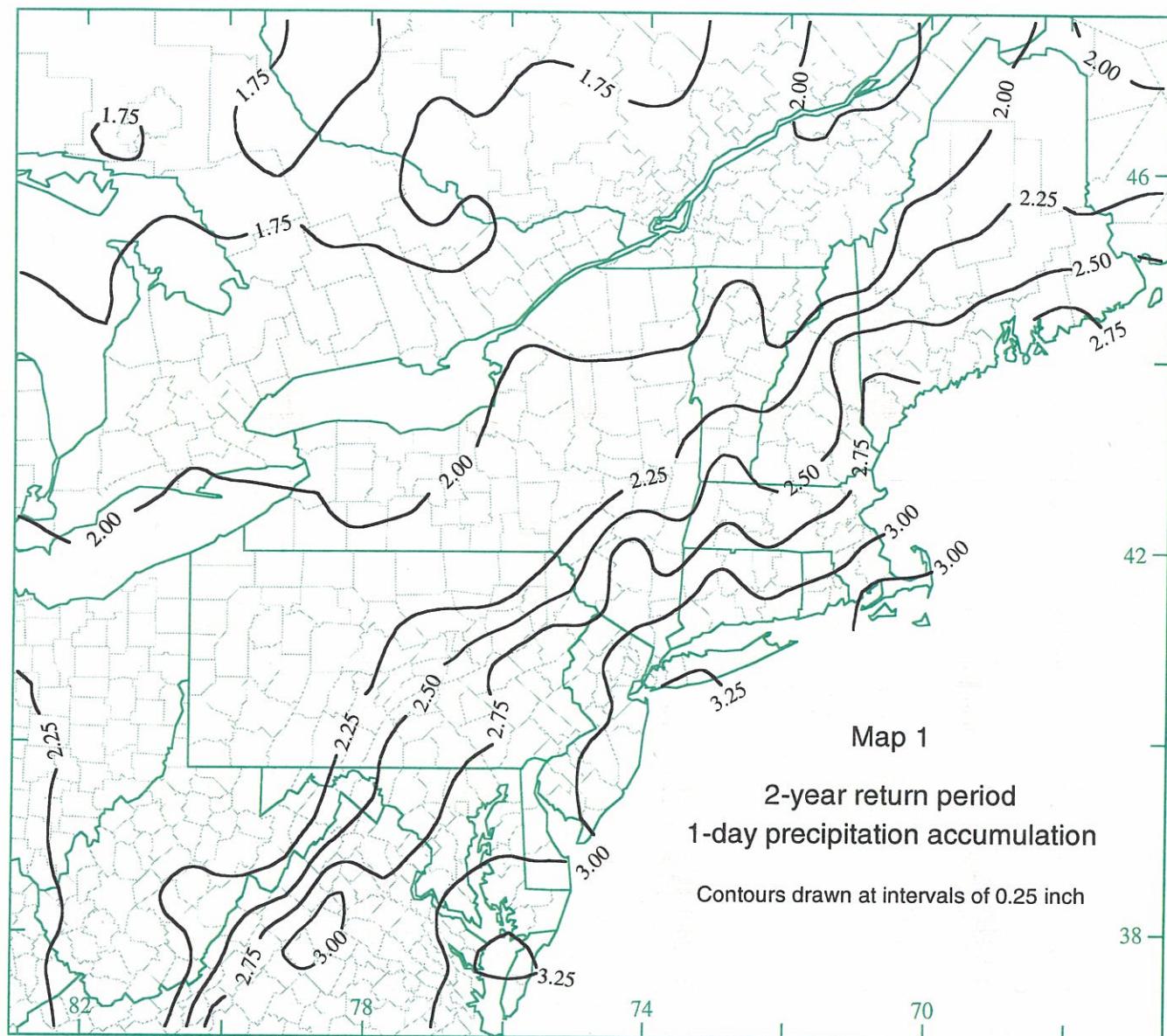
Table 3 (continued)

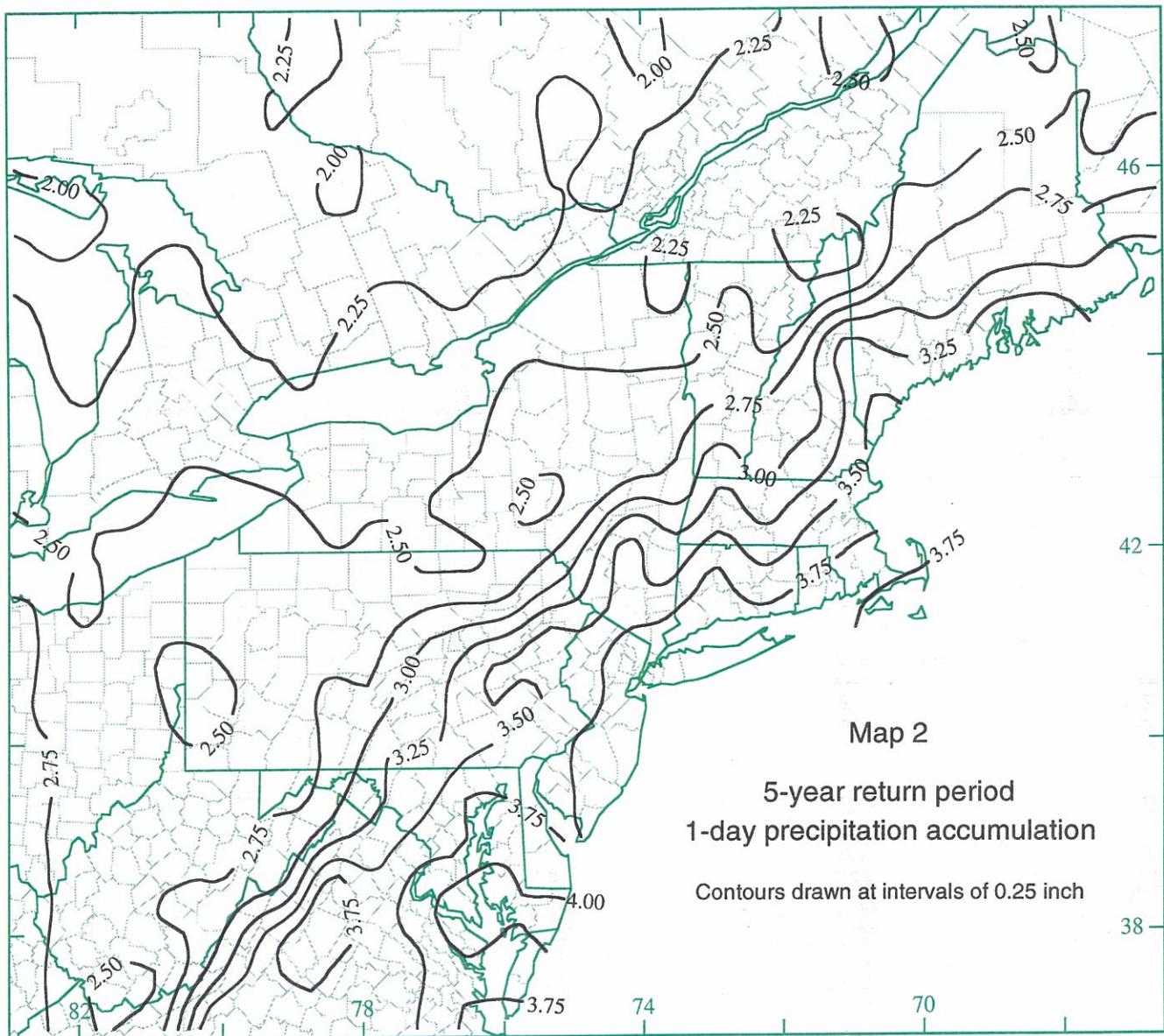
Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends	Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends
WEST VIRGINIA (continued)											
466849	PARKERSBURG FAA AP	39.35	81.43	1948	1993	6110745	BINGHAM CHUTE	46.08	79.40	1933	1970
466859	PARKERSBURG 1 E	39.27	81.53	1926	1993	6111045	BURKS FALLS	45.60	79.57	1888	1986
466867	PARSONS 1 SE	39.10	79.67	1948	1993	6111467	CHATSWORTH	44.40	80.90	1952	1990
466954	PETERSBURG	39.00	79.12	1939	1971	6111766	COLDWATER	44.70	79.67	1883	1954
466982	PHILIPPI	39.15	80.03	1948	1993	6111793	COLLINGWOOD	44.48	80.22	1869	1974
466991	PICKENS 1	38.67	80.22	1948	1986	6112171	DURHAM	44.18	80.82	1882	1990
467004	PIEDMONT	39.48	79.03	1926	1966	6112313	EMSDALE	45.50	79.23	1895	1952
467029	PINEVILLE	37.58	81.53	1941	1993	6112340	ESSA ONT HYDRO	44.37	79.80	1958	1990
467207	PRINCETON	37.37	81.08	1948	1993	6112350	EUGENIA	44.33	80.55	1916	1969
467352	RAVENSWOOD LOCK PARK	38.95	81.77	1948	1980	6113000	GRAVENHURST	44.92	79.37	1870	1949
467552	RIPLEY 4 NNE	38.88	81.68	1948	1993	6113660	HUNTSVILLE	45.32	79.25	1879	1961
467730	ROMNEY 1 SW	39.33	78.77	1948	1993	6114805	MAGNETAWAN	45.67	79.78	1924	1958
467785	ROWLESBURG 1	39.35	79.68	1948	1993	6115099	MIDHURST	44.45	79.77	1947	1990
468384	SPENCER 1 SE	38.80	81.35	1926	1993	6115127	MIDLAND	44.75	79.90	1889	1986
468433	SPRUCE KNOB	38.68	79.52	1951	1988	6115525	MUSKOKA A	44.97	79.30	1934	1990
468662	SUTTON LAKE	38.65	80.68	1948	1993	6115810	ORILLIA	44.62	79.40	1871	1961
468807	THOMAS	39.15	79.50	1948	1993	6116128	OWEN SOUND	44.57	80.92	1878	1962
469011	UNION 3 SSE	37.55	80.53	1948	1993	6116254	PARRY SOUND	45.33	80.00	1874	1976
469086	VALLEY HEAD	38.55	80.03	1948	1993	6117663	SCOTIA	45.52	79.30	1924	1978
469104	VALANDIA	38.93	80.40	1948	1980	6118187	SUTTON WEST	44.32	79.30	1871	1908
469281	WARDENSVILLE R M FARM	39.10	78.58	1926	1993	6119325	WASHAGO	44.75	79.33	1927	1970
469333	WEBSTER SPRINGS 1 E	38.48	80.42	1948	1989	6119495	WIARTON	44.75	81.13	1883	1936
469368	WELLSBURG WTR TRMT PL	40.28	80.62	1948	1989	6119500	WIARTON A	44.75	81.10	1947	1990
469436	WESTON	39.03	80.47	1948	1993	6120315	ARKONA	43.03	81.92	1882	1915
469492	WHEELING WARWOOD DAM 12	40.10	80.70	1926	1976	6120819	BLYTH	43.72	81.38	1959	1990
469522	WHITE SULPHUR SPRINGS	37.80	80.30	1926	1993	6121025	BRUCEFIELD	43.55	81.55	1903	1990
469605	WILLIAMSON	37.67	82.28	1926	1993	6122450	FOREST	43.10	82.00	1924	1964
469610	WILLIAMSON 2	37.68	82.30	1951	1993	6122845	GODERICH	43.75	81.70	1866	1950
469683	WINFIELD LOCKS	38.53	81.92	1948	1993	6122848	GODERICH LIGHTHOUSE	43.75	81.72	1874	1911
ONTARIO (continued)											
6060773	BISCOTASING	47.30	82.10	1914	1990	6121127	KINCARDINE	44.17	81.62	1870	1903
6061359	CHAPLEAU 2	47.83	83.43	1886	1966	6124700	LUCKNOW	43.95	81.50	1885	1990
6061847	CONISTON	46.47	80.82	1921	1976	6125705	NORTH BRUCE	44.38	81.42	1888	1922
6067211	RUEL	47.30	81.45	1915	1959	6126558	POINT CLARK	44.08	81.68	1871	1913
6068980	TURBINE	46.38	81.57	1914	1990	6127513	SARNIA	42.97	82.37	1882	1961
6070027	ABITIBI CANYON	49.88	81.57	1931	1963	6127887	SOUTHAMPTON	44.50	81.37	1872	1982
6071712	COCHRANE	49.07	81.03	1910	1990	6128320	TOBERMORY	45.25	81.67	1888	1983
6072225	EARLTON A	47.70	79.85	1938	1990	6129235	WALKERTON	44.13	81.15	1902	1971
6072325	ENGLEHART	47.82	79.90	1948	1990	6131081	CALEDONIA	43.08	79.95	1931	1966
6073138	HAILEYBURY	47.45	79.63	1893	1977	6131386	CHATTHAM	42.40	82.20	1933	1967
6073420	HEASLIP	47.80	79.83	1928	1967	6131388	CHATTHAM 2	42.40	82.20	1879	1946
6073810	IROQUOIS FALLS	48.75	80.67	1913	1990	6131910	COTTAM	42.12	82.75	1882	1926
6073840	ISLAND FALLS	49.58	81.38	1955	1990	6131982	DELHI CDA	42.87	80.55	1934	1990
6073960	KAPUSKASING CDA	49.40	82.43	1918	1990	6133047	GRIMSBY	43.20	79.57	1910	1985
6073975	KAPUSKASING A	49.42	82.47	1937	1990	6133057	GRIMSBY ROCK CHAPEL	43.18	79.58	1914	1966
6074209	KIRKLAND LAKE	48.15	80.02	1950	1990	6135120	HAGERSVILLE	42.97	80.07	1948	1990
6075379	MONTRÉAL RIVER	47.12	79.48	1910	1967	6133360	HARROW CDA	42.03	82.90	1917	1990
6075400	MOOSE FACTORY	51.23	80.50	1877	1938	6134390	LEAMINGTON	42.05	82.63	1916	1978
6075425	MOOSONEE	51.27	80.65	1932	1990	6134610	LONG POINT	42.55	80.05	1936	1985
6075594	NEW LISKEARD	47.50	79.67	1923	1984	6135583	NEW GLASGOW	42.52	81.63	1957	1990
6077845	SMOKY FALLS	50.07	82.17	1933	1990	6135638	NIAGARA FALLS	43.13	79.08	1902	1990
6078285	TIMMINS A	48.57	81.37	1955	1990	6135660	NIAGARA FALLS ONT HYDRO	43.08	79.08	1921	1972
6079415	WAWAUTIN	48.35	81.40	1913	1965	6136335	PELEE ISLAND	41.75	82.68	1888	1987
6080189	ALGOQUIN PARK	45.58	78.55	1917	1960	6136362	PORT DALHOUSIE	43.18	79.27	1874	1990
6081928	CRYSTAL FALLS	46.45	79.87	1922	1988	6136643	PORT DOVER	42.78	80.22	1874	1983
6084770	MADAWASKA	45.50	77.98	1915	1990	6136694	PORT STANLEY	42.67	81.22	1871	1990
6085682	NORTH BAY	46.32	79.47	1887	1982	6137147	RIDGETOWN	42.45	81.88	1883	1986
6085700	NORTH BAY A	46.35	79.43	1939	1990	6137285	ST CATHARINES	43.20	79.25	1882	1990
6087255	RUTHERGLEN	46.25	79.07	1891	1940	6137301	ST CATHARINES CDA	43.18	79.23	1928	1964
6092915	GORE BAY	45.92	82.47	1881	1983	6137361	ST THOMAS	42.78	81.17	1882	1980
6092925	GORE BAY A	45.88	82.57	1947	1990	6137399	ST WILLIAMS	42.70	80.45	1954	1988
6096755	PROVIDENCE BAY	45.67	82.23	1897	1940	6137735	SIMCOE	42.87	80.33	1866	1961
6097915	SOUTH BAYMOUTH	45.58	82.02	1954	1990	6139145	VINELAND STATION	43.18	79.40	1924	1988
6100969	BROCKVILLE	44.60	75.70	1871	1980	6139265	WALLACEBURG	42.58	82.40	1905	1990
6101440	CHATS FALLS	45.47	76.23	1950	1990	6139445	WELLAND	43.00	79.27	1872	1990
6101494	CHENAUX	45.58	76.68	1950	1990	6139520	WINDSOR	42.35	83.10	1866	1929
6101658	CLONTARF	45.38	77.15	1882	1957	6139600	WOODSLEE CDA	42.22	82.73	1946	1986
6101820	COMBERMERE	45.37	77.62	1956	1990	6140941	BRANTFORD	43.13	80.27	1876	1963
6101874	CORNWALL	45.02	74.75	1950	1990	6141095	CAMBRIDGE GALT MOE	43.33	80.32	1879	1990
6101901	CORNWALL ONT HYDRO	45.03	74.80	1954	1990	6142400	FERGUS SHAND DAM	43.73	80.35	1939	1990
6101955	DALHOUSIE L HIGH FALLS	44.97	76.62	1923	1983	6142803	GLEN ALLAN	43.68	80.72	1955	1990
6104025	KEMPTVILLE	45.00	75.63	1928	1990	6143083	GUELPH OAC	43.52	80.23	1881	1973
6104125	KILLALOE	45.57	77.42	1938	1972	6144232	KITCHENER	43.43	80.50	1914	1977
6104185	KINGSTON QUEENS U	44.25	76.50	1872	1957	6144442	LISTOWEL	43.75	80.97	1880	1966
6104733	MACCUE	44.88	76.17	1883	1918	6144475	LONDON A	43.03	81.15	1940	1990
6105460	MORRISBURG	44.92	75.18	1913	1990	6144500	LONDON SHARON DRIVE	43.03	81.28	1956	1990
6105887	OTTAWA	45.40	75.72	1872	1935	6144505	LONDON SOUTH	42.98	81.22	1883	1932
6105976	OTTAWA CDA	45.38	75.72	1889	1990	6144665	LUCAN	43.18	81.42	1871	1975
6106000	OTTAWA INT'L A	45.32	75.67	1938	1990	6145267	MONTICELLO	43.97	80.40	1954	1990
6106090	OTTAWA NRC	45.45	75.62	1951	1984	6145503	MOUNT FOREST	43.98	80.75	1891	1986
6106362	PEMBROKE EDDY MATCH	45.83	77.15	1866	1969	6146240	PARIS	43.18	80.45	1870	1967
6106400	PETAWAWA NAT FORESTRY	45.98	77.43	1931	1990	6146711	PRESTON	43.40	80.42	1953	1990
6106779	PURDY	45.32	77.72	1955	1990	6146939	REDICKVILLE	44.23	80.22	1944	1985
6107003	RENFREW	45.43	76.65	1882	1929	6148100	STRATFORD	43.38	81.00	1865	1959
6107955	SOUTH MOUNTAIN	44.97	75.48	1960	1990	6148105	STRATFORD MOE	43.37	81.00	1959	1990
6108060	STONECLIFFE	46.15	78.10	1876	1921	6148120	STRATHROY	42.95	81.65	1879	1990
6110270	ANGUS	44.32	79.87	1930	1965	6149454	WESTMINSTER	42.93	81.28	1882	1933
6110549	BARRIE	44.40	79.68	1866	1958	6149625	WOODSTOCK	43.13	80.77	1870	1990
6110605	BEATRICE	45.13	79.38	1876	1979	6150100	ALBION	43.93	79.83	19	

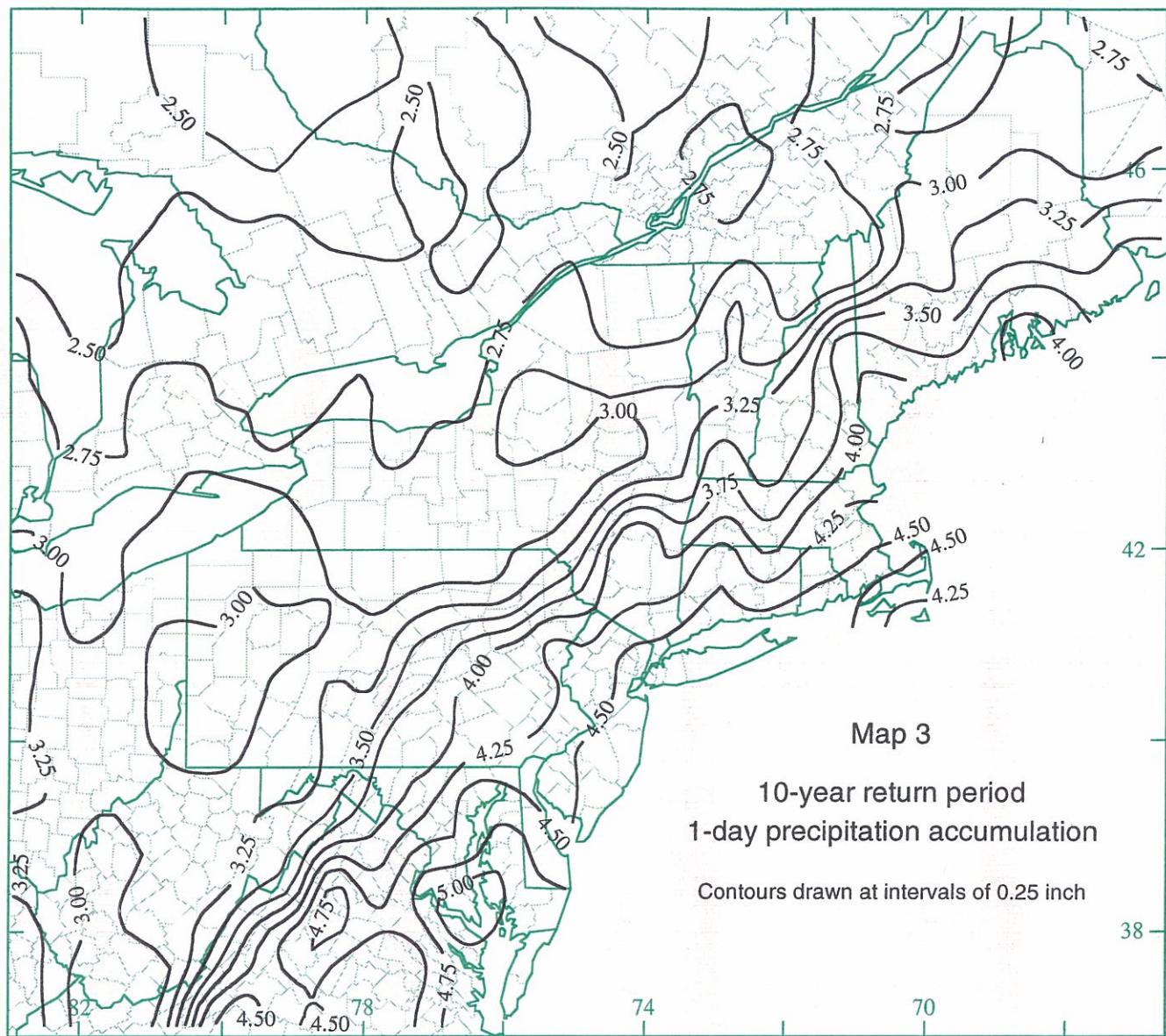
Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends	Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends
ONTARIO (continued)											
6150395	AURORA	43.95	79.40	1883	1919	7026465	RICHMOND	45.63	72.13	1871	1990
6150689	BELLEVILLE	44.15	77.40	1866	1990	7032440	FORT COULONGE	45.82	76.75	1948	1989
6150815	BLOOMFIELD	43.98	77.22	1896	1990	7033120	HIGH FALLS	45.85	75.65	1933	1972
6151064	BURLINGTON TS	43.33	79.83	1951	1990	7033160	HUBERDEAU	45.97	74.63	1913	1980
6151137	CAMPBELLFORD	44.30	77.80	1915	1990	7034350	LUCERNE	45.53	75.97	1911	1945
6152605	FRENCHMANS BAY	43.82	79.08	1959	1990	7034480	MANIWAKI	46.38	75.97	1953	1990
6152691	GEORGETOWN	43.65	79.95	1882	1966	7035112	MANIWAKI 2	46.38	75.98	1913	1975
6152833	GLEN HARRY MONO MILLS	43.93	79.95	1959	1990	7035158	MONT LAURIER	45.65	74.95	1930	1975
6153192	HAMILTON	43.27	79.90	1866	1958	7035360	MORIN HEIGHTS	46.57	75.50	1920	1963
6153300	HAMILTON RGB	43.28	79.88	1950	1990	7035520	NOMININGUE	46.38	75.05	1913	1990
6153410	HEART LAKE	43.73	79.78	1957	1989	7035680	NOTRE DAME DU LAUS	46.12	75.63	1929	1990
6155071	MEYERSBURG	44.25	77.80	1930	1971	7035760	OTTER LAKE	45.85	76.43	1948	1990
6155183	MILLGROVE	43.32	79.97	1951	1990	7036000	PERKINS	45.60	75.62	1911	1990
6155722	OAK RIDGES	43.97	79.47	1918	1979	7036760	STE AGATHE DES MONTES	46.05	74.28	1899	1958
6155788	ORANGEVILLE	43.92	80.05	1883	1967	7037400	ST JEROME	45.80	74.05	1932	1990
6155854	ORONO	43.97	78.62	1923	1990	7038040	SHAWVILLE	45.62	76.47	1948	1990
6156533	PICTON	44.02	77.13	1915	1990	7038080	SHEENBORO	45.97	77.25	1948	1990
6156670	PORT HOPE	43.95	78.28	1882	1990	7038880	WALTHAM	45.92	76.92	1953	1990
6157012	RICHMOND HILL	43.88	79.45	1959	1990	7040440	BAIE COMEAU A	49.13	68.20	1947	1990
6157685	SHARON	44.10	79.43	1886	1990	7040680	BERSIMIS	48.97	68.62	1923	1961
6157831	SMITHFIELD CDA	44.08	77.67	1949	1987	7041710	CLARKE CITY	50.18	66.63	1902	1981
6158065	STONEY CREEK	43.22	79.75	1884	1927	7042840	GRANDES BERGERONNES	48.25	69.52	1951	1990
6158350	TORONTO	43.67	79.40	1840	1990	7043000	HARRINGTON HARBOUR	50.53	59.50	1911	1978
6158363	TORONTO AGINCOURT	43.78	79.27	1895	1968	7043540	LABRIEVILLE B1	49.30	69.55	1955	1990
6158417	TORONTO DEER PARK	43.68	79.38	1890	1933	7043960	LA MALBAIE	47.67	70.15	1913	1990
6158665	TORONTO ISLAND A	43.63	79.40	1957	1990	7045400	NATASHQUAN A	50.18	61.82	1914	1990
6158733	TORONTO PEARSON INT'L A	43.67	79.63	1937	1990	7047250	ST FEROL	47.12	70.83	1915	1983
6158875	TRENTON A	44.12	77.53	1935	1990	7047770	ST URBAIN	47.57	70.55	1957	1990
6159010	TWEED	44.50	77.28	1925	1972	7047910	SEPT-ILES A	50.22	66.27	1944	1990
6159575	WOODBRIDGE	43.80	79.60	1948	1990	7048320	TADOUSSAC	48.15	69.70	1913	1990
6160297	APSLY	44.77	78.08	1922	1957	7050198	ANTICOSTI HEATH POINT	49.10	61.70	1682	1935
6160465	BANCROFT	45.05	77.85	1882	1985	7050200	ANTICOSTI SW POINT	49.40	63.55	1872	1954
6162375	FENELON FALLS	44.53	78.73	1915	1970	7050210	ANTICOSTI WEST POINT	49.87	64.53	1882	1933
6163156	HALIBURTON A	45.00	78.58	1883	1990	7050240	ARMAGH	46.75	70.55	1916	1990
6164297	LAKEFIELD	44.47	78.23	1874	1990	7050455	BARRAGE LAC MORIN	47.65	69.52	1942	1984
6164430	LINDSAY	44.35	78.75	1880	1971	7050463	BARRAGE MITIS	48.33	67.90	1926	1966
6165195	MINDEN	44.93	78.72	1883	1990	7050760	BIC	48.37	68.70	1882	1968
6166416	PETERBOROUGH	44.28	78.32	1866	1970	7050790	BIRD ROCKS	47.85	61.13	1881	1934
QUEBEC (continued)											
7010720	BERTHIERVILLE	46.05	73.18	1919	1990	7051120	CAP LAPLAN	48.10	65.68	1947	1990
7011600	CHUTE PANET	46.87	71.87	1949	1982	7051160	CAP MADELEINE	49.23	65.32	1882	1990
7012070	DONNACONA	46.67	71.75	1918	1964	7051200	CAUSAPASCAL	48.37	67.23	1913	1990
7012071	DONNACONA 2	46.68	71.73	1952	1990	7052600	GASPE	48.83	64.48	1895	1985
7013360	JOLIETTE	46.03	73.43	1913	1972	7052960	GRINDSTONE ISLAND	47.38	61.87	1871	1983
7014160	L'ASSOMPTION CDA	45.82	73.43	1930	1990	7054095	LA POCATIERE CDA	47.35	70.03	1899	1990
7014290	LES CEDRES	45.30	74.05	1913	1990	7055120	MONT JOLI A	48.60	68.22	1943	1990
7015730	OKA	45.50	74.07	1937	1990	7055200	MONT LOUIS	49.23	65.73	1933	1990
7016280	QUEBEC	46.80	71.22	1872	1959	7055380	MURDOCHVILLE	48.95	65.52	1952	1990
7016294	QUEBEC A	46.80	71.38	1943	1990	7056067	POINTE AU PERE	48.50	68.48	1873	1982
7016800	ST ALBAN	46.72	72.08	1949	1990	7056120	PORT DANIEL	48.15	64.98	1927	1990
7016840	STE ANNE DE LA PERADE	46.58	72.23	1949	1990	7056200	PORT MENIER	49.82	64.35	1929	1974
7016960	ST CHARLES DE MANDEVILLE	46.35	73.35	1921	1990	7056240	PRICE	48.60	68.13	1931	1985
7017000	ST CHRISTINE	46.82	71.92	1950	1990	7056480	RIMOUSKI	48.45	68.52	1952	1990
7017080	ST COME	46.28	73.75	1950	1990	7056600	RIVIERE BLEUE	47.43	69.03	1950	1990
7017270	ST GABRIEL DE BRANDON	46.30	73.38	1919	1985	7057160	ST ELZEAR DE BONAVENTURE	48.18	65.35	1948	1990
7017480	ST LIN DES LAURENTIDES	45.85	73.75	1913	1981	7057600	ST PAMPHILE	46.97	69.78	1950	1990
7017640	ST PAULIN	46.42	73.02	1950	1990	7057680	ST RAPHAEL	46.82	70.75	1949	1982
7017760	ST TITE	46.73	72.57	1920	1985	7057720	STE ROSE DU DEGELIS	47.57	68.63	1932	1990
7018000	SHAWINIGAN	46.57	72.75	1902	1990	7058520	TRINITE DES MONTES	48.13	68.47	1950	1990
7018564	TROIS RIVIERES	46.37	72.60	1934	1986	7060080	ALBANEL	48.88	72.45	1922	1990
7020040	ABERCORN	45.03	72.67	1950	1985	7060320	ARVIDA	48.43	71.17	1931	1989
7020360	ASBESTOS	45.77	71.95	1948	1987	7060400	BAGOTVILLE A	48.33	71.00	1942	1990
7020800	BISHOPTON	45.58	71.57	1948	1990	7061440	CHICOUTIMI	48.42	71.08	1871	1979
7020840	BROME	45.18	72.57	1875	1990	7061480	CHUTE A MURDOCK	48.52	71.25	1921	1957
7020860	BROMPTONVILLE	45.50	71.97	1957	1990	7061520	CHUTE AUX GALETS	48.65	71.20	1919	1963
7021320	CHARTIERVILLE	45.28	71.20	1951	1990	7063320	ISLE MALIGNE	48.58	71.63	1924	1990
7021580	CHUTE HEMMINGS	45.87	72.45	1931	1986	7063320	ISLE MALIGNE	48.58	71.63	1926	1990
7021840	COATICOOK	45.15	71.80	1949	1990	7063400	KENOGAMI	48.42	71.25	1916	1972
7022000	DISRAELI	45.92	71.32	1908	1990	7063560	LAG BOUCHETTE	48.27	72.18	1949	1990
7022160	DRUMMONDVILLE	45.88	72.48	1913	1990	7063683	LAC ONATCHIWAY	48.90	71.03	1920	1981
7022280	EAST ANGUS	45.48	71.67	1919	1985	7063690	LAC STE CROIX	48.42	71.75	1958	1990
7022300	EAST HEREFORD	45.08	71.50	1949	1990	7064998	MISTASSINI	48.85	72.20	1912	1990
7022320	FARNHAM	45.30	72.93	1917	1990	7065640	NORMANDIN CDA	48.85	72.53	1936	1990
7022720	GEORGEVILLE	45.13	72.23	1951	1990	7065960	PERIBONCA	48.77	72.03	1951	1990
7022800	GRANBY	45.38	72.70	1948	1990	7066080	PORTEAGE DES ROCHES	48.30	71.22	1926	1984
7023240	HUNTINGDON	45.05	74.17	1870	1990	7066585	ROBERVAL A	48.52	72.27	1957	1990
7023800	LAKE MEGANTIC	45.60	70.88	1913	1947	7066688	ROBERVAL NORD	48.53	72.23	1888	1967
7024000	LAMBTON	45.83	71.08	1915	1990	7066820	ST AMBROISE	48.57	71.33	1954	1990
7024080	LA PATRIE	45.40	71.25	1949	1981	7068160	SHIPSHAW	48.45	71.22	1943	1990
7024280	LENNOXVILLE CDA	45.37	71.83	1888	1990	7070448	BARRAGE A LAC KEMPT	47.55	74.18	1913	1970
7024320	LINGWICK	45.63	71.37	1952	1990	7070451	BGE C LAC CHATEAUVERT	47.77	73.90	1942	1982
7024400	MACDONALD COLLEGE	45.12	73.93	1906	1976	7070454	BARRAGE GOUIN	48.35	74.10	1913	1982
7024440	MAGOG	45.27	72.12	1948	1990	7070456	BARRAGE MATTAWIN	46.85	73.65	1929	1982
7024920	MILAN	45.58	71.12	1949	1990	7074240	LA TUQUE	47.40	72.78	1911	1990
7025250	MONTRÉAL/DORVAL INT'L A	45.47	73.75	1941	1990	7074600	MANOUAN SANMAUR	47.90	73.80	1919	1972
7025257	MONTRÉAL JAR BOT	45.57	73.55	1948	1989	7076360	RAPIDE BLANC	47.80	72.97	1931	1974
7025280	MONTRÉAL MCGILL	45.50	73.58	1871	1990	7080449	RAPIDE CABONGA	47.32	76.47	1929	1969
7025440	NILOLET	46.20	72.62	1913	1990	7080452	RAPIDE DES QUINZE	47.55	79.23	1911	1990
7026040	PHILIPSBURG	45.03	73.08	1950	1990</						

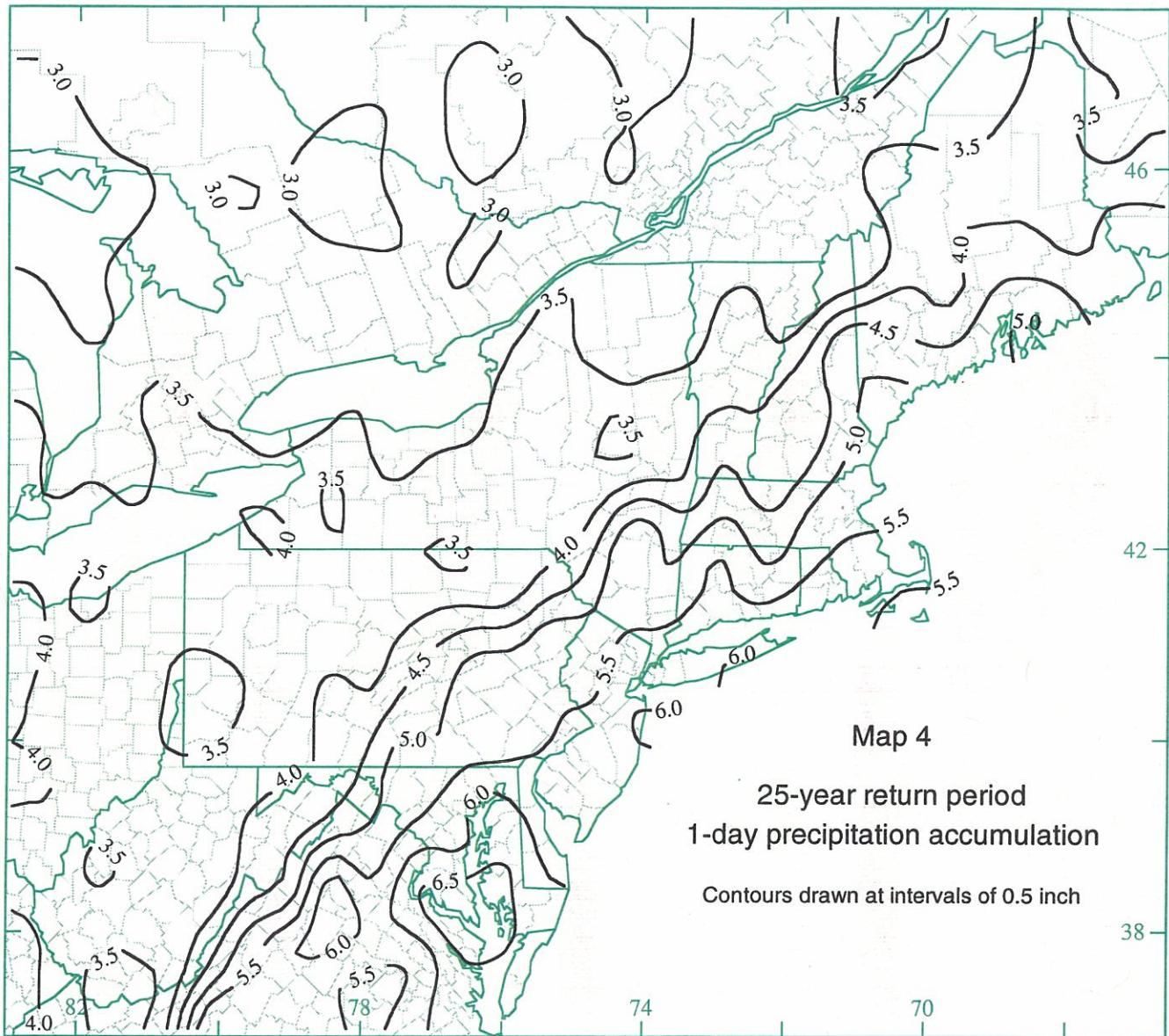
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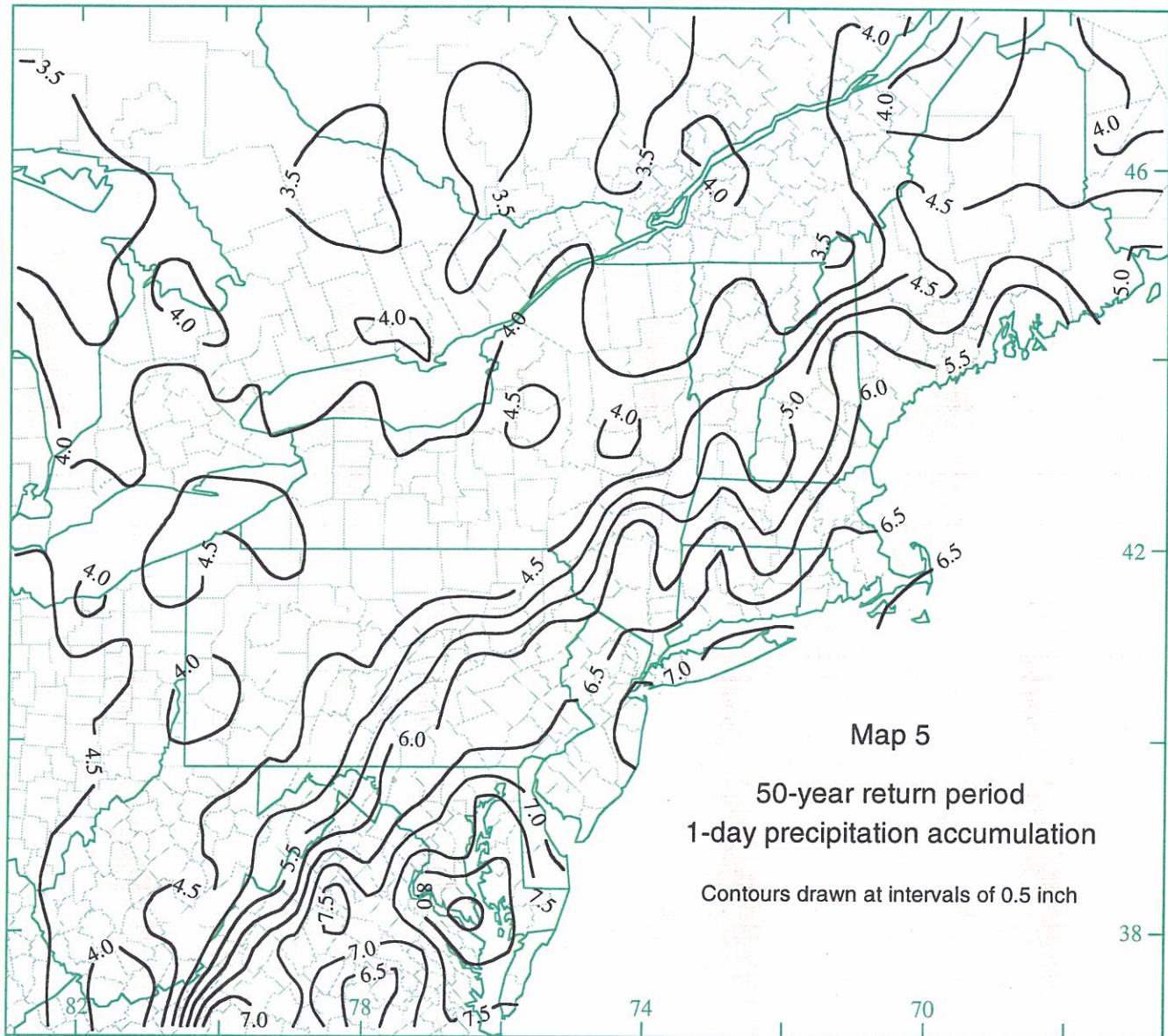
Station number	Station name	Latitude (degrees)	Longitude (degrees)	Record begins	Record ends
QUEBEC (continued)					
7080600	BELLETERRE	47.38	78.70	1951	1990
7082880	GRAND LAC VICTORIA	47.83	77.37	1927	1984
7083480	KIPAWA LANIEL	47.05	79.27	1920	1990
7084560	MANNEVILLE	48.55	78.48	1949	1990
7086400	RAPIDE-SEPT	47.77	78.30	1941	1975
7088760	VILLE MARIE	47.35	79.43	1913	1990
7090050	ABITIBI POST	48.72	79.37	1896	1936
7090120	AMOS	48.57	78.13	1913	1990
7092480	FORT GEORGE	53.83	79.00	1915	1969
7094120	LA SARRE	48.78	79.22	1951	1990
7095000	MISTASSINI POST	50.42	73.88	1885	1980
7095480	NITCHEQUON	53.20	70.90	1942	1985
7098360	TASCHEREAU	48.67	78.70	1951	1990
7098600	VAL D'OR A	48.07	77.78	1951	1990
NEW BRUNSWICK					
8100100	ACADIA FOREST EXP ST	45.98	66.37	1955	1990
8100200	ALMA	45.60	64.95	1950	1990
8100300	AROOSTOOK	46.80	67.72	1929	1990
8100500	BATHURST	47.62	65.65	1872	1972
8100701	CAMPBELLTON POWER ST	48.00	66.68	1937	1978
8100990	CHATHAM	47.05	65.48	1873	1947
8101000	CHATHAM A	47.02	65.45	1943	1990
8101100	CHIPMAN	46.18	65.87	1931	1967
8101170	DALHOUSIE	48.07	66.37	1872	1916
8101200	DOAKTOWN	46.55	66.15	1934	1990
8101300	EDMUNDSTON	47.37	68.33	1913	1957
8101301	EDMUNDSTON FRASER CO	47.37	68.33	1949	1979
8101500	FREDERICTON A	45.87	66.53	1951	1990
8101600	FREDERICTON CDA	45.92	66.62	1913	1990
8101700	FREDERICTON UNB	45.95	66.60	1871	1952
8101800	GAGETOWN 2	45.78	66.15	1897	1990
8101900	GRAND FALLS	47.05	67.73	1913	1966
8101920	GRAND MANAN	44.73	66.77	1874	1965
8102200	HARVEY STATION	45.73	67.00	1920	1976
8102300	KEDGWICK	47.65	67.35	1931	1990
8102600	MCADAM	45.58	67.33	1872	1976
8103000	MINTO	46.03	66.03	1954	1990
8103100	MONCTON	46.10	64.78	1881	1990
8103200	MONCTON A	46.12	64.68	1939	1990
8103400	MUSQUASH	45.20	66.33	1922	1981
8103500	NEPIGUIT FALLS	47.40	65.78	1922	1990
8103800	OROMOCITO	45.83	66.47	1957	1990
8104100	POINT ESCUMINAC	47.12	64.82	1885	1951
8104200	POINT LEPIREAU	45.07	66.47	1872	1952
8104400	REXTON	46.67	64.87	1922	1990
8104500	SACKVILLE	45.90	64.38	1878	1980
8104600	ST ANDREWS	45.08	67.08	1874	1990
8104700	ST GEORGE	45.13	66.83	1919	1981
8104800	SAINT JOHN	45.28	66.08	1871	1970
8104900	SAINT JOHN A	45.32	65.88	1946	1990
8105200	SUSSEX	45.72	65.53	1897	1990
8105600	WOODSTOCK	46.15	67.58	1886	1990

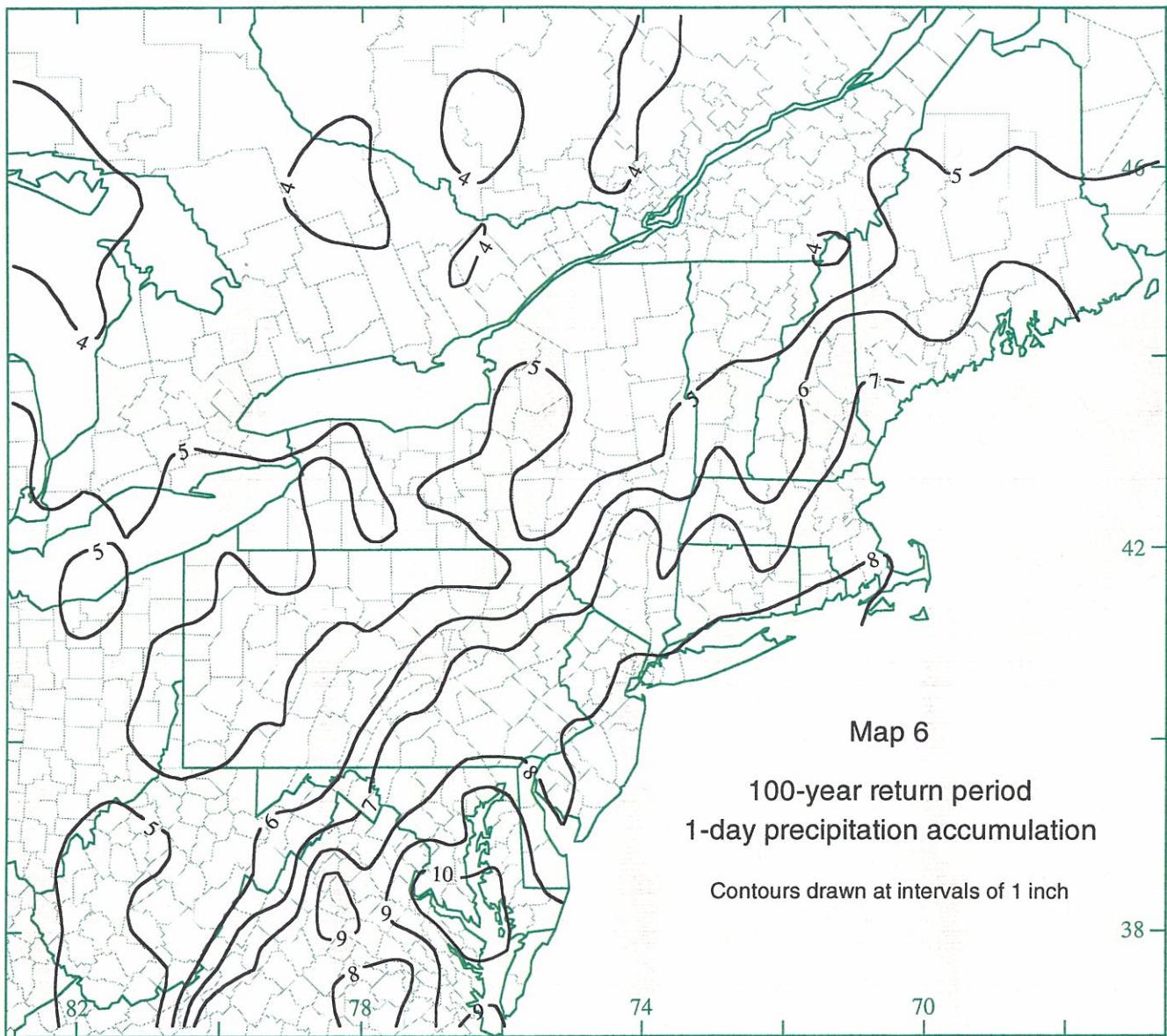


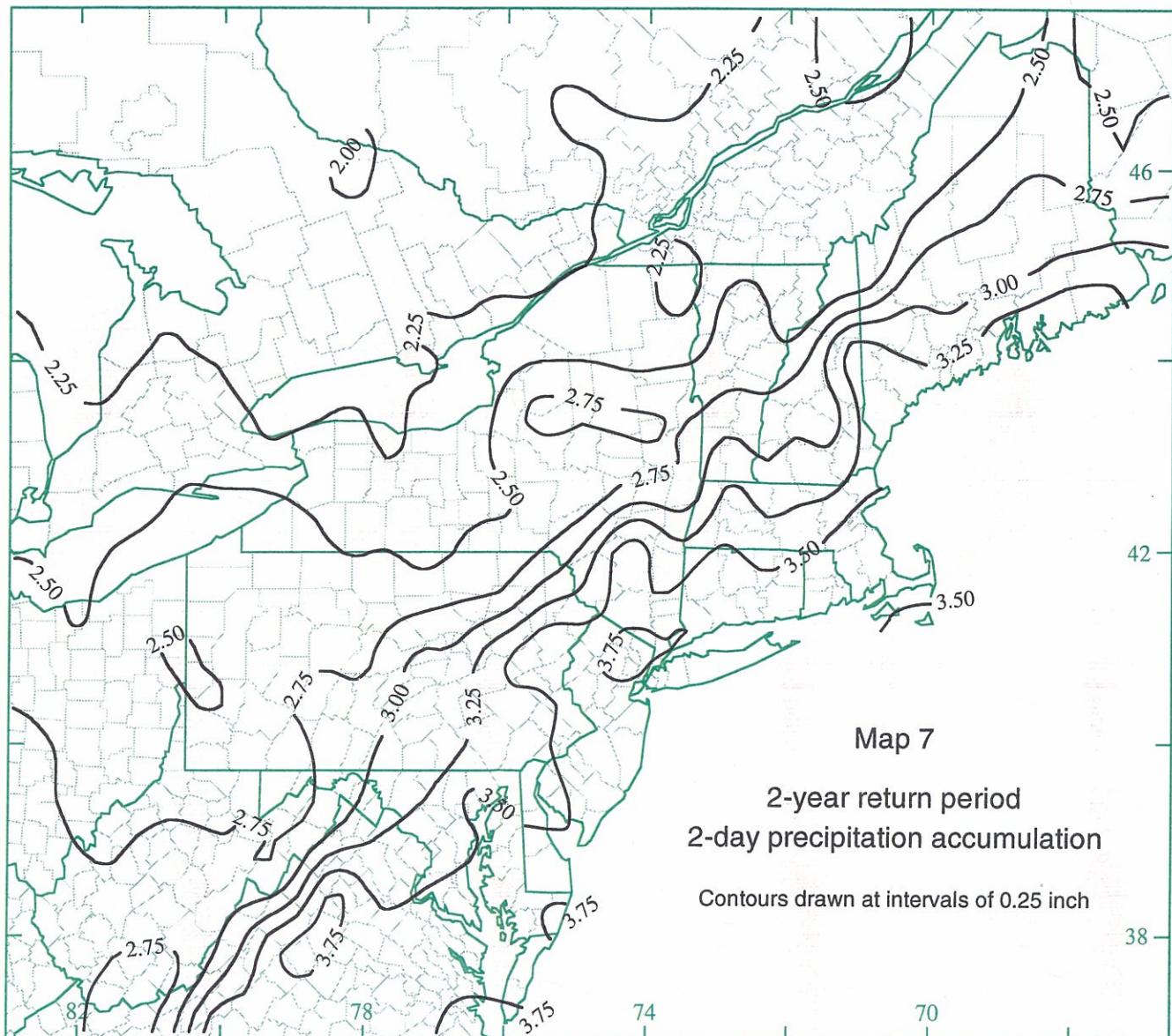


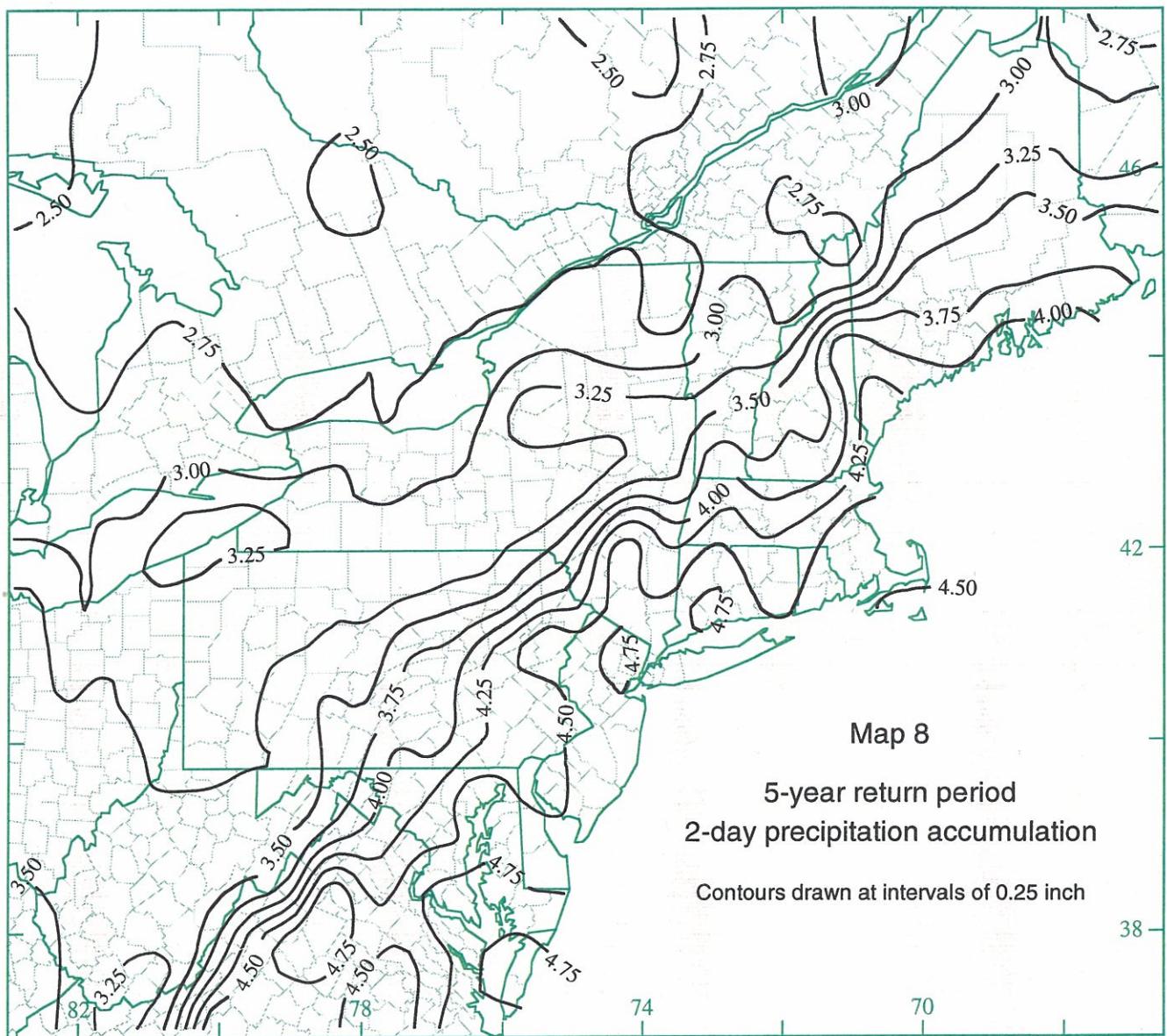


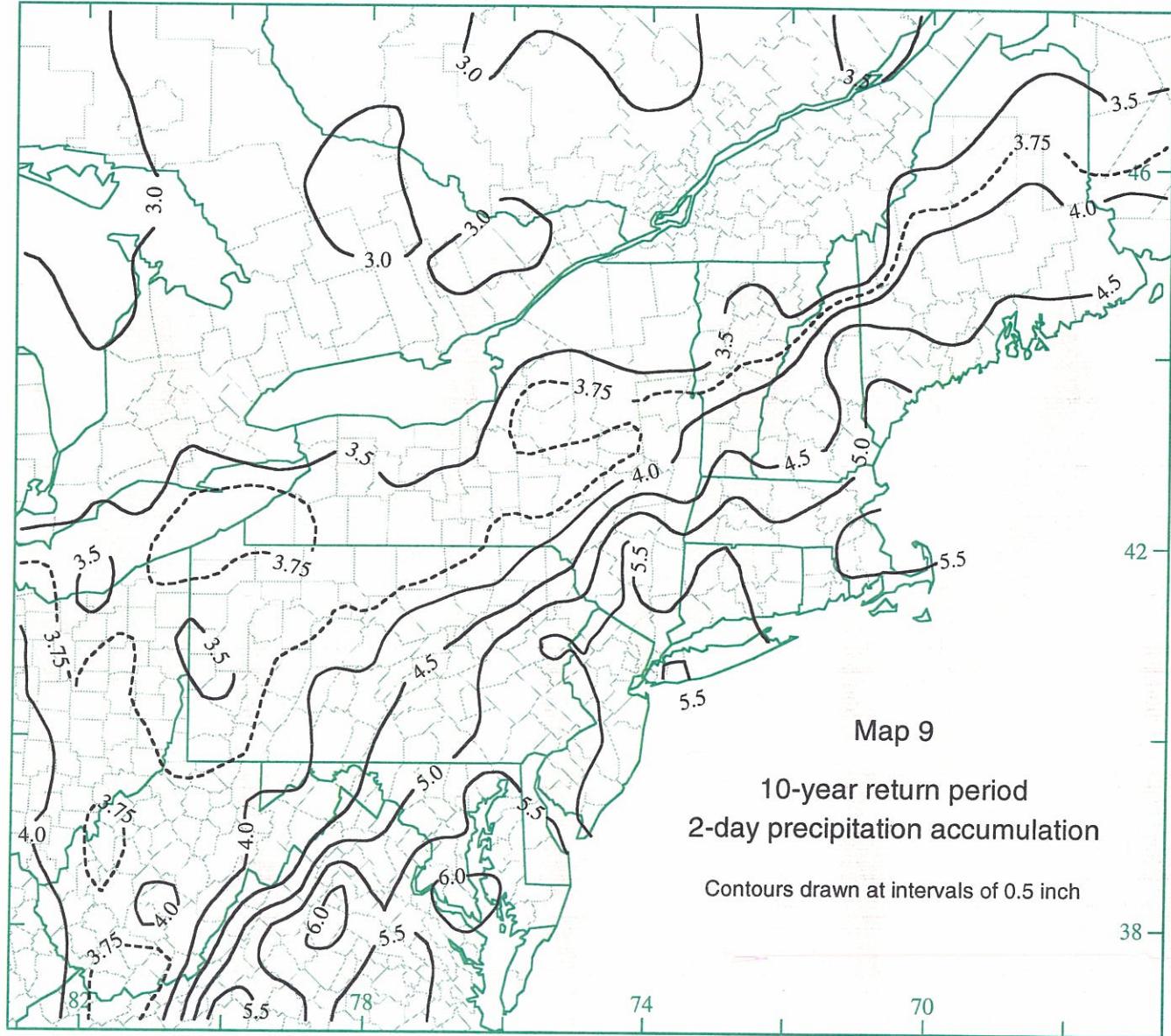


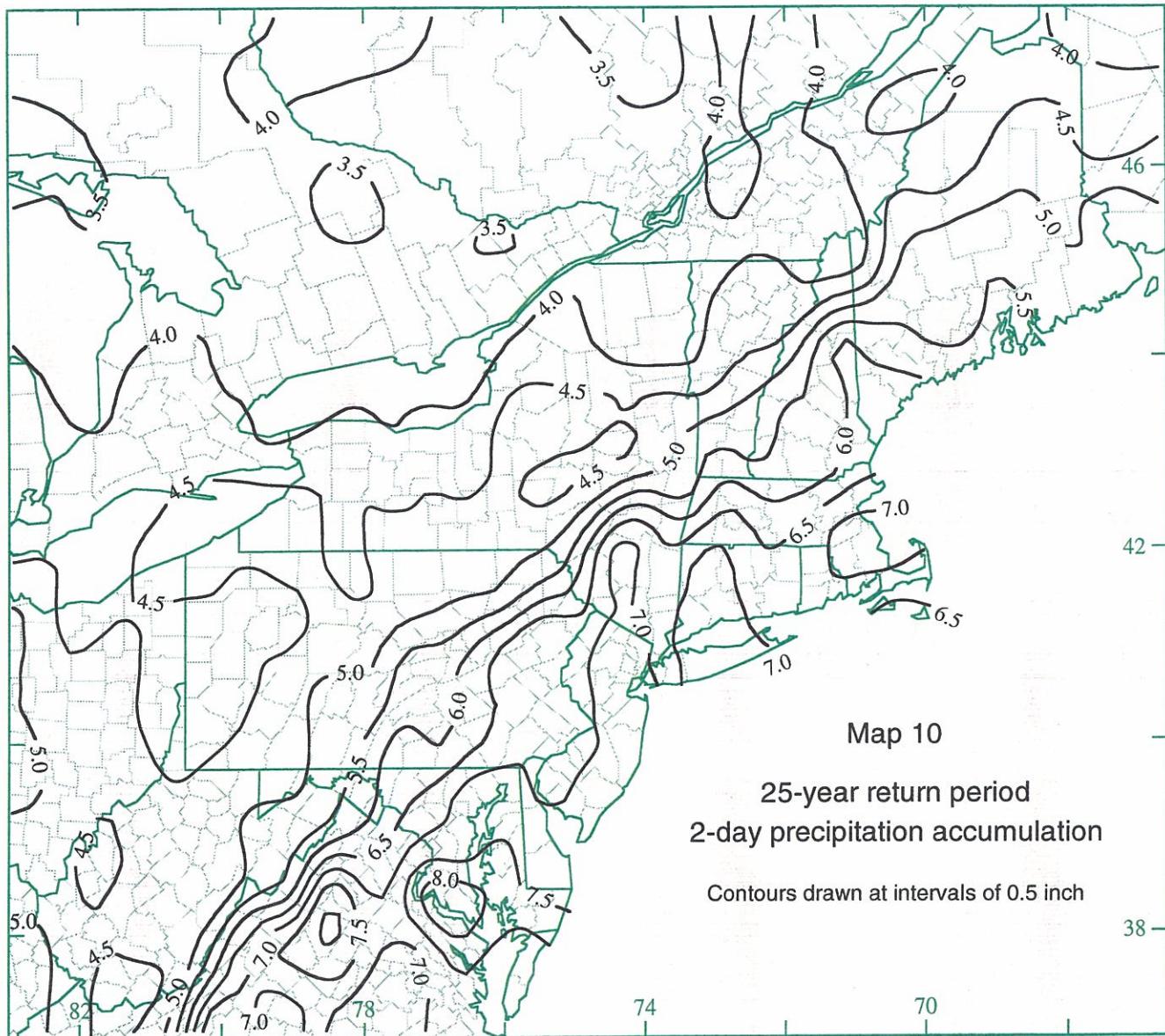


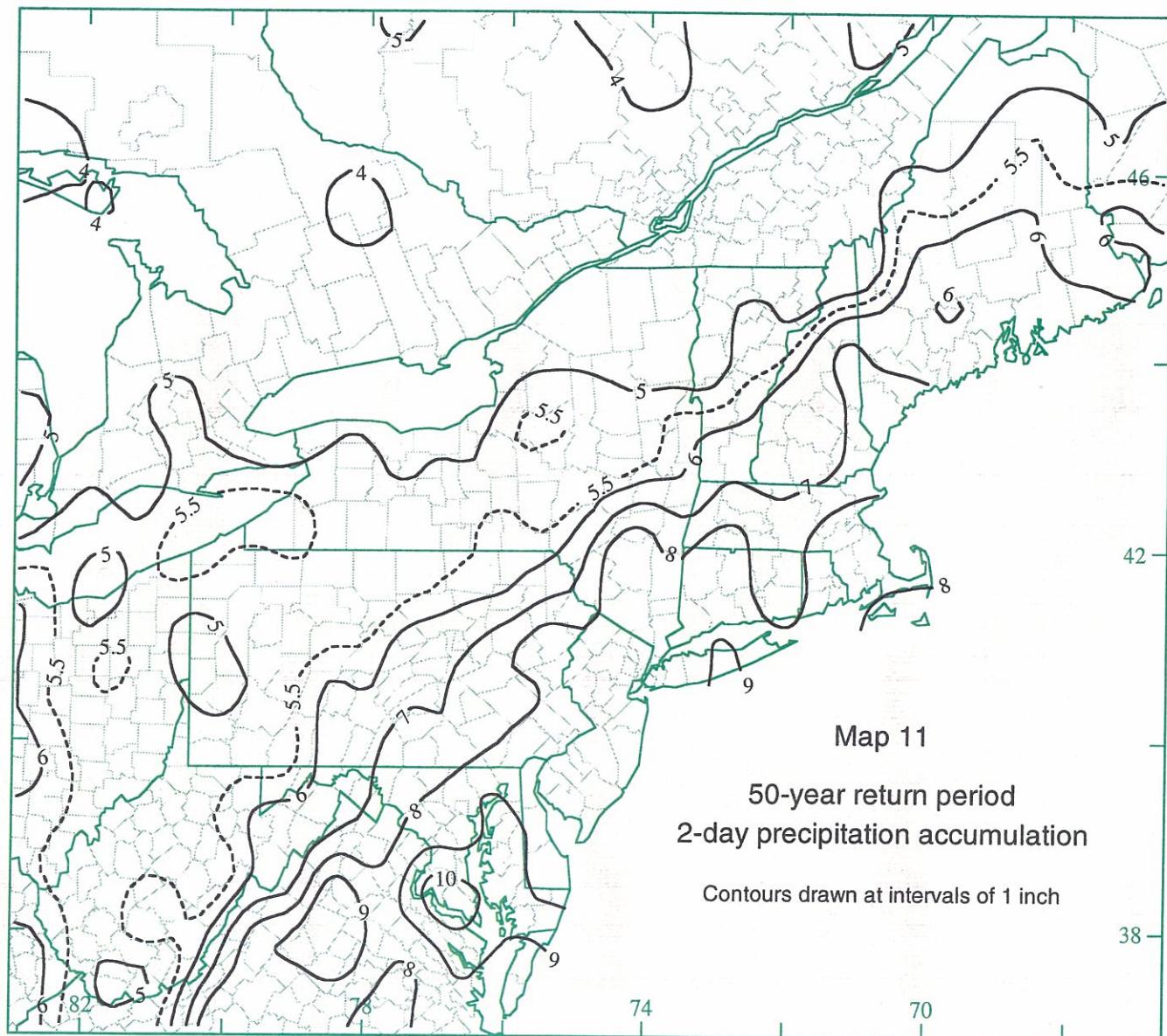


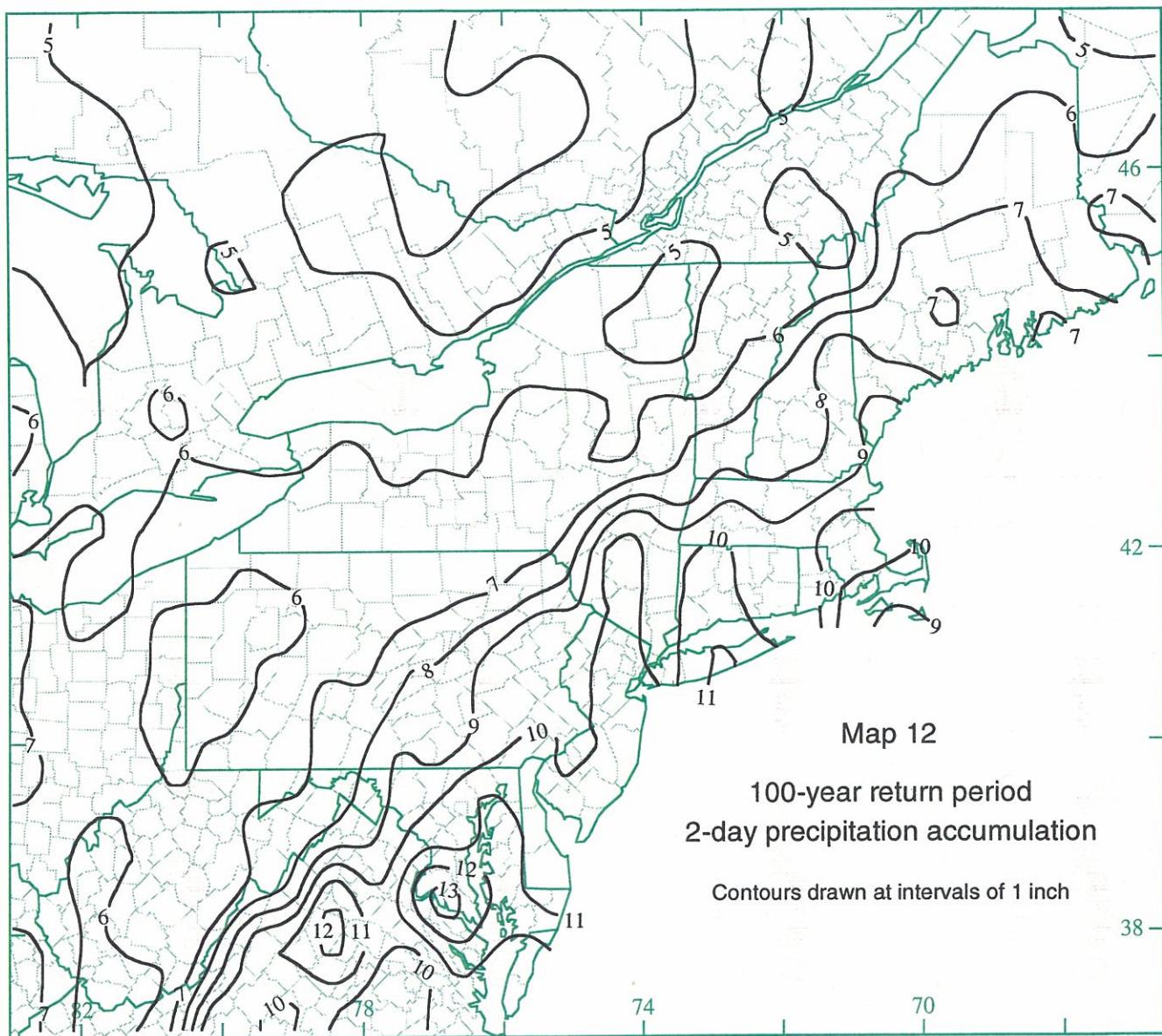


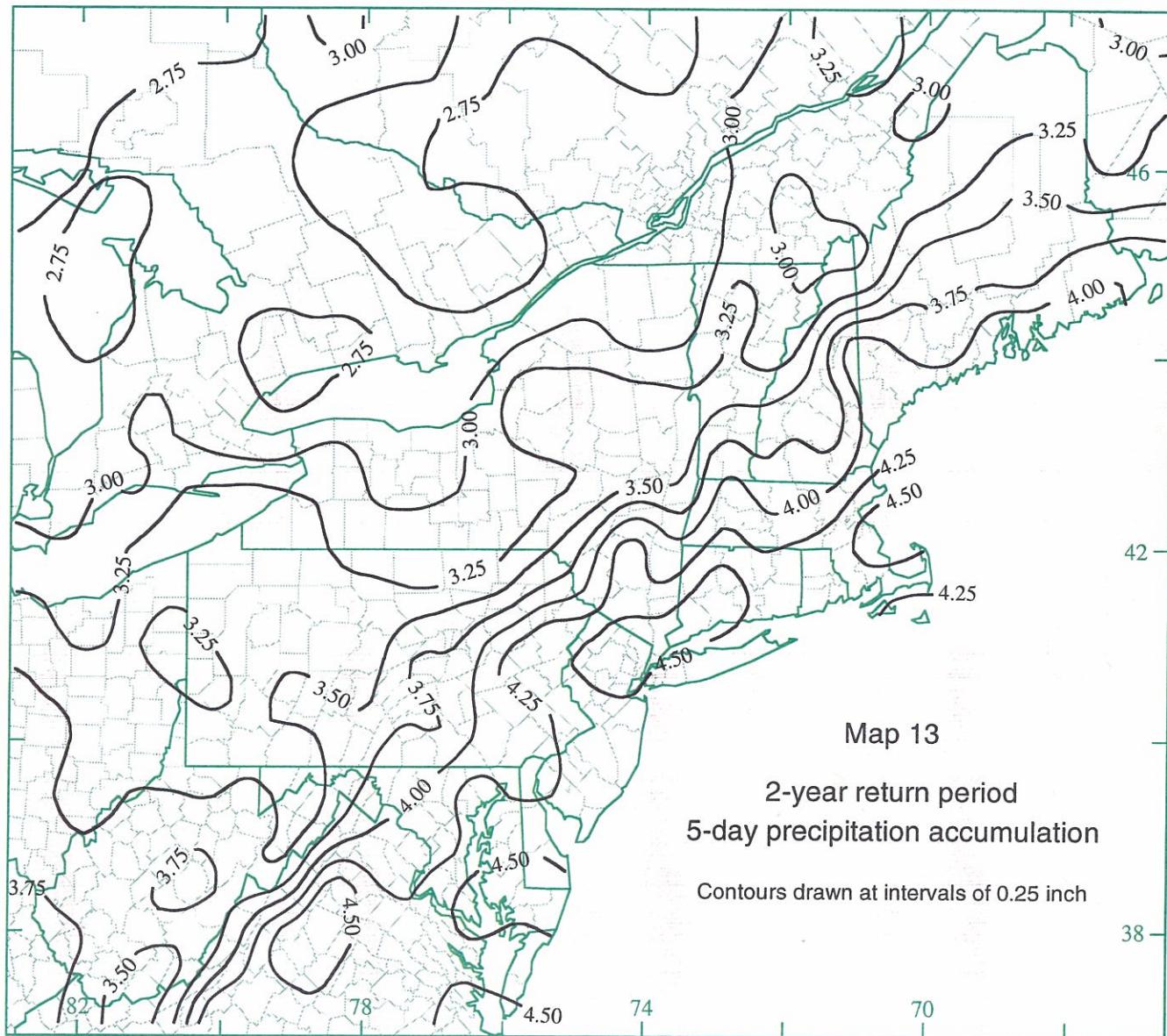


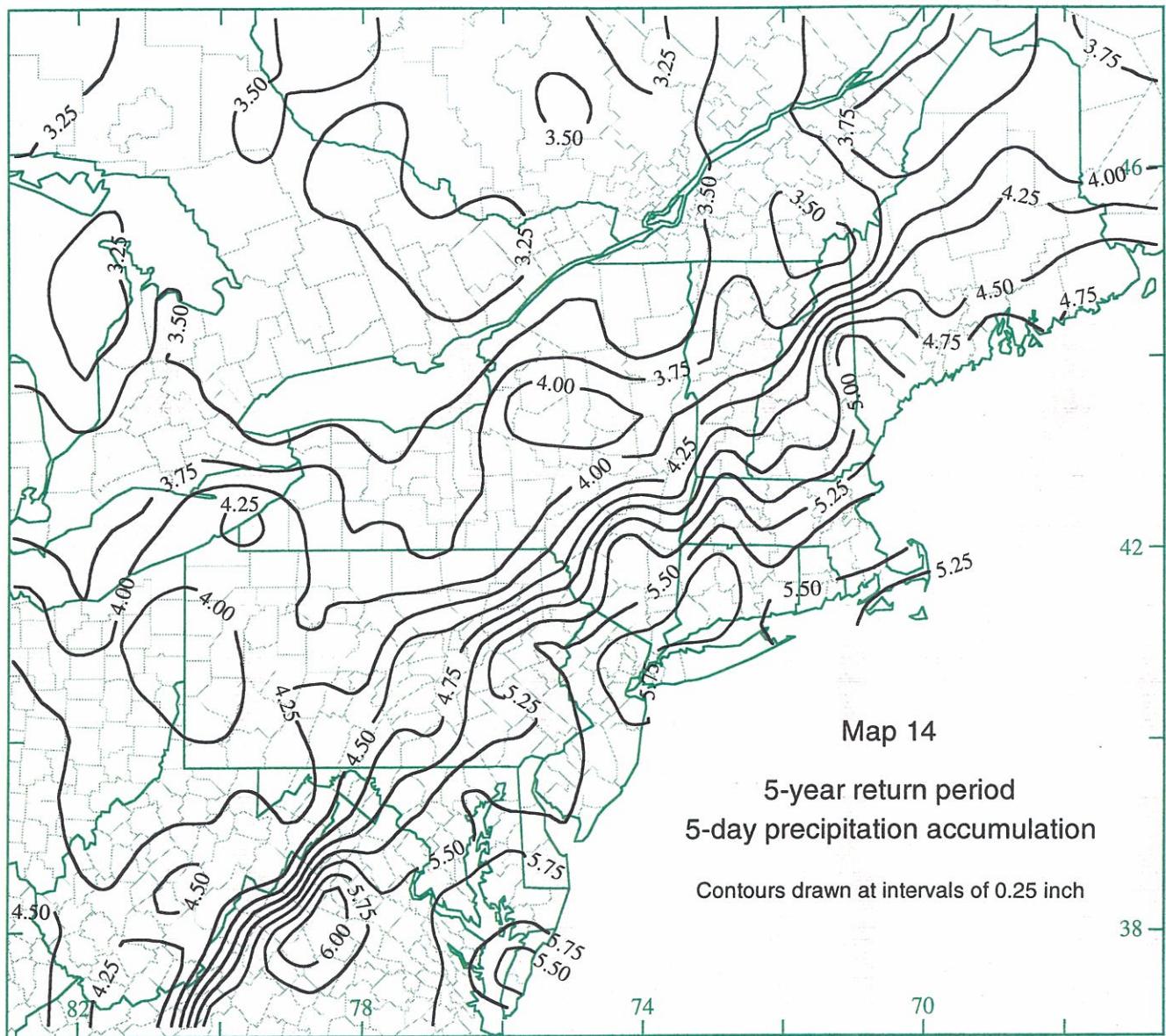


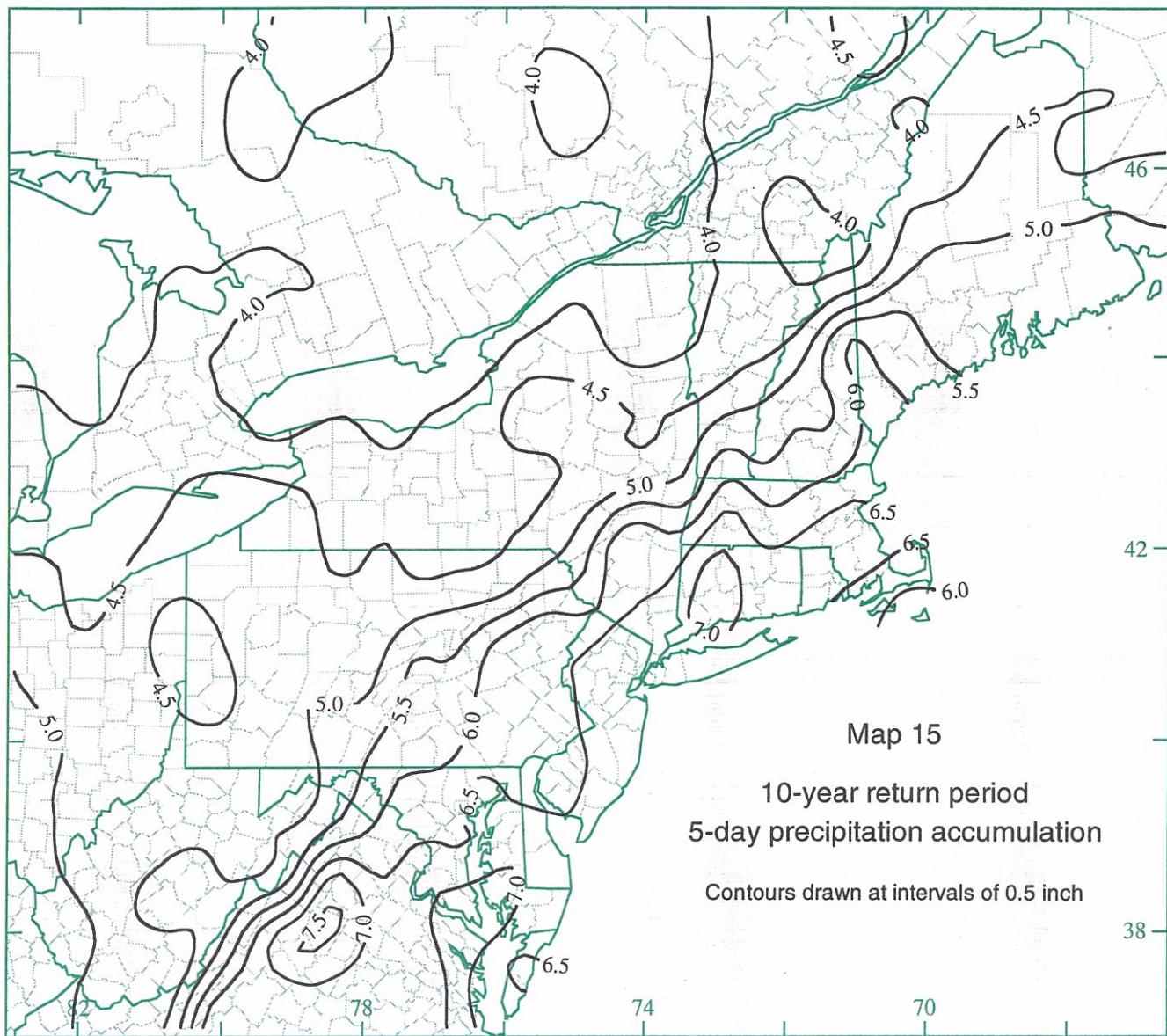


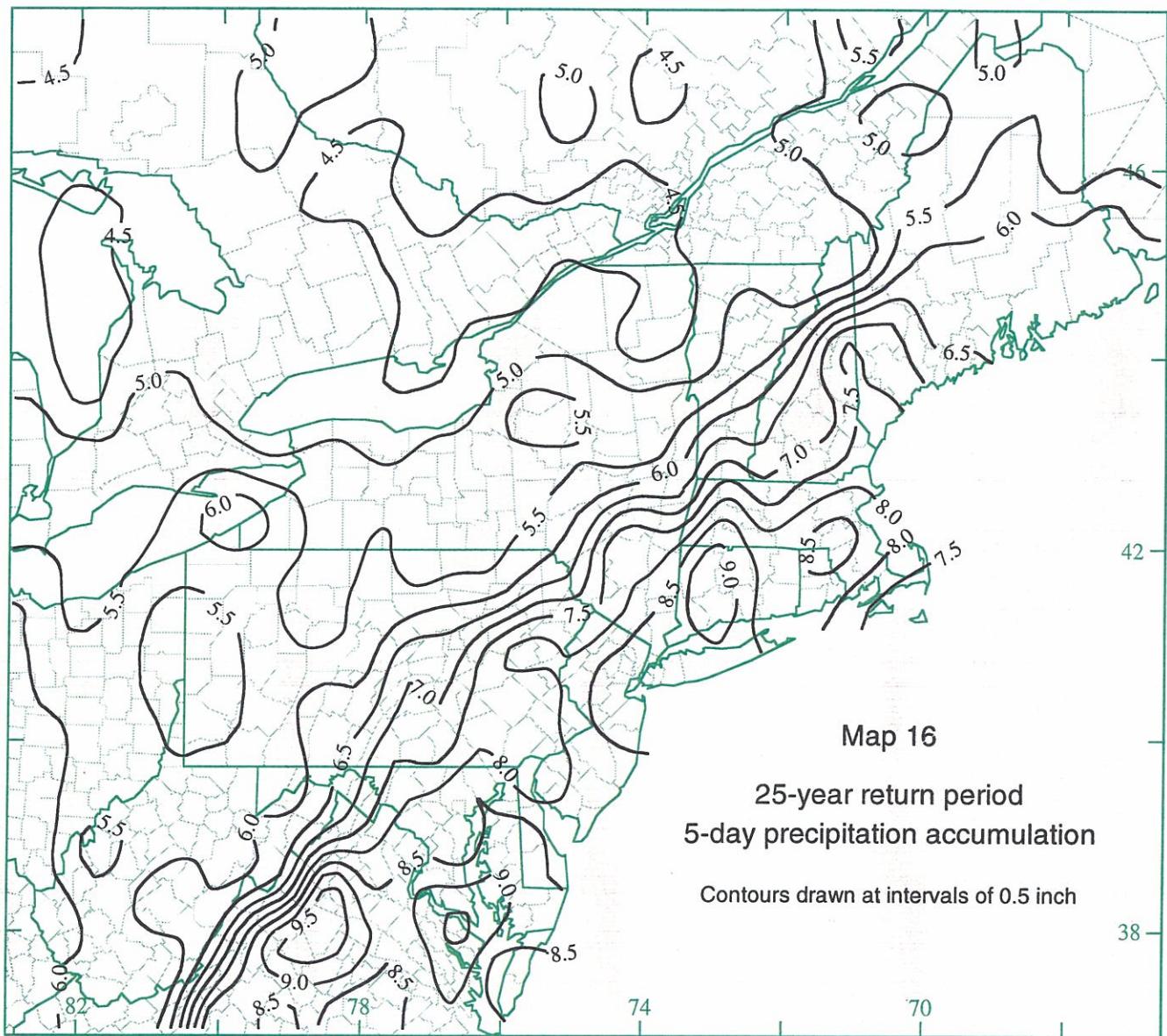


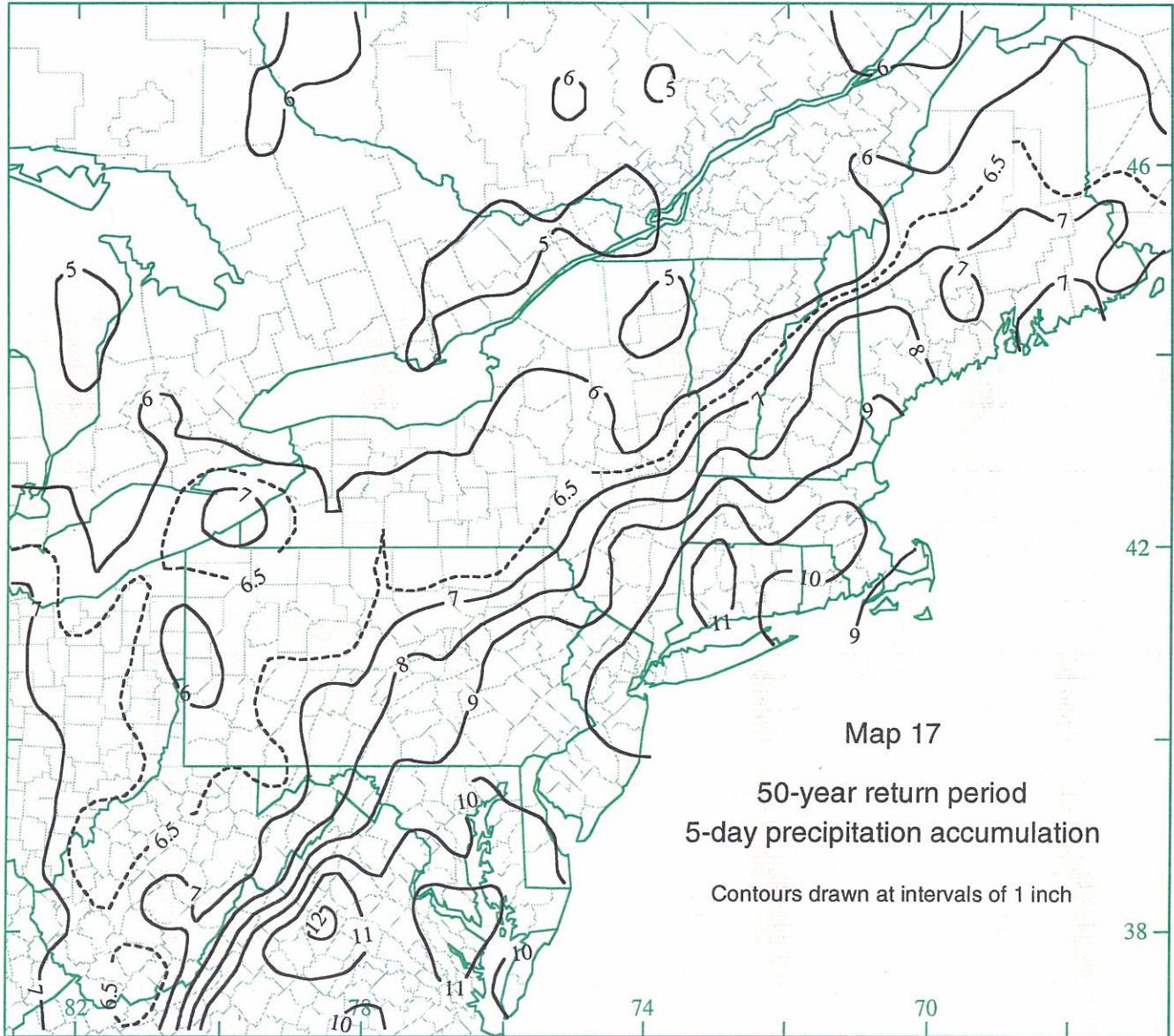


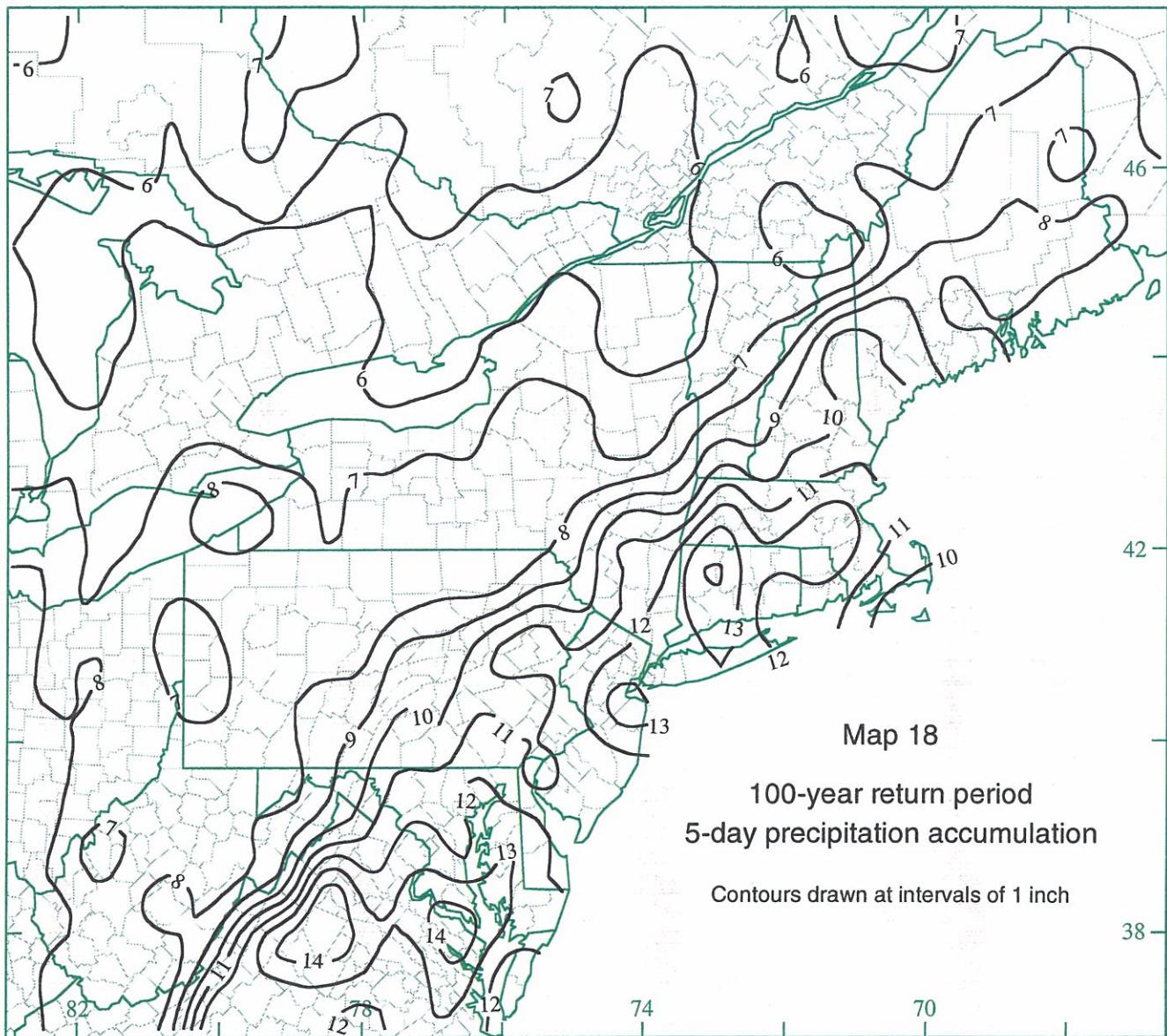


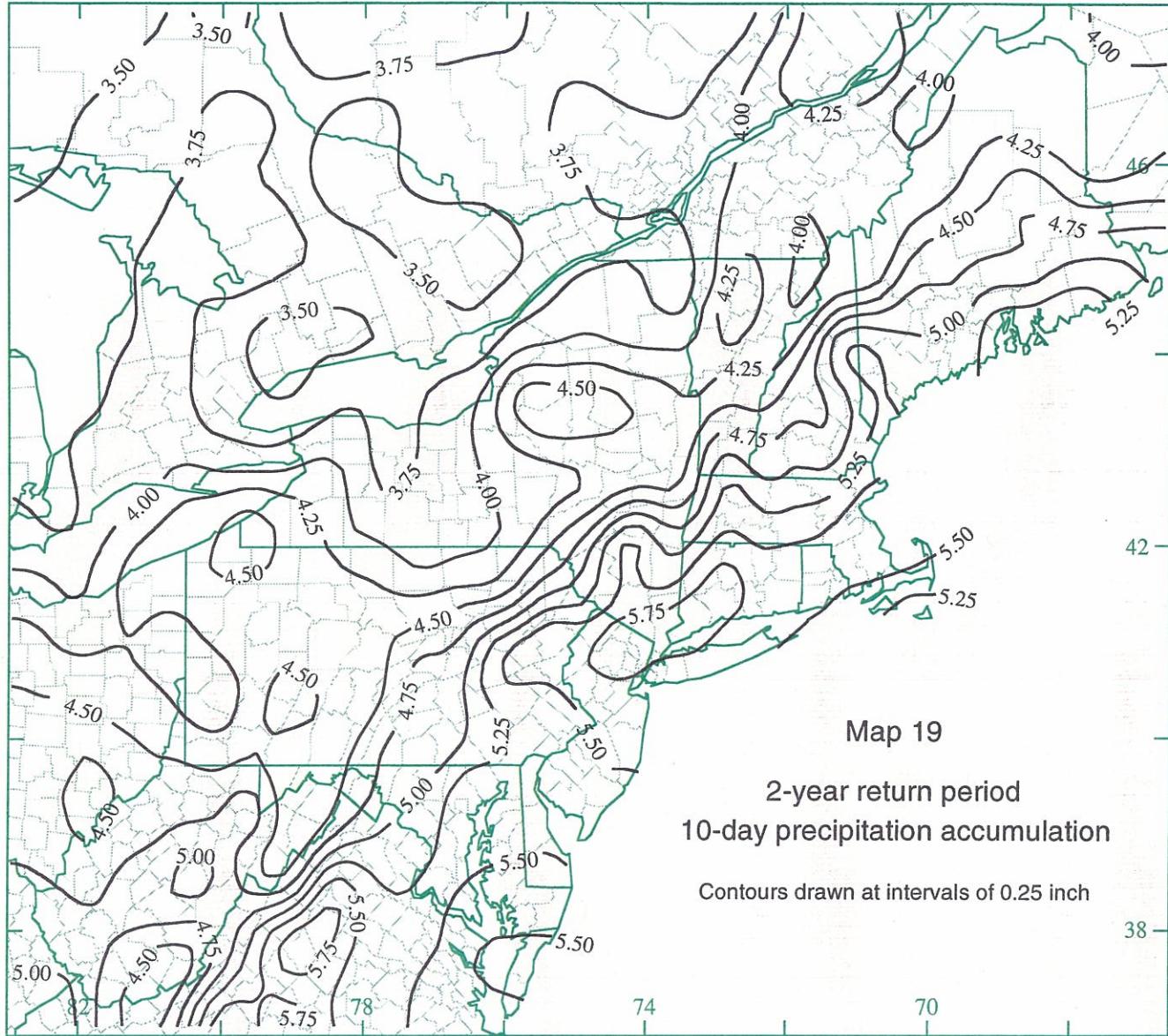


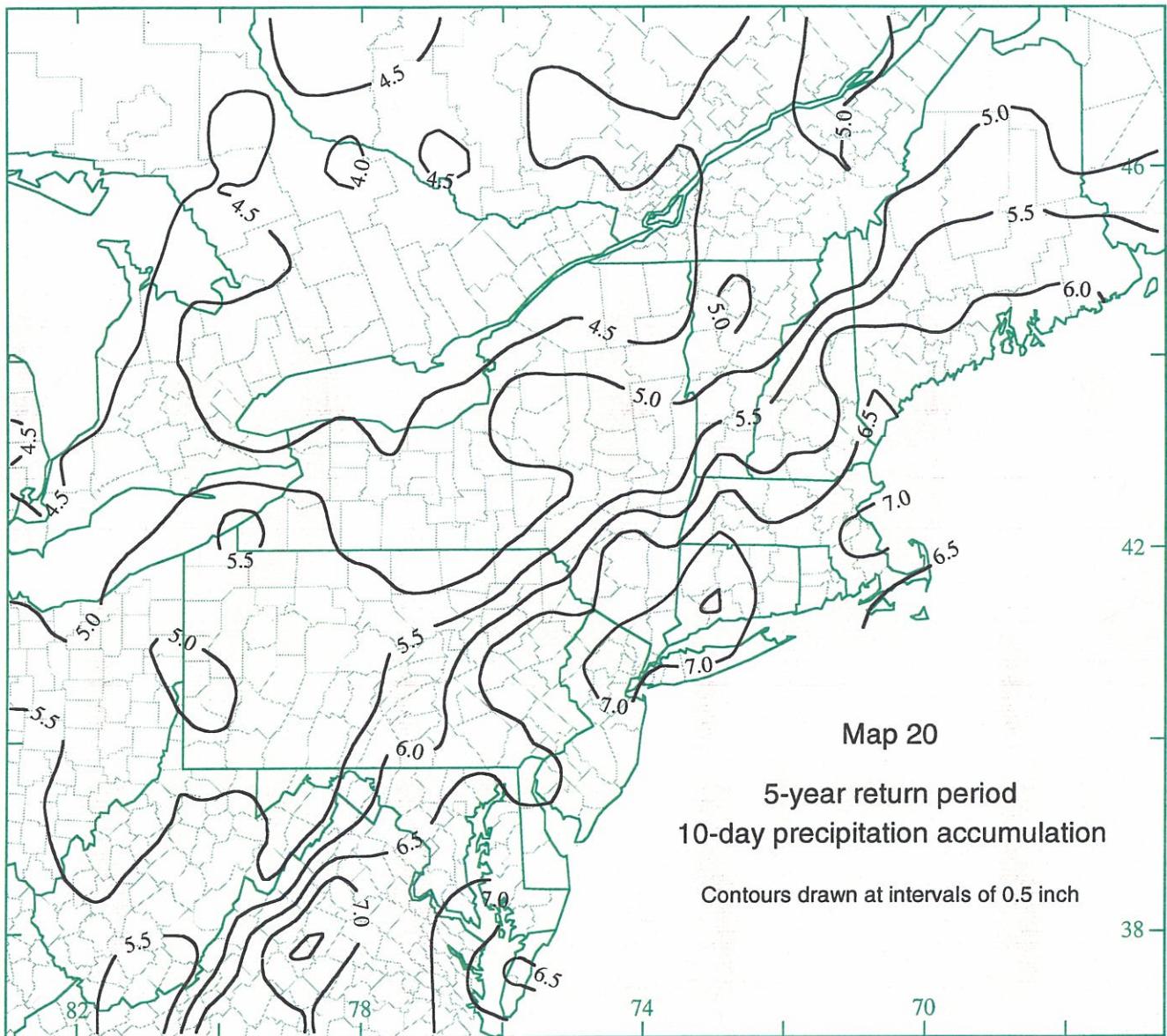


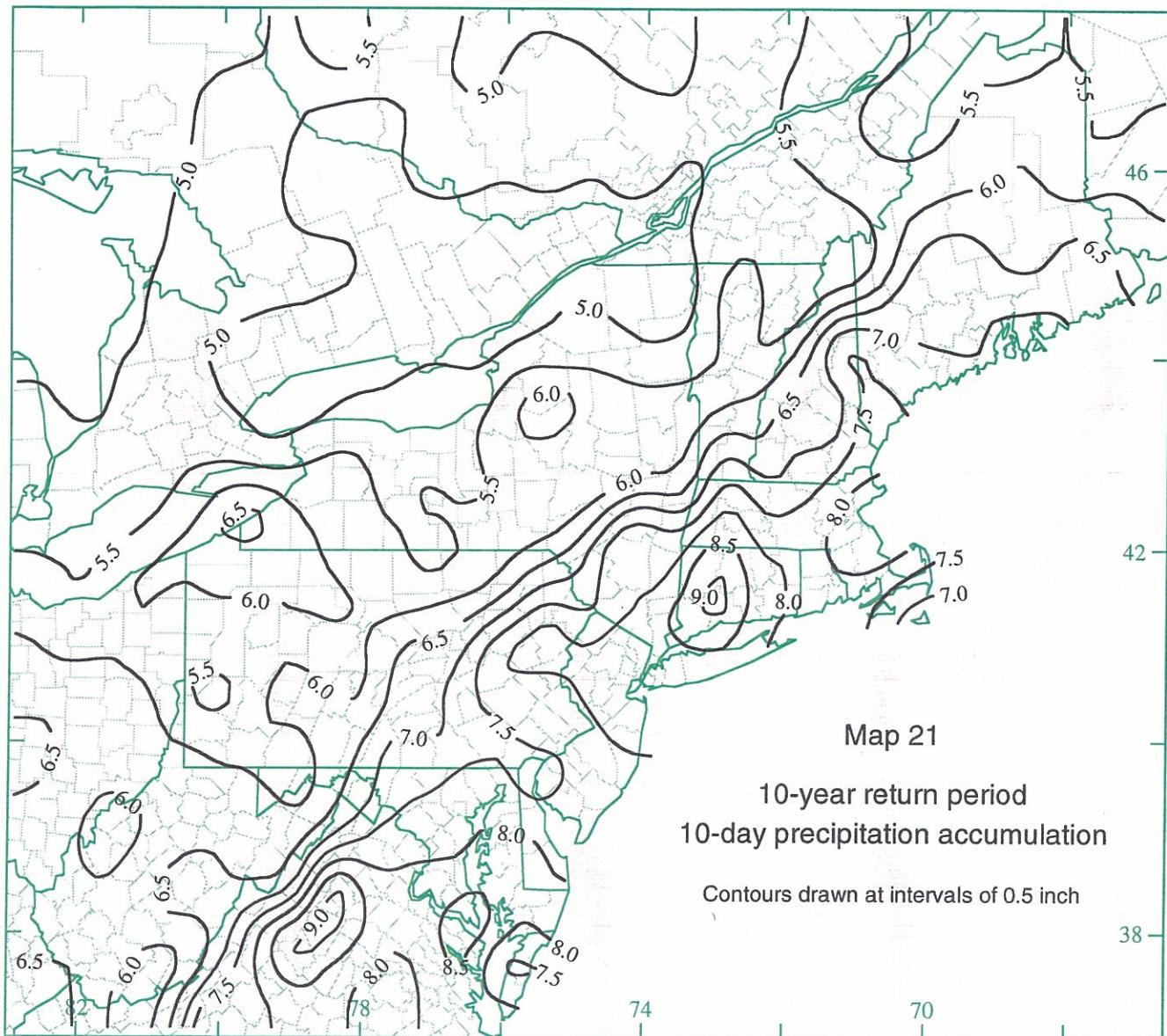


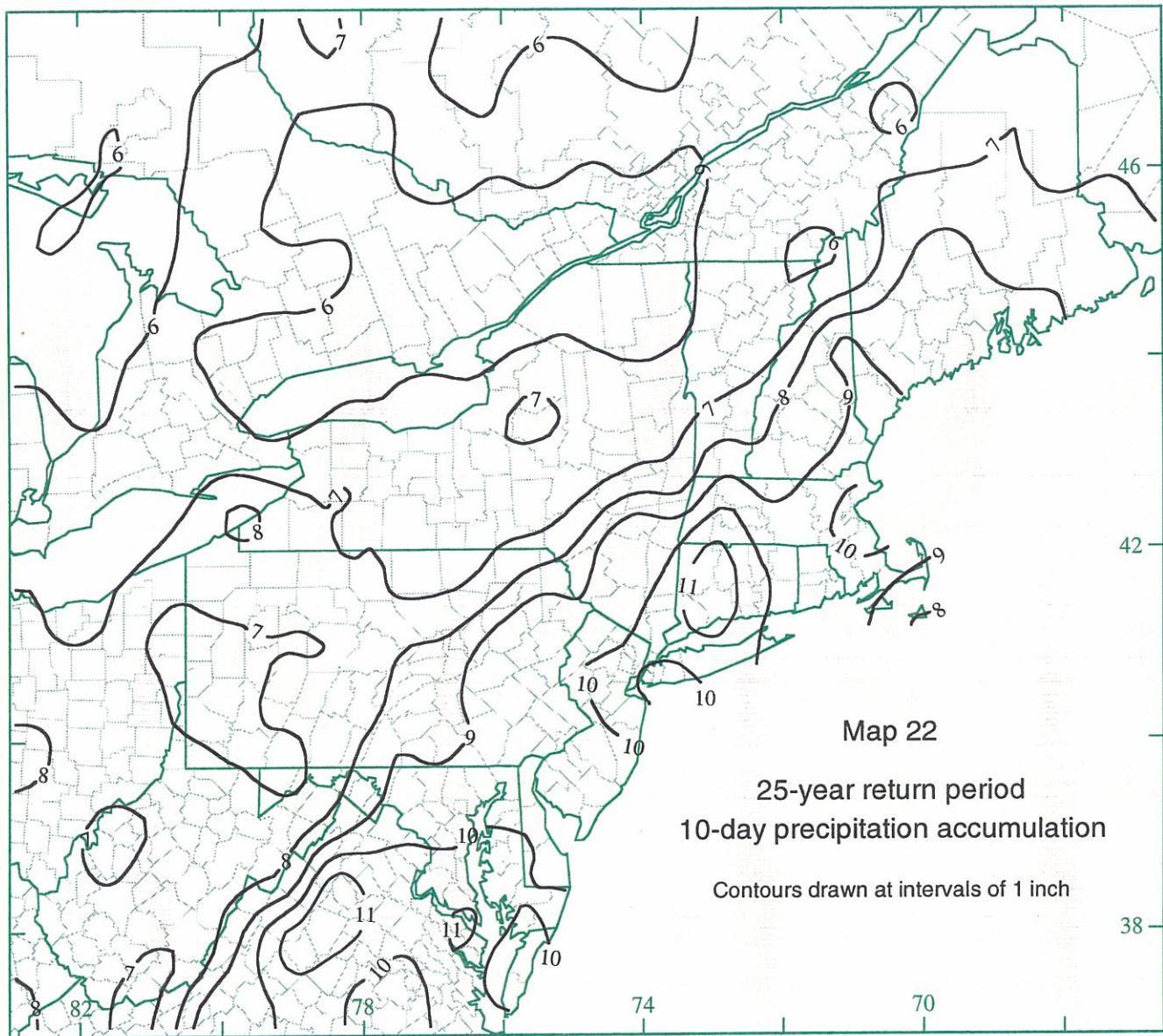


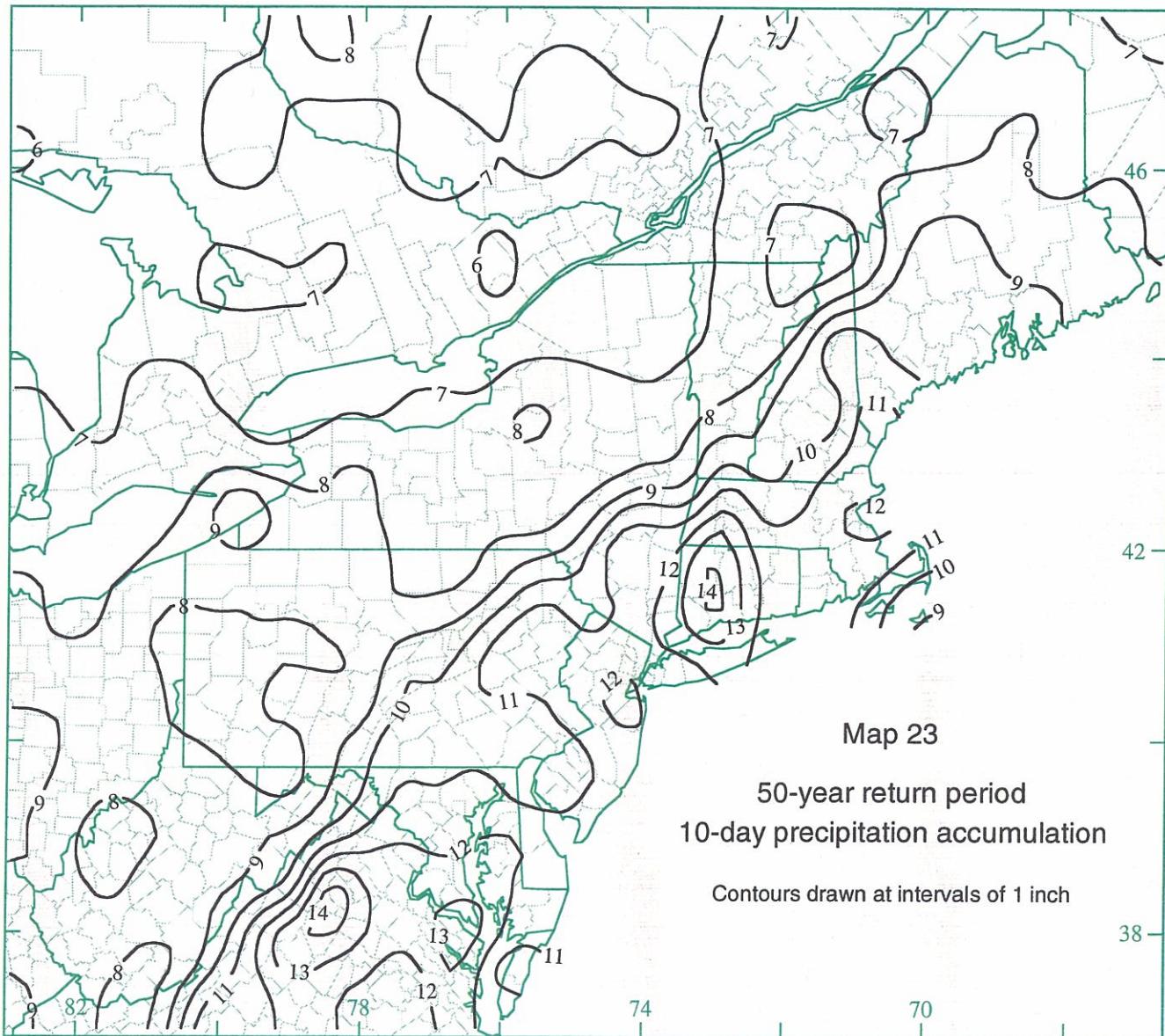


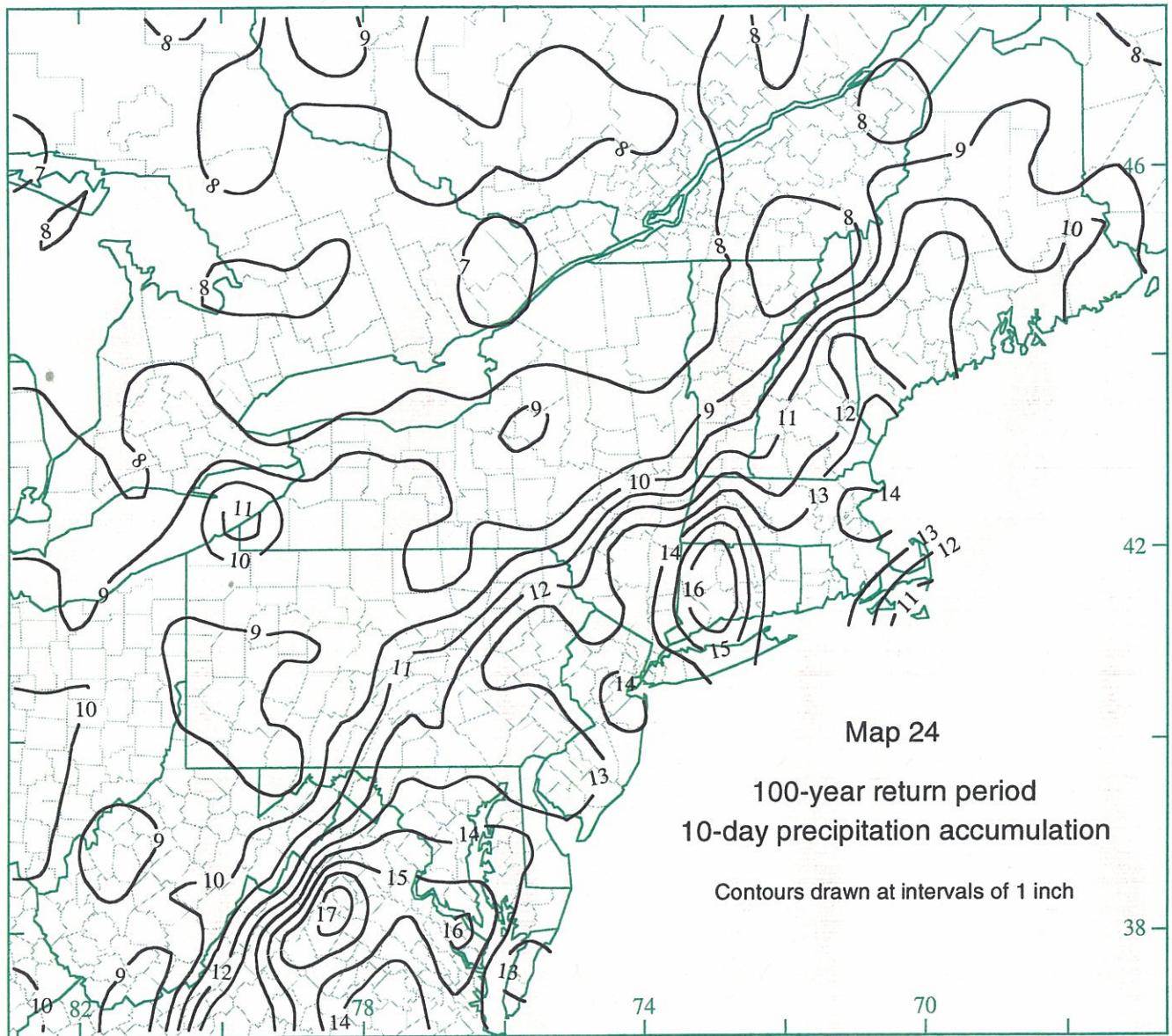












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