Contract Report 646

Operation of Rain Gauge and Ground-Water Monitoring Networks for the Imperial Valley Water Authority

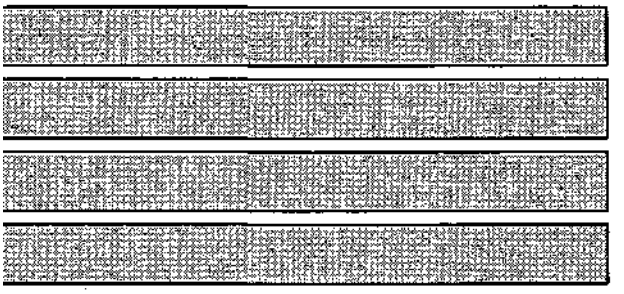
Year Six: September 1997 - August 1998

by

Steven E. Hollinger, H. Allen Wehrmann, Robert D. Olson, Robert W. Scott, and Renjie Xia

Prepared for the
Imperial Valley Water Aurthority

July 1999



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Atmospheric Environment Section,
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Champaign, Illinois

A Division of the Illinois Department of Natural Resources

OPERATION OF RAIN GAUGE AND GROUND-WATER MONITORING NETWORKS FOR THE IMPERIAL VALLEY WATER AUTHORITY YEAR SIX: SEPTEMBER 1997-AUGUST 1998

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REPORT

to

Imperial Valley Water Authority

on Contract

Imperial Valley 223

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July 1999

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ABSTRACT

The Illinois State Water Survey (ISWS), under contract to the Imperial Valley Water Authority (IVWA), has operated a network of rain gauges in Mason and Tazewell Counties since August 1992. The ISWS also established a network of ground-water observation wells in the Mason-Tazewell area. The networks are located in the most heavily irrigated region of the state. Ground water in various aquifers are the major source of the irrigation and domestic water supplies in the region. Recent extreme weather events (e.g., the drought of 1988 and the great flood of 1993) resulted in large fluctuations of the ground-water levels in the Imperial Valley area. The purpose of the rain gauge network and the ground-water observation well network is to collect a long-term series of data to determine the rate of ground-water drawdown in dry periods and during the growing season, and the rate at which the aquifers recharge.

Precipitation is recorded for each storm that traverses the Imperial Valley, and ground-water levels at the 13 observation wells are measured the first of each month. The database from these networks consists of 6 years of precipitation data and 4 years of ground-water observations.

At the beginning of the ground-water observations in 1995, the water levels were at the highest in the four years of observation. These high ground-water levels were the result of the very wet 1992-1995 period when annual precipitation was above the 30-year normals at both Havana and Mason City. From September 1995-August 1997 precipitation in the region was below the 30-year normal. The 1997-1998 observation year had rainfall above the 30-year normal. Ground-water levels in the observation wells mirrored these rainfall patterns, showing a general downward trend during the dry years and a recovery in the wet 1997-1998 year. Seasonal increases in the ground-water levels were observed at most wells during the late spring and early summer, followed by decreases in August-November ground water levels.

Analysis indicates that the ground-water levels are affected by both the precipitation in the Imperial Valley area and the Illinois River stages. The observation wells closest to the Illinois River show an increase in water levels whenever the river stage is high. Generally, the water levels in the wells correlate best with precipitation and Illinois River stages one to two months before the water levels are measured, i.e., the June ground-water levels are most highly correlated with the Illinois River stage or precipitation that occurs in either April or May.

The analyses conducted indicate the need for continued operation of both networks due to inconsistencies associated with ground-water levels, precipitation, and the Illinois River stage. For instance, the Mason-Tazwell observation well number 2 (MTOW-2) is located near the center of Mason County well away from the Illinois River, but it has an equal correlation with the Illinois River stage and the precipitation in the area. Additional analysis needs to be undertaken to explain this unusual finding.

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INTRODUCTION

The Imperial Valley area, a portion of which is also called the Havana Lowlands, is located principally in Mason and southern Tazewell Counties in west-central Illinois, just east of the Illinois River (Figure 1). The area overlies the confluence of the ancient Mississippi River and the Mahomet-Teays bedrock valley. The sandy soils and rolling dunes of the confluence area in the western portion of the Imperial Valley stand in stark contrast to the typically flat silt loam soils throughout much of the rest of central Illinois. The sand-and-gravel deposits associated with these two valleys contain an abundant ground-water resource. The area is used primarily for row and specialty crops, all made possible by irrigation from the easily developed ground-water resource that underlies the Imperial Valley.

Regional precipitation variability affects irrigation water demand on the aquifer, recharge of the aquifer, and the extent to which the aquifer can be used for agricultural irrigation, industrial, and domestic water supplies. All these factors impact any required water withdrawals from an aquifer. Therefore, knowledge of the precipitation variability and its relationship to ground-water recharge over an extensively irrigated region, such as the area within the Imperial Valley Water Authority (IVWA), should provide useful information for the management of ground-water resources in that region.

The Illinois State Water Survey (ISWS) has a long-term interest in precipitation measurement and related research, and has performed precipitation research in areas such as hydrology, weather modification, climate change, and urban influences on precipitation climate. Scientists and engineers from the ISWS have conducted extensive research on Illinois ground-water resources and have a continued interest in the hydrodynamics and recharge of aquifers in the state. The data collected by a rain gauge and ground-water observation well network established in the Imperial Valley will be useful in understanding the ground-water response to climate variability and water use in the region.

The objective of this project is to establish long-term monitoring of precipitation and ground-water levels in the Imperial Valley region, to learn how the ground-water resources respond to drought, and determine how long it takes for the aquifer to recover from seasonal irrigation pumping.

Previous Ground-Water Investigations in the Imperial Valley

The first report on the ground-water resources in the Havana region was published in the mid-1960s (Walker et al., 1965). This report included a detailed description of the geology and ground-water hydrology of the region, noting that the Kansan-age Sankoty Sand and overlying Wisconsinan outwash deposits constitute the main aquifer of the region. On the western side of

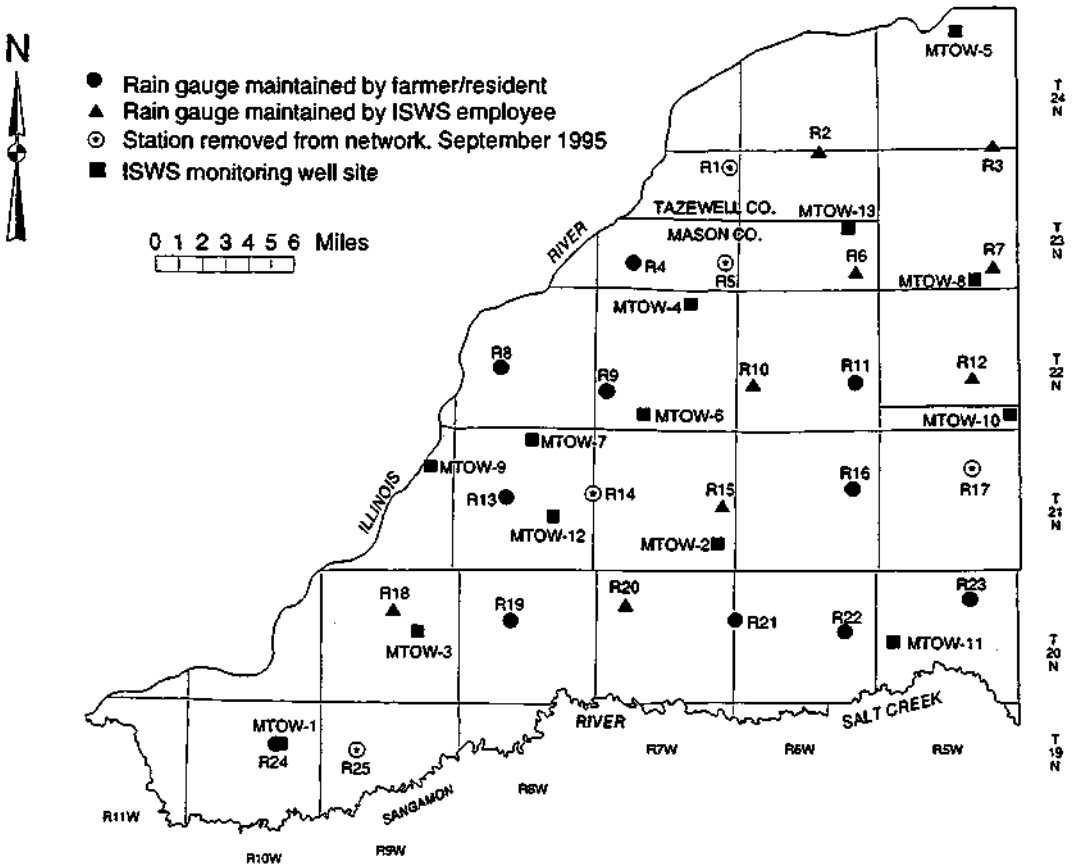

Figure 1. Configuration of the 13-site observation well network, and the 25-site rain gauge network in the Imperial Valley during the 1997-1998 observation year

the study area, where the sands and gravels of the Wisconsinan outwash immediately overlie the Sankoty Sand, precipitation directly over these deposits constitutes the principal source of ground-water recharge. In southeastern Mason County, where over 20 feet of fine-grained Illinoian and Wisconsinan-age tills overlie the Sankoty Sand, conditions are much less favorable for recharge.

Walker et al. (1965) provided the first map of the potentiometric surface (water table) of the aquifer. The water table generally conforms to land surface topography and slopes from an elevation of 540 feet above mean sea level[1] (ft-msl) east of Delavan to approximately 440 ft-msl along the Illinois River. Ground-water movement is from the eastern uplands westward toward the Illinois River, a major regional ground-water discharge zone. Other streams and rivers,

[1]National Geodetic Vertical Datum is preferred to mean sea level in the scientific and technical literature; however, mean sea level is used in this report because it is a term better understood by the public.

including the Mackinaw and Sangamon Rivers, affect ground-water movement locally and also act as ground-water discharge zones.

Construction of the potentiometric surface map allowed the annual recharge to be estimated by equating recharge to ground-water discharge through selected cross-sectional areas of the aquifer (commonly called a flow-net analysis). Flow-net analyses by Walker et al. (1965) suggested that annual recharge to the Sankoty Sand beneath the eastern till uplands is approximately 270,000 gallons per day per square mile (gpd/mi^2) or about 6 inches/year. Recharge to the Sankoty Sand where it underlies the sandy Wisconsinan outwash was estimated to be 490,000 gpd/mi^2 or about 10 inches/year. Based upon these recharge figures, the potential yield of the aquifer was estimated to be 300 million gallons per day (mgd). It was estimated that another 50 mgd could be induced from the Illinois River to bring the total potential yield of the aquifer system within the region to 350 mgd.

Very few studies of the Imperial Valley were conducted in the 20 years following Walker's initial work. Over the course of that time, irrigation in the area grew tremendously. The capability of the ground-water resource to meet the seasonal demands of irrigation and then to recover during the off-season was recognized. In 1988 and 1989, Illinois experienced a significant drought. The need for quantifying the capabilities of the ground-water resource to recover became paramount. Several studies in the late 1980s and early 1990s provided needed information on ground-water use and recharge within the area (Bowman and Collins, 1987; Bowman, 1991; Bowman and Kimpel, 1991; Visocky and Sievers, 1992; Clark, 1994; Visocky, 1995). These studies showed that under heavy pumping conditions, the aquifer is capable of yielding water from wells at a rate greater than the recharge rate. Thus, the potential yield and development of the aquifer depends upon aquifer recharge rates rather than well pumping capacities.

In 1960, Mason County had 11 irrigation systems pumping a total of 0.09 mgd from the aquifer. By 1987, Mason County had 80,000 acres under irrigation, and Tazewell County had 18,000 acres under irrigation, making them the most heavily irrigated counties in Illinois (Bowman and Collins, 1987). Bowman and Collins estimated irrigation water use by calculating growing season moisture deficits (based on 30-year mean climate conditions) and assuming those moisture deficits were made up by irrigation in those places where irrigation systems existed. Water demand (or use) on a per-township basis was compared with aquifer yield estimates to derive township use-to-yield ratios. Their analysis, employing use-to-yield ratios based on growing season demands, showed that water use would exceed aquifer yields during the growing season even in the abundant ground-water areas of Mason and Tazewell Counties. When these demands were spread out over the entire year, the aquifer yields exceeded the water use. Thus, the ground-water system was recharged during the part of the year when irrigation was not occurring, as Walker et al. suggested in 1965.

Bowman and Kimpel (1991) extended the work of Bowman and Collins (1987) by monitoring 214 irrigations sites in Illinois (195 sites in the Havana Lowlands) during the 1988 and 1989 growing seasons. Irrigation water use was estimated by the following equation:

$$I_t = 0.00221Q * H/A \qquad [1]$$

where I_t is the total irrigation water applied (in inches), Q is the estimated pumping rate of the irrigation well (in gallons per minute), H is the duration of pumping (in hours), A is the irrigated area (in acres), and 0.00221 is a unit conversion constant. Estimated 1989 demands irrigation for Mason County was 82.7 mgd and for Tazewell County 23.3 mgd based on a 365-day year. Their estimate for 1988 seasonal (92-day growing season) irrigation pumpage in the Havana Lowlands, based upon data obtained during their field study, was about 425 mgd. Their work suggested that irrigation water use was 64 percent higher in the drought year of 1988 (23.0 inches of water applied) than in 1989 (14.1 inches of water applied), with some farmers reporting application of twice as much water as they had applied in years preceding 1988.

Bowman (1991) continued the work started by Bowman and Collins (1987) with new irrigation figures based on updated irrigation acreage and soil moisture deficits from the 1988 drought. By the time of the 1988 drought, irrigated acreage in Mason County was estimated to be 90,831 acres, and in Tazewell County 25,989 acres. Seasonal (92-day) irrigation water use in 1988 is compared in Table 1 to the irrigation water demand in a year with normal rainfall.

Visocky and Sievers (1992) studied the ground-water conditions at the Jake Wolf Fish Hatchery in northwestern Mason County. They employed several different methods to estimate natural ground-water recharge for the period November 1989 to October 1990 and determined the following recharge rates: a) based on a technique of Stallman (1956), recharge rates ranged from 292,000 gpd/mi^2 to 507,000 gpd/mi^2 (6.1 to 10.6 inches); b) based on flow-net analyses of monthly potentiometric surface maps, an average rate of 855,000 gpd/mi^2 (18 inches) was computed; and c) based on an excess soil moisture estimation of 19.8 inches in 1990, recharge could amount to 941,000 gpd/mi^2. While these estimates vary widely, they show the ability of the sandy materials to accept a tremendous amount of water. Visocky and Sievers also suggested that additional work was needed to refine these estimates using similar techniques, but in areas not influenced by the constant hatchery withdrawals.

Visocky (1995) studied the occurrence of a severe ground-water flooding event during late 1993 and early 1994 in western and central Mason County. Record-setting precipitation across the state during 1993, coupled with high stages on the Illinois River, caused the water table to "back up" above the land surface resulting in ground-water flooding of roadways and

Table 1. Seasonal Water Use in 1988 Compared to the Seasonal Demand in a Year with Normal Rainfall

County	*Demand with normal rainfall (mgd)*	*1988 (mgd)* *
Mason	126	387
Tazewell	34	110
Total	160	497

Note: *Data are from Bowman, 1991.

ditches, and wreaking havoc with basements, especially in the towns of Bath and Havana. The object of Visocky's work was to determine the locations of ground-water flood-prone areas and the recurrence frequency of ground-water flooding for the Federal Emergency Management Agency (FEMA) programs. In particular, FEMA was interested in the preparation of a 100-year ground-water flood frequency map.

As part of the 1995 study, Visocky conducted a multiple regression analysis on the relationship between annual maximum ground-water levels at the ISWS long-term observation well at Snicarte (Mason-Tazewell Observation Well or MTOW-1 in Figure 1) and several parameters including cumulative precipitation (over various durations), annual peak stage on the Illinois River, and annual maximum ground-water levels as estimated by water budget simulations (using a soil moisture model developed by the Precipitation Augmentation for Crops Experiment, Durgunoglu et al., 1987). The best regression equation for predicting maximum ground-water levels at the Snicarte observation well with the least standard error used two parameters, the simulated maximum ground-water stage from the PACE model along with 12-month precipitation. From this analysis, annual peak ground-water levels at Snicarte were determined for the period 1901-1993, and a frequency analysis was performed to determine ground-water elevations for selected recurrences. The ground-water level for the 100-year recurrence interval was correlated to ground-water levels throughout the area of interest and maps prepared for use by FEMA.

A detailed numerical ground-water flow model of the area was developed by Clark (1994). The timing of Clark's modeling efforts was, perhaps, instigated by two fairly extreme hydrologic events that occurred relatively close together: the drought of 1988-1989 and the great flood of 1993. Clark was able to model the aquifer system based on average conditions and then change inputs to the model to simulate the effects of drought and flood. His model simulations showed that the Mahomet Valley aquifer contributes less than 1 percent the total inflow to the Havana Lowland aquifer system, thus reinforcing the statement made by Walker et al. in 1965 that the principle source of recharge to the aquifer is by direct precipitation infiltration. Model results also suggest that the average annual recharge rate is in the range of 300 mgd and that significant additional development of the resource for irrigation is possible without negatively impacting the resource on the long term.

Valuable calibration tools for the model were the updated potentiometric surface maps prepared by Sanderson and Buck (1995). This project established a network of 290 wells to measure ground-water levels during the autumn of 1992 and the spring of 1993. The project was extended to allow measurement of water levels in the autumn of 1993, following the tremendous flooding encountered that previous summer. The autumn 1992 map was compared to the map prepared by Walker et al. (1965) for 1960. The comparison indicated no significant difference between maps, suggesting that extensive irrigation development of the Havana Lowlands had not diminished the resource.

Rain Gauge Network

Precipitation is one of several important sources of water for recharging the aquifer. Therefore, it is important that year around precipitation measurements be made to understand its contribution to ground-water levels in the Imperial Valley area.

At present, the measurement of precipitation is best accomplished by a dense network of rain gauges over a long period of time. A relatively dense rain gauge spacing is needed to capture both the highly variable summertime convective rainstorms and the more widespread wintertime precipitation events. A relatively long time period is necessary to capture short-term climatological shifts such as abnormally wet or dry periods and even normal periods. Such networks provide the data necessary to understand the variability of precipitation patterns both spatially and temporally, and thus the spatial and temporal variations in the recharge of the soil and ground water within the network area.

During the last 40 years, the ISWS has operated rain gauge networks of varying areal gauge densities over various time periods in both rural and urban areas. Sampling requirements, as determined from these past studies (e.g., Huff, 1970), indicate that a 2- to 3-mile gridded rain gauge spacing should be adequate for properly capturing convective precipitation systems (spring and summer), while a 6-mile spacing is adequate for more widespread precipitation-producing systems (fall and winter). The weighing-bucket rain gauge provides precise and reliable precipitation measurements. Given the size of the IVWA area and the above spacing guidelines, a gridded, 25-site rain gauge (Figure 1) network with approximately 5 miles between gauges was established in late August 1992. The network was reduced to 20 sites in September 1996. Results of the previous years of the network operation are reported in Peppier and Hollinger (1994,1995), Hollinger and Peppier (1996), Hollinger (1997), and Hollinger and Scott (1998).

Report Objective

This report documents the operation, maintenance, data reduction and analysis, and management of the network during the sixth year of the rain gauge network's operation (September 1997-August 1998). Data showing the differences among the first six years of operation are included. Also included is a description of a network of 13 ground-water observation wells and the data collected since 1995. Analysis of the relationships between the rain gauge network and the ground-water levels are reported.

Several appendices document the network of observation wells (Appendix II), the rain gauge network sites (Appendix III), instructions for rain gauge technicians (Appendix IV), rain gauge maintenance (Appendix V), graphs of monthly rainfall for each site (Appendix VI), and network storm events with unusually large precipitation events recorded during the year highlighted, and total rainfall at each station in the network during each storm period in the six years of operation (Appendix VII).

GROUND-WATER LEVEL OBSERVATION WELL NETWORK DESCRIPTION

The observation well network, consisting of wells MTOW-1-11, was originally established by Sanderson and Buck (1995) for the IVWA in 1994. Two additional wells (MTOW-12 and MTOW-13) were added by the IVWA to improve spatial coverage of the network. The current 13 observation wells are located fairly uniformly across the Imperial Valley study area (Figure 1). A brief description of each network well is provided in Table 2. In addition to general well location and depth information, the predominant soil associations in proximity to

Table 2. Summary of Imperial Valley Observation Wells

Name	*ID.*	*Location*	*Depth (feet)*	*Generalized Soil Association**	*Remarks*
Snicarte	MTOW-1	Section 11.8b, T.19N., R.10W., Mason County	40.5	Sparta-Plainfield-Ade	Inactive well, continuous record since 1958
Easton	MTOW-2	Section 25.8a, T.2 IN., R.7W., Mason County	82	Elburn-Plano-Thorp	Abandoned city fire well
Mason County Wildlife Refuge & Recreation Area	MTOW-3	Section 14.8c, T.20N., R.9W., Mason County	24	Plainfield-Bloomfield	Installed in 1985 for ISGS study
Sand Ridge SR-11	MTOW-4	Section 2.8d, T.22N., R.7W., Mason County	27	Plainfield-Bloomfield	Installed in 1989 for ISWS study
Pekin-OW8	MTOW-5	Section 3.6a, T.24N., R.5W., Tazewell County	49	Selma-Harpster	Installed in 1991 for IS WS study
Mason State Tree Nursery	MTOW-6	Section 33.8f, T.22N., R.7W., Mason County	45.5	Onarga-Dakota-Sparta	Installed in 1993
IL Route 136 Rest Area	MTOW-7	Section 3.7e, T.21N., R.8W., Mason County	44	Onarga-Dakota-Sparta	Installed in 1993
Green Valley	MTOW-8	Section 34.1c, T.23N., R.5W., Mason County	53.5	Elburn-Plano-Thorp	Installed in 1993
IDOT-DWR	MTOW-9	Section 12.8e,T.21N., R.9W., Mason County	48	Sparta-Plainfield-Ade	Installed in 1994 for flood study
San Jose	MTOW-10	Section 36.2d, T.22N., R.5W., Mason County	56	Elburn-Plano-Thorp	Old municipal well
Mason City	MTOW-11	Section 18.2a, T.20N., R.5W., Mason County	63	Tama-Ipava	Old municipal well
HahnFarm	MTOW-12	Section 23.8c, T.2 IN., R.8W., Mason County	100	Plainfield-Bloomfield	Old turkey farm well
Talbott Tree Farm	MTOW-13	Section 9.4a, T.23N, R.6W., Tazewell County	82	Selma-Harpster	Installed in 1996

Note: *General Soil Map Units are from Calsyn, 1995. See Appendix I for general explanation of soil associations.

each well are reported (Appendix I). This provides some determination of relative soil permeability around the wells. Generally, the greater permeability associated with the Plainfield-Bloomfield, Sparta-Plainfield-Ade, and Onarga-Dakota-Sparta soil associations are found at MTOW-1, MTOW-3, MTOW-4, MTOW-6, MTOW-7, MTOW-9, and MTOW-12, all located on the western side of the study area. The fine-grained nature of the materials found in the upper portion of the geologic profiles at MTOW-10 and MTOW-11 (located in the southeastern portion of the study area) indicate that the water levels in these two wells are under artesian conditions. Since the water in these wells is under pressure, the water level response will be different from the other wells.

Detailed drawings of observation wells MTOW-1 through MTOW-11 are shown in Appendix II (detailed information on wells MTOW-12 and MTOW-13 is not available). The wells range in depth from 24 to 100 feet. Most of the network wells were constructed after 1985 either as part of special studies within the Imperial Valley or for use in this observation well network. A few of the wells that existed prior to the development of the network were used for water supplies. MTOW-1, located at Snicarte, is an inactive, large-diameter, hand-dug domestic well that the ISWS started monitoring in March 1958. All of the network wells have been surveyed for well head elevation above mean sea level.

GROUND-WATER NETWORK OPERATION AND MAINTENANCE

Ground-water levels in the IVWA observation wells are measured at the beginning of each month for the March-November period. A mid-month measurement is also collected during the irrigation season, typically May-September. Ground-water levels are measured manually with a steel tape or electric probe and entered into a database as depth below land surface. If the well head elevation is known, these observations can be converted to elevations for comparative analysis. The IVWA collects these measurements and maintains the database. The resulting data are forwarded annually by the IVWA to the ISWS.

The Snicarte observation well, MTOW-1, has been monitored by the ISWS since 1958 and has been incorporated into the ISWS Water and Atmospheric Resources Monitoring (WARM) program. This well is equipped with a Stevens, Type F water-level recorder that produces a continuous record of the ground-water level on a 32-day paper chart. The ISWS staff visit the well monthly to measure the ground-water level, change the recorder chart, and perform recorder maintenance. The monthly high and low water levels, as determined from the recorder chart, and the manual water level measurement are entered into the ISWS observation well water-level database.

RAIN GAUGE NETWORK OPERATION AND MAINTENANCE

Peppier and Hollinger (1994) described construction of the IVWA rain gauge network and the type and setup of the weighing-bucket rain gauges used to collect precipitation. Appendix III gives complete site description information for each of the 20 operational rain gauge locations as of August 31,1998. Also included are the locations of the five rain gauges that were removed from the network in 1996. During the sixth year, the rain gauges were

upgraded to include a data logger and linear potentiometer to automatically record the amount of water in the rain gauges every 10 minutes (see Appendix V). Local observers continued to perform weekly rain gauge maintenance at nine sites. The remaining 11 sites were maintained by a local resident of Mason County hired to remove the charts once a month and serve as a local resource for the other volunteer local observers. The nine sites with weekly rain charts were also visited at the end of each month to collect the rainfall data from the data loggers. Except for the monthly rain gauges (sites 2, 3,4, 6, 7, 10, 12, 15,18, 20, and 21), the rain gauges were serviced every 6 to 11 days. Servicing included removing and replacing the current chart, checking the felt-tipped pen to make sure it was inking properly, dumping the bucket contents from approximately April-October, and noting any unusual problems, including chart-drive malfunction, gauge imbalance or instability, vandalism, unauthorized movement of the gauge, etc. During the warm season, evaporation shields were fitted into the collection orifice above the bucket to minimize evaporation. During the cold season, a 1-quart charge of antifreeze was added to each rain gauge bucket so that any frozen precipitation collected would be melted to allow a proper weight reading, and to prevent freeze damage to the collection bucket. Approximately once a week, the local observers mailed their charts to the ISWS. Refer to Appendix IV for a complete description of servicing instructions for rain gauge observers.

Minor maintenance and repairs were performed by the paid observer in Mason County. As needed, Champaign-based personnel visited the network to perform major maintenance and repairs. This usually consisted of a site assessment of an observer-noted problem and the determination of a solution. Because most problems pertained to the chart drives, the usual solution was to adjust or replace the chart drive. If replaced, the defective chart drive was cleaned and readied for reuse at the ISWS. Other typical problems, mentioned above, were also solved on these trips. Appendix III documents nonroutine maintenance or repairs, including any site relocations, for the 20 rain gauges during Year Six.

OBSERVATION WELL AND RAIN GAUGE DATA ANALYSIS

This report marks the first time that ground-water level data have been presented in the annual data summary for the Imperial Valley. Therefore, data are presented from 1995-1998 along with rain gauge data from the current 1997-1998 year. The data collected from the observation well and rain gauge networks were maintained in separate databases. Data from the observation well network were analyzed separately from the rain gauge network. The rainfall and ground-water level data were analyzed together to evaluate the response of the ground-water levels to local precipitation.

Observation Well Analysis

Graphs of ground-water levels for each well for the period of record, from 1995 through 1998, are presented in tabular and graphic form in Appendix II. Graphs of ground-water levels are commonly called hydrographs. On each hydrograph, the total monthly precipitation for the

nearest rain gauge is displayed. For observation wells located between several rain gauges, a weighted average based on the inverse of the distance to each rain gauge, is displayed. For observation wells located near the Illinois River (MTOW-1 at Snicarte, MTOW-5 at Pekin, and MTOW-9 at Havana), the stage of the river at the nearest U.S. Geological Survey gauging station is also shown. All hydrographs were plotted at the same vertical (depth-to-water) and horizontal (time) scales to simplify comparison of the observation well water levels.

The IVWA has estimated irrigation pumpage from wells in the Imperial Valley since 1995, based on electric power consumption, using a modified version of equation 1. Electric power for the region is supplied by an electric cooperative (Menard system). The cooperative provides the IVWA with electric power consumption data for the irrigation wells during the growing season (June, July, August, and September). However, only a fraction of the irrigation wells use electric power to pump water. The estimate was made assuming application rates for the irrigation wells with electric pumps is representative of those using other energy sources. This estimate was based on the assumption that 33 percent of the irrigation wells used electric pumps in 1995, 1996, and 1997, and that 40 percent of the wells used electric pumps in 1998.

Using this method, a monthly and seasonal estimate of irrigation pumpage is calculated for the Imperial Valley (Table 3). Irrigation pumpage has averaged about 42 billion gallons per year since 1995, but annually totals have varied by as much as 65 percent (32 to 53 billion gallons). Yearly irrigation pumpage, ranked from highest to lowest, is 1996, 1997, 1995, and 1998. July has the greatest average irrigation pumpage but August is a close second followed by September and then June. The July estimated pumpage has been the largest monthly total in three of the four years reported.

Rain Gauge Analysis

Data reduction activities during Year Six of network operation included those performed during the first five years. See Peppier and Hollinger (1994) for complete details on these tasks. The upgrade of the rain gauges to include data loggers at each site allows for downloading of data in digital format, thus removing the need to digitize the rain gauge charts, except for rare occasions when there are problems with the data loggers. The number of storm events and storm

Table 3. Irrigation Well Pumpage Estimates (Billion Gallons)

Year	*June*	*July*	*August*	*September*	*Total*
1995	2.58	13.45	10.43	10.62	37.08
1996	2.02	20.20	18.03	12.34	52.59
1997	3.14	22.48	17.30	2.46	45.37
1998	2.68	9.93	16.74	8.73	31.74
Average	2.61	16.52	15.60	8.53	41.70

days at each station were determined for the 6-year period. A storm day was defined as any day that measurable precipitation was recorded at a given station. Precipitation events were defined by the first hour that rainfall was recorded and continued through each consecutive hour that precipitation occurred.

Network storm periods were also defined. A storm period is defined as a precipitation event separated from preceding and succeeding events at all stations in the network by 3 hours.

Combined Observation Well and Rain Gauge Analysis

An analysis of the correlation between total monthly precipitation and monthly ground-water level measurements was conducted. Observed ground-water levels in each well were correlated to either the total monthly precipitation at an adjacent rain gauge, or an average of the total monthly precipitation from up to four gauges closest to the observation well if a rain gauge was not immediately adjacent. When possible, the four rain gauges surrounded the observation well.

Several correlation approaches were investigated. To examine the delay in ground-water response to precipitation, linear and exponential regressions of total monthly precipitation "lagged" from 0 to 4 months were used. The effect of river stage on observed ground-water levels was examined using linear and exponential regressions with river stage lagged from 0 to 4 months and ground-water levels in wells close to the Illinois River (MTOW-1, MTOW-5, MTOW-7, and MTOW-9) and for two wells located farther from the river (MTOW-2 and MTOW-12) to see how far inland the river stage may have an influence. To examine the effect of total antecedent precipitation on observed ground-water level, precipitation was accumulated for the previous 0 to 6 months for the rain gauges associated with wells MTOW-1, MTOW-2, MTOW-5, MTOW-6, MTOW-9, MTOW-12, and MTOW-13, and then regressed with observed ground-water levels. For wells MTOW-3, MTOW-7, and MTOW-11, antecedent precipitation was accumulated from 0 to 12 months. For wells MTOW-4, MTOW-8, and MTOW-10, antecedent precipitation was accumulated from 0 to 18 months. Finally, step-wise regression was performed to examine the relative influence of Illinois River stage and total monthly precipitation on ground-water levels for wells MTOW-2, MTOW-7, MTOW-9, and MTOW-12. Regressions and lag analysis were performed using STATGRAPHICS® (1987).

RESULTS

Results of the observation well analysis are presented first, then an analysis of the current year precipitation is presented. Finally, the analysis of the ground-water level response to regional rainfall is presented.

Observation Wells

The ground-water levels in observation wells close to the Illinois River, particularly MTOW-5 and MTOW-9, fluctuate in apparent response to river stage. The water levels have a wider range in variation and a more easily discerned annual variation than the rest of the observation wells. Water level changes in these two wells range from 5 to 10 feet within a given year (up to 15 feet at MTOW-5 in 1995). Annual peak water levels occur in the spring and early summer, often within a month of the peak river stage on the Illinois River. Ground-water-level response to river stage changes may be more rapid than shown here, but the frequency of measurement (monthly) does not allow a better determination of how rapid the response may actually be. The highest ground-water levels occurred in 1995 (June). During 1996 and 1997, the ground-water levels showed a general downward trend and appeared to level off in 1998.

Ground-water levels in the observation wells more distant from the Illinois River showed their highest levels for the period of record in early- to mid-1995. This observation was followed by a much more consistent downward trend through 1996 and 1997 and a recovery in 1998. As with MTOW-5 and MTOW-9, the annual maxima occurred in the spring or early summer of each year; however, these peaks were much more subdued. For the wells distant from the Illinois River, these maxima appear only as small rises on the downward-trending hydrograph and, in some cases appear just as momentary reductions in the downward slopes.

The timing (i.e., month of occurrence) of the annual maximum water level in each observation well is shown in Table 4. Observation wells MTOW-1, MTOW-2, MTOW-3, MTOW-5, MTOW-6, MTOW-7, MTOW-9, MTOW-10, and MTOW-12 had their highest ground-water levels for the period of record (September 1994-August 1998) in May or June 1995. Ground-water levels in MTOW-8 and MTOW-11 peaked in July 1995, and MTOW-4 peaked in August 1995. The 1995 peak, therefore, appears to show a general delay from west to east across the study area. The water level in MTOW-10 is under artesian conditions and does not fit the general west-to-east pattern. Annual maxima in 1996 also show a similar kind of delay.

In 1997, the timing of the occurrence of the annual maxima came in early spring. The highest ground-water levels for MTOW-4, MTOW-8, MTOW-10, and MTOW-11 occurred in March, and water levels in those four wells declined throughout the whole year. A flattening of the downward slope on the hydrographs (Appendix II) can be seen to occur in May or June in each of these wells; however, there was not enough recovery in the water level to cause water levels to rise above levels observed in March. In 1997, peak water levels in MTOW-2 and the river wells, MTOW-5 and MTOW-9, occurred in April. This was followed by peaks in MTOW-7, MTOW-6, MTOW-7, and MTOW-13 in May, and MTOW-3 and MTOW-12 in June.

In 1998, the timing of the occurrence of the annual water-level maxima was similar to that experienced in 1995 and 1996, only the peaks occur about a month later in the year. The river wells MTOW-5 and MTOW-9 peaked in June; followed by MTOW-1, MTOW-2, MTOW-6, MTOW-7, MTOW-10, and MTOW-12 in July; and MTOW-3, MTOW-8, MTOW-11, and MTOW-13 in August. Water levels in MTOW-4 did not peak until November, rising throughout the year to the end of the period of record examined for this report.

Table 4. Month of Year When Observed Ground-Water Levels Peaked at the Mason-Tazewell Observation Wells, 1995-1998

Month	*1995*	*1996*	*1997*	*1998*
March		11,13*	4,8,10,11	
April			2, 5, 9	
May	12		1,6,7, 13	
June	2, 3, 5, 6, 7, 9, 10	2, 3, 5, 6, 7, 9,10, 12	3, 12	5, 9
July	8,11	1,8,11		1,2,6,7 10,12
August	4			3,8,11,13
September				
October				
November				4

Note: *Number is observation well number.

An examination of the average annual precipitation across the network helps to explain observed ground-water fluctuations. Table 5 contains the average annual precipitation (from September through August of the following year) for the entire rain gauge network. The average

Table 5. Imperial Valley Network Average Annual Precipitation, September-August

Year	*Average Precipitation (inches)*
1992 - 1993	55.55
1993 -1994	40.21
1994 -1995	39.42
1995-1996	25.70
1996 -1997	27.58
1997 - 1998	40.48
1992 - 1998 average	38.16
1961-1990 average: Havana	37.24
Mason City	35.08

precipitation for the 6-year period and the 30-year average (1961-1990) for Havana and Mason City rainfall are included. The flood year of 1992-1993 with 55.55 inches was clearly an above average year. The years of 1993-1994 and 1997-1998 were slightly above average, while the years of 1995-1996 and 1996-1997 were much below average. The year 1994-1995 was also slightly above average (39.42 inches), but one-fourth to one-third of this total fell in May 1995 with generally over 10 inches of rainfall in that month alone. The heavy rainfall caused ground-water levels to rise substantially over the following 1 to 3 months. June through December 1995 and the following two years were drier than normal, resulting in ground-water level declines throughout that period.

An examination of the long-term hydrograph at MTOW-1 (Snicarte) in Figure 2 provides a reference for comparison with the shorter records of the other network wells. Water levels in this well have been recorded by the ISWS since 1958. Annual fluctuations from less than 1 foot to over 6 feet have been observed. These fluctuations often appear to be superimposed on longer term trends, up to 10 years in length. Interestingly, for the +40-year record, both the record low and high have been observed within the last 10 years. A detailed look at water levels since 1990 is shown in Figure 3 (the vertical scale is exaggerated from the scale of the hydrographs in Appendix II to more clearly portray the annual fluctuations). Following the drought years of 1988 and 1989, the well was dry (meaning the water level fell below the bottom of the well at

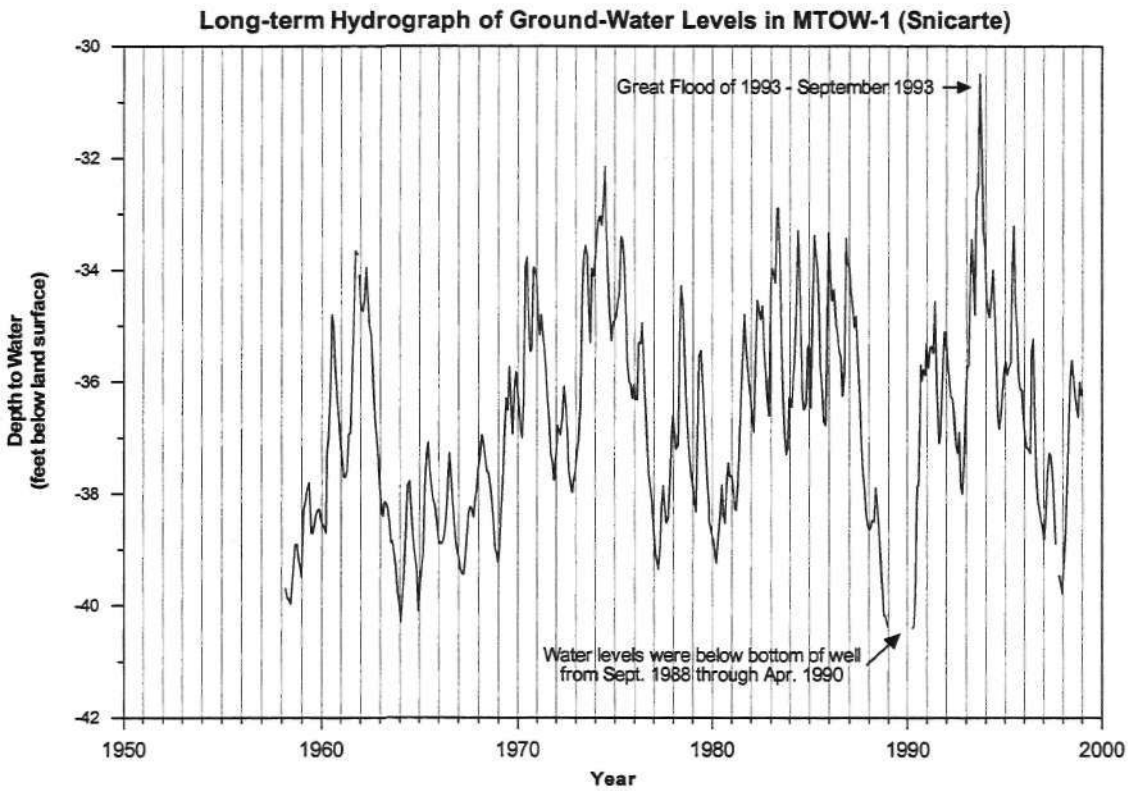

Figure 2. Hydrograph of ground-water levels at the Snicarte well (MTOW-1) for the period of 1958 to 1998.

around 40.5 feet) from September 1989 until April 1990, for the only time in the period of record. After the 1993 floods, the ground-water levels rose almost 10 feet and peaked in September 1993. In the years since then the ground-water levels in MTOW-1 have been falling at an almost linear trend. Water levels observed at the end of 1998 suggest that depths to water have returned to more "normal" levels.

Without this long-term hydrograph for comparison, the 4-year long hydrographs for the other wells, especially those wells other than the river wells (MTOW-5 and MTOW-9), might erroneously suggest that water levels in 1995 were unusually high. The long-term hydrograph, on the other hand, shows that even higher water levels have been observed and that levels are still from their record highs of 1993. This illustrates the importance of long-term records and the need for maintaining the current network into the future.

Rain Gauges

Table 6 contains monthly and annual (September 1997-August 1998) precipitation amounts for each site in the IVWA network. The average for the first five years of network operation (Figure 4a) along with the annual rainfall pattern for Year Six is shown in map form

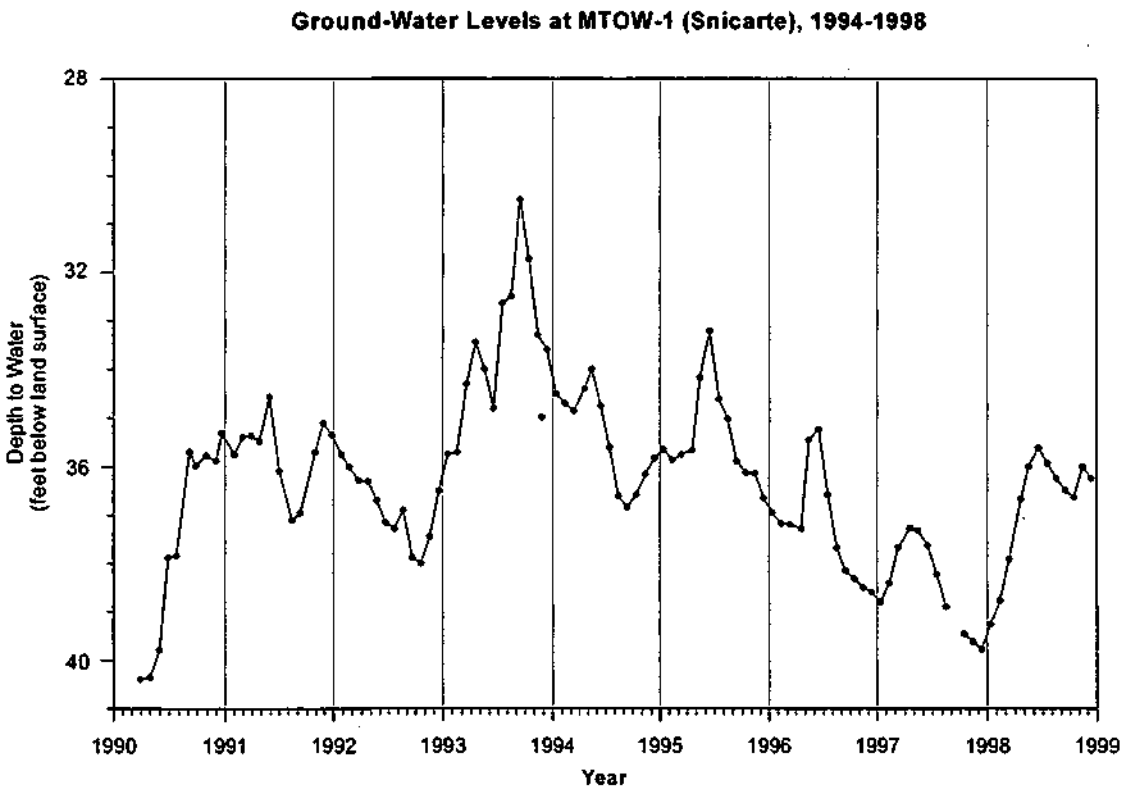

Figure 3. Ground water levels at the Snicarte observation well (MTOW-1) for the period 1990 to 1998.

Table 6. Monthly Precipitation Amounts for September 1997 to August 1998 (inches)

	Month												
Site #	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Total*
2	4.21	1.70	2.75	1.31	2.60	2.31	4.66	4.67	7.73	6.97	1.31	3.05	43.27
3	2.12	1.66	2.33	1.61	2.24	2.62	4.14	2.66	5.93	5.43	1.27	2.47	34.48
4	2.28	1.49	3.10	1.42	2.99	2.83	4.95	3.68	8.12	6.74	1.31	2.39	41.30
6	3.58	1.46	2.55	1.39	2.14	2.35	4.38	3.19	7.33	6.68	1.16	3.62	39.83
7	4.97	1.54	2.36	1.50	2.18	2.50	3.91	2.69	5.60	6.13	0.91	3.19	37.48
8	1.75	1.45	3.30	1.28	2.66	2.55	4.05	2.88	6.52	4.67	1.40	3.18	35.69
9	1.92	1.22	3.07	1.52	2.88	2.78	4.61	3.60	6.33	6.82	1.25	2.82	38.82
10	2.19	1.41	3.08	1.43	2.52	2.84	4.45	3.28	4.33	7.50	2.73	3.35	39.11
11	2.32	1.36	2.91	1.43	2.51	2.42	4.01	3.35	5.76	7.31	3.41	3.78	40.57
12	2.20	1.57	3.43	1.67	2.33	2.71	4.60	2.70	4.06	6.77	3.08	4.34	39.46
13	2.04	1.23	3.76	1.24	2.45	2.60	4.37	4.34	4.96	8.00	4.68	4.51	44.18
15	2.14	1.77	3.66	1.31	2.84	2.64	4.39	3.53	5.18	6.29	2.23	2.90	38.88
16	1.88	1.82	3.91	1.89	2.60	3.86	6.72	3.93	6.63	8.01	3.08	4.13	48.46
18	1.89	1.38	2.85	1.35	2.63	2.56	4.27	3.91	3.17	7.37	2.65	3.40	37.43
19	2.52	1.23	3.75	1.66	3.80	3.47	6.00	3.97	4.11	8.45	3.87	3.04	45.87
20	2.75	1.16	3.36	1.61	2.77	2.57	4.24	4.24	4.03	8.44	3.59	2.94	41.70
21	2.65	1.36	3.08	1.65	2.79	2.40	4.70	3.49	3.62	7.44	2.53	3.70	39.41
22	3.04	1.62	3.50	1.49	2.15	2.54	4.36	3.50	5.98	9.11	2.14	4.90	44.33
23	2.67	1.24	3.04	1.56	2.11	2.51	4.73	3.30	3.59	8.40	2.01	3.65	38.81
24	1.22	1.28	2.99	1.45	2.61	3.13	4.84	4.02	2.66	8.10	2.86	5.31	40.47
Average	2.52	1.45	3.14	1.49	2.59	2.71	4.62	3.55	5.28	7.23	2.37	3.53	40.48

Note: Stations 1, 5,14,17, and 25 were removed from network in September 1995.

(Figure 4b). Monthly rainfall patterns for Year Six are shown in Figures 5-10.

Table 6 shows that precipitation totals for the current year ranged from 48.46 inches at site 16 northwest of Mason City to 34.48 inches at site 3 southeast of South Pekin. The network average for 1997-1998 was 40.48 inches, 2.79 inches greater than the 1992-1997 average, 14.78 inches greater than the average for the driest year, and 15.07 inches less than the average for the wettest year, the flood year of 1992-1993. Compared to 1961-1990 normal values at the Havana and Mason City National Weather Service cooperative stations (37.24 and 35.08 inches, respectively), the 1997-1998 network average was 3.24 to 5.40 inches the above 30-year normal.

Figure 4 shows the rainfall patterns for the sixth year of network operation, and the average annual pattern for the 1992-1997 period. The annual average rainfall during the first five

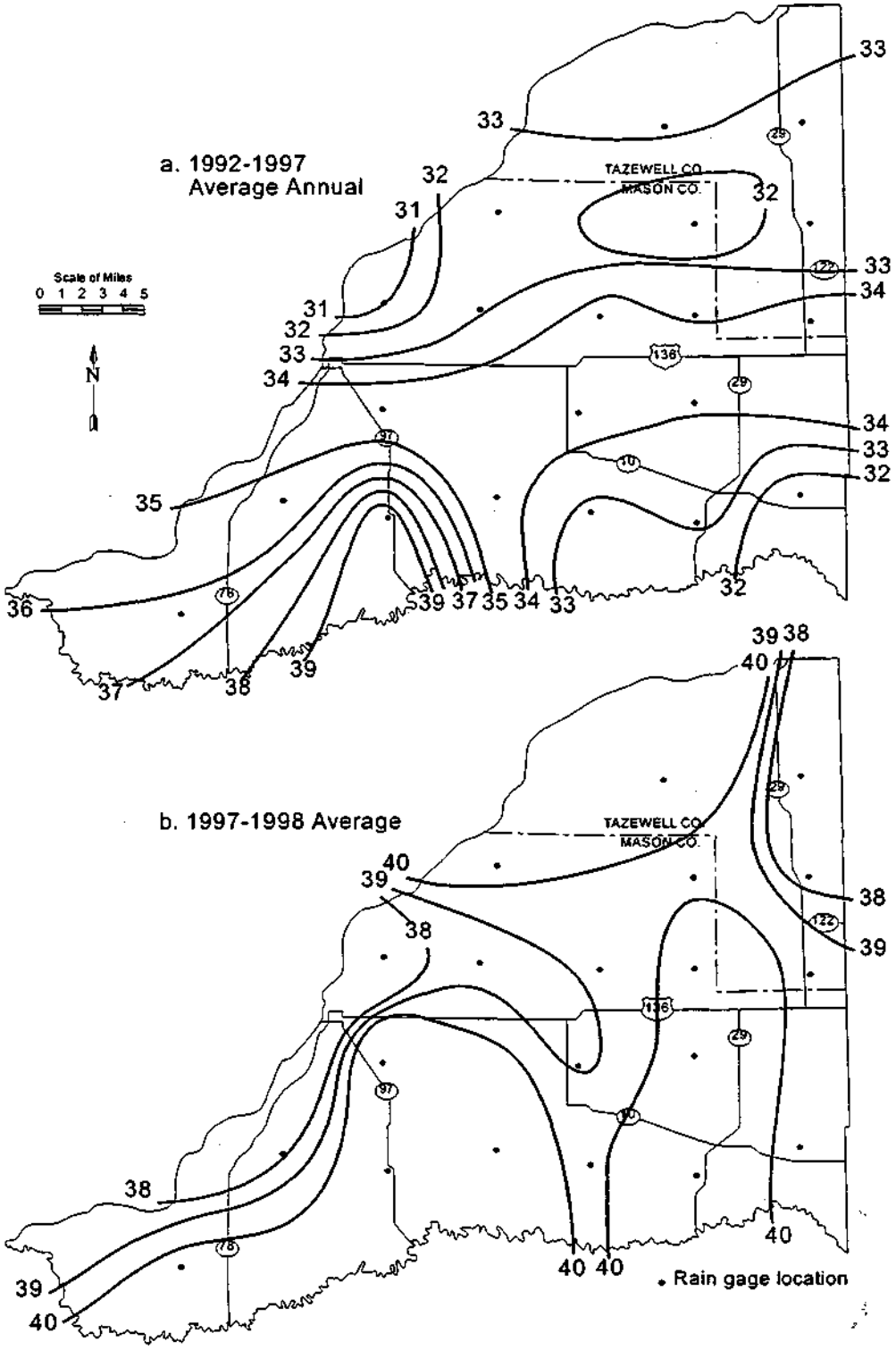

Figure 4. Precipitation (inches) for a) 1992 to 1997 average annual September to August and b) September 1997-August 1998

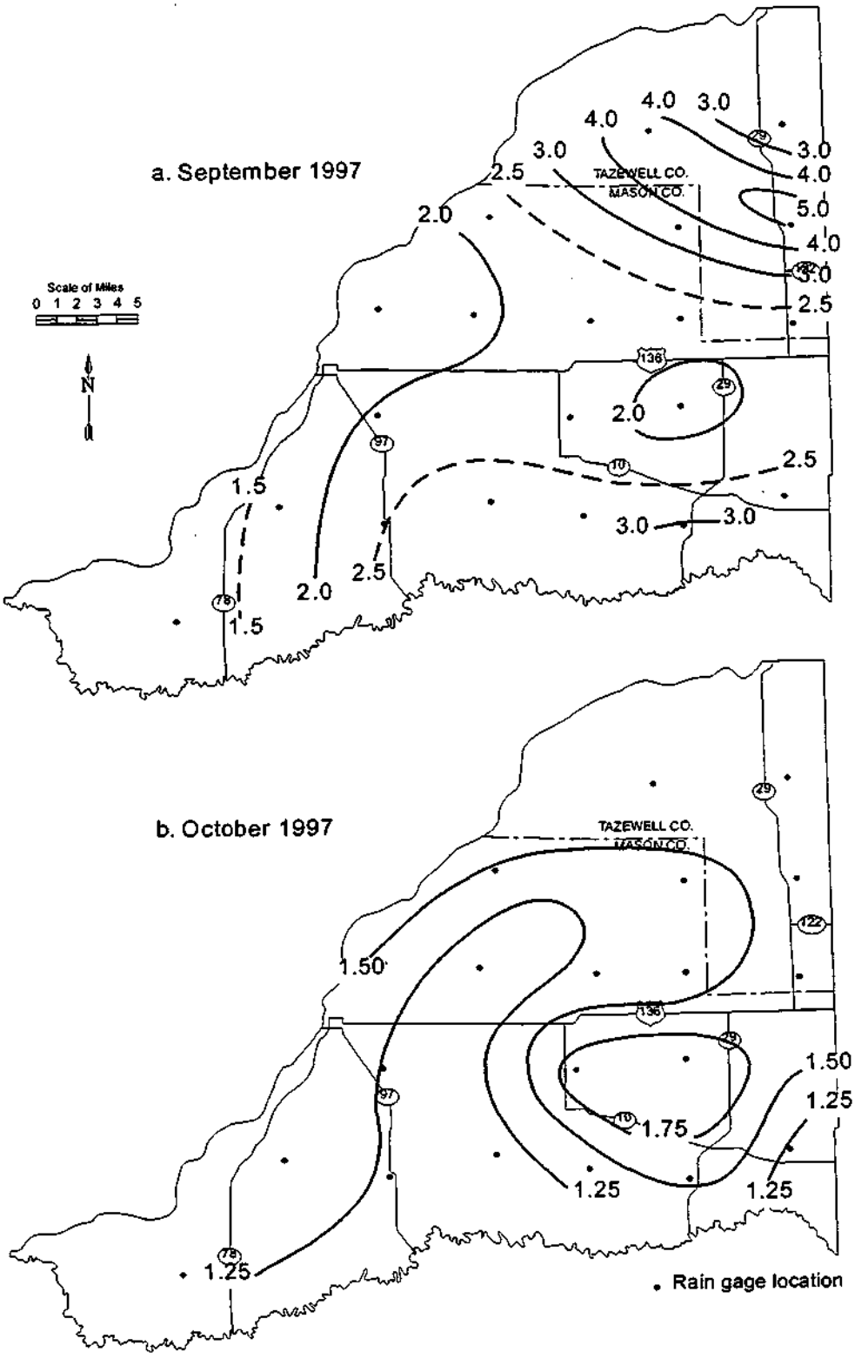

Figure 5. Precipitation pattern (inches)
for a) September 1997 and b) October 1997

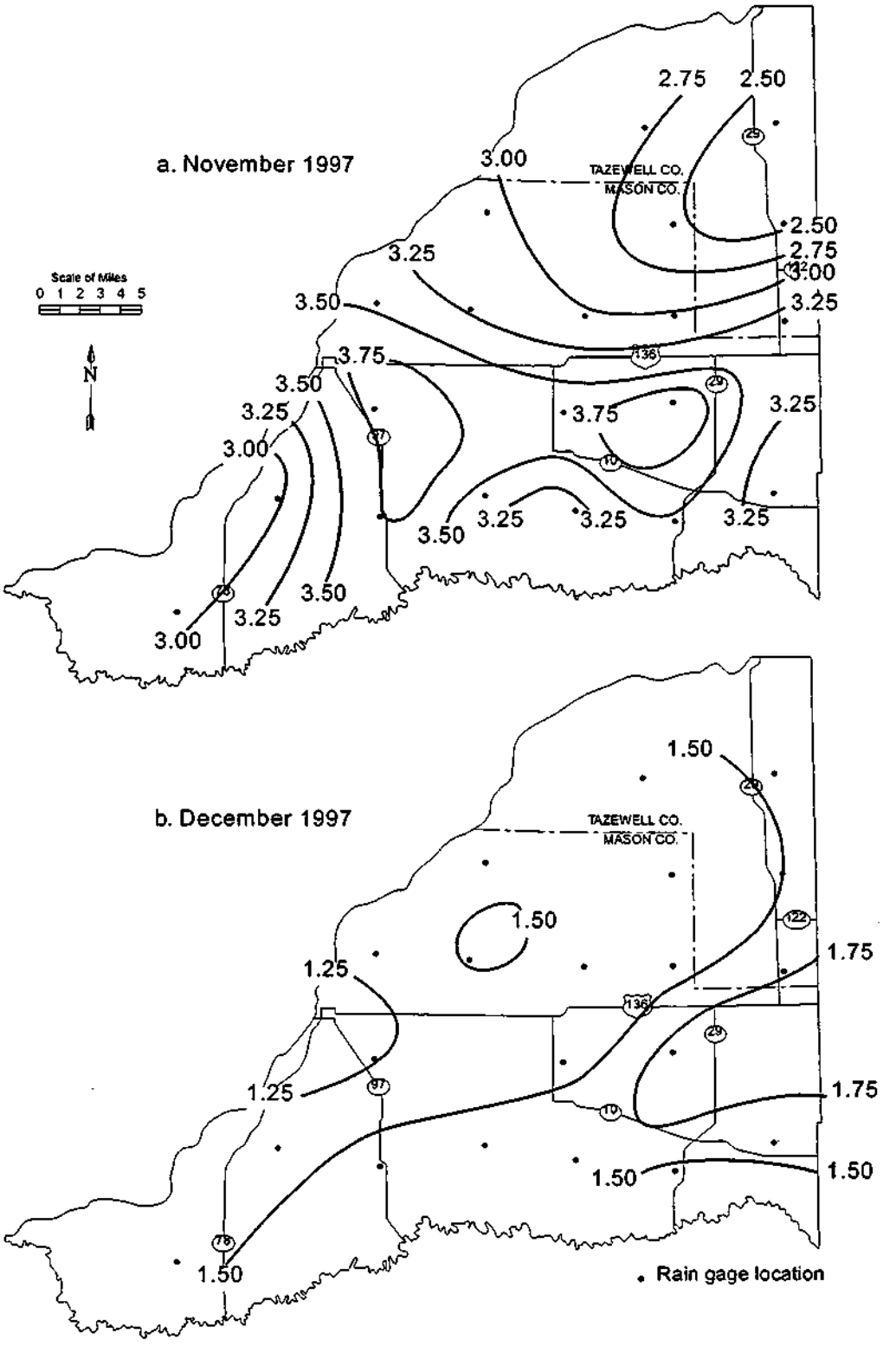

Figure 6. Precipitation pattern (inches)
for a) November 1997 and b) December 1997

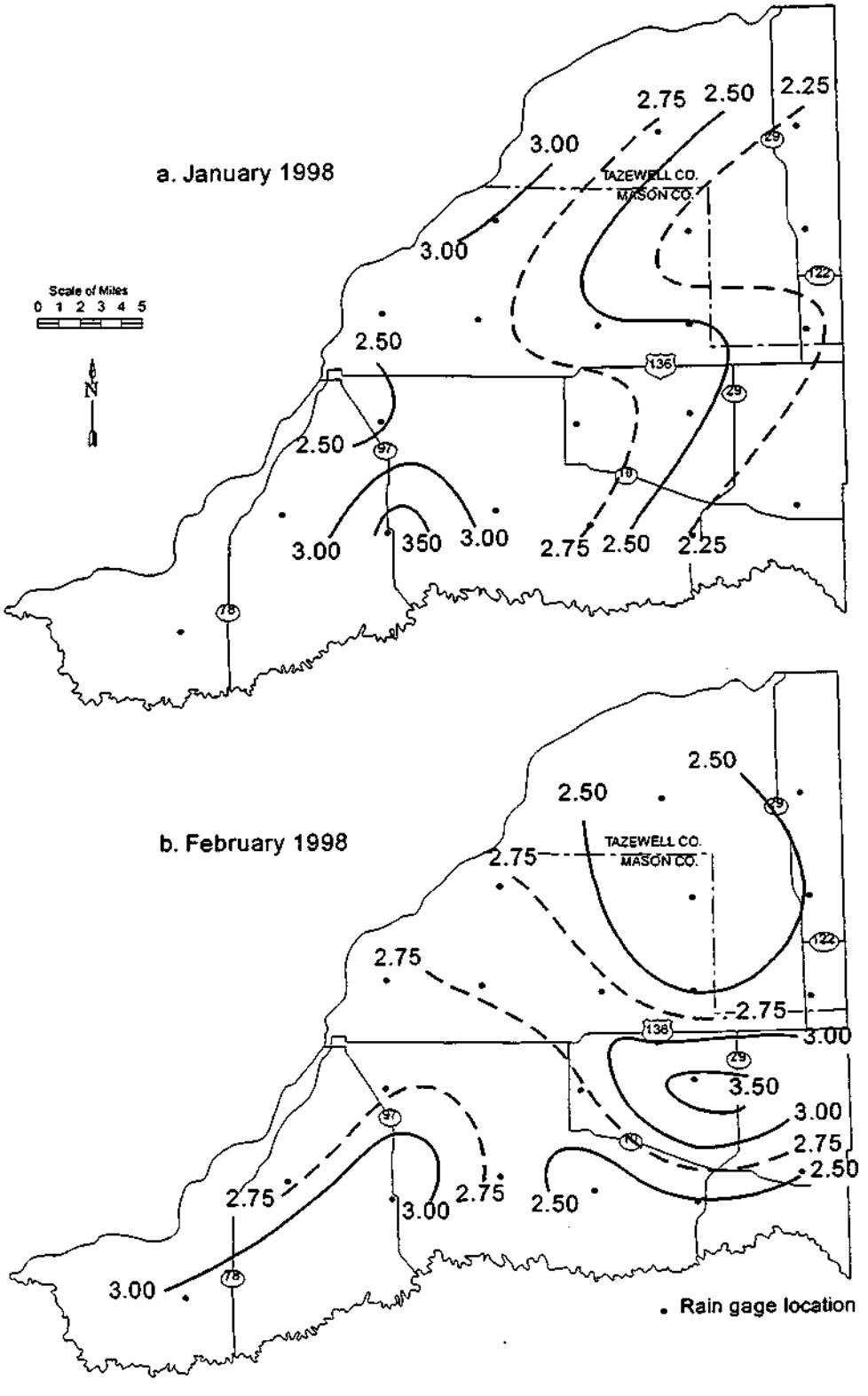

Figure 7. Precipitation pattern (inches)
for a) January 1998 and b) February 1998

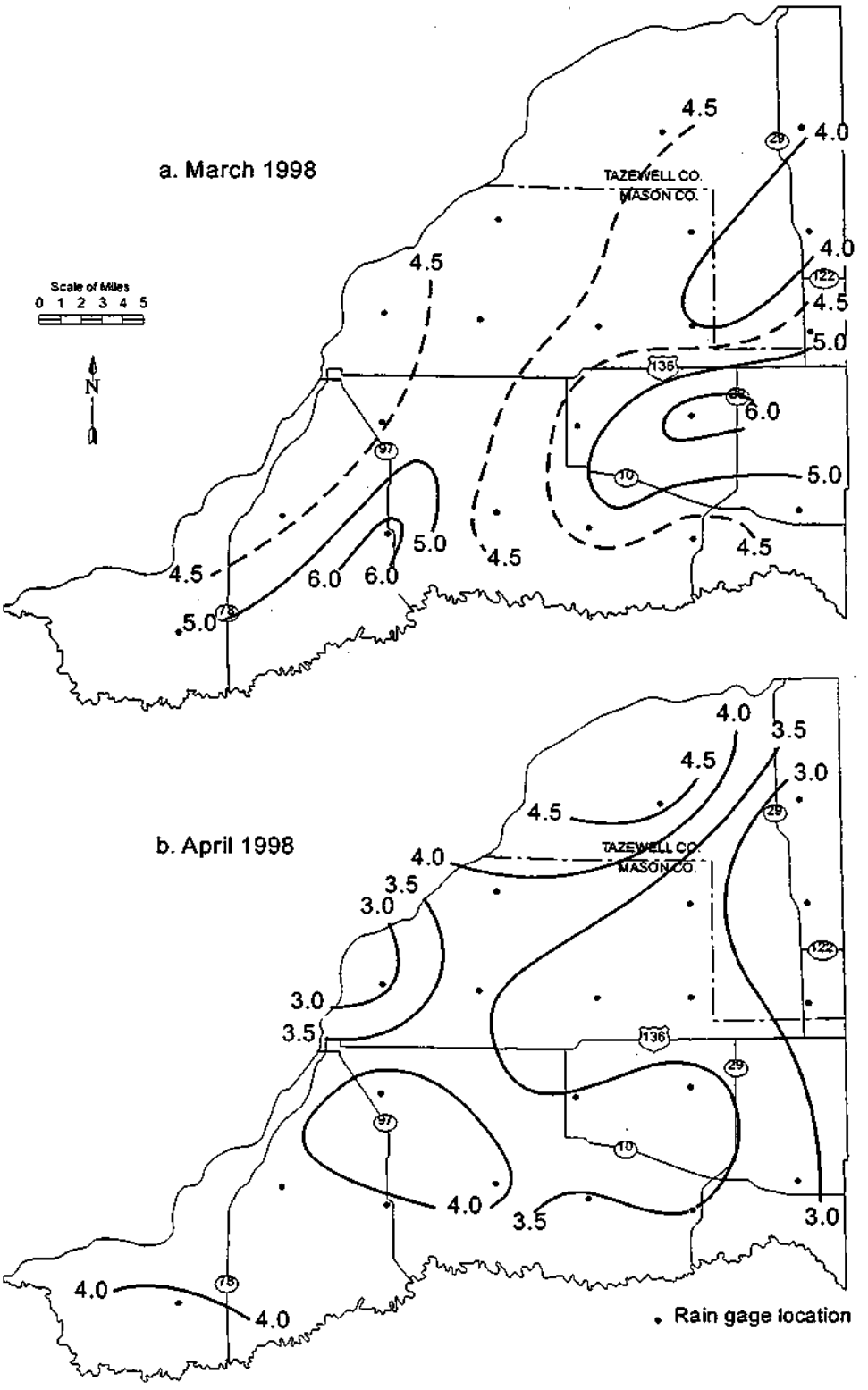

Figure 8. Precipitation pattern (inches)
for a) March 1998 and b) April 1998

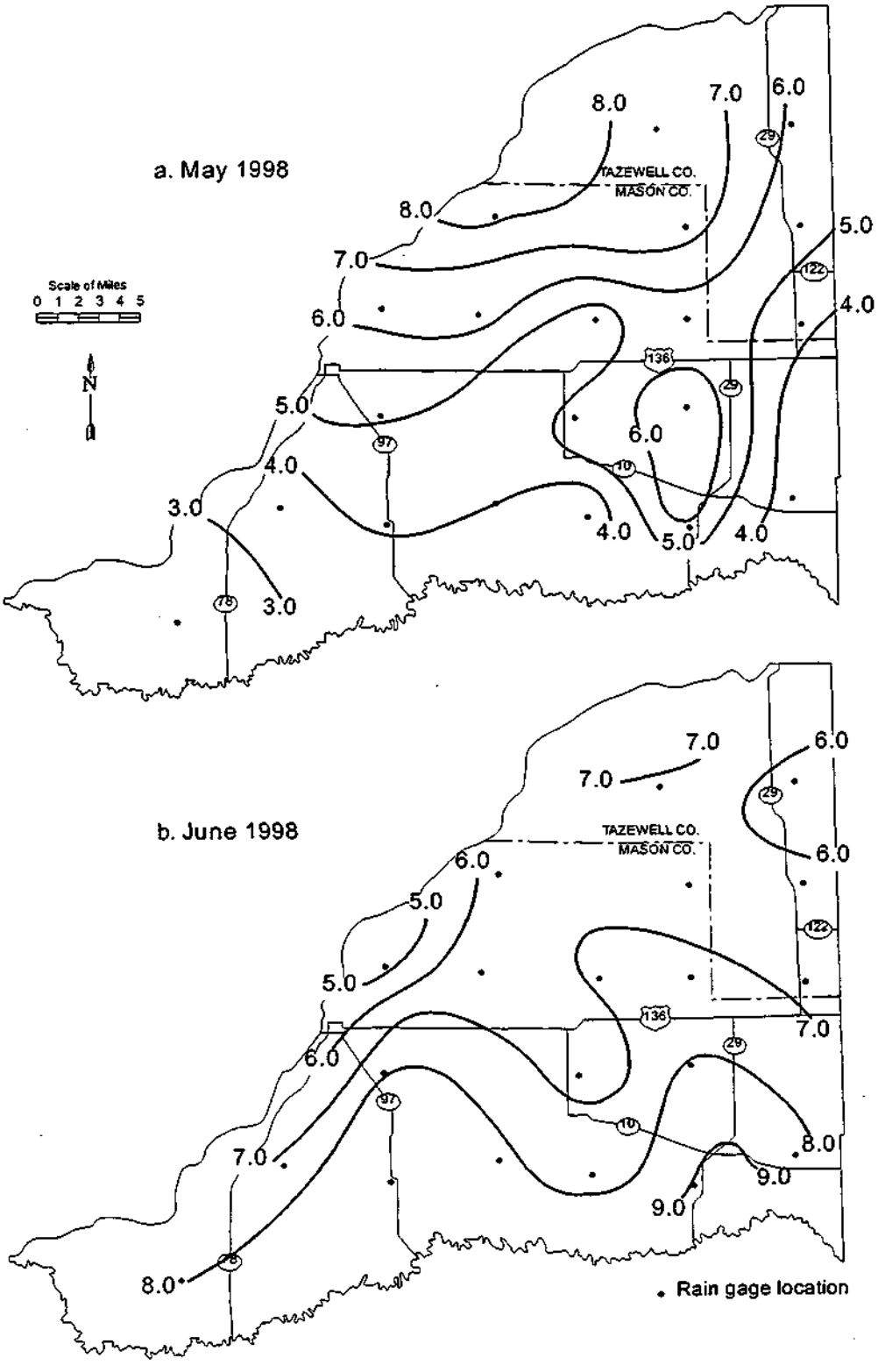

Figure 9. Precipitation pattern (inches)
for a) May 1998 and b) June 1998

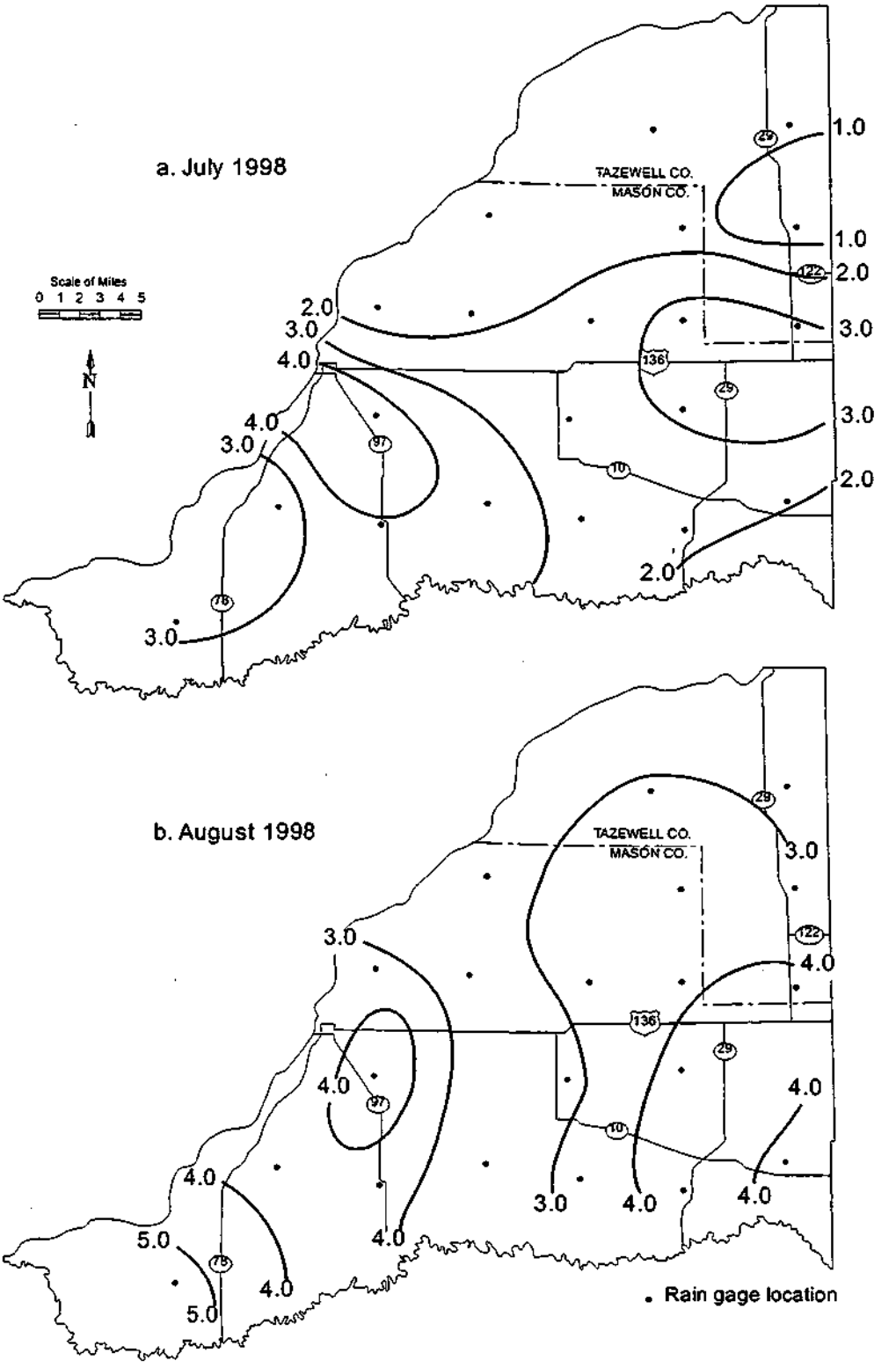

Figure 10. Precipitation pattern (inches)
for a) July 1998 and b) August 1998

years of the network operation was wettest in the southwestern part of the network with amounts greater than 35 inches per year (Figure 4a), and relatively uniform across the rest of the network. The "bulls-eye" around sites 6 and 19 (Figure 4a) should disappear as more years are added to the record. Annual rainfall during the 1997-1998 observation year (Figure 4b) was least near the Illinois River and the eastern edge of Tazewell County. Gradients across the rest of the region were relatively small.

June 1998 (Figure 9b) was the wettest month of the year (7.23 inch network average), followed by May 1998 (Figure 9a, 5.28 inches) and March 1998 (Figure 8a, 4.62 inch average). These three months all had rainfall above the 1992-1997 average and accounted for more than 42 percent of the total annual rainfall. Rainfall in June was lightest in northwestern Mason County along the Illinois River (Figure 9b) and heaviest in the southeast. May precipitation was heaviest in the northern part of the network and lightest in the south (Figure 9a). The precipitation in March was relatively uniform across the region with heaviest rainfall around sites 16 and 19 (Figure 8a).

October 1997, December 1997, and July 1998 were the driest months. October recorded 1.45 inches of precipitation with the driest portion of the network in the southwest (Figure 5b). December precipitation was rather uniform across the network with the driest area near site 13 (Figure 6b). July was considerable drier than average with the heaviest precipitation in the south and the lightest in the northern part of the network (Figure 10a).

September rainfall was heaviest in the northern part of the network and lightest in the southwest (Figure 5a). Rainfall during the month of November (Figure 6a) was lightest in the northeast and highest in the south-central portion of the network. January and February (Figure 7) precipitation was relatively uniform across the region. April rainfall (Figure 8b) was heaviest in the northwest and southwest. In August (Figure 10b) rainfall decreased from greater than 5 inches in the southwest to less than 3 inches in the north.

The spring of 1998 (March-May) was the wettest season of the year (Table 7) followed closely by summer; the winter and autumn totals were considerably lower. Spring rainfall was the second highest in the six years of the network operation. Spring rainfall in 1995 was 17.14 inches, 3.69 inches greater than the 1998 spring rainfall. The number of spring rain days (29) was less than the number of rain days in 1993 (34), 1995 (33), and 1996 (32). Rainfall came in approximately 53 events, resulting in an individual rain event mean of 0.25 inches. The 1998 spring event average rainfall exceeds only the 1997 spring rain event rainfall (0.20 inch). The event average rainfall in the remaining springs was 0.32 inches in 1993, 0.36 inches in 1994, 0.42 inches in 1995, and 0.26 inches in 1996.

Summer 1998 was slightly drier than the spring of 1998, and it was the second wettest summer of the six years. An average of 13.14 inches of rain was received across the region during June, July, and August, 10.17 inches less than 1993, the wettest summer. There were 41 summer rain events over 25 days, resulting in the largest amount of rainfall per rain day, and the second largest rain event size in the six years.

Winter 1997-1998 was the second wettest of the six winters and had the greatest number of rain days and events. The average amount of precipitation received per rain day and event was

Table 7. Average Number of Rain Days, Rain Events, Total Rainfall, Inches of Rain per Rain day, and Inches of Rain per Rain Event for Each Month and Season for the 1992-1997 Period Compared to the 1997-1998 Observation Year

	1992-1997 Average					1997-1998				
Period	*Days*	*Events*	*Rainfall*	*In./Day*	*InJEvent*	*Days*	*Events*	*Rainfall*	*In./Day*	*In./Event*
September	6.2	7.2	4.17	0.67	0.58	6.0	8.0	2.52	0.42	0.31
October	7.2	8.4	2.67	0.37	0.32	7.0	11.0	1.45	0.21	0.13
November	7.3	8.4	3.27	0.44	0.39	6.0	7.0	3.14	0.52	0.45
December	6.0	7.2	1.51	0.25	0.21	8.0	9.0	1.49	0.19	0.17
January	7.6	8.6	1.93	0.25	0.22	6.0	8.0	2.59	0.43	0.32
February	4.8	5.2	1.71	0.36	0.33	7.0	10.0	2.71	0.39	0.27
March	7.0	7.4	2.12	0.30	0.29	10.0	23.0	4.62	0.46	0.20
April	10.0	11.8	3.90	0.39	0.33	8.0	12.0	3.55	0.44	0.30
May	13.2	15.8	4.89	0.37	0.31	11.0	18.0	5.28	0.48	0.29
June	11.6	13.2	3.40	0.29	0.26	13.0	21.0	7.23	0.56	0.34
July	11.0	12.4	4.52	0.41	0.36	6.0	9.0	2.37	0.40	0.26
August	11.4	' 14.0	3.59	0.31	0.26	6.0	11.0	3.53	0.59	0.32
Autumn	20.8	24.0	10.11	0.49	0.42	19.0	26.0	7.10	0.37	0.27
Winter	18.4	21.0	5.15	0.28	0.25	21.0	27.0	6.79	0.32	0.25
Spring	30.2	35.0	10.92	0.36	0.31	29.0	53.0	13.45	0.46	0.25
Summer	34.0	39.6	11.51	0.34	0.29	25.0	41.0	13.14	0.53	0.32
Annual	103.4	119.6	37.69	0.36	0.32	94.0	147.0	40.48	0.43	0.28

0.32 and 0.25 inches, respectively. The rainfall amount in each rain day and event was exceeded by both the 1992-1993 and 1994-1995 winters.

The 1997 autumn season (September-November) was the third driest of the six years and had the same number of precipitation days (19) as 1994 and 1996. The 1995 autumn season had the fewest precipitation days. The two driest years were 1995 and 1996. Average precipitation per event was larger only than the 1996 autumn. An average precipitation of only 0.37 inches fell each rain day, which is less than the 6-year mean but greater than the 1996 mean of 0.31 inches.

The plot of the network average precipitation time series (Figure 11) shows the monthly variation of rainfall. October had the smallest year-to-year precipitation range (1.34 inches) over the six observation years, while September had the largest range (10.07 inches). The network

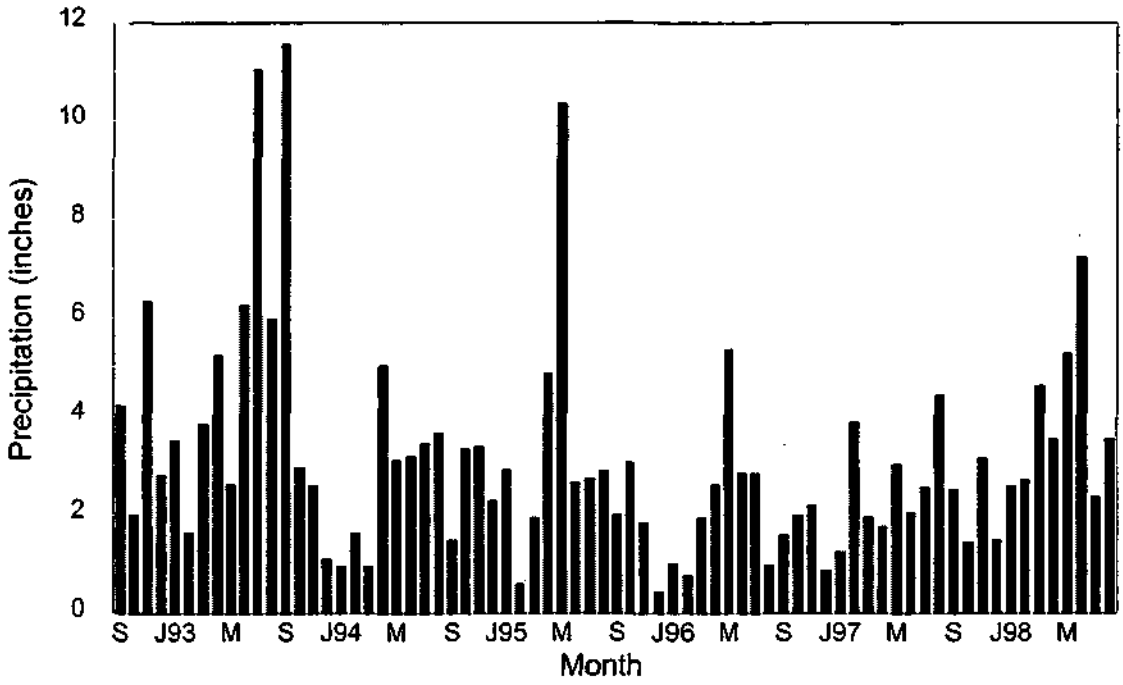

Figure 11. Time series of network average monthly precipitation for September 1992 to August 1998

average annual rainfall for 1997-1998 was 40.48 inches, the second wettest over the 6-year period. The period 1992-1993 was the wettest year (55.55 inches) and 1995-1996 the driest year (25.70 inches). The September 1992 to August 1993 year also had the widest month-to-month fluctuations in rainfall, reflecting the great flood of 1993 over the central and western Midwest. Monthly fluctuations from September 1997 to August 1998 were the third smallest. Only 1995-1996 and 1996-1997 had smaller month-to-month rainfall variations. The driest October and July, and the wettest March and June occurred during the 1997-1998 observation year. Two months in the 1997-1998 year (May and June) had monthly rainfall exceeding 5 inches. No month in the 1997-1998 year had less than 1 inch of precipitation.

During 1997-1998, five months received rainfall greater than the 1992-1997 average (Figure 12). All other months were drier than, or approximately equal to, the 5-year average. More details of the monthly rainfall by year can be found in Appendix VI where graphs of monthly average precipitation for each of the 25 rain gauge sites during the six years are presented. The five rain gauges removed from the network show only three years of data.

A total of 732 network storm periods have occurred during the 6-year observation period:148 in 1992-1993,102 in 1993-1994,129 in 1994-1995,98 in 1995-1996, 121 in 1996-1997, and 134 in 1997-1998, resulting in a 6-year average of 127 storms per year. Appendix VII documents each storm period with date and hour of the start of the storm period, storm period duration, number of stations receiving precipitation during the storm period,

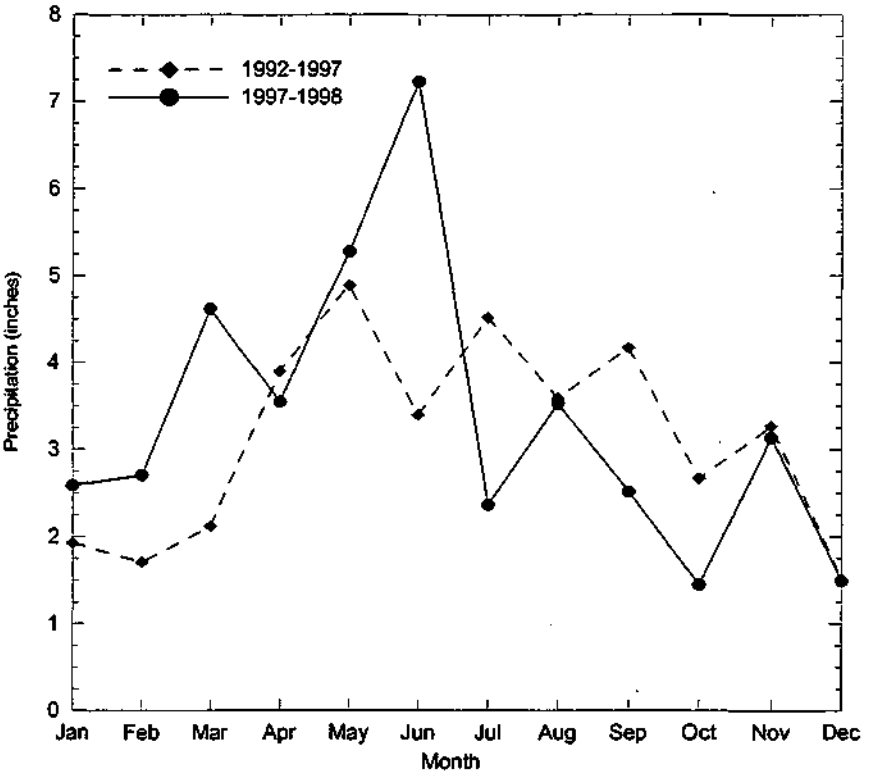

Figure 12. 1997-1998 monthly average precipitation compared to the 5-year network monthly average

network average rainfall, storm average precipitation, maximum precipitation received during the storm period, the station (gauge) where the maximum occurred, and storm recurrence frequency of the maximum observed precipitation (Table VII-1). The network average rainfall is the arithmetic mean of the rain received at all 20 or 25 stations, while the storm average is the arithmetic mean of the rain received at stations reporting rainfall during the storm period. The storm recurrence frequency is the statistical probability of the recurrence of a storm with the reported precipitation (i.e., a 10-year storm would be expected to occur on average only once every ten years at a given station, or have a 10 percent chance of occurring in any given year). Recurrence frequencies are recorded for the total storm period for the area. Also included in Appendix VII is a table (Table VII-2) showing each storm and the rainfall received at each of the 20 or 25 stations during that storm.

Twenty-seven of the 732 storm periods produced maximum precipitation at one or more stations with a recurrence frequency greater than one year: 50-year (1 storm), 10-year (3 storms), 5-year (3 storms), 2-year (13 storms), and greater than 1-year but less than 2-year (7 storms). The 50-year storm (storm 153) occurred on 13 September 1993, and the 10-year storms on 16 May 1995 (storm 323), 8 May 1996 (storm 432), and 19 July 1997 (storm 580). Two of the 5-year storms occurred in 1993 (storm 105 in June and storm 149 in September) and the third (storm 327) in May 1995. There were nine storms in 1992-1993, five in 1993-1994, five in 1994-1995,

one in 1995-1996, three in 1996-1997, and four in 1997-1998 with a recurrence frequency greater than or equal to one year. The stations that exceed the one-year or more recurrence frequency are indicated in bold type in Appendix VII, Table VII-2, which shows the total precipitation for each storm period by station.

Correlation of Ground-Water Levels with River Stage and Precipitation

Monthly ground-water level measurements in each well were correlated with total monthly precipitation at the nearest rain gauge(s) and the Illinois River stage in several different ways. Correlations, expressed as coefficients of determination, were calculated based on regression analyses. These analyses can be grouped as a) precipitation lag regression analysis, b) river stage lag regression analysis, c) accumulated precipitation regression analysis, and d) step-wise river stage/precipitation regression analysis.

Precipitation Lag Regression Analysis

To examine the timing of the delay in ground-water response to a single previous month's rainfall, the total precipitation for each month was "lagged" for a period from zero to four months and correlated to the observed ground-water level measurement for the month of the prescribed lag period. Best-fit equations were calculated based on both linear and exponential regressions. Examination of the observation well hydrographs (Appendix II) shows that, depending on the location of the well, the peak in a ground-water level hydrograph often lagged behind the month with the greatest rainfall by a period of a month or more. In addition, there appeared to be a grouping of wells that peaked together (Table 4). A precipitation lag regression analysis defines, quantitatively, the lag between monthly precipitation and ground-water levels.

The results of such an analysis are summarized in Table 8. For each well, local precipitation was lagged from zero to four months, linear and exponential regressions were performed, and coefficients of determination were calculated. The lag period with the highest coefficient of determination is marked with an asterisk, and the equations describing the best-fit line for that regression are provided. An example of the data and best-fit lines using the equations displayed for MTOW-2 is shown in Figure 13. The variance explained by the linear and exponential equations is not significantly different. However, the exponential equation more accurately explains the physical response of ground-water levels to precipitation. The exponential equation provides for an upper plateau for the ground-water depth.

For most of the wells, the best correlations occur for a 1- or 2-month lag in precipitation; that is, the ground-water level response follows precipitation by 1 to 2 months (Table 8). Wells with the best correlation to a 1-month lag in precipitation include MTOW-2, MTOW-9, MTOW-10, and MTOW-12. A 2-month lag in precipitation was most highly correlated with wells MTOW-1, MTOW-3, MTOW-6, MTOW-7, and MTOW-11. These two groups of wells are essentially combined in Table 4, suggesting that there may be subtle quantitative differences in ground-water response that were not observed in the earlier qualitative discussion. There does

Table 8. Results of Precipitation Lag Regression Analysis

Coefficient of determination (R^2-%) for ground-water elevation (Y) vs. lagged precipitation (X)		*No lag*	*1-month lag*	*2-month lag*	*3-month lag*	*4-month lag*	*Best-fit equations*
MTOW-1	Linear	1.64	25.00*	25.70*	12.74*	0.96	Y = 38.30-0.3273X
	Exponential	L59	25.42*	26.10*	12.75*	0.93	Y = exp(3.65-0.0089X)
MTOW-2	Linear	17.88*	42.33*	13.33*	1.10	1.40	Y= 11.88-0.7751X
	Exponential	13.27*	55.46*	12.52*	0.58	2.27	Y = exp(2.57-0.1181X)
MTOW-3	Linear	0.92	7.38	12.76*	8.30	3.61	Y= 16.83-0.4551X
	Exponential	0.82	10.15	16.46*	9.55	3.22	Y = exp(2.83-0.0378X)
MTOW-4	Linear	0.14	0.09	0.45	1.37	1.14	Y= 12.15-0.1514X
	Exponential	0.09	0.09	0.70	2.37	1.45	Y = exp(2.49-0.0185X)
MTOW-5	Linear	8.31	21.30*	20.98*	3.96	1.75	Y = 31.91-0.9797X
	Exponential	8.85	22.95*	23.34*	3.70	2.13	Y = exp(3.47-0.0362X)
MTOW-6	Linear	4.87	13.06*	25.94*	18.58*	6.44	Y= 18.47-0.5068X
	Exponential	4.42	13.91*	28.19*	19.95*	6.63	Y = exp(2.92-0.0319X)
MTOW-7	Linear	1.16	5.81	11.26*	6.79	1.91	Y= 16.24-0.3565X
	Exponential	0.89	7.02	12.82*	7.18	1.70	Y = exp(2.79-0.0266X)
MTOW-8	Linear	0.42	2.17	9.97	12.51*	12.39*	Y = 24.01-0.4515X
	Exponential	0.40	2.17	10.79	13.73*	13.05*	Y = exp(3.18-0.0210X)
MTOW-9	Linear	7.76	35.26*	32.84*	5.89	0.73	Y= 14.01-0.7329X
	Exponential	6.19	41.63*	35.20*	4.88	1.55	Y = exp(2.67-0.0727X)
MTOW-10	Linear	5.76	9.76	9.55	4.71	4.08	Y = 30.00-0.3324X
	Exponential	5.78	10.06	9.85	4.80	4.09	Y = exp(3.40-0.0117X)
MTOW-11	Linear	0.01	2.87	13.00*	12.91*	8.37	Y = 32.65-0.4133X
	Exponential	0.01	2.99	13.88*	13.74*	8.54	Y = exp(3.49-0.0141X)
MTOW-12	Linear	10.83	20.87*	18.51*	7.34	0.72	Y = 14.70-0.4595X
	Exponential	10.17	23.83*	20.09*	6.75	0.37	Y = exp(2.70-0.0406X)
MTOW-1	Linear	0.43	2.50	9.92	12.34*	13.43*	Y = 37.61-0.2994X
	Exponential	0.40	2.52	10.20	12.77*	13.93*	Y = exp(3.63-0.0084X)

Note: *Coefficients of determination significant at a = 0.05

not appear to be any easily discernible spatial pattern to these two groups of wells; in fact, if MTOW-10 and MTOW-11 are excluded from consideration because of artesian influences, wells

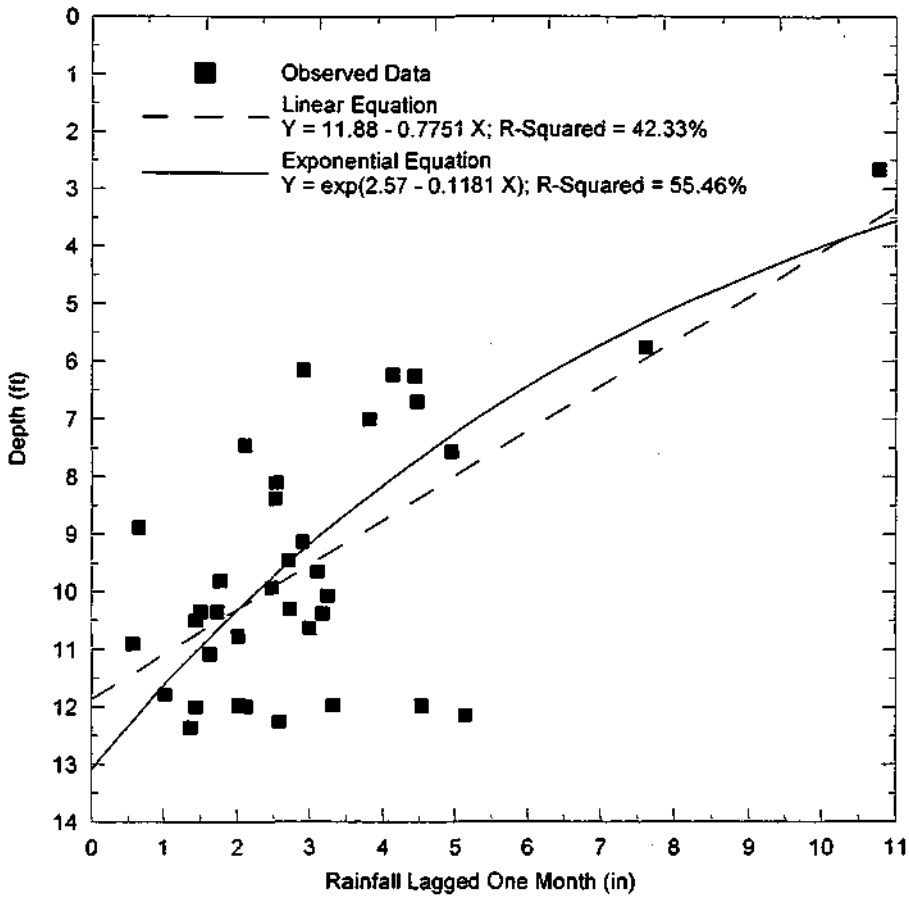

Figure 13. Linear and exponential equations fit to the MTOW-2 ground-water levels with a 1-month precipitation lag

MTOW-2, MTOW-9, and MTOW-12 stretch in a line perpendicular to the Illinois River, and wells MTOW-1, MTOW-3, MTOW-6, and MTOW-7 fall along a line somewhat parallel to the Illinois River.

Yet another group of wells, MTOW-4 and MTOW-8, correlate best with a 3-month precipitation lag, although the correlation coefficient for MTOW-4 is not statistically significant. Because MTOW-4 is close to the Jake Wolf Fish Hatchery, it is suspected that the pumping by the hatchery is masking possible correlations. MTOW-5 is unique in that the linear equation provided the greatest coefficient of determination with a one-month rainfall lag, while the exponential equation had the greatest coefficient of determination with a two-month rainfall lag.

Ground-water levels were significantly correlated to the rainfall one to two months prior to the month of the well observation (a 1- or 2-month lag from the rainfall). Only one well, MTOW-2, was significantly correlated with rainfall during the same month as the month the water levels were observed (i.e., no lag). Lagged ground-water levels were not significantly correlated with rainfall at two wells, MTOW-4 and MTOW-10. MTOW-8 and MTOW-13 were

significantly correlated with rainfall three to four months before the observed ground-water levels. These results indicate that, if a single month is used to estimate ground-water levels, the precipitation observed 1 to 3 months in the past should be used for best results. They also suggest the length of time required for rain received at the earth's surface to percolate down to the water table.

River Stage Lag Regression Analysis

A similar analysis to the precipitation lag regression analysis was performed with river-stage data for wells within 6 miles of the Illinois River (wells MTOW-1, MTOW-5, MTOW-7, and MTOW-9) and for two wells located more than 6 miles from the river (wells MTOW-2 and MTOW-12) to see how far inland the river may have an influence. The river stage was recorded on the first day of the month, the same day that the ground-water levels were measured. MTOW-5 and MTOW-9, the two wells closest to the river, are correlated best to a 1-month lag from the Illinois River stage (Table 9). MTOW-1 and MTOW-7 mostly correlated to a 2-month lag from the river stage. MTOW-7 was not significantly correlated with any of the lagged river stage observations.

The highest correlations between the river stage and ground-water levels occurred at the two observations wells closest (within 1 mile) to the river (MTOW-5 and MTOW-9). Of the wells included in this analysis, the two wells farthest from the river, MTOW-2 and MTOW-12, both had significant correlations with the 1-month lagged river stage. The data currently available does not allow us to evaluate the reason for this correlation. However, both the correlation between precipitation lagged 1-month and the ground-water level in MTOW-2, and the correlation with river stage lagged 1-month and the ground-water level in MTOW-2 are approximately the same. This indicates the possibility of a strong correlation with rainfall around MTOW-2 with the Illinois River stage at Havana, with an unknown cause or effect.

Accumulative Precipitation Regression Analysis

Ground-water levels were also correlated to cumulative 0- to 18-month precipitation totals, depending upon the well. Most of the wells were examined based upon the previous 6 months' precipitation; however, for wells MTOW-3, MTOW-7, and MTOW-11 antecedent precipitation was accumulated from 0 to 12 months, and for wells MTOW-4, MTOW-8, and MTOW-10 antecedent precipitation was accumulated from 0 to 18 months to examine changes in the correlation. The coefficient of determination was computed using the precipitation total beginning with the current month, then adding the precipitation for the previous month and computing a new coefficient of determination for that total. This procedure was repeated, adding precipitation of the month previous to the last period's total until the coefficient of determination had decreased for three periods in a row, which indicated that the highest coefficient of determination was a true maximum and not a local maximum. Best-fit equations were calculated based on both linear and exponential regressions. Only the exponential regressions are shown

Table 9. Results of River Stage Lag Regression Analysis

Coefficients of determination (R^2-%) for ground-water elevation (Y) vs. lagged river stage (X)		*No lag*	*1-month lag*	*2-month lag*	*3-month lag*	*4-month lag*	*Best-fit equations*
MTOW-1	Linear	6.88	29.54*	30.66*	12.76*	1.94	Y= 109.21-0.1659X
Beardstown	Exponential	6.98	29.89*	30.62*	12.05*	1.87	Y = exp(5.55-0.0045X)
MTOW-5	Linear	39.22*	75.79*	52.29*	14.27*	0.20	Y = 330.62-0.6898X
Kingston	Exponential	38.63*	75.91*	51.23*	12.96*	0.36	Y = exp(14.03-0.024X)
MTOW-9	Linear	44.36*	80.52*	52.03*	15.02*	0.04	Y = 207.25-0.4488X
Havana	Exponential	43.06*	79.04*	48.07*	12.20*	0.18	Y = exp(20.10-0.04 IX)
MTOW-7	Linear	0.80	4.72	5.68	5.72	4.56	Y = 68.91-0.1233X
Havana	Exponential	0.76	5.13	6.08	5.48	3.83	Y = exp(6.52-0.0087X)
MTOW-12	Linear	9.76	18.72*	14.66*	8.12	2.86	Y = 95.48-0.1889X
Havana	Exponential	9.51	19.31*	14.67*	7.26	2.21	Y = exp(9.48-0.0159X)
MTOW-2	Linear	50.83*	55.09*	27.31*	6.01	0.33	Y= 171.26-0.3714X
Havana	Exponential	43.92*	49.89*	22.10*	4.11	0.39	Y = exp(22.71-0.047X)

Note: *Coefficients of determination significant at a = 0.05

(Table 10) because the exponential regressions more accurately describe the expected asymptotic ground-water response to precipitation. Depending on the well, coefficients of determination (R^2) varied from 23.90 to 81.28 (i.e., 24 to 80 percent of the variation in ground-water level could be explained by rainfall and river stage variations). It is believed a longer period of record will allow better correlations to be made in the future as well as quantifying other factors contributing to water-level variations such as nearby pumping and factors affecting recharge/runoff relationships like soil type and land use.

The highest correlations with precipitation occurred within the first six months at those observation wells closest to the Illinois River and/or away from municipal wells or other wells with high pumping demands. The wells that showed the highest correlations with 12- to 18-month accumulated rainfall either were located near an area with a heavy pumping stress on the aquifer (MTOW-4) or were far away from any river (MTOW-8 and MTOW-10). MTOW-11 is almost as far away from the Illinois River as MTOW-8 and MTOW-10, but it is relatively close to the Salt Creek, which may explain its response to total rainfall for a shorter period.

MTOW-2 is somewhat an anomaly relative to the other wells in the region. Although it is near several municipal wells, the pumping demand is not as great as at MTOW-4 near the Illinois State Fish Hatchery. Additional analysis is needed for MTOW-2 to determine what is causing the ground-water levels to respond differently than the surrounding wells.

Table 10. Results of Accumulated Precipitation Analysis

Period of accumulation (Months)	R2 (%) for accumulated precipitation for the Mason-Tazwell Observation Wells												
	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.59	13.27	0.82	0.09	8.85	4.42	0.89	0.40	6.19	5.78	0.01	10.17	0.40
1	19.16	49.63	7.42	0.16	24.60	14.04	4.98	1.75	33.39	12.44	1.07	25.99	2.55
2	39.24	54.11*	18.64	0.00	41.80	35.33	12.17	9.41	60.43	18.89	7.70	38.35	13.34
3	46.43*	44.67	28.40	0.66	43.58*	49.05	17.09	19.37	62.01*	20.06	15.38	40.04*	20.30
4	38.26	31.06	33.52	2.22	34.09	52.05	18.70	27.89	49.33	22.05	21.76	35.10	21.75
5	26.30	25.08	37.54	4.56	27.53	53.67*	21.80	36.19	38.72	26.12	27.13	32.61	23.90*
6	15.56	20.78	37.86	6.46	16.89	50.90	23.81	39.24	25.31	29.90	31.05	32.63	19.50
7			40.95	9.30			28.24	40.07		36.59	34.84		
8			45.35	12.09			31.48*	40.20		46.07	37.27		
9			45.88*	13.87			29.50	39.96		52.22	38.04		
10			42.77	18.14			28.00	41.60		61.97	37.48		
11			39.47	25.07			28.35	50.22		73.12	38.65*		
12			33.38	29.95			28.82	56.33		79.28	36.93		
13				32.60				57.87		81.28*			
14				34.30				62.31		81.15			
15				35.07				66.78		76.68			
16				36.59				68.55		71.50			
17				37.79				69.01		68.57			
18				40.47*				70.00*		68.33			

Note: *Highest coefficient of determination.

Step-Wise River Stage/Precipitation Regression Analysis

A step-wise regression analysis was conducted on four observation wells (MTOW-2, MTOW-7, MTOW-9, and MTOW-12) that lie along a line from the Illinois River at Havana to Easton (in the central part of Mason County). Step-wise regression is a statistical procedure that allows the input of all the dependent variables, in this case the lagged Illinois River stage and monthly precipitation. The program then determines which variable explains most of the variance of the ground-water level. In the next step, the second variable selected explains the greatest amount of the remaining variance. Use of this procedure helps remove any investigator bias, i.e., the investigator may believe one independent variable is more important than another. The order of insertion of the independent variables into the statistical model will affect the outcome of the model.

Results of the analysis (Table 11) are presented in order of the distance of the observation wells from the Illinois River. The model that best describes the ground-water levels in MTOW-9 is derived from both the Illinois River stage and precipitation near the observation well lagged one month. Most of the variation is explained by the river stage, the first variable chosen by the step-wise regression program. The model for MTOW-9 also explains a greater percent of the ground-water variation than the best models for the other observation wells included in this analysis.

The best model fit to MTOW-7 is obtained using 2-month lagged precipitation and river stage. In this case, precipitation was the first variable included in the model, indicating that rainfall is more important than river stage in detennining the ground-water levels at this well. However, the low R^2 indicates that this is a very poor model and that there are other factors affecting the ground-water levels at this location.

One-month lagged precipitation and river stage provided the best fit model to the MTOW-12 ground-water observations. However, precipitation was the first and only variable selected by the step-wise regression. River stage was forced into the step-wise regression to generate the precipitation and river stage equation. While the precipitation model shows significant predictive power, it explains only 18 percent of the ground-water variations at the observation well. The model that includes the Illinois River stage improves the model.

At observation well MTOW-2, the 1-month lagged precipitation and river stage also provided the best model. Contrary to expectations, the river stage was the first variable

Table 11. Results of Step-Wise River Stage/Precipitation Analysis

Observation well	*Step-wise regression*		*R2 (%)*	*Adjusted R^2 (%)*	*Best-fit equations**
MTOW-9	1 month	Stage (S)	79.85	79.28	
	lag	Precipitation (P)	82.79	81.78	GW = -186.67+0.2440P+0.3998S
MTOW-7	2 month	Precipitation (P)	11.26	8.79	GW =-16.24+ 0.3565P
	lag	Stage (S)+	11.85	6.82	GW = -35.90 +0.3076P +0.0455S
MTOW-12	1 month	Precipitation (P)	20.87	18.54	GW =-14.70+ 0.4595P
	lag	Stage (S)+	26.91	22.48	GW =-67.31+0.3267P+0.1218S
MTOW-2	1 month	Stage (S)	55.10	53.81	
	lag	Precipitation (P)	67.13	65.19	GW = -133.28+0.4660P+0.2809S

Notes: * GW = Calculated ground-water level, P = monthly precipitation, and S = river stage.

† A variable was "forced" into the regression. Best-fit equations are presented for unforced and forced variables. When both variables are unforced, only one best-fit equation is presented.

selected by the step-wise regression. The river stage alone explained approximately 54 percent of the ground-water variation at this observation well. Precipitation explained an additional 12 percent of the ground-water variation. As noted earlier, the apparent effect of the Illinois River stage on this observation well is unexpected because of the great distance from the Illinois River.

SUMMARY

For the first time, both rainfall and observation well ground-water levels were included in an Imperial Valley report. This report attempts to relate the impact of rainfall in the Imperial Valley area to ground-water levels.

Ground-water levels tend to peak in most wells in the Imperial Valley during the months of June and July, and then decline to a lower level. The ground-water level decline in August and September corresponds to the later part of the irrigation pumping season in the Imperial Valley, and to the greatest crop of water demands occurring during the months of July through mid-September. The period of record for the observation wells (1994-1998) has been a relatively wet period. Ground-water levels have tended to decline during this period. This decline is a return of ground water to more normal levels after the extremely wet spring and summer of 1993 when ground-water levels rose to a modern-day, all time high.

The rain gauges were upgraded during December 1997 to include a linear potentiometer and data logger for recording the rainfall data at 10-minute intervals. This upgrade reduced the need to digitize each of the rain gauge charts, a labor-intensive project. Rain gauge charts were still used as a back-up to the data loggers, should data from the data loggers be lost.

The sixth year of the rain gauge network operation (September 1997-August 1998) was the second wettest observed in the six years of operation. It had the second wettest spring (March-May), summer (June-August), and winter (December-February), and the third driest autumn (September-November). The sixth observation year had the fourth most rain days and second most rain events of the six observation years.

The analysis of the relationship between ground-water levels and precipitation shows that there is a two-to-three month lag from the time rainfall is received at the surface of the earth to the time that it is observed in ground-water levels. For wells near the Illinois River, the river stage plays an important role in the ground-water levels. It was observed that there was a one-month lag between the river stage and ground-water levels in the wells nearest the river.

Initial analysis has revealed some unexpected responses, especially with MTOW-2 near Easton. Additional analysis needs to be conducted on the wells further away from the river to determine if the observation of the ground-water level response at MTOW-2 to the Illinois River stage is real, or whether another influence, such as the Sangamon River, exists.

While the statistical analyses show significant correlations between the ground-water levels and precipitation and/or the Illinois River stage, a longer record of data is needed to improve the correlation estimates and allow a more complete examination of the trends in some of the wells. The short record does not allow for complete discernment of the trends. Better estimates of the pumpage on a regional and local scale, especially near the observation wells, is needed to eliminate that factor on the response of the ground-water levels to the precipitation.

ACKNOWLEDGMENTS

This work was contracted for the Imperial Valley Water Authority (TVWA) under grant "Imperial Valley 223," with partial support from the Illinois State Water Survey (ISWS) general revenue fund. Mr. Morris Bell, chairman of the IVWA, and his board administer the project. The views expressed in this report are those of the authors and do not necessarily reflect the views of the sponsor or of the Illinois State Water Survey. Doug Ward established the digitizing system, including software; Linda Hascall drafted the figures for this report; and Eva Kingston and Agnes Dillon edited the report. Paul Nelson and Robert Ransom made the field portion of this project run smoothly, and their efforts are greatly appreciated. The ISWS and IVWA take this opportunity to thank all of the local Mason/Tazewell County observers, past and present, for their diligence in making this analysis possible.

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Appendix I

Soil Legend

NEARLY LEVEL TO STEEP, EXCESSIVELY DRAINED TO WELL DRAINED, SANDY AND LOAMY SOILS; ON STREAM TERRACES AND DUNES

Plainfield-Bloomington association
Sparta-Plainfield-Ade association
Onarga-Dakota-Sparta association

NEARLY LEVEL, POORLY DRAINED, LOAMY AND SILTY SOILS; ON STREAM TERRACES

Marshan-Udolpho association
Selma-Harpster association

NEARLY LEVEL TO SLOPING, WELL DRAINED, SOMEWHAT POORLY DRAINED, AND POORLY DRAINED, SILTY SOILS; ON UPLANDS AND STREAM TERRACES

Elburn-Plano-Thorp associaiton
Broadwell-Edgington-Pillot association
Tama-Ipava association

NEARLY LEVEL TO STEEP, WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, SILTY, LOAMY, AND SANDY SOILS; ON UPLANDS

Fayette- Alvin-Bloomfield association

NEARLY LEVEL, POORLY DRAINED AND SOMEWHAT POORLY DRAINED, SILTY SOILS; ON FLOOD PLAINS

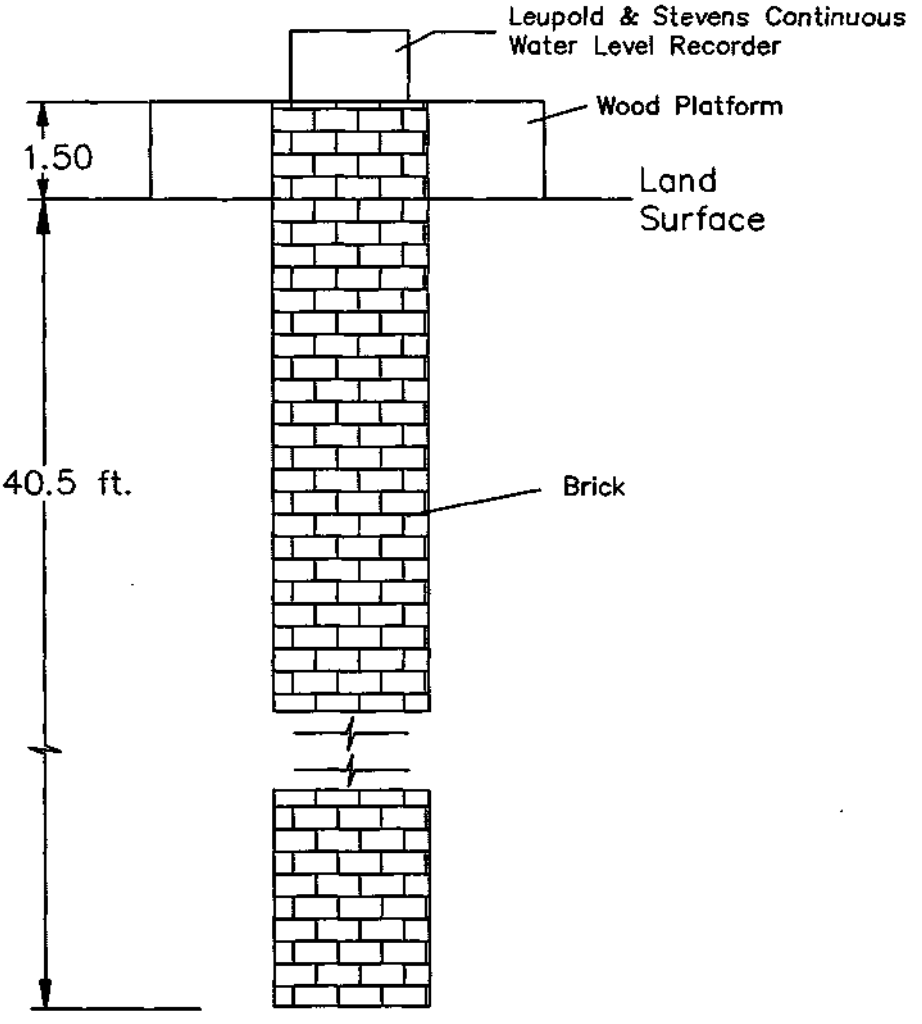
Beaucoup-Dockery association

Source: Calsyn, 1995

APPENDIX II: OBSERVATION WELL DESCRIPTIONS

This appendix shows the construction of the wells in the Imperial Valley observation well network, the hydro graphs of the ground-water levels in each of the wells with precipitation from near by rain gauge from the Imperial Valley rain gauge network and/or Illinois River stage near the observation well, and a table showing the observed ground-water levels in each of the wells for the period of record. Construction details for observation wells MTOW12 and MTOW13 are not available.

Observation Well Construction Details for MTOW1
(Snicarte)

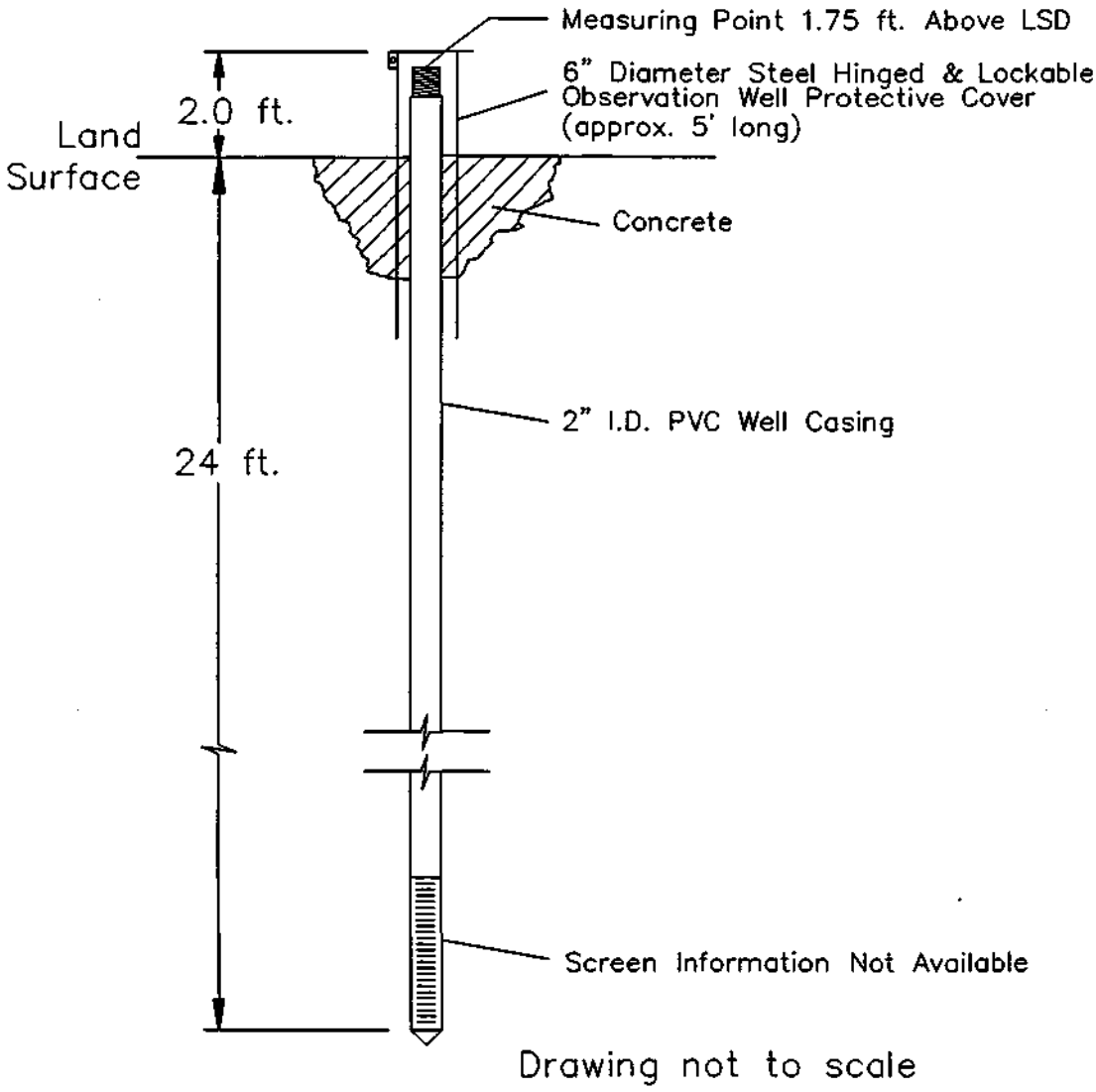


Drawing not to scale

Illinois State Water Survey Drillers Log
Section 11.8b, T.19N., R.10W., Mason County
SWS ID #00091

Depth (feet)	Description of Materials
	Log Not Available

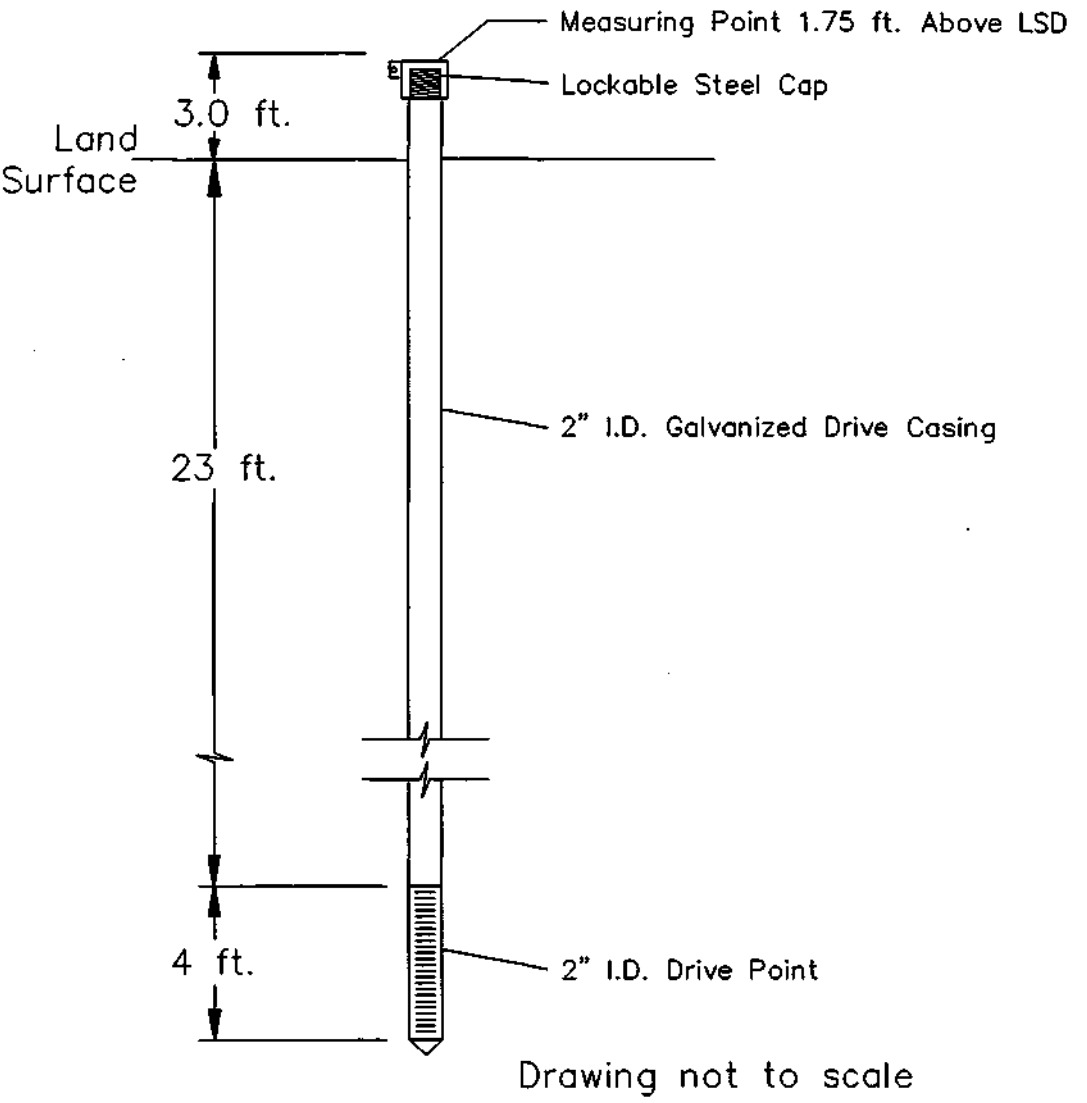
Observation Well Construction Details for MTOW3
(Mason County Wildlife Refuge & Recreation Area)



Illinois State Water Survey Drillers Log
Section 14.8c, T.20N., R.9W., Mason County
SWS Hole # N/A

Depth (feet)	Description of Materials
	Log Not Available

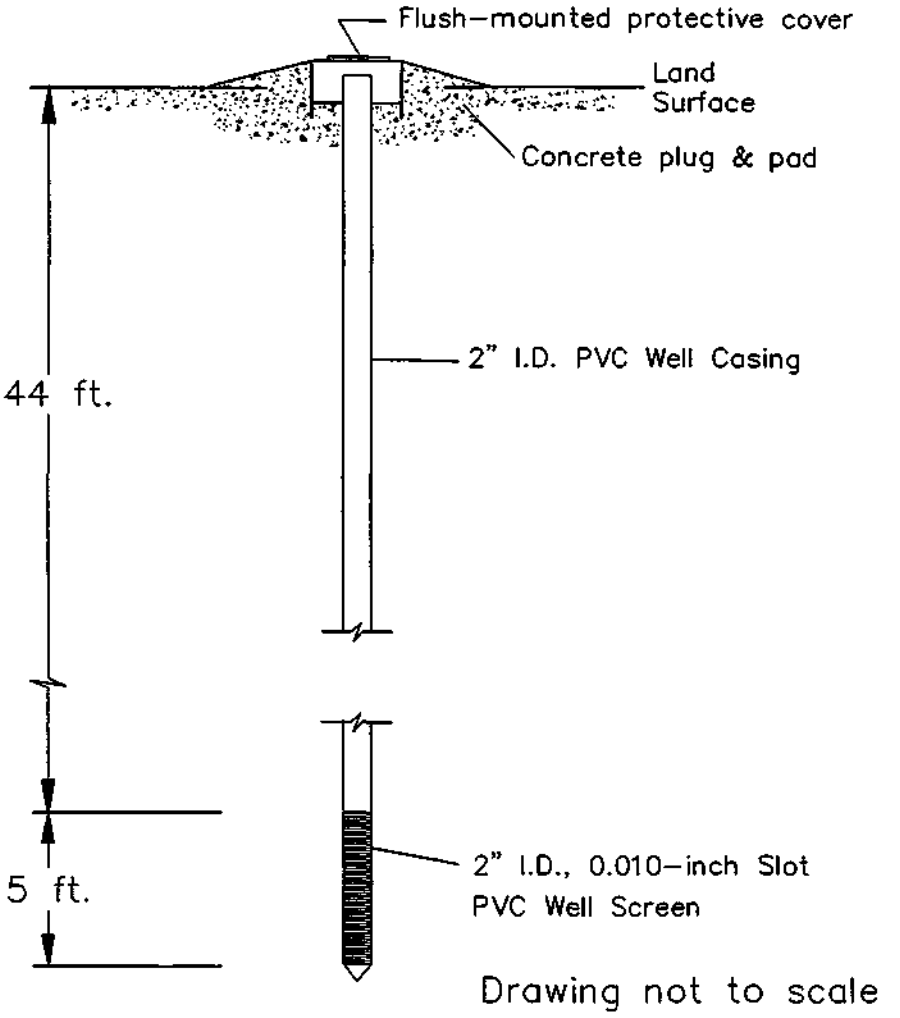
Observation Well Construction Details for MTOW4
(Sand Ridge State Forest, ISWS Well SR-11)



Illinois State Water Survey Drillers Log
Section 2.8d, T.22N., R.7W., Mason County
SWS Hole # N/A

Depth (feet)	Description of Materials
	Log Not Available

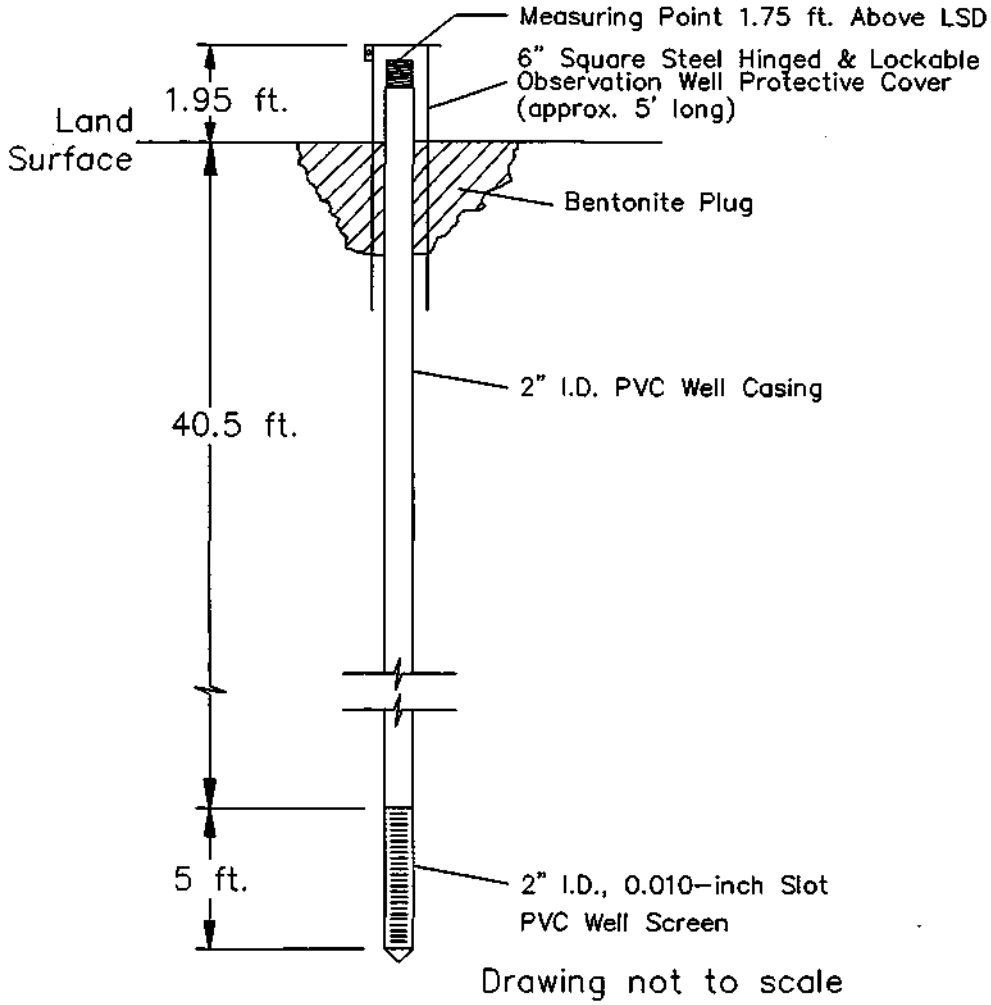
Observation Well Construction Details for MTOW5
(Pekin, ISWS Observation Well 8)



Illinois State Water Survey Drillers Log
Section 3.6a, T.24N., R.5W., Tazewell County
SWS Hole # R–196

Depth (feet)	Description of Materials
	Log Not Available

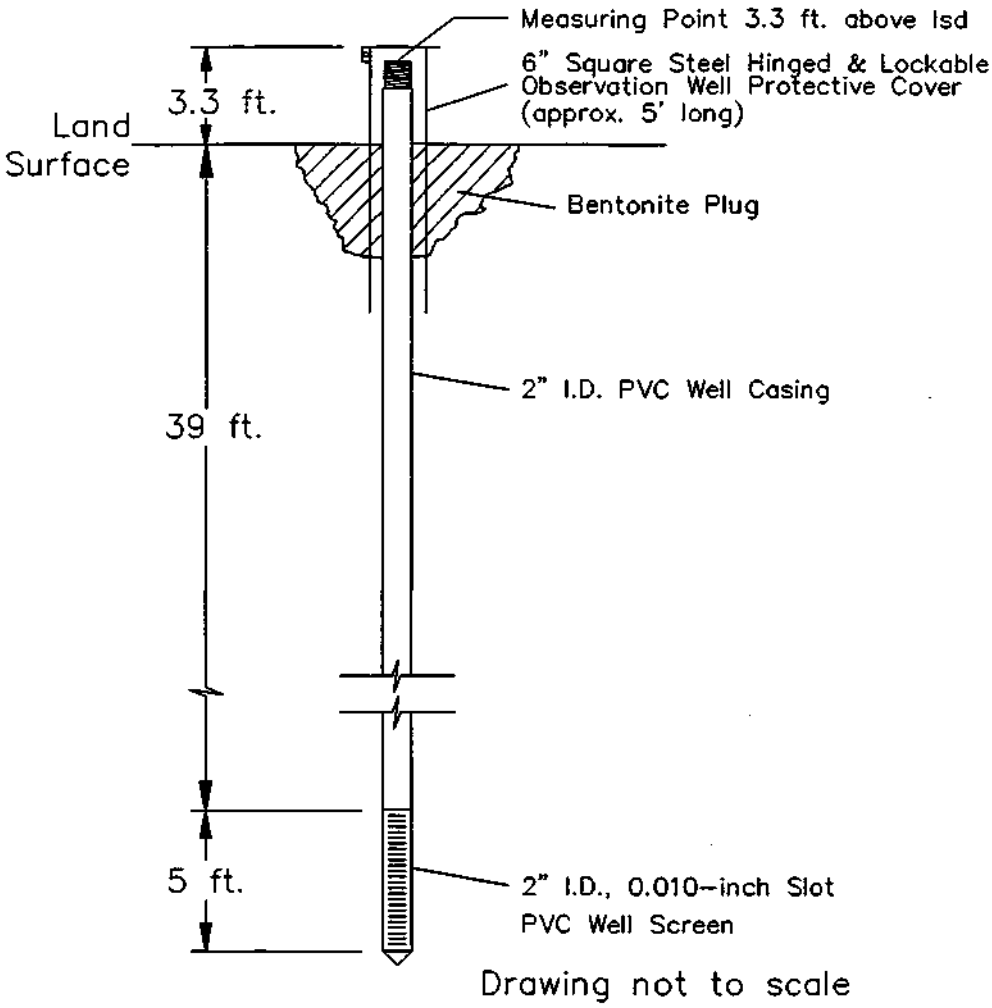
Observation Well Construction Details for MTOW6
(Mason State Tree Nursery)



Illinois State Water Survey Drillers Log
Section 33.8f, T.22N., R.7W., Mason County
SWS Hole # R-257

Depth (feet)	Description of Materials
0–2.0	Sand, dark brown, silty
2.0–15.0	Sand, brown, medium
15.0–46.0	Sand, tan, medium to coarse

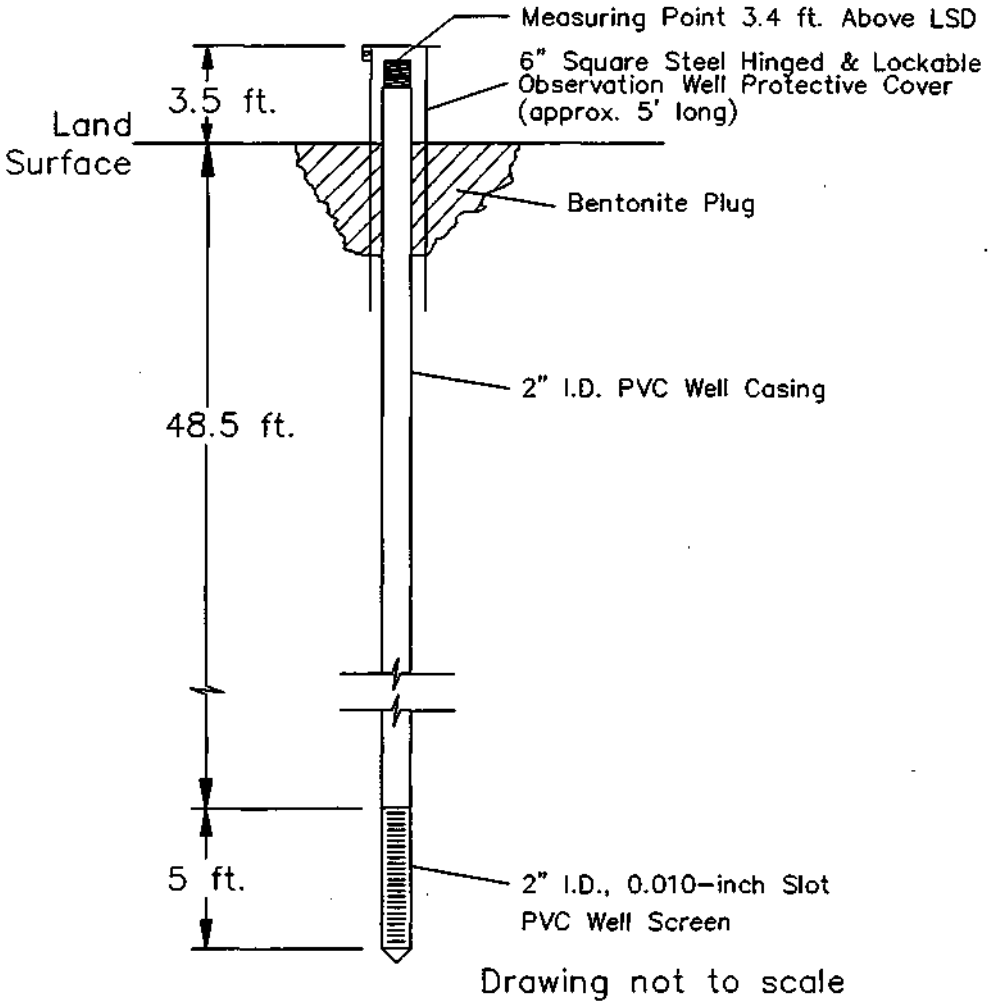
Observation Well Construction Details for MTOW7
(IL Route 136 Rest Area)



Illinois State Water Survey Drillers Log
Section 3.7e, T.21N., R.8W., Mason County
SWS Hole # R-258

Depth (feet)	Description of Materials
0–0.5	Topsoil
0.5–12.0	Sand, brown, medium to coarse
12.0–31.0	Sand, tan, medium to coarse
31.0–45.0	Sand, tan, coarse

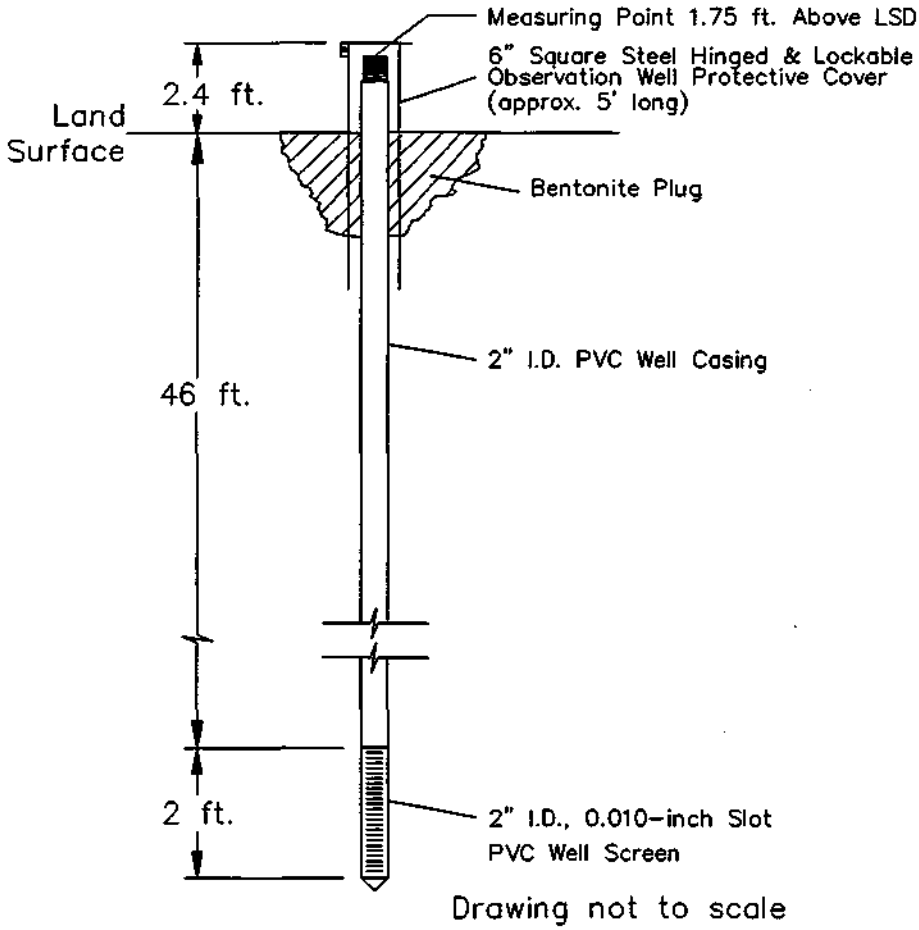
Observation Well Construction Details for MTOW8
(Green Valley)



Illinois State Water Survey Drillers Log
Section 34.1c, T.23N., R.5W., Mason County
SWS Hole # R-259

Depth (feet)	Description of Materials
0–2.0	Topsoil
2.0–12.0	Clay, brown, silty
12.0–18.0	Sand, tan to brown, medium to coarse
18.0–26.0	Gravel, brown, medium to coarse
26.0–35.0	Gravel, brown, fine to medium
35.0–55.0	Sand, tan, medium to coarse

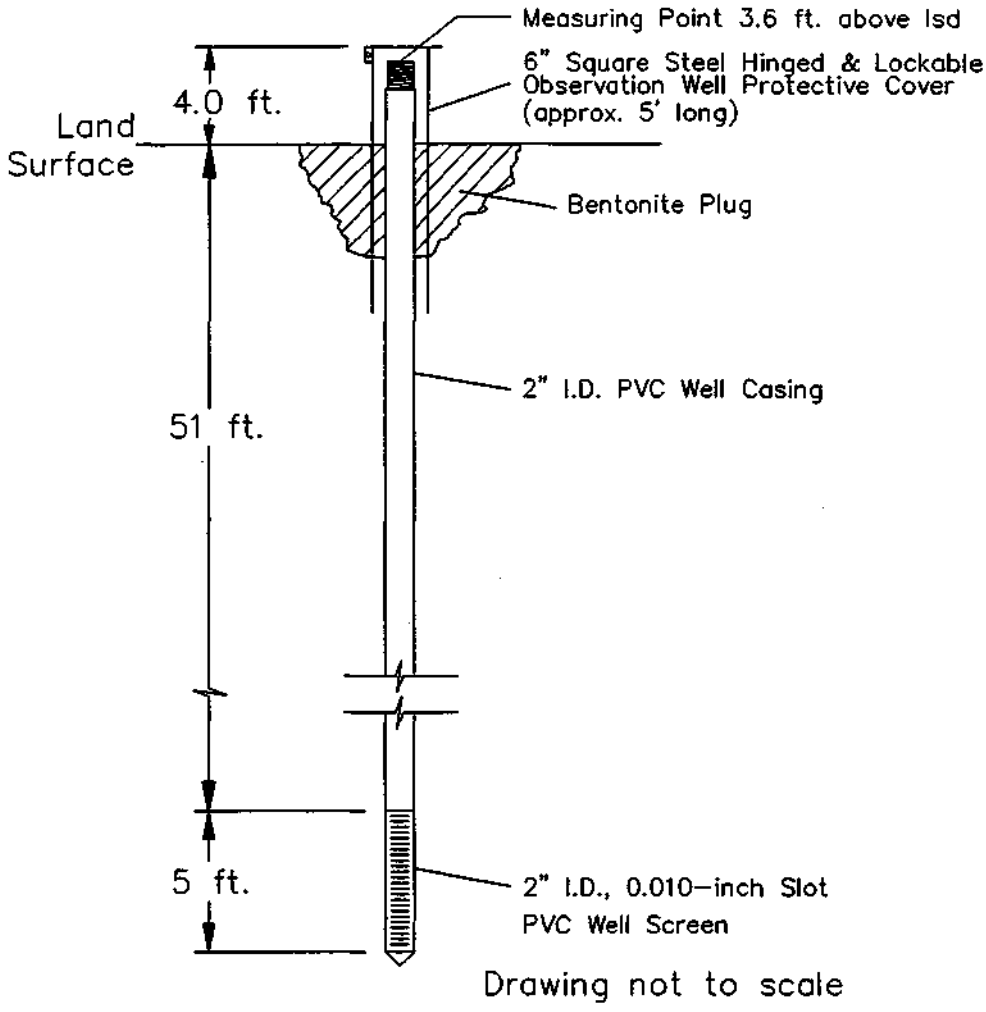
Observation Well Construction Details for MTOW9
(IDOT-DWR)



Illinois State Water Survey Drillers Log
Section 12.8e, T.21N., R.9W., Mason County
SWS Hole # R-263

Depth (feet)	Description of Materials
0–0.5	Topsoil
0.5–5.0	Sand, brown, silty
5.0–8.0	Sand, brown, medium
8.0–13.0	Sand, dark brown, clayey
13.0–55.0	Sand, brown, medium to coarse, dirty
55.0–83.0	Sand, brown, coarse
83.0–87.0	Shale, gray

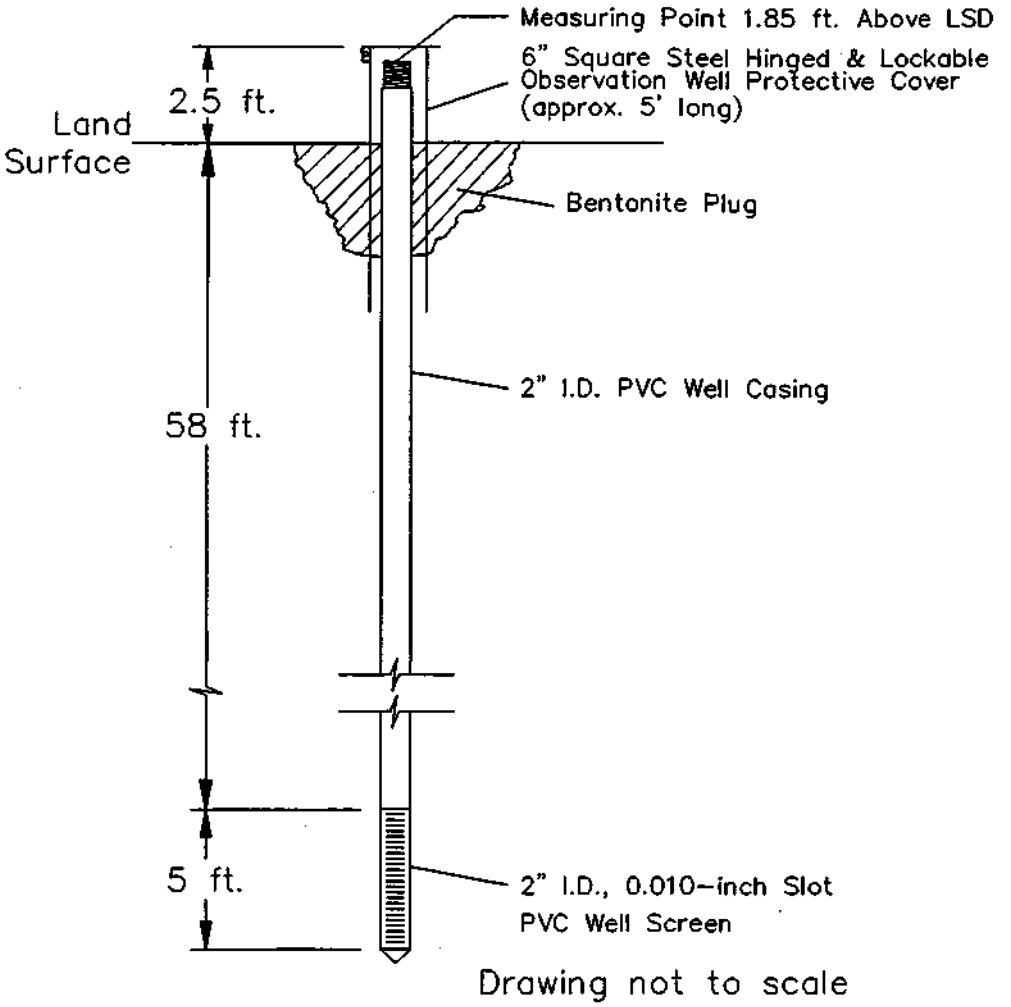
Observation Well Construction Details for MTOW10
(San Jose)



Illinois State Water Survey Drillers Log
Section 36.2d, T.22N., R.5W., Mason County
SWS Hole # R-264

Depth (feet)	Description of Materials
0–1.5	Topsoil
1.5–5.0	Clay, light brown, silty
5.0–6.0	Sand, brown, clayey
6.0–41.0	Clay, brown, silty
41.0–56.0	Sand, brown, silty

Observation Well Construction Details for MTOW11
(Mason City)



Illinois State Water Survey Drillers Log
Section 18.2a, T.20N., R.5W., Mason County
SWS Hole # R-265

Depth (feet)	Description of Materials
0–1.5	Topsoil
1.5–53.0	Clay, brown, silty
53.0–58.0	Sand, brown, silty
58.0–63.0	No cuttings, probably sand, fine with silt

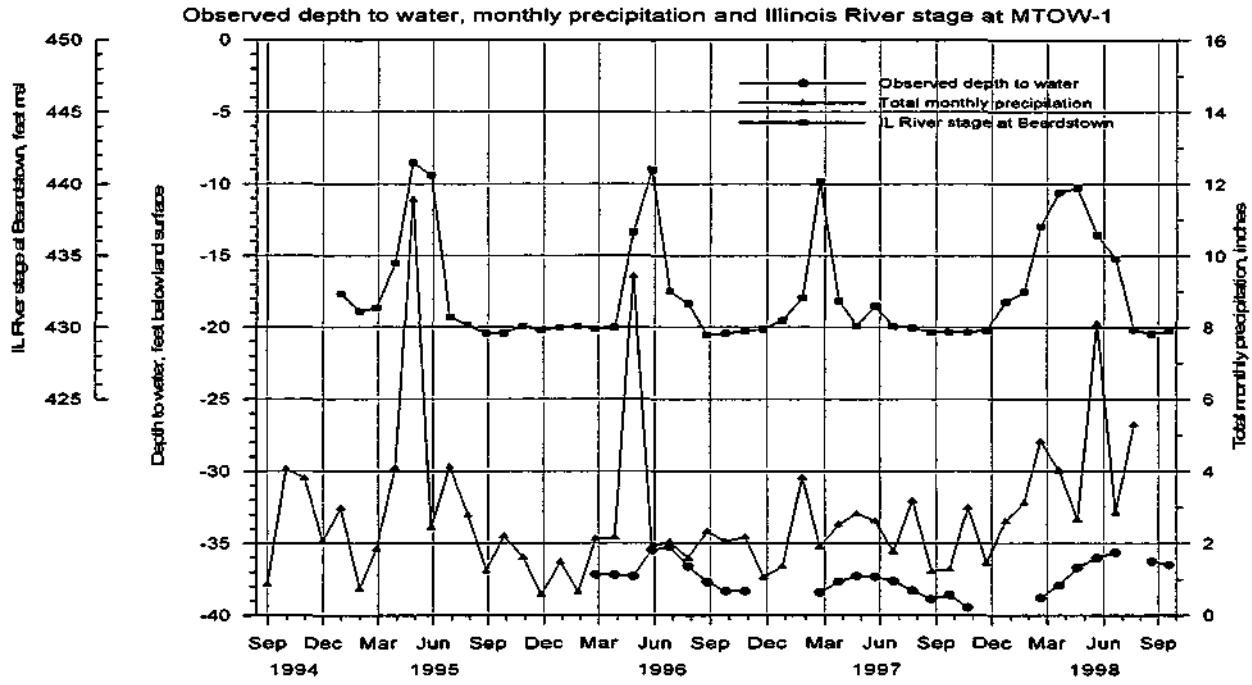


Figure II-1. Ground water depth, monthly precipitation, and Illinois River stage for MTOW-1

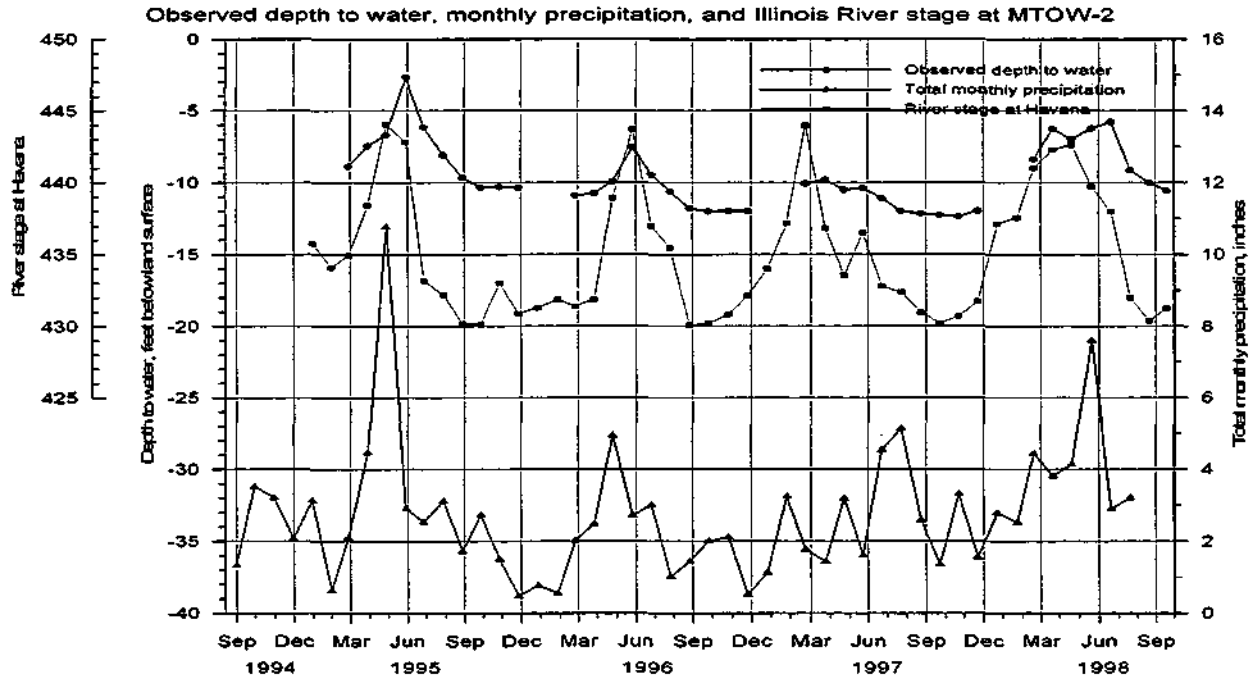


Figure II-2. Ground water depth, monthly precipitation, and Illinois River stage for MTOW-2

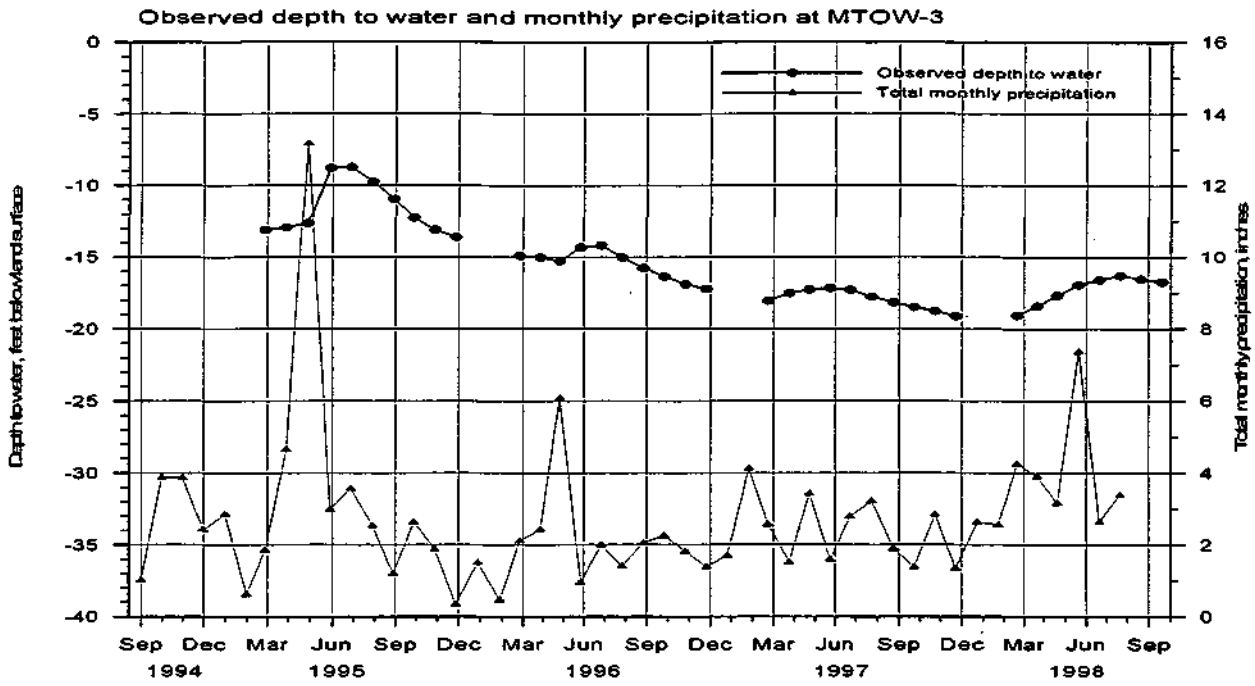


Figure II-3. Ground water depth and monthly precipitation for MTOW-3

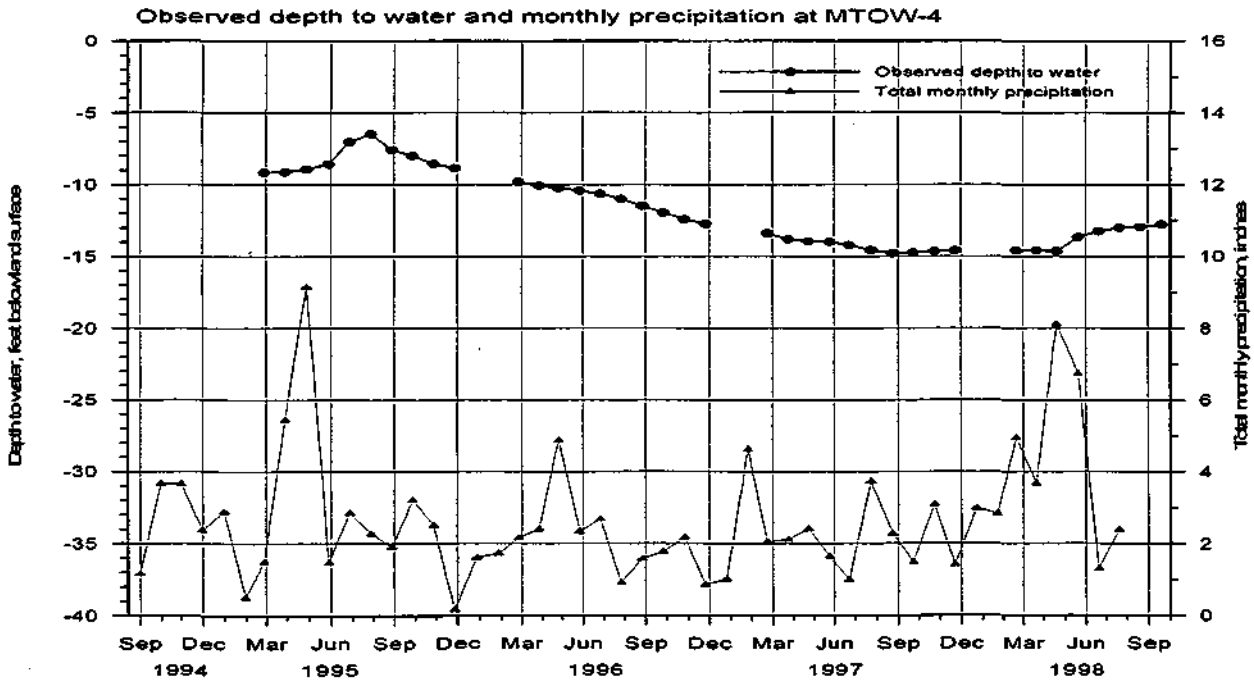


Figure II-4. Ground water depth and monthly precipitation for MTOW-4

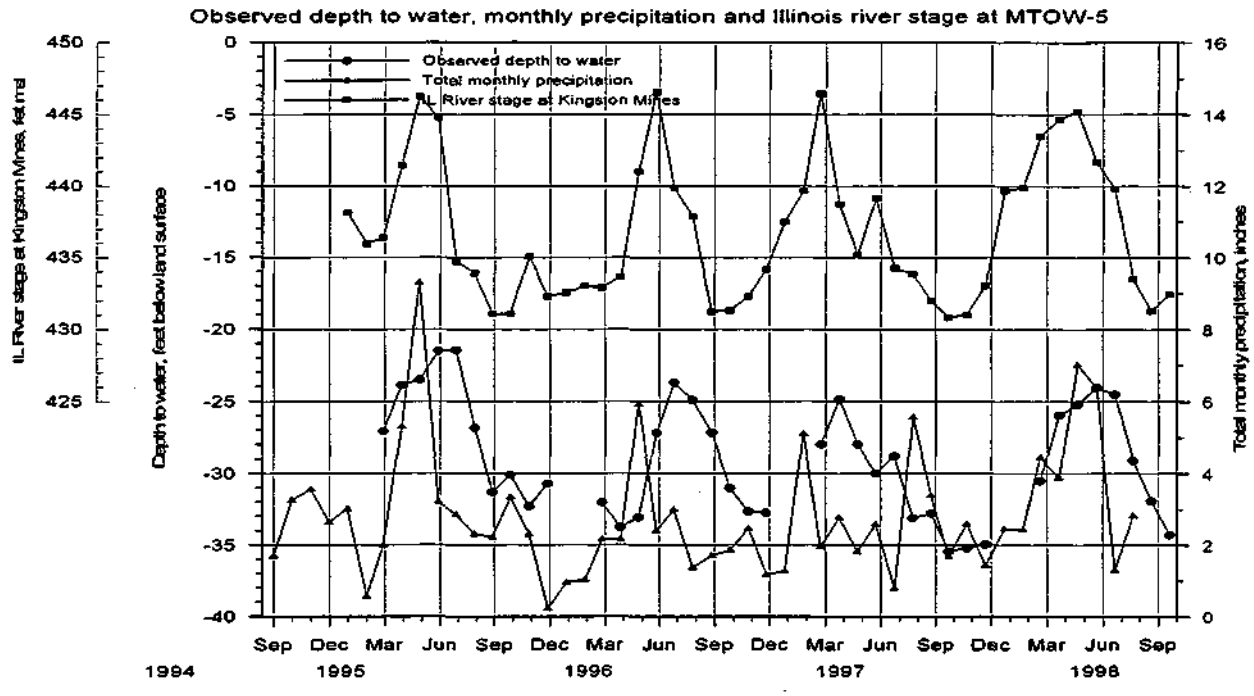


Figure II-5. Ground water depth, monthly precipitation, and Illinois River Stage for MTOW-5

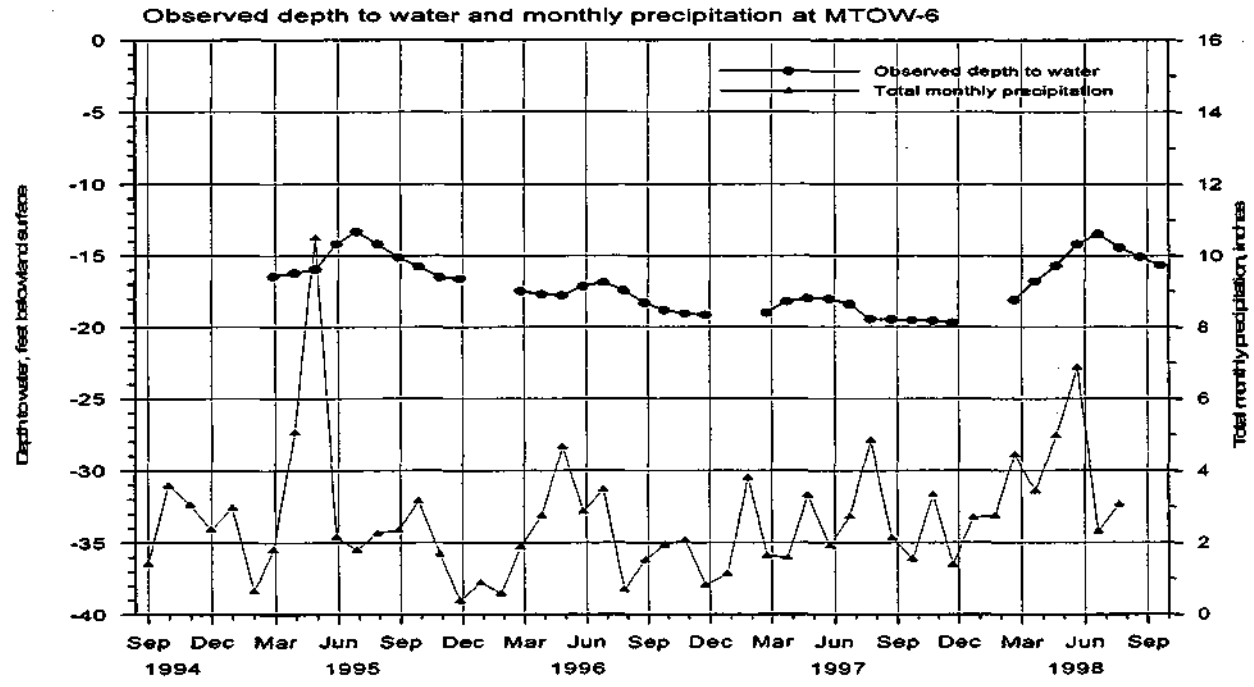


Figure II-6. Ground water depth and monthly precipitation for MTOW-6

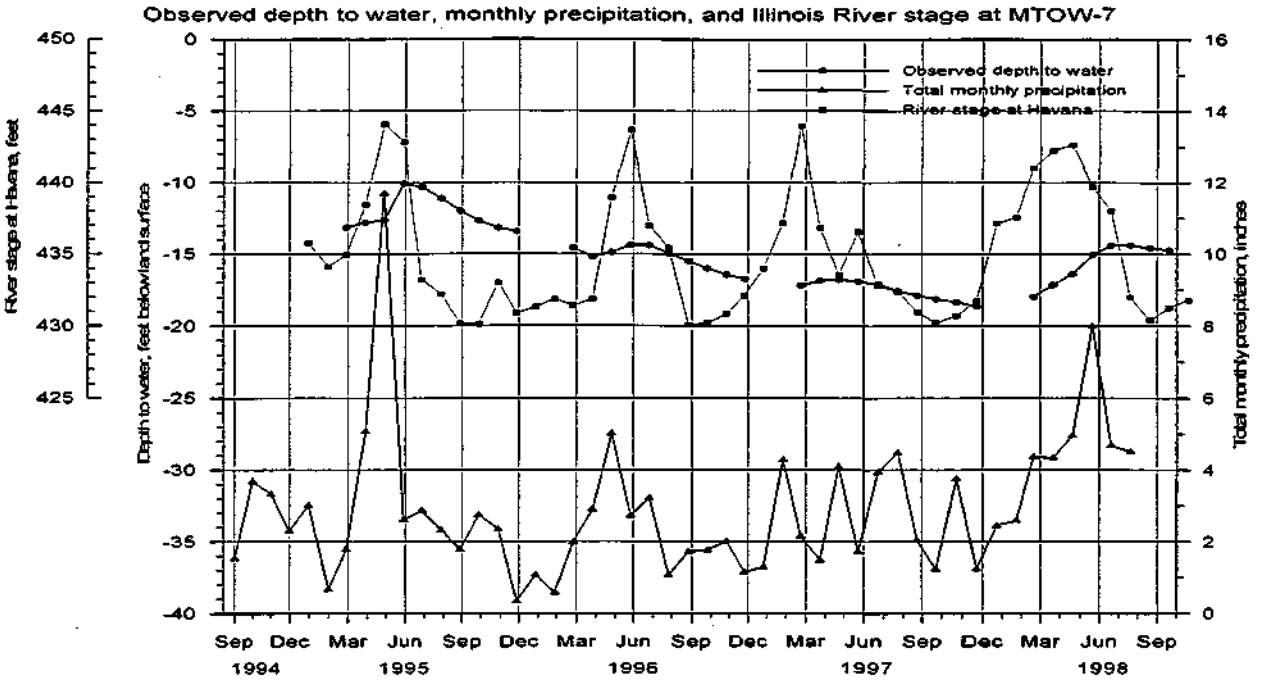


Figure II-7. Ground water depth, monthly precipitation, and Illinois River stage for MTOW-7

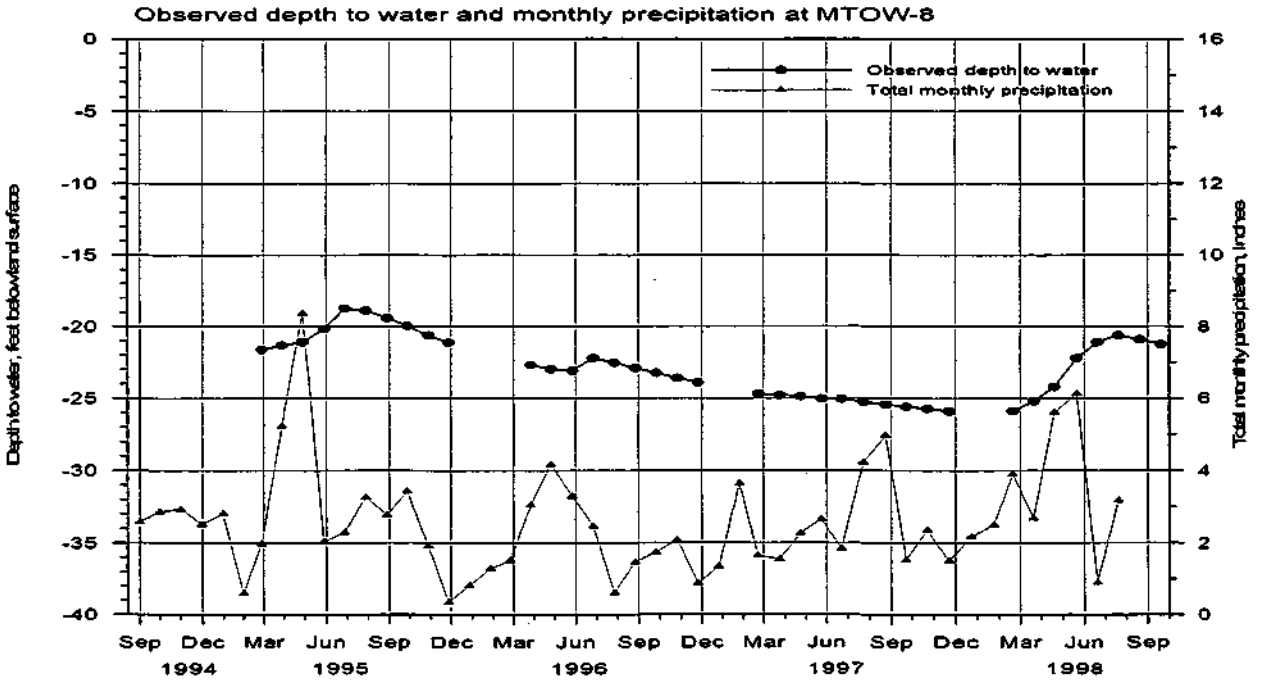


Figure II-8. Ground water depth and monthly precipitation for MTOW-8

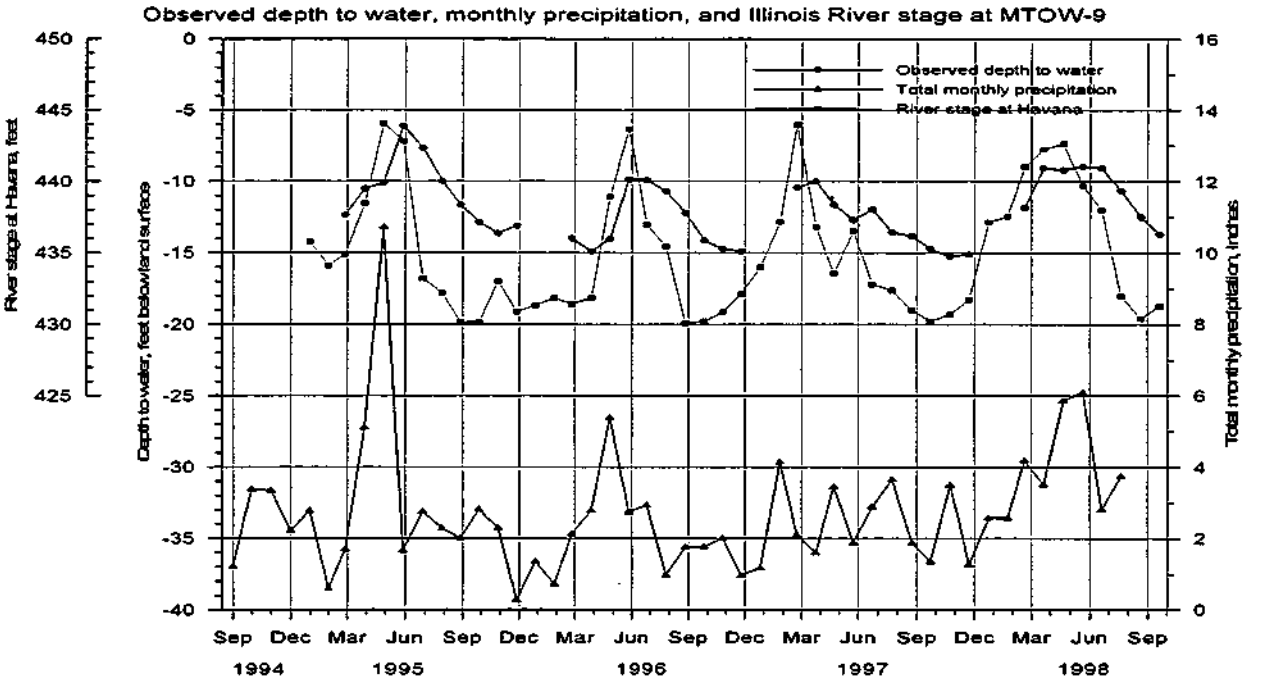


Figure II-9. Ground water depth, monthly precipitation, and Illinois River stage for MTOW-9

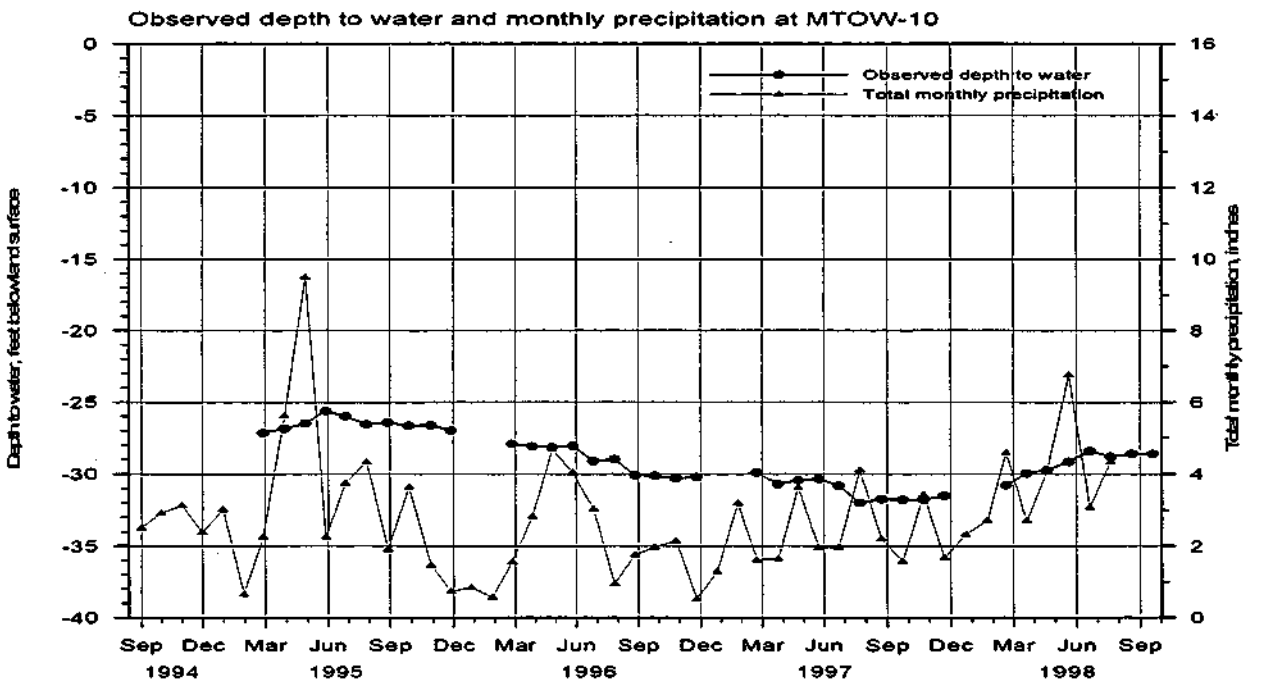


Figure II-10. Ground water depth and monthly precipitation for MTOW-10

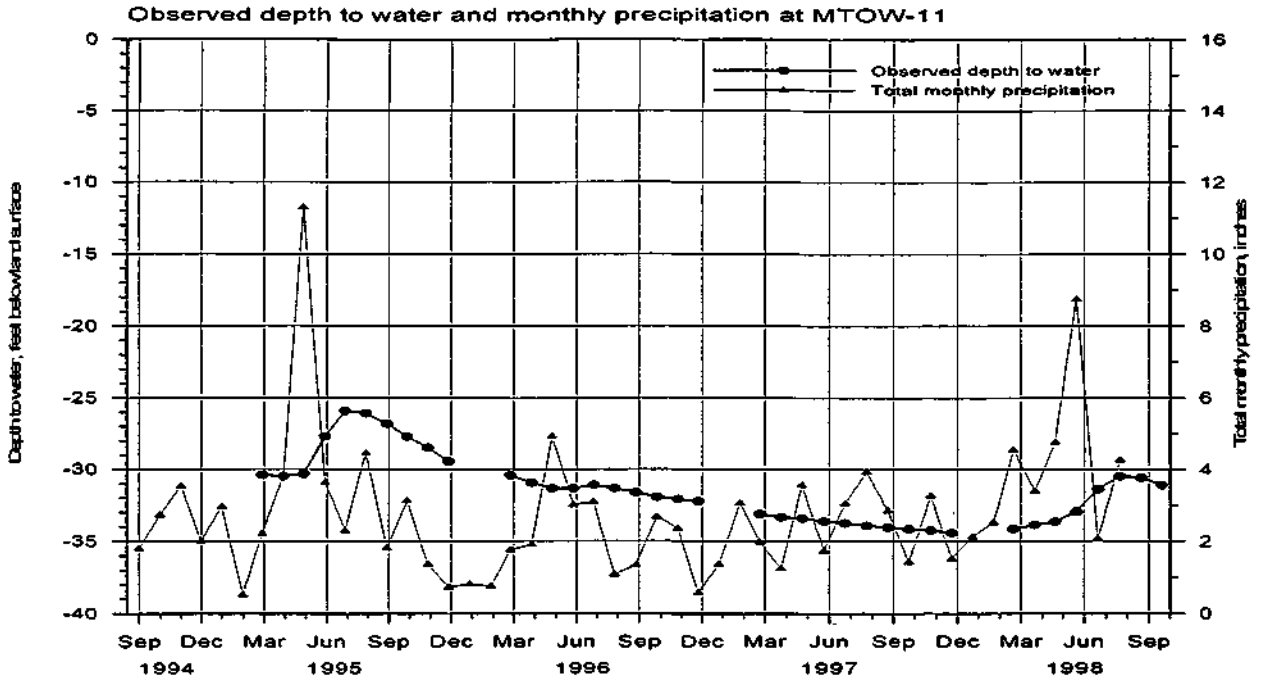


Figure II-11. Ground water depth and monthly precipitation for MTOW-11

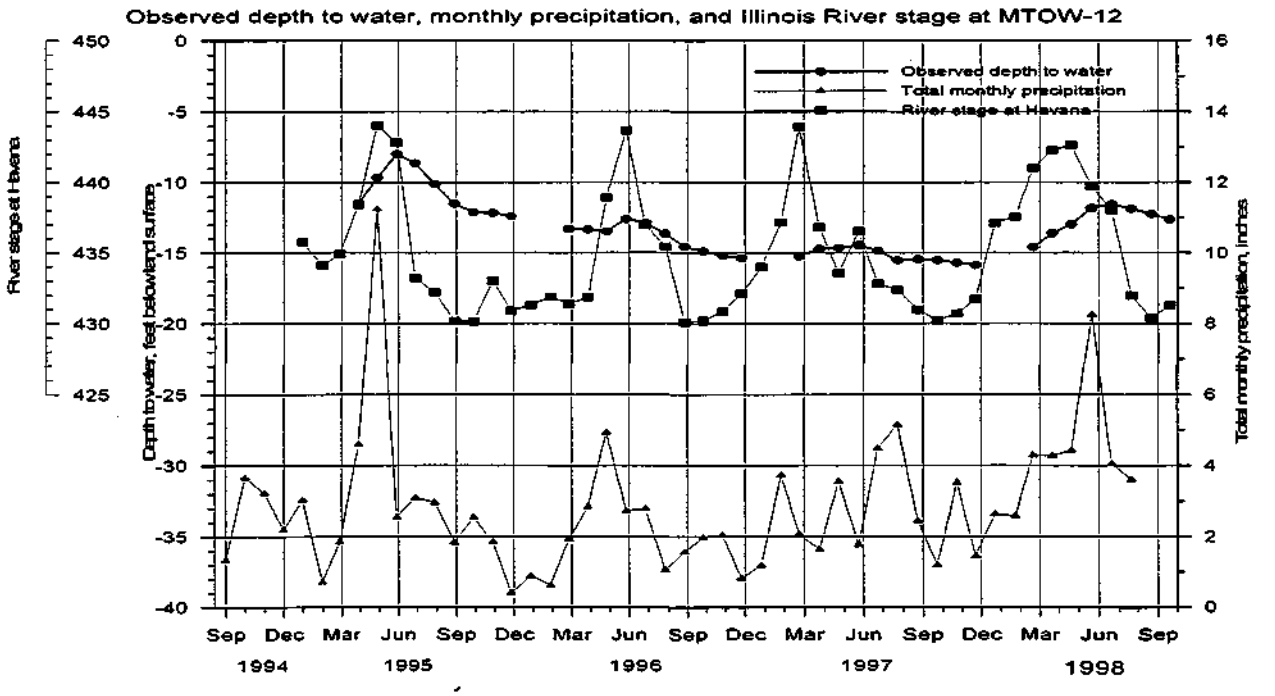


Figure II-12. Ground water depth, monthly precipitation, and Illinois River stage for MTOW-12

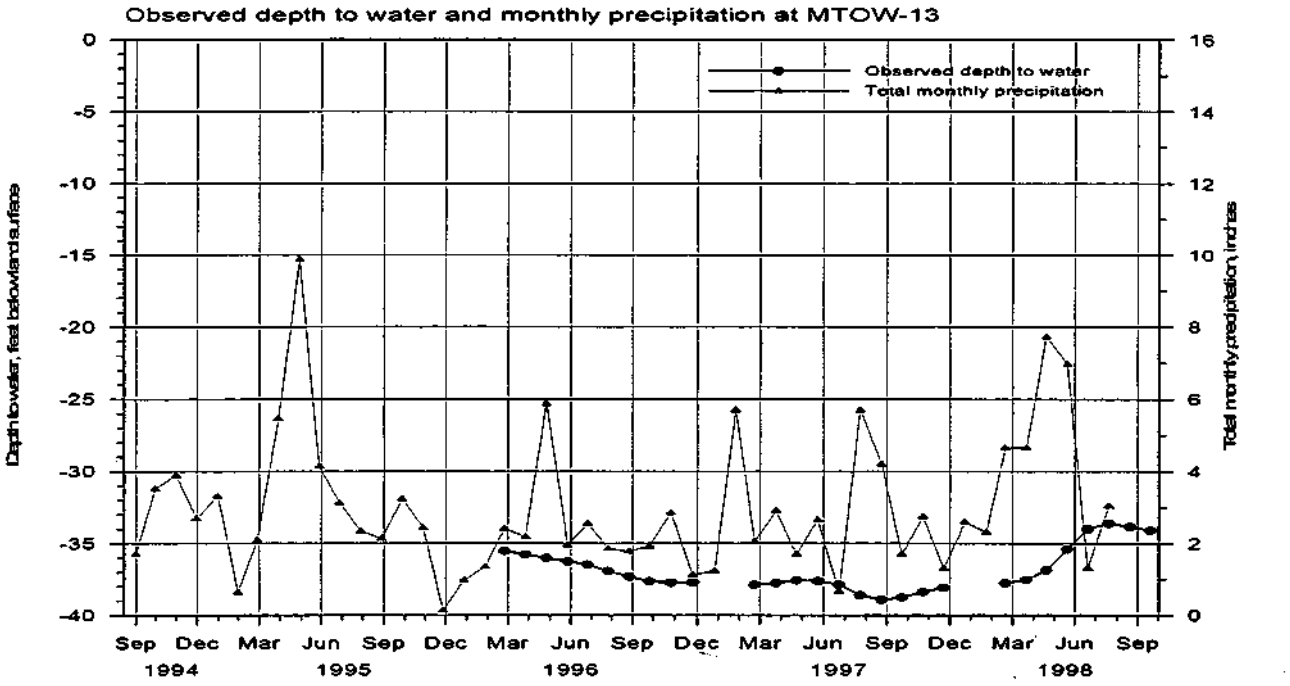


Figure 11-13. Ground water depth and monthly precipitation for MTOW-13

Table II-1. Observed Ground-Water Levels at the Imperial Valley Observation Wells

Depth to Water (feet below land surface) at Imperial Valley Observation Wells

Date	MTOW1	MTWQ2	MTOW3	MTOW4	MT0W5	MTOW6	MT0W7	MT0W8	MTOW9	MTOW10	MTOW11	MTOW12	MT0W13
3-01-1995	-.--	8.88	13.11	*9.15*	27.06	16.45	13.15	*21.62*	12.54	*27.14*	30.38		
4-01-1995	-.--	7.45	12.94	9.12	23.87	16.20	12.82	21.31	10.52	26.84	*30.48*	11.49	
5-01-1995	-.--	6.69	12.65	8.92	23.50	15.95	12.63	21.09	10.12	26.48	30.32	9.67	
5-15-1995	-.--	3.50	10.50	8.78	22.67	15.16	11.12	20.80	11.12	25.93	28.76	7.97	
6-01-1995	-.--	**2.67**	8.80	8.57	21.50	14.17	10.07	20.16	6.12	**25.60**	27.67	8.00	
6-15-1995	-.--	4.51	**8.07**	7.64	**18.24**	**13.15**	**9.74**	19.03	**5.26**	25.79	26.11	8.68	
7-01-1995	-.--	6.15	8.74	7.03	21.43	13.31	10.30	18.73	7.66	25.97	25.88	8.64	
7-15-1995	-.--	6.10	9.08	6.87	24.49	13.60	10.52	**18.69**	8.80	25.90	**25.68**	9.71	
8-01-1995	-.--	8.10	9.77	**6.47**	26.82	14.17	11.11	18.87	9.98	26.55	26.05	10.13	
8-15-1995	-.--	8.80	10.38	7.33	30.47	14.67	11.41	19.12	11.21	26.01	26.45	11.12	
9-01-1995	-.--	9.65	10.96	7.58	31.28	15.11	12.00	19.40	11.65	26.42	26.79	11.52	
9-15-1995	-.--	10.19	11.65	7.82	31.93	15.47	12.44	19.66	12.24	26.57	27.22	11.86	
10-01-1995	-.--	10.35	12.27	7.99	30.09	15.76	12.69	19.94	12.84	26.64	27.69	12.12	
10-15-1995	-.--	*10.40*	12.81	8.17	*32.79*	16.05	12.95	20.21	13.29	26.75	28.02	12.13	
11-01-1995	-.--	10.30	13.12	8.55	32.30	16.50	13.19	20.60	*13.63*	26.61	28.47	12.17	
12-01-1995	-.--	10.35	*13.62*	8.85	30.70	*16.60*	*13.45*	21.10	13.09	27.00	29.43	*12.39*	
3-01-1996	37.18	10.90	14.89	**9.80**	32.00	17.47	14.58	-.--	13.98	27.90	30.40	13.30	35.52
4-01-1996	37.19	10.77	15.01	10.07	*33.77*	17.70	15.20	22.67	14.90	28.07	30.92	13.34	35.76
5-01-1996	37.28	9.93	15.27	10.24	33.05	17.80	14.88	22.97	14.02	28.14	31.33	13.47	36.00
5-15-1996	-.--	8.84	14.97	10.34	32.04	17.63	14.72	23.09	12.90	28.14	31.36	13.03	36.08
6-01-1996	35.45	7.57	14.31	10.43	27.17	17.14	14.38	23.08	9.85	28.04	31.33	12.58	36.25
6-15-1996	-.--	7.62	**14.07**	10.44	**23.36**	**16.78**	**14.25**	22.76	**8.64**	**28.01**	31.17	**12.54**	36.32
7-01-1996	**35.23**	9.45	14.17	10.64	23.69	16.85	14.40	**22.20**	9.90	29.10	**31.09**	12.88	36.47
7-15-1996	-.--	10.20	14.65	10.82	25.20	17.38	14.72	22.35	10.51	29.14	31.31	13.37	36.70
8-01-1996	36.58	10.63	15.01	11.00	24.90	17.42	14.95	22.52	10.69	28.97	31.33	13.65	36.92
8-15-1996	-.--	11.30	15.39	11.21	24.41	18.00	15.18	22.69	10.72	30.22	31.45	14.07	37.14
9-01-1996	37.68	11.78	15.75	11.48	27.17	18.29	15.48	22.90	12.20	30.07	31.61	14.55	37.30
9-15-1996	-.--	*12.02*	16.12	11.75	29.16	18.72	15.82	23.09	13.55	30.22	31.85	14.81	37.50
10-01-1996	*38.32*	12.00	16.35	11.95	31.00	18.80	16.00	23.24	14.12	30.12	31.93	14.89	37.63
11-01-1996	38.32	11.97	16.89	12.42	32.66	19.04	16.43	23.60	14.73	*30.30*	32.06	15.19	*37.73*
12-01-1996	-.--	11.99	*17.23*	*12.73*	32.74	*19.15*	*16.72*	*23.91*	*14.90*	30.20	*32.22*	*15.36*	37.71

Note: Bold numbers are the shallowest ground-water levels for the year and *italic* numbers are the deepest ground-water levels.

Table III (Continued)

Depth to Water (feet below land surface) at Imperial Valley Observation Wells

Date	MTOW1	MTWQ2	MTOW3	MTOW4	MTOW5	MTOW6	MTOW7	MTOW8	MTOW9	MTOW10	MTOW11	MTOW12	MTOW13
3-01-1997	38.41	10.07	18.05	**13.40**	27.94	19.00	17.18	**24.70**	10.43	**29.90**	**33.10**	15.24	37.87
4-01-1997	37.67	**9.87**	17.53	13.84	**24.80**	18.20	16.86	24.80	**10.00**	30.70	33.33	14.71	37.75
5-01-1997	**37.27**	10.50	17.27	13.95	27.95	**17.98**	**16.78**	24.88	11.62	30.42	33.40	14.65	**37.56**
6-01-1997	37.32	10.38	**17.17**	13.98	29.98	18.02	16.90	25.03	12.71	30.34	33.61	**14.45**	37.60
6-15-1997	-.--	-.--	-.--	-.--	-.--	-.--	-.--	-.--	-.--	31.45			
7-01-1997	37.63	11.08	17.29	14.22	28.78	18.38	17.06	25.05	11.95	31.80	33.73	14.85	37.86
7-15-1997	-.--	11.54	17.45	14.35		19.00	17.24	25.12	12.67	31.45	33.78	15.17	38.15
8-01-1997	38.28	11.98	17.77	14.56	33.10	19.44	17.57	25.25	13.57	*31.99*	33.90	15.52	38.59
8-15-1997	-.--	12.19	17.94	14.68	33.70	19.55	17.74	25.35	14.07	31.79	33.97	15.37	38.84
9-01-1997	38.90	12.15	18.17	*14.80*	32.78	19.45	17.89	25.44	13.80	31.74	34.03	15.45	*38.92*
10-01-1997	38.59	12.25	18.51	14.75	*35.43*	19.51	18.14	25.58	14.72	31.77	34.14	15.52	38.75
11-01-1997	*39.46*	*12.36*	18.77	14.64	35.20	19.55	18.35	25.72	*15.24*	31.78	34.23	15.70	38.38
12-01-1997	-.--	11.97	*19.11*	14.60	34.95	*19.70*	*18.65*	*25.90*	15.10	31.51	*34.41*	*15.87*	38.08
3-01-1998	*38.78*	8.38	*19.04*	*14.59*	30.50	*18.10*	*17.98*	*25.88*	11.84	*30.77*	*34.13*	*14.61*	*37.75*
4-01-1998	37.91	6.25	18.41	14.58	25.95	16.78	17.14	25.21	9.04	29.95	33.85	13.61	37.52
5-01-1998	36.67	7.00	17.65	14.64	25.21	15.70	16.38	24.20	9.20	29.73	33.63	12.97	36.85
6-01-1998	36.00	6.23	16.92	13.66	**24.02**	14.18	15.08	22.22	**8.95**	29.15	32.93	11.82	35.38
7-01-1998	**35.61**	**5.77**	16.57	13.24	24.50	**13.47**	**14.40**	21.08	9.05	**28.40**	31.36	**11.55**	33.98
8-01-1998	-.--	9.13	**16.27**	13.00	29.10	14.42	14.40	**20.60**	10.65	28.79	**30.47**	11.87	**33.60**
9-01-1998	36.24	10.00	16.52	12.95	31.90	15.08	14.58	20.90	12.48	28.60	30.58	12.25	33.82
10-01-1998	36.48	10.55	16.72	12.78	*34.30*	15.68	14.72	21.25	13.70	28.60	31.10	12.65	34.07
11-01-1998	-.--	*10.70*	16.97	**12.55**	33.93	16.30	15.00	21.70	*14.10*	28.70	31.69	13.02	34.24

Note: Bold numbers are the shallowest ground-water levels for the year and *italic* numbers are the deepest ground-water levels.

APPENDIX III: RAIN GAUGE SITE DESCRIPTIONS

This appendix contains site descriptions of each rain gauge site in the IVWA network as of August 31,1996. Sites that have been relocated since the network was established in August 1992 are so noted in the "Placement" portion of their site description. Sites with shaded descriptions have been removed from the network.

SITE DESCRIPTION		
Site Number: 1		
County: Tazewell	Latitude: 40° 28' 3"	Longitude: 89° 50' 9"
Property Owner: Melvin Fornoff		
Address: 10200 Fornoff Road, Manito, IL 61546		
Telephone: 309-968-6653		
Permission Date: 8-10-92		
Installation Date: 8-25-92		
Gauge Mfrs. No.: 4695	Gauge ID No.: SWS 5068	
Placement: Near apple/pear trees, northeast of a garage. Property on east side of 450 E in Tazewell County, north of 1000 N. Large dog. SWS services. Gauge 15 meters northwest of lat/lon reading. Station removed from the network in September 1995.		

SITE DESCRIPTION		
Site Number: 2		
County: Tazewell	Latitude: 40° 28' 42"	Longitude: 89° 45'54"
Property Owner: Ken Becker		
Address: 8479 Townline Road, Manito, IL 61546		
Telephone: 309-545-2207		
Permission Date: 8-15-92		
Installation Date: 8-25-92		
Gauge Mfrs. No.: 4723	Gauge ID No.: SWS 5030	
Placement: In back yard (grass) near garbage burner. Property on south side of 1100 N in Tazewell County, west of 900 E. SWS services. Gauge 2 meters west of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 3		
County: Tazewell	Latitude: 40° 28' 56"	Longitude: 89° 37 33"
Property Owner: Lonn Schleder		
Address: RR #3, 11177 S. 14th Street, Pekin, IL 61554		
Telephone: 309-348-2447		
Permission Date: 8-10-92		
Installation Date: 8-25-92		
Gauge Mfrs. No.: 1463	Gauge ID No.: SWS 3693	
Placement: Moved 5-13-94 to a position about 60 meters north-northeast of original position, which was in a back pasture along a wire fence between a white aluminum shed and a large tree. Present position is between a garage and another shed near a well. Property on northwest comer of the intersection of 1600 E and 1100 N. SWS services. Gauge 50 meters north-northwest of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 4		
County: Mason	Latitude: 40° 24' 29"	Longitude: 89° 54'41"
Property Owner: Ellis Popcorn (Maureen Hanks)		
Address: R.R. #1, Topeka, IL 61567		
Telephone: 309-535-3840		
Permission Date: 8-10-92		
Installation Date: 8-25-92		
Gauge Mfrs. No.: 7382	Gauge ID No.: SWS 6573	
Placement: South of large white office building, between two trees in a grassy area. Property on east side of 2340 E in Mason County, northeast of Goofy Ridge. Mrs. Hanks services. Gauge 10 meters south-southwest of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 5		
County: Mason	Latitude: 40° 24' 29"	Longitude: 89° 50' 19"
Property Owner: Joseph Meyer		
Address: R.R. # 1, Box 175, Topeka, IL 61567		
Telephone: 309-968-6378		
Permission Date: 8-10-92		
Installation Date: 8-25-92		
Gauge Mfrs. No.: 5985	Gauge ID No.: CDA 000130	
Placement: Next to stone drive in a pasture in front of house. Property on west side of 2750 E in Mason County, south of 2500 N. SWS services. Gauge 3 meters east lat/lon reading. Station removed from network in September 1995.		

SITE DESCRIPTION		
Site Number: 6		
County: Mason	Latitude: 40° 24' 12"	Longitude: 89° 44'6"
Property Owner: c/oWesHilst		
Address: R.R. # 3, Box 116, Manito, EL 61546		
Telephone: 309-968-7043		
Permission Date: 8-10-92		
Installation Date: 8-25-92		
Gauge Mfrs. No.: 5295	Gauge ED No.: SWS 5309	
Placement: Next to old farm machinery just north of garden and northeast of green shed. Property on west side of 3300 E in Mason County, just south of 2400 N. SWS services. Gauge 18 meters south of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 7		
County: Tazewell	Latitude: 40° 24' 24"	Longitude: 89° 37' 29"
Property Owner: David Van Orman		
Address: 5801 Warner Road, Green Valley, IL 61534		
Telephone: 309-352-5673		
Permission Date: 8-10-92		
Installation Date: 8-25-92		
Gauge Mfrs. No.: 5935	Gauge ID No.: —	
Placement: Moved in May 1993 to a position south of a bam with a green roof, near edge of field. Original position was 30 meters to the northeast, north of the same barn. Both positions are northwest of the house. Property located just east of Green Valley on south side of 600 N in Tazewell County, just west of 1600 E. SWS services. Gauge 17 meters west-northwest of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 8		
County: Mason	Latitude: 40° 20' 32"	Longitude: 90° 1' 8"
Property Owner: Gary Blakely		
Address: 18012 E. County Road N, Havana, EL 62644		
Telephone: 309-543-4949		
Permission Date: 8-10-92		
Installation Date: 8-24-92		
Gauge Mfrs. No.: 2000	Gauge ID No.:US148085	
Placement: East-southeast of house near a small tree. Property located on north side of 1950 N in Mason County west of 1900 E. Mr. Blakely services. Gauge 36 meters east-northeast of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 9		
County: Mason	Latitude: 40° 19*41"	Longitude: 89° 55' 55
Property Owner: John Crum		
Address: Box 19, Topeka, IL 61567		
Telephone: 309-535-2080		
Permission Date: 5-14-93		
Installation Date: 5-14-93		
Gauge Mfrs. No.: 5986	Gauge ID No.: CDA 000132	
Placement: Located in a sparse apple orchard about 70 meters west of house. Original position from 8-24-92 to 5-14-93 was at R.R. #1, Box 6, Topeka, about one mile north-northeast of present position at a farmstead, between a tank and a light pole along a front drive. Present location is on Pear Street in the far southwestern portion of Topeka in Mason County. From 2280 E turn west on 5th Street until you reach Pear Street. Mr. Crum services. Gauge 75 meters west-northwest of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 10		
County: Mason	Latitude: 40° 19' 58"	Longitude: 89° 48'53"
Property Owner: Paul Meeker		
Address: RR # 1, Box 31, Forest City, IL 61532		
Telephone: 309-597-2163		
Permission Date: 8-10-92		
Installation Date: 8-24-92		
Gauge Mfrs. No.: 4679	Gauge ID No.: SWS 5100	
Placement: West of hedge row on southwest edge of home property. Property is on north side of 1900 N in Mason County, east of 2800 E, and the gauge is about 3 meters north of 1900 E. SWS services. Gauge 5 meters northeast of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 11		
County: Mason	Latitude: 40° 20' 2"	Longitude: 89° 44'4"
Property Owner: Louis Moehring		
Address: 32972 E. County Road 1900 N, Manito, IL 61546		
Telephone: 217-482-3320		
Permission Date: 8-10-92		
Installation Date: 8-24-92		
Gauge Mfrs. No.: 3362	Gauge ID No.: SWS 4450	
Placement: North side (back of) house along a walk. Property is on northwest comer of intersection of 1900 N and 3300 E in Mason County. Mr. Moehring services. Gauge 12 meters southwest of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 12		
County: Tazewell	Latitude: 40° 20' 16"	Longitude: 89° 38'26"
Property Owner: Harold Deiss		
Address: 1327 Route 29, San Jose, EL 62682		
Telephone: 309-247-3535		
Permission Date: 8-10-92		
Installation Date: 8-24-92		
Gauge Mfrs. No.: 3346	Gauge ED No.: SWS 4439	
Placement: East side of Route 29 (1500 E) in Tazewell County in a grassy area southwest of a red shed. Deiss house is 1/4 mile north. Just north of Day Ditch. SWS services. Gauge 2 meters south of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 13		
County: Mason	Latitude: 40° 15'43"	Longitude: 90° 0' 48"
Property Owner: Don Hahn		
Address: R.R. # 1, Box 386, Havana, IL 62644		
Telephone: 309-543-4660		
Permission Date: 8-11-92		
Installation Date: 8-25-92		
Gauge Mfrs. No.: 5939	Gauge ID No.: -	
Placement: Left side of front entrance drive near a short fence. Property on south side of the diagonal 1450 N, east of Route 92. Mr. Hahn services. Gauge 3 meters north-northeast of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 14		
County: Mason	Latitude: 40° 15' 52"	Longitude: 89° 56' 33"
Property Owner: Wayne Patterson (650 E. Taintor, Rd., Springfield, IL 62702-1755)		
Address: R.R. #1, Box 220, Easton, IL 62633		
Telephone: 309-543-4664		
Permission Date: 8-11-92		
Installation Date: 8-24-92		
Gauge Mfrs. No.: 4678	Gauge ID No.: SWS 5098	
Placement: In a small clearing north of house. Property located on east side of 2200 E in Mason County south of 1500 N. Correspondence address changed to that of Wayne Patterson on 3-26-94. SWS services. Gauge 17 meters northwest of lat/lon reading. Station removed from network in September 1995.		

SITE DESCRIPTION		
Site Number: 15		
County: Mason	Latitude: 40° 15'27"	Longitude: 89° 50'22"
Property Owner: c/o Joe Umbach		
Address: R.R. #1, Box 156, Easton, IL 62633		
Telephone: 309-562-7611		
Permission Date: 8-12-92		
Installation Date: 8-24-92		
Gauge Mfrs. No.: 6462	Gauge ID No.: CDA 000136	
Placement: Along right side of the house lane which extends north from 1410 N in Mason County between Route 10 and 2800 E. 1410 N runs from southwest to northeast along Central Ditch. SWS services. Gauge 2 meters north-northeast of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 16		
County: Mason	Latitude: 40° 16' 5"	Longitude: 89° 44'9"
Property Owner: Donald Osborn, Sr.		
Address: 32866 E. County Road 1450 N, Mason City, IL 62664		
Telephone: 217-482-5816		
Permission Date: 8-11-92		
Installation Date: 8-24-92		
Gauge Mfrs. No.: 46595	Gauge ID No.: SWS 5059	
Placement: Along right side of drive near pig pen and road (1450 N). Property located on north side of 1450 N just west of 3300 E. Mr. Osborn services. Gauge 2 meters east of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 17		
County: Mason	Latitude: 40° 16' 51"	Longitude: 89° 38' 25"
Property Owner: Larry Jennings		
Address: R.R. #1, Box 100, San Jose, IL 62682		
Telephone: 309-274-3781		
Permission Date: 8-11-92		
Installation Date: 8-24-92		
Gauge Mfrs. No.: 5280	Gauge ID No.: SWS 5317	
Placement: West of garage near back fence and animal petting area. Property located on 3800 E in Mason County just north of 1500 N. SWS services. Gauge 34 meters west of lat/lon reading. Station removed from network in September 1995.		

SITE DESCRIPTION		
Site Number: 18		
County: Mason	Latitude: 40° 11' 32"	Longitude: 90° 6'15"
Property Owner: Vernon Heye		
Address: R.R. #1,Bath,IL 62617		
Telephone: 309-546-2266		
Permission Date: 8-11-92		
Installation Date: 8-26-92		
Gauge Mfrs. No.: 5278	Gauge ID No.: SWS 5308	
Placement: East of white shed near field on east edge of home property. Property located on north side of 900 N in Mason County about 2 miles east of Bath. SWS services. Gauge about 37 meters east-northeast of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 19		
County: Mason	Latitude: 40° 11'1"	Longitude: 90° 0' 19"
Property Owner: Charles W. Lane		
Address: R.R. #1,Box 51, Kilbourne,IL 62655		
Telephone: 309-538-4397		
Permission Date: 8-11-92		
Installation Date: 8-26-92		
Gauge Mfrs. No.: 4718	Gauge ID No.: SWS 5081	
Placement: Along a wire fence separating home property from pig pen, northwest of house. Property located on west side of Route 97 on southern end of a large curve between 900 N and 800 N. Mr. Lane services. Gauge 14 meters northwest of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 20		
County: Mason	Latitude: 40° 11'46"	Longitude: 89° 54'56"
Property Owner: Wanda Krause		
Address: R.R. #1, Box 109, Easton, IL 62633		
Telephone: 309-562-7528		
Permission Date: 8-11-92		
Installation Date: 8-26-92		
Gauge Mfrs. No.: 3771	Gauge ID No.: US 148830	
Placement: In yard of Jon Krause just north of the east-west lane and to the west of the lane to the Krause home. The rain gauge was moved to this position in early 1995. The previous location was on the east side of 2400 E in Mason County near Jon Krause mailbox, was in a strawberry patch along the same lane about 250 meters to the west on the Wanda Krause property. SWS services. Gauge 150 meters east of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 21		
County: Mason	Latitude: 40° 11'10"	Longitude: 89° 49'39"
Property Owner: John Walters		
Address: 28030 E. County Road 850 N, Mason City, IL 62664		
Telephone: 309-562-7527		
Permission Date: 8-11-92		
Installation Date: 8-26-92		
Gauge Mfrs. No.: 6294	Gauge ED No.: CDA 00013A	
Placement: East of the house and driveway and southeast of a shed. Property located on a hill on the northeast corner of the intersection of 2800 E and 850 N in Mason County. Position previous to 5-20-94 was between a windmill and a bush about 25 meters west of present position. Mrs. Walters services. Gauge 25 meters east of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 22		
County: Mason	Latitude: 40° 10' 46"	Longitude: 89° 44' 28"
Property Owner: Joe Swaar		
Address: 32706 E. County Road 800 N, Mason City, IL 62664		
Telephone: 217-482-5571		
Permission Date: 8-11-92		
Installation Date: 8-26-92		
Gauge Mfrs. No.: 4708	Gauge ID No.: SWS 5021	
Placement: On a concrete slab with two 2" x 4"s attached to the base of the guage, west of the house and lane on a ridge. Property is located on north side of 800 N in Mason County west of Route 29 and southwest of Mason City. Mr. Swaar services. Gauge 25 meters west of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 23		
County: Mason	Latitude: 40° 12' 0"	Longitude: 89° 38'28"
Property Owner: Dale C. Fancher		
Address: 9482 N. County Road 3800 E, Mason City, EL 62664-7209		
Telephone: 217-482-3506		
Permission Date: 8-11-92		
Installation Date: 8-26-92		
Gauge Mfrs. No.: 3773	Gauge ID No.: US 148832	
Placement: On the west edge of a garden located north of a wood shop and the house. Property located on the west side of 3800 E in Mason County about a half mile north of Route 10, east of Mason City. Mr. Fancher services. Gauge 30 meters north-northwest of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 24		
County: Mason	Latitude: 40° 6' 26"	Longitude: 90° 11' 58"
Property Owner: Norman L. Fletcher		
Address: R.R. # 1, Box 147, Bath, IL 62664		
Telephone: 309-546-2677		
Permission Date: 8-11-92		
Installation Date: 8-26-92		
Gauge Mfrs. No.: —	Gauge ID No.: --	
Placement: North of a garage near a grapevine, northeast of the house. Property located on the east side of 800 E in Mason County west of Route 78, just north of 300 N. Mrs. Fletcher services. Gauge 32 meters northeast of lat/lon reading.		

SITE DESCRIPTION		
Site Number: 25		
County: Mason	Latitude: 40° 6' 14"	Longitude: 90° 8' 0"
Property Owner: Rocky Adkins		
Address: R.R. #2, Box 16, Chandlerville, IL 62627		
Telephone: 217-458-2587		
Permission Date: 8-11-92		
Installation Date: 8-26-92		
Gauge Mfrs. No.: 5947	Gauge ID No.: --	
Placement: Next to two tanks and a sign in a small grassy area surrounded by truck access. Property located at Adkins Farms on south side of 300 N (east of Route 78) in Mason County. SWS services. Gauge 2 meters south of lat/lon reading. Station removed from network in September 1995.		

APPENDIX IV: INSTRUCTIONS FOR RAIN GAUGE TECHNICIANS

A. Use Central Standard Time:

From October through March, Illinois is in the Central Standard Time zone, so the time your watch shows is the time to use when you write the time and date on the chart. From April through October, subtract one hour from what your watch says, since during the warm season Illinois is in the Central Daylight Time zone.

B. Order of Servicing:

1) Old Chart

a) Unlock and open (slide up) door on the side of the instrument case and then lock door in place to prevent it from falling.
b) Depress the bucket platform casting to mark the OFF time position on the chart (a vertical trace will be written by the pen).
c) Note the time on your watch, and move the pen point and arm away from the chart by pushing out on the pen bracket.
d) Lift up on the drum cylinder that contains the chart in order to disengauge it from the chart drive, and remove it out the door.
e) Remove the chart from the drum and write the OFF date and time on the chart on the red line at the right end of the chart.

2) Bucket

a) Remove the collector from the top of the gauge by rotating it clockwise to disengage the tongue-and-groove assembly, set it down.
b) Carefully lift the bucket off of the weighing platform if there is water in it and dump the water on the ground.
c) Reposition the empty bucket on the platform.
d) Reinstall the collector by setting it on top of the rain gauge case and turning counterclockwise until the tongue-and-groove assembly meshes.
e) During wintertime operation, when a quart of antifreeze is in the bucket to prevent freezing, do not dump the bucket contents. We will monitor the increase in liquid in the bucket at the Water Survey (via the chart trace) and come to dispose of the liquid when it approaches the top of the bucket.
f) In the winter, stir the contents of the bucket to keep the antifreeze mixed with the water.

3) New Chart

a) Copy the OFF time from the old chart to the ON time on the new chart (another red line on end of the chart) and write your site number on the chart.
b) Clip the new chart to the drum cylinder, making sure the crease at the right end of the chart is sharp and the chart is tight on the cylinder.
c) Wind the chart drive lever until nearly tight so that the chart drive will be ready to run

again for another eight days. **Do not over wind.**

d) Reinstall the chart cylinder onto the chart drive, making sure the chart cylinder and drive gears mesh. Simply push down on the cylinder and wiggle it a little. You should feel some resistance if done correctly.

e) Move the pen arm and point over to the chart cylinder with the pen bracket and rotate the cylinder counterclockwise until the pen point coincides with the correct ON time position.

f) Let the pen point rest right on the chart and depress the platform casting again to make a small vertical line denoting the ON time position.

g) When you are sure that everything is in order, carefully unlock the door, push the door down, and lock it into place for another week.

4) Problems

a) If you notice anything unusual about the gauge or the chart drive operation, write a note, on the upper right corner of the old chart.

b) If you think the problem requires immediate attention, call Robert Scott collect at 217-333-4966 (day) to relay the information to him. Situations worthy of immediate attention include confusion over how to perform the operation described above, premature chart-drive stoppage, or unauthorized tampering with the gauge. Immediate repairs will be scheduled if necessary.

c) Once you become experienced with this operation, it will take you less than five minutes to do it. Don't let the above instructions scare you - this operation is actually easier to perform than to describe!

5) Mail Old Chart

a) Carefully fold the old chart and place it in one of the postage-paid envelopes provided.

b) Mail the chart to the State Water Survey.

C. Change in Site Status:

If at any time you decide that you no longer want the gauge on your property or would rather that we service it, please contact Water Survey staff immediately so that new arrangements can made. It is important to try to keep the sites in the same locations during the course of this project since rainfall generally varies greatly over short distances.

We greatly appreciate your cooperation for this project.

APPENDIX V: DOCUMENTATION OF RAIN GAUGE MAINTENANCE

This appendix documents major maintenance work carried out at sites in the network from 1 September 1997 through 31 August 1998.

All recording rain guages were enhanced with automatic devices to record rainfall. The devices, produced by Onset Computer Corporation, Pocasset, Massachusetts, are small data loggers, which record precipitation that falls into the buckets at intervals of every 10 minutes. Gauge modification in the shop ran from December 1-12,1997. This involved the installation of linear potentiometers on the gauge to correlate the weight of collected precipitation to an electronic signal output in volts, and the installation of the data loggers.

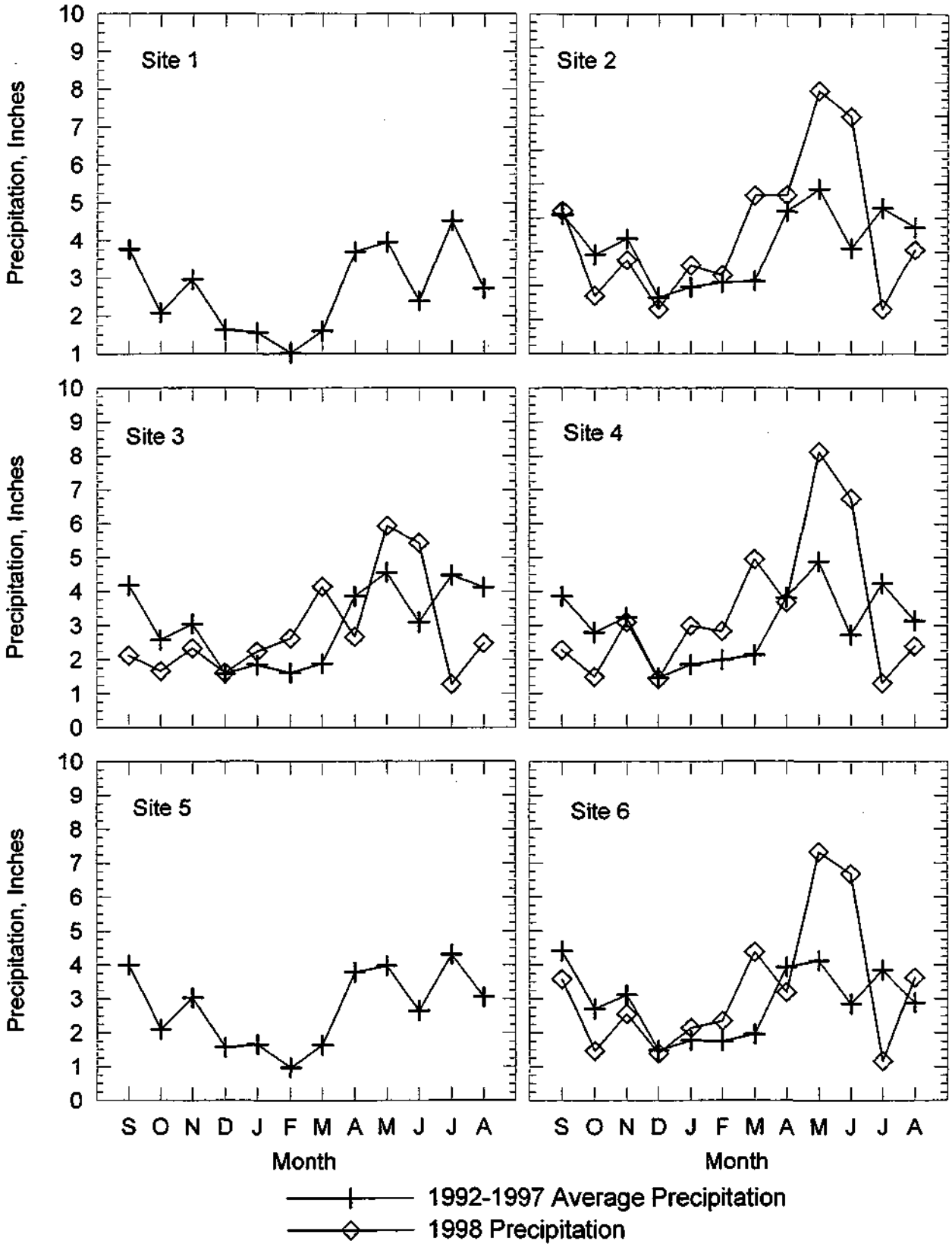
Each gauge was calibrated in the laboratory before installation. This involved determining a set multiplier and offset amount for each logger to be applied to the output value. This arithmetic procedure yields precipitation depth in inches. The data loggers have a resolution of 0.04 and 0.05 inches.

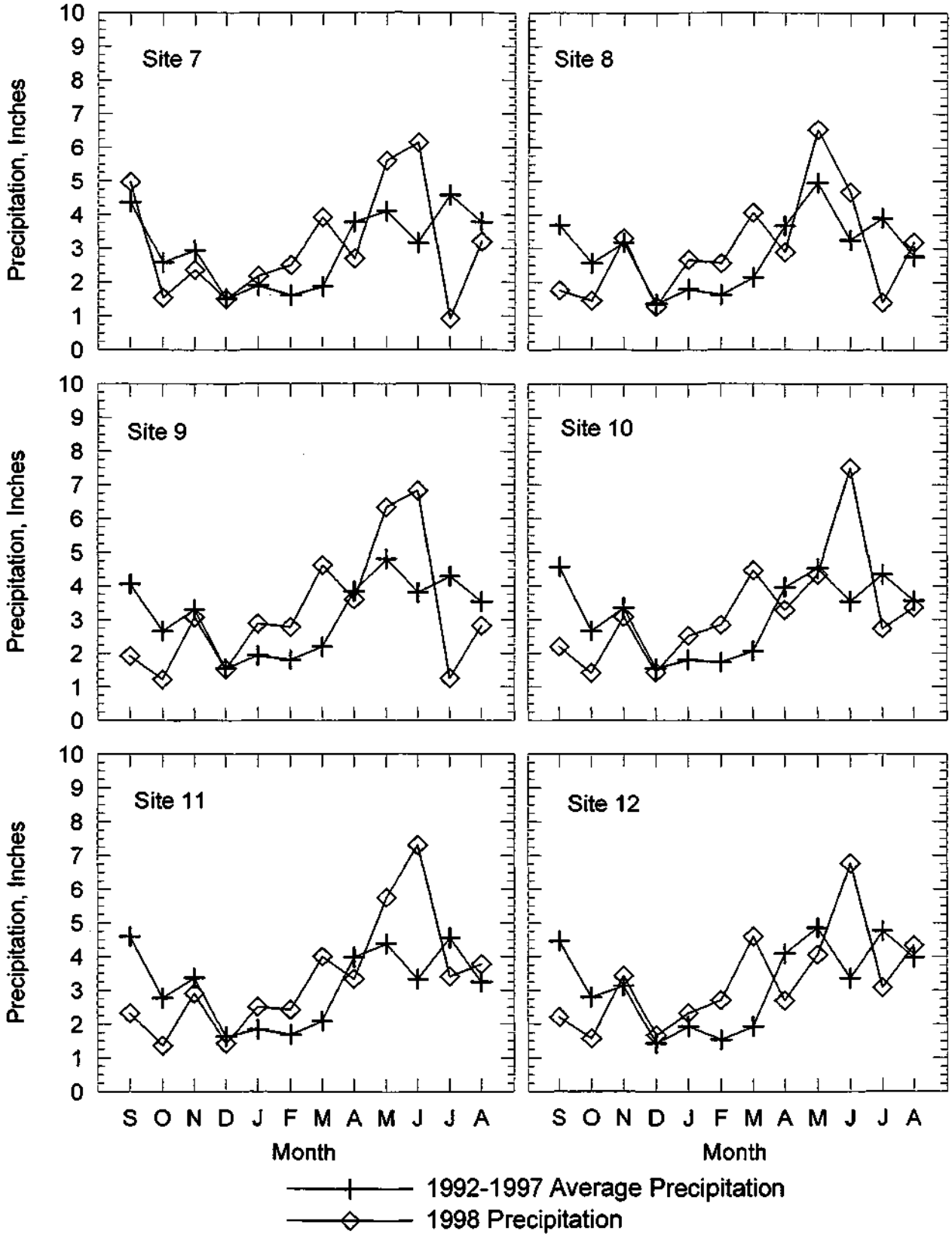
The modified gauges were installed in the network between 15 and 17 December 1997. Testing continued through March, with replacement of gauges and data loggers as well as re-calibrations as necessary.

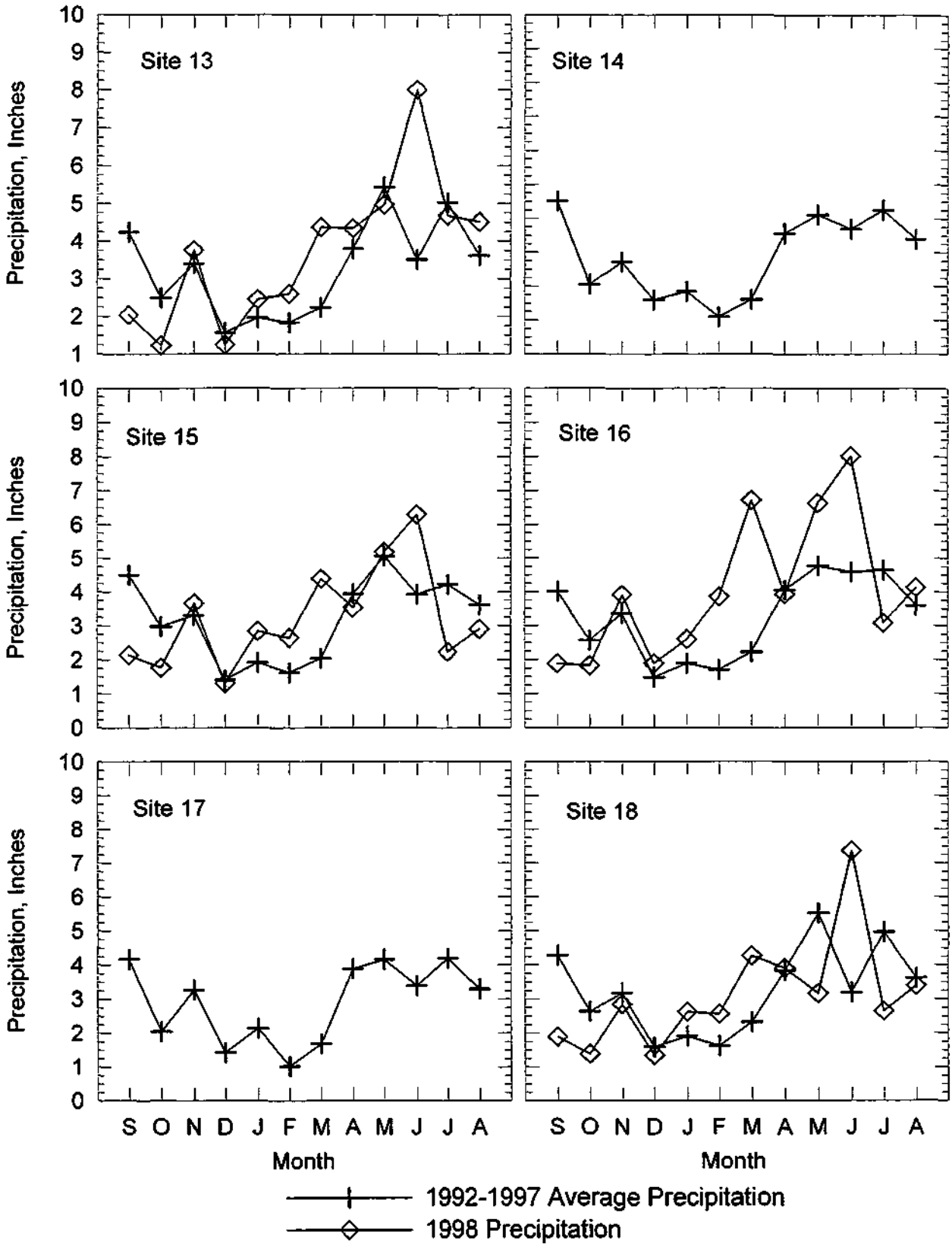
A Hewett-Packard palm top computer was purchased for downloading the data. Our field operator was trained in the download instructions. These involve monthly visits to each site. Data loggers are connected to the palm top computer, data are extracted, and the data loggers are reset for the next period of recording. Data are stored on flash cards which are then mailed to ISWS for downloading and analysis.

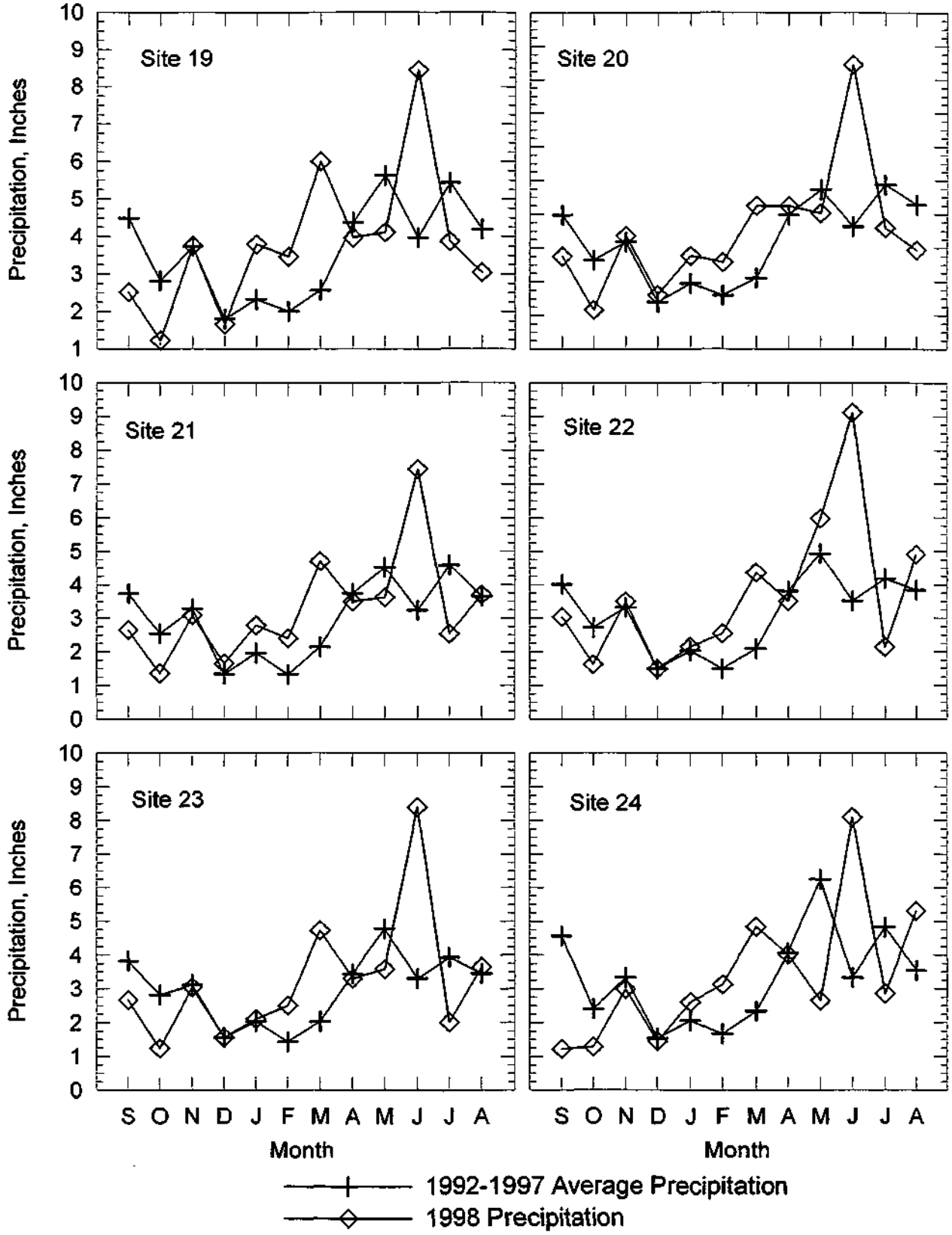
APPENDIX VI: MONTHLY PRECIPITATION VARIABILITY AT EACH SITE

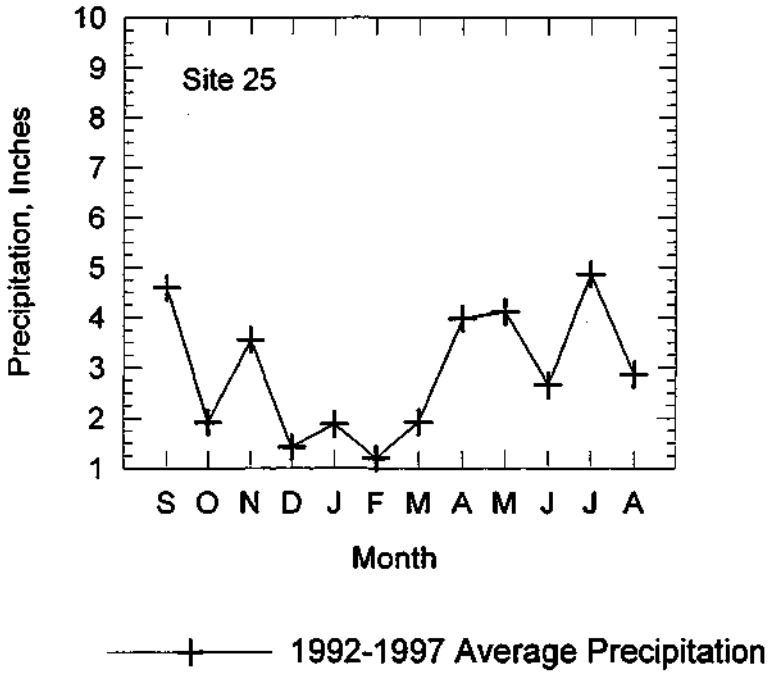
This appendix contains graphs of the monthly variability of precipitation amounts at each site in the IVWA Network. Each graph plots the five-year (1992-1997) monthly average precipitation (in inches) for a site for each month during the observation year (September through August of the following year) and the current 1997-1998 totals for the operating sites. The decommissioned rain gauge site plots are included showing the 1992-1996 average monthly rainfall. Actual 1997-1998 monthly amounts are contained in Table 5. The 1992-1993 totals can be found in Peppier and Hollinger (1994), the 1993-1994 totals in Peppier and Hollinger (1995), the 1994-1995 totals in Hollinger and Peppier (1996), the 1995-1996 totals in Hollinger (1997), ans the 1996-1997 totals in Hollinger and Scott (1998).


Site 1
Site 2
Site 3
Site 4
Site 5
Site 6
Precipitation, Inches
Precipitation, Inches
Precipitation, Inches
0 1 2 3 4 5 6 7 8 9 10
S O N D J F M A M J J A
Month
Month
1992-1997 Average Precipitation
1998 Precipitation


Site 7
Site 8
Site 9
Site 10
Site 11
Site 12
Precipitation, Inches
0
1
2
3
4
5
6
7
8
9
10
S O N D J F M A M J J A
Month
1992-1997 Average Precipitation
1998 Precipitation


Site 13
Site 14
Site 15
Site 16
Site 17
Site 18
Precipitation, Inches
Precipitation, Inches
Precipitation, Inches
0 1 2 3 4 5 6 7 8 9 10
S O N D J F M A M J J A
Month
Month
1992-1997 Average Precipitation
1998 Precipitation


Site 19
Site 20
Site 21
Site 22
Site 23
Site 24
Precipitation, Inches
Precipitation, Inches
Precipitation, Inches
0
1
2
3
4
5
6
7
8
9
10
S O N D J F M A M J J A
Month
Month
1992-1997 Average Precipitation
1998 Precipitation


Site 25
Precipitation, Inches
10
9
8
7
6
5
4
3
2
1
S O N D J F M A M J J A
Month
1992-1997 Average Precipitation

APPENDIX VII: DOCUMENTATION OF HEAVY STORM AMOUNTS

This appendix documents all storm period amounts, start time, and duration, and notes those that exceeded an annual event (one-year recurrence interval) during the period September 1, 1992, through August 31,1998. Individual storm durations of one hour to ten days were considered. The rainfall amounts for a one-year recurrence interval and these storm durations for west-central Illinois are given below (Huff and Angel, 1989):

Storm Duration	Rainfall (inches) for Given Recurrence Interval						
	1-Yr	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
lhour	1.18	1.42	1.77	2.09	2.50	2.86	3.25
2 hours	1.48	1.78	2.22	2.62	3.14	3.59	4.08
3 hours	1.61	1.93	2.41	2.85	3.41	3.89	4.43
6 hours	1.89	2.26	2.82	3.33	3.99	4.56	5.19
12 hours	2.17	2.62	3.27	3.87	4.63	5.29	6.02
18 hours	2.28	2.75	3.46	4.09	4.90	5.59	6.37
24 hours	2.52	3.02	3.76	4.45	5.32	6.08	6.92
48 hours	2.81	3.38	4.19	4.86	5.78	6.62	7.51
72 hours	3.05	3.70	4.55	5.26	6.15	7.25	8.16
5 days	3.48	4.17	5.11	5.84	6.96	7.98	9.21
10 days	4.29	5.12	6.27	7.10	8.19	9.10	10.18

To determine the return frequency of any storm in Table VII-1 or VII-2 obtain the storm duration from the tables, then look in the left hand column of the table above and locate the storm duration line which equals or just exceeds the storm duration in Table VII-1 or VII-2. If the rainfall for the event in Table VII-1 or VII-2 exceeds any of the amounts in the table above, obtain the return frequency by looking at the heading of the most right hand column that the rainfall amount exceeds. For example: In Table VII-2, storm number 20 has a duration of 38 hours. This storm duration falls between the 24- and 48-hour storm duration in the table above. Use the 48-hour storm duration line. In Table VII-2 station 10 recorded rainfall equal to 3.21 inches, and station 11 3.39 inches. Therefore, station 10 exceeded the 1-year return frequency amount (2.81 inches) for a 48-hour storm, and station 11 exceeded the 2-year return frequency amount (3.38 inches) for a 48-hour storm.

The following table documents individual storm period start time (hour), duration (in hours), number of gauges receiving precipitation during each storm, average precipitation over the network of 25 gauges, average precipitation at the gauges receiving precipitation during the event, maximum precipitation at any gauge during the storm, and the location of the gauge. The last column in the table indicates whether a particular storm, at the station with the maximum rainfall, exceeded events greater than an annual event for the observed storm duration (1 -year to 100-year recurrence intervals considered). Only those events with maximum precipitation greater than that expected once a year are indicated. A storm recurrence frequency of 50 years means that a storm this size would be expected once every 50 years. Storm amounts are in inches.

Table VII-1. Documentation of Storm Amounts

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					September 1992				
1	1	0900	8	25	0.45	0.45	1.07	11	
2	2	0300	11	25	0.23	0.23	0.38	4	
3	2	2100	3	13	0.06	0.11	0.28	12	
4	7	2100	7	25	0.74	0.74	1.83	24	
5	9	0300	20	25	1.34	1.34	1.89	14	
6	14	1400	2	7	0.03	0.11	0.25	5	
7	18	0600	6	23	0.05	0.05	0.14	25	
8	18	1800	1	2	0.00	0.06	0.09	24	
9	20	0800	24	25	1.08	1.08	1.42	5	
10	25	2200	24	25	0.23	0.23	0.38	19	
					October 1992				
11	8	0300	37	25	0.34	0.34	0.50	10	
12	9	2400	8	21	0.07	0.08	0.17	4	
13	10	1600	3	16	0.04	0.07	0.20	11	
14	14	2300	11	25	0.85	0.85	1.25	11	
15	15	2000	3	18	0.04	0.05	0.16	23	
16	19	2200	6	25	0.18	0.18	0.43	24	
17	28	1900	4	16	0.02	0.04	0.07	14	
18	29	0400	6	11	0.03	0.07	0.10	1	
19	29	1800	19	19	0.08	0.11	0.29	24	
20	31	1600	38	25	2.18	2.18	3.39	11	2-Yr, 48-Hr
					November 1992				
21	3	0900	14	25	0.63	0.63	0.81	22	
22	8	2300	12	25	0.23	0.23	0.33	1	
23	9	1900	16	25	0.71	0.71	1.02	19	
24	10	1700	15	25	0.15	0.15	0.30	21	
25	11	1700	23	25	0.58	0.58	0.79	3	
26	17	1900	3	2	0.00	0.03	0.03	24	
27	18	0200	6	2	0.01	0.09	0.10	24	
28	18	1500	18	25	0.52	0.52	0.84	19	
29	19	2400	12	25	0.19	0.19	0.34	1	
30	20	1600	11	25	0.46	0.46	0.66	24	
31	21	0400	25	25	0.65	0.65	0.89	16	
32	25	0300	20	25	0.38	0.38	0.52	1	
33	30	1500	6	7	0.01	0.04	0.06	8	
					December 1992				
34	3	0700	1	2	0.00	0.04	0.04	22	
35	9	1200	25	25	0.34	0.34	0.44	11	
36	14	0900	3	1	0.00	0.06	0.06	20	
37	14	2100	24	25	1.52	1.52	1.98	19	
38	19	0500	2	1	0.00	0.04	0.04	2	
39	19	1000	11	25	0.30	0.30	0.39	3	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					December 1992 (Continued)				
40	20	0800	5	15	0.03	0.06	0.08	10	
41	28	1000	2	2	0.00	0.02	0.04	9	
42	28	2300	47	25	0.62	0.62	0.86	22	
					January 1993				
43	1	2000	3	1	0.00	0.03	0.03	19	
44	2	0400	34	25	0.26	0.26	0.41	3	
45	3	2100	23	25	1.70	1.70	2.24	20	
46	6	1100	3	3	0.01	0.05	0.06	23	
47	7	1100	2	4	0.01	0.05	0.07	24	
48	7	2000	15	23	0.08	0.08	0.25	13	
49	9	1300	20	25	0.22	0.22	0.52	25	
50	12	0700	24	25	0.33	0.33	0.46	16	
51	20	0900	21	25	0.92	0.92	1.23	22	
					February 1993				
52	11	0800	30	25	0.70	0.70	1.10	12	
53	12	1800	23	23	0.12	0.13	0.24	14	
54	15	1500	18	25	0.15	0.15	0.27	19	
55	20	1400	24	25	0.44	0.44	0.75	11	
56	25	0500	26	25	0.23	0.23	0.69	19	
					March 1993				
57	2	0800	14	25	0.30	0.30	0.51	2	
58	3	0400	47	25	1.16	1.16	1.96	19	
59	5	1900	1	2	0.00	0.02	0.04	11	
60	7	1700	7	15	0.04	0.07	0.17	24	
61	9	2400	3	4	0.01	0.07	0.08	21	
62	15	2100	25	25	0.36	0.36	0.46	1	
63	19	0200	21	25	0.23	0.23	0.40	11	
64	20	0700	6	3	0.01	0.06	0.10	22	
65	21	1100	41	25	1.42	1.42	1.71	4	
66	30	2200	43	25	0.55	0.55	0.82	3	
					April 1993				
67	1	2200	10	2	0.02	0.19	0.19	24	
68	5	2400	4	2	0.01	0.11	0.12	20	
69	7	1000	37	25	0.80	0.80	0.95	14	
70	12	1900	4	4	0.01	0.07	0.10	24	
71	13	1400	16	25	1.18	1.18	1.87	21	
72	14	1300	34	25	1.62	1.62	2.09	15	
73	16	1100	9	17	0.04	0.06	0.11	20	
74	19	0300	7	25	0.13	0.13	0.22	18	
75	19	1600	26	25	0.78	0.78	1.09	17	
76	24	2100	13	25	0.25	0.25	0.39	18	
77	28	2400	13	25	0.19	0.19	0.28	5	
					May 1993				
78	1	0100	1	1	0.00	0.03	0.03	10	
79	1	1200	12	21	0.14	0.16	0.39	8	
80	2	1400	25	25	0.21	0.21	0.56	25	
81	4	0300	16	17	0.24	0.35	0.81	3	
82	5	0700	1	1	0.00	0.03	0.03	13	
83	5	1100	5	5	0.03	0.13	0.31	13	
84	6	0600	10	11	0.16	0.37	0.99	24	
85	10	1100	13	22	0.13	0.15	0.16	13	
86	11	1700	3	4	0.01	0.04	0.05	17	
87	12	1300	9	25	0.45	0.45	0.72	23	
88	18	1800	4	7	0.02	0.07	0.12	4	
89	21	1500	4	4	0.01	0.06	0.07	21	
90	22	1400	18	24	0.37	0.38	1.00	1	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					May 1993 (Continued)				
91	23	1400	15	24	0.13	0.14	0.47	1	
92	28	2000	17	23	0.46	0.50	2.09	4	
93	30	0800	16	24	0.27	0.28	0.67	13	
					June 1993				
94	1	2200	13	25	0.41	0.41	0.68	3	
95	3	2300	19	25	1.05	1.05	1.39	5	
96	7	2300	13	24	0.31	0.32	0.82	3	
97	8	1600	4	24	0.17	0.18	0.33	12	
98	15	0300	4	8	0.03	0.09	0.15	3	
99	17	2100	12	25	0.26	0.26	0.53	20	
100	18	1500	18	20	0.19	0.23	0.68	24	
101	19	1400	9	25	0.48	0.48	1.19	19	
102	24	2100	13	25	1.34	1.34	2.09	13	
103	28	0700	9	19	0.39	0.52	1.57	8	
104	28	2400	4	6	0.06	0.24	0.87	9	
105	30	0100	8	25	1.52	1.52	3.29	16	5-Yr, 12-Hr
106	30	2300	14	25	1.25	1.25	3.03	24	2-Yr, 18-Hr
					July 1993				
107	2	1000	10	21	0.21	0.25	0.59	17	
108	5	1900	6	17	0.25	0.36	0.91	4	
109	7	0700	11	25	0.44	0.44	0.70	4	
110	7	2100	1	1	0.00	0.02	0.02	11	
111	9	2000	13	25	0.43	0.43	0.64	4	
112	10	1700	9	24	1.05	1.09	2.57	11	1-Yr, 12-Hr
113	11	0700	4	15	0.04	0.07	0.13	13	
114	12	0700	6	3	0.01	0.05	0.07	22	
115	13	1400	7	25	0.81	0.81	2.22	12	1-Yr, 8-Hr
116	15	0500	12	24	0.27	0.28	0.81	25	
117	15	2100	12	24	0.18	0.19	0.82	18	
118	16	1900	14	15	0.36	0.60	3.07	7	2-Yr, 18-Hr
119	18	1500	6	25	0.89	0.89	1.58	11	
120	20	1600	16	25	0.37	0.37	0.70	5	
					July 1993				
121	22	0500	10	25	0.70	0.70	1.29	18	
122	23	0400	14	25	1.49	1.49	3.37	18	2-Yr, 18-Hr
123	24	0400	6	25	1.05	1.05	2.12	25	1-Yr, 6-Hr
124	24	1300	6	25	0.27	0.27	0.77	22	
125	25	0400	5	21	0.06	0.07	0.13	13	
126	28	0500	6	21	0.14	0.16	0.54	21	
127	31	1400	11	25	0.87	0.87	2.08	9	
					August 1993				
128	1	0500	2	1	0.00	0.08	0.08	20	
129	1	1800	5	10	0.08	0.19	0.68	20	
130	3	1300	6	24	0.27	0.28	1.06	10	
131	5	2400	6	5	0.01	0.06	0.13	3	
132	9	1700	3	2	0.00	0.05	0.06	3	
133	10	0100	7	25	0.90	0.90	1.42	25	
134	11	2100	20	25	0.73	0.73	1.39	12	
135	15	2200	6	24	0.60	0.63	1.52	3	
136	16	1500	3	3	0.01	0.05	0.06	14	
137	17	1700	3	5	0.02	0.09	0.12	4	
138	18	0800	5	22	0.34	0.39	1.06	22	
139	18	2100	2	12	0.02	0.04	0.07	6	
140	19	1200	2	2	0.00	0.06	0.07	11	
141	19	1700	1	3	0.01	0.07	0.12	13	
142	22	0800	6	16	0.07	0.11	0.30	2	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*' Gauge with max.*	*Storm recurrence frequency*
					August 1993 (Continued)				
143	23	1600	7	25	1.63	1.63	2.34	15	1-Yr, 12-Hr
144	25	0500	5	8	0.05	0.15	0.34	8	
145	28	0500	2	7	0.02	0.07	0.15	5	
146	28	1700	5	21	0.13	0.16	0.34	22	
147	30	1400	2	3	0.04	0.31	0.54	3	
148	30	2000	16	25	1.04	1.04	1.88	25	
					September 1993				
149	2	0200	29	25	3.48	3.48	4.79	25	5-Yr, 48-Hr
150	5	2200	15	25	1.07	1.07	1.99	3	
151	7	2400	6	24	0.09	0.10	0.15	15	
152	12	0300	6	25	0.18	0.18	0.37	11	
153	13	0600	36	25	5.36	5.36	6.86	19	50-Yr, 48-Hr
154	22	0700	14	25	0.38	0.38	0.66	25	
155	25	0600	13	25	0.97	0.97	1.27	11	
156	26	1600	4	10	0.02	0.06	0.08	13	
					October 1993				
157	8	1400	17	25	0.88	0.88	1.38	23	
158	15	1600	31	25	1.74	1.74	2.33	2	
159	18	1400	10	14	0.03	0.05	0.10	21	
160	20	0900	14	25	0.32	0.32	0.47	17	
161	21	1600	8	18	0.06	0.08	0.13	22	
					November 1993				
162	12	1400	8	25	0.35	0.35	0.49	2	
163	13	2000	20	25	0.74	0.74	0.93	17	
164	16	2000	16	25	0.70	0.70	0.91	19	
165	24	0100	11	25	0.11	0.11	0.17	4	
166	24	1700	45	25	0.59	0.59	0.74	24	
167	27	1000	4	13	0.03	0.05	0.10	16	
168	27	2000	11	9	0.02	0.07	0.09	4	
					December 1993				
169	1	1900	15	25	0.28	0.28	0.48	23	
170	3	1300	3	1	0.00	0.10	0.10	14	
171	3	2000	10	25	0.15	0.15	0.23	2	
172	13	0100	4	16	0.03	0.05	0.09	4	
173	13	0900	42	25	0.51	0.51	0.68	19	
174	17	2200	5	20	0.06	0.07	0.18	23	
175	24	1900	12	13	0.05	0.10	0.16	11	
176	30	2400	1	2	0.00	0.04	0.04	2	
177	31	2200	3	9	0.02	0.04	0.06	11	
					January 1994				
178	2	2200	11	12	0.06	0.12	0.23	24	
179	10	1000	12	25	0.20	0.20	0.29	23	
180	13	1100	7	7	0.02	0.06	0.11	19	
181	16	1200	6	16	0.04	0.06	0.10	11	
182	25	0600	8	16	0.05	0.07	0.19	16	
183	25	1900	1	1	0.00	0.04	0.04	4	
184	26	2300	23	25	0.53	0.53	0.77	12	
185	29	1500	20	15	0.06	0.11	0.27	7	
					February 1994				
186	7	2000	21	13	0.04	0.08	0.22	19	
187	12	1100	5	5	0.01	0.05	0.06	14	
188	19	0400	30	25	0.76	0.76	0.97	3	
189	22	1500	33	25	0.52	0.52	0.94	25	
190	24	1700	23	25	0.26	0.26	0.44	23	
191	28	2000	7	17	0.06	0.08	0.20	25	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					March 1994				
192	6	2300	9	25	0.33	0.33	0.47	10	
193	12	2400	6	22	0.05	0.06	0.14	16	
194	13	1500	6	16	0.02	0.04	0.06	6	
195	21	0100	3	11	0.02	0.04	0.08	3	
196	23	1900	4	3	0.01	0.06	0.08	2	
197	26	0600	21	25	0.53	0.53	0.73	23	
					April 1994				
198	2	1500	8	25	0.24	0.24	0.31	3	
199	5	1500	6	17	0.03	0.05	0.08	15	
200	9	1500	17	25	0.43	0.43	0.62	2	
201	10	2300	38	25	2.03	2.03	2.64	25	
202	12	2300	9	16	0.03	0.05	0.12	1	
203	15	0300	8	25	0.39	0.39	0.59	22	
204	20	1900	17	25	0.34	0.34	1.12	25	
205	25	1800	6	24	0.09	0.09	0.21	1	
206	26	0400	4	5	0.01	0.03	0.05	4	
207	26	1800	5	6	0.04	0.16	0.35	22	
208	27	1700	22	25	0.70	0.70	0.87	19	
209	29	1700	22	25	0.72	0.72	0.92	19	
					May 1994				
210	5	1700	43	25	1.31	1.31	1.70	12	
211	9	1900	4	3	0.00	0.04	0.05	3	
212	11	1500	5	25	0.26	0.26	0.57	15	
213	14	0400	17	25	0.42	0.42	0.80	2	
214	24	1500	12	25	1.00	1.00	2.83	24	2-Yr, 12-Hr
215	25	1800	7	25	0.10	0.10	0.17	17	
216	31	1400	7	4	0.01	0.08	0.13	10	
					June 1994				
217	1	1700	21	25	0.75	0.75	1.13	13	
218	5	1100	7	24	0.16	0.16	0.47	10	
219	5	2400	1	1	0.00	0.07	0.07	23	
220	7	1900	21	25	0.69	0.69	1.62	19	
221	11	2400	3	11	0.05	0.11	0.17	9	
222	12	1100	8	25	0.47	0.47	1.16	14	
223	14	1600	3	2	0.00	0.05	0.06	4	
224	16	1600	5	17	0.23	0.34	1.08	14	
225	20	1500	7	5	0.02	0.10	0.18	23	
226	23	0500	7	5	0.02	0.10	0.18	23	
227	23	1300	20	25	0.26	0.26	0.37	24	
228	25	1900	6	21	0.10	0.12	0.52	15	
229	26	0500	17	25	0.38	0.38	0.89	22	
					July 1994				
230	2	1100	11	25	1.02	1.02	1.99	19	
231	4	0500	6	24	0.21	0.22	0.64	9	
232	7	1500	7	11	0.09	0.21	0.34	20	
233	16	1700	8	25	0.61	0.61	2.62	19	2-Yr, 12-Hr
234	19	0400	7	24	1.01	1.06	2.78	17	2-Yr, 12-Hr
235	20	0400	1	1	0.00	0.05	0.05	21	
236	20	1500	10	25	0.46	0.46	0.85	7	
237	21	2200	2	7	0.02	0.07	0.09	7	
238	24	1500	3	3	0.00	0.04	0.06	10	
					August 1994				
239	1	1300	11	16	0.13	0.20	0.77	24	
240	3	1500	19	25	0.91	0.91	1.75	18	
241	4	1500	7	24	0.17	0.18	0.49	3	
242	13	1500	4	22	0.40	0.45	0.79	18	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					August 1994 (Continued)				
248	29	2400	1	1	0.00	0.04	0.14	11	
249	30	0600	8	25	1.25	1.25	1.83	25	
250	30	2300	2	4	0.01	0.06	0.13	25	
					September 1994				
251	4	1200	14	25	0.31	0.31	0.56	13	
252	21	2100	11	25	0.26	0.26	0.34	2	
253	22	1200	17	25	0.56	0.56	0.86	3	
254	25	0500	7	17	0.06	0.09	0.18	25	
255	25	1500	7	15	0.20	0.33	1.01	7	
256	26	0300	7	18	0.11	0.16	0.36	1	
					October 1994				
257	6	0300	2	2	0.00	0.06	0.08	25	
258	7	0800	34	25	1.71	1.71	2.55	24	
259	18	1300	10	25	0.12	0.12	0.20	22	
260	22	1900	2	14	0.06	0.10	0.21	21	
261	24	0600	5	11	0.03	0.06	0.13	25	
262	25	2300	3	4	0.01	0.04	0.06	21	
263	30	2400	22	25	1.41	1.41	1.80	19	
					November 1994				
264	3	1500	3	25	0.21	0.21	0.56	23	
265	4	0200	2	2	0.01	0.09	0.09	22	
266	4	0800	6	25	0.26	0.26	0.45	1	
267	4	2000	27	25	1.02	1.02	1.94	25	
268	9	0100	16	25	0.28	0.28	0.63	23	
269	13	2000	7	25	0.12	0.12	0.24	7	
270	20	0300	8	25	0.18	0.18	0.25	19	
271	20	1900	10	25	0.53	0.53	0.66	22	
272	27	0300	11	25	0.76	0.76	1.08	2	
273	30	0900	2	2	0.00	0.04	0.05	14	
					December 1994				
274	2	1900	8	24	0.06	0.06	0.16	3	
275	3	0700	4	10	0.01	0.03	0.04	7	
276	6	0400	26	25	1.70	1.70	1.97	2	
277	8	1700	12	25	0.21	0.21	0.29	2	
278	16	0100	12	25	0.27	0.27	0.37	23	
279	20	0300	4	5	0.01	0.17	0.10	17	
280	20	1300	4	6	0.01	0.05	0.08	18	
281	31	2300	2	7	0.01	0.04	0.06	8	
					January 1995				
282	6	0100	17	17	0.06	0.08	0.16	11	
283	13	0400	30	25	1.61	1.61	2.18	19	
284	17	0500	3	6	0.01	0.04	0.06	19	
235	18	2000	26	25	0.81	0.81	1.03	15	
286	27	0400	27	25	0.41	0.41	0.76	19	
					February 1995				
287	3	0200	14	25	0.19	0.19	0.41	25	
288	14	1400	5	20	0.03	0.04	0.06	23	
289	26	1600	15	25	0.38	0.38	0.51	19	
					March 1995				
290	4	2200	10	25	0.46	0.46	0.56	19	
291	6	2000	17	25	0.86	0.86	1.22	21	
292	20	0300	6	25	0.22	0.22	0.40	21	
293	22	1800	2	16	0.03	0.05	0.10	6	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					March 1995 (Continued)				
294	26	0400	4	25	0.06	0.06	0.09	1	
295	26	2100	10	25	0.31	0.31	0.42	19	
					April 1995				
296	3	0900	6	25	0.27	0.27	0.43	12	
297	6	1200	2	2	0.01	0.11	0.13	25	
298	6	1800	8	11	0.01	0.03	0.05	12	
299	7	2100	11	25	0.86	0.86	1.34	16	
300	9	0100	7	25	0.64	0.64	0.84	15	
301	9	2300	9	25	0.35	0.35	0.63	1	
302	10	1300	2	12	0.04	0.08	0.16	8	
303	10	2000	2	2	0.00	0.02	0.03	25	
304	11	1000	11	25	0.39	0.39	0.50	1	
305	15	1400	3	7	0.01	0.04	0.05	12	
306	16	2100	4	25	0.32	0.32	0.57	5	
307	17	2000	11	25	0.74	0.74	0.95	2	
308	20	0200	7	25	0.31	0.31	0.39	23	
309	20	2200	2	5	0.01	0.07	0.13	24	
310	23	1700	1	1	0.00	0.04	0.04	9	
311	24	1400	5	23	0.06	0.06	0.12	7	
312	26	0600	9	25	0.11	0.11	0.20	2	
313	26	2200	8	25	0.57	0.57	0.79	22	
314	29	1200	11	25	0.17	0.17	0.25	22	
					May 1995				
315	3	1500	18	24	0.07	0.08	0.18	22	
316	7	1900	17	25	1.22	1.22	1.76	4	
317	8	1600	14	25	0.59	0.59	1.18	1	
318	9	1600	4	16	0.09	0.14	0.47	3	
319	10	0200	12	21	0.12	0.14	0.45	17	
320	12	2000	12	25	0.40	0.40	0.50	7	
321	13	1800	1	2	0.01	0.09	0.12	2	
322	16	0500	7	23	0.08	0.09	0.39	25	
323	16	1500	12	25	2.31	2.31	4.22	19	10-Yr, 12-Hr
324	17	0800	21	25	0.88	0.88	1.03	9	
325	18	1000	9	25	0.75	0.75	1.85	18	
326	23	1000	6	25	0.23	0.23	0.46	9	
327	23	1900	24	25	2.77	2.77	3.78	19	5-Yr, 12-Hr
328	26	2200	8	25	0.08	0.08	0.13	18	
329	27	1000	15	25	0.73	0.73	1.13	22	
330	28	0700	**1**	1	0.00	0.02	0.02	24	
					June 1995				
331	2	0800	8	12	0.03	0.07	0.13	10	
332	8	0700	5	25	0.37	0.37	0.70	13	
333	9	0900	5	22	0.11	0.12	0.26	16	
334	9	2300	4	7	0.03	0.12	0.28	3	
335	11	1300	4	14	0.02	0.03	0.04	1	
336	20	1800	11	25	0.35	0.35	1.11	16	
337	21	1900	6	25	0.55	0.55	2.67	19	2-Yr, 6-Hr
338	23	1400	6	9	0.02	0.06	0.14	23	
339	24	0100	6	10	0.27	0.68	2.52	22	2-Yr, 6-Hr
340	24	1600	5	9	0.15	0.40	1.91	2	
341	25	1400	6	16	0.06	0.09	0.35	17	
342	26	0200	16	24	0.23	0.24	0.90	1	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					June 1995 (Continued)				
343	27	1100	11	15	0.06	0.10	0.42	19	
344	28	1400	7	23	0.30	0.33	1.10	17	
345	29	1100	11	24	0.10	0.10	0.42	24	
					July 1995				
346	4	0300	14	23	0.34	0.37	1.09	1	
347	4	2300	5	18	0.09	0.13	0.35	4	
348	5	2100	4	18	0.07	0.09	0.37	1	
349	9	1300	5	9	0.02	0.06	0.14	16	
350	16	1400	5	24	0.26	0.27	0.94	12	
351	18	2000	5	2	0.02	0.20	0.31	10	
352	20	0700	10	23	0.21	0.23	0.45	8	
353	20	2000	4	3	0.00	0.03	0.03	1	
354	21	0800	6	25	0.44	0.44	0.85	12	
355	23	0600	6	25	0.46	0.46	1.10	18	
356	23	2100	4	21	0.13	0.16	0.75	19	
357	24	1600	5	17	0.19	0.28	0.84	24	
358	25	1300	15	22	0.21	0.24	0.56	24	
359	26	1700	4	18	0.19	0.26	0.74	20	
360	27	2000	5	16	0.05	0.08	0.21	14	
361	31	2000	8	22	0.17	0.20	0.65	3	
					August 1995				
362	1	1500	5	15	0.07	0.11	0.55	22	
363	2	0200	17	25	0.64	0.64	0.98	19	
364	3	0100	11	23	0.22	0.24	0.57	23	
365	3	2300	15	23	0.28	0.31	1.29	22	
366	4	2100	1	1	0.00	0.01	0.01	25	
367	5	0200	5	9	0.02	0.06	0.12	11	
368	6	1800	2	1	0.00	0.04	0.04	24	
369	6	2300	3	13	0.05	0.10	0.29	12	
370	8	0400	3	4	0.01	0.08	0.23	19	
371	8	1200	6	25	0.45	0.45	1.15	7	
372	9	1900	12	25	0.55	0.55	2.26	12	1-Yr, 12-Hr
373	13	1900	3	1	0.01	0.15	0.15	2	
374	14	1100	2	1	0.00	0.03	0.03	10	
375	15	1600	8	20	0.17	0.22	0.68	1	
376	16	1100	1	1	0.00	0.02	0.02	18	
377	16	1500	7	12	0.03	0.07	0.17	24	
378	17	0100	7	25	0.26	0.26	0.51	23	
379	24	1500	2	1	0.00	0.09	0.09	10	
					September 1995				
380	6	1600	12	20	0.51	0.51	0.62	8	
381	7	1300	24	20	0.58	0.58	1.51	7	
382	17	1300	2	4	0.01	0.03	0.05	23	
383	19	1300	15	20	0.35	0.35	0.45	4	
384	21	0900	16	20	0.17	0.17	0.25	2	
385	30	1900	7	20	0.38	0.38	0.63	19	
					October 1995				
386	2	2300	5	6	0.02	0.07	0.10	22	
387	5	1600	8	6	0.03	0.11	0.20	3	
388	6	1700	4	6	0.02	0.06	0.09	23	
389	13	1700	11	20	0.16	0.16	0.30	12	
390	19	1600	10	20	1.36	1.36	1.60	21	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					October 1995 (Continued)				
391	20	1100	6	6	0.01	0.04	0.05	11	
392	23	1400	6	20	0.17	0.17	0.30	10	
393	26	1500	12	20	0.38	0.38	0.62	23	
394	30	1200	24	20	0.90	0.90	1.22	7	
					November 1995				
395	1	1200	10	20	0.52	0.52	0.89	4	
396	2	0300	10	16	0.13	0.16	0.42	4	
397	10	1300	21	20	1.18	1.18	1.49	7	
					December 1995				
398	7	1400	4	2	0.01	0.05	0.08	19	
399	8	0600	18	20	0.10	0.10	0.20	23	
400	17	2100	16	20	0.22	0.22	0.34	19	
401	18	2000	10	15	0.12	0.16	0.33	12	
402	19	0900	3	1	0.00	0.04	0.04	19	
					January 1996				
403	4	0300	17	20	0.11	0.11	0.16	22	
404	5	1100	11	9	0.02	0.04	0.10	7	
405	11	0200	11	17	0.09	0.10	0.16	4	
406	17	0700	4	8	0.07	0.18	0.33	8	
407	18	0100	22	20	0.47	0.47	0.98	4	
408	23	0100	13	20	0.10	0.10	0.19	19	
409	26	0700	12	20	0.14	0.14	0.29	18	
410	30	0800	9	3	0.01	0.05	0.05	8	
					February 1996				
411	8	0500	5	9	0.01	0.03	0.05	2	
412	21	1500	8	15	0.02	0.03	0.11	12	
413	26	0900	5	5	0.10	0.42	0.85	6	
414	26	1900	13	20	0.63	0.63	1.28	4	
					March **1996**				
415	5	0100	12	20	1.14	1.14	1.35	2	
416	6	0200	14	20	0.07	0.07	0.13	9	
417	19	1700	14	15	0.04	0.06	0.24	21	
418	23	1300	6	9	0.01	0.03	0.05	22	
419	24	1900	7	20	0.52	0.52	0.82	4	
420	28	1200	12	20	0.10	0.10	0.16	8	
421	31	0100	13	19	0.05	0.05	0.16	21	
					April 1996				
422	14	1800	19	20	0.92	0.92	1.13	2	
423	18	1600	5	19	0.34	0.36	0.94	7	
424	19	1000	2	1	0.00	0.04	0.04	2	
425	19	1600	4	14	0.30	0.43	1.14	11	
426	21	1900	15	20	0.61	0.61	1.49	16	
427	27	1900	41	20	0.43	0.43	0.65	19	
					May 1996				
428	3	1800	18	20	0.33	0.33	0.48	19	
429	5	0600	6	12	0.05	0.08	0.22	8	
430	6	1900	12	20	0.31	0.31	0.60	19	
431	7	1400	6	6	0.01	0.03	0.05	12	
432	8	0100	14	20	1.30	1.30	4.64	24	10-Yr, 18-Hr
433	9	1200	2	1	0.00	0.08	0.08	3	
434	10	0200	21	20	0.51	0.51	0.83	22	
435	13	0300	3	1	0.00	0.03	0.03	20	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					May 1996 (Continued)				
436	13	0900	1	1	0.00	0.04	0.04	23	
437	13	1400	6	5	0.01	0.05	0.10	13	
438	14	1400	8	14	0.03	0.05	0.10	15	
439	15	0100	6	15	0.04	0.06	0.13	8	
440	16	0700	3	2	0.00	0.02	0.02	2	
441	20	1500	12	17	0.13	0.15	0.34	4	
442	23	0200	8	20	0.27	0.27	0.49	24	
443	24	0300	1	2	0.00	0.03	0.05	9	
444	24	0900	7	20	0.37	0.37	0.60	3	
445	25	0400	5	9	0.09	0.20	0.66	2	
446	25	1700	8	20	0.23	0.23	0.56	19	
447	26	1100	7	20	0.46	0.46	0.74	24	
448	26	2300	12	20	1.17	1.17	1.83	3	
449	28	0600	6	7	0.03	0.09	0.20	6	
450	29	0700	8	2	0.00	0.04	0.04	2	
451	30	0600	3	2	0.00	0.01	0.02	18	
452	31	0800	1	1	0.00	0.01	0.01	2	
					June 1996				
453	1	0600	19	20	0.66	0.66	0.89	8	
454	2	1900	5	20	0.29	0.29	0.56	6	
455	5	2100	5	20	0.19	0.19	0.53	12	
456	6	1800	4	20	0.50	0.50	1.35	16	
457	8	1800	15	19	0.04	0.04	0.09	19	
458	9	2100	8	20	0.10	0.10	0.34	9	
459	13	1400	8	15	0.31	0.41	1.21	23	
460	17	0500	2	6	0.03	0.09	0.20	7	
461	17	1700	11	17	0.15	0.18	0.41	24	
462	21	1800	4	2	0.01	0.14	0.16	10	
463	23	2100	5	20	0.56	0.56	0.99	9	
					July 1996				
464	12	2200	6	13	0.14	0.21	0.41	23	
465	14	0300	21	20	0.55	0.55	1.02	15	
466	16	1200	2	6	0.01	0.04	0.07	11	
467	20	1200	23	20	1.08	1.08	1.44	2	
468	22	1700	4	20	0.13	0.13	0.29	3	
469	23	2000	10	20	0.23	0.23	0.60	13	
470	24	1100	4	19	0.13	0.14	0.34	15	
471	27	2300	2	2	0.00	0.02	0.03	22	
472	28	1400	8	11	0.21	0.38	1.19	3	
473	30	0100	5	17	0.37	0.43	1.15	15	
					August 1996				
474	7	1700	5	6	0.07	0.24	1.05	2	
475	16	2100	39	20	0.89	0.89	1.54	24	
476	19	0200	3	2	0.01	0.06	0.06	2	
477	23	1100	2	1	0.02	0.32	0.32	12	
					September 1996				
478	06	1700	6	2	0.02	0.18	0.24	2	
479	08	1200	2	4	0.01	0.04	0.05	21	
480	08	1700	3	3	0.02	0.10	0.16	12	
481	23	0500	10	20	0.34	0.34	0.41	19	
482	25	1600	4	8	0.04	0.09	0.12	11	
483	25	2300	27	20	1.15	1.15	1.62	24	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					October 1996				
484	07	1200	1	1	0.00	0.03	0.03	8	
485	07	1800	10	19	0.39	0.41	0.67	23	
486	08	1500	1	1	0.00	0.04	0.04	23	
487	17	0200	4	3	0.01	0.07	0.10	15	
488	17	1200	10	20	0.62	0.62	1.24	23	
489	21	0400	6	10	0.01	0.03	0.06	24	
490	21	1300	2	2	0.00	0.02	0.03	23	
491	21	1900	1	1	0.00	0.03	0.03	13	
492	21	2400	20	20	0.68	0.68	0.93	24	
493	22	2300	9	20	0.06	0.06	0.11	12	
494	29	1400	6	20	0.19	0.19	0.43	18	
					November 1996				
495	04	1700	10	12	0.03	0.04	0.08	3	
496	06	0700	19	20	1.14	1.14	1.47	2	
497	07	0500	9	14	0.07	0.11	0.25	22	
498	16	2000	15	18	0.20	0.23	0.29	24	
499	20	2300	17	18	0.08	0.09	0.22	16	
500	23	0900	10	2	0.01	0.05	0.09	2	
501	24	0300	17	19	0.24	0.25	0.34	21	
502	29	1400	14	20	0.36	0.36	0.60	2	
503	30	2300	2	14	0.02	0.03	0.08	18	
					December 1996				
504	01	0100	12	20	0.11	0.11	0.21	19	
505	04	2300	15	19	0.14	0.15	0.28	11	
506	11	0400	4	14	0.04	0.05	0.21	23	
507	14	2400	4	16	0.04	0.05	0.09	11	
508	23	0300	**14**	19	0.54	0.57	1.17	18	
					January 1997				
509	04	1000	6	4	0.01	0.05	0.08	2	
510	08	2300	14	17	0.14	0.17	0.33	12	
511	09	1800	10	11	0.03	0.06	0.11	4	
512	12	1100	4	2	0.01	0.14	0.15	24	
513	12	1900	4	2	0.01	0.09	0.14	24	
514	15	0300	36	15	0.24	0.32	0.44	23	
515	21	1300	5	10	0.03	0.06	0.10	3	
516	21	2400	4	15	0.05	0.07	0.12	9	
517	22	0900	2	1	0.00	0.04	0.04	20	
518	24	0900	8	18	0.30	0.33	0.44	22	
519	26	0500	9	18	0.10	0.11	0.19	19	
520	26	2300	2	1	0.00	0.02	0.02	8	
521	27	0700	11	17	0.15	0.17	0.41	18	
					February 1997				
522	02	1500	8	1	0.00	0.08	0.08	18	
523	03	0500	3	2	0.00	0.01	0.01	7	
524	03	1100	27	18	0.11	0.12	0.21	18	
525	15	1600	13	18	0.06	0.07	0.14	3	
526	19	0300	8	8	0.02	0.04	0.06	10	
527	20	1100	39	19	2.07	2.18	3.56	2	2-Yr, 48-Hr
528	26	0400	35	19	1.28	1.35	1.96	16	
529	28	1700	8	18	0.14	0.15	0.30	19	
					March 1997				
530	01	0100	21	19	0.09	0.10	0.20	8	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					March 1997 (Continued)				
531	09	0500	9	20	0.88	0.88	1.26	18	
532	13	1400	13	19	0.43	0.46	0.71	16	
533	18	0100	11	8	0.04	0.09	0.20	19	
534	24	1200	5	20	0.30	0.30	0.38	18	
535	24	2300	7	18	0.08	0.08	0.16	18	
536	27	2400	5	7	0.01	0.04	0.06	18	
537	30	0400	9	19	0.08	0.09	0.15	2	
					April 1997				
538	04	1400	34	20	0.38	0.38	1.32	24	
539	06	0300	4	2	0.00	0.04	0.05	22	
540	10	1200	35	20	0.87	0.87	1.53	4	
541	12	1100	14	3	0.02	0.10	0.13	11	
542	15	2300	4	18	0.09	0.10	0.18	18	
543	18	1700	9	10	0.04	0.08	0.18	6	
544	20	1600	8	9	0.06	0.13	0.22	24	
545	21	0700	15	7	0.03	0.09	0.26	3	
546	27	0200	10	12	0.04	0.06	0.08	20	
547	30	0500	2	1	0.00	0.04	0.04	2	
548	30	1200	4	18	0.20	0.22	0.50	20	
					May 1997				
549	02	0600	5	19	0.06	0.06	0.18	19	
550	02	2400	9	20	0.45	0.45	0.82	9	
551	03	1200	4	14	0.03	0.05	0.13	10	
552	07	1300	4	6	0.01	0.03	0.06	3	
553	07	2200	9	20	0.45	0.45	0.80	20	
554	11	1500	2	3	0.00	0.03	0.03	22	
555	13	2400	5	2	0.01	0.10	0.12	16	
556	16	1600	2	1	0.00	0.04	0.04	10	
557	16	2100	6	10	0.06	0.11	0.34	16	
558	18	0700	6	19	0.09	0.09	0.13	3	
559	18	2100	11	20	0.33	0.33	0.64	13	
560	24	1500	6	9	0.03	0.07	0.17	23	
561	25	1600	27	20	1.20	1.20	2.63	16	
562	27	1500	9	20	0.24	0.24	0.37	9	
563	28	1400	9	9	0.05	0.11	0.29	12	
					June 1997				
564	01	1400	18	12	0.05	0.09	0.19	23	
565	06	0400	12	18	0.38	0.43	0.89	7	
566	07	1300	20	18	0.31	0.35	0.98	18	
567	08	1200	3	4	0.00	0.02	0.03	3	
568	10	2200	8	2	0.02	0.25	0.40	24	
569	11	2000	8	4	0.05	0.27	0.56	22	
570	12	0900	10	15	0.56	0.74	1.62	16	
571	15	2100	8	13	0.04	0.06	0.15	21	
572	20	0800	4	6	0.07	0.24	1.03	16	
573	21	0500	3	3	0.02	0.14	0.26	24	
574	25	1500	6	17	0.08	0.10	0.38	3	
575	29	1500	2	6	0.06	0.20	0.49	9	
576	30	0300	3	3	0.02	0.15	0.24	19	
577	30	1200	13	15	0.15	0.20	0.72	24	
					July 1997				
578	03	1000	14	18	0.27	0.30	0.56	16	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					July 1997 (Continued)				
579	13	1500	2	4	0.03	0.13	0.19	8	
580	19	1200	11	19	1.27	1.34	3.98	21	10-Yr, 12-Hr
581	20	0500	2	1	0.00	0.08	0.08	23	
582	21	0500	19	19	0.56	0.59	1.28	11	
583	27	1700	8	13	0.34	0.53	1.77	18	
					August 1997				
584	03	1700	15	19	0.51	0.53	1.53	8	
585	08	2400	10	19	0.56	0.58	1.29	15	
586	09	1600	2	2	0.01	0.15	0.17	12	
587	11	0100	4	4	0.03	0.17	0.38	3	
588	11	2000	5	12	0.09	0.14	0.45	22	
589	12	1300	6	16	0.25	0.31	0.83	10	
590	15	0100	5	19	0.27	0.28	0.64	23	
591	16	2300	15	19	1.44	1.51	3.06	2	2-Yr, 18-Hr
592	17	1900	1	1	0.00	0.07	0.07	19	
593	19	0800	9	18	0.25	0.28	0.48	24	
594	21	0700	2	1	0.00	0.03	0.03	2	
595	21	1500	8	18	0.09	0.10	0.18	16	
596	24	1300	11	15	0.29	0.38	0.92	9	
597	26	0600	4	4	0.02	0.12	0.18	24	
598	30	0700	8	19	0.42	0.44	0.94	12	
					September 1997				
599	2	1000	13	18	0.73	0.81	1.75	22	
600	7	1600	13	14	0.18	0.26	0.94	7	
601	8	1300	11	17	0.65	0.77	2.95	7	2-Yr, 12-Hr
602	9	1100	10	13	0.18	0.28	0.83	20	
603	16	1800	11	18	0.20	0.22	0.30	2	
604	22	1900	24	18	0.29	0.33	0.45	16	
					October 1997				
605	4	0500	8	13	0.03	0.05	0.11	8	
606	8	2300	11	16	0.05	0.06	0.16	23	
607	12	2100	15	18	0.51	0.57	0.97	16	
608	23	1700	10	15	0.08	0.11	0.25	2	
609	24	1400	12	19	0.14	0.15	0.23	8	
610	25	1800	29	17	0.41	0.49	0.59	8	
611	31	2100	4	10	0.05	0.11	0.21	18	
					November 1997				
612	1	0100	5	15	0.11	0.14	0.30	23	
613	2	0900	8	15	0.05	0.07	0.15	15	
614	3	1600	5	4	0.00	0.01	0.01	6	
615	5	0800	28	20	1.18	1.18	1.58	16	
616	27	1300	5	20	0.16	0.16	0.24	2	
617	28	0400	8	19	0.47	0.49	0.71	12	
618	28	2200	8	14	0.05	0.07	0.15	2	
619	29	1100	35	20	1.08	1.08	1.53	22	
					December 1997				
620	3	0300	6	20	0.16	0.16	0.28	22	
621	4	1800	12	6	0.02	0.07	0.13	11	
622	8	1300	8	5	0.01	0.05	0.06	18	
623	9	1600	22	20	0.28	0.28	0.43	7	
624	21	0800	5	6	0.01	0.03	0.04	2	
625	21	1600	21	19	0.24	0.26	0.60	16	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					December 1997 (Continued)				
626	24	0500	20	19	0.59	0.62	0.79	16	
627	29	0300	13	18	0.06	0.07	0.12	19	
628	30	0800	11	15	0.05	0.06	0.12	20	
629	30	2300	5	1	0.00	0.03	0.03	18	
					January 1998				
630	4	0700	10	20	0.48	0.48	0.79	16	
631	5	0300	14	20	0.24	0.24	0.30	10	
632	6	0200	4	2	0.00	0.03	0.04	19	
633	6	1200	20	20	0.52	0.52	0.69	19	
634	7	1200	33	20	1.14	1.14	1.79	19	
635	9	1000	7	3	0.01	0.05	0.10	19	
636	14	1200	6	18	0.13	0.15	0.25	19	
637	15	0900	9	10	0.04	0.08	0.14	12	
638	22	1700	3	1	0.00	0.05	0.05	3	
639	24	0200	12	3	0.01	0.05	0.08	3	
640	24	1700	2	1	0.00	0.03	0.03	4	
641	31	1100	7	1	0.00	0.10	0.10	19	
					February 1998				
642	10	0700	11	20	0.28	0.28	0.42	23	
643	10	2300	23	20	1.40	1.40	1.87	16	
644	16	0900	11	20	0.16	0.16	0.33	16	
645	17	0500	15	20	0.14	0.14	0.23	20	
646	18	0300	2	2	0.00	0.03	0.04	21	
647	19	1500	12	19	0.12	0.13	0.28	9	
648	26	1500	19	20	0.61	0.61	0.90	16	
					March 1998				
649	7	1900	19	20	1.08	1.08	1.66	16	
650	8	1700	20	20	0.64	0.64	1.05	21	
651	16	0200	13	15	0.03	0.04	0.05	3	
652	16	2000	30	20	1.44	1.44	1.94	19	
653	19	1900	22	20	0.55	0.55	0.87	21	
654	27	2000	12	20	0.47	0.47	1.07	16	
655	28	2400	9	19	0.12	0.12	0.35	22	
656	31	0200	20	17	0.28	0.28	0.41	11	
					April 1998				
657	3	1100	12	19	0.24	0.25	0.56	23	
658	7	0800	12	20	0.43	0.43	1.71	13	
659	8	2400	13	20	0.14	0.14	0.26	4	
660	13	1000	14	19	0.87	0.91	1.16	24	
661	15	0200	5	20	0.23	0.23	0.51	19	
662	15	2200	2	4	0.03	0.12	0.18	4	
663	21	1800	3	2	0.01	0.09	0.13	2	
664	21	2400	7	11	0.04	0.06	0.13	16	
665	28	1500	16	19	0.80	0.85	1.22	15	
666	29	1800	3	9	0.12	0.28	0.63	2	
667	30	0100	4	3	0.02	0.12	0.21	21	
668	30	0800	17	19	0.47	0.49	1.17	20	
					May 1998				
669	1	0100	18	17	0.16	0.19	0.64	19	
670	2	0900	5	3	0.01	0.08	0.11	23	
671	2	1700	13	11	0.12	0.22	0.99	3	
672	3	1900	1	1	0.00	0.06	0.06	8	

Table VII-1. (Continued)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					May 1998 (Continued)				
673	5	1700	8	12	0.53	0.88	2.48	2	2-Yr, 6-Hr
674	6	0600	13	12	0.15	0.25	0.83	3	
675	7	0200	34	20	1.34	1.34	3.00	22	1-Yr, 48-Hr
676	9	0900	22	3	0.02	0.15	0.22	8	
677	12	0500	8	15	0.08	0.11	0.22	13	
678	12	1800	8	20	0.41	0.41	0.87	4	
679	15	1900	13	20	0.45	0.45	0.90	18	
680	19	1700	27	19	0.50	0.53	1.31	8	
681	22	0400	8	19	0.52	0.55	0.73	4	
682	22	2200	2	17	0.20	0.23	0.48	16	
683	23	2100	8	19	0.65	0.69	1.35	6	
684	25	1900	4	15	0.08	0.11	0.27	13	
					June 1998				
685	3	1000	4	20	0.12	0.12	0.22	24	
686	4	2200	9	20	0.20	0.20	0.33	19	
687	8	0800	7	20	0.42	0.42	0.60	24	
688	8	1900	10	20	0.71	0.71	0.98	23	
689	11	0200	3	16	0.21	0.27	0.77	19	
690	11	0800	8	20	0.63	0.63	1.15	23	
691	14	0400	5	20	0.43	0.43	0.55	4	
692	14	1300	18	19	0.50	0.53	1.58	4	
693	15	1500	18	20	0.73	0.73	1.81	16	
694	16	1800	1	1	0.00	0.09	0.09	12	
695	18	1700	6	20	0.37	0.37	0.61	11	
696	19	1300	1	1	0.00	0.08	0.08	9	
697	20	2400	10	20	0.49	0.49	1.11	13	
698	22	0700	6	20	0.43	0.43	0.69	21	
699	22	1600	4	20	0.42	0.42	0.83	22	
700	28	1900	15	20	0.82	0.82	1.96	22	
701	29	1500	9	20	0.72	0.72	1.48	18	
					July 1998				
702	1	1400	1	1	0.01	0.13	0.13	24	
703	3	1500	5	16	0.16	0.20	1.08	16	
704	3	2400	3	4	0.01	0.06	0.13	15	
705	6	0700	3	6	0.05	0.17	0.38	24	
706	7	0500	2	2	0.01	0.11	0.13	2	
707	7	1000	7	20	1.10	1.10	2.13	13	
708	9	1600	4	11	0.23	0.41	0.74	11	
709	18	0300	7	13	0.17	0.26	0.92	20	
710	19	2000	1	2	0.01	0.06	0.09	9	
711	20	0700	3	11	0.09	0.16	0.39	20	
712	20	2200	1	1	0.00	0.08	0.08	10	
713	22	0800	14	19	0.43	0.45	1.12	13	
714	23	0700	2	7	0.01	0.04	0.05	3	
715	30	0400	9	12	0.10	0.17	0.55	24	
716	30	2100	4	1	0.00	0.04	0.04	10	
					August 1998				
717	3	1000	8	8	0.03	0.07	0.14	13	
718	3	2100	2	6	0.03	0.11	0.26	7	
719	4	0200	10	20	0.14	0.14	0.54	24	
720	4	1700	7	20	0.92	0.92	1.84	24	
721	5	0300	19	15	0.16	0.22	0.65	16	

Table VII-1. (Concluded)

Storm number	*Storm date*	*Start time*	*Storm duration*	*Number gauges*	*Network avg.*	*Storm avg.*	*Network max.*	*Gauge with max.*	*Storm recurrence frequency*
					August 1998 (Continued)				
722	6	1400	1	1	0.00	0:09	0.09	12	
723	7	2300	5	5	0.05	0.22	0.40	13	
724	9	1600	2	4	0.07	0.35	0.84	8	
725	10	0500	6	4	0.01	0.05	0.08	8	
726	11	1500	1	1	0.00	0.08	0.08	10	
727	12	0700	1	1	0.01	0.17	0.17	10	
728	15	1300	1	1	0.01	0.18	0.18	3	
729	17	1400	7	8	0.11	0.28	0.46	2	
730	17	2400	11	20	1.36	1.36	2.49	22	1-Yr, 12-Hr
731	28	0400	7	20	0.40	0.40	0.96	24	
732	28	1400	7	15	0.21	0.28	0.75	13	

Table VII-2. Precipitation Received at Each Station from Each Storm Period during the Observation Period (September 1992-August 1996)

Slrm #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	090192	0900	8	0.50	0.65	0.13	0.94	0.59	0.87	0.16	0.22	0.16	0.32	1.07	0.30	0.04	0.37	1.03	0.91	0.25	0.13	0.69	0.46	0.27	0.53	0.40	0.18	0.13
2	090292	0300	11	0.28	0.22	0.23	0.38	0.19	0.20	0.14	0.33	0.24	0.21	0.19	0.16	0.21	0.29	0.20	0.15	0.16	0.20	0.35	0.25	0.24	0.21	0.19	0.23	0.32
3	090292	2100	3	0.00	0.00	0.13	0.00	0.00	0.00	0.03	0.04	0.12	0.19	0.16	0.28	0.00	0.08	0.07	0.09	0.14	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.00
4	090792	2100	7	0.42	0.41	0.61	0.74	0.86	0.93	0.40	0.54	0.94	0.72	0.40	0.46	0.66	0.50	0.55	0.59	0.42	1.14	0.94	1.08	0.88	0.83	0.40	1.83	1.26
5	090992	0300	20	1.37	1.43	1.21	1.45	1.46	1.23	1.45	1.68	1.68	1.53	1.62	1.42	1.56	1.89	1.33	1.48	1.43	1.31	0.82	0.90	1.11	1.24	1.36	0.82	0.69
6	091492	1400	2	0.00	0.00	0.00	0.13	0.25	0.04	0.05	0.00	0.00	0.14	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
7	091892	0600	6	0.06	0.06	0.02	0.05	0.05	0.02	0.03	0.10	0.07	0.04	0.04	0.03	0.00	0.03	0.01	0.04	0.04	0.03	0.02	0.07	0.00	0.05	0.07	0.12	0.14
8	091892	1800	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.09	0.00
9	092092	0800	24	1.28	1.15	0.94	1.27	1.42	0.83	1.27	1.21	0.99	1.33	1.32	0.99	1.20	1.00	1.12	0.96	0.87	1.17	1.12	0.94	1.13	0.92	0.71	1.03	0.84
10	092592	2200	24	0.23	0.15	0.18	0.33	0.21	0.17	0.12	0.28	0.24	0.21	0.15	0.14	0.28	0.29	0.21	0.11	0.13	0.37	0.38	0.31	0.17	0.15	0.21	0.36	0.35
11	100892	0300	37	0.32	0.30	0.46	0.33	0.32	0.39	0.35	0.40	0.35	0.50	0.43	0.43	0.28	0.26	0.26	0.27	0.30	0.29	0.29	0.19	0.29	0.33	0.30	0.41	0.41
12	100992	2400	8	0.14	0.14	0.07	0.17	0.10	0.08	0.05	0.11	0.13	0.05	0.07	0.09	0.07	0.06	0.07	0.06	0.08	0.04	0.00	0.03	0.00	0.03	0.00	0.01	0.00
13	101092	1600	3	0.09	0.06	0.05	0.07	0.05	0.15	0.05	0.02	0.04	0.08	0.20	0.05	0.00	0.03	0.05	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	101492	2300	11	0.90	0.82	0.64	0.94	0.99	1.08	0.85	0.83	1.14	1.25	1.24	1.04	0.53	1.09	0.99	1.05	1.00	0.36	0.56	0.62	0.65	0.88	1.14	0.26	0.33
15	101592	2000	3	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.02	0.03	0.00	0.01	0.03	0.05	0.05	0.05	0.04	0.07	0.03	0.04	0.06	0.09	0.09	0.16	0.00	0.06
16	101992	2200	6	0.10	0.10	0.06	0.14	0.14	0.11	0.09	0.16	0.13	0.11	0.12	0.12	0.19	0.17	0.22	0.16	0.14	0.30	0.26	0.24	0.24	0.24	0.19	0.43	0.42
17	102892	1900	4	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.03	0.02	0.02	0.03	0.02	0.05	0.07	0.04	0.04	0.05	0.00	0.05	0.00	0.04	0.05	0.04	0.00	0.00
18	102992	0400	6	0.10	0.09	0.06	0.09	0.09	0.05	0.05	0.07	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	102992	1800	19	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.03	0.05	0.06	0.06	0.07	0.05	0.07	0.11	0.04	0.06	0.13	0.22	0.17	0.17	0.21	0.29	0.25
20	103192	1600	38	1.52	1.71	1.49	1.29	2.22	2.32	1.93	1.57	1.97	**3.21**	**3.39**	2.37	2.08	1.54	**3.08**	2.21	2.80	1.87	2.44	2.77	2.59	1.95	1.93	1.74	2.39
21	110392	0900	14	0.59	0.59	0.60	0.57	0.62	0.58	0.70	0.54	0.61	0.62	0.65	0.73	0.56'	0.59	0.66	0.68	0.77	0.48	0.68	0.59	0.65	0.81	0.76	0.52	0.57
22	110892	2300	12	0.33	0.32	0.30	0.28	0.33	0.26	0.23	0.28	0.26	0.22	0.25	0.20	0.21	0.23	0.16	0.18	0.19	0.13	0.20	0.14	0.18	0.28	0.26	0.22	0.18
23	110992	1900	16	0.37	0.51	0.71	0.42	0.69	0.78	0.62	0.47	0.61	0.89	0.79	0.81	0.81	0.70	0.79	0.71	0.83	0.87	1.02	0.72	0.66	0.70	0.62	0.84	0.74
24	111092	1700	15	0.11	0.08	0.07	0.07	0.09	0.07	0.11	0.10	0.11	0.11	0.22	0.15	0.13	0.18	0.15	0.16	0.19	0.14	0.18	0.19	0.30	0.19	0.16	0.20	0.27
25	111192	1700	23	0.73	0.61	0.79	0.67	0.68	0.75	0.46	0.67	0.59	0.73	0.62	0.52	0.72	0.56	0.55	0.43	0.45	0.64	0.76	0.50	0.42	0.45	0.38	0.53	0.40
26	111792	1900	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
27	111892	0200	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.09
28	111892	1500	18	0.52	0.29	0.41	0.62	0.52	0.51	0.45	0.63	0.59	0.57	0.48	0.48	0.67	0.55	0.56	0.54	0.43	0.49	0.84	0.46	0.47	0.37	0.36	0.46	0.61
29	111992	2400	12	0.34	0.18	0.17	0.24	0.28	0.18	0.16	0.22	0.18	0.21	0.18	0.15	0.16	0.15	0.23	0.19	0.08	0.11	0.23	0.22	0.19	0.17	0.14	0.16	0.19
30	112092	1600	11	0.49	0.44	0.37	0.54	0.43	0.39	0.40	0.60	0.48	0.46	0.38	0.35	0.57	0.44	0.45	0.37	0.36	0.61	0.57	0.44	0.42	0.35	0.35	0.66	0.63
31	112292	0400	25	0.56	0.39	0.49	0.53	0.59	0.63	0.39	0.52	0.60	0.75	0.73	0.74	0.54	0.60	0.68	0.89	0.87	0.54	0.86	0.66	0.68	0.82	0.77	0.66	0.79
32	112592	0300	20	0.52	0.37	0.41	0.47	0.40	0.30	0.16	0.43	0.39	0.35	0.26	0.23	0.45	0.38	0.34	0.33	0.36	0.41	0.51	0.42	0.37	0.41	0.44	0.30	0.46
33	113092	1500	6	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.06	0.03	0.03	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	120392	0700	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
35	120992	1200	25	0.38	0.27	0.31	0.34	0.24	0.27	0.30	0.33	0.34	0.35	0.44	0.25	0.41	0.32	0.37	0.34	0.36	0.31	0.37	0.33	0.36	0.37	0.43	0.40	0.41
36	121492	0900	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
37	121492	2100	24	1.43	1.34	1.31	1.60	1.53	1.54	1.30	1.60	1.73	1.48	1.62	1.16	1.61	1.62	1.45	1.22	1.29	1.65	1.98	1.60	1.53	1.48	1.41	1.81	1.59
38	121992	0500	2	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	121992	1000	11	0.33	0.34	0.39	0.36	0.32	0.37	0.32	0.34	0.37	0.27	0.30	0.26	0.30	0.37	0.24	0.29	0.31	0.22	0.33	0.28	0.25	0.16	0.15	0.30	0.28
40	122092	0800	5	0.04	0.04	0.06	0.00	0.07	0.06	0.06	0.00	0.00	0.08	0.07	0.07	0.07	0.02	0.08	0.06	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00
41	122892	1000	2	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	122892	2300	47	0.67	0.72	0.68	0.60	0.64	0.48	0.66	0.48	0.51	0.75	0.75	0.69	0.70	0.70	0.59	0.71	0.56	0.55	0.59	0.55	0.63	0.86	0.70	0.37	0.29
43	010193	2000	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
44	010293	0400	34	0.31	0.30	0.41	0.24	0.29	0.24	0.27	0.22	0.24	0.17	0.29	0.11	0.40	0.21	0.29	0.25	0.27	0.22	0.33	0.33	0.28	0.25	0.17	0.21	0.29
45	010393	2100	23	1.65	1.58	1.70	1.71	1.62	1.75	1.64	1.67	1.71	1.63	1.80	1.47	1.69	1.79	1.52	1.62	1.81	1.62	1.71	2.24	1.70	1.85	1.83	1.79	1.46
46	010693	1100	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.06	0.00	0.00
47	010793	1100	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.07	0.00
48	010793	2000	15	0.04	0.04	0.09	0.07	0.08	0.06	0.06	0.09	0.06	0.10	0.05	0.08	0.25	0.13	0.08	0.08	0.09	0.00	0.00	0.05	0.07	0.05	0.05	0.09	0.13
49	010993	1300	20	0.17	0.18	0.23	0.10	0.11	0.09	0.08	0.19	0.33	0.25	0.22	0.44	0.12	0.48	0.17	0.17	0.33	0.08	0.36	0.15	0.18	0.19	0.17	0.23	0.52
50	01 1293	0700	24	.0.33	0.42	0.43	0.30	0.26	0.37	0.43	0.20	0.23	0.40	0.44	0.42	0.10	0.23	0.33	0.46	0.38	0.06	0.35	0.35	0.42	0.46	0.39	0.23	0.21
51	012093	0900	21	1.14	1.05	0.69	0.81	1.03	0.96	0.72	0.76	0.87	0.94	1.02	0.81	0.89	0.67	0.85	0.98	1.02	0.80	1.10	0.84	0.99	1.23	1.11	0.77	0.83
52	021193	0800	30	0.85	0.66	0.38	0.87	0.85	0.92	0.50	0.48	0.53	0.72	1.03	1.10	0.56	0.57	0.60	0.75	0.97	0.49	0.84	0.56	0.58	0.57	0.58	0.67	0.88
53	021293	1800	23	0.21	0.00	0.06	0.12	0.04	0.08	0.04	0.13	0.11	0.11	0.08	0.00	0.14	0.24	0.20	0.18	0.10	0.21	0.18	0.19	0.12	0.06	0.08	0.14	0.12
54	021593	1500	18	0.11	0.05	0.16	0.14	0.06	0.12	0.14	0.13	0.15	0.21	0.20	0.09	0.21	0.17	0.18	0.15	0.12	0.07	0.27	0.12	0.15	0.17	0.19	0.20	0.14
55	022093	1400	24	0.65	0.44	0.33	0.41	0.49	0.40	0.36	0.41	0.51	0.49	0.75	0.36	0.53	0.47	0.42	0.42	0.42	0.40	0.52	0.40	0.36	0.31	0.48	0.33	0.35
56	022593	0500	26	0.18	0.09	0.17	0.12	0.17	0.17	0.09	0.20	0.17	0.19	0.17	0.35	0.42	0.32	0.23	0.23	0.34	0.18	0.69	0.14	0.12	0.26	0.23	0.13	0.41
57	030293	0800	14	0.48	0.51	0.31	0.30	0.35	0.29	0.21	0.33	0.22	0.32	0.34	0.24	0.33	0.16	0.23	0.24	0.26	0.31	0.36	0.21	0.25	0.29	0.20	0.33	0.34
58	030393	0400	47	0.61	0.28	0.26	1.12	1.06	0.87	0.51	1.22	1.39	1.32	1.25	1.00	1.28	1.42	1.33	1.32	1.22	1.39	1.96	1.42	1.10	1.19	1.09	1.55	1.86
59	030593	1900	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
60	030793	1700	7	0.03	0.00	0.03	0.17	0.05	0.02	0.04	0.00	0.03	0.05	0.00	0.05	0.05	0.03	0.00	0.00	0.00	0.08	0.06	0.00	0.00	0.00	0.00	0.17	0.13
61	030993	2400	3	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.08	0.00	0.00	0.00	0.00
62	031593	2100	25	0.46	0.45	0.45	0.38	0.44	0.40	0.33	0.29	0.41	0.39	0.36	0.29	0.35	0.42	0.38	0.40	0.41	0.25	0.29	0.27	0.32	0.28	0.28	0.42	0.30
63	031993	0200	21	0.16	0.10	0.16	0.15	0.19	0.21	0.19	0.12	0.20	0.26	0.40	0.19	0.28	0.26	0.28	0.21	0.23	0.21	0.30	0.27	0.24	0.35	0.36	0.29	0.22
64	032093	0700	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.04	0.00	0.00
65	032193	1100	41	1.69	1.46	1.40	1.71	1.63	1.44	1.29	1.61	1.52	1.50	1.38	1.12	1.68	1.45	1.44	1.20	1.16	1.43	1.58	1.27	1.22	1.18	1.00	1.49	1.53
66	033093	2200	43	0.77	0.73	0.82	0.69	0.56	0.56	0.61	0.79	0.74	0.43	0.50	0.58	0.62	0.70	0.53	0.37	0.36	0.46	0.81	0.44	0.32	0.32	0.24	0.46	0.43
67	040193	2200	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19
68	040593	2400	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00
69	040793	1000	37	0.91	0.89	0.95	0.79	0.84	0.85	0.72	0.76	0.90	0.90	0.93	0.74	0.77	0.95	0.77	0.76	0.76	0.72	0.95	0.68	0.72	0.72	0.64	0.63	0.64
70	041293	1900	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.00	0.00	0.00	0.00	0.10	0.08
71	041393	1400	16	0.82	0.75	0.81	0.87	0.76	0.95	0.84	0.82	0.76	1.21	1.19	0.96	1.27	0.83	1.25	1.27	1.32	1.44	1.78	1.42	1.87	1.83	1.56	1.38	1.60
72	041493	1300	34	1.69	1.63	1.46	1.74	2.07	1.67	1.61	1.13	1.85	1.55	1.56	1.85	1.12	1.86	2.09	1.62	1.68	1.31	1.24	1.66	1.96	1.87	1.69	1.40	1.26
73	041693	1100	9	0.08	0.00	0.06	0.00	0.03	0.07	0.06	0.00	0.03	0.05	0.00	0.04	0.00	0.06	0.04	0.00	0.05	0.09	0.10	0.11	0.00	0.00	0.06	0.02	0.05
74	041993	0300	7	0.18	0.14	0.08	0.14	0.17	0.12	0.10	0.13	0.12	0.15	0.12	0.10	0.15	0.10	0.12	0.12	0.10	0.22	0.11	0.18	0.14	0.10	0.09	0.13	0.15
75	041993	1600	26	0.66	0.52	0.73	0.40	0.71	0.80	0.52	0.81	0.67	0.85	0.61	0.83	0.87	0.77	0.70	0.83	1.09	0.80	0.74	0.93	0.97	1.06	0.91	0.89	0.75
76	042493	2100	13	0.25	0.29	0.14	0.19	0.24	0.16	0.17	0.23	0.24	0.21	0.21	0.22	0.25	0.29	0.24	0.25	0.25	0.39	0.25	0.38	0.20	0.27	0.26	0.34	0.24
77	042893	2400	13	0.18	0.09	0.21	0.20	0.28	0.19	0.16	0.22	0.19	0.19	0.26	0.16	0.26	0.20	0.20	0.18	0.17	0.12	0.22	0.20	0.19	0.08	0.11	0.21	0.18
78	050193	0100	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	050193	1200	12	0.14	0.17	0.08	0.16	0.12	0.12	0.00	0.39	0.15	0.30	0.00	0.06	0.23	0.22	0.25	0.09	0.02	0.15	0.16	0.22	0.21	0.03	0.00	0.00	0.11
80	050293	1400	25	0.15	0.11	0.10	0.49	0.13	0.14	0.11	0.28	0.11	0.14	0.15	0.11	0.13	0.26	0.12	0.18	0.22	0.46	0.22	0.14	0.14	0.19	0.21	0.46	0.56
81	050493	0300	16	0.35	0.54	0.81	0.23	0.41	0.12	0.79	0.00	0.06	0.08	0.24	0.68	0.00	0.00	0.13	0.32	0.57	0.04	0.00	0.00	0.00	0.00	0.44	0.07	0.00
82	050593	0700	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83	050593	1100	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.10	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.05
84	050693	0600	10	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.33	0.06	0.00	0.84	0.47	0.25	0.05	0.14	0.00	0.99	0.59
85	051093	1100	13	0.04	0.09	0.06	0.06	0.00	0.09	0.10	0.67	0.00	0.04	0.05	0.03	0.68	0.20	0.11	0.05	0.00	0.05	0.22	0.08	0.28	0.05	0.06	0.20	0.05
86	051193	1700	3	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.03	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm	#	Dale	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
87	051293	1300	9	0.39	0.41	0.51	0.37	0.44	0.61	0.30	0.46	0.39	0.42	0.64	0.44	0.45	0.40	0.43	0.53	0.61	0.42	0.33	0.36	0.28	0.51	0.72	0.53	0.29
88	051893	1800	4	0.00	0.00	0.03	0.12	0.00	0.00	0.00	0.00	0.05	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.05
89	052193	1500	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
90	052293	1400	18	1.00	0.88	0.77	0.52	0.62	0.38	0.46	0.28	0.41	0.34	0.42	0.30	0.43	0.35	0.36	0.37	0.30	0.11	0.14	0.10	0.15	0.21	0.13	0.13	0.00
91	052393	1400	15	0.47	0.43	0.21	0.32	0.11	0.13	0.14	0.07	0.10	0.07	0.12	0.06	0.04	0.05	0.05	0.10	0.05	0.12	0.06	0.10	0.15	0.08	0.00	0.10	0.14
92	052893	2000	17	0.67	0.63	0.71	2.09	1.33	0.93	0.70	0.50	0.60	0.43	0.48	0.75	0.14	0.28	0.29	0.26	0.26	0.03	0.06	0.08	0.04	0.10	0.15	0.00	0.00
93	053093	0800	16	0.23	0.20	0.14	0.35	0.07	0.11	0.07	0.33	0.30	0.07	0.24	0.11	0.67	0.57	0.52	0.16	0.20	0.23	0.22	0.57	0.46	0.49	0.29	0.00	0.04
94	060193	2200	13	0.66	0.66	0.68	0.56	0.55	0.50	0.56	0.31	0.35	0.50	0.62	0.53	0.27	0.19	0.30	0.37	0.45	0.31	0.30	0.32	0.21	0.23	0.25	0.22	0.27
95	060393	2300	19	0.97	0.84	1.05	0.97	1.39	1.12	0.95	1.20	1.17	1.14	1.08	1.18	1.15	1.17	1.11	0.95	1.09	1.31	0.99	0.78	0.62	0.87	1.27	0.91	0.96
96	060793	2300	13	0.29	0.12	0.82	0.21	0.14	0.16	0.67	0.29	0.11	0.26	0.56	0.42	0.10	0.10	0.60	0.29	0.56	0.17	0.22	0.40	0.35	0.46	0.15	0.00	0.18
97	060893	1600	4	0.11	0.12	0.21	0.07	0.12	0.19	0.29	0.05	0.13	0.17	0.25	0.33	0.09	0.15	0.18	0.24	0.31	0.11	0.13	0.00	0.23	0.25	0.31	0.13	0.08
98	061593	0300	4	0.00	0.00	0.15	0.12	0.06	0.11	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.02	0.06	0.00	0.00	0.00	0.00
99	061793	2100	12	0.44	0.52	0.35	0.13	0.13	0.30	0.30	0.15	0.12	0.38	0.28	0.20	0.13	0.20	0.38	0.16	0.19	0.18	0.25	0.53	0.24	0.23	0.23	0.21	0.21
100	061893	1500	18	0.26	0.50	0.45	0.05	0.36	0.14	0.26	0.06	0.01	0.04	0.00	0.00	0.46	0.08	0.17	0.00	0.00	0.41	0.05	0.27	0.11	0.12	0.00	0.68	0.19
101	061993	1400	9	0.56	0.35	0.18	0.39	0.29	0.26	0.61	0.41	0.28	0.60	0.43	0.41	0.67	0.90	0.82	0.40	0.41	1.01	1.19	0.39	0.37	0.16	0.20	0.30	0.44
102	062493	2100	13	1.02	0.85	0.87	1.50	1.39	1.04	0.88	2.05	1.59	1.36	1.18	1.03	2.09	1.52	1.71	0.96	1.05	1.79	1.98	1.60	1.32	0.76	1.19	1.58	1.22
103	062893	0700	9	0.10	0.07	0.10	0.34	0.27	0.16	0.14	1.57	1.19	0.84	0.40	0.43	0.33	0.77	0.86	0.94	0.75	0.00	0.00	0.00	0.00	0.24	0.33	0.00	0.00
104	062893	2400	4	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.87	0.05	0.03	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00
105	063093	0100	8	1.11	1.09	1.17	1.68	1.34	0.92	0.99	2.06	1.86	1.94	1.82	1.48	1.49	1.36	1.75	**3.29**	**2.24**	1.27	1.50	1.66	1.22	1.04	1.30	1.23	1.18
106	063093	2300	14	0.57	0.52	1.30	0.69	0.60	0.73	0.90	0.83	1.00	1.03	0.73	1.06	1.25	1.37	1.69	1.21	1.29	1.11	1.38	1.50	1.47	**2.17**	1.87	**3.03**	2.07
107	070293	1000	10	0.12	0.19	0.52	0.07	0.08	0.04	0.43	0.00	0.00	0.24	0.22	0.36	0.03	0.09	0.27	0.47	0.59	0.11	0.00	0.19	0.41	0.35	0.33	0.00	0.09
108	070593	1900	6	0.76	0.75	0.76	0.91	0.86	0.46	0.13	0.56	0.27	0.15	0.08	0.05	0.15	0.05	0.06	0.12	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
109	070793	0700	11	0.57	0.43	0.35	0.70	0.41	0.22	0.33	0.50	0.39	0.38	0.28	0.16	0.49	0.62	0.41	0.49	0.21	0.51	0.66	0.62	0.39	0.39	0.43	0.52	0.61
110	070793	2100	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
111	070993	2000	13	0.63	0.60	0.44	0.64	0.55	0.35	0.34	0.54	0.49	0.36	0.34	0.37	0.30	0.42	0.38	0.41	0.27	0.35	0.48	0.44	0.36	0.28	0.46	0.54	0.48
112	071093	1700	9	1.21	1.01	0.56	0.76	0.75	0.77	0.99	0.64	1.54	**2.19**	**2.57**	1.62	1.30	1.44	1.53	1.75	1.97	0.56	0.52	0.63	0.68	0.32	0.75	0.00	0.12
113	071193	0700	4	0.08	0.08	0.07	0.08	0.05	0.10	0.03	0.08	0.07	0.04	0.00	0.00	0.13	0.06	0.06	0.00	0.00	0.08	0.00	0.00	0.00	0.09	0.00	0.00	0.00
114	071293	0700	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.07	0.00	0.00	0.00
115	071393	1400	7	1.09	1.55	1.06	1.33	1.31	0.68	1.80	1.41	0.45	0.33	0.71	**2.22**	0.22	0.11	0.32	1.67	1.30	0.21	0.14	0.16	0.42	0.57	0.74	0.19	0.30
116	071593	0500	12	0.08	0.00	0.09	0.11	0.18	0.18	0.17	0.25	0.28	0.30	0.24	0.19	0.34	0.29	0.24	0.24	0.25	0.31	0.26	0.20	0.20	0.39	0.28	0.79	0.91
117	071593	2100	12	0.10	0.08	0.07	0.16	0.12	0.09	0.10	0.23	0.21	0.16	0.09	0.12	0.42	0.12	0.02	0.00	0.10	0.82	0.12	0.13	0.11	0.10	0.02	0.42	0.70
118	071693	1900	14	1.09	1.14	0.96	0.52	0.27	0.77	**3.07**	0.09	0.06	0.00	0.00	0.46	0.00	0.00	0.00	0.10	0.16	0.00	0.00	0.05	0.00	0.00	0.00	0.11	0.08
119	071893	1500	6	0.61	0.52	1.56	0.71	1.10	1.27	0.97	0.53	0.34	1.26	1.58	0.87	0.62	1.48	1.14	0.87	0.48	0.36	1.28	1.13	0.69	0.71	0.30	1.00	0.95
120	072093	1600	16	0.39	0.42	0.41	0.44	0.70	0.66	0.60	0.29	0.36	0.29	0.37	0.32	0.40	0.29	0.31	0.27	0.11	0.55	0.29	0.14	0.43	0.09	0.12	0.66	0.29
121	072293	0500	10	0.60	0.43	0.45	0.69	0.74	0.78	0.39	0.68	0.84	0.78	0.55	0.51	0.89	0.83	0.68	0.57	0.54	1.29	0.73	0.67	0.63	0.64	0.50	1.14	0.96
122	072393	0400	14	1.95	**2.37**	**2.62**	1.81	1.66	1.72	1.13	1.30	1.03	0.85	0.87	0.81	1.53	1.03	0.94	0.82	1.04	**3.37**	**2.67**	1.35	0.89	0.66	0.70	1.82	2.19
123	072493	0400	6	1.00	1.13	1.02	1.19	0.92	0.77	0.78	1.03	1.18	0.75	0.55	0.58	1.79	0.93	0.63	0.45	0.37	1.64	1.73	1.51	1.16	0.72	0.24	**1.96**	**2.12**
124	072493	1300	6	0.05	0.10	0.11	0.19	0.08	0.09	0.15	0.07	0.08	0.04	0.15	0.25	0.13	0.06	0.40	0.47	0.57	0.18	0.21	0.36	0.68	0.77	0.50	0.51	0.45
125	072593	0400	5	0.00	0.06	0.00	0.05	0.05	0.03	0.08	0.05	0.00	0.05	0.07	0.07	0.13	0.08	0.05	0.08	0.07	0.00	0.07	0.08	0.06	0.05	0.08	0.08	0.12
126	072893	0500	6	0.06	0.07	0.08	0.00	0.09	0.05	0.09	0.19	0.31	0.21	0.39	0.54	0.32	0.51	0.07	0.11	0.09	0.08	0.00	0.01	0.06	0.00	0.00	0.09	0.04
127	073193	1400	11	0.36	031	0.22	0.87	0.69	0.27	0.34	0.93	2.08	0.10	0.55	0.24	1.01	1.85	1.43	0.86	0.32	0.80	1.41	1.58	1.71	1.51	0.88	0.62	0.81
128	080193	0500	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	*0.00*	*0.00*	*0.00*

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
129	080193	1800	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.31	0.17	0.08	0.05	0.30	0.00	0.06	0.68	0.19	0.00	0.04	0.00	0.00
130	080393	1300	6	0.30	0.19	1.04	0.53	0.42	0.29	0.47	0.05	0.20	1.06	0.17	0.14	0.03	0.04	0.03	0.00	0.08	0.07	0.12	0.28	0.40	0.35	0.36	0.06	0.04
131	080593	2400	6	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.04	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
132	080993	1700	3	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
133	081093	0100	7	0.97	1.30	0.77	0.62	0.95	0.78	0.75	0.56	0.62	0.68	0.81	0.81	0.81	0.71	1.17	0.76	0.87	1.11	1.29	1.16	0.92	0.58	0.68	1.34	1.42
134	081193	2100	20	0.48	0.45	1.38	0.46	0.54	0.62	0.59	0.61	0.73	0.59	0.70	1.39	0.67	0.58	0.71	1.33	1.23	0.46	0.58	0.52	0.79	0.82	1.02	0.52	0.51
135	081593	2200	6	1.34	1.26	1.52	1.19	0.82	0.50	1.50	1.16	1.27	0.45	0.16	0.72	0.87	0.83	0.21	0.07	0.37	0.16	0.11	0.26	0.04	0.00	0.05	0.10	0.10
136	081693	1500	3	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
137	081793	1700	3	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.08	0.10	0.00	0.00	0.00
138	081893	0800	5	0.25	0.07	0.00	0.31	0.37	0.10	0.08	0.74	0.66	0.45	0.17	0.05	0.36	0.96	0.44	0.39	0.06	0.07	0.34	0.85	0.77	1.06	0.06	0.00	0.00
139	081893	2100	2	0.04	0.02	0.04	0.05	0.03	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00
140	081993	1200	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
141	081993	1700	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142	082293	0800	6	0.14	0.30	0.08	0.10	0.06	0.04	0.08	0.00	0.03	0.00	0.00	0.07	0.00	0.00	0.07	0.21	0.16	0.04	0.06	0.00	0.05	0.00	0.30	0.00	0.00
143	082393	1600	7	1.70	1.77	**2.17**	1.29	1.79	1.58	1.83	1.18	1.80	**2.30**	**2.22**	1.76	2.00	2.11	**2.34**	1.58	1.47	1.97	1.06	2.00	1.30	0.98	0.67	1.25	0.56
144	082593	0500	5	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.34	0.16	0.00	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.13	0.08
145	082893	0500	2	0.11	0.09	0.04	0.00	0.15	0.04	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
146	082893	1700	5	0.00	0.00	0.15	0.17	0.00	0.04	0.06	0.11	0.00	0.08	0.22	0.12	0.07	0.04	0.11	0.32	0.17	0.12	0.17	0.10	0.25	0.34	0.25	0.16	0.21
147	083093	1400	2	0.00	0.04	0.54	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
148	083093	2000	16	0.48	0.57	0.95	0.31	0.57	0.64	1.88	0.53	0.70	1.08	1.17	1.63	1.08	0.92	1.11	0.99	1.01	1.49	1.26	1.15	1.24	1.29	0.84	1.68	1.49
149	090293	0200	29	**3.03**	**2.90**	**3.15**	**3.01**	**2.85**	**3.04**	**2.84**	**3.26**	**3.39**	**3.01**	**3.86**	**3.71**	**3.54**	**3.80**	**4.41**	**3.51**	**3.25**	**3.94**	**3.68**	**3.42**	**3.11**	**3.48**	**3.59**	**4.47**	**4.79**
150	090593	2200	15	1.57	1.54	1.99	1.21	1.23	1.70	1.83	0.98	1.26	1.25	0.92	1.32	0.86	0.76	0.98	0.69	0.96	0.64	0.77	0.76	0.71	0.68	0.71	0.67	0.66
151	090793	2400	6	0.06	0.05	0.00	0.07	0.06	0.07	0.05	0.06	0.10	0.07	0.08	0.10	0.13	0.11	0.15	0.09	0.13	0.14	0.12	0.15	0.10	0.10	0.09	0.12	0.14
152	091293	0300	6	0.03	0.07	0.18	0.06	0.05	0.07	0.15	0.06	0.12	0.20	0.37	0.17	0.12	0.04	0.21	0.15	0.19	0.28	0.36	0.35	0.35	0.31	0.32	0.21	0.15
153	091393	0600	36	**3.69**	**4.78**	**5.47**	**3.86**	**4.01**	**5.82**	**5.14**	**3.57**	**5.10**	**6.21**	**5.63**	**5.45**	**6.44**	**6.61**	**6.02**	**4.92**	**5.38**	**6.36**	**6.86**	**5.25**	**5.17**	**5.05**	**4.14**	**6.81**	**6.38**
154	092293	0700	14	0.18	0.22	0.11	0.30	0.26	0.23	0.27	0.33	0.39	0.41	0.41	0.34	0.42	0.40	0.38	0.33	0.40	0.44	0.42	0.49	0.36	0.49	0.60	0.63	0.66
155	092593	0600	13	0.95	1.16	0.95	0.85	1.20	1.13	1.06	0.81	0.75	1.08	1.27	1.18	0.61	0.76	0.99	1.07	1.16	0.87	0.74	0.87	0.86	1.05	1.15	0.81	0.94
156	092693	1600	4	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.08	0.00	0.00	0.00	0.00	0.04	0.05	0.03	0.00	0.06	0.07	0.00	0.08
157	100893	1400	17	0.85	1.35	1.01	0.99	0.89	0.81	0.79	0.84	0.62	0.56	0.81	0.69	0.63	0.69	0.94	0.78	0.77	1.06	1.22	1.15	1.15	1.11	1.38	0.51	0.35
158	101593	1600	31	2.09	2.33	1.89	1.96	1.98	1.82	1.94	1.93	1.91	1.56	1.52	2.11	1.82	1.56	2.26	1.66	1.98	1.35	1.74	1.75	1.33	1.29	1.30	1.12	1.21
159	101893	1400	10	0.09	0.08	0.03	0.10	0.04	0.00	0.02	0.06	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.05	0.05	0.10	0.04	0.00	0.00	0.00
160	102093	0900	14	0.28	0.26	0.34	0.22	0.26	0.29	0.40	0.29	0.18	0.34	0.36	0.44	0.22	0.29	0.40	0.43	0.47	0.22	0.31	0.38	0.45	0.41	0.37	0.19	0.22
161	110293	1600	8	0.06	0.00	0.12	0.00	0.05	0.08	0.08	0.00	0.00	0.07	0.07	0.09	0.06	0.06	0.11	0.08	0.10	0.00	0.00	0.10	0.06	0.13	0.10	0.00	0.05
162	111293	1400	8	0.45	0.49	0.37	0.42	0.36	0.44	0.23	0.41	0.42	0.40	0.30	0.28	0.36	0.32	0.34	0.21	0.25	0.32	0.33	0.24	0.25	0.32	0.42	0.41	0.37
163	111393	2000	20	0.51	0.61	0.59	0.66	0.57	0.59	0.65	0.61	0.73	0.60	0.70	0.83	0.77	0.69	0.74	0.84	0.93	0.71	0.89	0.75	0.89	0.89	0.93	0.91	0.86
164	111693	2000	16	0.47	0.52	0.69	0.54	0.51	0.63	0.68	0.67	0.69	0.72	0.58	0.70	0.70	0.83	0.67	0.63	0.73	0.77	0.91	0.77	0.80	0.89	0.74	0.91	0.69
165	112493	0100	11	0.16	0.15	0.11	0.17	0.10	0.09	0.10	0.13	0.10	0.10	0.08	0.16	0.11	0.08	0.09	0.08	0.11	0.11	0.13	0.05	0.06	0.09	0.08	0.12	0.09
166	112493	1700	45	0.58	0.71	0.59	0.52	0.61	0.64	0.55	0.55	0.48	0.55	0.55	0.42	0.60	0.52	0.43	0.66	0.70	0.66	0.61	0.57	0.62	0.58	0.63	0.74	0.68
167	112793	1000	4	0.05	0.00	0.02	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.08	0.05	0.04	0.01	0.06	0.10	0.00	0.03	0.00	0.00	0.06	0.07	0.04	0.00	0.00
168	112793	2000	11	0.07	0.06	0.09	0.09	0.08	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.08	0.02	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
169	120193	1900	15	0.34	0.39	0.25	0.28	0.23	0.19	0.28	0.23	0.27	0.26	0.28	0.26	0.24	0.28	0.23	0.25	0.34	0.23	0.33	0.28	0.22	0.33	0.48	0.27	0.32
170	120393	1300	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
171	120393	2000	10	0.14	0.23	0.12	0.18	0.17	0.14	0.13	0.13	0.12	0.10	0.18	0.19	0.16	0.15	0.10	0.17	0.16	0.13	0.17	0.12	0.12	0.19	0.20	0.11	0.08

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm	#	Dale	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
172	121393	0100	4	0.04	0.08	0.00	0.09	0.06	0.03	0.00	0.00	0.05	0.06	0.00	0.00	0.03	0.07	0.05	0.00	0.00	0.05	0.07	0.03	0.02	0.00	0.00	0.05	0.04
173	121393	0900	42	0.65	0.62	0.47	0.38	0.42	0.32	0.51	0.45	0.45	0.47	0.45	0.49	0.46	0.36	0.48	0.58	0.46	0.60	0.68	0.57	0.57	0.60	0.66	0.60	0.56
174	121793	2200	5	0.04	0.04	0.05	0.00	0.04	0.05	0.09	0.00	0.00	0.08	0.06	0.08	0.00	0.04	0.04	0.09	0.14	0.05	0.04	0.03	0.08	0.16	0.18	0.00	0.04
175	122493	1900	12	0.13	0.15	0.06	0.08	0.08	0.00	0.08	0.05	0.12	0.00	0.16	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.10	0.12	0.00
176	123093	2400	1	0.00	0.04	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177	123193	2200	3	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.00	0.00	0.04	0.06	0.04	0.00	0.00	0.02	0.05	0.00	0.00	0.04	0.00	0.00	0.06	0.00	0.00	0.00
178	010294	2200	11	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.11	0.08	0.00	0.00	0.00	0.13	0.10	0.06	0.00	0.00	0.10	0.18	0.10	0.09	0.00	0.00	0.23	0.18
179	011094	1000	12	0.25	0.15	0.23	0.17	0.22	0.17	0.23	0.27	0.25	0.18	0.28	0.12	0.15	0.20	0.19	0.16	0.20	0.13	0.21	0.18	0.17	0.23	0.29	0.22	0.22
180	011394	1100	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.07	0.00	0.03	0.00	0.07	0.02	0.11	0.00	0.06	0.00	0.00	0.00	0.00
181	011694	1200	6	0.00	0.00	0.06	0.00	0.00	0.00	0.07	0.00	0.05	0.05	0.10	0.06	0.08	0.06	0.04	0.00	0.06	0.00	0.03	0.03	0.05	0.08	0.09	0.00	0.09
182	012594	0600	8	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.03	0.07	0.10	0.07	0.07	0.06	0.11	0.08	0.19	0.10	0.05	0.04	0.06	0.00	0.00	0.05	0.05	0.00
183	012594	1900	1	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
184	012694	2300	23	0.46	0.39	0.68	0.20	0.45	0.55	0.67	0.17	0.41	0.56	0.66	0.77	0.39	0.38	0.58	0.72	0.76	0.33	0.56	0.55	0.57	0.69	0.59	0.53	0.57
185	012994	1500	20	0.10	0.08	0.00	0.00	0.08	0.12	0.27	0.00	0.09	0.00	0.00	0.17	0.06	0.07	0.04	0.00	0.21	0.00	0.00	0.00	0.12	0.06	0.08	0.06	0.00
186	020794	2000	21	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.01	0.00	0.10	0.10	0.00	0.22	0.07	0.10	0.05	0.04	0.08	0.14
187	021294	1100	5	0.05	0.00	0.00	0.00	0.03	0.04	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
188	021994	0400	30	0.80	0.97	0.97	0.69	0.84	0.91	0.67	0.67	0.85	0.85	0.92	0.65	0.80	0.88	0.77	0.68	0.64	0.67	0.70	0.75	0.62	0.74	0.55	0.79	0.63
189	022294	1500	33	0.39	0.33	0.65	0.49	0.53	0.34	0.41	0.41	0.61	0.56	0.31	0.53	0.62	0.74	0.57	0.38	0.53	0.55	0.72	0.69	0.42	0.39	0.29	0.57	0.94
190	022494	1700	23	0.32	0.28	0.20	0.26	0.30	0.33	0.29	0.28	0.33	0.35	0.32	0.15	0.27	0.23	0.24	0.19	0.22	0.23	0.18	0.21	0.19	0.35	0.44	0.12	0.18
191	022894	2000	7	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.04	0.06	0.00	0.05	0.07	0.08	0.07	0.06	0.05	0.06	0.09	0.08	0.07	0.10	0.09	0.18	0.20
192	030694	2300	9	0.17	0.21	0.22	0.27	0.24	0.34	0.41	0.27	0.36	0.47	0.40	0.36	0.37	0.32	0.35	0.31	0.29	0.40	0.36	0.33	0.29	0.33	0.24	0.38	0.44
193	031294	2400	6	0.05	0.06	0.07	0.05	0.04	0.05	0.04	0.00	0.03	0.04	0.05	0.05	0.00	0.06	0.03	0.14	0.05	0.06	0.12	0.08	0.00	0.06	0.05	0.06	0.07
194	031394	1500	3	0.04	0.00	0.05	0.00	0.04	0.06	0.05	0.00	0.00	0.03	0.00	0.02	0.00	0.03	0.04	0.00	0.00	0.05	0.00	0.00	0.06	0.03	0.00	0.00	0.04
195	032194	0100	3	0.04	0.04	0.08	0.05	0.03	0.04	0.03	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
196	032394	1900	4	0.00	0.08	0.08	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
197	032694	0600	21	0.43	0.47	0.40	0.43	0.45	0.41	0.54	0.38	0.43	0.47	0.60	0.54	0.52	0.39	0.56	0.60	0.65	0.54	0.61	0.53	0.62	0.70	0.73	0.68	0.57
198	040294	1500	8	0.30	0.27	0.31	0.26	0.26	0.27	0.24	0.25	0.23	0.26	0.23	0.24	0.27	0.27	0.25	0.23	0.23	0.26	0.17	0.20	0.16	0.20	0.17	0.19	0.20
199	040594	1500	6	0.03	0.06	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.04	0.01	0.04	0.04	0.05	0.08	0.07	0.05	0.06	0.03	0.04	0.00	0.00	0.04	0.07	0.08
200	040994	1500	17	0.56	0.62	0.47	0.41	0.46	0.35	0.34	0.44	0.37	0.37	0.37	0.42	0.40	0.46	0.41	0.50	0.41	0.43	0.50	0.41	0.36	0.42	0.39	0.42	0.43
201	041094	2300	38	1.62	2.52	1.93	1.68	1.82	1.74	2.07	1.64	1.95	2.01	2.17	2.06	1.68	1.58	2.04	2.16	2.06	1.97	2.57	1.95	1.84	2.30	2.24	2.44	2.64
202	041294	2300	9	0.12	0.07	0.04	0.07	0.03	0.06	0.00	0.03	0.04	0.05	0.00	0.06	0.00	0.06	0.03	0.04	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.03
203	041594	0300	8	0.50	0.36	0.36	0.32	0.32	0.32	0.46	0.34	0.33	0.31	0.35	0.51	0.35	0.36	0.38	0.42	0.39	0.32	0.29	0.48	0.48	0.59	0.42	0.34	0.37
204	042094	1900	17	0.12	0.09	0.17	0.13	0.12	0.12	0.15	0.18	0.20	0.23	0.14	0.16	0.35	0.31	0.28	0.22	0.20	0.80	0.75	0.53	0.45	0.35	0.26	1.07	1.12
205	042594	1800	6	0.21	0.19	0.12	0.14	0.14	0.07	0.06	0.06	0.11	0.09	0.08	0.09	0.10	0.08	0.07	0.03	0.02	0.12	0.05	0.03	0.01	0.00	0.03	0.21	0.05
206	042694	0400	4	0.04	0.02	0.01	0.05	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
207	042694	1800	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.13	0.11	0.00	0.00	0.00	0.20	0.35	0.11	0.00	0.00
208	042794	1700	22	0.58	0.81	0.61	0.66	0.67	0.53	0.65	0.73	0.68	0.68	0.70	0.82	0.64	0.61	0.70	0.83	0.81	0.64	0.87	0.74	0.77	0.66	0.66	0.74	0.75
209	042994	1700	22	0.64	0.84	0.66	0.74	0.65	0.66	0.68	0.71	0.71	0.69	0.67	0.82	0.68	0.67	0.65	0.66	0.74	0.67	0.92	0.79	0.75	0.70	0.68	0.75	0.75
210	050594	1700	43	0.91	1.10	1.06	1.07	0.86	0.97	1.00	1.27	1.45	1.63	1.67	1.70	1.46	1.34	1.63	1.57	1.67	1.17	1.56	1.15	1.10	1.06	1.30	1.43	1.50
211	050994	1900	4	0.00	0.00	0.05	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
212	051194	1500	5	0.19	0.27	0.21	0.07	0.16	0.07	0.08	0.30	0.21	0.16	0.20	0.30	0.33	0.19	0.57	0.36	0.15	0.32	0.41	0.52	0.27	0.23	0.42	0.25	0.15
213	051494	0400	17	0.36	0.80	0.45	0.41	0.46	0.38	0.50	0.42	0.40	0.50	0.47	0.39	0.35	0.27	0.45	0.38	0.46	0.31	0.55	0.32	0.33	0.43	0.45	0.35	0.40
214	052494	1500	12	0.90	1.08	1.08	1.57	1.53	1.63	1.21	0.87	0.60	0.81	0.69	1.33	0.95	0.66	0.43	0.40	1.11	0.56	0.79	0.72	0.47	0.46	0.51	**2.83**	1.87

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
215	052594	1800	7	0.03	0.06	0.11	0.07	0.09	0.06	0.11	0.03	0.06	0.09	0.15	0.16	0.10	0.11	0.14	0.15	0.17	0.10	0.13	0.08	0.12	0.15	0.14	0.07	0.06
216	053194	1400	7	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.10	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
217	060194	1700	21	0.64	0.59	0.53	0.72	0.75	0.61	0.61	0.84	0.57	0.74	0.74	0.58	1.13	0.79	0.79	0.66	0.67	0.88	0.97	0.81	0.77	0.82	0.57	1.06	1.01
218	060594	1100	7	0.05	0.00	0.06	0.06	0.06	0.02	0.02	0.24	0.15	0.47	0.11	0.03	0.12	0.15	0.26	0.10	0.16	0.19	0.26	0.27	0.28	0.32	0.25	0.11	0.21
219	060594	2400	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
220	060794	1900	21	0.18	0.20	0.09	0.22	0.19	0.18	0.17	0.24	0.38	0.55	0.41	0.47	1.05	1.17	1.04	0.93	0.68	1.21	1.62	1.50	1.03	1.05	0.99	0.79	0.96
221	061194	2400	3	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.06	0.17	0.16	0.16	0.15	0.03	0.17	0.06	0.10	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
222	061294	1100	8	0.08	0.09	0.39	0.18	0.15	0.31	0.28	0.23	0.42	0.70	0.36	0.70	0.43	1.16	0.76	0.74	0.47	0.17	0.44	0.80	0.88	0.49	0.44	0.60	0.41
223	061494	1600	3	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
224	061694	1600	5	0.09	0.00	0.00	0.13	0.24	0.00	0.00	0.00	0.71	0.24	0.00	0.00	0.31	1.08	0.07	0.00	0.06	0.16	0.34	0.96	0.07	0.05	0.20	0.58	0.46
225	062094	1500	7	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.13	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.04	0.00
226	062394	0500	5	0.23	0.21	0.06	0.13	0.30	0.05	0.10	0.15	0.21	0.09	0.12	0.00	0.00	0.03	0.13	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00
227	062394	1300	20	0.23	0.32	0.29	0.33	0.30	0.19	0.23	0.16	0.25	0.24	0.13	0.25	0.12	0.24	0.24	0.28	0.35	0.26	0.32	0.23	0.29	0.32	0.30	0.37	0.21
228	062594	1900	6	0.00	0.00	0.04	0.09	0.08	0.06	0.04	0.07	0.05	0.05	0.05	0.04	0.22	0.29	0.52	0.11	0.09	0.10	0.11	0.10	0.00	0.00	0.12	0.12	0.13
229	062694	0500	17	0.29	0.18	0.58	0.09	0.31	0.67	0.50	0.16	0.24	0.64	0.41	0.29	0.22	0.18	0.36	0.50	0.26	0.66	0.41	0.31	0.62	0.89	0.47	0.09	0.07
230	070294	1100	11	0.58	0.65	0.39	0.76	0.59	0.54	0.71	0.72	0.66	1.14	0.86	0.95	1.02	1.57	1.06	1.09	0.77	1.76	1.99	1.38	0.89	0.79	1.32	1.66	1.70
231	070494	0500	6	0.18	0.29	0.28	0.27	0.34	0.45	0.06	0.20	0.64	0.40	0.30	0.16	0.16	0.23	0.02	0.11	0.09	0.15	0.24	0.11	0.10	0.05	0.00	0.22	0.18
232	070794	1500	7	0.06	0.26	0.23	0.00	0.00	0.32	0.00	0.27	0.16	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.32	0.34	0.07	0.00	0.00	0.06	0.00
233	071694	1700	8	0.24	0.25	0.77	0.09	0.05	0.45	0.57	0.27	0.30	0.30	0.26	0.54	1.29	0.63	0.28	0.17	0.29	1.69	**2.62**	0.49	0.38	0.22	0.27	0.89	2.02
234	071994	0400	7	1.85	1.61	0.61	1.36	2.02	**2.21**	1.15	0.00	0.04	2.06	**2.58**	**2.19**	0.14	0.11	0.28	1.59	**2.78**	0.05	0.09	0.08	0.05	0.57	1.86	0.03	0.04
235	072094	0400	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00
236	072094	1500	10	0.32	0.34	0.32	0.32	0.38	0.46	0.85	0.32	0.44	0.48	0.28	0.37	0.80	0.55	0.61	0.52	0.36	0.58	0.48	0.56	0.56	0.38	0.31	0.66	0.28
237	072194	2200	2	0.00	0.00	0.00	0.00	0.04	0.00	0.09	0.08	0.06	0.08	0.09	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
238	072494	1500	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
239	080194	1300	11	0.37	0.28	0.00	0.24	0.09	0.18	0.00	0.00	0.00	0.45	0.04	0.00	0.00	0.06	0.04	0.00	0.00	0.02	0.13	0.20	0.20	0.14	0.00	0.77	0.04
240	080394	1500	19	0.58	0.59	0.67	0.60	0.70	0.69	0.69	0.87	1.02	0.86	1.02	0.83	1.54	1.33	0.80	0.77	0.95	1.75	1.27	0.73	0.69	0.82	0.33	1.32	1.27
241	080494	1500	7	0.13	0.08	0.49	0.28	0.25	0.15	0.24	0.08	0.22	0.38	0.22	0.10	0.16	0.13	0.15	0.22	0.12	0.15	0.25	0.08	0.08	0.10	0.13	0.05	0.00
242	081394	1500	4	0.00	0.00	0.77	0.19	0.59	0.77	0.66	0.00	0.06	0.20	0.43	0.42	0.43	0.33	0.48	0.24	0.25	0.79	0.75	0.60	0.51	0.51	0.41	0.24	0.35
243	081694	1600	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
244	081994	2100	9	0.05	0.07	0.06	0.22	0.23	0.13	0.23	0.00	0.00	0.12	0.06	0.08	0.14	0.16	0.11	0.10	0.03	0.27	0.22	0.25	0.20	0.30	0.33	0.24	0.12
245	082694	0800	5	0.50	0.17	0.32	0.68	0.46	0.35	0.35	0.07	0.08	0.36	0.27	0.79	0.05	0.04	0.32	1.01	0.66	0.76	0.79	0.72	0.39	0.79	0.81	0.21	0.24
246	082894	1200	7	0.13	0.16	0.22	0.30	0.20	0.20	0.17	0.21	0.22	0.28	0.24	0.22	0.12	0.13	0.14	0.18	0.27	0.10	0.10	0.12	0.06	0.12	0.21	0.17	0.19
247	082994	1800	3	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00
248	082994	2400	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
249	083094	0600	8	1.07	1.29	0.94	1.08	1.10	1.16	1.08	1.09	1.24	1.23	1.27	1.12	1.30	1.28	1.21	1.27	1.11	1.31	1.53	1.38	1.24	1.24	1.14	1.73	1.83
250	083094	2300	2	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.13	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
251	090494	1200	14	0.22	0.28	0.23	0.23	0.34	0.25	0.20	0.23	0.28	0.30	0.26	0.20	0.56	0.26	0.50	0.35	0.37	0.24	0.36	0.40	0.47	0.42	0.45	0.12	0.13
252	092194	2100	11	0.28	0.34	0.24	0.25	0.33	0.31	0.27	0.24	0.28	0.34	0.28	0.29	0.27	0.21	0.26	0.26	0.14	0.25	0.16	0.20	0.28	0.28	0.25	0.30	0.18
253	092294	1200	17	0.47	0.74	0.86	0.45	0.40	0.74	0.84	0.35	0.47	0.62	0.65	0.82	0.44	0.48	0.61	0.58	0.79	0.31	0.39	0.47	0.59	0.65	0.72	0.21	0.26
254	092594	0500	7	0.07	0.05	0.00	0.08	0.02	0.05	0.00	0.00	0.04	0.00	0.05	0.00	0.11	0.06	0.13	0.04	0.00	0.17	0.15	0.12	0.06	0.00	0.00	0.17	0.18
255	092594	1500	7	0.00	0.00	0.26	0.00	0.00	0.09	1.01	0.12	0.14	0.03	0.37	0.89	0.16	0.06	0.00	0.56	0.30	0.00	0.07	0.00	0.00	0.77	0.07	0.00	0.00
256	092694	0300	7	0.36	0.31	0.08	0.16	0.22	0.27	0.27	0.04	0.00	0.08	0.13	0.31	0.00	0.04	0.00	0.14	0.18	0.06	0.06	0.00	0.00	0.00	0.00	0.07	0.07
257	100694	0300	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm	#	Dale	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
258	100794	0800	34	1.51	1.59	1.13	1.73	1.51	1.53	1.36	1.57	1.80	1.80	1.45	1.29	2.14	2.12	2.01	1.32	1.21	2.33	2.48	2.01	1.42	1.38	1.35	2.55	2.23
259	101894	1300	10	0.09	0.09	0.11	0.11	0.10	0.10	0.11	0.16	0.06	0.18	0.15	0.13	0.10	0.09	0.15	0.16	0.16	0.11	0.11	0.11	0.14	0.20	0.07	0.13	0.09
260	102294	1900	2	0.13	0.07	0.19	0.06	0.11	0.08	0.13	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.04	0.18	0.21	0.05	0.00	0.00	0.00
261	102494	0600	5	0.00	0.00	0.00	0.06	0.00	0.05	0.06	0.00	0.00	0.06	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.06	0.00	0.09	0.13
262	102594	2300	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.06	0.00	0.00	0.00	0.02
263	103094	2400	22	1.28	1.77	1.43	1.71	1.48	1.31	1.21	1.36	1.57	1.44	1.33	1.41	1.45	1.41	1.51	1.15	1.40	1.44	1.80	1.31	1.36	1.24	1.12	1.30	1.38
264	110394	1500	3	0.20	0.21	0.31	0.10	0.08	0.10	0.12	0.03	0.06	0.16	0.22	0.45	0.08	0.19	0.18	0.24	0.46	0.09	0.21	0.15	0.17	0.38	0.56	0.11	0.31
265	110494	0200	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.08	0.00	0.00
266	110494	0800	6	0.45	0.21	0.25	0.28	0.19	0.20	0.21	0.26	0.31	0.16	0.23	0.20	0.23	0.20	0.33	0.31	0.27	0.24	0.31	0.36	0.32	0.25	0.17	0.25	0.26
267	110494	2000	27	1.01	1.27	0.83	1.33	1.01	0.81	0.78	1.21	1.02	0.82	0.71	0.70	1.15	0.73	0.82	0.77	0.70	1.89	1.25	0.88	0.85	0.78	0.63	1.68	1.94
268	110994	0100	16	0.12	0.18	0.12	0.19	0.15	0.11	0.11	0.23	0.21	0.22	0.18	0.26	0.27	0.22	0.26	0.41	0.44	0.17	0.35	0.35	0.53	0.60	0.63	0.29	0.38
269	111394	2000	7	0.10	0.13	0.21	0.12	0.08	0.14	0.24	0.11	0.06	0.12	0.17	0.21	0.05	0.06	0.10	0.18	0.18	0.06	0.09	0.09	0.16	0.18	0.15	0.06	0.04
270	112094	0300	8	0.21	0.22	0.15	0.19	0.20	0.19	0.16	0.20	0.16	0.20	0.17	0.13	0.17	0.09	0.18	0.18	0.15	0.22	0.25	0.19	0.17	0.16	0.14	0.20	0.24
271	112094	1900	10	0.62	0.59	0.39	0.61	0.48	0.42	0.48	0.53	0.52	0.51	0.44	0.49	0.52	0.55	0.52	0.51	0.53	0.57	0.61	0.51	0.56	0.66	0.46	0.66	0.61
272	112794	0300	11	1.00	1.08	0.79	0.84	1.06	0.75	0.84	0.78	0.96	0.79	0.82	0.69	0.86	0.60	0.67	0.72	0.66	0.63	0.71	0.62	0.62	0.58	0.58	0.56	0.77
273	113094	0900	2	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
274	120294	1900	8	0.06	0.08	0.16	0.07	0.04	0.10	0.10	0.04	0.01	0.11	0.06	0.05	0.04	0.09	0.04	0.07	0.02	0.03	0.05	0.06	0.07	0.04	0.00	0.05	0.04
275	120394	0700	4	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.00	0.00	0.03	0.04	0.04	0.01	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.04
276	120694	0400	26	1.71	1.97	1.90	1.83	1.92	1.79	1.84	1.68	1.80	1.88	1.76	1.87	1.75	1.83	1.66	1.68	1.51	1.69	1.84	1.57	1.37	1.39	1.46	1.49	1.41
277	120894	1700	12	0.21	0.29	0.26	0.22	0.23	0.22	0.24	0.17	0.25	0.23	0.21	0.17	0.24	0.23	0.21	0.19	0.17	0.29	0.21	0.17	0.19	0.16	0.15	0.21	0.20
278	121694	0100	12	0.34	0.35	0.21	0.26	0.26	0.31	0.26	0.20	0.20	0.27	0.21	0.26	0.22	0.17	0.24	0.27	0.29	0.31	0.29	0.28	0.29	0.29	0.37	0.24	0.29
279	122094	0300	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.10	0.00	0.00	0.00	0.04	0.09	0.06	0.00	0.00
280	122094	1300	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.08	0.04	0.03	0.00	0.00	0.00	0.03	0.07
281	123194	2300	2	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.00	0.02	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00
282	010695	0100	17	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.04	0.00	0.16	0.00	0.05	0.05	0.10	0.15	0.13	0.03	0.11	0.03	0.13	0.10	0.10	0.11	0.06
283	011395	0400	30	1.10	2.06	1.55	1.52	1.48	1.37	1.52	1.51	1.56	1.46	1.19	1.86	1.57	1.74	1.65	1.53	1.88	1.60	2.18	1.62	1.68	1.56	1.63	1.73	1.65
284	011795	0500	3	0.00	0.04	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.03	0.00	0.00	0.00
285	011895	2000	26	0.34	0.80	0.73	0.97	0.63	0.79	0.92	0.77	0.94	0.77	0.75	0.82	0.87	0.89	1.03	0.92	0.94	0.68	1.03	0.84	0.85	0.66	0.90	0.73	0.79
286	012795	0400	27	0.33	0.42	0.27	0.37	0.37	0.30	0.33	0.29	0.28	0.43	0.33	0.34	0.48	0.27	0.52	0.37	0.35	0.55	0.76	0.55	0.48	0.47	0.47	0.42	0.50
287	020395	0200	14	0.12	0.12	0.07	0.15	0.15	0.13	0.19	0.19	0.21	0.20	0.15	0.18	0.23	0.24	0.21	0.17	0.21	0.19	0.25	0.27	0.17	0.19	0.12	0.33	0.41
288	021495	1400	5	0.03	0.04	0.03	0.00	0.03	0.04	0.00	0.03	0.05	0.05	0.05	0.00	0.06	0.00	0.04	0.04	0.04	0.03	0.04	0.03	0.00	0.06	0.06	0.04	0.03
289	022695	1600	15	0.38	0.48	0.35	0.36	0.34	0.29	0.41	0.33	0.37	0.37	0.41	0.48	0.38	0.37	0.41	0.33	0.32	0.41	0.51	0.45	0.34	0.34	0.29	0.37	0.45
290	030495	2200	10	0.44	0.53	0.48	0.38	0.42	0.45	0.46	0.44	0.43	0.47	0.49	0.45	0.47	0.31	0.48	0.44	0.43	0.54	0.56	0.46	0.44	0.47	0.49	0.44	0.41
291	030695	2000	17	0.56	0.85	0.79	0.57	0.67	0.73	0.79	0.66	0.78	0.77	0.88	1.06	0.75	0.90	0.83	1.13	1.19	0.74	1.09	0.78	1.22	1.13	1.09	0.75	0.70
292	032095	0300	6	0.25	0.24	0.17	0.27	0.21	0.20	0.26	0.21	0.21	0.16	0.24	0.23	0.24	0.08	0.23	0.23	0.23	0.15	0.18	0.17	0.40	0.23	0.29	0.26	0.23
293	032295	1800	2	0.02	0.00	0.05	0.00	0.00	0.10	0.06	0.02	0.00	0:06	0.07	0.09	0.05	0.03	0.04	0.05	0.09	0.03	0.00	0.06	0.03	0.00	0.00	0.00	0.00
294	032695	0400	4	0.09	0.08	0.07	0.04	0.07	0.05	0.06	0.02	0.02	0.07	0.07	0.08	0.06	0.03	0.04	0.06	0.05	0.04	0.07	0.06	0.06	0.04	0.05	0.06	0.06
295	032695	2100	10	0.31	0.39	0.25	0.24	0.33	0.33	0.35	0.28	0.26	0.24	0.31	0.34	0.22	0.17	0.23	0.34	0.27	0.35	0.42	0.37	0.34	0.33	0.31	0.34	0.39
296	040395	0900	6	0.13	0.17	0.21	0.17	0.23	0.29	0.36	0.19	0.28	0.38	0.39	0.43	0.33	0.31	0.37	0.29	0.26	0.28	0.29	0.29	0.25	0.17	0.20	0.24	0.21
297	040695	1200	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.13
298	040695	1800	8	0.00	0.00	0.00	0.05	0.03	0.00	0.03	0.00	0.02	0.02	0.03	0.05	0.00	0.03	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.04
299	040795	2100	11	0.98	1.05	1.09	0.91	0.99	1.34	1.09	1.13	1.15	0.98	0.94	0.94	0.92	0.85	0.78	0.65	0.83	0.53	0.75	0.72	0.74	0.47	0.42	0.50	0.65
300	040995	0100	7	0.55	0.76	0.55	0.78	0.65	0.59	0.65	0.79	0.63	0.63	0.81	0.82	0.68	0.71	0.84	0.67	0.64	0.78	0.75	0.61	0.42	0.31	0.30	0.54	0.48

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm	*#*	*Date*	*Hour*	*Duration**	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*
301	040995	2300	9	0.63	0.60	0.57	0.63	0.40	0.53	0.42	0.31	0.44	0.44	0.33	0.46	0.57	0.42	0.39	0.33	0.28	0.27	0.24	0.09	0.10	0.11	0.05	0.06	0.10
302	041095	1300	2	0.12	0.08	0.05	0.11	0.04	0.05	0.02	0.16	0.00	0.02	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.11	0.00
303	041095	2000	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
304	041195	1000	11	0.50	0.44	0.28	0.38	0.48	0.39	0.24	0.29	0.43	0.45	0.39	0.25	0.34	0.40	0.46	0.41	0.32	0.40	0.44	0.38	0.42	0.41	0.36	0.38	0.42
305	041595	1400	3	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.02	0.00	0.05	0.00	0.05	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
306	041695	2100	4	0.12	0.18	0.10	0.52	0.57	0.37	0.29	0.46	0.39	0.43	0.40	0.42	0.32	0.13	0.13	0.35	0.34	0.39	0.39	0.23	0.43	0.26	0.37	0.22	0.30
307	041795	2000	11	0.81	0.95	0.92	0.69	0.75	0.85	0.95	0.64	0.55	0.74	0.88	0.91	0.54	0.43	0.68	0.84	0.93	0.56	0.69	0.68	0.77	0.63	0.88	0.54	0.62
308	042095	0200	7	0.32	0.32	0.30	0.32	0.32	0.33	0.30	0.26	0.31	0.30	0.30	0.32	0.37	0.14	0.27	0.31	0.36	0.35	0.31	0.25	0.30	0.37	0.39	0.32	0.29
309	042095	2200	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.13	0.09
310	042395	1700	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
311	042495	1400	5	0.05	0.05	0.05	0.00	0.06	0.05	0.12	0.07	0.00	0.06	0.05	0.08	0.12	0.09	0.07	0.05	0.03	0.05	0.05	0.04	0.04	0.05	0.05	0.05	0.06
312	042695	0600	9	0.17	0.20	0.13	0.16	0.18	0.15	0.11	0.18	0.19	0.13	0.09	0.10	0.07	0.13	0.08	0.08	0.02	0.10	0.10	0.09	0.06	0.04	0.04	0.12	0.09
313	042695	2200	8	0.54	0.46	0.61	0.54	0.49	0.53	0.50	0.46	0.48	0.47	0.51	0.64	0.57	0.55	0.65	0.66	0.74	0.58	0.56	0.64	0.70	0.79	0.52	0.60	0.55
314	042995	1200	11	0.16	0.21	0.20	0.19	0.15	0.14	0.13	0.16	0.13	0.12	0.11	0.16	0.16	0.13	0.17	0.16	0.15	0.16	0.24	0.23	0.22	0.25	0.22	0.18	0.16
315	050395	1500	18	0.09	0.04	0.00	0.08	0.03	0.07	0.06	0.12	0.04	0.04	0.08	0.05	0.08	0.08	0.04	0.10	0.05	0.04	0.04	0.09	0.10	0.18	0.08	0.13	0.11
316	050795	1900	17	1.69	1.70	1.27	1.76	1.43	1.14	1.21	1.74	1.36	1.29	1.15	1.15	1.41	0.67	1.24	1.06	1.23	1.07	1.02	0.82	1.00	1.04	1.22	0.92	0.89
317	050895	1600	14	1.18	1.03	0.39	0.46	1.11	0.47	0.61	0.55	0.63	0.75	0.41	0.62	0.63	0.83	0.66	0.30	0.36	0.77	0.35	0.60	0.16	0.94	0.29	0.21	0.51
318	050995	1600	4	0.32	0.24	0.47	0.19	0.06	0.13	0.12	0.31	0.08	0.03	0.00	0.00	0.06	0.04	0.00	0.00	0.03	0.00	0.10	0.00	0.00	0.00	0.06	0.00	0.06
319	051095	0200	12	0.17	0.04	0.25	0.09	0.12	0.10	0.14	0.04	0.07	0.09	0.04	0.18	0.00	0.04	0.04	0.34	0.45	0.02	0.03	0.00	0.14	0.34	0.27	0.00	0.00
320	051295	2000	12	0.39	0.41	0.43	0.36	0.43	0.37	0.50	0.43	0.39	0.46	0.47	0.47	0.42	0.25	0.44	0.46	0.37	0.41	0.46	0.45	0.40	0.36	0.34	0.29	0.35
321	051395	1800	1	0.06	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
322	051695	0500	7	0.04	0.04	0.08	0.05	0.05	0.05	0.13	0.03	0.00	0.03	0.00	0.06	0.02	0.02	0.06	0.06	0.11	0.12	0.10	0.18	0.04	0.09	0.11	0.12	0.39
323	051695	1500	12	0.90	0.86	0.85	1.07	1.05	1.05	1.10	1.78	2.12	1.93	1.58	1.56	**3.07**	**3.25**	**3.04**	**2.40**	**2.46**	**3.65**	**4.22**	**3.26**	**3.28**	**3.60**	**3.13**	**3.59**	**2.94**
324	051795	0800	21	0.67	0.84	0.75	0.85	0.79	0.77	0.84	0.98	1.03	0.93	0.81	0.89	0.91	0.81	0.83	0.87	0.77	0.93	1.00	0.88	0.87	0.98	0.89	1.02	0.98
325	051895	1000	9	0.49	0.41	0.47	0.53	0.44	0.52	0.44	0.56	0.67	0.81	0.54	0.64	1.15	1.09	0.76	0.69	1.34	1.85	1.04	0.66	0.79	0.60	0.68	0.97	0.57
326	052395	1000	6	0.28	0.28	0.28	0.25	0.41	0.36	0.25	0.16	0.46	0.20	0.20	0.09	0.41	0.24	0.18	0.08	0.14	0.22	0.22	0.13	0.15	0.11	0.11	0.29	0.19
327	052395	1900	24	**2.72**	**2.76**	2.32	**2.64**	**2.83**	2.23	2.23	2.49	2.41	**2.53**	**2.66**	**2.85**	**2.70**	**3.40**	**3.08**	**2.77**	**2.62**	**3.22**	**3.78**	**3.24**	**2.79**	2.42	2.35	**3.33**	**3.00**
328	052695	2200	8	0.09	0.09	0.03	0.06	0.07	0.05	0.04	0.06	0.09	0.06	0.07	0.05	0.10	0.07	0.09	0.04	0.06	0.13	0.13	0.13	0.07	0.09	0.09	0.08	0.12
329	052795	1000	15	0.86	1.02	0.80	0.77	0.71	0.78	0.71	0.75	0.74	0.84	0.76	0.89	0.73	0.39	0.63	0.61	0.72	0.74	0.45	0.49	0.61	1.13	1.12	0.60	0.45
330	052895	0700	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
331	060295	0800	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.08	0.00	0.04	0.03	0.00	0.00	0.09	0.04	0.09	0.09	0.07	0.07	0.04	0.00	0.07
332	060895	0700	5	0.32	0.33	0.24	0.54	0.31	0.39	0.34	0.27	0.26	0.23	0.30	0.27	0.25	0.36	0.70	0.67	0.47	0.53	0.44	0.28	0.43	0.26	0.27	0.39	0.35
333	060995	0900	5	0.06	0.06	0.08	0.08	0.10	0.00	0.15	0.00	0.10	0.10	0.09	0.10	0.14	0.12	0.13	0.26	0.12	0.11	0.17	0.18	0.00	0.14	0.15	0.12	0.17
334	060995	2300	4	0.03	0.15	0.28	0.05	0.00	0.25	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
335	061195	1300	4	0.04	0.03	0.00	0.03	0.03	0.00	0.04	0.00	0.04	0.04	0.03	0.04	0.03	0.03	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.02	0.00	0.03	0.00
336	062095	1800	11	0.45	0.12	0.54	0.29	0.09	0.21	0.79	0.12	0.43	0.26	0.28	0.47	0.27	0.18	0.33	1.11	0.83	0.04	0.06	0.15	0.43	0.40	0.82	0.11	0.07
337	062195	1900	6	0.06	0.06	0.21	0.11	0.10	0.10	0.27	0.18	0.31	0.54	0.44	0.71	0.91	0.52	0.96	0.61	0.37	1.29	**2.67**	0.51	0.66	0.57	0.48	0.61	0.48
338	062395	1400	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.02	0.09	0.00	0.03	0.00	0.00	0.03	0.14	0.00	0.00
339	062495	0100	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.23	0.86	0.26	0.59	0.00	0.04	0.13	0.33	1.23	**2.52**	0.00	0.00	0.00
340	062495	1600	5	0.05	1.91	0.09	0.02	0.69	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.04
341	062595	1400	6	0.00	0.04	0.00	0.15	0.03	0.04	0.05	0.00	0.00	0.05	0.00	0.07	0.00	0.04	0.13	0.06	0.35	0.00	0.00	0.06	0.20	0.03	0.00	0.03	0.05
342	062695	0200	16	0.90	0.48	0.23	0.00	0.22	0.25	0.09	0.10	0.05	0.07	0.17	0.16	0.27	0.16	0.02	0.12	0.09	0.44	0.47	0.45	0.05	0.03	0.08	0.48	0.33
343	062795	1100	11	0.03	0.03	0.00	0.15	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.17	0.09	0.02	0.00	0.02	0.42	0.04	0.00	0.05	0.02	0.05	0.13

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
344	062895	1400	7	0.20	0.89	0.09	0.00	0.46	0.29	0.22	0.10	0.00	0.13	0.45	0.36	0.09	0.48	0.03	0.63	1.10	0.13	0.07	0.35	0.41	0.46	0.39	0.14	0.08
345	062995	1100	11	0.09	0.04	0.03	0.06	0.02	0.04	0.04	0.09	0.11	0.05	0.02	0.08	0.10	0.04	0.04	0.00	0.04	0.34	0.21	0.06	0.02	0.27	0.04	0.42	0.22
346	070495	0300	14	1.09	0.93	0.52	0.74	0.70	0.37	0.35	0.38	0.45	0.25	0.00	0.24	0.11	0.30	0.00	0.22	0.29	0.27	0.16	0.10	0.07	0.13	0.29	0.48	0.17
347	070495	2300	5	0.12	0.08	0.18	0.35	0.06	0.13	0.28	0.27	0.13	0.08	0.00	0.25	0.03	0.10	0.00	0.00	0.09	0.03	0.00	0.03	0.04	0.10	0.00	0.00	0.00
348	070595	2100	4	0.37	0.27	0.11	0.15	0.04	0.03	0.04	0.08	0.03	0.05	0.05	0.10	0.00	0.06	0.00	0.00	0.00	0.06	0.02	0.00	0.00	0.03	0.12	0.04	0.00
349	070995	1300	5	0.11	0.00	0.00	0.00	0.07	0.00	0.03	0.00	0.04	0.03	0.05	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.00
350	071695	1400	5	0.06	0.03	0.04	0.20	0.23	0.10	0.05	0.00	0.10	0.16	0.46	0.94	0.32	0.24	0.05	0.68	0.31	0.10	0.28	0.40	0.26	0.12	0.14	0.61	0.50
351	071895	2000	5	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
352	072095	0700	10	0.12	0.14	0.11	0.20	0.25	0.31	0.41	0.45	0.34	0.27	0.22	0.14	0.27	0.25	0.00	0.00	0.15	0.22	0.18	0.18	0.21	0.21	0.25	0.23	0.18
353	072095	2000	4	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
354	072295	0800	6	0.49	0.47	0.64	0.65	0.55	0.36	0.36	0.24	0.24	0.46	0.83	0.85	0.10	0.07	0.19	0.57	0.84	0.12	0.37	0.34	0.74	0.42	0.51	0.39	0.26
355	072395	0600	6	0.62	0.31	0.10	0.32	0.55	0.09	0.10	0.53	0.46	0.49	0.42	0.49	0.77	0.37	0.38	0.44	0.28	1.10	0.82	0.30	0.33	0.60	0.45	0.85	0.23
356	072395	2100	4	0.05	0.03	0.02	0.04	0.01	0.06	0.00	0.21	0.04	0.05	0.04	0.04	0.25	0.08	0.03	0.00	0.03	0.68	0.75	0.39	0.20	0.26	0.06	0.00	0.00
357	072495	1600	5	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.10	0.68	0.02	0.03	0.20	0.18	0.23	0.08	0.10	0.30	0.39	0.23	0.32	0.61	0.00	0.00	0.84	0.36
358	072595	1300	15	0.42	0.29	0.14	0.00	0.16	0.19	0.42	0.00	0.20	0.04	0.16	0.00	0.29	0.08	0.05	0.02	0.27	0.16	0.26	0.41	0.21	0.23	0.55	0.56	0.25
359	072695	1700	4	0.00	0.44	0.08	0.15	0.00	0.20	0.26	0.00	0.32	0.25	0.00	0.50	0.17	0.24	0.00	0.44	0.24	0.28	0.13	0.74	0.03	0.00	0.05	0.00	0.12
360	072795	2000	5	0.05	0.03	0.00	0.00	0.02	0.00	0.00	0.15	0.10	0.03	0.00	0.00	0.16	0.21	0.00	0.02	0.00	0.16	0.04	0.06	0.04	0.01	0.00	0.09	0.09
361	073195	2000	8	0.00	0.03	0.65	0.00	0.12	0.18	0.24	0.25	0.01	0.22	0.14	0.06	0.22	0.34	0.11	0.16	0.11	0.00	0.14	0.49	0.22	0.16	0.21	0.04	0.20
362	080195	1500	5	0.00	0.14	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.04	0.04	0.00	0.08	0.03	0.04	0.00	0.55	0.26	0.28	0.14
363	080295	0200	17	0.67	0.55	0.48	0.55	0.67	0.36	0.45	0.33	0.60	0.47	0.58	0.44	0.62	0.89	0.71	0.85	0.43	0.70	0.98	0.88	0.85	0.77	0.54	0.74	0.94
364	080395	0100	11	0.33	0.47	0.46	0.33	0.41	0.32	0.25	0.32	0.14	0.13	0.04	0.18	0.11	0.01	0.17	0.20	0.41	0.00	0.05	0.06	0.28	0.15	0.57	0.00	0.05
365	080395	2300	15	0.09	0.09	0.00	0.13	0.07	0.00	0.13	0.12	0.08	0.09	0.17	0.17	0.13	0.16	0.14	0.26	0.19	0.21	0.30	0.16	0.34	1.29	1.12	1.10	0.52
366	080495	2100	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
367	080595	0200	5	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.05	0.00	0.03	0.12	0.00	0.00	0.00	0.06	0.00	0.00	0.04	0.03	0.00	0.09	0.00	0.00	0.00	0.09
368	080695	1800	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
369	080695	2300	3	0.01	0.17	0.00	0.00	0.00	0.11	0.09	0.00	0.00	0.00	0.04	0.29	0.00	0.15	0.03	0.00	0.08	0.00	0.00	0.20	0.02	0.06	0.04	0.00	0.00
370	080895	0400	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.03	0.23	0.00	0.00	0.00	0.00	0.00	0.00
371	080895	1200	6	0.34	0.21	0.29	0.32	0.22	0.29	1.15	0.33	0.32	0.17	0.21	0.46	0.76	0.91	0.41	0.17	0.40	0.88	0.80	0.73	0.53	0.40	0.39	0.21	0.31
372	080995	1900	12	0.06	0.24	0.22	0.30	0.48	0.42	0.24	0.22	0.60	0.40	0.13	2.26	0.53	0.80	0.48	0.96	1.80	0.29	0.78	0.59	0.24	0.43	0.87	0.04	0.37
373	081395	1900	3	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
374	081495	1100	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
375	081595	1600	8	0.68	0.13	0.38	0.49	0.28	0.04	0.49	0.47	0.22	0.06	0.05	0.27	0.00	0.10	0.00	0.00	0.03	0.11	0.15	0.04	0.15	0.00	0.00	0.09	0.12
376	081695	1100	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
377	081695	1500	7	0.00	0.00	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.10	0.00	0.00	0.00	0.05	0.02	0.00	0.00	0.14	0.09	0.04	0.17	0.16
378	081795	0100	7	0.04	0.17	0.21	0.15	0.24	0.22	0.21	0.41	0.23	0.42	0.25	0.18	0.04	0.21	0.29	0.37	0.48	0.16	0.21	0.25	0.29	0.49	0.51	0.13	0.28
379	082495	1500	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	090695	1600	12	----	0.49	0.45	0.59	----	0.50	6.52	0.62	0.46	0.54	0.58	0.53	0.49	----	0.61	0.56	----	0.38	0.48	0.49	0.53	0.56	0.54	0.35	
381	090795	1300	24	----	0.56	0.94	0.24	----	0.93	1.51	0.78	0.72	1.39	0.67	0.49	0.45	----	0.26	0.32	----	0.17	0.32	0.53	0.13	0.33	0.75	0.08	----
382	091795	1300	2	----	0.00	0.00	0.00	----	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	----	0.00	0.00	----	0.00	0.00	0.00	0.02	0.04	0.05	0.03	----
383	091995	1300	15	----	0.37	0.38	0.45	----	0.41	0.34	0.34	0.35	0.32	0.42	0.40	0.38	----	0.33	0.42	----	0.23	0.37	0.32	0.34	0.32	0.26	0.32	----
384	092195	0900	16	----	0.25	0.15	0.20	----	0.15	0.16	0.17	0.15	0.25	0.14	0.21	0.14	----	0.17	0.18	----	0.13	0.16	0.17	0.18	0.18	0.14	0.10	----
385	093095	1900	7	----	0.47	0.45	0.45	----	0.49	0.25	0.30	0.47	0.50	0.38	0.29	0.32	----	0.43	0.40	----	0.29	0.63	0.36	0.31	0.24	0.21	0.36	----
386	100295	2300	5	----	0.00	0.00	0.00	----	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	----	0.00	0.07	----	0.00	0.02	0.00	0.08	0.10	0.09	0.00	----

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
387	100595	1600	8	----	0.07	0.20	0.04	----	0.08	0.13	0.00	0.00	0.00	0.00	0.13	0.00	----	0.00	0.00	----	0.00	0.00	0.00	0.00	0.00	0.00	0.00	----
388	100695	1700	4	—	0.00	0.00	0.01	—	0.00	0.00	0.00	0.04	0.00	0.07	0.00	0.00	—	0.00	0.08	—	0.00	0.00	0.00	0.00	0.04	0.09	0.00	—
389	101395	1700	11	—	0.13	0.18	0.23	—	0.16	0.15	0.22	0.12	0.13	0.18	0.30	0.14	—	0.14	0.04	—	0.19	0.15	0.12	0.19	0.19	0.16	0.16	—
390	101995	1600	10	—	1.41	1.53	1.28	—	1.45	1.36	1.03	1.32	1.32	1.53	1.37	1.31	—	1.47	1.54	—	1.22	1.29	1.27	1.60	1.51	1.27	1.12	—
391	102095	1100	6	—	0.00	0.00	0.00	—	0.03	0.04	0.00	0.00	0.00	0.05	0.03	0.00	—	0.00	0.00	—	0.03	0.00	0.00	0.00	0.04	0.00	0.00	—
392	102395	1400	6	—	0.16	0.24	0.19	—	0.19	0.16	0.19	0.20	0.30	0.17	0.17	0.14	—	0.18	0.14	—	0.16	0.17	0.09	0.13	0.18	0.11	0.17	—
393	102695	1500	12	—	0.48	0.37	0.38	—	0.37	0.38	0.41	0.36	0.40	0.37	0.45	0.33	—	0.36	0.39	—	0.25	0.32	0.29	0.29	0.42	0.62	0.28	—
394	103095	1200	24	—	0.99	0.98	1.07	—	1.18	1.22	0.97	0.99	1.09	1.14	1.18	0.83	—	0.96	0.69	—	0.79	0.78	0.61	0.60	0.68	0.75	0.48	—
395	110195	1200	10	—	0.75	0.46	0.89	—	0.48	0.39	0.58	0.80	0.44	0.48	0.36	0.79	—	0.43	0.39	—	0.61	0.69	0.33	0.43	0.31	0.21	0.63	—
396	110295	0300	10	—	0.39	0.23	0.42	—	0.17	0.04	0.39	0.22	0.08	0.00	0.04	0.23	—	0.01	0.00	—	0.11	0.00	0.06	0.00	0.04	0.08	0.07	—
397	111095	1300	21	—	1.30	1.40	1.20	—	1.23	1.49	1.26	1.16	1.19	1.32	1.07	1.33	—	1.09	1.13	—	1.16	1.18	1.08	1.09	1.10	1.00	0.91	—
398	120795	1400	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.08	0.00	0.00	0.00	0.00	0.03	—
399	120895	0600	18	—	0.04	0.16	0.04	—	0.05	0.06	0.07	0.17	0.03	0.11	0.09	0.14	—	0.12	0.14	—	0.07	0.11	0.06	0.09	0.19	0.20	0.13	—
400	121795	2100	16	—	0.09	0.21	0.10	—	0.16	0.18	0.12	0.20	0.18	0.29	0.30	0.15	—	0.26	0.28	—	0.20	0.34	0.24	0.23	0.32	0.31	0.18	—
401	121895	2000	10	—	0.00	0.00	0.00	—	0.00	0.12	0.00	0.05	0.03	0.12	0.33	0.05	—	0.13	0.21	—	0.07	0.25	0.14	0.17	0.23	0.21	0.23	—
402	121995	0900	3	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.04	0.00	0.00	0.00	0.00	0.00	—
403	010496	0300	17	—	0.09	0.15	0.05	—	0.09	0.11	0.04	0.09	0.12	0.10	0.11	0.09	—	0.13	0.11	—	0.14	0.13	0.10	0.05	0.16	0.13	0.13	—
404	010596	1100	11	—	0.01	0.00	0.01	—	0.07	0.10	0.02	0.00	0.00	0.00	0.06	0.04	—	0.06	0.00	—	0.01	0.00	0.00	0.00	0.00	0.00	0.00	—
405	011196	0200	11	—	0.12	0.10	0.16	—	0.08	0.07	0.14	0.16	0.04	0.03	0.08	0.11	—	0.08	0.00	—	0.07	0.14	0.10	0.00	0.14	0.12	0.00	—
406	011796	0700	4	—	0.08	0.00	0.14	—	0.00	0.00	0.33	0.22	0.00	0.00	0.00	0.11	—	0.00	0.00	—	0.30	0.08	0.00	0.00	0.00	0.00	0.16	—
407	011896	0100	22	—	0.35	0.36	0.98	—	0.53	0.32	0.75	0.37	0.39	0.35	0.32	0.43	—	0.42	0.36	—	0.57	0.48	0.34	0.42	0.44	0.40	0.88	—
408	012396	0100	13	—	0.10	0.08	0.09	—	0.06	0.07	0.06	0.05	0.10	0.08	0.17	0.10	—	0.17	0.08	—	0.08	0.19	0.11	0.14	0.10	0.05	0.12	—
409	012696	0700	12	—	0.23	0.21	0.18	—	0.16	0.15	0.18	0.18	0.12	0.02	0.11	0.19	—	0.10	0.08	—	0.29	0.20	0.09	0.05	0.06	0.04	0.20	—
410	013096	0800	9	—	0.00	0.00	0.00	—	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.05	0.00	0.00	0.04	0.00	0.00	0.00	—
411	020896	0500	5	—	0.05	0.04	0.03	—	0.04	0.03	0.01	0.00	0.03	0.00	0.03	0.00	—	0.02	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
412	022196	1500	8	—	0.04	0.01	0.02	—	0.03	0.03	0.02	0.00	0.02	0.02	0.11	0.00	—	0.02	0.00	—	0.03	0.00	0.02	0.03	0.03	0.04	0.00	—
413	022696	0900	5	—	0.04	0.08	0.40	—	0.85	0.72	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
414	022696	1900	13	—	1.22	0.40	1.28	—	0.34	0.51	0.79	0.69	0.58	0.48	0.43	0.58	—	0.47	0.48	—	0.44	0.67	0.64	0.43	0.53	0.91	0.64	—
415	030596	0100	12	—	1.35	1.28	1.19	—	1.09	1.10	1.26	1.15	1.04	0.98	1.02	1.06	—	1.21	1.08	—	1.04	1.26	1.22	1.18	1.00	1.11	1.18	—
416	030696	0200	14	—	0.07	0.05	0.05	—	0.08	0.01	0.08	0.13	0.05	0.04	0.09	0.06	—	0.12	0.08	—	0.03	0.11	0.05	0.08	0.05	0.10	0.01	—
417	031996	1700	14	—	0.07	0.02	0.00	—	0.00	0.01	0.05	0.09	0.00	0.07	0.01	0.00	—	0.01	0.06	—	0.06	0.09	0.01	0.24	0.05	0.05	0.00	—
418	032396	1300	6	—	0.00	0.00	0.01	—	0.00	0.00	0.00	0.02	0.00	0.04	0.00	0.01	—	0.00	0.02	—	0.00	0.02	0.00	0.03	0.05	0.00	0.04	—
419	032496	1900	7	—	0.75	0.29	0.82	—	0.35	0.27	0.66	0.75	0.42	0.46	0.31	0.72	—	0.41	0.29	—	0.82	0.62	0.42	0.36	0.33	0.49	0.80	—
420	032896	1200	12	—	0.12	0.10	0.07	—	0.10	0.10	0.16	0.04	0.11	0.06	0.10	0.10	—	0.10	0.13	—	0.16	0.09	0.10	0.12	0.10	0.09	0.07	—
421	033196	0100	13	—	0.05	0.03	0.02	—	0.04	0.03	0.01	0.02	0.06	0.05	0.03	0.03	—	0.13	0.02	—	0.00	0.07	0.08	0.16	0.03	0.08	0.03	—
422	041496	1800	19	—	1.13	1.03	1.00	—	0.99	0.88	0.81	1.09	0.91	0.91	0.94	0.99	—	0.84	0.78	—	0.97	1.08	0.79	0.78	0.75	0.70	1.02	—
423	041896	1600	5	—	0.18	0.23	0.53	—	0.78	0.94	0.58	0.32	0.17	0.11	0.11	0.15	—	0.17	0.14	—	0.20	0.59	0.47	0.32	0.52	0.33	0.00	—
424	041996	1000	2	—	0.04	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
425	041996	1600	4	—	0.09	0.06	0.20	—	0.30	0.27	0.60	0.58	0.70	1.14	0.65	1.00	—	0.15	0.10	—	0.20	0.00	0.00	0.00	0.00	0.00	0.00	—
426	042196	1900	15	—	0.28	0.35	0.26	—	0.45	0.61	0.26	0.41	0.72	0.71	0.77	0.29	—	1.16	1.49	—	0.54	0.90	1.13	0.48	0.59	0.37	0.49	—
427	042796	1900	41	—	0.46	0.50	0.42	—	0.48	0.35	0.44	0.44	0.32	0.39	0.36	0.48	—	0.36	0.40	—	0.52	0.65	0.42	0.40	0.41	0.17	0.65	—
428	050396	1800	18	—	0.47	0.27	0.15	—	0.19	0.32	0.38	0.41	0.30	0.28	0.18	0.41	—	0.40	0.25	—	0.38	0.48	0.33	0.30	0.38	0.34	0.47	—
429	050596	0600	6	—	0.10	0.09	0.05	—	0.04	0.04	0.22	0.14	0.07	0.05	0.04	0.01	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.13	—

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
430	050696	1900	12	—	0.15	0.13	0.19	—	0.10	0.07	0.38	0.34	0.25	0.23	0.19	0.37	—	0.34	0.24	—	0.49	0.60	0.40	0.41	0.43	0.31	0.55	—
431	050796	1400	6	—	0.00	0.00	0.00	—	0.00	0.00	0.02	0.02	0.00	0.02	0.05	0.03	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.03	0.00	0.00	—
432	050896	0100	14	—	1.03	0.86	0.99	—	1.05	1.05	1.23	1.08	1.10	1.08	1.09	1.12	—	0.99	0.89	—	1.66	1.63	1.18	1.17	1.11	1.00	4.64	—
433	050996	1200	2	—	0.00	0.08	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
434	051096	0200	21	—	0.81	0.78	0.51	—	0.51	0.38	0.58	0.52	0.21	0.21	0.41	0.41	—	0.37	0.40	—	0.64	0.56	0.43	0.60	0.83	0.68	0.38	—
435	051396	0300	3	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.03	0.00	0.00	0.00	0.00	—
436	051396	0900	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.04	0.00	—
437	051396	1400	6	—	0.05	0.03	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	—	0.03	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.05	---
438	051496	1400	8	—	0.02	0.02	0.07	—	0.04	0.04	0.05	0.00	0.01	0.03	0.03	0.04	—	0.10	0.05	—	0.07	0.00	0.00	0.00	0.00	0.00	0.09	—
439	051596	0100	6	—	0.09	0.06	0.08	—	0.08	0.11	0.13	0.07	0.03	0.04	0.03	0.04	—	0.03	0.03	—	0.01	0.00	0.00	0.00	0.00	0.00	0.04	—
440	051696	0700	3	—	0.02	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.02	0.00	0.00	0.00	0.00	0.00	0.00	—
441	052096	1500	12	—	0.23	0.31	0.34	—	0.13	0.13	0.16	0.14	0.11	0.14	0.16	0.16	—	0.05	0.05	—	0.08	0.00	0.00	0.03	0.28	0.12	0.00	—
442	052396	0200	8	—	0.13	0.09	0.20	—	0.12	0.17	0.22	0.25	0.19	0.23	0.22	0.31	—	0.32	0.30	—	0.34	0.46	0.29	0.25	0.33	0.41	0.49	—
443	052496	0300	1	—	0.00	0.00	0.00	—	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---
444	052496	0900	7	—	0.30	0.60	0.34	—	0.54	0.27	0.40	0.42	0.29	0.53	0.37	0.30	—	0.30	0.40	—	0.42	0.46	0.40	0.26	0.17	0.14	0.45	—
445	052596	0400	5	—	0.66	0.33	0.33	—	0.03	0.00	0.21	0.19	0.01	0.03	0.00	0.00	—	0.03	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
446	052596	1700	8	—	0.11	0.07	0.16	—	0.11	0.09	0.19	0.21	0.15	0.16	0.20	0.24	—	0.24	0.27	—	0.42	0.56	0.32	0.25	0.17	0.19	0.44	---
447	052696	1100	7	—	0.35	0.32	0.34	—	0.26	0.25	0.41	0.45	0.35	0.59	0.62	0.47	—	0.47	0.42	—	0.57	0.68	0.50	0.73	0.47	0.30	0.74	—
448	052696	2300	12	—	1.30	1.83	1.13	—	1.46	1.16	1.06	1.40	1.06	1.35	1.09	1.01	—	1.08	1.09	—	0.93	1.36	0.92	1.10	1.13	1.01	0.97	—
449	052896	0600	6	—	0.00	0.13	0.00	—	0.20	0.09	0.00	0.00	0.08	0.00	0.00	0.00	—	0.05	0.00	—	0.04	0.00	0.04	0.00	0.00	0.00	0.00	—
450	052996	0700	8	—	0.04	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.04	0.00	0.00	0.00	0.00	—
451	053096	0600	3	—	0.01	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.02	0.00	0.00	0.00	0.00	0.00	0.00	—
452	053196	0800	1	—	0.01	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
453	060196	0600	19	—	0.57	0.70	0.72	—	0.63	0.43	0.89	0.69	0.52	0.70	0.47	0.75	—	0.65	0.70	—	0.21	0.78	0.70	0.86	0.67	0.79	0.79	—
454	060296	1900	5	—	0.23	0.29	0.39	—	0.56	0.45	0.54	0.51	0.35	0.45	0.41	0.28	—	0.13	0.24	—	0.19	0.09	0.12	0.13	0.20	0.27	0.02	—
455	060596	2100	5	—	0.05	0.04	0.21	—	0.25	0.36	0.17	0.33	0.14	0.30	0.53	0.16	—	0.18	0.24	—	0.06	0.17	0.15	0.11	0.10	0.15	0.18	---
456	060696	1800	4	—	0.24	1.30	0.08	—	0.48	0.45	0.22	0.65	0.60	0.78	0.35	0.29	—	0.57	1.35	—	0.08	0.41	0.70	0.70	0.42	0.26	0.14	—
457	060896	1800	15	—	0.00	0.02	0.04	—	0.02	0.02	0.05	0.06	0.03	0.03	0.04	0.04	—	0.04	0.04	—	0.01	0.09	0.07	0.02	0.05	0.03	0.03	—
458	060996	2100	8	—	0.10	0.07	0.11	---	0.08	0.05	0.18	0.34	0.08	0.06	0.07	0.12	—	0.07	0.09	—	0.03	0.10	0.08	0.11	0.09	0.08	0.08	—
459	061396	1400	8	—	0.06	0.13	0.00	—	0.02	1.13	0.00	0.00	0.23	0.74	1.12	0.00	—	0.05	0.78	—	0.09	0.00	0.20	0.10	0.30	1.21	0.06	—
460	061796	0500	2	—	0.05	0.03	0.00	—	0.00	0.20	0.00	0.00	0.00	0.00	0.12	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.07	0.07	0.00	—
461	061796	1700	11	—	0.19	0.12	0.10	—	0.11	0.00	0.10	0.05	0.00	0.00	0.37	0.10	—	0.03	0.23	—	0.09	0.17	0.07	0.41	0.09	0.36	0.41	---
462	062196	1800	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.12	0.00	0.00	---
463	062396	2100	5	—	0.46	0.39	0.69	—	0.58	0.20	0.61	0.99	0.82	0.71	0.56	0.98	—	0.87	0.66	—	0.20	0.76	0.65	0.31	0.39	0.27	0.20	—
464	071296	2200	6	—	0.00	0.00	0.10	—	0.00	0.00	0.26	0.14	0.00	0.00	0.00	0.34	—	0.10	0.07	—	0.23	0.14	0.14	0.25	0.34	0.41	0.21	—
465	071496	0300	21	—	0.44	0.38	0.54	—	0.40	0.45	0.57	0.68	0.59	0.80	0.82	0.77	—	1.02	0.54	—	0.55	0.35	0.33	0.34	0.48	0.54	0.32	—
466	071696	1200	2	—	0.00	0.01	0.00	—	0.06	0.05	0.00	0.00	0.04	0.07	0.02	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
467	072096	1200	23	—	1.44	1.31	1.04	—	0.89	0.92	0.83	1.06	1.00	1.17	1.04	1.07	—	1.20	1.07	—	0.91	1.18	1.09	1.14	1.07	1.34	0.80	—
468	072296	1700	4	—	0.11	0.29	0.13	—	0.04	0.11	0.20	0.09	0.10	0.07	0.06	0.16	—	0.09	0.08	—	0.08	0.19	0.19	0.07	0.14	0.07	0.27	---
469	072396	2000	10	—	0.03	0.10	0.17	—	0.14	0.48	0.25	0.15	0.29	0.35	0.23	0.60	—	0.28	0.21	—	0.01	0.09	0.10	0.29	0.30	0.21	0.22	—
470	072496	1100	4	—	0.11	0.06	0.06	—	0.13	0.05	0.05	0.04	0.09	0.07	0.00	0.08	—	0.34	0.05	—	0.22	0.25	0.11	0.27	0.23	0.24	0.22	---
471	072796	2300	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.03	0.02	0.00	---
472	072896	1400	8	—	0.07	1.19	0.00	—	0.00	0.36	0.00	0.00	0.00	0.04	0.49	0.00	—	0.03	0.00	—	0.00	0.68	0.49	0.45	0.37	0.02	0.00	—

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Concluded)

Strm#	Dale	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
473	073096	0100	5	—	0.35	0.35	0.65	—	0.17	0.06	0.56	0.92	0.71	0.59	0.37	0.20	—	1.15	0.81	—	0.00	0.00	0.02	0.09	0.08	0.30	0.00	—
474	080796	1700	5	—	1.05	0.00	0.10	—	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.03	—	0.00	0.00	—	0.15	0.00	0.00	0.00	0.00	0.00	0.05	—
475	081696	2100	39	—	0.75	0.60	0.82	—	0.47	0.61	0.81	0.93	0.55	0.57	0.63	1.04	—	0.74	0.74	—	1.26	1.39	1.04	1.16	1.11	1.06	1.54	—
476	081996	0200	3	—	0.06	0.00	0.00	—	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
477	082396	1100	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
478	090696	1700	6	—	0.24	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.12	—
479	090896	1200	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.05	0.05	0.04	0.04	—
480	090896	1700	3	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.09	0.16	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.06	—
481	092396	0500	10	—	0.26	0.27	0.37	—	0.29	0.28	0.34	0.35	0.31	0.33	0.34	0.34	—	0.36	0.37	—	0.39	0.41	0.34	0.34	0.35	0.37	0.39	—
482	092596	1600	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.12	0.11	0.00	—	0.00	0.08	—	0.00	0.08	0.00	0.06	0.10	0.08	0.10	—
483	092596	2300	27	—	1.28	1.30	1.21	—	1.21	1.19	1.43	1.05	1.22	0.99	1.15	1.38	—	1.19	0.77	—	0.96	1.42	1.13	0.88	0.59	1.09	1.62	—
484	100796	1200	1	—	0.00	0.00	0.00	—	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
485	100796	1800	10	—	0.34	0.32	0.00	—	0.53	0.52	0.28	0.25	0.33	0.41	0.49	0.32	—	0.38	0.57	—	0.37	0.39	0.33	0.35	0.55	0.67	0.39	—
486	100896	1500	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.04	0.00	----
487	101796	0200	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	—	0.10	0.00	—	0.00	0.00	0.06	0.00	0.00	0.00	0.00	—
488	101796	1200	10	—	0.56	0.76	0.49	—	0.66	0.42	0.35	0.72	0.36	0.71	0.60	0.56	—	0.94	0.54	—	0.52	0.43	0.80	0.45	0.89	1.24	0.41	—
489	102196	0400	6	—	0.04	0.02	0.00	—	0.01	0.03	0.03	0.00	0.03	0.00	0.00	0.00	—	0.04	0.00	—	0.02	0.00	0.02	0.00	0.00	0.00	0.06	—
490	102196	1300	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.02	—	0.00	0.00	0.00	0.00	0.00	0.03	0.00	—
491	102196	1900	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
492	102196	2400	20	—	0.75	0.46	0.72	—	0.55	0.53	0.79	0.69	0.59	0.68	0.53	0.66	—	0.64	0.67	—	0.83	0.75	0.72	0.62	0.75	0.73	0.93	—
493	102296	2300	9	—	0.04	0.05	0.02	—	0.04	0.05	0.09	0.06	0.08	0.09	0.11	0.02	—	0.03	0.07	—	0.09	0.08	0.04	0.09	0.04	0.04	0.10	---
494	102996	1400	6	---	0.20	0.12	0.24	---	0.17	0.20	0.20	0.22	0.12	0.17	0.23	0.18	—	0.21	0.20	—	0.43	0.13	0.14	0.20	0.20	0.16	0.16	—
495	110496	1700	10	—	-0.03	0.08	0.06	—	0.00	0.06	0.06	0.04	0.00	0.00	0.07	0.02	—	0.01	0.02	—	0.03	0.00	0.00	0.00	0.00	0.00	0.03	—
496	110696	0700	19	—	1.47	1.08	1.10	—	1.09	1.07	1.01	1.39	0.94	1.23	1.06	1.16	—	1.13	1.46	—	0.87	1.07	0.98	1.10	1.23	1.17	1.18	---
497	110796	0500	9	—	0.00	0.06	0.00	—	0.04	0.07	0.00	0.00	0.04	0.06	0.12	0.00	—	0.05	0.15	—	0.00	0.10	0.09	0.16	0.25	0.24	0.06	—
498	111696	2000	15	—	0.27	0.17	0.00	—	0.23	0.21	0.24	0.00	0.27	0.20	0.21	0.20	—	0.22	0.22	—	0.28	0.27	0.25	0.16	0.20	0.19	0.29	—
499	112096	2300	17	—	0.11	0.05	0.00	—	0.01	0.05	0.15	0.00	0.10	0.09	0.07	0.09	—	0.11	0.22	—	0.01	0.13	0.07	0.05	0.09	0.13	0.08	—
500	112396	0900	10	—	0.09	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.02	0.00	0.00	0.00	0.00	—
501	112496	0300	17	—	0.28	0.19	0.19	—	0.20	0.27	0.16	0.00	0.21	0.30	0.27	0.17	—	0.28	0.32	—	0.24	0.32	0.30	0.34	0.29	0.19	0.20	—
502	112996	1400	14	—	0.60	0.23	0.38	—	0.31	0.32	0.37	0.41	0.29	0.26	0.33	0.36	—	0.33	0.59	—	0.31	0.38	0.31	0.32	0.39	0.36	0.31	—
503	113096	2300	2	—	0.00	0.02	0.00	—	0.02	0.04	0.00	0.00	0.04	0.02	0.02	0.02	—	0.04	0.02	—	0.08	0.05	0.04	0.01	0.00	0.00	0.02	—
504	120196	0100	12	—	0.11	0.08	0.15	—	0.15	0.07	0.11	0.16	0.11	0.09	0.08	0.12	—	0.09	0.20	—	0.11	0.21	0.06	0.20	0.05	0.04	.0.10	—
505	120496	2300	15	—	0.16	0.23	0.00	—	0.09	0.13	0.21	0.18	0.13	0.28	0.08	0.11	—	0.14	0.15	—	0.09	0.15	0.10	0.06	0.13	0.17	0.18	—
506	121196	0400	4	—	0.04	0.01	0.00	—	0.03	0.03	0.06	0.00	0.03	0.06	0.03	0.00	—	0.00	0.04	—	0.00	0.04	0.04	0.00	0.05	0.21	0.03	—
507	121496	2400	4	—	0.06	0.03	0.00	—	0.03	0.05	0.00	0.01	0.03	0.09	0.08	0.00	—	0.05	0.07	—	0.02	0.03	0.04	0.07	0.04	0.04	0.00	—
508	122396	0300	14	—	0.75	0.90	0.45	—	0.96	0.60	0.44	0.72	0.67	0.48	0.26	0.92	—	0.32	0.25	—	1.17	0.59	0.34	0.07	0.00	0.23	0.74	—
509	010497	1000	6	—	0.08	0.03	0.00	—	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.03	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
510	010897	2300	14	—	0.15	0.09	0.03	—	0.10	0.31	0.00	0.00	0.09	0.16	0.33	0.22	—	0.23	0.15	—	0.21	0.23	0.13	0.18	0.06	0.21	0.00	—
511	010997	1800	10	—	0.06	0.05	0.11	—	0.08	0.04	0.00	0.00	0.05	0.00	0.00	0.04	—	0.00	0.04	—	0.09	0.00	0.00	0.02	0.09	0.00	0.00	—
512	011297	1100	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.13	0.00	0.00	0.15	—
513	011297	1900	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.04	0.00	0.00	0.14	—
514	011597	0300	36	—	0.22	0.37	0.00	—	0.32	0.29	0.00	0.00	0.40	0.43	0.23	0.41	—	0.25	0.19	—	0.37	0.32	0.26	0.00	0.36	0.44	0.00	—
515	012197	1300	5	—	0.08	0.10	0.00	—	0.00	0.07	0.00	0.00	0.04	0.06	0.07	0.00	—	0.03	0.08	—	0.00	0.00	0.04	0.00	0.06	0.00	0.00	—

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
516	012197	2400	4	—	0.05	0.11	0.00	—	0.10	0.05	0.00	0.12	0.08	0.04	0.05	0.09	—	0.04	0.07	—	0.11	0.07	0.05	0.00	0.05	0.00	0.00	—
517	012297	0900	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.04	0.00	0.00	0.00	0.00	—
518	012497	0900	8	—	0.35	0.27	0.28	—	0.26	0.36	0.35	0.36	0.36	0.24	0.43	0.30	—	0.31	0.39	—	0.33	0.30	0.35	0.28	0.44	0.00	0.00	—
519	012697	0500	9	—	0.07	0.17	0.13	—	0.06	0.07	0.05	0.14	0.06	0.14	0.12	0.14	—	0.07	0.07	—	0.17	0.19	0.12	0.06	0.18	0.00	0.00	—
520	012697	2300	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.02	0.00	0.00	0.00	0.00	0.00	0.00	—
521	012797	0700	11	—	0.19	0.14	0.00	—	0.16	0.12	0.19	0.27	0.10	0.25	0.09	0.13	—	0.14	0.15	—	0.41	0.23	0.14	0.18	0.07	0.00	0.00	—
522	020297	1500	8	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.08	0.00	0.00	0.00	0.00	0.00	0.00	—
523	020397	0500	3	—	0.00	0.00	0.00	—	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	—	0.01	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
524	020397	1100	27	—	0.12	0.15	0.00	—	0.08	0.11	0.10	0.11	0.10	0.08	0.08	0.15	—	0.12	0.19	—	0.21	0.19	0.12	0.07	0.12	0.00	0.14	—
525	021597	1600	13	—	0.07	0.14	0.03	—	0.05	0.13	0.02	0.03	0.07	0.06	0.08	0.06	—	0.09	0.08	—	0.00	0.05	0.06	0.06	0.00	0.09	0.07	—
526	021997	0300	8	—	0.05	0.05	0.00	—	0.05	0.00	0.00	0.00	0.06	0.00	0.03	0.00	—	0.06	0.00	—	0.04	0.00	0.02	0.00	0.00	0.00	0.00	--
527	022097	1100	39	—	**3.56**	2.38	**3.02**	—	2.19	1.80	2.64	2.69	2.14	1.78	1.51	2.59	—	1.85	1.95	—	2.51	2.21	1.66	1.43	0.00	1.22	2.34	—
528	022697	0400	35	—	1.66	1.26	1.28	—	1.23	1.45	1.10	1.34	1.32	1.46	1.43	1.33	—	1.34	1.96	—	0.77	1.48	1.30	1.28	0.00	1.38	1.23	—
529	022897	1700	8	—	0.25	0.18	0.18	—	0.13	0.14	0.17	0.16	0.11	0.17	0.06	0.16	—	0.18	0.17	—	0.00	0.30	0.17	0.09	0.00	0.08	0.05	—
530	030197	0100	21	—	0.06	0.07	0.17	—	0.13	0.10	0.20	0.13	0.12	0.05	0.10	0.09	—	0.09	0.10	—	0.06	0.06	0.08	0.04	0.00	0.15	0.06	—
531	030997	0500	9	—	0.75	0.87	0.88	—	0.74	0.50	0.96	0.80	0.50	0.72	0.72	0.95	—	0.67	1.25	—	1.26	0.94	0.88	1.10	1.11	1.12	0.91	---
532	031397	1400	13	—	0.54	0.46	0.00	—	0.48	0.59	0.35	0.50	0.52	0.57	0.35	0.46	—	0.18	0.71	—	0.53	0.54	0.52	0.18	0.29	0.48	0.42	—
533	031897	0100	11	—	0.08	0.05	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	—	0.00	0.09	—	0.00	0.20	0.09	0.05	0.00	0.00	0.08	—
534	032497	1200	5	—	0.30	0.24	0.35	—	0.29	0.28	0.37	0.37	0.35	0.18	0.31	0.34	—	0.14	0.29	—	0.38	0.34	0.30	0.25	0.34	0.23	0.25	—
535	032497	2300	7	—	0.14	0.05	0.11	—	0.10	0.07	0.13	0.11	0.14	0.01	0.02	0.13	—	0.00	0.03	—	0.16	0.06	0.06	0.00	0.05	0.01	0.14	—
536	032797	2400	5	—	0.03	0.00	0.00	—	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.03	—	0.00	0.04	—	0.06	0.04	0.00	0.00	0.00	0.00	0.04	—
537	033097	0400	9	—	0.15	0.08	0.08	—	0.09	0.11	0.05	0.09	0.11	0.09	0.12	0.08	—	0.09	0.13	—	0.08	0.05	0.07	0.10	0.05	0.05	0.00	—
538	040497	1400	34	—	0.80	0.49	0.25	—	0.35	0.32	0.34	0.24	0.28	0.14	0.50	0.22	—	0.22	0.37	—	0.38	0.34	0.27	0.17	0.23	0.32	1.32	—
539	040697	0300	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.05	0.00	0.00	---
540	041097	1200	35	—	1.52	1.38	1.53	—	0.93	1.00	0.98	0.98	0.89	0.95	0.77	0.90	—	0.70	0.62	—	0.66	0.95	0.56	0.43	0.38	0.44	0.74	—
541	041297	1100	14	—	0.00	0.00	0.08	—	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.10	0.00	0.00	0.00	—
542	041597	2300	4	—	0.09	0.04	0.00	—	0.11	0.04	0.07	0.09	0.10	0.06	0.09	0.13	—	0.14	0.18	—	0.18	0.12	0.11	0.12	0.00	0.11	0.08	—
543	041897	1700	9	—	0.17	0.00	0.00	—	0.18	0.00	0.02	0.04	0.00	0.00	0.09	0.11	—	0.00	0.07	—	0.00	0.00	0.04	0.04	0.00	0.03	0.00	—
544	042097	1600	8	—	0.00	0.00	0.00	—	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	—	0.07	0.19	—	0.13	0.13	0.19	0.09	0.00	0.08	0.22	—
545	042197	0700	15	—	0.00	0.26	0.00	—	0.07	0.00	0.00	0.00	0.08	0.12	0.03	0.00	—	0.01	0.03	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
546	042797	0200	10	—	0.05	0.08	0.00	—	0.07	0.04	0.00	0.00	0.05	0.00	0.06	0.00	—	0.07	0.06	—	0.06	0.04	0.08	0.00	0.00	0.06	0.00	—
547	043097	0500	2	—	0.04	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---
548	043097	1200	4	—	0.24	0.33	0.00	—	0.24	0.15	0.21	0.24	0.25	0.19	0.11	0.12	—	0.31	0.00	—	0.11	0.20	0.50	0.09	0.29	0.18	0.16	----
549	050297	0600	5	—	0.09	0.07	0.04	—	0.04	0.03	0.06	0.00	0.04	0.04	0.07	0.07	—	0.05	0.05	—	0.07	0.18	0.08	0.05	0.04	0.08	0.08	—
550	050297	2400	9	—	0.25	0.22	0.48	—	0.25	0.25	0.50	0.82	0.44	0.37	0.32	0.61	—	0.42	0.41	—	0.72	0.68	0.60	0.46	0.49	0.36	0.40	—
551	050397	1200	4	—	0.02	0.04	0.03	—	0.00	0.08	0.02	0.00	0.13	0.02	0.03	0.00	—	0.07	0.03	—	0.00	0.00	0.04	0.08	0.03	0.07	0.00	—
552	050797	1300	4	—	0.00	0.06	0.00	—	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	—	0.02	0.00	—	0.00	0.05	0.02	0.00	0.00	0.00	0.00	—
553	050797	2200	9	—	0.20	0.24	0.25	—	0.28	0.27	0.37	0.31	0.31	0.33	0.30	0.64	—	0.45	0.40	—	0.64	0.74	0.80	0.66	0.67	0.67	0.39	---
554	051197	1500	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.02	0.03	0.00	0.03	—
555	051397	2400	5	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	—	0.00	0.12	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
556	051697	1600	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
557	051697	2100	6	—	0.00	0.03	0.02	—	0.06	0.05	0.00	0.00	0.26	0.00	0.04	0.00	—	0.00	0.34	—	0.00	0.00	0.04	0.02	0.00	0.29	0.00	—
558	051897	0700	6	—	0.07	0.13	0.08	—	0.07	0.00	0.09	0.10	0.07	0.07	0.08	0.08	—	0.12	0.11	—	0.11	0.09	0.12	0.09	0.09	0.11	0.09	---

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Dale	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
559	051897	2100	11	—	0.18	0.20	0.15	—	0.18	0.25	0.16	0.17	0.22	0.27	0.35	0.64	—	0.33	0.25	—	0.51	0.38	0.36	0.57	0.63	0.47	0.35	
560	052497	1500	6	—	0.05	0.06	0.00	—	0.04	0.04	0.00	0.00	0.05	0.00	0.10	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.05	0.10	0.17	0.00	—
561	052597	1600	27	—	0.71	0.74	1.11	—	0.72	1.07	1.45	1.35	1.14	1.20	1.89	1.70	—	1.89	2.63	—	1.14	0.57	0.76	0.73	0.90	1.08	1.15	---
562	052797	1500	9	—	0.13	0.15	0.26	—	0.18	0.12	0.30	0.37	0.27	0.25	0.16	0.22	—	0.27	0.25	—	0.24	0.29	0.33	0.20	0.32	0.24	0.34	—
563	052897	1400	9	—	0.00	0.05	0.00	—	0.00	0.08	0.00	0.00	0.08	0.00	0.29	0.14	—	0.00	0.05	—	0.00	0.02	0.00	0.03	0.00	0.28	0.00	—
564	060197	1400	18	—	0.08	0.14	0.00	—	0.09	0.10	0.00	0.00	0.06	0.07	0.12	0.00	—	0.00	0.00	—	0.02	0.00	0.05	0.05	0.09	0.19	0.00	—
565	060697	0400	12	—	0.82	0.56	0.00	—	0.30	0.89	0.34	0.38	0.00	0.43	0.46	0.23	—	0.41	0.27	—	0.25	0.19	0.33	0.43	0.46	0.56	0.34	—
566	060797	1300	20	—	0.15	0.10	0.00	—	0.30	0.18	0.32	0.41	0.00	0.29	0.43	0.36	—	0.25	0.36	—	0.98	0.38	0.26	0.29	0.18	0.27	0.75	—
567	060897	1200	3	—	0.00	0.03	0.00	—	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	—	0.00	0.02	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
568	061097	2200	8	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.09	0.00	0.00	0.00	0.00	0.40	—
569	061197	2000	8	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.13	0.00	0.10	0.00	0.56	0.28	0.00	—
570	061297	0900	10	—	1.34	1.16	0.00	—	1.41	1.04	0.90	1.18	0.00	0.87	0.69	0.62	—	0.00	1.62	—	0.05	0.07	0.03	0.00	0.04	0.14	0.00	—
571	061597	2100	8	—	0.04	0.08	0.00	—	0.03	0.00	0.04	0.11	0.00	0.04	0.02	0.09	—	0.00	0.03	—	0.02	0.00	0.03	0.15	0.00	0.00	0.09	—
572	062097	0800	4	—	0.07	0.00	0.00	—	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	1.03	—	0.00	0.00	0.09	0.00	0.10	0.05	0.00	—
573	062197	0500	3	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.12	0.05	0.00	0.00	0.00	0.26	—
574	062597	1500	6	—	0.10	0.38	0.00	—	0.07	0.08	0.08	0.00	0.06	0.10	0.07	0.06	—	0.00	0.09	—	0.09	0.06	0.08	0.05	0.08	0.10	0.07	—
575	062997	1500	2	—	0.00	0.00	0.00	—	0.00	0.00	0.18	0.49	0.00	0.00	0.00	0.05	—	0.00	0.00	—	0.00	0.12	0.00	0.08	0.28	0.00	0.00	—
576	063097	0300	3	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	—	0.00	0.00	—	0.00	0.24	0.16	0.00	0.00	0.00	0.00	—
577	063097	1200	13	—	0.07	0.00	0.15	—	0.00	0.27	0.15	0.00	0.09	0.03	0.13	0.23	—	0.00	0.08	—	0.05	0.07	0.62	0.24	0.10	0.00	0.72	—
578	070397	1000	14	—	0.22	0.10	0.00	—	0.20	0.15	0.26	0.22	0.00	0.25	0.27	0.32	—	0.44	0.56	—	0.30	0.33	0.35	0.36	0.41	0.37	0.28	---
579	071397	1500	2	—	0.00	0.00	0.00	—	0.00	0.00	0.19	0.00	0.00	0.17	0.00	0.00	—	0.00	0.00	—	0.00	0.12	0.00	0.00	0.00	0.04	0.00	—
580	071997	1200	11	—	0.21	0.47	0.00	—	0.20	0.37	1.00	1.25	1.03	0.96	0.39	1.65	—	0.81	1.23	—	0.23	**2.74**	**3.89**	**3.98**	**2.64**	1.05	1.28	—
581	072097	0500	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.08	0.00	—
582	072197	0500	19	—	0.07	0.37	0.00	—	0.75	1.02	0.34	0.42	1.12	1.28	1.28	0.98	—	1.14	1.16	—	0.49	0.12	0.07	0.24	0.11	0.08	0.20	—
583	072797	1700	8	—	0.16	0.07	0.00	—	0.00	0.30	0.00	0.07	0.00	0.00	0.03	0.99	—	0.88	0.37	—	1.77	0.00	0.59	0.29	0.75	0.60	0.00	—
584	080397	1700	15	—	0.69	0.59	0.00	—	0.08	0.15	1.53	0.68	0.58	0.07	0.05	1.14	—	0.43	0.31	—	0.65	0.78	1.07	0.42	0.23	0.08	0.57	—
585	080897	2400	10	—	0.78	0.58	0.00	—	0.12	0.53	0.26	0.74	1.01	0.65	0.41	0.52	—	1.29	0.62	—	0.15	1.03	0.98	0.47	0.47	0.30	0.20	—
586	080997	1600	2	—	0.00	0.00	0.00	—	0.00	0.12	0.00	0.00	0.00	0.00	0.17	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
587	081197	0100	4	—	0.10	0.38	0.00	—	0.12	0.07	0.00	0.00	0.00'	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
588	081197	2000	5	—	0.07	0.00	0.00	—	0.00	0.00	0.00	0.11	0.00	0.04	0.17	0.00	—	0.07	0.17	—	0.00	0.06	0.08	0.24	0.45	0.21	0.06	—
589	081297	1300	6	—	0.04	0.25	0.00	—	0.20	0.23	0.00	0.47	0.83	0.48	0.36	0.09	—	0.10	0.23	—	0.00	0.43	0.25	0.20	0.35	0.41	0.00	—
590	081597	0100	5	—	0.15	0.19	0.00	—	0.18	0.21	0.20	0.35	0.17	0.23	0.24	0.24	—	0.28	0.49	—	0.15	0.29	0.27	0.39	0.46	0.64	0.19	—
591	081697	2300	15	—	**3.06**	**2.44**	0.00	—	1.49	1.78	0.06	1.46	1.13	1.96	1.27	1.24	—	1.70	1.64	—	1.14	1.39	1.59	1.36	1.12	1.70	1.18	—
592	081797	1900	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.07	0.00	0.00	0.00	0.00	0.00	—
593	081997	0800	9	—	0.21	0.18	0.00	—	0.24	0.29	0.39	0.28	0.26	0.24	0.21	0.39	—	0.26	0.33	—	0.43	0.29	0.24	0.00	0.16	0.21	0.48	—
594	082197	0700	2	—	0.03	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
595	082197	1500	8	—	0.16	0.11	0.00	—	0.06	0.04	0.18	0.14	0.09	0.03	0.00	0.07	—	0.10	0.18	—	0.11	0.06	0.02	0.17	0.16	0.04	0.04	—
596	082497	1300	11	—	0.29	0.06	0.00	—	0.44	0.30	0.00	0.92	0.00	0.00	0.29	0.11	—	0.54	0.13	—	0.00	0.88	0.78	0.72	0.17	0.04	0.08	—
597	082697	0600	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	—	0.00	0.00	—	0.15	0.08	0.00	0.00	0.00	0.00	0.18	---
598	083097	0700	8	—	0.13	0.56	0.00	—	0.58	0.51	0.42	0.34	0.28	0.72	0.94	0.62	—	0.36	0.53	—	0.44	0.32	0.38	0.38	0.49	0.18	0.21	—
599	090297	1000	13	—	0.28	0.39	0.00	—	0.33	0.60	0.81	0.42	0.71	0.40	0.65	1.08	—	0.93	0.73	—	1.01	1.66	0.00	1.31	1.75	1.27	0.26	—
600	090797	1600	13	—	0.32	0.51	0.00	—	0.21	0.94	0.07	0.15	0.00	0.05	0.58	0.07	—	0.08	0.10	—	0.00	0.00	0.00	0.10	0.00	0.28	0.17	—
601	090897	1300	11	—	**2.80**	0.64	0.00	—	**2.40**	**2.95**	0.18	0.88	0.35	0.00	0.40	0.42	—	0.13	0.26	—	0.25	0.18	0.00	0.21	0.41	0.45	0.11	—

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

Strm #	Dale	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
602	090997	1100	10	—	0.25	0.16	0.00	—	0.28	0.04	0.21	0.00	0.70	0.00	0.09	0.00	—	0.35	0.10	—	0.00	0.00	0.83	0.45	0.08	0.09	0.00	—
603	091697	1800	11	—	0.30	0.16	0.00	—	0.13	0.20	0.21	0.00	0.17	0.18	0.17	0.18	—	0.24	0.24	—	0.22	0.20	0.25	0.27	0.28	0.25	0.30	
604	092297	1900	24	—	0.26	0.26	0.00	—	0.23	0.24	0.27	0.00	0.26	0.30	0.31	0.29	—	0.41	0.45	—	0.41	0.44	0.40	0.31	0.33	0.33	0.38	—
605	100497	0500	8	—	0.04	0.04	0.05	—	0.10	0.04	0.11	0.00	0.05	0.00	0.08	0.03	—	0.03	0.03	—	0.06	0.00	0.04	0.00	0.00	0.00	0.00	—
606	100897	2300	11	—	0.01	0.03	0.06	—	0.03	0.03	0.05	0.00	0.12	0.00	0.08	0.00	—	0.08	0.11	—	0.07	0.00	0.04	0.04	0.04	0.16	0.08	—
607	101297	2100	15	—	0.62	0.68	0.37	—	0.65	0.66	0.32	0.00	0.59	0.64	0.67	0.00	—	0.66	0.97	—	0.30	0.46	0.45	0.57	0.69	0.59	0.39	—
608	102397	1700	10	—	0.25	0.10	0.16	—	0.12	0.03	0.15	0.03	0.06	0.07	0.00	0.00	—	0.15	0.00	—	0.05	0.00	0.04	0.00	0.22	0.05	0.11	—
609	102497	1400	12	—	0.19	0.14	0.16	—	0.08	0.18	0.23	0.15	0.14	0.10	0.14	0.22	—	0.18	0.05	—	0.17	0.13	0.12	0.00	0.07	0.10	0.22	—
610	102597	1800	29	—	0.47	0.55	0.00	—	0.40	0.53	0.59	0.50	0.37	0.55	0.50	0.53	—	0.51	0.00	—	0.52	0.53	0.41	0.00	0.52	0.32	0.48	—
611	103197	2100	4	—	0.12	0.12	0.00	—	0.08	0.07	0.00	0.00	0.08	0.00	0.10	0.00	—	0.16	0.00	—	0.21	0.00	0.06	0.00	0.08	0.00	0.00	—
612	110197	0100	5	—	0.04	0.06	0.00	—	0.00	0.13	0.28	0.00	0.05	0.16	0.23	0.14	—	0.14	0.00	—	0.04	0.26	0.04	0.00	0.08	0.30	0.18	
613	110297	0900	8	—	0.00	0.00	0.07	—	0.07	0.06	0.06	0.14	0.08	0.02	0.06	0.06	—	0.15	0.00	—	0.05	0.00	0.07	0.06	0.02	0.09	0.00	—
614	1103 97	1600	5	—	0.00	0.00	0.00	—	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	—	0.01	0.00	—	0.01	0.00	0.00	0.00	0.00	0.00	0.00	—
615	110597	0800	28	—	1.06	1.04	1.29	—	1.02	0.84	1.34	1.24	1.13	0.99	0.93	1.29	—	1.22	1.58	—	1.33	1.56	1.24	1.06	1.06	0.90	1.47	—
616	112797	1300	5	—	0.24	0.13	0.23	—	0.16	0.19	0.14	0.19	0.14	0.18	0.21	0.10	—	0.16	0.19	—	0.11	0.11	0.13	0.08	0.13	0.19	0.14	—
617	112897	0400	8	—	0.42	0.46	0.38	—	0.45	0.37	0.35	0.45	0.55	0.63	0.71	0.66	—	0.49	0.00	—	0.37	0.41	0.41	0.59	0.68	0.52	0.41	
618	112897	2200	8	—	0.15	0.15	0.06	—	0.06	0.10	0.08	0.00	0.03	0.00	0.06	0.06	—	0.06	0.02	—	0.07	0.00	0.00	0.00	0.00	0.03	0.06	—
619	112997	1100	35	—	0.84	0.49	1.06	—	0.78	0.67	1.05	1.05	1.09	0.93	1.23	1.45	—	1.43	1.38	—	0.87	1.41	1.45	1.24	1.53	1.01	0.73	—
620	120397	0300	6	—	0.12	0.10	0.12	—	0.12	0.18	0.13	0.13	0.11	0.19	0.21	0.12	—	0.12	0.26	—	0.12	0.21	0.15	0.19	0.28	0.28	0.09	—
621	120497	1800	12	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.03	—	0.00	0.00	—	0.05	0.03	0.10	0.10	0.00	0.00	0.00	—
622	120897	1300	8	—	0.00	0.04	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.05	0.00	—	0.06	0.05	0.05	0.00	0.00	0.00	0.00	—
623	120997	1600	22	—	0.07	0.39	0.30	—	0.26	0.43	0.38	0.41	0.22	0.17	0.37	0.20	—	0.15	0.20	—	0.11	0.41	0.32	0.38	0.13	0.33	0.43	—
624	122197	0800	5	—	0.04	0.00	0.02	—	0.02	0.03	0.00	0.00	0.04	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.02	0.00	0.00	0.00	0.00	
625	122197	1600	21	—	0.24	0.38	0.19	—	0.32	0.25	0.16	0.21	0.30	0.28	0.33	0.20	—	0.22	0.60	—	0.22	0.00	0.17	0.16	0.33	0.21	0.12	—
626	122497	0500	20	—	0.51	0.61	0.68	—	0.53	0.52	0.61	0.68	0.62	0.62	0.62	0.59	—	0.67	0.79	—	0.56	0.00	0.65	0.68	0.65	0.64	0.62	—
627	122997	0300	13	—	0.08	0.08	0.04	—	0.08	0.09	0.00	0.04	0.07	0.04	0.08	0.10	—	0.01	0.00	—	0.09	0.12	0.03	0.09	0.05	0.04	0.07	—
628	123097	0800	11	—	0.03	0.01	0.07	—	0.06	0.00	0.00	0.05	0.07	0.00	0.06	0.00	—	0.05	0.00	—	0.11	0.08	0.12	0.05	0.05	0.06	0.05	—
629	123097	2300	5	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.03	0.00	0.00	0.00	0.00	0.00	0.00	—
630	010498	0700	10	—	0.44	0.61	0.37	—	0.41	0.45	0.35	0.45	0.46	0.57	0.46	0.37	—	0.45	0.79	—	0.39	0.53	0.47	0.48	0.57	0.54	0.36	—
631	010598	0300	14	—	0.28	0.27	0.29	—	0.26	0.26	0.18	0.22	0.30	0.25	0.22	0.28	—	0.27	0.18	—	0.26	0.30	0.27	0.27	0.13	0.15	0.19	—
632	010698	0200	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.04	0.00	0.00	0.00	0.00	0.02	—
633	010698	1200	20	—	0.53	0.43	0.55	—	0.58	0.41	0.56	0.53	0.54	0.60	0.29	0.42	—	0.59	0.53	—	0.52	0.69	0.62	0.57	0.44	0.38	0.52	—
634	010798	1200	33	—	1.02	0.61	1.67	—	0.84	0.92	1.25	1.48	1.00	0.90	1.11	1.22	—	1.47	0.88	—	1.15	1.79	1.25	1.31	0.81	0.90	1.31	—
635	010998	1000	7	—	0.02	0.03	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.10	0.00	0.00	0.00	0.00	0.00	—
636	011498	1200	6	—	0.23	0.16	0.05	—	0.00	0.10	0.23	0.20	0.13	0.12	0.11	0.16	—	0.06	0.14	—	0.19	0.25	0.16	0.10	0.00	0.07	0.21	—
637	011598	0900	9	—	0.08	0.00	0.00	—	0.00	0.04	0.09	0.00	0.09	0.07	0.14	0.00	—	0.00	0.08	—	0.08	0.00	0.00	0.06	0.00	0.08	0.00	—
638	012298	1700	3	—	0.00	0.05	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
639	012498	0200	12	—	0.00	0.08	0.03	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.04	0.00	0.00	0.00	0.00	0.00	0.00	—
640	012498	1700	2	—	0.00	0.00	0.03	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
641	013198	1100	7	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.10	0.00	0.00	0.00	0.00	0.00	—
642	021098	0700	11	—	0.14	0.22	0.20	—	0.25	0.24	0.23	0.25	0.40	0.26	0.33	0.21	—	0.30	0.40	—	0.21	0.35	0.26	0.23	0.38	0.42	0.39	—
643	021098	2300	23	—	1.32	1.53	1.61	—	1.33	1.29	1.48	1.42	1.40	1.32	1.26	1.44	—	1.31	1.87	—	1.41	1.83	1.25	1.12	1.13	1.03	1.57	—
644	021698	0900	11	—	0.12	0.20	0.15	—	0.08	0.14	0.08	0.12	0.10	0.11	0.19	0.17	—	0.17	0.33	—	0.15	0.32	0.16	0.12	0.12	0.13	0.17	—

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Continued)

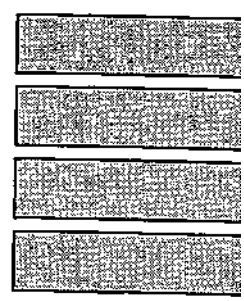
Strm #	Dale	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
645	021798	0500	15	—	0.10	0.06	0.13	—	0.11	0.11	0.12	0.10	0.12	0.10	0.15	0.17	—	0.13	0.15	—	0.08	0.22	0.23	0.20	0.17	0.13	0.16	—
646	021898	0300	2	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.02	0.00	0.04	0.00	0.00	0.00	—
647	021998	1500	12	—	0.08	0.10	0.16	—	0.12	0.14	0.02	0.28	0.23	0.11	0.11	0.08	—	0.14	0.21	—	0.04	0.06	0.13	0.12	0.11	0.17	0.00	—
648	022698	1500	19	—	0.55	0.51	0.58	—	0.46	0.58	0.62	0.61	0.59	0.52	0.67	0.53	—	0.59	0.90	—	0.67	0.67	0.54	0.57	0.63	0.63	0.84	—
649	030798	1900	19	—	1.17	1.08	1.19	—	1.03	0.94	0.96	1.00	1.03	1.05	1.14	1.05	—	1.07	1.66	—	0.94	1.35	0.97	0.78	1.02	1.05	1.09	—
650	030898	1700	20	—	0.72	0.41	0.67	—	0.59	0.42	0.47	0.60	0.64	0.45	0.61	0.46	—	0.58	0.80	—	0.80	0.97	0.55	1.05	0.64	0.63	0.76	—
651	031698	0200	13	—	0.04	0.05	0.04	—	0.04	0.04	0.00	0.04	0.04	0.00	0.00	0.05	—	0.04	0.04	—	0.04	0.04	0.04	0.00	0.00	0.04	0.04	—
652	031698	2000	30	—	1.54	1.50	1.70	—	1.40	1.27	1.60	1.65	1.49	1.10	1.16	1.50	—	1.19	1.93	—	1.43	1.94	1.32	1.15	1.19	1.37	1.45	—
653	031998	1900	22	—	0.36	0.33	0.61	—	0.36	0.40	0.48	0.57	0.40	0.46	0.70	0.62	—	0.64	0.69	—	0.45	0.82	0.56	0.87	0.48	0.61	0.56	
654	032798	2000	12	—	0.50	0.51	0.25	—	0.47	0.47	0.21	0.34	0.47	0.42	0.70	0.27	—	0.50	1.07	—	0.29	0.38	0.56	0.55	0.48	0.65	0.41	—
655	032898	2400	9	—	0.04	0.00	0.17	—	0.21	0.13	0.04	0.04	0.13	0.12	0.09	0.09	—	0.12	0.13	—	0.04	0.21	0.04	0.07	0.35	0.13	0.17	—
656	033198	0200	20	—	0.29	0.26	0.32	—	0.28	0.24	0.29	0.37	0.25	0.41	0.20	0.33	—	0.25	0.40	—	0.28	0.29	0.20	0.23	0.20	0.25	0.36	—
657	040398	1100	12	—	0.08	0.07	0.07	—	0.14	0.28	0.00	0.08	0.21	0.15	0.18	0.23	—	0.27	0.51	—	0.24	0.37	0.30	0.33	0.36	0.56	0.38	—
658	040798	0800	12	—	1.45	0.33	0.90	—	0.42	0.18	0.54	0.74	0.12	0.12	0.09	1.71	—	0.11	0.20	—	0.60	0.19	0.16	0.12	0.34	0.20	0.16	—
659	040898	2400	13	—	0.19	0.18	0.26	—	0.14	0.21	0.10	0.11	0.13	0.14	0.19	0.07	—	0.16	0.17	—	0.18	0.17	0.14	0.04	0.09	0.08	0.08	—
660	041398	1000	14	—	0.61	0.62	0.74	—	0.84	0.82	0.75	0.98	0.91	0.89	0.79	0.00	—	0.97	1.07	—	1.02	1.09	1.06	0.80	1.15	1.09	1.16	—
661	041598	0200	5	—	0.21	0.13	0.19	—	0.12	0.14	0.33	0.29	0.17	0.27	0.15	0.34	—	0.20	0.26	—	0.37	0.51	0.13	0.08	0.18	0.16	0.46	—
662	041598	2200	2	—	0.12	0.10	0.18	—	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
663	042198	1800	3	—	0.13	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
664	042198	2400	7	—	0.00	0.00	0.04	—	0.07	0.00	0.00	0.00	0.06	0.07	0.11	0.00	—	0.08	0.13	—	0.03	0.06	0.02	0.00	0.00	0.00	0.04	—
665	042898	1500	16	—	0.93	0.73	1.05	—	0.58	0.68	0.78	0.86	0.94	0.00	0.65	0.53	—	1.22	0.95	—	0.70	0.99	1.16	0.91	0.79	0.79	0.84	—
666	042998	1800	3	—	0.63	0.07	0.00	—	0.34	0.06	0.00	0.00	0.38	0.00	0.00	0.00	—	0.23	0.38	—	0.00	0.00	0.00	0.31	0.08	0.00	0.00	—
667	043098	0100	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.06	0.00	—	0.00	0.00	0.10	0.21	0.00	0.00	0.00	—
668	043098	0800	17	—	0.32	0.43	0.25	—	0.54	0.32	0.38	0.16	0.36	0.00	0.49	0.56	—	0.23	0.26	—	0.77	0.59	1.17	0.69	0.51	0.42	0.90	—
669	050198	0100	18	—	0.23	0.12	0.28	—	0.04	0.12	0.40	0.05	0.13	0.00	0.00	0.35	—	0.20	0.09	—	0.13	0.64	0.01	0.00	0.06	0.24	0.12	—
670	050298	0900	5	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.05	0.11	0.00	—
671	050298	1700	13	—	0.09	0.99	0.00	—	0.00	0.00	0.00	0.12	0.32	0.21	0.18	0.00	—	0.11	0.12	—	0.13	0.00	0.00	0.00	0.02	0.12	0.00	—
672	050398	1900	1	—	0.00	0.00	0.00	—	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
673	050598	1700	8	—	**2.48**	1.38	1.99	—	1.52	1.46	0.43	0.19	0.43	0.46	0.20	0.02	—	0.00	0.00	—	0.00	0.00	0.00	0.01	0.00	0.00	0.00	—
674	050698	0600	13	—	0.30	0.83	0.60	—	0.13	0.21	0.15	0.16	0.22	0.00	0.18	0.12	—	0.00	0.12	—	0.00	0.00	0.00	0.00	0.00	0.00	0.02	—
675	050798	0200	34	—	1.59	0.72	1.58	—	1.97	0.63	0.94	2.23	1.56	1.60	0.79	1.20	—	1.98	**2.83**	—	0.17	0.42	1.18	1.22	**3.00**	1.01	0.21	—
676	050998	0900	22	—	0.00	0.00	0.06	—	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	—	0.00	0.17	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
677	051298	0500	8	—	0.12	0.00	0.13	—	0.08	0.00	0.21	0.08	0.15	0.07	0.00	0.22	—	0.09	0.00	—	0.13	0.10	0.08	0.08	0.09	0.04	0.00	—
678	051298	1800	8	—	0.71	0.17	0.87	—	0.19	0.10	0.61	0.28	0.23	0.29	0.07	0.42	—	0.19	0.74	—	0.18	0.72	0.58	0.70	0.78	0.30	0.03	
679	051598	1900	13	—	0.06	0.29	0.44	—	0.73	0.36	0.88	0.56	0.43	0.41	0.45	0.43	—	0.50	0.33	—	0.90	0.37	0.52	0.21	0.40	0.40	0.27	—
680	051998	1700	27	—	0.70	0.29	0.85	—	0.75	0.70	1.31	1.16	0.00	0.46	0.38	0.31	—	0.75	0.47	—	0.16	0.29	0.23	0.32	0.33	0.25	0.33	—
681	052298	0400	8	—	0.62	0.55	0.73	—	0.57	0.60	0.48	0.39	0.00	0.60	0.69	0.58	—	0.51	0.64	—	0.54	0.63	0.52	0.39	0.43	0.43	0.50	—
682	052298	2200	2	—	0.00	0.09	0.04	—	0.00	0.04	0.22	0.30	0.00	0.25	0.13	0.40	—	0.30	0.48	—	0.17	0.35	0.26	0.17	0.22	0.13	0.38	—
683	052398	2100	8	—	0.83	0.50	0.51	—	1.35	1.34	0.44	0.57	0.00	1.25	0.99	0.64	—	0.51	0.56	—	0.58	0.46	0.52	0.43	0.48	0.43	0.67	—
684	052598	1900	4	—	0.00	0.00	0.04	—	0.00	0.04	0.17	0.17	0.00	0.08	0.00	0.27	—	0.04	0.08	—	0.08	0.13	0.13	0.09	0.12	0.13	0.13	—
685	060398	1000	4	—	0.08	0.08	0.13	—	0.13	0.08	0.12	0.13	0.12	0.12	0.08	0.18	—	0.09	0.13	—	0.13	0.12	0.13	0.13	0.12	0.16	0.22	—
686	060498	2200	9	—	0.09	0.10	0.08	—	0.08	0.26	0.21	0.26	0.21	0.21	0.30	0.18	—	0.29	0.20	—	0.20	0.33	0.20	0.25	0.25	0.13	0.23	—
687	060898	0800	7	—	0.43	0.29	0.39	—	0.30	0.34	0.43	0.42	0.41	0.39	0.34	0.41	—	0.39	0.47	—	0.49	0.56	0.42	0.38	0.42	0.43	0.60	—

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

Table VII-2. (Concluded)

Strut #	Date	Hour	Duration*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
688	060898	1900	10	—	0.79	0.82	0.68	—	0.77	0.68	0.53	0.55	0.61	0.55	0.55	0.77	—	0.82	0.94	—	0.88	0.81	0.69	0.74	0.65	0.98	0.45	—
689	061198	0200	3	—	0.00	0.00	0.00	—	0.04	0.04	0.00	0.10	0.04	0.08	0.22	0.05	—	0.56	0.52	—	0.04	0.77	0.74	0.39	0.53	0.09	0.08	—
690	061198	0800	8	—	0.67	0.77	0.46	—	0.61	0.38	0.62	0.64	0.58	0.33	0.38	0.90	—	0.38	0.65	—	0.45	0.64	0.65	0.87	0.82	1.15	0.71	—
691	061498	0400	5	—	0.46	0.28	0.55	—	0.52	0.47	0.44	0.48	0.46	0.48	0.47	0.45	—	0.39	0.47	—	0.43	0.43	0.35	0.35	0.35	0.35	0.47	—
692	061498	1300	18	—	1.34	0.68	1.58	—	0.91	0.82	0.79	1.19	0.33	0.44	0.60	0.68	—	0.09	0.08	—	0.04	0.08	0.08	0.04	0.09	0.00	0.19	—
693	061598	1500	18	—	1.21	0.87	0.41	—	1.13	0.73	0.12	0.24	0.78	1.57	0.81	0.72	—	0.72	1.81	—	0.04	0.17	0.38	0.34	0.92	1.59	0.08	—
694	061698	1800	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
695	061898	1700	6	—	0.51	0.24	0.38	—	0.39	0.35	0.12	0.07	0.33	0.61	0.48	0.18	—	0.34	0.38	—	0.25	0.30	0.52	0.35	0.61	0.48	0.55	—
696	061998	1300	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
697	062098	2400	10	—	0.26	0.16	0.77	—	0.25	0.17	0.29	0.67	0.46	0.21	0.17	1.11	—	0.51	0.39	—	0.80	0.95	0.87	0.30	0.30	0.34	0.87	—
698	062298	0700	6	—	0.25	0.20	0.42	—	0.25	0.25	0.04	0.52	0.67	0.61	0.52	0.32	—	0.39	0.47	—	0.38	0.51	0.48	0.69	0.52	0.52	0.63	—
699	062298	1600	4	—	0.16	0.23	0.25	—	0.48	0.53	0.22	0.59	0.80	0.42	0.43	0.14	—	0.43	0.30	—	0.46	0.30	0.53	0.40	0.83	0.51	0.32	—
700	062898	1900	15	—	0.17	0.16	0.04	—	0.34	0.60	0.08	0.15	1.03	0.86	0.91	0.94	—	0.34	0.64	—	1.30	1.15	1.53	1.48	1.96	1.03	1.73	—
701	062998	1500	9	—	0.55	0.55	0.60	—	0.48	0.43	0.66	0.73	0.67	0.43	0.42	0.97	—	0.55	0.56	—	1.48	1.33	0.87	0.73	0.74	0.64	0.97	—
702	070198	1400	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0,00	0.00	0.00	0.00	0.13	—
703	070398	1500	5	—	0.04	0.00	0.00	—	0.08	0.04	0.18	0.00	0.00	0.08	0.43	0.31	—	0.22	1.08	—	0.08	0.08	0.21	0.17	0.04	0.08	0.04	—
704	070398	2400	3	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.13	0.00	—	0.00	0.04	0.00	0.04	0.00	0.04	0.00	—
705	070698	0700	3	—	0.00	0.00	0.00	—	0.00	0.00	0.18	0.16	0.00	0.00	0.00	0.23	—	0.00	0.00	—	0.00	0.04	0.04	0.00	0.00	0.00	0.38	—
706	070798	0500	2	—	0.13	0.00	0.08	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
707	070798	1000	7	—	0.85	1.22	0.47	—	0.74	0.53	0.48	0.50	1.16	1.52	1.68	2.13	—	1.29	0.86	—	1.27	1.71	1.49	1.61	1.22	1.04	0.17	—
708	070998	1600	4	—	0.17	0.00	0.64	—	0.00	0.17	0.13	0.00	0.71	0.74	0.00	0.00	—	0.00	0.34	—	0.59	0.35	0.00	0.00	0.00	0.22	0.46	—
709	071898	0300	7	—	0.00	0.00	0.04	—	0.21	0.00	0.22	0.12	0.04	0.04	0.08	0.84	—	0.00	0.04	—	0.00	0.56	0.92	0.13	0.08	0.00	0.00	—
710	071998	2000	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.09	0.04	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
711	072098	0700	3	—	0.04	0.00	0.04	—	0.00	0.00	0.13	0.04	0.00	0.00	0.00	0.00	—	0.00	0.04	—	0.00	0.30	0.39	0.17	0.26	0.22	0.09	
712	072098	2200	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
713	072298	0800	14	—	0.08	0.00	0.04	—	0.13	0.17	0.08	0.30	0.66	0.99	0.77	1.12	—	0.59	0.64	—	0.46	0.51	0.21	0.29	0.34	0.20	1.00	—
714	072398	0700	2	—	0.00	0.05	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	—	0.00	0.04	—	0.00	0.00	0.04	0.00	0.04	0.04	0.04	—
715	073098	0400	9	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.04	0.00	0.04	0.08	0.05	—	0.00	0.04	—	0.25	0.28	0.29	0.12	0.16	0.17	0.55	
716	073098	2100	4	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
717	080398	1000	8	—	0.00	0.00	0.00	—	0.04	0.04	0.00	0.08	0.00	0.04	0.08	0.14	—	0.00	0.13	—	0.04	0.00	0.00	0.00	0.00	0.00	0.00	—
718	080398	2100	2	—	0.04	0.00	0.09	—	0.18	0.26	0.00	0.00	0.08	0.04	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
719	080498	0200	10	—	0.12	0.05	0.08	—	0.12	0.12	0.12	0.08	0.20	0.12	0.13	0.10	—	0.12	0.12	—	0.21	0.17	0.12	0.13	0.08	0.08	0.54	—
720	080498	1700	7	—	0.84	0.55	0.90	—	0.64	0.48	0.70	1.26	0.91	0.65	0.65	0.99	—	1.16	0.30	—	1.09	1.16	1.13	0.96	1.27	0.95	1.84	—
721	080598	0300	19	—	0.04	0.00	0.00	—	0.04	0.21	0.22	0.04	0.00	0.26	0.59	0.00	—	0.12	0.65	—	0.04	0.04	0.00	0.48	0.25	0.21	0.04	—
722	080698	1400	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
723	080798	2300	5	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.40	—	0.00	0.00	—	0.21	0.21	0.00	0.00	0.00	0.00	0.09	—
724	080998	1600	2	—	0.00	0.14	0.00	—	0.00	0.00	0.84	0.00	0.00	0.31	0.00	0.13	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
725	081098	0500	6	—	0.00	0.05	0.00	—	0.00	0.00	0.08	0.00	0.00	0.04	0.00	0.05	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
726	081198	1500	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
727	081298	0700	1	—	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
728	081598	1300	1	—	0.00	0.18	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—
729	081798	1400	7	—	0.46	0.23	0.00	—	0.43	0.30	0.00	0.00	0.00	0.16	0.38	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.08	0.21	—
730	081798	2400	11	—	1.26	1.13	0.95	—	1.83	1.48	0.61	0.57	1.54	1.69	2.00	1.15	—	0.90	2.29	—	0.76	0.86	1.04	1.43	2.49	1.90	1.34	—
731	082898	0400	7	—	0.29	0.09	0.37	—	0.34	0.30	0.34	0.53	0.37	0.43	0.30	0.80	—	0.30	0.43	—	0.93	0.26	0.21	0.26	0.24	0.21	0.96	—
732	082898	1400	7	—	0.00	0.05	0.00	—	0.00	0.00	0.27	0.09	0.00	0.04	0.12	0.75	—	0.30	0.21	—	0.12	0.34	0.44	0.44	0.57	0.22	0.29	—

Note: *Duration specified in hours. Values in boldface type exceed one-year or more recurrence frequency.

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