REPORT OF THE RIVER MASTER OF THE DELAWARE RIVER

FOR THE PERIOD DECEMBER 1,1994-NOVEMBER 30, 1995

By William E. Harkness, Bruce E. Krejmas, and William J. Carswell, Jr.

With a section on WATER QUALITY

By Charles R. Wood

U. S. GEOLOGICAL SURVEY
Open-File Report 97-568

Reston, Virginia

1997

U.S. DEPARTMENT OF THE INTERIOR
BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY
Gordon P. Eaton, Director

For additional infirmation write to:

Delaware River Master
U.S. Geological Survey
433 National Center
Reston,VA 20192
or
Deputy Delaware River Master
U.S. Geological Survey
405 Broad Street
Milford, PA 18337-1534

Copies of this report can be purchased from:

U.S. Geological Survey
Branch of Information Services
Box 25286
Denver, CO 80225-0286

CONTENTS

ILLUSTRATIONS

TABLES

CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
Length		
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
Area		
square mile (mi^2)	2.590	square kilometer
Volume		
million gallons (Mgal)	3,785	cubic meter
million gallons (Mgal)	1.547	cubic feet per second-day
billion gallons (Bgal)	3.785	cubic hectometer
cubic foot per second-day ($ft^3/s \cdot d$)	0.002447	cubic hectometer
Flow rate		
million gallons per day (Mgal/d)	1.547	cubic feet per second
million gallons per day (Mgal/d)	0.04381	cubic meter per second
billion gallons per day (Bgal/d)	43.81	cubic meter per second
cubic foot per second (ft^3/s)	0.02832	cubic meter per second

Vertical datum: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

SECTION I

RIVER MASTER LETTER OF TRANSMITTAL

and

SPECIAL REPORT

OFFICE OF THE DELAWARE RIVER MASTER
United States Geological Survey
433 National Center, Reston, Virginia 20192

October 10, 1997

The Honorable
William H. Rehnquist
Chief Justice of the United States

The Honorable
Thomas R. Carper
Governor of Delaware

The Honorable
Christine Todd Whitman
Governor of New Jersey

The Honorable
George E. Pataki
Governor of New York

The Honorable
Thomas J. Ridge
Governor of Pennsylvania

The Honorable
Rudolph W. Giuliani
Mayor of the City of New York

New Jersey v. New York et al
No. 5 Original, October Term 1950

Dear Sirs and Madam:

For the record and in compliance with the provisions of the Amended Decree of the Supreme Court of the United States entered June 7, 1954, I am transmitting herewith the forty-second Annual Report of the River Master of the Delaware River for the year December 1, 1994, to November 30, 1995.

Monthly precipitation in the upper Delaware River Basin during the 1995 River Master report year ranged from 36 percent of the long-term average during August to 235 percent during October. Precipitation during the December to May period, when reservoirs typically refill, was 4.21 inches less than the long-term average (79 percent of the 54-year average), was below normal during all months except January, and caused the seasonal drawdown of the reservoirs to begin approximately one month earlier than usual. Except for July, precipitation continued to be less than the long-term average through September, and the precipitation deficit for the report year accumulated to 8.5 inches by September 30, 1995. During October and November, precipitation was 5.63 inches above the long-term average and reduced the precipitation deficit for the year to 2.87 inches.

On December 1, 1994, when this report year began, combined storage in the New York City reservoirs in the upper Delaware River Basin was 186.077 billion gallons (Bgal), 68.7 percent of the combined storage capacity. Median storage on December 1, based on 27 years of data, is 161.018 Bgal. Operations on December 1, 1994 were being conducted as prescribed in the Decree. Combined storage in the New York City reservoirs reached a maximum of 253.768 Bgal, 93.7 percent of capacity, on May 6, 1995. Cannonsville Reservoir filled to capacity on January 23, 1995 and spilled for much of the winter period; however, neither Pepacton Reservoir nor Neversink Reservoir filled to capacity during the year. Combined storage was below the median on April 1, 1995 and was below the 25th percentile from May until the end of the report year.

The Delaware River Master Advisory Committee met at Milford, Pennsylvania on May 19, 1995, to discuss hydrologic conditions in the basin and operational procedures for the 1995 release season. The River Master informed the committee that, on the basis of information provided by New York City, the excess-release quantity to be released beginning June 15 was 7.381 Bgal. He stated that, based on the formula contained in the Decree, this water would be released at rates designed to maintain the Montague target flow at 100 cubic feet per second (ft^3/s) above the normal 1,750 ft^3/s beginning June 15, 1995. New York City and New York State requested that the Parties to the Decree consider setting aside the excess-release quantity for the year because of the dry conditions in the Delaware River Basin. The Parties to the Decree agreed that conditions were below normal but that the excess-release quantity should be released as prescribed by the Decree; however, they also agreed to reconsider this decision at a later date if the dry conditions continued.

Combined storage in the New York City Delaware River Basin Reservoirs declined at above normal rates throughout the summer in response to below normal precipitation and above normal releases to meet the Montague target. On July 18, 1995, the Parties to the Decree, the Delaware River Basin Commission, and the Delaware River Master agreed to suspend the release of the remainder excess-release quantity in an effort to prevent, or at least delay, the entry into drought warning in the basin. In spite of this action, storage continued to decline and reached the drought-warning level of the operating curves on September 10, 1995. Operations were reduced to those prescribed for drought warning on September 15, 1995. Combined storage continued to decline and reached the lower half of the drought-warning zone of the operation curves on October 13, 1995, when operations were reduced to the appropriate levels as prescribed in the "Inter-

state Water Management Recommendations of the Parties to the Decree", (DRBC Resolution 83-13). Details of the operations are described in section II of this report.

On October 18, the Parties to the Decree agreed, after several meetings in person or by conference call, to a request by New York State for an "Emergency Fisheries Protection Program" authorizing up to a maximum aggregate quantity of 2,000 cubic foot per second days [$(ft^3/s)\cdot d$] of water for special releases to protect the cold water fishery during the drought-warning period. A copy of that agreement is attached to this report (Section IV - Appendix) and the program is further described in Section II of this report.

During October, hydrologic conditions and combined storage in the basin began to improve in response to increased precipitation. Combined storage increased to the normal zone of the operation curves on October 29 and was 15 Bgal above the drought-warning zone by November 7, 1995. Normal operations in the basin as specified in the Decree were resumed on November 12, 1995.

On November 30, 1995, the end of this report year, the combined storage in the New York City reservoirs was 165.726 Bgal, 61.2 percent of capacity, and operations in the basin were being conducted as prescribed in the Decree.

During the report year, the River Master and staff participated in meetings of the Delaware River Basin Commission to assess water-supply conditions. Upon invitation of the representatives of the Parties to the Decree, the Deputy Delaware River Master met periodically with those representatives as a member of the Flow Management Technical Advisory Committee. Discussions primarily centered on proposals for the management of releases from reservoirs in the basin and other measures designed to cope with streamflow deficiencies whenever they occur.

The U.S. Geological Survey continued the operation of its field office of the Delaware River Master at Milford, Pennsylvania. William E. Harkness, Deputy Delaware River Master, continued in charge of the office, assisted by Bruce E. Krejmas. Joanne Koch joined the staff of the Milford office in September 1995, to fill the secretarial position that had been vacant for more than a year. Mr. Harkness served as Acting Delaware River Master from March 1993, until William J. Carswell, Jr., the USGS Regional Hydrologist at Reston, Virginia, was designated the Delaware River Master effective May 1, 1995.

During the report year, the Milford office continued the weekly distribution of summary river data. These weekly reports contained preliminary data on releases from the New York City reservoirs to the Delaware River, diversions to the New York City water-supply system, reservoir contents, daily segregation of flow of the Delaware River at Montague gaging station, and diversions by New Jersey. The reports were made available to the Delaware River Master Advisory Committee and to other parties interested in the Delaware River operations. A special monthly summary of past hydrologic conditions, supplemented by an "outlook" of the river flow for the forthcoming month, was made available to the representatives on the Advisory Committee.

Section II of this report describes in detail Delaware River operations during the report year. The City of New York diverted a total of 242.423 Bgal from the basin during the report year ending November 30, 1995 and released 100.036 Bgal from Pepacton, Cannonsville, and Never-

sink Reservoirs to the Delaware River during the same period. The River Master directed releases to the Delaware River from these reservoirs totaling 77.529 Bgal.

Section III of this report describes water quality at various sites in the Delaware River Estuary. It was prepared by Charles R. Wood, U.S. Geological Survey, Malvern, Pennsylvania and contains data showing the extent of salinity encroachment and other water-quality characteristics in the estuary.

During the report year, the following individuals served as members of the River Master Advisory Committee:

Delaware	Dr. Robert R. Jordan
New Jersey	Steven Nieswand
New York	Daniel J. Campbell N.G. Kaul
New York City	Marilyn Gelber
Pennsylvania	William A. Gast Hugh V. Archer Irene B. Brooks

Throughout the year, diversions to supply water for New York City and releases designed to maintain the flow of the Delaware River at Montague were made as directed by this office. Diversions by New York City from the Delaware River basin reservoirs did not exceed the limit specified by the Decree or the limits in the "Interstate Water Management Recommendations of the Parties to the Decree", (DRBC Resolution 83-13).

The appreciation of the River Master and staff is expressed for the continued excellent cooperation of all the representatives of the Parties to the Decree. Also, appreciation is extended to the Pennsylvania Power & Light Company and the Orange and Rockland Utilities, Inc. for keeping us informed of their plans for power generation and resulting releases.

A draft of this report was furnished to the River Master Advisory Committee members for comment.

Sincerely yours,

William J. Carswell, Jr., Ph.D.
Delaware River Master

SECTION II

REPORT OF DELAWARE RIVER OPERATIONS

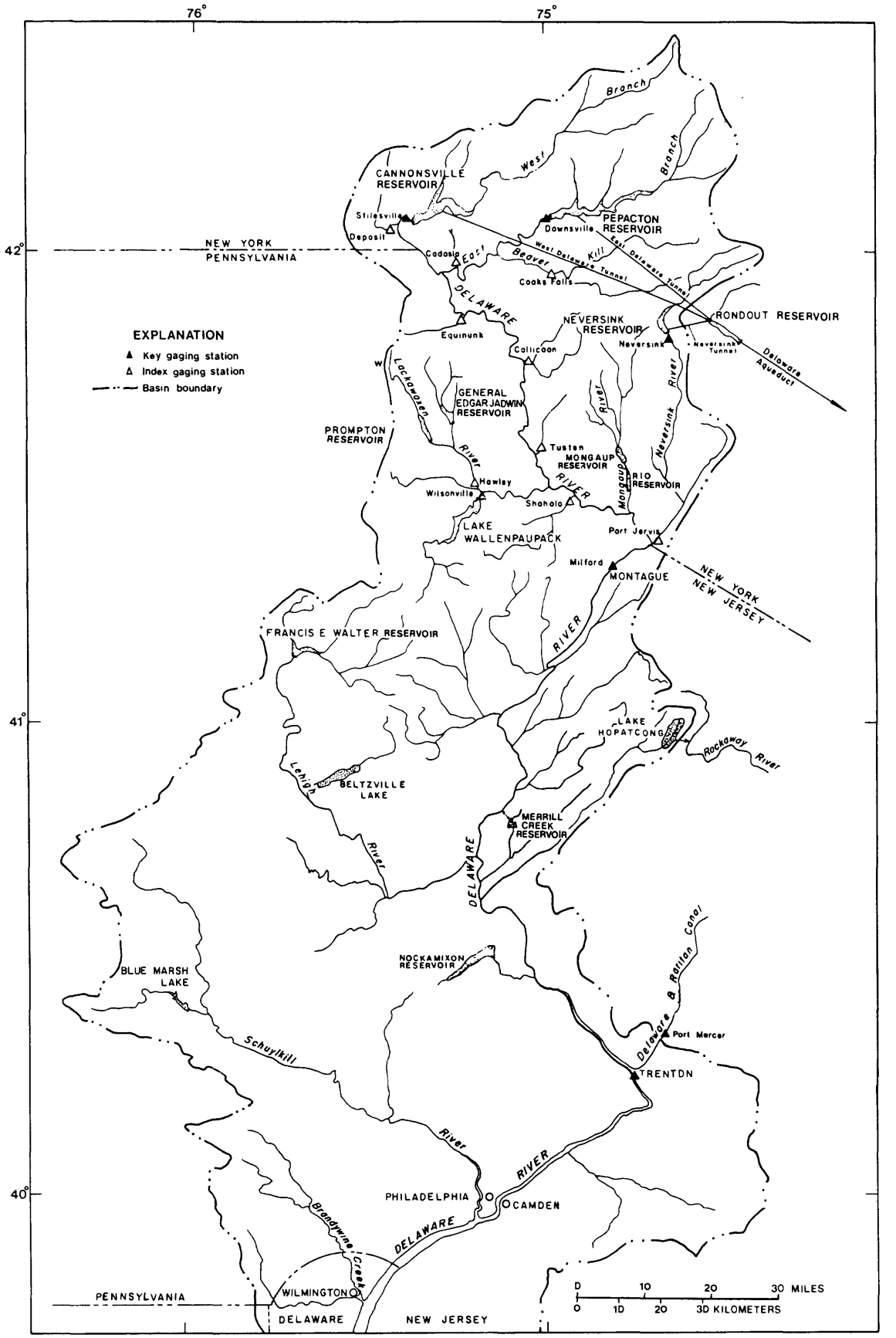

Figure 1.- Delaware River Basin upstream from Wilmington, Delaware

Section II

REPORT OF DELAWARE RIVER OPERATIONS

by William E. Harkness and Bruce E. Krejmas

ABSTRACT

A Decree of the Supreme Court of the United States in 1954 established the position of Delaware River Master. The Decree authorizes diversions of water from the Delaware River Basin (fig. 1) and requires compensating releases from certain New York City owned reservoirs to be made under the supervision and direction of the River Master. Reports to the Court, not less frequently than annually, were stipulated.

For the 1995 report year, December 1, 1994, to November 30, 1995, precipitation in the Delaware River Basin was 2.87 inches below average. Reservoir storage in the basin increased seasonally December 1, 1994 through April, 1995, except for a slight decline during February. Storage declined steadily from May 6 to October 15, 1995, reaching drought-warning level September 10, 1995 (fig. 2). Operations were conducted at reduced levels designed to conserve the short water supplies caused by the drought-warning conditions in the basin from September 15 to November 12, 1995.

Diversions from the Delaware River basin by New York City and New Jersey did not exceed those authorized by the terms of the Amended Decree, or the reduced limits imposed because of the drought. Releases were made as directed by the River Master at rates designed to meet the target flow of the Delaware River at Montague, New Jersey on 120 days during the year. Releases were made at the experimental conservation rates, at rates designed to relieve thermal stress and protect the fishery in the streams downstream from the reservoirs, or at other times at the basic conservation rates.

New York City and New Jersey complied fully with the terms of the Decree, and during the drought-warning period, with the terms of the "Interstate Water Management Recommendations of the Parties to the Decree", (DRBC Resolution 83-13), and with the directives of the River Master during the year.

INTRODUCTION

The Amended Decree of the United States Supreme Court entered June 7, 1954, authorized diversions of water from the Delaware River Basin and provided for releases of water from certain New York City reservoirs to the Delaware River to be made under the supervision and direction of a River Master. The Decree also stipulated that reports be made to the Court not less frequently than annually. This report describes the River Master operations from December 1, 1994 to November 30, 1995.

Part of the hydrologic data presented are records of flow and water quality at U.S. Geological Survey gaging stations. These records were collected, computed, and furnished by the Offices of the U.S. Geological Survey at Albany, New York, Malvern, Pennsylvania, and West Trenton, New Jersey, in cooperation with the States of New York and New Jersey, the Commonwealth of Pennsylvania, and the City of New York.

Definition of Terms and Procedures

The following definitions apply to various terms and procedures used in the operations described in this report. A table for converting inch-pound units to International System of Units (SI) is given on page *v*. The map of the Delaware River Basin (fig. 1) indicates the location of pertinent streams, reservoirs, and gaging stations.

Capacity. - Total usable volume between the point of maximum depletion and the elevation of the lowest crest of the spillway.

Conservation releases. - Controlled releases from reservoirs designed to maintain flow in the channels downstream from the reservoirs.

Daily excess-release credits. - Daily credits and deficits during the seasonal period are equal to the algebraic difference between the daily mean discharge of the Delaware River at Montague, N.J. and 1,750 ft^3/s. However, the daily credit cannot exceed the 24-hour period releases from Pepacton, Cannonsville, and Neversink Reservoirs routed to Montague and made in accordance with direction, with the following exception: during the seasonal period, credits are also made for part or all of other releases from these reservoirs that contribute to the daily mean discharge at Montague between 1,750 ft^3/s and the excess-release rate.

Directed releases. - Controlled releases from the New York City reservoirs in the upper Delaware River Basin designed by the Delaware River Master to meet the Montague flow objective.

Diversions. - The transfer of water by New York City from Pepacton, Cannonsville, and Neversink Reservoirs in the upper Delaware River Basin through the East Delaware, West Delaware, and Neversink Tunnels, respectively, to its water-supply system. Also, the transfer of water by New Jersey from the Delaware River through the Delaware and Raritan Canal.

Excess quantity and seasonal period for its release. - As defined in the Decree, the excess quantity of water equals 83 percent of the amount by which the estimated consumption in New York City during the year is less than the City's estimate of continuous safe yield (1,665 Mgal/d

stipulated by 1954 Decree) from all its sources of supply obtainable without pumping, except that the excess quantity should not exceed 70 billion gallons. Each year the "seasonal period" for release of the excess quantity begins on June 15. The design rate for that period becomes effective at Montague on that date and continues in effect until the following March 15, or until the cumulative total of excess-release credits becomes equal to the seasonal quantity, whichever occurs first.

Point of maximum reservoir depletion. - Elevation at the top of the highest outlet, sometimes referred to as minimum full-operation level.

Rate of flow. - Mean discharge for any stated 24-hour period, in cubic feet per second (ft^3/s) or million gallons per day(Mgal/d).

Rate of flow at Montague. - Daily mean discharge of the Delaware River at Montague, N.J., on a calendar-day basis.

Reservoir-controlled releases. - Controlled releases from reservoirs passed through outlet valves in the dams or through turbines in powerplants. This does not include spillway overflow at the reservoirs.

Storage or contents. - Usable volume of water in a reservoir. Unless otherwise indicated, volume is computed on the basis of level pool and above the point of maximum depletion.

Time of day. - Time of day is expressed in 24-hour eastern standard time, which included a 23-hour day April 2 and a 25-hour day October 29.

Uncontrolled runoff at Montague. - Runoff from the drainage area upstream from Montague exclusive of the drainage area upstream from the Downsville, Cannonsville, Neversink, Wallenpaupack, and Rio dams, but including spillway overflow at these dams.

Precipitation

Precipitation measured in the basin above Montague totaled 40.28 inches for the 1995 report year and was 2.87 inches below the long-term (54-year) average. Monthly precipitation ranged from 36 percent of the long-term average in August, 1995 to 235 percent of the average in October, 1995. Table 1[1] compares the monthly precipitation during the report year with the long-term average.

These data were computed from records collected by the National Weather Service; the New York City Department of Environmental Protection, Bureau of Water Supply; and the River Master, at 10 stations distributed over the basin area upstream from Montague.

December to May is generally considered the normal time of year when surface- and ground-water reservoirs fill. During this period in 1994-95, average precipitation at the 10 stations was 16.01 inches, which was 79 percent of the 54-year average. During June to November, average precipitation at the 10 stations was 24.27 inches, which was 106 percent of the long-term average. The maximum monthly precipitation measured at any of the 10 stations was 9.78 inches

1. All numbered tables in Section II are grouped at the end of this section, beginning on page 31.

in October, at Rock Hill, New York; the minimum monthly precipitation was 0.66 inches in August, at Narrowsburg, New York.

Acknowledgments

The River Master's daily-operation records were prepared by the Milford Office of the Delaware River Master from hydrologic data collected principally on a day-to-day basis. Data for these records were collected and computed by the Milford office or were furnished by agencies as follows: Data from Pepacton, Cannonsville, and Neversink Reservoirs by the New York City Department of Environmental Protection, Bureau of Water Supply; from Delaware and Raritan Canal by the New Jersey Water Supply Authority; from Lake Wallenpaupack by the Pennsylvania Power & Light Company; and from Rio Reservoir by Orange and Rockland Utilities, Inc. Precipitation data and quantitative precipitation forecasts were provided by the National Oceanic and Atmospheric Administration, National Weather Service.

OPERATIONS

December through May

Operations on December 1, 1994 were being conducted as prescribed in the Decree. The Montague flow objective was 1,750 ft^3/s, and the allowable diversions to New York City and New Jersey were 800 Mgal/d and 100 Mgal/d, respectively. Conservation releases from New York City reservoirs were being made at the experimental levels shown in table 2.

During the first half of the report year, total precipitation was 4.21 inches below average and monthly precipitation ranged from 126 percent of the long-term average in January to 62 percent in May (table 1). Runoff in the upper basin was above normal during December and January and was below normal during February, April, and May.

On December 1, 1994, Pepacton Reservoir contained 95.644 Bgal of water in storage above the point of maximum depletion, or 68.2 percent of the reservoir's storage capacity of 140.190 Bgal. Cannonsville Reservoir contained 69.146 Bgal, or 72.2 percent of the reservoir's storage capacity of 95.706 Bgal. Neversink Reservoir contained 21.287 Bgal, or 60.9 percent of the reservoir's storage capacity of 34.941 Bgal. The combined storage in the three reservoirs as of December 1 was 186.077 Bgal, or 68.7 percent of their combined capacity. Daily storages in Pepacton, Cannonsville, and Neversink Reservoirs are shown in tables 3, 4, and 5 respectively, and the combined storage is shown graphically in figure 2.

Inflow to the City's reservoirs during the December through May period generally exceeds draft rates and therefore increases storage. The average inflow to Pepacton, Cannonsville, and Neversink Reservoirs for these six months during the 54-year period, December 1940 to May 1994, was 301.3 Bgal. During the corresponding six months of the current report year, inflow to the three reservoirs totaled 227.9 Bgal. Evaporation loss was not included in the computation.

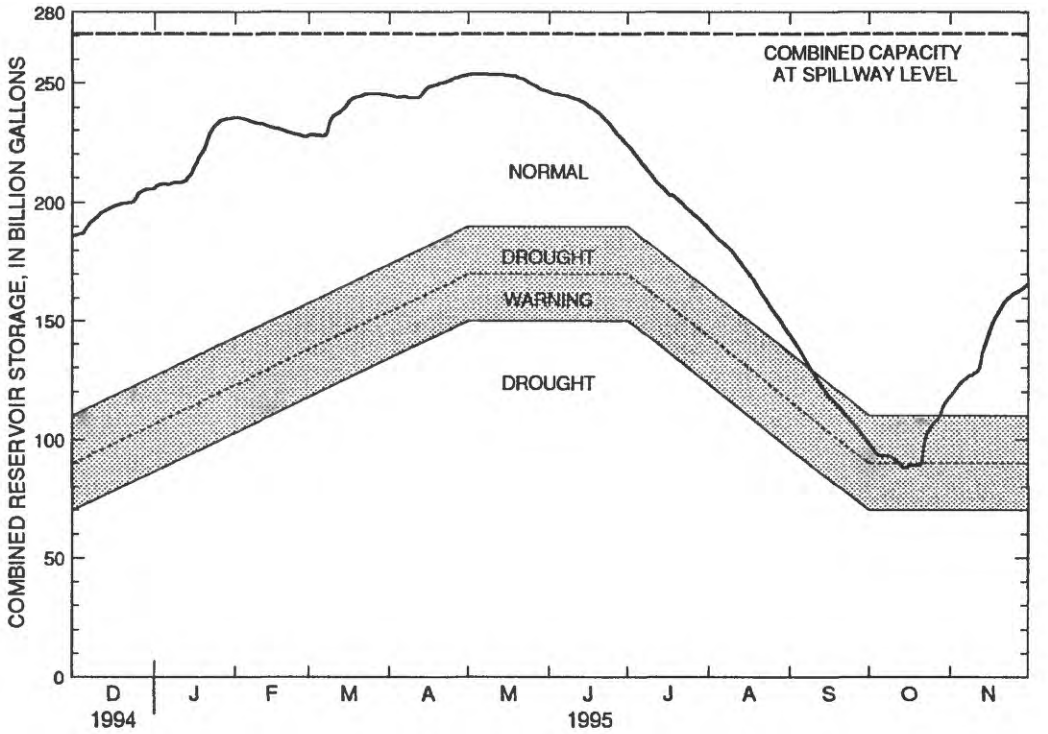

Figure 2.-Operating curves for New York City reservoirs in the Delaware River basin compared with the actual contents of the reservoirs, December 1, 1994 to November 30, 1995 (Sources: Operating curves from Interstate Water Management Recommendations of the Parties to the U.S. Supreme Court Decree of 1954, reservoir contents from New York City Bureau of Water Supply data.)

Combined storage increased seasonally from December 1994, through April 1995, except for a slight decline during February. Total storage in the three New York City reservoirs was 185.167 Bgal on November 30, 1994 and 246.694 Bgal on May 31, 1995. During the 1995 report year, the maximum storage was 253.768 Bgal on May 6 (fig. 2). Normally, maximum storage in the individual reservoirs occurs on different days. The maximum storage in Pepacton Reservoir was 130.511 Bgal on May 22, 1995, the maximum storage in Cannonsville Reservoir was 99.054 Bgal on March 10, 1995, and the maximum storage in Neversink Reservoir was 31.827 Bgal on May 22, 1995. Cannonsville Reservoir filled to capacity on January 22, 1995, and spilled continuously until April 27, except for April 7-12. A total of 28.515 Bgal spilled during this period. Pepacton and Neversink Reservoirs did not spill during the 1995 report year.

During the December to May period, diversions to Rondout Reservoir by New York City totaled 121.217 Bgal (666 Mgal/d). The forecast discharge at Montague, exclusive of water released from the City reservoirs, fell below the design rate on four days during May, and releases were directed. The observed discharge at Montague did not fall below the design rate. The release of a total of 963 $(ft^3/s)\cdot d$ (622 Mgal) of water was directed during the period and New York City

made releases for conservation purposes at the experimental conservation rates shown in table 2 on all other days during the period.

June through November

Monthly precipitation during the June through November period was below average in June, August, and September and was above average in July, October, and November. Total precipitation during the period was 24.27 inches or 1.34 inches more than the 54-year average of 22.93 inches (table 1).

The New York City Department of Environmental Protection, Bureau of Water Supply, furnished the River Master with the following advance data for the 1995 calendar year:

1. The estimated continuous safe yield from all the City's sources, obtainable without pumping, is 1,665 Mgal/d, or a total during the calendar year 1995 of 1.665 Bgal/d x 365 days = 607.725 Bgal.

2. The estimated consumption that the City must provide from all its sources of supply during calendar year 1995 is 591.582 + 7.250 = 598.832 Bgal.

On the basis of the provisions of the Decree and the above data, the aggregate quantity of excess-release water was 83 percent of (607.725 - 598.832) or 7.381 Bgal. The Montague design rate during the excess release period beginning June 15, 1995, was computed as:

$$1{,}750 \text{ ft}^3\text{/s} + \frac{7.381 \text{ Bgal} \times 1{,}547 \text{ (ft}^3\text{/s)/(Bgal/d)}}{120 \text{ days}} = 1{,}850 \text{ ft}^3\text{/s}$$

Data on consumption of water by the City of New York for each calendar year, since 1950, are shown in table 6.

Releases were directed to satisfy the Montague design rate on 116 days between June 1 and November 30, 1995, when the forecasted discharge at Montague, exclusive of water released from the New York City reservoirs, fell below the applicable design rate (table 7). Releases at various conservation rates or at rates designed to protect the fishery were made at other times from each reservoir from June 1 to November 30. A total of 3,168 $(ft^3/s)\cdot d$ (2.048 Bgal) was released for the relief of thermal stress from June 1 through August 3, and 22 $(ft^3/s)\cdot d$. (14.2 Mgal) was released to protect the fishery October 31 through November 2 (table 8).

From June 1 to June 14, the level of flow required to be maintained in the Delaware River at Montague was 1,750 ft^3/s. The forecasted flow, exclusive of releases from Pepacton, Cannonsville, and Neversink Reservoirs, was less than the design rate on six days during the period, and releases were directed.

On June 15, 1995, the seasonal period for the release of the excess quantity began and the Montague design rate was increased to 1,850 ft^3/s. Between June 15 and July 18, in response to below normal runoff from precipitation and above normal releases to meet the Montague design rate, the storage in the New York City reservoirs declined rapidly. On July 18, 1995, in an effort to prevent or at least delay entry into drought warning, the Parties to the Decree met, the DRBC and

the River Master unanimously agreed to set aside the remainder of the excess-release quantity in an excess-release bank to be used, if necessary, to provide lower Delaware River Basin drought assistance. The Montague design rate was returned to 1,750 ft^3/s effective July 21, 1995. A total of 3.099 Bgal of the 7.381 Bgal excess-release quantity was released and the remainder, 4.282 Bgal, was put in the excess-release bank to be used if needed for lower basin drought assistance at a later date.

Throughout August and September, precipitation continued to be significantly below normal, releases required to meet the Montague design rate were very high, and storage continued to decline at greater than normal rates. Combined storage declined below the drought-warning level of the operation curves on September 10, 1995 and remained below that level for five days. On September 15, 1995, the Montague design rate was reduced to 1,655 ft^3/s and the allowable diversions to New York City and New Jersey were reduced to 680 Mgal/d and 85 Mgal/d respectively, as required by the "Interstate Water Management Recommendations of the Parties to the Decree" (DRBC Resolution 83-13).

On August 28, 1995, in anticipation of entry into drought-warning in the basin, New York State requested that the Parties to the Decree, the DRBC, and the Delaware River Master consider the establishment of an emergency fisheries protection program designed to allow special releases from the New York City Delaware River Basin reservoirs to protect the fishery during the drought-warning period. Pursuant to this request, the Parties to the Decree, the DRBC, and the River Master met several times in person or by conference call to work out the details of the program. On October 18, 1995, the Parties to the Decree unanimously agreed to allow New York State to request special releases totaling a maximum of 2,000 $(ft^3/s)\cdot d$ and specified that the amount released be paid back through reductions in the releases required to meet the Montague target. A copy of the agreement is attached to this report as an Appendix. A total of 22 $(ft^3/s)\cdot d$ was released to protect the fishery and 150 $(ft^3/s)\cdot d$ was set aside in a fishery protection bank through reductions in releases to meet the Montague flow objective between October 21, when the agreement became effective, and November 30, 1995. The special releases and the reductions in release requirements are summarized in table 8.

Combined storage continued to decline during September and October and reached the lower half of the drought-warning zone of the operation curves on October 13, 1995. The Montague design rate was immediately reduced to 1,550 ft^3/s, and allowable diversions to New York City and New Jersey were reduced to 560 Mgal/d and 70 Mgal/d as required by DRBC Resolution 83-13.

An average of 1.20 inches of precipitation fell in the Upper Delaware River Basin on October 15 and was followed by slightly more than 3 inches of precipitation on October 21-22, 1995. The runoff from these two storms was sufficient to eliminate the need for directed releases from the reservoirs to meet the Montague design rate and to begin the recovery of storage in the reservoirs. Storage continued to increase steadily during the last half of October and throughout November. Combined storage reached the normal zone of the operation curves on October 29, 1995, and was more than 15 Bgal above the drought-warning zone on November 7, 1995. Storage continued to increase, allowing a return to operations as specified in the Decree on November 12, 1995. Storage had been more than 25 Bgal above the drought-warning zone of the operation

curves for 15 days on November 28, allowing the experimental conservation releases to be resumed.

Between June 15, when release of the excess quantity began, and November 30, 1995, the forecasted flow at Montague, exclusive of releases from the New York City reservoirs, was below the design rate on 110 days and releases were directed. On 58 days during the June 15 to November 30 period, the observed flow fell below the applicable design rate. Of those 58 days, 45 were within 10 percent of the design rate and 13 were more than 10 percent below the design rate.

The total discharge at Montague, the portion derived from uncontrolled runoff downstream from the reservoirs, the portion contributed by the power reservoirs, and the portion contributed by Pepacton, Cannonsville, and Neversink Reservoirs are shown by the hydrographs in figure 3. In analyzing the water budget at Montague, the uncontrolled runoff downstream from the reservoirs was computed as the residual of observed flow less releases from all reservoirs, and therefore was subject to all the errors in observations, transit times, and routing of the several components of flow. All of these uncertainties are contained in the computed hydrograph of uncontrolled runoff.

Diversions to Rondout Reservoir June 1 to November 30, 1995 totaled 121.206 Bgal.

Summary of Operations

From December 1, 1994, to November 30, 1995, diversions to Rondout Reservoir totaled 242.423 Bgal, and all releases from the New York City reservoirs to the Delaware River totaled 100.036 Bgal.

During the year, maximum storage in Pepacton Reservoir was 130.511 Bgal, on May 22, 1995. Maximum storage in Cannonsville Reservoir was 99.054 Bgal, on March 10, when the reservoir was spilling. Maximum storage in Neversink Reservoir was 31.827 Bgal, on May 22. The maximum combined storage in the three reservoirs during the year was 253.768 Bgal, on May 6.

Minimum combined storage in the reservoirs during the year was 88.060 Bgal on October 15, 1995. Minimum storage in Pepacton Reservoir was 56.150 Bgal (40.1 percent of capacity) on October 20, 1995. Minimum storage in Cannonsville Reservoir was 22.762 Bgal (23.8 percent of capacity) on October 14, 1995, and minimum storage in Neversink Reservoir was 7.736 Bgal (22.1 percent of capacity) on October 13, 1995.

On November 30, 1995, combined storage in the three reservoirs was 165.726 Bgal, or 61.2 percent of their combined capacity. During the year, combined storage decreased 19.441 Bgal, or 7.2 percent of capacity.

The combined storage of the three reservoirs on the first day of the month June 1967 to November 1995, is shown in figure 4. Storage was above the median from December through March, was below the median in April, and was below the 25th percentile from May through November. Storage on October 1, 1995, was the lowest storage for October 1 for the period of record, June 1967 to November 1995.

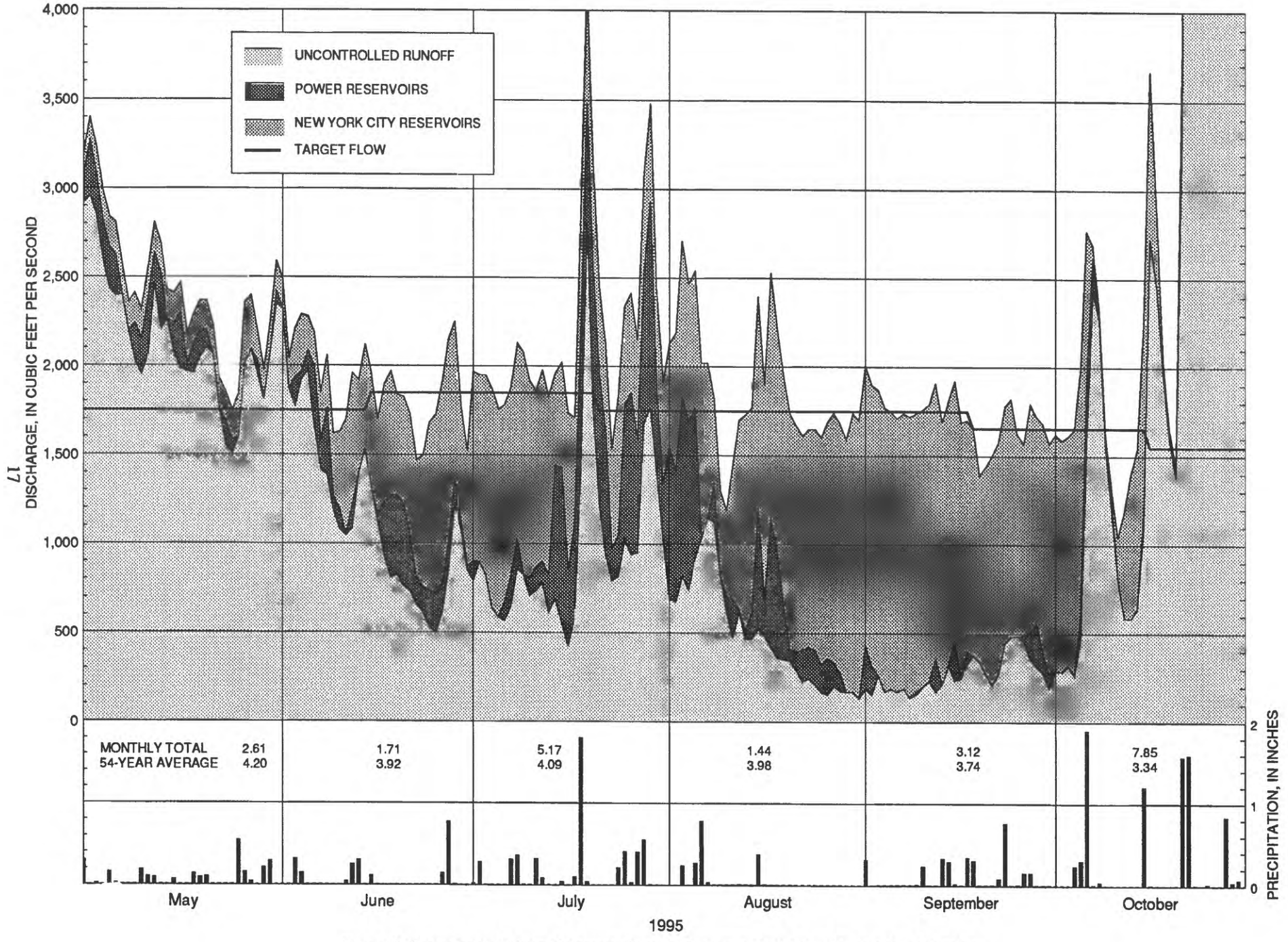

Figure 3.-Components of flow, Delaware River at Montague, N.J., May 1 to October 31, 1995.

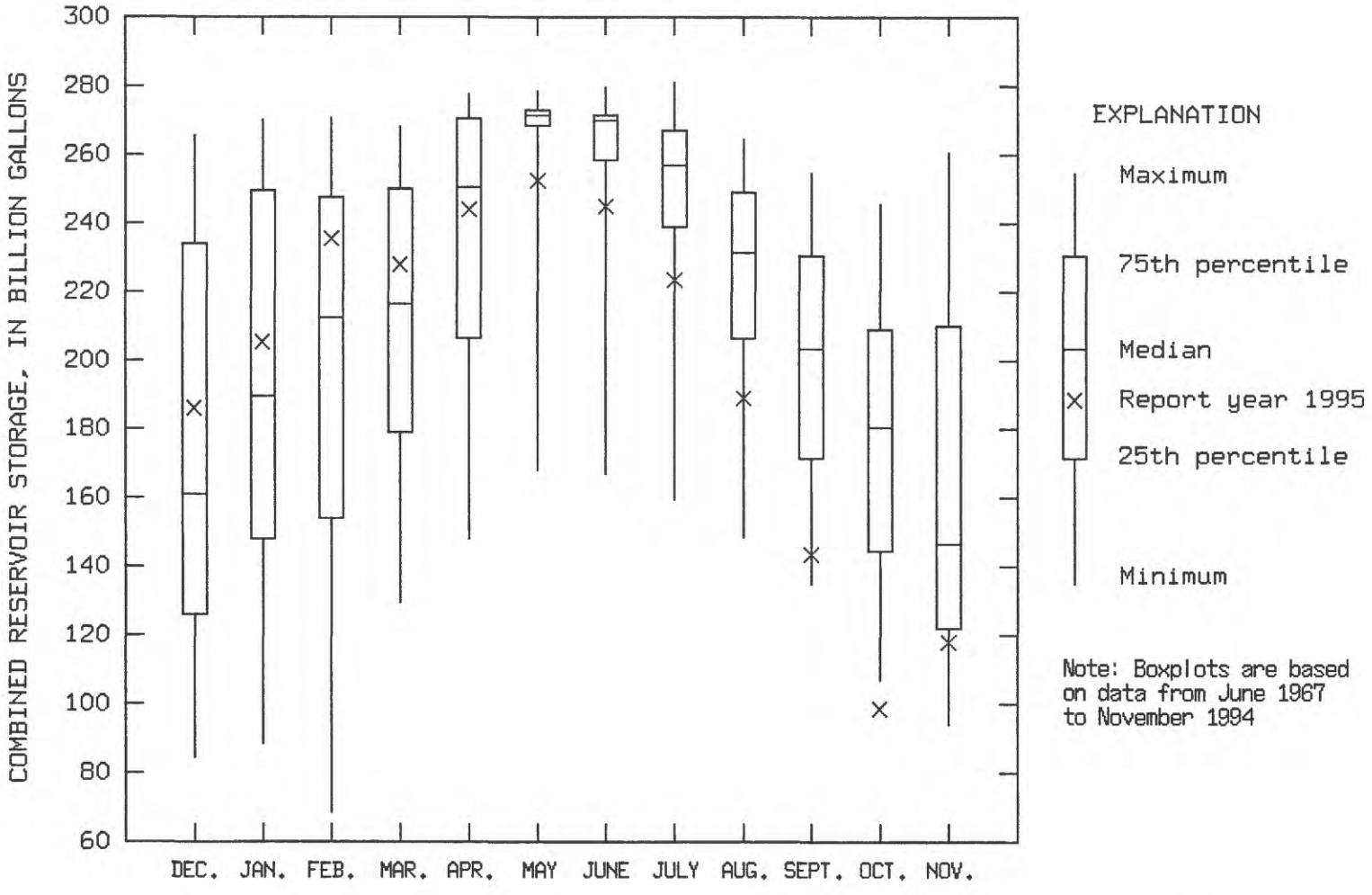

Figure 4.- Combined storage in Pepacton, Cannonsville, and Neversink Reservoirs on the first day of the month, December 1994 to November 1995 (this report year), compared to values for the period of record, June 1967 to November 1994.

SUPPLEMENTARY RELEASE FROM WALLENPAUPACK POWERPLANT

An agreement between Pennsylvania Power & Light Company and New York City provides for supplementary releases from Wallenpaupack hydroelectric powerplant if the Delaware River Basin Commission requests compensation for water consumed at the company's Martins Creek steam-electric generating station. Releases may be requested if the flow of the Delaware River at Trenton, N.J. is expected to be less than 3,000 ft^3/s for more than three consecutive days. No supplementary releases were requested during the report year.

COMPONENTS OF FLOW, DELAWARE RIVER AT MONTAGUE, N.J.

The data and computations of the various components of flow formed the basic operational records required to carry out the River Master's specific responsibilities with respect to the Montague Formula during the report year. The operational record has two parts: the forecasted flow at Montague, exclusive of controlled releases from New York City's reservoirs (table 9), and the segregation of the daily average flow at Montague among its various source components (table 10).

Discharge of the Delaware River at Montague was composed of the following source components:

1. Controlled releases from Lake Wallenpaupack on Wallenpaupack Creek in the production of hydroelectric power.
2. Controlled releases from Rio Reservoir on Mongaup River in the production of hydroelectric power.
3. Runoff from the uncontrolled area upstream from Montague.
4. Controlled releases from Pepacton, Cannonsville, and Neversink Reservoirs of New York City.

The releases from the City's reservoirs necessary to maintain the applicable rate of flow at Montague were computed from the forecasted flow at Montague, exclusive of the controlled releases from the reservoirs.

TIME OF TRANSIT

The average times for the effective transit of water from the various sources of controlled supply to Montague used for discharge routing during the 1995 report year are as follows:

Source	Hours
Pepacton Reservoir	60
Cannonsville Reservoir	48
Neversink Reservoir	33
Lake Wallenpaupack	16
Rio Reservoir	8

This schedule was developed from reservoir and powerplant operations and gaging-station records of prior years and was found generally suitable. At times, noticeable exceptions occur, for example, when a large release from Cannonsville Reservoir follows a small one, a large part of the release is expended in filling the channel en route, and the remainder may appear at Montague as much as 18 hours late. During the winter, ice cover, together with the low streamflow, gradually increases the resistance to streamflow and lengthens the time of transit. However, because the increased travel time generally occurs gradually over several days and releases were not generally being directed to meet the Montague flow objective during that time, no adjustments were made to compensate for the increased travel time under ice cover.

SEGREGATION OF FLOW AT MONTAGUE

The River Master daily operation record of reservoir releases and daily segregation of flow among the various source components contributing to the flow of the Delaware River at Montague is shown in table 10. The arrangement of data conforms with the downstream movement of water from the various sources to Montague. A horizontal summation of data in the table is equivalent to routing the various contributions to Montague, using the schedule for travel time of water discussed previously. The uncontrolled runoff was computed by subtracting the contributions of the several other sources from the observed discharge at Montague.

COMPUTATION OF DIRECTED RELEASES

In the daily operations, it was necessary that the River Master utilize: (1) discharges computed from recorded or reported stream gage heights for various 24-hour periods without current information about changes in stage-discharge relations that might have occurred; (2) daily discharge from New York City's three reservoirs obtained from venturi meters; (3) rainfall reports for the previous 24 hours; (4) actual powerplant releases converted to daily discharge; (5) advance estimates of power demand converted to daily discharge; (6) advance estimates of uncontrolled runoff at Montague; and (7) average times for routing of water from the several sources. Variable errors of estimate occur in projecting data, but these data must be used in the daily design and direction of releases from the reservoirs.

The time of transit of water from Pepacton Reservoir to Montague (60 hours) was greater than the transit time of water from any other reservoir. Releases from Cannonsville and Neversink Reservoirs were timed to arrive at Montague concurrently with releases from Pepacton Reservoir.

To allow for the actual differences in transit times, daily directed releases from Pepacton were scheduled to begin at 1200 hours, releases from Cannonsville were scheduled to begin at 2400 hours, and releases from Neversink were scheduled to begin at 1500 hours the following day.

Releases from the City's reservoirs required to maintain the specified flow at Montague were calculated after estimates of releases from Lake Wallenpaupack and Rio Reservoir were obtained and after a forecast was made of the uncontrolled runoff at Montague. Taking into account the time of transit from these sources to Montague, the calculation required that estimates of the following components be made two or more days in advance: (1) release of water from Lake Wallenpaupack, (2) release of water from Rio Reservoir, and (3) uncontrolled runoff at Montague. The River Master daily operation record for computing daily directed release from the City's reservoirs during the periods of low flow is shown in table 9.

The electric power companies cooperated fully in furnishing advance estimates of power-plant releases. As the hydroelectric plants were used chiefly for meeting peak-power demands of the system, advance estimates were subject to many modifying factors such as the influence of the vagaries of weather upon peak-power demand. In addition, the power companies are members of wide-area power pools that may present unforeseen demands for power generation. As a result, the actual use of water for power generation was at times at considerable variance with the advance estimates that were used by the River Master's office in design computation.

For computation purposes during periods of low flow, the estimate of uncontrolled runoff at Montague was treated as two items: (1) current runoff and (2) estimated increase in runoff from precipitation. Estimated quantities for these items are shown in table 9.

During the winter period, the advance estimate of the uncontrolled runoff (current conditions) was based on flows at nearby gaging stations and on the recession curve of the computed uncontrolled flow at Montague.

During ice-free conditions, the current runoff was calculated using a routing and recession procedure based on discharges as of 0800 hours at the gaging stations listed below:

Station	Drainage area (mi^2)
Beaver Kill at Cooks Falls, N.Y.	241
Cadosia Creek at Cadosia, N.Y.	17.9
Oquaga Creek at Deposit, N.Y.	67.6
Equinunk Creek at Equinunk, Pa.	56.3
Callicoon Creek at Callicoon, N.Y.	110
Tenmile River at Tusten, N.Y.	45.6
Lackawaxen River at Hawley, Pa.	290
Shohola Creek near Shohola, Pa.	83.6
Neversink River at Port Jervis, N.Y.	336

The forecasted increase in runoff from precipitation is shown in table 9 under the heading of "Weather Adjustment." Throughout the low-flow periods, the National Weather Service Office

at Mt. Holly, N.J., furnished quantitative forecasts of average precipitation over the drainage area above Montague and air temperatures for each day of the three-day design period. During the winter, runoff was estimated from the current state of snow and ice and from forecasted temperature and precipitation. During other periods, the forecasted precipitation was used to calculate runoff.

The forecasted flow at Montague, exclusive of releases from the City's reservoirs (table 9), was the sum of the forecasted releases from the power reservoirs, the estimated uncontrolled runoff under then current conditions, and the weather adjustment. If the computed flow was less than the desired flow at Montague, the expected deficiency was made up by corresponding releases from New York City reservoirs.

When revised forecasts of precipitation or powerplant releases became available, the releases required from the reservoirs were recomputed. Usually this procedure resulted in a reduced release requirement from New York City reservoirs for that day and therefore conserved water. Only the final figures are shown in table 9.

ANALYSIS OF FORECASTS

Forecasts of the flow at Montague based on the anticipated flow of the several components (exclusive of the release from New York City's reservoirs) varied somewhat from the observed flow on most days. At times, variations in the several components are partially compensating and the resulting observed flows were fairly close to the estimated flows.

The forecasted flow of the Delaware River at Montague, exclusive of the releases from the New York City reservoirs, was less than the applicable design rate on four days during May and on most days from June 9 to October 21, 1995. The following tabulation compares the advance estimates of the various contributions to the flow at Montague to the observed operations from June 9 to October 21, 1995.

	Advance estimates [$(ft^3/s)\cdot d$]	Observed operations [$(ft^3/s)\cdot d$]
Directed releases from New York City reservoirs	[a] 119,004	[b] 118,965
Power releases		
Lake Wallenpaupack	11,654	14,080
Rio Reservoir	11,386	14,032
Runoff from uncontrolled area	98,817	102,192

[a] Directed release as designed.
[b] Actual release in response to direction.

During the period, New York City released slightly less water than was directed, the power companies released 21 percent more water from Lake Wallenpaupack and 23 percent more

water from Rio Reservoir than was forecast, and the observed runoff from the uncontrolled area was 3.4 percent more than the forecasted runoff.

On the basis of the observed discharges at Montague, exact forecasting of releases required from the City's reservoirs during the report year would have totaled 117,901 $(ft^3/s)\cdot d$. Directed releases totaled 119,967 $(ft^3/s)\cdot d$, or 1.8 percent more than for exact forecasting.

A comparison of the hydrographs of forecasted runoff and the actual runoff (fig. 5) from the uncontrolled area indicate that the forecasting procedures tended to underestimate runoff during high precipitation events, but the forecasts were generally adequate. Adjustments were made when needed to compensate for errors in the forecast, but because of the travel time, the effect of the adjustments at Montague are not seen for several days.

Analysis of the precipitation forecasts indicate that the total precipitation forecasted for the three-day design period is often fairly accurate, but the storm may occur either earlier or later in the period. The accuracy of the runoff forecasts are significantly affected by the timing of the precipitation events. In addition, if the storm track is somewhat different than was anticipated, the amount and timing of the runoff is significantly affected.

DIVERSIONS TO NEW YORK CITY WATER SUPPLY

The 1954 Amended Decree allows New York City to divert water from the Delaware River Basin at a rate not to exceed 800 Mgal/d. The Decree also specifies that the rate of diversions will be computed as the aggregate total diversion beginning on June 1 of each year divided by the number of days elapsed since the previous May 31.

Table 11 shows diversions from Pepacton, Cannonsville, and Neversink Reservoirs to the New York City water-supply system (Rondout Reservoir) during the report year. The table includes a running account of the average rates of the combined diversions from the reservoirs, computed as prescribed by the Decree or the "Interstate Water Management Recommendations of the Parties to the Decree (DRBC Resolution 83-13)." The tabulation below shows the allowable maximum diversion rates and the actual diversions during those periods.

Effective dates	Allowable diversions (Mgal/d)	Actual diversions (Mgal/d)
June 1, 1994 to May 31, 1995	800	719
June 1 to Sept. 14, 1995	800	795
Sept. 15 to October 12, 1995	680	671
October 13 to November 11, 1995	560	409
November 12-30, 1995	800	309

During the year, a total of 242.423 Bgal of water was diverted to the New York City water supply system. The allowable diversion during the year was 286.590 Bgal.

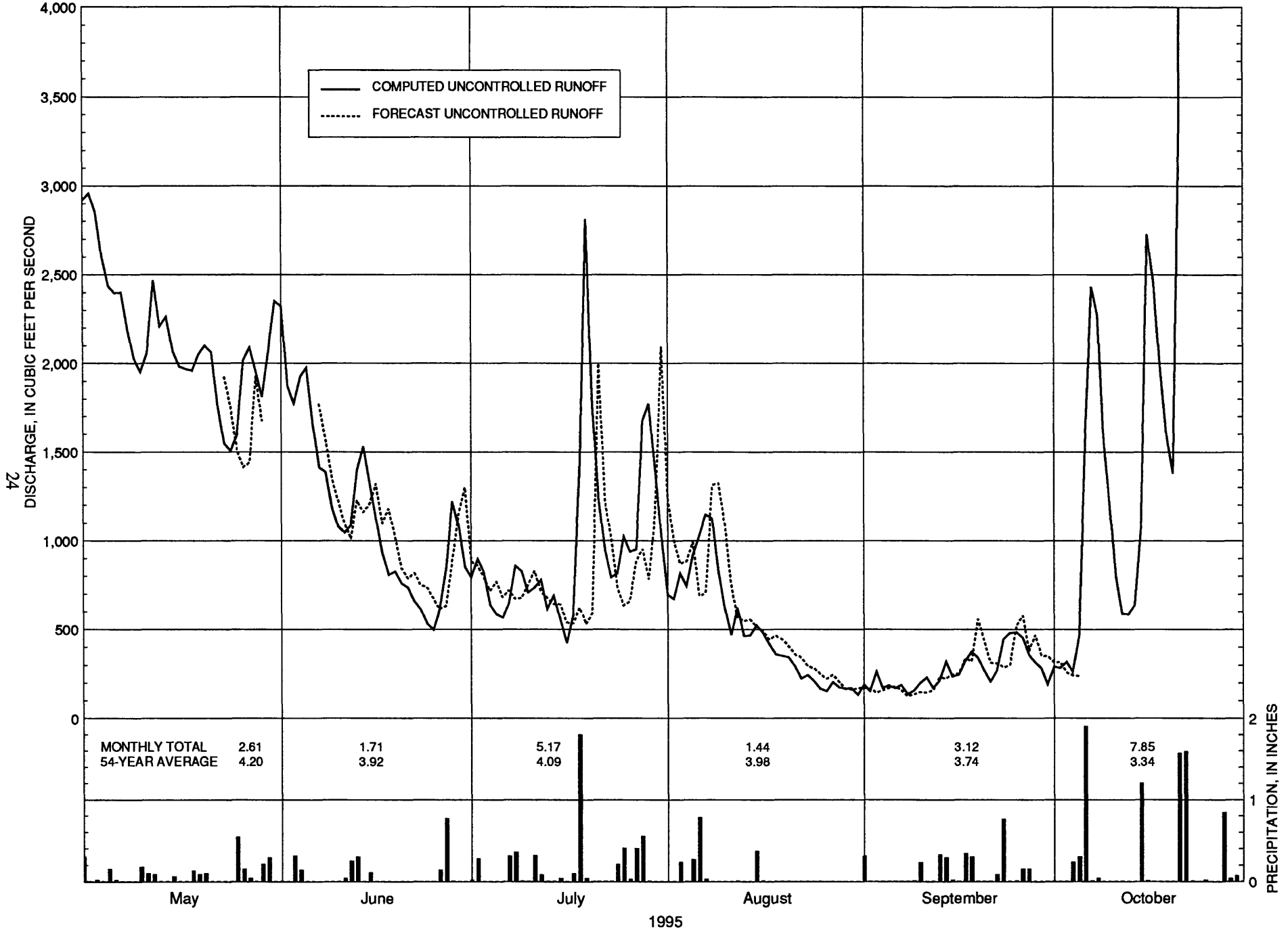

Figure 5.-Uncontrolled runoff component, Delaware River at Montague, N.J., May 1 to October 31, 1995.

STORAGE IN NEW YORK CITY RESERVOIRS

The New York City Board of Water Supply determined the "point of maximum depletion" and other pertinent reservoir levels and contents of Pepacton, Cannonsville, and Neversink Reservoirs as follows:

Level	Pepacton Reservoir		Cannonsville Reservoir		Neversink Reservoir	
	Elevation (ft.)	Contents (Bgal)	Elevation (ft.)	Contents (Bgal)	Elevation (ft.)	Contents (Bgal)
Full pool or spillway crest	1,280.00	*140.190	1,150.00	*95.706	1,440.00	*34.941
Point of maximum depletion	1,152.00	*3.511	1,040.00	*1.020	1,319.00	*0.525
Sill of diversion tunnel	1,143.00	*4.200	+1,035.00	*1.564	1,314.00	
Sill of river outlet tunnel	1,126.50		1,020.5		1,314.00	
Dead storage		1.800		0.328		1.680

*Contents shown are quantities stored between listed elevations.
+Elevation of mouth of inlet channel of diversion works.

Tables 3, 4, and 5 show storage in Pepacton, Cannonsville, and Neversink Reservoirs, respectively, above the "point of maximum depletion" or minimum full-operating level.

On December 1, 1994, combined storage in the three reservoirs was 186.077 Bgal. As discussed earlier, storage increased seasonally from December through April, except for a slight decline during February. Cannonsville Reservoir filled to capacity on January 22, 1995, and spilled throughout the winter; however, Pepacton and Neversink Reservoirs did not fill to capacity. The maximum storage for the year occurred on May 6, 1995 (fig. 2).

The seasonal decline in storage began in early May, about one month earlier than usual, and continued at greater than normal rates, reaching drought-warning level on September 10. Storage continued to decline, reaching the lower half of the drought warning zone on October 13, 1995. The minimum combined storage was 88.060 Bgal on October 15, 1995. Storage began to recover during October and reached 165.726 Bgal, 61.2 percent of capacity on November 30, 1995.

COMPARISON OF RIVER MASTER OPERATION DATA AND OTHER STREAMFLOW RECORDS

It has been explained that the River Master operations are, in effect, day-to-day operations, for which it is necessary to use preliminary records of streamflow. The following summaries compare records used in the River Master operations and published records from U.S. Geological Survey gaging stations. In the comparison of releases, the data used were reported in units of million gallons per day (Mgal/d) and converted to cubic feet per second (ft^3/s) in the summaries.

Releases from New York City Reservoirs

The River Master operations data on the controlled releases from Pepacton, Cannonsville, and Neversink Reservoirs, to the Delaware River were obtained from calibrated instruments connected to venturi meters installed in the outlet conduits.

The U.S. Geological Survey gaging station on the East Branch Delaware River at Downsville, N.Y., is 0.5 mile downstream from Pepacton Dam (fig. 1). The discharge shown in table 12 includes releases from Pepacton Reservoir, a small amount of seepage, and any runoff that enters the channel between the dam and the gaging station. The drainage area at the dam is 371 mi^2 and at the gaging station is 372 mi^2.

The tabulation below lists the comparison of the releases from Pepacton Reservoir reported by New York City to the final records for the USGS gaging station on the East Branch Delaware River at Downsville, N.Y. (table 12):

Approximate rate of flow reported by NYC (ft^3/s)	6	19	45	70	108	390	470	640
Percent difference from gaging-station record a/	-31	-19	+7.6	-5.4	+10.4	+11.2	+9.1	+8.3

a/ (-) indicates reported release was lower than gaging station record

The differences are similar to the differences observed in previous years, except at the very low flows. The comparison shows that for flows above 100 ft^3/s, the gaging station record of flow is approximately 9.0 percent higher than the record from the venturi meters. The flow rates at 6 ft^3/s and 19 ft^3/s are at the very low end of the range of the meters and the differences are higher than in previous years.

The U.S. Geological Survey gaging station on the West Branch Delaware River at Stilesville, N.Y. is 1.4 miles downstream from Cannonsville Dam (fig. 1). The discharge shown in table 13 includes releases from Cannonsville Reservoir and the runoff from 2 mi^2 of drainage area between the dam and the gaging station. The drainage area at the dam is 454 mi^2, and at the gaging station is 456 mi^2.

The following tabulation compares the releases from Cannonsville Reservoir reported by New York City to the final records for the USGS gaging station on the West Branch Delaware River at Stilesville, N.Y. (table 13):

Approximate rate of flow reported by NYC (ft^3/s)	26	34	45	455	893
Percent difference from gaging-station record a/	-13.1	-14.5	-15.6	+9.1	+5.8

a/ (-) indicates reported release was lower than gaging station record

The gaging-station records are considered good (within 10 percent) above 100 ft^3/s and fair (within 15 percent) below. The agreement between the data reported by New York City and the gaging station records is also good at high flows, but is only fair at low flows. The gaging-station records include the runoff from precipitation on the area between the dam and the gaging station and includes seepage that occurs near the base of the dam. On January 29, 1992, the seepage near the base of the dam was measured and found to be 2.4 ft^3/s. This value agrees with estimates made in previous years. If the gaging-station record is adjusted for seepage, the agreement at 26 ft^3/s , 34 ft^3/s and 45 ft^3/s from the above table becomes -5.5, -9.0 and -11.6 percent respectively. These differences are similar to those calculated in previous years. The River Master's Office is continuing to monitor the differences and is working with New York City and the USGS field office at Troy, N. Y., to improve the agreement.

The U.S. Geological Survey gaging station on the Neversink River at Neversink, N.Y. is 1,650 feet downstream from Neversink Dam (fig. 1). The discharge shown in table 14 includes releases from Neversink Reservoir and, during storms, a small amount of runoff that originates between the dam and the gaging station. The drainage area at the dam is 92.5 mi^2 and that at the gaging station is 92.6 mi^2.

The following table compares the releases from Neversink Reservoir to the final records for the USGS gaging station on the Neversink River at Neversink, N.Y. shown in table 14:

Approximate rate of flow reported by NYC (ft^3/s)	4.6	17	25	53	74	90
Percent difference from gaging-station record a/	-19.2	+12.3	+6.0	+13.0	+12.3	+10.9

a/ (-) indicates reported release was lower than gaging station record

The above comparisons indicate the venturi meter records tended to be lower than the gaging station records at the very low flows and to be higher at the higher flow rates. Measurements made by the River Master Office indicate somewhat closer agreement between the venturi instruments and the discharge measurements.

Releases from Lake Wallenpaupack

Records of daily discharge through the Wallenpaupack powerplant were furnished by the Pennsylvania Power & Light Company and published by the U.S. Geological Survey as Wallenpaupack Creek at Wilsonville, Pa. (table 15). These discharges represent the flow through the turbines of the powerplant and were computed on a midnight-to-midnight basis. For River Master operations, flows were computed on an 0800 hour to 0800 hour basis to compensate for the travel time to Montague (table 10).

From December 1994 through November 1995, the River Master's record agrees with the published U.S. Geological Survey record except for a slight variation due to the difference in the time frame and rounding of the computations.

Delaware River at Montague, N.J.

The River Master's operation record for the Delaware River at Montague, N.J. (table 10) indicated 0.15 percent less discharge for the year than the published U.S. Geological Survey record for the gaging station at that site (table 16), and daily values from the two records were in good agreement.

Diversion Tunnels

Records of diversions through the East Delaware, West Delaware, and Neversink Tunnels (fig. 1) were furnished to the River Master's Office by the City of New York. These records were obtained from New York City's calibrated instruments connected to venturi meters installed in the tunnel conduits. The on-site venturi rates-of-flow were transmitted electronically to the New York City Department of Environmental Protection computer at the Rondout Effluent Chamber every 15 seconds. Every five minutes, the computer system calculated the release and diversion quantities for the preceding five-minute periods based on the latest instantaneous rates-of-flow. These five-minute quantities were added to calculate the daily total flows which were reported to the River Master office daily. The diversion values were checked weekly against the flow meter totalizer readings on-site and calibrated or corrected as necessary. Current-meter measurements were made by the River Master's office to verify the reported diversions. The measurements were made in the outlet channels downstream from the tunnels.

The East Delaware Tunnel is used to divert water from Pepacton Reservoir to Rondout Reservoir. Conditions in the outlet channel of the East Delaware Tunnel were unfavorable for the measurement of flows from March 16 to November 30, 1995, because of high water levels in Rondout Reservoir. The results of two current-meter measurements, one made just prior to the beginning of the report year and one made during the report year, showed that on the average, the venturi-meter instruments gave higher figures by 5.6 percent for the totalizer and 5.2 percent higher for the rate-of-flow indicator.

Comparison of the data provided by New York City with discharges obtained from recorded gage-heights and the rating curve for the weir on the outlet channel from the East Delaware Tunnel indicate that the data provided by New York City were within acceptable limits.

The hydroelectric plant at the downstream end of the East Delaware Tunnel operated most days of the year. When the powerplant was not in operation, a small amount of leakage through the wicket gates was not recorded on the totalizer. The results of current-meter measurements made in previous years and observations made in 1995 indicate that the leakage has not changed substantially with time and is approximately 8.0 Mgal/d. Because the powerplant was not in operation for the equivalent of 84 days during the 1995 report year, the unmeasured leakage was approximately 670 Mgal. Based upon the measurements obtained this year and in previous years, the record of diversions through the East Delaware Tunnel was substantially correct.

The West Delaware Tunnel is used to divert water from Cannonsville Reservoir into Rondout Reservoir. Four current-meter measurements of flow in the West Delaware Tunnel outlet channel were made during the year. Those measurements indicated that on the average, the venturi instruments gave higher results, 5.8 percent for the totalizer and 5.0 percent for the rate-of-

flow indicator. Inspections of the channel downstream from the outlet, when valves were closed, showed negligible leakage.

A hydroelectric plant uses water diverted through the West Delaware Tunnel. However, it operates only when diversions are less than 300 Mgal/d. When the powerplant is not operating, the valves on the pipelines to the powerplant are closed, and there is no leakage through the system. The results of the measurements and inspections made this year and during past years indicate that the reported record of the quantity of water diverted through the West Delaware Tunnel was substantially correct.

The Neversink Tunnel is used to divert water from Neversink Reservoir into Rondout Reservoir. No measurements of flow from the Neversink Tunnel were made during the year. Measurements made during the 1994 and 1996 report years, however, showed that on average, the venturi instruments were 4.2 percent higher for the totalizer and 3.8 percent higher for the rate-of-flow indicator.

A hydroelectric plant uses water diverted through the Neversink Tunnel. When the powerplant is not operating and the main valve on the diversion tunnel is open, leakage occurs that is not recorded on the venturi instruments. Based on measurements made during previous years, the average rate of leakage was 14.0 ft^3/s (9.0 Mgal/d). When the powerplant was operating, the leakage was included in the recorded flow. When the main valve on the tunnel is closed, there is no leakage.

During the 1995 report year, the power plant did not operate for part of the day most of the time and was not operated the equivalent of 220 days. Based on the above rate and on records of power plant operation, approximately 2.0 Bgal of water was diverted but was unrecorded.

DIVERSIONS BY NEW JERSEY

The Amended Decree allows New Jersey to divert water from the Delaware River (or its tributaries in New Jersey) to areas outside the Delaware River Basin without compensating releases. These diversions may not exceed 100 Mgal/d (154.7 ft^3/s) as a monthly average, with the diversion on any day not to exceed 120 Mgal/d (185.6 ft^3/s). The U.S. Geological Survey gaging station, Delaware and Raritan Canal at Port Mercer, New Jersey (fig. 1) is used as the official location for measuring the diversions by New Jersey (table 17).

The following tabulation lists the allowable diversions by New Jersey, the periods that they were in effect, and the maximum monthly diversion during each period for the report year:

Effective dates	Allowable diversion Mgal/d	Maximum monthly average diversion (Mgal/d)
Dec. 1, 1994 to Sept. 14, 1995	100	96.9
Sept. 15 to Oct. 12, 1995	85	*81.2
Oct. 13 to Nov. 11, 1995	70	*73.4
Nov. 12-30, 1995	100	*68.8

*Average diversion during the period

The 30-day average diversion was computed weekly throughout the year to monitor compliance with the terms of the Decree and with the reduced diversions allowed during the period of drought warning. The maximum 30-day average diversion was 96.9 Mgal/d during July, 1995. The maximum daily diversion was 104 Mgal on August 20, 1995. These computations show that the diversions by New Jersey, as measured at Port Mercer, exceeded the reduced limits in effect during the drought-warning period October 13 to November 11, 1995. While the data indicates that the allowable diversions were exceeded, the diversions were within the accuracy of the data and the excess diversions were caused by errors in the preliminary records for the gaging station, which indicated that the diversions were within the allowable limit. The error was not discovered until after the reduced limits were returned to the higher levels allowed by the Decree and therefore no corrections could be made.

CONFORMANCE OF OPERATIONS AS PROVIDED UNDER AMENDED DECREE OF THE U.S. SUPREME COURT DATED JUNE 7, 1954

Operations were conducted as prescribed by the Decree from December 1, 1994, to July 20, 1995; by unanimous agreement of the Parties to the Decree, July 21 to September 14, 1995; by "Interstate Water Management Recommendations of the Parties to the Decree (DRBC Resolution 83-13)," which were designed to alleviate the drought-warning conditions in the basin from September 15 to November 11, 1995; and by the Decree from November 12-30, 1995.

Diversions from the Delaware River Basin to the New York City water-supply system were less than those authorized by the Decree and the "Interstate Water Management Recommendations of the Parties to the Decree".

Under Compensating Releases of the Montague Formula, New York City released water from its reservoirs at rates designed by the River Master to maintain the applicable Montague flow objectives and complied fully with the directives of the River Master during the year.

Diversions from the Delaware River Basin by New Jersey were within the limits prescribed by the Decree, et al, except as described earlier. New Jersey also complied fully with the requests of the River Master.

Table 1. Precipitation in the Delaware River basin upstream from Montague, N.J.
[All values given in inches.]

Month	December 1940 to November 1994 Monthly Average	December 1994 to November 1995			
		Amount	Percentage of average	Excess (+) or deficit (-) Month	Cumulative
December	3.38	2.50	74	-0.88	-0.88
January	2.88	3.62	126	+.74	-.14
February	2.69	2.02	75	-.67	-.81
March	3.30	2.64	80	-.66	-1.47
April	3.77	2.62	69	-1.15	-2.62
May	4.20	2.61	62	-1.59	-4.21
June	3.92	1.71	44	-2.21	-6.42
July	4.09	5.17	126	+1.08	-5.34
August	3.98	1.44	36	-2.54	-7.88
September	3.74	3.12	83	-.62	-8.50
October	3.34	7.85	235	+4.51	-3.99
November	3.86	4.98	129	+1.12	-2.87
12 months	43.15	40.28	93	-2.87	

Table 2. Conservation release rates for New York City reservoirs in the Delaware River Basin.
[ft^3/s, cubic feet per second]

Reservoir	Operative dates	Conservation release rates		
		Basic (ft^3/s)	Augmented (ft^3/s)	Experimental (ft^3/s)
Neversink	January 1 to March 31	5	25	25
	April 1-7	5	45	25
	April 8-30	15	45	25
	May 1 to September 30	15	45	53
	October 1-31	15	45	25
	November 1 to December 31	5	25	25
Pepacton	January 1 to March 31	6	50	45
	April 1-7	6	70	45
	April 8-30	19	70	45
	May 1-31	19	70	70
	June 1 to August 31	19	70	95
	September 1-30	19	70	70
	October 1-31	19	70	45
	November 1 to December 31	6	50	45
Cannonsville	January 1 to March 31	8	33	33
	April 1-15	8	45	45
	April 16 to June 14	23	45	45
	June 15 to August 15	23	325	325
	August 16 to October 31	23	45	45
	November 1-30	23	33	33
	December 1-31	8	33	33

Table 3. Storage in Pepacton Reservoir, N.Y. for year ending November 30, 1995
(Storage in millions of gallons above elevation 1,152.00 ft. Add 7,711 million gallons for total contents above sill of outlet tunnel, elevation 1,126.50 ft.) Storage at spillway level is 140,190 million gallons.
(River Master daily operations record; gage reading at 0800)

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	95,644	100,001	111,252	105,717	119,070	127,477	127,829	121,351	108,007	89,665	64,861	65,372
2	95,705	100,435	111,219	105,701	118,968	127,635	127,477	121,009	107,460	88,850	64,184	65,763
3	95,765	100,481	111,006	105,685	118,816	127,970	127,285	120,548	107,044	88,056	63,437	66,130
4	95,826	100,544	110,876	105,605	118,833	128,093	127,006	120,123	106,548	87,166	62,779	66,498
5	95,841	100,450	110,598	105,621	119,036	128,357	126,656	119,614	106,116	86,351	62,303	66,818
6	96,521	100,264	110,436	105,510	119,240	128,532	126,673	119,206	105,796	85,512	62,078	67,077
7	96,841	100,280	110,176	105,605	119,342	128,725	126,726	118,731	105,352	84,707	61,817	67,373
8	97,206	100,420	109,965	106,084	119,138	128,919	126,831	118,445	104,827	83,864	61,497	67,747
9	97,434	100,404	109,640	108,040	119,070	128,972	126,831	117,956	104,399	83,039	61,003	67,584
10	97,633	100,295	109,559	109,526	119,036	129,218	126,883	117,467	103,878	82,301	60,357	68,046
11	97,953	100,140	109,299	110,485	119,104	129,377	126,953	117,048	103,389	81,443	59,693	68,195
12	98,184	100,156	108,959	111,186	119,189	129,554	127,076	116,612	102,916	80,671	59,055	68,207
13	98,352	100,017	108,685	112,024	119,750	129,713	126,848	116,127	102,383	79,823	58,433	71,763
14	98,337	100,264	108,395	112,695	120,531	129,979	126,656	115,876	101,898	79,059	57,721	73,042
15	98,475	100,420	108,007	113,601	121,129	130,049	126,377	115,608	101,429	78,166	57,287	74,649
16	98,475	101,101	107,814	114,595	121,591	130,191	126,044	114,928	100,962	77,011	57,024	76,130
17	98,460	101,742	107,637	115,559	121,968	130,369	125,870	114,512	100,544	76,501	56,841	77,347
18	98,429	102,743	107,380	116,394	122,309	130,369	125,679	114,279	99,846	75,652	56,569	78,329
19	98,321	103,326	107,108	116,964	122,636	130,387	125,419	113,914	99,151	74,701	56,263	79,236
20	98,321	103,688	106,836	117,400	123,170	130,387	125,157	113,420	98,383	73,875	56,150	80,028
21	98,198	104,954	106,564	117,787	123,549	130,440	124,742	113,008	97,771	73,198	56,207	80,712
22	98,061	105,940	106,388	118,242	123,859	130,511	124,412	112,530	97,161	72,227	59,216	81,443
23	97,908	106,660	106,180	118,596	124,395	130,120	124,065	112,053	96,400	71,390	60,451	81,898
24	97,832	107,541	106,020	118,799	124,794	129,837	123,859	111,628	95,690	70,358	61,167	82,176
25	98,614	108,379	105,892	118,934	125,279	129,642	123,325	111,235	95,010	69,700	61,669	82,427
26	99,320	109,445	105,669	119,070	125,714	129,377	122,998	110,778	94,216	68,870	62,018	82,552
27	99,691	110,046	105,478	119,172	125,975	129,077	122,533	110,338	93,647	67,996	62,244	82,677
28	99,831	110,452	105,446	119,274	126,464	128,761	122,241	109,867	92,873	67,077	62,659	82,802
29	100,032	110,859		119,291	126,796	128,392	121,916	109,381	92,071	66,301	64,038	83,179
30	100,048	111,235		119,223	127,058	128,251	121,728	108,911	91,247	65,629	64,680	83,471
31	99,861	111,366		119,189		128,022		108,476	90,438		65,030	
Change	+4,564	+11,505	-5,920	+13,743	+7,869	+964	-6,294	-13,252	-18,038	-24,809	-599	+18,441
Equiv. Mgal/d	+147.2	+371.1	-211.4	+443.3	+262.3	+31.1	-209.8	-427.5	-581.9	-827.0	-19.3	+614.7
Equiv. ft^3/s	+228	+574	-327	+686	+406	+48.1	-325	-661	-900	-1,279	-29.9	+951

Change for year -11,826 Mgal Equiv. for year -32.4 Mgal/d Equiv. for year -50.1 ft^3/s

Table 4. Storage in Cannonsville Reservoir, N.Y for year ending November 30, 1995
(Storage in millions of gallons above elevation 1,040.00 ft. Add 2,584 million gallons for total contents above sill outlet tunnel, elevation 1,020.50 ft.) Storage at spillway level is 95,706 million gallons.
(River Master daily operations record; gage reading at 0800)

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	69,146	81,813	96,848	96,285	96,446	95,113	88,071	73,728	60,500	41,816	24,779	37,846
2	69,371	82,305	96,897	96,414	96,317	95,006	87,869	72,933	60,121	40,923	24,148	38,622
3	69,609	82,622	96,945	96,462	96,173	94,733	87,739	72,099	59,889	40,094	23,521	39,348
4	69,808	82,839	96,800	96,398	95,947	94,550	87,912	71,199	59,511	39,179	22,979	40,094
5	70,033	83,056	96,768	96,398	95,851	94,291	87,854	70,404	59,315	38,370	22,933	40,651
6	70,894	82,926	96,559	96,398	95,803	94,048	87,710	69,596	59,096	37,490	23,118	41,112
7	71,596	83,013	96,414	96,462	95,706	93,805	87,450	68,775	59,010	36,746	23,498	41,438
8	72,351	83,186	96,446	96,961	95,493	93,470	87,045	67,874	58,876	35,895	23,707	41,806
9	72,960	83,446	96,494	98,667	95,356	93,257	86,583	67,012	58,693	35,063	23,807	41,974
10	73,503	83,518	96,527	99,054	95,463	92,999	86,193	66,210	58,229	34,379	23,823	42,258
11	74,077	83,605	96,575	98,909	95,402	92,679	85,629	65,459	57,753	33,537	23,738	42,489
12	74,740	83,894	96,494	98,523	95,402	92,466	85,383	64,720	57,081	32,722	23,451	43,099
13	75,155	84,429	96,430	98,313	95,676	92,238	84,921	64,287	56,605	31,999	23,126	44,889
14	75,694	85,369	96,366	98,458	96,366	91,903	84,776	63,905	55,970	31,359	22,762	46,112
15	76,150	86,193	96,334	98,490	96,864	91,659	84,415	63,574	55,311	30,692	22,786	47,569
16	76,675	87,378	96,382	98,635	97,025	91,386	83,966	63,281	54,673	30,340	23,598	49,072
17	77,158	88,693	96,446	98,667	97,041	90,990	83,634	63,065	54,159	30,080	23,993	50,379
18	77,545	89,895	96,446	98,506	96,977	90,731	83,200	63,141	53,669	29,848	24,264	51,453
19	77,987	90,914	96,414	98,120	96,784	90,518	82,709	63,090	52,747	29,580	24,447	52,374
20	78,318	91,903	96,301	97,782	96,720	90,093	82,362	62,950	51,942	29,172	24,643	53,249
21	78,650	93,683	96,334	97,685	96,494	89,697	81,683	62,683	51,219	28,600	24,941	54,147
22	78,885	95,295	96,189	97,637	96,317	89,347	81,018	62,492	50,414	28,064	27,792	54,895
23	79,217	96,543	96,140	97,573	96,221	89,149	80,391	62,161	49,632	27,851	29,997	55,701
24	79,410	97,074	96,157	97,379	96,060	88,906	79,590	61,995	48,826	27,647	31,239	56,385
25	79,894	97,251	96,124	97,234	96,092	88,693	78,443	61,855	47,914	27,443	31,990	56,971
26	80,599	97,234	96,060	97,106	95,899	88,572	77,503	61,651	47,002	27,017	32,787	57,447
27	80,946	97,090	95,996	96,961	95,738	88,541	76,771	61,549	46,146	26,753	33,398	57,985
28	81,279	96,977	96,012	96,816	95,630	88,328	76,094	61,409	45,323	26,421	34,062	58,510
29	81,553	96,784		96,671	95,478	88,176	75,127	61,244	44,356	25,979	35,350	59,303
30	81,669	96,494		96,511	95,280	88,176	74,354	61,053	43,361	25,375	36,271	60,011
31	81,654	96,559		96,478		88,176		60,854	42,594		37,133	
Change	+12,972	+14,905	-547	+466	-1,198	-7,104	-13,822	-13,500	-18,260	-17,219	+11,758	+22,878
Equiv. Mgal/d	+418.5	+480.8	-19.5	+15.0	-39.9	-229.2	-460.7	-435.5	-589.0	-574.0	+379.3	+762.6
Equiv. ft^3/s	+647	+744	-30.2	+23.3	-61.8	-355	-713	-674	-911	-888	+587	+1,180

Change for year -8,671 Mgal | Equiv. for year -23.8 Mgal/d | Equiv. for year -36.8 ft^3/s

Table 5. Storage in Neversink Reservoir, N.Y. for year ending November 30, 1995
(Storage in millions of gallons above elevation 1,319.00 ft. Add 525 million gallons for total contents above sill of outlet tunnel, elevation 1,314.00 ft.) Storage at spillway level is 34,941 million gallons.
(River Master daily operations record; gage reading at 0800)

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	21,287	23,870	27,477	25,992	29,365	30,947	30,337	28,522	20,555	12,215	8,848	14,933
2	21,348	24,039	27,464	25,980	29,324	30,934	30,369	28,359	20,120	12,190	8,718	15,152
3	21,370	24,100	27,430	25,896	29,284	30,966	30,442	28,333	19,715	12,173	8,568	15,690
4	21,389	24,136	27,451	25,862	29,284	31,072	30,538	28,184	19,300	12,156	8,292	16,096
5	21,408	24,161	27,391	25,787	29,311	31,113	30,570	27,992	18,892	11,932	8,009	16,358
6	21,931	24,124	27,374	25,737	29,383	31,188	30,593	27,835	18,579	11,723	7,944	16,607
7	22,198	24,181	27,270	25,691	29,387	31,206	30,657	27,688	18,212	11,498	7,982	16,816
8	22,345	24,335	27,206	25,712	29,302	31,271	30,639	27,593	17,886	11,300	8,089	17,079
9	22,435	24,393	27,133	26,749	29,311	31,280	30,684	27,460	17,505	11,085	8,166	17,298
10	22,529	24,393	27,090	27,227	29,374	31,354	30,698	27,288	17,144	10,864	8,076	17,473
11	22,646	24,376	27,022	27,399	29,369	31,420	30,735	27,141	16,756	10,660	7,980	17,639
12	22,737	24,352	27,000	27,546	29,374	31,443	30,744	27,009	16,338	10,453	7,866	18,882
13	22,764	24,409	26,893	27,615	29,522	31,504	30,749	26,838	15,972	10,413	7,736	19,880
14	22,830	24,548	26,821	27,770	29,679	31,539	30,648	26,473	15,522	10,416	7,761	20,235
15	22,878	24,727	26,769	27,983	29,742	31,569	30,588	26,102	15,174	10,374	7,987	20,701
16	22,874	25,412	26,710	28,320	29,783	31,630	30,506	25,678	14,788	10,344	8,236	21,230
17	22,909	25,483	26,684	28,605	29,814	31,658	30,415	25,254	14,364	10,322	8,335	21,622
18	22,905	25,674	26,634	28,676	29,847	31,691	30,314	25,503	13,984	10,339	8,429	21,915
19	22,917	25,841	26,549	28,937	29,860	31,719	30,227	25,275	13,586	10,233	8,521	22,175
20	22,878	25,980	26,494	28,994	30,009	31,775	30,073	24,887	13,179	10,124	8,587	22,396
21	22,862	26,515	26,409	29,066	30,059	31,799	29,869	24,507	12,784	10,009	8,732	22,638
22	22,826	26,872	26,363	29,151	30,123	31,827	29,756	24,112	12,719	9,910	11,183	22,611
23	22,815	27,085	26,278	29,266	30,177	31,658	29,611	23,721	12,582	9,855	11,770	22,595
24	22,826	27,236	26,240	29,329	30,222	31,490	29,455	23,366	12,462	9,799	12,026	22,536
25	23,282	27,331	26,144	29,342	30,332	31,327	29,275	22,996	12,361	9,700	12,277	22,509
26	23,581	27,404	26,072	29,342	30,451	31,183	29,079	22,619	12,355	9,610	12,499	22,462
27	23,685	27,451	25,967	29,383	30,542	31,058	28,977	22,314	12,304	9,474	12,666	22,412
28	23,757	27,477	25,950	29,383	30,648	30,850	28,929	22,054	12,287	9,332	13,105	22,369
29	23,809	27,434		29,356	30,739	30,698	28,839	21,726	12,277	9,173	14,040	22,322
30	23,830	27,434		29,369	30,808	30,598	28,659	21,344	12,249	9,020	14,408	22,244
31	23,821	27,485		29,387		30,496		20,961	12,221		14,658	
Change	+2,633	+3,664	-1,535	+3,437	+1,421	-312	-1,837	-7,698	-8,740	-3,201	+5,638	+7,586
Equiv. Mgal/d	+84.9	+118.2	-54.8	+110.9	+47.4	-10.1	-61.2	-248.3	-281.9	-106.7	+181.9	+252.9
Equv. ft^3/s	+131	+183	-84.8	+172	+73.3	-15.6	-94.7	-384	-436	-165	+281	+391

Change for year +1,056 Mgal — Equiv. for year +2.9 Mgal/d — Equiv. for year +4.5 ft^3/s

Table 6. Consumption of Water by New York City - 1950 to 1995
Data furnished by New York City, Department of Environmental Protection, Bureau of Water Supply
[Mgal/d, million gallons per day; Bgal, billion gallons]

Year	Average daily consumption			Annual consumption
	City proper (Mgal/d)	Outside communities (Mgal/d)	Total (Mgal/d)	(Bgal)
1950	953.3	29.1	982.4	358.576
51	1,041.9	28.1	1,070.0	390.550
52	1,087.0	32.7	1,119.7	409.810
53	1,093.9	44.6	1.138.5	415.552
54	1,063.4	46.3	1,109.7	405.040
1955	1,109.9	45.3	1,155.2	421.648
56	1,111.3	48.9	1,160.2	424.633
57	1,169.0	57.2	1,226.2	447.563
58	1,152.9	49.6	1,202.5	438.912
59	1,204.3	60.3	1,264.6	461.579
1960	1,199.4	58.9	1,258.3	460.529
61	1,221.0	64.0	1,285.0	469.022
62	1,207.6	68.8	1,276.4	465.896
63	1,218.0	76.7	1,294.7	472.582
64	1,189.2	79.4	1,268.6	464.295
1965	1,052.1	71.2	1,123.3	409.995
66	1,044.9	73.2	1,118.1	408.128
67	1,135.3	71.0	1,206.3	440.302
68	1,242.0	78.2	1,320.2	483.175
69	1,328.7	80.1	1,408.8	514.229
1970	1,400.3	90.4	1,490.7	544.116
71	1,423.6	87.9	1,511.5	551.695
72	1,412.4	83.0	1,495.4	547.340
73	1,448.9	95.4	1,544.3	563.681
74	1,441.8	96.3	1,538.1	561.409
1975	1,415.0	92.1	1,507.1	550.093
76	1,435.0	95.8	1,530.8	560.264
77	1,483.0	104.7	1,587.7	579.510
78	1,479.4	103.0	1,582.4	577.566
79	1,513.0	104.6	1,617.6	590.426
1980	1,506.3	110.1	1,616.3	591.582
81	1,309.5	100.0	1,409.5	514.475
82	1,383.0	104.8	1,487.8	543.060
83	1,424.2	112.6	1,536.8	561.010
84	1,465.2	113.9	1,579.1	577.963
1985	1,325.4	106.5	1,431.9	522.656
86	1,351.1	115.2	1,466.3	535.200
87	1,447.1	119.8	1,566.9	571.885
88	1,484.3	125.6	1,609.9	589.090
89	1,402.0	113.4	1,515.4	553.158
1990	1,424.4	122.4	1,546.8	564.577
91	1,469.9	123.6	1,593.5	581.628
92	1,368.7	113.9	1,482.6	542.632
93	1,368.9	118.8	1,487.7	543.011
94	1,357.8	119.2	1,477.0	539.105
1995	1,326.1	123.1	1,449.2	528.958

Table 7. Design rates for the Delaware River at Montague, N.J. gaging station December 1, 1994 to November 30, 1995
[ft^3/s, cubic feet per second]

Effective dates	Montague Design Rate (ft^3/s)
December 1, 1994 to June 14, 1995	1,750
June 15 to July 20, 1995	1,850
July 21 to September 17, 1995	1,750
September 18 to October 15, 1995	1,655
October 16 to November 14, 1995	1,550
November 15-30, 1995	1,750

Table 8. Summary releases during the administration of the Emergency Fishery Protection Program
October 21 to November 30, 1995, (All values in cubic feet per second)
[Bal. Adj. = Balancing adjustment from table 9; Dir. = Release in response to direction; Cons. = Release charged to basic conservation release]

Montague	Directed Releases				Pepacton				Cannonsville				Neversink				Cumulative	
Date	Deficiency	Bal. Adj.	Cutback	Directed	Dir.	Cons.	Fishery	Total	Dir.	Cons.	Fishery	Total	Dir.	Cons.	Fishery	Total	Fishery	Cutback
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Oct. 21	318	-50	150	118	19	0	0	19	84	0	0	84	15	0	0	15	0	150
22	0	-50	0	0	0	19	0	19	0	29	0	29	0	15	0	15	0	150
23	0	-50	0	0	0	19	0	19	0	26	0	26	0	15	0	15	0	150
24	0	-50	0	0	0	19	0	19	0	28	0	28	0	15	0	15	0	150
25	0	-50	0	0	0	19	0	19	0	28	0	28	0	15	0	15	0	150
26	0	-50	0	0	0	19	0	19	0	28	0	28	0	15	0	15	0	150
27	0	-50	0	0	0	19	0	19	0	28	0	28	0	15	0	15	0	150
28	0	-50	0	0	0	19	0	19	0	28	0	28	0	15	0	15	0	150
29	0	-50	0	0	0	19	0	19	0	28	0	28	0	15	0	15	0	150
30	0	-50	0	0	0	19	0	19	0	29	0	29	0	15	0	15	0	150
31	0	-50	0	0	0	20	0	20	0	29	0	29	0	15	0	15	0	150
Nov. 1	0	-50	0	0	0	19	0	19	0	25	0	25	0	15	0	15	0	150
2	0	-50	0	0	0	19	0	19	0	22	0	22	0	12	3	15	3	150
3	0	-50	0	0	0	17	0	17	0	22	0	22	0	5	10	15	13	150
4	0	-50	0	0	0	5	0	5	0	22	0	22	0	5	9	14	22	150
Nov. 5-30	There were no fishery releases or cutbacks credited to this program.																	

Table 9. New York City Reservoir release design data
(River Master daily operation record)
[ft^3/s, cubic feet per second;(ft^3/s)·d, cubic feet per second days]

Date of advance estimate	Advance estimate of discharge of Delaware River at Montague exclusive of New York City reservoir releases: Powerplant release forecasts: Lake Wallenpaupack ft^3/s	Powerplant release forecasts: Rio Reservoir ft^3/s	Uncontrolled runoff: Current conditions ft^3/s	Uncontrolled runoff: Weather adjustment ft^3/s	Date	Discharge ft^3/s	Indicated deficiency ft^3/s	Balancing adjustment ft^3/s	Directed release ft^3/s	Computation of the balancing adjustment: Adjusted directed release: Daily ft^3/s	Adjusted directed release: Cumulative (ft^3/s)·d	Actutal deficiency: Daily ft^3/s	Actutal deficiency: Cumulative (ft^3/s)·d	Cumulative difference (ft^3/s)·d	Balancing adjustment (ft^3/s)
1994/95	1	2	3	4		5	6	7	8	9	10	11	12	13	14
MONTAGUE DESIGN RATE = 1,750 ft^3/s DECEMBER 1, 1994 TO JUNE 14, 1995															
The estimated Montague discharge was greater than the Montague design rate December 1, 1994 to May 22, 1995															
May 20	0	0	1,827	100	23	1,927	0		0						
21	0	0	1,675	81	24	1,756	0		0						
22	0	0	1,509	0	25	1,509	241		241						
23	0	0	1,357	57	26	1,414	336		336						
24	0	0	1,173	267	27	1,440	310		310						
25	0	85	1,681	163	28	1,929	0		0						
26	0	0	1,657	17	29	1,674	76		76						
The estimated Montague discharge was greater than the Montague design rate May 30 to June 6, 1995															

Col. 1 - Furnished by power company.
Col. 2 - Furnished by power company.
Col. 3 - Computed from index stations.
Col. 4 - Computed increase in runoff based on weather forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Co. 6 = 0.
Col. 7 = Col. 14 (4 days earlier).
Col. 8 = Design rate - Col. 5 + Col. 7, when positive; otherwise Col. 8 = 0.
Col. 9 = Col. 7, from Table 16.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 16), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by minus 10, limited to ±100.

Note:--Cols. 9-14 are used only for the computation of the balancing adjustment November 30.

Table 9. New York City Reservoir release design data (Continued)
(River Master daily operation record)
[ft^3/s, cubic feet per second;(ft^3/s)·d, cubic feet per second days]

Advance estimate of discharge of Delaware River at Montague exclusive of New York City reservoir releases							Indicated deficiency	Balancing adjustment	Directed release	Computation of the balancing adjustment					
	Powerplant release forecasts		Uncontrolled runoff							Adjusted directed release		Actutal deficiency		Cumulative difference	Balancing adjustment
Date of advance estimate	Lake Wallenpaupack	Rio Reservoir	Current conditions	Weather adjustment	Date	Discharge				Daily	Cumulative	Daily	Cumulative		
	ft^3/s	ft^3/s	ft^3/s	ft^3/s		ft^3/s	ft^3/s	ft^3/s	ft^3/s	ft^3/s	(ft^3/s)·d	ft^3/s	(ft^3/s)·d	(ft^3/s)·d	(ft^3/s)
1995	1	2	3	4		5	6	7	8	9	10	11	12	13	14
June 4	0	0	1,676	95	June 7	1,771	0		0						
5	0	212	1,556	17	8	1,785	0		0						
6	0	70	1,307	44	9	1,421	329		329						
7	0	89	1,202	24	10	1,315	435		435						
8	0	0	1,097	0	11	1,097	653		653						
9	0	0	1,010	0	12	1,010	740		740						
10	0	0	943	284	13	1,227	523		523						
11	0	0	1,003	157	14	1,160	590		590						
MONTAGUE DESIGN RATE = 1,850 ft^3/s JUNE 15 TO JULY 20															
12	0	0	1,145	61	15	1,206	644		644	645	645	525	525	120	-12
13	0	0	1,323	0	16	1,323	527		527	531	1,176	681	1,206	-30	+3
14	0	70	1,097	0	17	1,167	683		683	664	1,840	614	1,820	20	-2
15	0	0	1,181	0	18	1,181	669		669	669	2,509	579	2,399	110	-11
16	0	454	1,021	0	19	1,475	375	-12	363	362	2,871	576	2,975	-104	+10
17	0	454	845	0	20	1,299	551	+3	554	554	3,425	625	3,600	-175	+18
18	0	454	772	16	21	1,242	608	-2	606	606	4,031	790	4,390	-359	+36
19	0	397	776	42	22	1,215	635	-11	624	624	4,655	1,034	5,424	-769	+77
20	0	355	751	0	23	1,106	744	+10	754	745	5,400	1,095	6,519	-1,119	+100
21	0	177	680	59	24	916	934	+18	952	945	6,345	1,115	7,634	-1,289	+100
22	0	199	574	103	25	876	974	+36	1,010	1,005	7,350	1,125	8,759	-1,409	+100
23	0	170	588	25	26	783	1,067	+77	1,144	1,143	8,493	1,073	9,832	-1,339	+100
24	0	170	570	63	27	803	1,047	+100	1,147	1,144	9,637	844	10,676	-1,039	+100
25	0	170	553	342	28	1,065	785	+100	885	880	10,517	480	11,156	-639	+64
26	0	170	792	359	29	1,321	529	+100	629	643	11,160	723	11,879	-719	+72
27	0	0	1,300	0	30	1,300	550	+100	650	647	11,807	977	12,856	-1,049	+100

Col. 1 - Furnished by power company.
Col. 2 - Furnished by power company.
Col. 3 - Computed from index stations.
Col. 4 - Computed increase in runoff based on weather forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Co. 6 = 0.
Col. 7 = Col. 14 (4 days earlier).
Col. 8 = Design rate - Col. 5 + Col. 7, when positive; otherwise Col. 8 = 0.
Col. 9 = Col. 7, from Table 16.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 16), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by minus 10, limited to ±100.

Note:--Cols. 9-14 are used only for the computation of the balancing adjustment June 15 to November 30.

Table 9. New York City Reservoir release design data (Continued)
(River Master daily operation record)
[ft^3/s, cubic feet per second;(ft^3/s)·d, cubic feet per second days]

Advance estimate of discharge of Delaware River at Montague exclusive of New York City reservoir releases							Indicated	Balancing	Directed	Computation of the balancing adjustment					
	Powerplant release forecasts		Uncontrolled runoff							Adjusted directed release		Actutal deficiency			
Date of advance estimate	Lake Wallenpaupack	Rio Reservoir	Current conditions	Weather adjustment	Date	Discharge	deficiency	adjustment	release	Daily	Cumulative	Daily	Cumulative	Cumulative difference	Balancing adjustment
	ft^3/s	ft^3/s	ft^3/s	ft^3/s		ft^3/s	ft^3/s	ft^3/s	ft^3/s	ft^3/s	$(ft^3/s)·d$	ft^3/s	$(ft^3/s)·d$	$(ft^3/s)·d$	(ft^3/s)
1995	1	2	3	4		5	6	7	8	9	10	11	12	13	14
June 28	0	0	867	16	July 1	883	967	+100	1,067	1,066	12,873	946	13,802	-926	+93
29	0	0	781	80	2	861	989	+64	1,053	1,053	13,926	953	14,755	-829	+83
30	0	0	710	84	3	794	1,056	+72	1,128	1,125	15,051	1,025	15,780	-729	+73
July 1	0	0	641	76	4	717	1,133	+100	1,233	1,232	16,283	1,212	16,992	-709	+71
2	0	0	715	55	5	770	1,080	+93	1,173	1,174	17,457	1,264	18,256	-799	+80
3	0	142	667	15	6	824	1,026	+83	1,109	1,109	18,566	1,179	19,435	-869	+87
4	0	142	645	77	7	864	986	+73	1,059	1,061	19,627	1,031	20,466	-839	+84
5	0	128	591	81	8	800	1,050	+71	1,121	1,104	20,731	824	21,290	-559	+56
6	0	0	565	112	9	677	1,173	+80	1,253	1,252	21,983	1,022	22,312	-329	+33
7	0	71	617	134	10	822	1,028	+87	1,115	1,113	23,096	1,043	23,355	-259	+26
8	0	113	766	65	11	944	906	+84	990	990	24,086	980	24,335	-249	+25
9	0	113	670	46	12	829	1,021	+56	1,077	1,080	25,166	950	25,285	-119	+12
10	0	199	614	66	13	879	971	+33	1,004	1,003	26,169	1,023	26,308	-139	+14
11	642	199	644	0	14	1,485	365	+26	391	391	26,560	408	26,716	-156	+16
12	642	142	620	23	15	1,427	423	+25	448	448	27,008	421	27,137	-129	+13
13	292	142	539	0	16	973	877	+12	889	888	27,896	998	28,135	-239	+24
14	586	142	483	52	17	1,263	587	+14	601	601	28,497	741	28,876	-379	+38
15	586	199	452	170	18	1,407	443	+16	459	459	28,956	0	28,876	80	-8
16	586	199	420	110	19	1,315	535	+13	548	548	29,504	0	28,876	628	-63
17	586	142	416	179	20	1,323	463	+24	487	487	29,991	0	28,876	1,115	-100
MONTAGUE DESIGN RATE = 1,750 ^{3}/s JULY 21 TO SEPTEMBER 17															
18	586	142	+2,000	0	21	+2,000	0	+38	0	0	29,991	0	28,876	1,115	-100
19	586	142	1,208	20	22	1,956	0	-8	0	0	29,991	102	28,978	1,013	-100
20	0	113	915	101	23	1,129	621	-63	558	559	30,550	779	29,957	793	-79
21	0	128	736	0	24	864	886	-100	786	792	31,342	702	30,459	883	-88
22	586	199	635	0	25	1,420	330	-100	230	230	31,572	0	30,459	1,113	-100
23	586	199	616	43	26	1,444	306	-100	206	206	31,778	0	30,459	1,319	-100
24	586	199	681	205	27	1,671	79	-79	0	0	31,778	159	30,618	1,160	-100
25	586	142	843	112	28	1,683	67	-88	0	0	31,778	0	30,618	1,160	-100
26	586	142	739	44	29	1,511	239	-100	139	139	31,917	0	30,618	1,299	-100
27	0	142	878	270	30	1,290	460	-100	360	360	32,277	0	30,618	1,659	-100
28	0	170	1,727	368	31	2,265	0	-100	0	0	32,277	414	31,032	1,245	-100

Col. 1 - Furnished by power company.
Col. 2 - Furnished by power company.
Col. 3 - Computed from index stations.
Col. 4 - Computed increase in runoff based on weather forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.

Col. 6 = Design rate - Col. 5, when positive; otherwise Co. 6 = 0.
Col. 7 = Col. 14 (4 days earlier).
Col. 8 = Design rate - Col. 5 + Col. 7, when positive; otherwise Col. 8 = 0.
Col. 9 = Col. 7, from Table 16.
Col. 10 = Summation of Col. 9.

Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 16), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by minus 10, limited to ±100.

Note: Cols. 9-14 are used only for the computation of the balancing adjustment June 15 to November 30.

Table 9. New York City Reservoir release design data (Continued)
(River Master daily operation record)
[ft^3/s, cubic feet per second;(ft^3/s)·d, cubic feet per second days]

Date of advance estimate	Advance estimate of discharge of Delaware River at Montague exclusive of New York City reservoir releases: Powerplant release forecasts: Lake Wallenpaupack ft^3/s	Powerplant release forecasts: Rio Reservoir ft^3/s	Uncontrolled runoff: Current conditions ft^3/s	Uncontrolled runoff: Weather adjustment ft^3/s	Date	Discharge ft^3/s	Indicated deficiency ft^3/s	Balancing adjustment ft^3/s	Directed release ft^3/s	Computation of the balancing adjustment: Adjusted directed release: Daily ft^3/s	Adjusted directed release: Cumulative (ft^3/s)·d	Actutal deficiency: Daily ft^3/s	Actutal deficiency: Cumulative (ft^3/s)·d	Cumulative difference (ft^3/s)·d	Balancing adjustment (ft^3/s)
1995	1	2	3	4		5	6	7	8	9	10	11	12	13	14
July 29	586	199	1,251	0	Aug. 1	2,036	0	-100	0	0	32,277	202	31,234	1,043	-100
30	586	199	1,000	0	2	1,785	0	-100	0	0	32,277	338	31,572	705	-70
31	586	199	816	55	3	1,656	94	-100	0	0	32,277	0	31,572	705	-70
Aug. 1	586	199	689	194	4	1,668	82	-100	0	0	32,277	61	31,633	644	-64
2	586	71	961	32	5	1,650	100	-100	0	0	32,277	0	31,633	644	-64
3	0	0	663	27	6	690	1,060	-70	990	988	33,265	718	32,351	914	-91
4	0	99	612	93	7	804	946	-70	876	874	34,139	604	32,955	1,184	-100
5	234	142	702	610	8	1,688	62	-64	0	0	34,139	397	33,352	787	-79
6	234	142	1,063	263	9	1,702	48	-64	0	0	34,139	927	34,279	-140	+14
7	234	99	1,045	48	10	1,426	324	-91	233	233	34,372	1,039	35,318	-946	+95
8	0	142	756	0	11	898	852	-100	752	750	35,122	1,060	36,378	-1,256	+100
9	0	43	568	0	12	611	1,139	-79	1,060	1,064	36,186	1,114	37,492	-1,306	+100
10	0	0	548	0	13	548	1,202	+14	1,216	1,215	37,401	1,235	38,727	-1,326	+100
11	0	142	505	51	14	698	1,052	+95	1,147	1,150	38,551	1,130	39,857	-1,306	+100
12	0	142	492	24	15	658	1,092	+100	1,192	1,193	39,744	543	40,400	-656	+66
13	0	142	495	0	16	637	1,113	+100	1,213	1,215	40,959	1,065	41,465	-506	+51
14	0	142	430	14	17	586	1,164	+100	1,264	1,264	42,223	594	42,059	+164	-16
15	0	142	465	0	18	607	1,143	+100	1,243	1,249	43,472	789	42,848	624	-62
16	0	43	445	0	19	488	1,262	+66	1,328	1,290	44,762	1,080	43,928	834	-83
17	0	71	406	0	20	477	1,273	+51	1,324	1,329	46,091	1,339	45,267	824	-82
18	0	99	360	0	21	459	1,291	-16	1,275	1,275	47,366	1,355	46,622	744	-74
19	0	142	342	0	22	484	1,266	-62	1,204	1,204	48,570	1,344	47,966	604	-60
20	0	142	296	0	23	438	1,312	-83	1,229	1,229	49,799	1,329	49,295	504	-50
21	0	142	281	0	24	423	1,327	-82	1,245	1,248	51,047	1,348	50,643	404	-40
22	0	142	249	0	25	391	1,359	-74	1,285	1,283	52,330	1,433	52,076	254	-25
23	0	142	223	0	26	365	1,385	-60	1,325	1,331	53,661	1,391	53,467	194	-19
24	0	43	247	0	27	290	1,460	-50	1,410	1,408	55,069	1,418	54,885	184	-18
25	0	99	207	0	28	306	1,444	-40	1,404	1,402	56,471	1,472	56,357	114	-11
26	0	142	166	0	29	308	1,442	-25	1,417	1,421	57,892	1,581	57,938	-46	+5
27	0	0	164	0	30	164	1,586	-19	1,567	1,569	59,461	1,579	59,517	-56	+6
28	0	0	171	0	31	171	1,579	-18	1,561	1,566	61,027	1,616	61,133	-106	+11

Col. 1 - Furnished by power company.
Col. 2 - Furnished by power company.
Col. 3 - Computed from index stations.
Col. 4 - Computed increase in runoff based on weather forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Co. 6 = 0.
Col. 7 = Col. 14 (4 days earlier).
Col. 8 = Design rate - Col. 5 + Col. 7, when positive; otherwise Col. 8 = 0.
Col. 9 = Col. 7, from Table 16.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 16), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by minus 10, limited to

Note:--Cols. 9-14 are used only for the computation of the balancing adjustment June 15 to November 30.

Table 9. New York City Reservoir release design data (Continued)
(River Master daily operation record)
[ft^3/s, cubic feet per second;(ft^3/s)·d, cubic feet per second days]

Date of advance estimate	Advance estimate of discharge of Delaware River at Montague exclusive of New York City reservoir releases				Date	Discharge	Indicated deficiency	Balancing adjustment	Directed release	Computation of the balancing adjustment					
	Powerplant release forecasts		Uncontrolled runoff							Adjusted directed release		Actutal deficiency		Cumulative difference	Balancing adjustment
	Lake Wallenpaupack	Rio Reservoir	Current conditions	Weather adjustment						Daily	Cumulative	Daily	Cumulative		
	ft^3/s	ft^3/s	ft^3/s	ft^3/s		ft^3/s	ft^3/s	ft^3/s	ft^3/s	ft^3/s	$(ft^3/s)\cdot d$	ft^3/s	$(ft^3/s)\cdot d$	$(ft^3/s)\cdot d$	(ft^3/s)
1995	1	2	3	4		5	6	7	8	9	10	11	12	13	14
Aug. 29	0	0	173	0	Sept. 1	173	1,577	-11	1,566	1,578	62,605	1,318	62,451	154	-15
30	0	0	169	0	2	169	1,581	+5	1,586	1,586	64,191	1,436	63,887	304	-30
31	0	0	146	0	3	146	1,604	+6	1,610	1,606	65,797	1,486	65,373	424	-42
Sept. 1	0	0	159	0	4	159	1,591	+11	1,602	1,598	67,395	1,578	66,951	444	-44
2	0	0	171	0	5	171	1,579	-15	1,564	1,564	68,959	1,564	68,515	444	-44
3	0	0	181	0	6	181	1,569	-30	1,539	1,539	70,498	1,579	70,094	404	-40
4	0	0	158	0	7	158	1,592	-42	1,550	1,552	72,050	1,562	71,656	394	-39
5	0	0	126	0	8	126	1,624	-44	1,580	1,582	73,632	1,612	73,268	364	-36
6	0	0	131	6	9	137	1,613	-44	1,569	1,567	75,199	1,577	74,845	354	-35
7	0	0	137	11	10	148	1,602	-40	1,562	1,559	76,758	1,549	76,394	364	-36
8	0	0	146	0	11	146	1,604	-39	1,565	1,559	78,317	1,519	77,913	404	-40
9	0	0	158	0	12	158	1,592	-36	1,556	1,553	79,870	1,393	79,306	564	-56
10	0	0	230	0	13	230	1,520	-35	1,485	1,478	81,348	1,538	80,844	504	-50
11	0	0	210	15	14	225	1,525	-36	1,489	1,490	82,838	1,430	82,274	564	-50
12	0	0	207	41	15	248	1,502	-40	1,462	1,462	84,300	1,292	83,566	734	-50
13	0	0	228	23	16	251	1,499	-56	1,443	1,444	85,744	1,504	85,070	674	-50
14	0	71	313	23	17	407	1,343	-50	1,293	1,298	87,042	1,348	86,418	624	-50
MONTAGUE DESIGN RATE = 1,655 ft^3/s SEPTEMBER 18 TO OCTOBER 15															
15	0	0	270	52	18	322	1,333	-50	1,283	1,285	88,327	1,280	87,698	629	-50
16	0	0	245	314	19	559	1,096	-50	1,046	1,048	89,375	1,313	89,011	364	-36
17	0	0	248	192	20	440	1,215	-50	1,165	1,169	90,544	1,384	90,395	149	-15
18	0	0	313	0	21	313	1,342	-50	1,292	1,292	91,836	1,447	91,842	-6	+1
19	0	0	292	18	22	310	1,345	-50	1,295	1,301	93,137	1,376	93,218	-81	+8
20	0	0	277	11	23	288	1,367	-36	1,331	1,334	94,471	1,209	94,427	44	-4
21	0	0	268	29	24	297	1,358	-15	1,34^	1,340	95,811	1,175	95,602	209	-21
22	0	0	241	280	25	521	1,134	+1	1,13›	1,135	96,946	1,170	96,772	174	-17
23	0	0	560	19	26	579	1,076	+8	1,084	1,082	98,028	1,167	97,939	89	-9
24	0	0	369	11	27	380	1,275	-4	1,271	1,271	99,299	1,136	99,075	224	-22
25	0	0	348	122	28	470	1,185	-21	1,164	1,159	100,458	1,094	100,169	289	-29
26	0	0	339	16	29	355	1,300	-17	1,283	1,281	101,739	1,256	101,425	314	-31
27	0	0	350	0	30	350	1,305	-9	1,296	1,300	103,039	1,385	102,810	229	-23

Col. 1 - Furnished by power company.
Col. 2 - Furnished by power company.
Col. 3 - Computed from index stations.
Col. 4 - Computed increase in runoff based on weather forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.

Col. 6 = Design rate - Col. 5, when positive; otherwise Co. 6 = 0.
Col. 7 = Col. 14 (4 days earlier).
Col. 8 = Design rate - Col. 5 + Col. 7, when positive; otherwise Col. 8 = 0.
Col. 9 = Col. 7, from Table 16.
Col. 10 = Summation of Col. 9.

Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 16), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by minus 10, limited to ±100 Sept. 1–17, ± 50 Sept.. 18–30.

Note:--Cols. 9-14 are used only for the computation of the balancing adjustment June 15 to November 30.

Table 9. New York City Reservoir release design data (Continued)
(River Master daily operation record)
[ft^3/s, cubic feet per second;(ft^3/s)·d, cubic feet per second days]

Date of advance estimate	Advance estimate of discharge of Delaware River at Montague exclusive of New York City reservoir releases: Powerplant release forecasts: Lake Wallenpaupack ft^3/s	Powerplant release forecasts: Rio Reservoir ft^3/s	Uncontrolled runoff: Current conditions ft^3/s	Uncontrolled runoff: Weather adjustment ft^3/s	Date	Discharge ft^3/s	Indicated deficiency ft^3/s	Balancing adjustment ft^3/s	Directed release ft^3/s	Computation of the balancing adjustment: Adjusted directed release: Daily ft^3/s	Adjusted directed release: Cumulative $(ft^3/s)\cdot d$	Actutal deficiency: Daily ft^3/s	Actutal deficiency: Cumulative $(ft^3/s)\cdot d$	Cumulative difference $(ft^3/s)\cdot d$	Balancing adjustment (ft^3/s)
1995	1	2	3	4		5	6	7	8	9	10	11	12	13	14
Sept. 28	0	0	316	0	Oct. 1	316	1,339	-22	1,317	1,329	104,368	1,364	104,174	194	-19
29	0	0	317	0	2	317	1,338	-29	1,309	1,306	105,674	1,371	105,545	+129	-13
30	0	71	260	0	3	331	1,324	-31	1,293	1,291	106,965	1,336	106,881	+84	-8
Oct. 1	0	0	243	0	4	243	1,412	-23	1,389	1,388	108,353	1,393	108,274	79	-8
2	0	0	233	5	5	238	1,417	-19	1,398	1,392	109,745	1,057	109,331	414	-41
3	0	0	237	541	6	778	877	-13	864	864	110,609	0	109,331	1,278	-50
4	0	532	270	2,689	7	3,491	0	-8	0	0	110,609	0	109,331	1,278	-50
5	0	0	534	1,172	8	1,706	0	-8	0	0	110,609	0	109,331	1,278	-50
6	0	0	2,116	0	9	2,116	0	-41	0	0	110,609	95	109,426	1,183	-50
7	0	0	1,732	0	10	1,732	0	-50	0	0	110,609	415	109,841	768	-50
8	0	0	1,361	0	11	1,361	294	-50	244	243	110,852	858	110,699	153	-15
9	0	0	1,008	0	12	1,008	647	-50	597	602	111,454	1,067	111,766	-312	+31
10	0	0	809	0	13	809	846	-50	796	814	112,268	1,069	112,835	-567	+50
11	0	0	699	0	14	699	956	-50	906	904	113,172	1,019	113,854	-682	+50
12	0	71	502	13	15	586	1,069	-15	1,054	1,054	114,226	479	114,333	-107	+11
MONTAGUE DESIGN RATE = 1,550 ft^3/s OCTOBER 16 TO NOVEMBER 14															
13	0	0	490	142	16	632	918	+31	949	942	115,168	0	114,333	835	-50
14	0	0	450	744	17	1,194	356	+50	406	406	115,574	0	114,333	1,241	-50
15	0	0	2,705	0	18	2,705	0	+50	0	0	115,574	0	114,333	1,241	-50
16	0	0	1,913	0	19	1,913	0	+11	0	0	115,574	0	114,333	1,241	-50
17	0	0	1,595	0	20	1,595	0	-50	0	0	115,574	170	114,503	1,071	-50
18	0	0	1,182	50	21	1,232	318	-50	268	118	115,692	0	114,503	1,189	-50

The estimated Montague discharge was greater than the Montague design rate October 2 to November 30.

MONTAGUE DESIGN RATE = 1,750 ft^3/s NOVEMBER 15-30.

Col. 1 - Furnished by power company.
Col. 2 - Furnished by power company.
Col. 3 - Computed from index stations.
Col. 4 - Computed increase in runoff based on weather forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Co. 6 = 0.
Col. 7 = Col. 14 (4 days earlier).
Col. 8 = Design rate - Col. 5 + Col. 7, when positive; otherwise Col. 8 = 0.
Col. 9 = Col. 7, from Table 16.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 16), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by minus 10, limited to ±50

Note:--Cols. 9-14 are used only for the computation of the balancing adjustment June 15 to November 30.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled	Total	Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other				Daily	Cumul.
1994	1	2	3	4		5	6		7	8	9	10	11	12	13
Nov. 28		45	32	28	Nov. 30	662	216	Dec. 1		105	878	8,397	9,380		
29		45	32	28	Dec. 1	669	344	2		105	1,013	6,742	7,860		
30		45	32	28	2	653	422	3		105	1,075	5,770	6,950		
Dec. 1		45	32	28	3	406	471	4		105	877	5,018	6,000		
2		45	32	28	4	463	440	5		105	903	5,332	6,340		
3		45	32	28	5	853	726	6		105	1,579	11,516	13,200		
4		45	32	28	6	857	674	7		105	1,531	10,664	12,300		
5		45	32	28	7	1,254	709	8		105	1,963	8,932	11,000		
6		46	32	28	8	1,381	709	9		106	2,090	7,534	9,730		
7		45	32	29	9	835	699	10		106	1,534	6,540	8,180		
8		45	32	23	10	861	649	11		100	1,510	8,060	9,670		
9		45	32	23	11	995	762	12		100	1,757	8,643	10,500		
10		45	32	23	12	1,410	699	13		100	2,109	6,791	9,000		
11		45	32	23	13	1,443	621	14		100	2,064	5,896	8,060		
12		48	32	23	14	1,445	223	15		103	1,668	5,369	7,140		
13		46	32	25	15	1,439	0	16		103	1,439	4,888	6,430		
14		45	32	25	16	866	553	17		102	1,419	4,309	5,830		
15		45	32	23	17	548	628	18		100	1,176	4,444	5,720		
16		45	32	23	18	926	638	19		100	1,564	3,936	5,600		
17		45	32	25	19	841	192	20		102	1,033	3,595	4,730		
18		45	34	28	20	1,442	369	21		107	1,811	3,342	5,260		
19		45	34	26	21	1,456	262	22		105	1,718	3,127	4,950		
20		45	34	26	22	842	688	23		105	1,530	2,785	4,420		
21		45	34	25	23	793	312	24		104	1,105	3,281	4,490		
22		45	34	25	24	813	514	25		104	1,327	4,849	6,280		
23		45	34	25	25	0	369	26		104	369	5,057	5,530		
24		45	34	25	26	0	528	27		104	528	4,398	5,030		
25		45	34	26	27	811	230	28		105	1,041	3,814	4,960		
26		45	34	26	28	801	99	29		105	900	3,555	4,560		
27		45	34	25	29	809	433	30		104	1,242	2,994	4,340		
28		45	34	26	30	806	514	31		105	1,320	2,455	3,880		
Total	0	1,400	1,014	800		27,380	14,693		0	3,214	42,073	172,033	217,320		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4- Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled		Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other			Total	Daily	Cumul.
1994/95	1	2	3	4		5	6		7	8	9	10	11	12	13
Dec. 29		45	34	26	Dec. 31	829	567	Jan. 1		105	1,396	3,259	4,760		
30		45	34	25	Jan. 1	342	401	2		104	743	5,423	6,270		
31		45	34	25	2	355	366	3		104	721	5,625	6,450		
Jan. 1		45	34	25	3	831	578	4		104	1,409	4,377	5,890		
2		45	34	25	4	940	720	5		104	1,660	3,756	5,520		
3		45	34	25	5	929	713	6		104	1,642	3,174	4,920		
4		45	34	25	6	819	411	7		104	1,230	3,196	4,530		
5		45	34	23	7	0	472	8		102	472	4,006	4,580		
6		45	34	25	8	447	422	9		104	869	4,127	5,100		
7		45	34	23	9	867	482	10		102	1,349	3,479	4,930		
8		45	34	25	10	922	468	11		104	1,390	2,856	4,350		
9		45	34	25	11	931	543	12		104	1,474	2,642	4,220		
10		45	34	25	12	833	471	13		104	1,304	3,002	4,410		
11		45	34	25	13	822	245	14		104	1,067	3,639	4,810		
12		45	34	25	14	0	0	15		104	0	5,086	5,190		
13		45	34	25	15	0	255	16		104	255	10,141	10,500		
14		45	34	23	16	816	635	17		102	1,451	10,447	12,000		
15		45	34	23	17	795	549	18		102	1,344	8,854	10,300		
16		45	34	23	18	820	493	19		102	1,313	7,415	8,830		
17		45	34	23	19	814	426	20		102	1,240	7,188	8,530		
18		45	34	23	20	834	713	21		102	1,547	12,951	14,600		
19		45	34	23	21	0	713	22		102	713	14,685	15,500		
20		45	34	25	22	459	706	23		104	1,165	11,631	12,900		
21		46	34	25	23	921	564	24		105	1,485	9,510	11,100		
22		46	34	25	24	938	571	25		105	1,509	8,486	10,100		
23		46	34	25	25	942	691	26		105	1,633	7,512	9,250		
24		46	34	25	26	916	535	27		105	1,451	6,764	8,320		
25		46	34	25	27	817	511	28		105	1,328	5,617	7,050		
26		46	34	25	28	0	386	29		105	386	4,979	5,470		
27		46	36	25	29	459	539	30		107	998	4,855	5,960		
28		46	34	25	30	922	663	31		105	1,585	4,320	6,010		
Total	0	1,403	1,056	760		20,320	15,809		0	3,219	36,129	193,002	232,350		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4- Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-	Rio		Controlled releases			Computed		Excess Release Credits	
									N.Y.C. reservoirs		Power-	uncon-			
Date	Amount				Date	paupack	Reservoir	Date	Directed	Other	plants	trolled	Total	Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
Jan. 29		46	34	25	Jan. 31	893	387	Feb. 1		105	1,280	4,315	5,700		
30		46	34	25	Feb. 1	514	518	2		105	1,032	4,413	5,550		
31		46	36	25	2	928	479	3		107	1,407	3,686	5,200		
Feb. 1		45	34	25	3	815	613	4		104	1,428	3,268	4,800		
2		45	34	25	4	825	323	5		104	1,148	2,848	4,100		
3		45	34	25	5	952	450	6		104	1,402	2,794	4,300		
4		45	34	25	6	1,479	511	7		104	1,990	2,706	4,800		
5		45	34	25	7	1,076	422	8		104	1,498	2,798	4,400		
6		45	34	25	8	925	514	9		104	1,439	2,957	4,500		
7		45	34	25	9	914	461	10		104	1,375	3,321	4,800		
8		45	34	23	10	820	238	11		102	1,058	3,040	4,200		
9		45	34	25	11	0	0	12		104	0	2,896	3,000		
10		45	34	25	12	512	96	13		104	608	2,888	3,600		
11		45	34	25	13	995	411	14		104	1,406	2,790	4,300		
12		45	34	25	14	923	589	15		104	1,512	2,784	4,400		
13		45	34	25	15	958	337	16		104	1,295	2,501	3,900		
14		48	34	25	16	947	216	17		107	1,163	2,530	3,800		
15		42	34	25	17	833	0	18		101	833	2,666	3,600		
16		45	34	25	18	0	0	19		104	0	2,596	2,700		
17		45	34	25	19	0	0	20		104	0	2,546	2,650		
18		45	34	25	20	22	0	21		104	22	2,684	2,810		
19		45	34	25	21	538	0	22		104	538	2,678	3,320		
20		45	34	25	22	753	0	23		104	753	2,403	3,260		
21		45	34	25	23	895	0	24		104	895	2,421	3,420		
22		45	34	25	24	121	0	25		104	121	2,745	2,970		
23		45	34	25	25	0	262	26		104	262	2,834	3,200		
24		45	34	25	26	0	0	27		104	0	2,436	2,540		
25		45	34	25	27	0	43	28		104	43	2,573	2,720		
Total	0	1,263	954	698		17,638	6,870		0	2,915	24,508	81,117	108,540		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4- Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases N.Y.C. reservoirs		Power-plants	Computed uncon-trolled	Total	Excess Release Credits	
Date	Amount				Date			Date	Directed	Other				Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
Feb. 26		45	34	25	Feb. 28	0	429	Mar. 1		104	429	3,947	4,480		
27		45	34	22	Mar. 1	0	149	2		101	149	4,230	4,480		
28		45	34	26	2	0	181	3		105	181	3,904	4,190		
Mar. 1		45	34	25	3	2	220	4		104	222	3,324	3,650		
2		43	34	25	4	0	0	5		102	0	3,208	3,310		
3		45	34	23	5	0	216	6		102	216	3,342	3,660		
4		45	34	23	6	0	500	7		102	500	3,758	4,360		
5		45	34	23	7	0	319	8		102	319	6,099	6,520		
6		45	34	23	8	363	521	9		102	884	20,714	21,700		
7		45	34	25	9	879	826	10		104	1,705	17,591	19,400		
8		46	34	25	10	828	688	11		105	1,516	13,379	15,000		
9		46	34	25	11	0	828	12		105	828	11,367	12,300		
10		46	34	25	12	0	837	13		105	837	10,958	11,900		
11		46	34	25	13	0	748	14		105	748	12,147	13,000		
12		43	62	25	14	0	862	15		130	862	12,408	13,400		
13		45	36	25	15	0	840	16		106	840	12,354	13,300		
14		45	36	25	16	0	716	17		106	716	11,778	12,600		
15		45	36	25	17	0	475	18		106	475	10,519	11,100		
16		45	34	25	18	0	521	19		104	521	8,985	9,610		
17		45	36	25	19	0	652	20		106	652	7,912	8,670		
18		46	36	25	20	231	709	21		107	940	6,923	7,970		
19		46	36	25	21	222	716	22		107	938	7,415	8,460		
20		46	36	25	22	229	699	23		107	928	7,405	8,440		
21		46	36	25	23	262	645	24		107	907	6,626	7,640		
22		46	36	25	24	819	592	25		107	1,411	5,762	7,280		
23		46	36	25	25	741	550	26		107	1,291	4,912	6,310		
24		46	36	25	26	0	511	27		107	511	4,782	5,400		
25		46	36	25	27	517	737	28		107	1,254	4,089	5,450		
26		46	36	25	28	457	592	29		107	1,049	3,764	4,920		
27		46	34	25	29	457	418	30		105	875	3,500	4,480		
28		46	34	25	30	463	656	31		105	1,119	3,346	4,570		
Total	0	1,406	1,108	765		6,470	17,353		0	3,279	23,823	240,448	267,550		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4- Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled	Total	Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other				Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
Mar. 29		46	34	25	Mar. 31	462	582	Apr. 1		105	1,044	3,131	4,280		
30		46	34	25	Apr. 1	0	440	2		105	440	3,115	3,660		
31		46	42	23	2	101	730	3		111	831	2,918	3,860		
Apr. 1		45	43	25	3	460	355	4		113	815	2,652	3,580		
2		46	45	25	4	359	436	5		116	795	2,789	3,700		
3		46	45	25	5	493	582	6		116	1,075	2,749	3,940		
4		46	45	25	6	517	638	7		116	1,155	2,459	3,730		
5		46	63	25	7	517	397	8		134	914	2,392	3,440		
6		46	45	25	8	0	301	9		116	301	2,553	2,970		
7		46	45	25	9	0	312	10		116	312	3,392	3,820		
8		46	45	25	10	810	465	11		116	1,275	3,729	5,120		
9		46	45	25	11	828	323	12		116	1,151	3,703	4,970		
10		46	45	25	12	466	440	13		116	906	6,028	7,050		
11		46	45	25	13	509	482	14		116	991	9,293	10,400		
12		46	45	25	14	0	422	15		116	422	7,952	8,490		
13		46	45	25	15	0	14	16		116	14	6,870	7,000		
14		46	45	25	16	0	319	17		116	319	6,185	6,620		
15		46	45	25	17	0	500	18		116	500	5,234	5,850		
16		46	45	25	18	0	535	19		116	535	4,929	5,580		
17		46	45	25	19	67	465	20		116	532	5,612	6,260		
18		46	45	25	20	224	379	21		116	603	4,971	5,690		
19		46	45	25	21	226	0	22		116	226	4,638	4,980		
20		46	45	25	22	0	0	23		116	0	4,624	4,740		
21		46	45	25	23	0	0	24		116	0	4,244	4,360		
22		46	45	25	24	241	0	25		116	241	3,713	4,070		
23		46	45	25	25	826	124	26		116	950	3,354	4,420		
24		46	45	25	26	229	18	27		116	247	3,137	3,500		
25		46	45	25	27	219	7	28		116	226	3,018	3,360		
26		46	45	25	28	224	0	29		116	224	2,860	3,200		
27		46	45	26	29	0	74	30		117	74	2,849	3,040		
Total	0	1,379	1,341	749		7,778	9,340		0	3,469	17,118	125,093	145,680		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4- Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled	Total	Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other				Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
Apr. 28	0	46	45	26	Apr. 30	0	163	May 1	0	117	163	2,920	3,200		
29	0	46	45	34	May 1	204	114	2	0	125	318	2,957	3,400		
30	0	50	45	53	2	230	0	3	0	148	230	2,852	3,230		
May 1	0	70	45	54	3	223	0	4	0	169	223	2,598	2,990		
2	0	70	45	54	4	234	0	5	0	169	234	2,437	2,840		
3	0	87	45	54	5	227	0	6	0	186	227	2,397	2,810		
4	0	70	45	54	6	0	0	7	0	169	0	2,401	2,570		
5	0	70	45	54	7	0	0	8	0	169	0	2,191	2,360		
6	0	70	45	54	8	0	213	9	0	169	213	2,028	2,410		
7	0	70	45	54	9	0	199	10	0	169	199	1,952	2,320		
8	0	70	45	54	10	0	323	11	0	169	323	2,058	2,550		
9	0	70	45	54	11	0	173	12	0	169	173	2,468	2,810		
10	0	70	45	54	12	0	312	13	0	169	312	2,209	2,690		
11	0	70	45	53	13	0	0	14	0	168	0	2,262	2,430		
12	0	70	45	53	14	0	173	15	0	168	173	2,069	2,410		
13	0	70	45	53	15	0	319	16	0	168	319	1,983	2,470		
14	0	70	45	53	16	0	43	17	0	168	43	1,969	2,180		
15	0	70	45	53	17	0	163	18	0	168	163	1,959	2,290		
16	0	70	45	53	18	0	152	19	0	168	152	2,050	2,370		
17	0	70	45	51	19	0	103	20	0	166	103	2,101	2,370		
18	0	70	45	51	20	0	0	21	0	166	0	2,064	2,230		
19	0	70	45	51	21	0	0	22	0	166	0	1,764	1,930		
20	0	70	45	51	22	26	110	23	0	166	136	1,548	1,850		
21	0	70	45	51	23	78	0	24	0	166	78	1,506	1,750		
22	241	70	122	51	24	0	0	25	243	0	0	1,597	1,840		
23	336	70	220	53	25	0	0	26	343	0	0	2,017	2,360		
24	310	70	187	53	26	0	0	27	310	0	0	2,090	2,400		
25	0	70	45	53	27	0	74	28	0	168	74	1,958	2,200		
26	76	70	45	53	28	0	0	29	76	92	0	1,812	1,980		
27	0	70	45	53	29	0	0	30	0	168	0	2,072	2,240		
28	0	70	45	53	30	0	71	31	0	168	71	2,351	2,590		
Total	963	2,119	1,789	1,595		1,222	2,705		972	4,531	3,927	66,640	76,070		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4- Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases N.Y.C. reservoirs		Power-plants	Computed uncon-trolled	Total	Excess Release Credits	
Date	Amount				Date			Date	Directed	Other				Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
May 29	0	70	45	53	May 31	0	0	June 1	0	168	0	2,322	2,490		
30	0	70	45	53	June 1	0	0	2	0	168	0	1,872	2,040		
31	0	73	144	53	2	166	0	3	0	270	166	1,774	2,210		
June 1	0	94	175	53	3	0	43	4	0	322	43	1,925	2,290		
2	0	94	45	53	4	0	113	5	0	192	113	1,975	2,280		
3	0	94	45	53	5	0	337	6	0	192	337	1,661	2,190		
4	0	93	121	53	6	0	170	7	0	267	170	1,413	1,850		
5	0	94	150	51	7	166	213	8	0	295	379	1,386	2,060		
6	329	94	183	76	8	0	78	9	330	23	78	1,189	1,620		
7	435	94	288	54	9	0	113	10	436	0	113	1,081	1,630		
8	653	94	507	53	10	0	0	11	654	0	0	1,046	1,700		
9	740	94	593	53	11	131	0	12	740	0	131	1,089	1,960		
10	523	93	377	53	12	0	0	13	523	0	0	1,397	1,920		
11	590	96	441	53	13	0	0	14	590	0	0	1,530	2,120		
12	644	116	476	53	14	0	0	15	645	0	0	1,325	1,970	220	220
13	527	94	381	56	15	0	43	16	531	0	43	1,126	1,700	-50	170
14	683	93	518	53	16	0	305	17	664	0	305	931	1,900	150	320
15	669	110	515	74	17	79	383	18	669	30	462	809	1,970	220	540
16	363	94	398	74	18	78	369	19	362	204	447	827	1,840	90	630
17	554	108	407	90	19	81	383	20	554	51	464	761	1,830	80	710
18	606	124	455	91	20	78	245	21	606	64	323	737	1,730	-20	690
19	624	122	422	110	21	0	156	22	624	30	156	660	1,470	-280	410
20	754	122	549	74	22	0	142	23	745	0	142	613	1,500	-250	160
21	952	107	764	74	23	0	202	24	945	0	202	533	1,680	-70	90
22	1,010	108	823	74	24	0	227	25	1,005	0	227	498	1,730	-20	70
23	1,144	110	959	74	25	0	163	26	1,143	0	163	614	1,920	170	240
24	1,147	110	961	73	26	0	160	27	1,144	0	160	846	2,150	400	640
25	885	110	696	74	27	0	149	28	880	0	149	1,221	2,250	500	1,140
26	629	110	480	53	28	0	46	29	643	0	46	1,081	1,770	20	1,160
27	650	93	501	53	29	0	21	30	647	0	21	852	1,520	-230	930
Total	15,111	2,978	12,464	1,914		779	4,061		15,080	2,276	4,840	35,094	57,290		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4 - Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Col. 12 = Col. 11 - Col. 8 - 1,750 ft^3/s computed algebraically, but not greater than Col. 7; except that part of Col. 8 contributing to the excess-release increment of Col. 11.
Col. 13 - Season limit of cumulative credit beginning June 15, 1995 = 11,418 (ft^3/s)-d.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague								
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled	Total	Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other				Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
June 28	1,067	94	919	53	June 30	110	0	July 1	1,066	0	110	794	1,970	220	1,150
29	1,053	93	886	74	July 1	0	0	2	1,053	0	0	897	1,950	200	1,350
30	1,128	110	941	74	2	0	0	3	1,125	0	0	825	1,950	200	1,550
July 1	1,233	111	1,047	74	3	0	0	4	1,232	0	0	638	1,870	120	1,670
2	1,173	111	989	74	4	0	0	5	1,174	0	0	586	1,760	10	1,680
3	1,109	111	924	74	5	0	103	6	1,109	0	103	568	1,780	30	1,710
4	1,059	111	876	74	6	0	174	7	1,061	0	174	645	1,880	130	1,840
5	1,121	111	919	74	7	0	167	8	1,104	0	167	859	2,130	380	2,220
6	1,253	110	1,089	53	8	0	0	9	1,252	0	0	828	2,080	330	2,550
7	1,115	90	970	53	9	0	99	10	1,113	0	99	708	1,920	170	2,720
8	990	97	840	53	10	0	135	11	990	0	135	735	1,860	110	2,830
9	1,077	97	930	53	11	0	121	12	1,080	0	121	779	1,980	230	3,060
10	1,004	97	832	74	12	0	213	13	1,003	0	213	614	1,830	80	3,140
11	391	93	351	74	13	574	177	14	391	127	751	691	1,960	83	3,223
12	448	108	393	90	14	661	213	15	448	143	874	555	2,020	127	3,350
13	889	116	682	90	15	221	206	16	888	0	427	425	1,740	-10	3,340
14	601	124	387	90	16	341	184	17	601	0	525	584	1,710	-40	3,300
15	459	124	450	90	17	599	167	18	459	205	766	1,400	2,830	459	3,759
16	548	141	447	87	18	570	102	19	548	127	672	2,813	4,160	548	4,307
17	487	142	385	53	19	562	213	20	487	93	775	1,775	3,130	487	4,794
18	0	94	326	57	20	567	166	21	0	477	733	1,230	2,440		
19	0	93	325	74	21	566	138	22	0	492	704	944	2,140		
20	558	108	377	74	22	0	177	23	559	0	177	794	1,530		
21	786	116	608	68	23	110	121	24	792	0	231	817	1,840		
22	230	108	381	68	24	575	184	25	230	327	759	1,024	2,340		
23	206	110	381	68	25	707	206	26	206	353	913	938	2,410		
24	0	110	381	68	26	589	50	27	0	559	639	952	2,150		
25	0	108	381	62	27	625	230	28	0	551	855	1,674	3,080		
26	139	102	381	62	28	589	574	29	139	406	1,163	1,772	3,480		
27	360	102	379	76	29	0	479	30	360	197	479	1,404	2,440		
28	0	102	390	82	30	110	195	31	0	574	305	1,031	1,910		
Total	20,484	3,344	19,567	2,190		8,076	4,794		20,470	4,631	12,870	30,299	68,270		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4 - Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Col. 12 = Col. 11 - Col. 8 - 1,750 ft^3/s computed algebraically, but not greater than Col. 7; except that part of Col. 8 contributing to the excess-release increment of Col. 11.
Col. 13 - Season limit of cumulative credit beginning June 15, 1995 = 11,418 $(ft^3/s)\cdot d$.
Excess Release quantity suspended July 18, 1995.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled		Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other			Total	Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
July 29	0	102	390	90	July 31	586	266	Aug. 1	0	582	852	696	2,130		
30	0	105	563	110	Aug. 1	587	152	2	0	778	739	673	2,190		
31	0	141	633	107	2	583	429	3	0	881	1,012	817	2,710		
Aug. 1	0	141	541	99	3	587	358	4	0	781	945	744	2,470		
2	0	127	541	101	4	588	262	5	0	769	850	921	2,540		
3	990	125	764	99	5	0	0	6	988	0	0	1,032	2,020		
4	876	124	651	99	6	0	0	7	874	0	0	1,146	2,020		
5	0	94	330	53	7	227	0	8	0	477	227	1,126	1,830		
6	0	94	330	53	8	0	0	9	0	477	0	823	1,300		
7	233	96	330	53	9	0	89	10	233	246	89	622	1,190		
8	752	93	600	57	10	0	219	11	750	0	219	471	1,440		
9	1,060	91	883	90	11	0	14	12	1,064	0	14	622	1,700		
10	1,216	127	998	90	12	51	0	13	1,215	0	51	464	1,730		
11	1,147	127	933	90	13	51	103	14	1,150	0	154	466	1,770		
12	1,192	127	976	90	14	545	138	15	1,193	0	683	524	2,400		
13	1,213	127	998	90	15	0	202	16	1,215	0	202	483	1,900		
14	1,264	125	1,159	90	16	523	212	17	1,264	110	735	421	2,530		
15	1,243	124	1,035	90	17	318	282	18	1,249	0	600	361	2,210		
16	1,328	122	1,078	90	18	226	92	19	1,290	0	318	352	1,960		
17	1,324	343	896	90	19	0	67	20	1,329	0	67	344	1,740		
18	1,275	387	798	90	20	0	103	21	1,275	0	103	292	1,670		
19	1,204	387	727	90	21	0	181	22	1,204	0	181	225	1,610		
20	1,229	387	752	90	22	0	177	23	1,229	0	177	244	1,650		
21	1,245	387	808	53	23	0	192	24	1,248	0	192	210	1,650		
22	1,285	387	843	53	24	0	149	25	1,283	0	149	168	1,600		
23	1,325	387	891	53	25	21	184	26	1,331	0	205	154	1,690		
24	1,410	387	968	53	26	0	128	27	1,408	0	128	204	1,740		
25	1,404	467	882	53	27	0	103	28	1,402	0	103	175	1,680		
26	1,417	469	899	53	28	0	0	29	1,421	0	0	169	1,590		
27	1,567	470	1,046	53	29	0	0	30	1,569	0	0	171	1,740		
28	1,561	467	1,046	53	30	0	0	31	1,566	0	0	134	1,700		
Total	28,760	7,137	24,289	2,425		4,893	4,102		28,750	5,101	8,995	15,254	58,100		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4 - Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled		Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other			Total	Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
Aug. 29	1,566	622	903	53	Aug. 31	199	43	Sept. 1	1,578		242	190	2,010		
30	1,586	620	913	53	Sept. 1	0	160	2	1,586		160	154	1,900		
31	1,610	620	933	53	2	0	0	3	1,606		0	264	1,870		
Sept. 1	1,602	620	925	53	3	0	0	4	1,598		0	172	1,770		
2	1,564	620	891	53	4	0	0	5	1,564		0	186	1,750		
3	1,539	620	866	53	5	0	0	6	1,539		0	171	1,710		
4	1,550	619	880	53	6	0	0	7	1,552		0	188	1,740		
5	1,580	619	910	53	7	0	0	8	1,582		0	138	1,720		
6	1,569	617	897	53	8	15	0	9	1,567		15	158	1,740		
7	1,562	616	890	53	9	0	0	10	1,559		0	201	1,760		
8	1,565	616	890	53	10	0	0	11	1,559		0	231	1,790		
9	1,556	614	886	53	11	185	0	12	1,553		185	172	1,910		
10	1,485	614	811	53	12	0	0	13	1,478		0	212	1,690		
11	1,489	620	817	53	13	0	0	14	1,490		0	320	1,810		
12	1,462	682	727	53	14	222	0	15	1,462		222	236	1,920		
13	1,443	684	707	53	15	0	0	16	1,444		0	246	1,690		
14	1,293	682	563	53	16	0	78	17	1,298		78	324	1,700		
15	1,283	681	551	53	17	0	0	18	1,285		0	375	1,660		
16	1,046	681	314	53	18	0	0	19	1,048		0	342	1,390		
17	1,165	681	435	53	19	0	0	20	1,169		0	271	1,440		
18	1,292	674	565	53	20	0	0	21	1,292		0	208	1,500		
19	1,295	337	911	53	21	0	10	22	1,301		10	269	1,580		
20	1,331	316	965	53	22	0	0	23	1,334		0	446	1,780		
21	1,343	620	667	53	23	0	0	24	1,340		0	480	1,820		
22	1,135	616	466	53	24	0	0	25	1,135		0	485	1,620		
23	1,084	616	413	53	25	0	35	26	1,082		35	453	1,570		
24	1,271	616	602	53	26	0	163	27	1,271		163	356	1,790		
25	1,164	614	492	53	27	0	245	28	1,159		245	316	1,720		
26	1,283	614	614	53	28	0	117	29	1,281		117	282	1,680		
27	1,296	617	630	53	29	0	78	30	1,300		78	192	1,570		
Total	42,009	18,388	22,034	1,590		621	929		42,012	0	1,550	8,038	51,600		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4 - Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued)
and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled	Total	Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other				Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
Sept. 28	1,317	303	973	53	Sept. 30	0	0	Oct. 1	1,329	0	0	291	1,620		
29	1,309	311	950	45	Oct. 1	0	0	2	1,306	0	0	284	1,590		
30	1,293	308	958	25	2	0	0	3	1,291	0	0	319	1,610		
Oct. 1	1,389	308	1,055	25	3	0	0	4	1,388	0	0	262	1,650		
2	1,398	308	1,061	23	4	0	128	5	1,392	0	128	470	1,990		
3	864	308	541	15	5	0	333	6	864	0	333	1,573	2,770		
4	0	26	26	15	6	0	192	7	0	67	192	2,431	2,690		
5	0	19	26	15	7	0	0	8	0	60	0	2,270	2,330		
6	0	19	26	15	8	0	0	9	0	60	0	1,560	1,620		
7	0	19	26	15	9	43	0	10	0	60	43	1,197	1,300		
8	244	73	145	25	10	0	0	11	243	0	0	797	1,040		
9	597	297	280	25	11	0	0	12	602	0	0	588	1,190		
10	796	300	489	25	12	0	0	13	814	0	0	586	1,400		
11	906	300	579	25	13	0	0	14	904	0	0	636	1,540		
12	1,054	299	730	25	14	0	82	15	1,054	0	82	1,094	2,230		
13	949	299	620	23	15	0	0	16	942	0	0	2,728	3,670		
14	406	266	125	15	16	0	0	17	406	0	0	2,454	2,860		
15	0	19	26	15	17	0	0	18	0	60	0	1,970	2,030		
16	0	19	26	15	18	0	0	19	0	60	0	1,590	1,650		
17	0	19	26	15	19	0	0	20	0	60	0	1,380	1,440		
18	118	19	84	15	20	0	287	21	118	0	287	3,355	3,760		
19	0	19	29	15	21	0	737	22	0	63	737	27,300	28,100		
20	0	19	26	15	22	0	486	23	0	60	486	16,154	16,700		
21	0	19	28	15	23	0	262	24	0	62	262	9,186	9,510		
22	0	19	28	15	24	0	174	25	0	62	174	6,594	6,830		
23	0	19	28	15	25	0	184	26	0	62	184	5,184	5,430		
24	0	19	28	15	26	0	174	27	0	62	174	4,304	4,540		
25	0	19	28	15	27	0	525	28	0	62	525	4,433	5,020		
26	0	19	28	15	28	0	461	29	0	62	461	7,907	8,430		
27	0	19	29	15	29	0	294	30	0	63	294	6,713	7,070		
28	0	20	29	15	30	0	184	31	0	64	184	5,092	5,340		
Total	12,640	4,030	9,053	619		43	4,503		12,653	1,049	4,546	120,702	138,950		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4 - Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 10. Controlled releases for reservoirs in the upper Delaware River basin (Continued) and segregation of flow of Delaware River at Montague, N.J.
(River Master daily operation record)
Mean discharge in cubic feet per second for 24 hours

Controlled releases from New York City reservoirs					Controlled releases from power reservoirs			Segregation of flow Delaware River at Montague							
Directed		Pepacton	Cannonsville	Neversink		Lake Wallen-paupack	Rio Reservoir		Controlled releases			Computed uncon-trolled		Excess Release Credits	
									N.Y.C. reservoirs		Power-plants				
Date	Amount				Date			Date	Directed	Other			Total	Daily	Cumul.
1995	1	2	3	4		5	6		7	8	9	10	11	12	13
Oct. 29		19	25	15	Oct. 31	0	142	Nov. 1		59	142	4,359	4,560		
30		19	22	15	Nov. 1	88	571	2		56	659	4,025	4,740		
31		17	22	15	2	0	535	3		54	535	4,611	5,200		
Nov. 1		5	22	14	3	293	206	4		41	499	5,250	5,790		
2		6	22	5	4	0	0	5		33	0	4,837	4,870		
3		6	22	5	5	51	21	6		33	72	4,175	4,280		
4		6	23	5	6	409	277	7		34	686	3,640	4,360		
5		6	23	5	7	167	202	8		34	369	3,717	4,120		
6		6	23	5	8	274	333	9		34	607	3,759	4,400		
7		6	23	5	9	461	348	10		34	809	3,067	3,910		
8		6	23	5	10	345	195	11		34	540	3,046	3,620		
9		6	23	5	11	0	692	12		34	692	12,074	12,800		
10		6	23	5	12	84	766	13		34	850	17,116	18,000		
11		6	23	5	13	826	801	14		34	1,627	11,639	13,300		
12		6	23	5	14	1,620	883	15		34	2,503	14,963	17,500		
13		6	23	5	15	1,816	830	16		34	2,646	17,720	20,400		
14		6	23	5	16	1,818	688	17		34	2,506	12,860	15,400		
15		6	23	5	17	1,690	883	18		34	2,573	9,693	12,300		
16		6	23	5	18	1,431	840	19		34	2,271	8,395	10,700		
17		6	23	5	19	1,444	773	20		34	2,217	7,569	9,820		
18		6	23	5	20	1,413	812	21		34	2,225	6,921	9,180		
19		6	23	5	21	1,419	691	22		34	2,110	6,476	8,620		
20		6	23	5	22	581	344	23		34	925	5,831	6,790		
21		6	23	5	23	0	720	24		34	720	5,276	6,030		
22		6	23	5	24	0	642	25		34	642	4,694	5,370		
23		6	23	5	25	153	447	26		34	600	4,256	4,890		
24		6	23	5	26	126	645	27		34	771	4,035	4,840		
25		6	25	5	27	433	617	28		36	1,050	3,824	4,910		
26		6	25	9	28	450	443	29		40	893	4,227	5,160		
27		12	31	25	29	1,253	631	30		68	1,884	4,798	6,750		
Total	0	222	699	213		18,645	15,978		0	1,134	34,623	206,853	242,610		

Col. 2 - 24 hours beginning 1200 of date shown.
Col. 3 - 24 hours ending 2400 one day later.
Col. 4 - 24 hours beginning 1500 one day later.
Col. 5 - 24 hours beginning 0800 of date shown.
Col. 6 - 24 hours beginning 1600 of date shown.

Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to Col. 1.
Col. 8 = Col. 2 + Col. 3 + Col. 4 - Col. 7.
Col. 9 = Col. 5 + Col. 6.
Col. 10 = Col. 11 - Col. 7 - Col. 8 - Col. 9.
Col. 11 = 24 hours of calendar day shown.

Table 11. Diversions to New York City water supply
Million gallons per day for 24 hour period beginning 0800 local time
(River Master daily operation record)

Date 1994	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1994 to date	Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1994 to date
Dec. 1	450	227	102	772	Jan. 1	400	209	104	748
2	437	227	105	772	2	400	199	114	748
3	453	227	102	772	3	401	199	101	748
4	453	227	107	772	4	401	201	102	748
5	402	199	100	772	5	401	199	101	748
6	401	198	102	771	6	401	199	101	747
7	402	198	101	771	7	401	199	149	747
8	402	198	104	771	8	402	199	103	747
9	402	199	101	770	9	402	199	99	747
10	402	199	104	770	10	402	198	124	747
11	402	199	119	770	11	451	0	140	746
12	401	198	105	769	12	450	0	113	745
13	401	0	100	768	13	451	0	93	744
14	401	0	106	767	14	413	0	142	744
15	401	0	104	765	15	455	0	99	743
16	401	0	98	764	16	455	0	128	742
17	401	0	102	763	17	30	0	130	740
18	401	0	114	761	18	238	0	105	738
19	401	0	105	760	19	453	0	119	737
20	401	0	108	759	20	452	0	121	736
21	401	0	121	758	21	413	0	122	736
22	401	0	101	756	22	450	0	124	735
23	401	143	101	756	23	38	234	118	733
24	21	13	0	752	24	0	296	127	732
25	0	0	0	749	25	0	297	123	731
26	275	183	103	748	26	0	297	123	730
27	394	268	97	748	27	0	296	123	728
28	398	269	116	748	28	0	297	123	727
29	399	269	98	748	29	2	296	126	726
30	399	269	105	748	30	362	0	100	725
31	399	269	112	748	31	451	0	122	724
Total	11,703	4,179	3,043			9,575	4,014	3,619	

Table 11. Diversions to New York City water supply (Continued)
Million gallons per day for 24 hour period beginning 0800 local time
(River Master daily operation record)

Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1994 to date	Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1994 to date
Feb. 1	451	0	120	723	Mar. 1	401	300	124	716
2	452	0	120	723	2	401	299	125	716
3	450	0	115	722	3	401	299	126	717
4	452	0	126	722	4	401	299	122	717
5	354	0	118	721	5	401	299	126	718
6	452	0	124	720	6	401	298	124	718
7	451	0	120	719	7	295	299	124	718
8	451	0	121	719	8	340	257	124	718
9	452	0	122	718	9	400	299	124	718
10	449	0	131	718	10	401	300	121	719
11	451	0	125	717	11	432	300	124	719
12	450	0	123	717	12	405	300	124	720
13	452	0	123	716	13	400	296	118	720
14	452	0	125	716	14	401	297	123	720
15	452	0	133	715	15	402	296	139	721
16	452	0	119	714	16	402	296	110	721
17	451	0	122	714	17	402	296	116	721
18	452	0	122	713	18	402	296	129	722
19	452	0	123	713	19	402	296	129	722
20	452	196	141	713	20	401	296	127	722
21	402	201	128	713	21	401	296	151	723
22	401	202	117	713	22	401	296	105	723
23	400	294	129	714	23	401	296	129	723
24	401	300	124	714	24	400	296	116	724
25	401	300	123	714	25	400	297	124	724
26	401	300	123	715	26	400	297	110	724
27	401	300	127	715	27	402	297	124	725
28	401	300	120	716	28	401	296	123	725
					29	401	296	123	725
					30	401	296	121	726
					31	401	296	119	726
Total	12,138	2,393	3,464			12,300	9,177	3,824	

Table 11. Diversions to New York City water supply (Continued)
Million gallons per day for 24 hour period beginning 0800 local time
(River Master daily operation record)

Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1994 to date	Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1994 to date
Apr. 1	385	284	124	726	May 1	0	489	100	726
2	402	296	123	726	2	0	489	0	725
3	269	470	104	727	3	0	489	0	725
4	92	489	42	726	4	0	489	0	724
5	0	489	0	726	5	0	488	0	723
6	293	489	85	726	6	0	488	0	723
7	466	489	166	727	7	0	488	0	722
8	451	489	99	728	8	0	488	0	721
9	451	490	107	729	9	0	488	0	721
10	301	490	100	730	10	0	486	0	720
11	300	488	106	731	11	0	488	0	719
12	302	490	101	731	12	0	488	0	719
13	292	490	97	731	13	0	488	0	718
14	291	307	101	731	14	0	487	0	717
15	300	297	100	731	15	0	487	0	717
16	313	296	103	731	16	0	487	0	716
17	262	448	88	731	17	0	487	0	715
18	282	491	96	732	18	0	487	0	715
19	282	491	100	732	19	1	487	0	714
20	284	491	97	733	20	30	487	0	713
21	283	491	105	733	21	0	487	0	713
22	0	491	100	733	22	439	298	199	713
23	0	491	90	732	23	453	297	194	714
24	0	308	0	731	24	453	296	191	715
25	0	477	0	730	25	452	296	190	715
26	0	491	0	729	26	452	296	196	716
27	0	486	0	729	27	452	296	196	717
28	0	483	0	728	28	451	295	198	717
29	0	489	0	727	29	451	295	198	718
30	0	489	0	727	30	452	296	197	718
					31	453	296	192	719
Total	6,301	13,460	2,234			4,539	13,203	2,051	

Table 11. Diversions to New York City water supply (Continued)
Million gallons per day for 24 hour period beginning 0800 local time
(River Master daily operation record)

Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1995 to date	Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1995 to date
June 1	452	296	0	748	July 1	453	295	153	666
2	452	295	0	748	2	453	295	0	669
3	452	22	0	656	3	471	294	142	676
4	452	296	0	679	4	452	294	142	682
5	0	295	0	602	5	453	294	147	688
6	0	349	0	560	6	450	295	130	693
7	0	391	16	538	7	452	294	138	699
8	0	296	0	508	8	452	294	148	704
9	0	295	0	484	9	452	295	146	709
10	0	294	0	465	10	452	295	148	713
11	0	295	0	450	11	451	295	144	718
12	388	295	97	477	12	452	294	148	722
13	294	206	101	487	13	452	115	319	726
14	301	283	98	501	14	452	0	387	728
15	449	288	96	523	15	452	0	387	731
16	128	161	95	514	16	452	0	386	733
17	297	266	96	523	17	450	0	392	735
18	297	259	87	529	18	450	0	384	737
19	298	182	106	532	19	449	0	394	739
20	448	421	175	558	20	449	0	379	741
21	286	376	98	568	21	451	0	395	743
22	280	180	107	568	22	451	0	389	745
23	286	465	129	581	23	451	0	396	747
24	452	482	176	603	24	453	0	392	749
25	452	481	185	624	25	453	0	390	751
26	443	479	135	640	26	451	0	388	752
27	268	480	90	648	27	452	0	387	754
28	275	480	107	655	28	453	0	391	755
29	272	319	147	658	29	453	0	390	757
30	284	189	186	658	30	452	0	391	758
					31	453	0	391	760
Total	8,006	9,416	2,327			14,022	3,649	8,914	

Table 11. Diversions to New York City water supply (Continued)
Million gallons per day for 24 hour period beginning 0800 local time
(River Master daily operation record)

Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Average June 1, 1995 to date	Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Ave. to date June 1 or Sept. 15, 1995
Aug. 1	452	0	391	761	Sept. 1	452	296	0	786
2	453	0	393	762	2	451	295	0	785
3	453	0	397	764	3	450	295	0	785
4	452	0	396	765	4	450	294	211	787
5	452	0	399	766	5	453	296	201	788
6	451	0	413	768	6	454	295	201	790
7	453	0	342	768	7	415	276	200	791
8	452	0	387	769	8	453	295	175	792
9	450	0	365	770	9	452	295	195	794
10	453	0	390	771	10	452	295	193	795
11	453	1	382	772	11	410	294	200	796
12	452	0	368	772	12	452	294	0	796
13	452	0	418	774	13	453	295	0	795
14	453	0	332	774	14	453	280	0	795
15	453	0	360	774	15	452	0	0	452
16	451	0	395	775	16	451	0	0	452
17	451	0	372	776	17	449	0	0	451
18	453	201	388	779	18	525	0	96	493
19	452	296	378	784	19	566	0	97	527
20	451	295	372	788	20	566	0	108	552
21	451	295	17	787	21	565	0	95	567
22	451	295	100	788	22	565	0	96	579
23	452	294	100	789	23	564	0	90	587
24	452	294	96	789	24	563	0	90	594
25	451	296	0	789	25	562	0	84	599
26	451	296	0	788	26	562	0	148	608
27	451	295	0	788	27	561	0	132	614
28	451	295	0	788	28	561	0	136	620
29	453	296	1	787	29	560	0	149	626
30	451	294	0	787	30	558	0	149	631
31	452	296	0	786					
Total	14,008	4,039	7,952			14,880	4,095	3,046	

Table 11. Diversions to New York City water supply (Continued)
Million gallons per day for 24 hour period beginning 0800 local time
(River Master daily operation record)

Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Ave. to date Sept. 15 or Oct. 13, 1995	Date 1995	East Delaware Tunnel	West Delaware Tunnel	Never-sink Tunnel	Ave. to date Oct. 13 or Nov. 12, 1995
Oct. 1	559	0	147	636	Nov. 1	294	0	0	411
2	550	0	162	640	2	451	0	0	413
3	563	0	298	652	3	299	0	0	408
4	563	0	305	662	4	297	0	0	403
5	563	0	238	669	5	296	0	0	398
6	525	0	306	676	6	295	165	0	401
7	555	0	0	671	7	301	176	0	404
8	554	0	0	666	8	279	162	0	405
9	554	0	145	667	9	149	142	0	401
10	557	0	140	669	10	298	164	0	403
11	557	0	151	670	11	299	287	0	409
12	557	0	152	671	12	448	287	0	735
13	556	0	0	556	13	300	225	97	679
14	555	0	0	556	14	21	8	0	462
15	497	0	0	536	15	0	0	0	347
16	402	0	0	503	16	0	0	0	277
17	403	0	0	483	17	0	0	0	231
18	388	0	0	467	18	0	0	0	198
19	305	0	0	444	19	0	0	0	173
20	292	0	96	437	20	0	0	0	154
21	384	0	118	444	21	0	0	197	158
22	454	0	91	454	22	158	0	196	176
23	323	0	96	451	23	298	0	224	205
24	281	0	0	437	24	287	0	179	225
25	266	0	0	424	25	293	0	171	242
26	286	0	0	414	26	296	0	215	260
27	300	0	0	406	27	301	0	189	274
28	472	0	0	410	28	298	0	189	287
29	454	0	0	413	29	300	0	197	299
30	452	0	0	415	30	297	0	203	309
31	452	0	0	417					
Total	14,179	0	2,445			6,555	1,616	2,057	

Table 12. Daily Mean discharge, East Branch Delaware River at Downsville, N.Y., (01417000) for the year ending November 30, 1995.
(U.S. Geological Survey published record)
[All values, except total, in cubic feet per second, ft^3/s; total in cubic feet per second days, $(ft^3/s)\cdot d$]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	37	42	44	43	43	56	82	98	131	572	285	16
2	37	42	43	44	43	63	89	98	116	568	284	9.5
3	37	42	43	42	43	80	88	98	115	569	285	9.7
4	37	43	43	42	44	71	88	98	116	567	167	8.6
5	37	43	43	43	43	72	88	98	108	566	22	8.6
6	37	43	43	43	43	72	88	98	87	565	22	8.6
7	39	43	43	43	43	72	88	90	89	565	22	8.5
8	37	42	43	43	44	72	89	82	87	565	45	8.7
9	37	42	43	43	44	73	91	87	87	565	174	8.7
10	38	42	42	43	43	73	92	87	100	565	280	8.7
11	38	42	42	42	44	73	92	85	115	569	282	8.9
12	38	43	42	42	44	73	101	90	115	605	281	10
13	38	43	42	42	44	73	93	96	115	633	281	9.3
14	38	43	42	43	44	73	81	104	115	632	278	9.4
15	38	43	43	43	44	73	85	111	115	631	127	9.8
16	39	43	42	43	44	73	95	125	115	631	22	9.4
17	39	43	42	43	44	73	89	126	214	631	22	9.3
18	39	43	42	42	44	73	102	105	339	631	22	9.4
19	39	43	42	42	45	73	109	83	353	468	22	9.4
20	39	44	42	42	44	74	106	90	353	297	22	9.3
21	39	44	42	43	45	75	98	100	354	433	24	8.7
22	40	44	42	43	45	75	92	105	346	575	23	8.7
23	40	44	43	43	45	75	95	104	347	575	23	8.7
24	40	44	43	43	45	75	95	104	346	574	23	8.7
25	40	44	43	43	45	76	95	104	386	574	23	8.6
26	40	44	43	43	45	76	95	102	430	574	23	8.4
27	41	44	43	43	45	75	88	95	429	574	23	8.3
28	41	44	43	43	45	75	82	94	431	427	24	34
29	41	44	---	43	45	75	82	95	505	281	24	42
30	41	44	---	43	45	75	90	95	581	284	24	42
31	41	44	---	43	---	72	---	120	580	---	24	---
Total	1202	1338	1193	1326	1324	2259	2748	3067	7720	16266	3203	367.9
Mean	38.8	43.2	42.6	42.8	44.1	72.9	91.6	98.9	249	542	103	12.3

Year total 42013.9 $(ft^3/s)\cdot d$ Mean 115 ft^3/s

Table 13. Daily mean discharge, West Branch Delaware River at Stilesville, N.Y., (01425000) for the year ending November 30, 1995.
(U.S. Geological Survey published record)
[All values, except total, in cubic feet per second, ft^3/s; total in cubic feet per second days, $(ft^3/s)\cdot d$]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	38	40	572	259	275	55	116	910	577	873	880	24
2	37	40	603	313	241	54	168	1010	492	887	1010	25
3	37	39	564	304	187	54	64	964	479	844	998	25
4	37	38	520	285	134	52	51	907	693	821	576	25
5	43	38	469	269	123	53	98	850	596	826	48	25
6	42	38	394	276	110	53	148	898	306	865	33	25
7	41	39	351	330	74	52	166	1070	291	853	29	25
8	40	38	344	930	55	52	250	953	290	845	28	25
9	39	38	344	2270	54	53	455	827	531	846	90	25
10	39	38	344	2520	56	54	554	907	816	839	249	25
11	40	38	344	2240	55	53	384	808	917	770	409	26
12	39	39	336	1870	55	53	380	335	877	771	490	37
13	38	40	314	1750	85	52	464	359	915	680	656	29
14	38	40	297	1910	316	52	329	641	937	649	544	29
15	38	43	286	2000	543	53	496	368	1080	498	175	32
16	38	44	292	2060	674	52	482	401	979	498	38	30
17	38	43	296	2020	680	52	359	408	1040	281	27	28
18	38	42	299	1840	534	53	369	362	814	368	27	28
19	38	42	299	1580	453	53	420	309	756	479	40	28
20	38	47	295	1320	399	52	382	309	661	851	71	28
21	38	51	256	1130	325	52	499	348	684	903	49	27
22	38	54	222	1110	271	52	723	570	742	613	40	27
23	38	383	183	1030	217	104	763	347	784	400	32	27
24	39	714	175	893	172	201	888	347	818	369	31	27
25	38	827	186	754	162	179	924	346	907	514	30	27
26	38	823	163	627	122	65	667	345	841	423	29	27
27	38	753	134	520	88	53	403	345	836	537	29	27
28	38	631	144	435	59	53	444	348	975	556	31	32
29	38	474	---	365	53	54	873	350	1000	895	30	38
30	38	409	---	324	54	55	839	349	846	884	28	38
31	38	493	---	299	---	53	---	494	862	---	24	---
Total	1195	6416	9026	33833	6626	1978	13158	17785	23342	20438	6771	841
Mean	38.5	207	322	1091	221	63.8	439	574	753	681	218	28.0

Year total 141,409 $(ft^3/s)\cdot d$ Mean 387 ft^3/s

Table 14. Daily Mean discharge, Neversink River at Neversink, N.Y., (0143600) for the year ending November 30, 1995.
(U.S. Geological Survey published record)
[All values, except total, in cubic feet per second, ft^3/s; total in cubic feet per second days, $(ft^3/s)\cdot d$]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	25	23	23	30	24	39	46	66	98	46	30	14
2	26	23	23	23	24	48	47	66	91	46	21	15
3	25	23	23	23	24	48	46	66	89	46	21	10
4	25	22	23	22	23	48	46	66	89	46	18	5.1
5	26	22	23	22	22	48	46	66	91	46	14	5.2
6	26	23	23	22	24	47	46	66	77	46	14	5.4
7	26	21	22	22	24	48	58	60	48	46	14	5.5
8	25	21	22	23	24	48	57	48	48	46	14	5.3
9	25	21	22	23	24	48	47	48	48	46	16	5.3
10	22	22	22	23	24	49	48	48	65	46	21	5.4
11	21	22	23	23	24	49	48	54	82	46	21	5.7
12	21	22	22	23	24	48	48	67	82	46	21	6.4
13	22	22	22	23	24	48	48	67	81	46	21	5.9
14	22	21	23	23	24	48	48	82	82	45	22	6.0
15	22	21	23	23	23	48	50	80	82	45	17	6.4
16	22	22	23	23	24	48	54	81	81	45	13	6.0
17	21	22	24	23	24	48	66	82	80	45	13	5.9
18	21	23	24	23	24	46	71	69	80	45	13	6.0
19	23	22	25	24	24	46	79	48	80	45	14	5.9
20	23	23	25	24	24	46	88	59	80	45	14	5.8
21	23	23	25	24	24	46	85	68	80	45	16	5.9
22	24	23	25	24	24	46	66	61	68	45	14	5.7
23	24	23	25	24	24	45	66	61	48	45	14	5.8
24	24	23	25	26	24	46	66	61	48	45	14	5.8
25	24	23	25	24	24	48	66	61	48	45	14	5.8
26	24	23	25	23	24	48	66	61	48	45	14	5.8
27	24	23	25	24	24	47	59	56	48	44	14	5.8
28	24	23	26	23	24	47	48	57	48	44	15	15
29	22	23	---	23	24	47	48	74	48	45	14	22
30	24	23	---	24	24	46	55	74	47	45	14	22
31	24	23	---	24	---	46	---	90	46	---	14	---
Total	730	694	661	728	716	1458	1712	2013	2131	1361	509	235.8
Mean	23.5	22.4	23.6	23.5	23.9	47.0	57.1	64.9	68.7	45.4	16.4	7.86

Year total 12948.8 $(ft^3/s)\cdot d$ Mean 35.5 ft^3/s

Table 15. Daily Mean discharge, Wallenpaupack Creek at Wilsonville, Pa., (01432000) for the year ending November 30, 1995.
(Record furnished by Pennsylvania Power & Light Company)
[All values, except total, in cubic feet per second, ft^3/s; total in cubic feet per second days, $(ft^3/s)\cdot d$]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	665	342	505	0	0	204	0	0	587	0	0	88
2	661	355	931	0	0	230	166	0	583	0	0	0
3	601	831	924	0	561	223	0	0	587	0	0	293
4	432	824	825	2	359	234	0	0	588	0	0	0
5	623	936	488	0	453	227	0	0	0	0	0	0
6	857	929	1460	0	501	0	0	0	0	0	0	461
7	1070	0	1450	0	573	0	166	0	227	0	0	167
8	1430	335	927	247	0	0	0	0	0	15	0	223
9	1260	950	929	886	0	0	0	0	0	0	41	463
10	861	841	918	937	801	0	0	0	0	0	0	395
11	880	929	0	0	837	0	131	0	0	185	0	0
12	1050	823	342	0	466	0	0	0	51	0	0	0
13	1440	945	1050	0	509	0	0	574	51	0	0	622
14	1440	0	921	0	0	0	0	661	545	222	0	1300
15	1440	0	958	0	0	0	0	221	0	0	0	1810
16	1350	816	948	0	0	0	0	341	523	0	0	1820
17	548	795	945	0	0	0	79	599	318	0	0	1820
18	811	860	0	0	0	0	78	570	226	0	0	1420
19	941	814	0	0	67	0	81	562	0	0	0	1440
20	973	834	22	231	224	0	78	567	0	0	0	1410
21	1460	0	538	222	226	0	0	566	0	0	0	1440
22	1330	335	753	229	0	0	104	0	0	0	0	1040
23	793	935	777	227	0	104	0	110	0	0	0	0
24	813	935	238	854	241	0	0	575	0	0	0	0
25	0	942	0	741	821	0	0	707	21	0	0	153
26	0	917	0	0	229	0	0	589	0	0	0	75
27	811	931	0	517	219	0	0	625	0	0	0	439
28	801	0	0	457	224	0	0	589	0	0	0	448
29	809	347	---	457	0	0	0	0	0	0	0	602
30	806	920	---	463	0	0	110	110	0	0	0	1420
31	829	903	---	462	---	0	---	586	194	---	0	---
Total	27785	20324	16849	6932	7311	1222	993	8552	450	422	41	19349
Mean	896	656	602	224	244	39.4	33.1	276	145	14.1	1.32	645

Year total 114,281 $(ft^3/s)\cdot d$ Mean 313.10 ft^3/s

Table 16. Daily Mean discharge, Delaware River at Montague, N.J., (01438500) for the year ending November 30, 1995.
(U.S. Geological Survey published record)
[All values, except total, in cubic feet per second, ft^3/s; total in cubic feet per second days, $(ft^3/s)\cdot d$; e - estimated]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	9410	4770	5710	4480	4290	3190	2610	1930	2140	2080	1640	4540
2	7870	6270	5560	4490	3670	3400	2160	1890	2210	1910	1620	4730
3	6960	6460	5200	4200	3850	3220	2330	1890	2780	1840	1630	5190
4	6010	5900	e 4800	3660	3570	2980	2410	1860	2510	1730	1660	5750
5	6350	5530	e 4100	3320	3680	2830	2410	1740	2600	1710	2000	4850
6	13200	4920	e 4300	3670	3930	2800	2300	1760	2020	1680	2810	4260
7	12300	4540	e 4800	4370	3720	2560	1930	1860	2020	1720	2710	4340
8	11000	4590	e 4400	6510	3430	2350	2090	2100	1830	1700	2330	4100
9	9750	5100	e 4500	21700	2960	2400	1610	2060	1300	1730	1590	4380
10	8200	4940	e 4800	19400	3800	2310	1590	1880	1180	1750	1270	3900
11	9680	4360	e 4200	15100	5100	2540	1620	1830	1420	1800	1030	3610
12	10500	4230	e 3000	12300	4950	2810	1930	1940	1700	1930	1210	12800
13	9020	4420	e 3600	11900	7020	2680	1880	1790	1720	1720	1450	18000
14	8070	4830	e 4300	13000	10400	2430	2080	1930	1770	1840	1620	13300
15	7150	5260	e 4400	13400	8480	2400	1930	1990	2440	1980	2350	17500
16	6440	10500	e 3900	13400	6980	2470	1660	1700	1900	1680	3670	20400
17	5840	12100	e 3800	12600	6600	2170	1860	1670	2580	1700	2850	15300
18	5730	10300	e 3600	11100	5830	2280	1940	2860	2230	1650	2020	12300
19	5600	8850	e 2700	9630	5560	2360	1800	4290	1980	1400	1650	10600
20	4740	8550	e 2650	8690	6240	2360	1790	3180	1730	1460	1430	9750
21	5260	14700	2820	7980	5670	2220	1690	2440	1690	1520	3740	9170
22	4960	15500	3330	8470	4960	2020	1430	2160	1610	1610	28000	8600
23	4430	12900	3270	8450	4720	1960	1460	1520	1660	1820	16700	6760
24	4490	11100	3430	7640	4350	1860	1690	1820	1660	1880	9490	6010
25	6290	10100	2980	7290	4050	1960	1740	2350	1600	1670	6820	5350
26	5530	9270	3220	6320	4410	2480	1930	2410	1710	1620	5410	4870
27	5030	8340	2550	5410	3490	2530	2160	2130	1750	1870	4520	4830
28	4970	7060	2730	5460	3350	2320	2260	3120	1690	1810	5000	4890
29	4570	5480	---	4930	3190	2100	1750	3560	1600	1770	8350	5140
30	4350	5970	---	4490	3040	2370	1490	2400	1750	1660	7140	6720
31	3890	6010	---	4580	---	2720	---	1840	1710	---	5350	---
Total	217590	232850	108650	267940	145290	77080	57530	67900	58490	52190	139060	241940
Mean	7019	7511	3880	8643	4843	2486	1918	2190	1887	1740	4486	8065

Year total 1,666,510 $(ft^3/s)\cdot d$ Mean 4,566 ft^3/s

Table 17. Diversions by New Jersey; daily mean discharge, Delaware and Raritan Canal at Port Mercer, N.J. (01460440) for the year ending November 30, 1995.

[All values, except total, in million gallons per day, Mgal/d; total in million gallons, Mgal; e - estimated]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	83	89	90	91	95	94	96	96	98	91	83	78
2	83	88	90	89	95	90	96	96	96	92	83	71
3	84	87	90	89	94	94	91	97	94	92	83	77
4	85	85	96	93	94	94	95	96	95	93	85	72
5	73	87	93	93	94	96	95	98	96	94	75	76
6	73	89	93	92	94	94	96	95	92	94	70	78
7	72	64	103	94	96	94	96	100	97	92	79	77
8	68	83	101	92	95	96	95	98	98	93	81	65
9	65	83	97	59	96	96	95	94	99	90	82	79
10	74	86	96	90	96	97	94	96	100	92	83	78
11	74	89	98	89	95	99	98	e89	99	92	83	74
12	74	88	95	92	96	96	96	e99	96	92	83	34
13	74	87	97	92	83	97	99	98	93	94	85	69
14	73	87	96	90	93	94	96	99	93	92	78	58
15	78	87	96	88	92	97	98	98	95	90	65	48
16	83	89	98	92	92	96	97	96	100	85	67	69
17	77	89	96	92	93	96	98	96	99	73	69	72
18	76	90	95	94	95	97	98	84	103	80	67	74
19	74	90	94	94	94	96	98	101	103	83	69	73
20	76	76	90	92	95	98	98	100	104	85	75	73
21	83	73	89	94	94	96	96	97	103	83	61	59
22	87	80	87	92	94	96	97	98	99	82	74	74
23	92	83	87	93	94	93	97	100	95	80	72	78
24	89	83	87	93	95	94	101	98	94	84	72	76
25	88	83	88	93	94	101	101	100	92	86	77	76
26	87	85	91	94	93	101	97	97	90	77	76	74
27	87	85	93	95	92	98	96	100	92	70	79	75
28	88	92	69	94	92	96	98	96	92	80	59	74
29	88	95	---	94	92	99	97	96	93	83	77	76
30	89	94	---	93	92	87	97	98	94	83	76	76
31	89	93	---	94	---	100	---	98	92	---	78	---
Total	2486	2659	2595	2826	2809	2972	2902	3004	2986	2597	2346	2133
Mean	80.2	85.8	92.7	91.2	93.6	95.9	96.7	96.9	96.3	86.6	75.7	71.1

Year total 32,315 Mgal

Mean 88.5 Mgal/d

Section III

WATER QUALITY OF THE DELAWARE RIVER ESTUARY

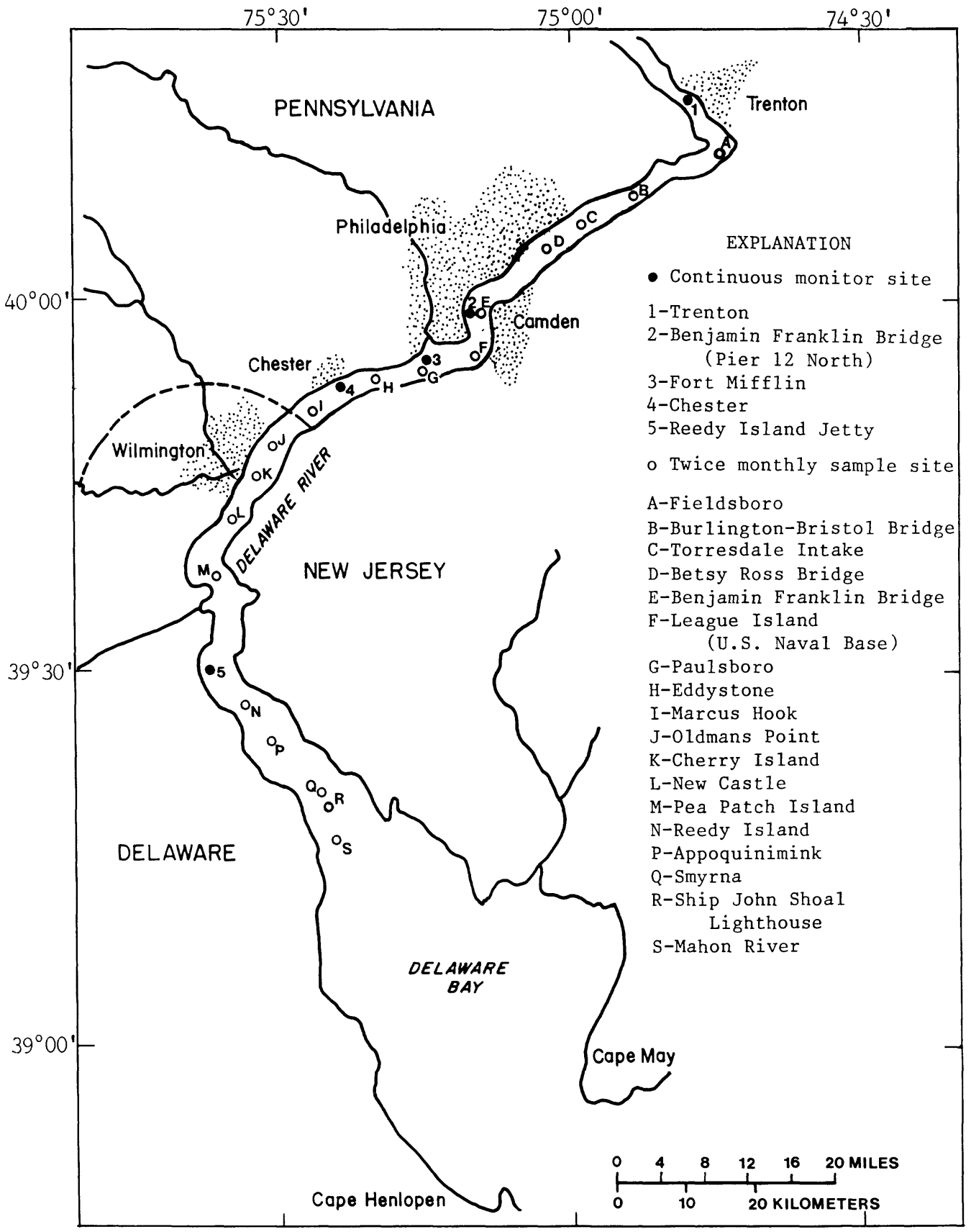

Figure 6.- Location of water quality monitoring sites in the Delaware River Estuary.

Section III

WATER QUALITY OF THE DELAWARE RIVER ESTUARY

By Charles R. Wood

INTRODUCTION

This section describes the water-quality monitoring program conducted by the U.S. Geological Survey, in cooperation with the Delaware River Basin Commission (DRBC), in the Delaware Estuary during the 1995 report year. Also presented here are some of the data that were obtained by this program and a brief discussion of the significance of the data.

WATER-QUALITY MONITORING PROGRAM

Water quality of the Delaware River and Estuary was monitored between Trenton, N.J., and Reedy Island Jetty, Del. Data were acquired continuously by electronic instruments at five monitor sites: one at Trenton just upstream of the head of tidewater and four in the estuary (fig. 6). At Fort Mifflin, the water was monitored for two parameters: temperature and specific conductance. At the remaining sites, the water was monitored for four parameters: temperature, specific conductance, dissolved oxygen, and pH.

Additional data were obtained twice a month from March to November at 18 sites between Fieldsboro, N.J., and the mouth of the Mahon River (fig. 6). At each of these sites, samples of water were collected at the center of the river channel. These samples were analyzed for 28 parameters including temperature, chloride, alkalinity, specific conductance, dissolved oxygen, and pH.

Data obtained from the continuous monitoring sites were processed by computer and stored for future reference by the U.S. Geological Survey. They were also distributed regularly to cooperators and published annually by the U.S. Geological Survey in "Water Resources Data for Pennsylvania, Volume 1, Delaware River Basin." Data from 18 twice-a-month sites were collected by the State of Delaware for the DRBC. These data are available from the DRBC and from STORET, the U.S. Environmental Protection Agency's data storage system. The above-described programs were carried out in cooperation with the Delaware River Basin Commission, Delaware River Master, and other agencies of federal, state, and county governments.

ESTUARINE WATER-QUALITY DATA DURING 1995

The following is a summary and discussion of the data that were collected during the 1995 report year.

Streamflow

Streamflow is a vital factor that influences the water quality of the estuary. Increased streamflow usually results in better water quality by limiting salt-water intrusion and diluting the concentration of dissolved minerals, both of which contribute to a lower specific conductance and chloride level. Increased flow also aids in maintaining lower water temperature during warm weather and supporting higher levels of dissolved oxygen.

On the basis of streamflow records for the Delaware River at Trenton, mean monthly streamflow for the 1995 report year was lowest during September (2,970 ft^3/s) and highest during November (18,100 ft^3/s) (table 18)[2]. The monthly mean streamflow was above the respective monthly mean for the period of record in December, January, October, and November and below the monthly mean for the remainder of the year.

Temperature

Water temperature has a profound influence on various physical, chemical, and biological properties of the water. In general, increases in water temperature have deleterious effects on water quality by lowering the saturation level of dissolved oxygen and increasing biological activities. The primary factors affecting water temperature in the estuary are climatic; however, various uses of the water by man can also alter water temperature significantly.

Records of water temperature of the Delaware River at Benjamin Franklin Bridge (Pier 12 North), Philadelphia, Pa., show that mean monthly temperatures for the period March to November 1995, were below the long-term mean during May, June, September, and November and exceeded the long-term mean during the rest of the year. The long-term mean is based on historical temperature records from 1962 to 1994 (fig. 7).

Specific Conductance and Chloride

Specific conductance is the ability of a solution to conduct electricity. Specific conductance can be used as an indicator of the amount of ionized material in solution and relates approximately to dissolved-solids content. Specific conductance values in bodies of water usually reflect the geochemistry of the drainage basin; however, pollution and the intrusion of oceanic salts can also have a considerable effect on specific conductance. Increasing streamflows reduce the concentration of dissolved sol-ids, thus lowering specific conductance and chloride concentration; decreasing flows have the opposite effects.

The intrusion of oceanic salts into the Delaware Estuary, is important to those who must use the estuary as a water supply. For this reason, chloride concentration is of great interest. Water with chloride concentrations in excess of 250 mg/L (milligrams per liter) is usually considered undesirable for domestic use, and water with concentrations in excess of 50 mg/L is unsatisfactory for some industrial uses.

---

2. All numbered tables in Section III are grouped at the end of this section, beginning on page 78.

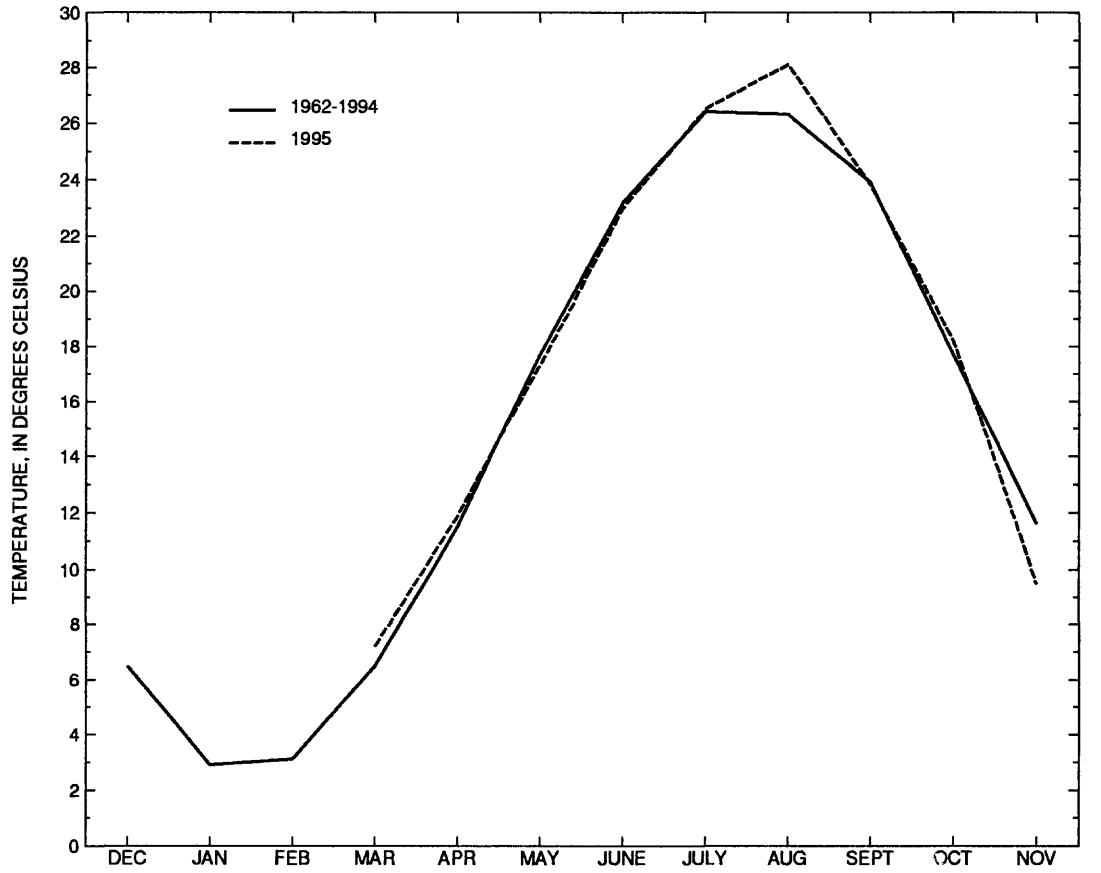

Figure 7.- Monthly mean temperatures of the Delaware River at Benjamin Franklin Bridge, Philadelphia, Pennsylvania.

Because sea water has a chloride concentration of approximately 19,000 mg/L, the location of a body of water in relation to the sea can influence chloride levels in that body of water. Thus chloride concentrations in the Delaware Estuary generally increase with distance downstream toward the Delaware Bay and Atlantic Ocean.

Chloride concentration was not measured directly at Fort Mifflin, Pa., and at Reedy Island Jetty, Del., but a correlation between specific conductance and chloride concentration has been developed on the basis of analyses of water samples collected from the estuary. Chloride concentrations estimated from that correlation are presented in tables 19 and 20. The correlation is less reliable when chloride concentrations are lower than 30 mg/L because other ionized materials may be present in amounts large enough to affect the conductance-chloride relation. Therefore, chloride concentrations derived from specific conductance are not given when chloride concentrations of less than 30 mg/L are indicated. Chloride concentrations at Chester, Pa., (table 21) were furnished by Kimberly Clark Chester Operations.[3]

3. The use of trade, product, or firm names in this report is for identification purposes only and does not imply endorsement by the U.S. Geological Survey.

At Fort Mifflin, the maximum daily chloride concentration for March 15 through November 31 exceeded 50 mg/L, 21 percent of the time. The maximum daily chloride concentration for the period was 220 mg/L on September 12 (table 19). At Chester, the minimum daily chloride concentration equaled or exceeded 50 mg/L, 38 percent of the time. The maximum daily concentration was greater than 50 mg/L, 56 percent of the time (table 21). The maximum daily chloride concentration was 846 mg/L on September 25. Minimum chloride concentrations at Reedy Island Jetty (table 20), were greater than 500 mg/L except on January 23-29 and November 12-14, 16-29. Maximum chloride concentrations typically ranged from 2,000 to 8,000 mg/L. The maximum at this site was 8,300 mg/L on September 20.

Dissolved Oxygen

Dissolved oxygen (DO) is necessary in water for the respiration of aquatic organisms. It also plays a significant role in chemical reactions in aquatic environments. The major sources of dissolved oxygen in water are diffusion from the atmosphere and photosynthesis in aquatic plants. The principal factors that affect dissolved-oxygen concentrations are water temperature, biochemical oxygen demand (BOD), fresh-water inflow to the estuary, phytoplankton populations, turbidity, salinity, and tidal and wind-driven mixing. Dissolved-oxygen levels in the estuary tend to be highest near Trenton and tend to decrease with distance downstream to a point near or somewhat downstream from the Benjamin Franklin Bridge, where minimum values are usually reached.

Dissolved-oxygen concentration has been measured by the U.S. Geological Survey at various continuous monitor sites in the Delaware Estuary since 1962. Two of these sites, Benjamin Franklin Bridge at Philadelphia, Pa., and Chester, Pa., have nearly continuous records and are in the reach of the estuary that has been most affected by pollutant loadings. Changes in dissolved-oxygen concentration with time at these two stations for 1965 to 1995 are shown in figure 8. A marked improvement (increase) in DO with time is apparent. Although concentrations have increased substantially from 1965 to 1995, substantial annual variation in monthly means still exist. The low dissolved-oxygen concentrations during 1977-80 at the Benjamin Franklin Bridge may be related to the disruption of treatment during the construction of secondary treatment facilities at the Philadelphia waste-water treatment plants. Although the three upgraded waste-water treatment plants in Philadelphia were fully operational by fall 1986, the trend in dissolved-oxygen concentration is still upward after 1986. This trend may be due to a reduction in biochemical oxygen demand from bottom sediments that gradually are being oxidized. If this is true, some further improvement (increase) in DO with time may occur even without further improvements to waste-water treatment plants.

During the past year, daily mean dissolved-oxygen concentration at the Benjamin Franklin Bridge was below 5 mg/L on most days in mid and late June, late July, and early August (table 22). The minimum daily mean was 3.9 mg/L on June 14 and 15. At Chester, the daily mean dissolved-oxygen concentration was below 5 mg/L on 28 days in June, July, and August (table 23). The lowest daily mean was 3.9 mg/L on August 6. The minimum hourly value was 3.5 mg/L on August 6. At Reedy Island Jetty, the minimum hourly value was 4.9 on August 23.

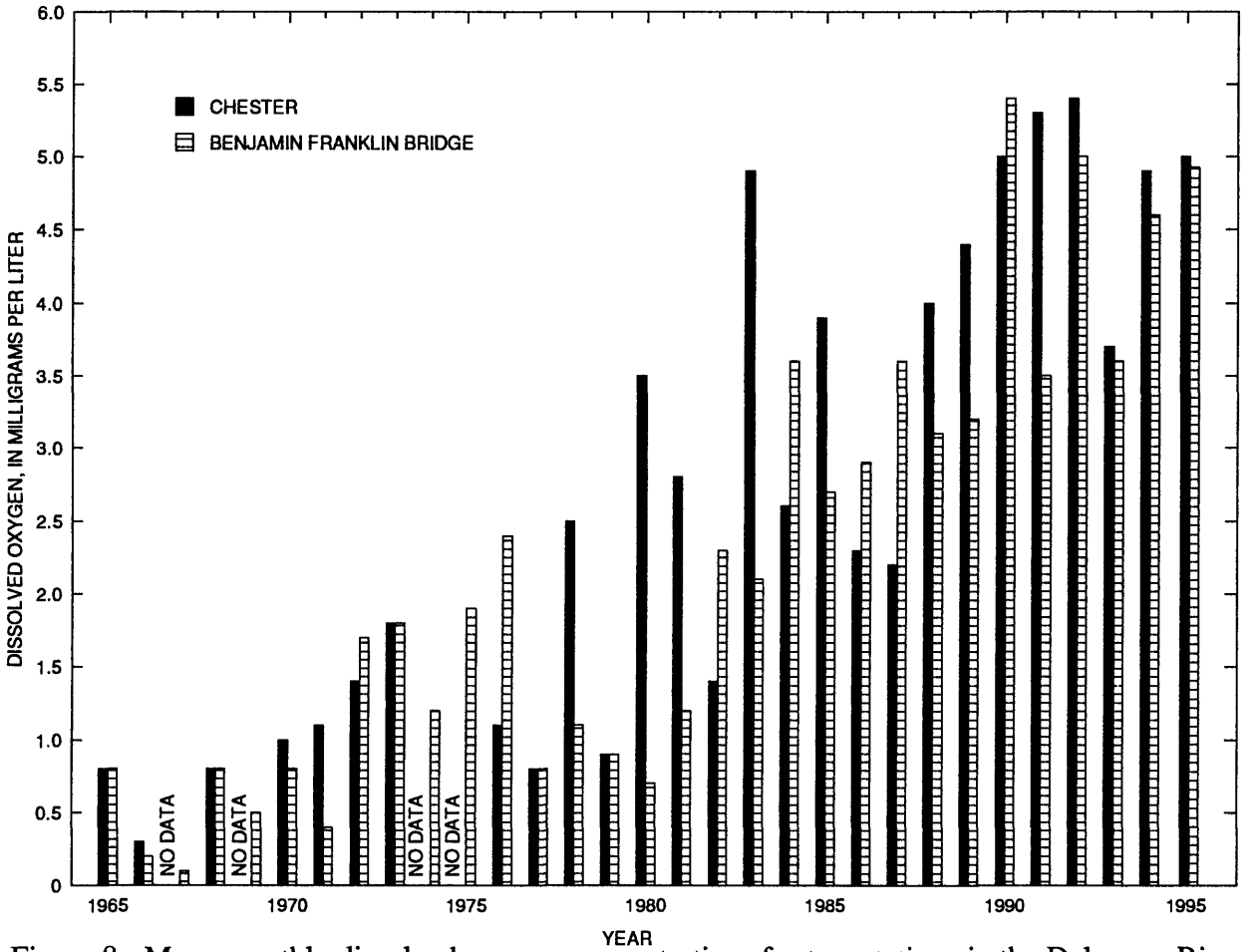

Figure 8.- Mean monthly dissolved-oxygen concentrations for two stations in the Delaware River for July.

Figure 9 shows the frequency of hourly dissolved-oxygen concentration at Benjamin Franklin Bridge and Chester during the critical summer period, July through September 1995. At Chester, dissolved-oxygen concentration was equal to or below 4 mg/L, 3 percent of the time in 1995, as compared to 2 percent of the time in 1994 and 36 percent of the time in 1993. At Benjamin Franklin Bridge, the dissolved-oxygen concentration was equal to or below 4 mg/L, 1 percent of the time in 1995, as compared with 15 percent of the time in 1994 and 65 percent of the time in 1993.

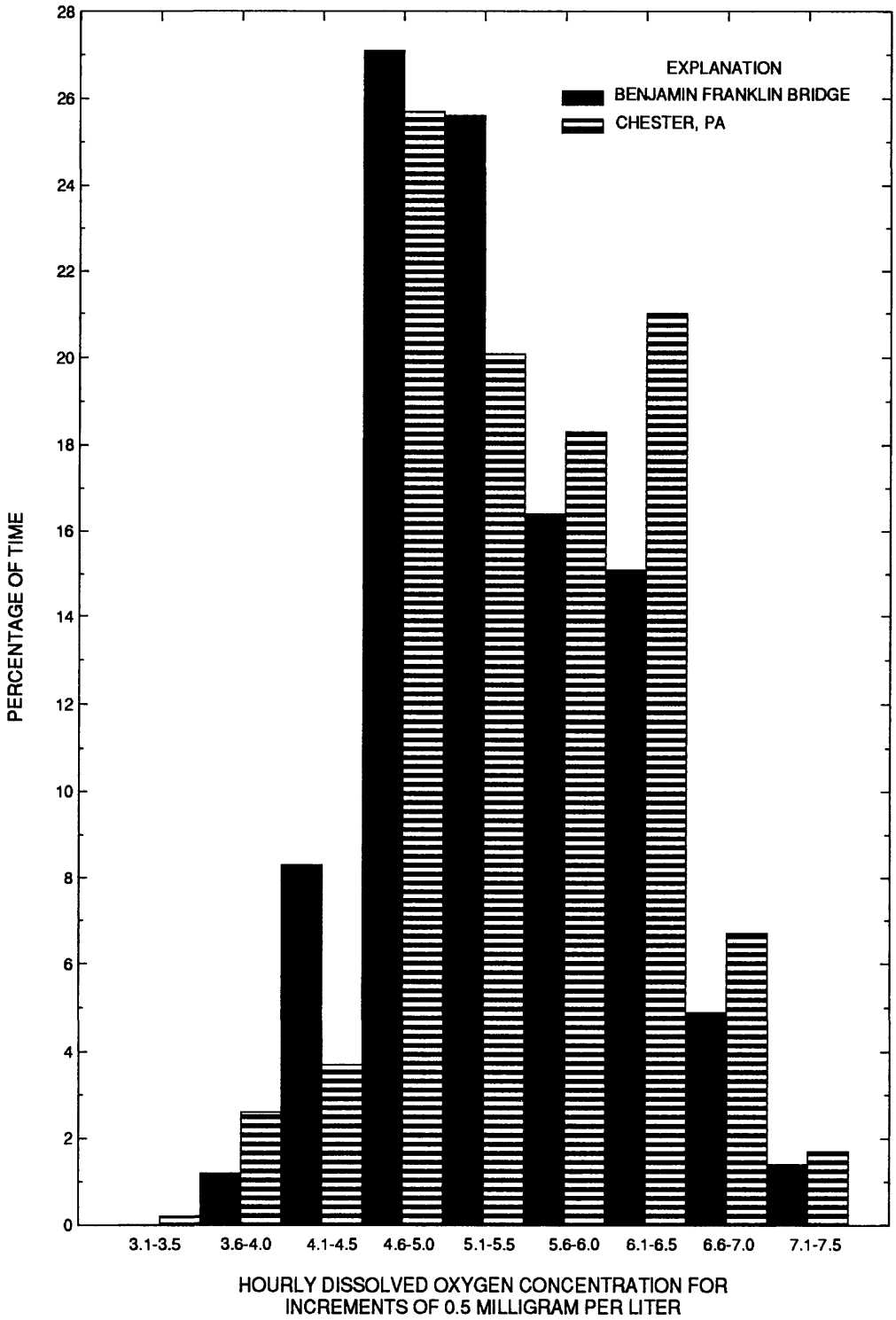

Figure 9.- Frequency of occurrence of dissolved oxygen concentration in the Delaware River during July, August, and September, 1995.

Hydrogen-Ion Activity (pH)

Values of pH (hydrogen-ion activity) below 7 indicate acidic water, whereas values above 7 indicate alkaline water. In natural waters, pH generally ranges from 6.0 to 8.5. The main factors controlling the pH of a body of water are usually the geochemistry of the drainage basin and external influences such as pollution. Photosynthetic activity can also have a considerable influence on pH values. Increased photosynthetic activity (algal bloom) produces higher pH values. All pH values at Benjamin Franklin Bridge, Chester, and Reedy Island Jetty were in a range of 6.8 to 8.2. The pH range for each station is: Reedy Island Jetty, 6.8 to 8.2; Chester, 6.9 to 7.7; Benjamin Franklin Bridge, 6.8 to 7.6. The pH in the estuary tends to be lowest near Trenton, N.J., and tends to increase downstream.

Table 18. Daily Mean discharge, Delaware River at Trenton, N.J., (01463500) for the year ending November 30, 1995.
(U.S. Geological Survey published record)
[All values, except total, in cubic feet per second, ft^3/s; total in cubic feet per second days, $(ft^3/s)\cdot d$; e - estimated]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	25600	8700	11800	12400	8010	5970	5140	3540	4500	2710	2800	12600
2	20100	11800	11200	11900	8010	6480	4990	3320	3780	2730	2560	12800
3	16800	13600	10600	11500	7260	7130	4620	4530	3800	2990	2580	14000
4	14400	13400	10300	10300	6840	6670	4580	4540	3980	3000	2560	13000
5	15000	11900	10100	9480	6970	6100	5300	4060	4500	2940	3180	12800
6	22400	10700	9040	8550	6330	5630	4960	3810	4970	2860	12400	11100
7	28600	13600	e 8700	8490	6640	5410	4700	4260	4880	2690	12500	9900
8	24700	14200	e 8400	9880	6550	5100	4170	5700	3940	2680	8130	10300
9	21200	11800	e 8400	40400	6440	4700	3920	6360	3810	2730	6250	9360
10	18900	11100	8560	46700	6620	4510	3830	5890	3500	2850	4880	8910
11	21300	10700	8360	36000	7310	4780	3500	6990	2760	3060	3960	8640
12	22400	10100	8570	28900	8470	4660	4400	9180	2490	2910	3270	21100
13	21400	9660	6710	24500	10600	5130	5800	6720	2480	2880	2740	32700
14	19000	9900	5900	22500	13100	5190	5530	5720	2890	3070	2760	34200
15	16700	11400	7060	23500	16800	5010	4930	4820	2840	2780	6180	36200
16	14900	14700	7220	23200	13900	4570	4820	4800	3400	2790	6510	40400
17	13700	21800	8030	22800	12000	4540	4270	5430	3770	3510	6200	37600
18	13100	23900	8040	21400	11100	4670	3810	9570	3100	3150	6370	29800
19	12400	20300	7630	18700	9950	4810	3870	7160	3630	2860	4880	24900
20	11800	21600	7150	16900	9450	5000	3720	7230	3220	2770	3970	22100
21	11100	26700	7400	15900	9780	5010	3510	7270	2970	2420	14300	20300
22	10600	31400	7520	15700	9820	4620	3520	5530	2590	2490	34700	18600
23	10400	28700	7680	15300	8770	4330	3460	4890	2560	2840	45800	17400
24	10200	24700	8080	14900	8300	3920	3060	4550	2550	3120	29400	15300
25	10600	21600	8580	13700	7540	3750	3150	3830	2590	3020	20600	13600
26	12100	19100	7840	13000	7050	3870	3820	3930	2610	3760	15500	12200
27	11300	17400	7540	11600	6990	4580	3810	4440	2630	4100	12500	11300
28	10400	15800	9860	9950	6280	5040	4360	4410	2700	3290	16800	10700
29	10100	14100	---	9630	5840	4920	4530	4420	2800	3150	17300	10600
30	9350	11800	---	8950	5690	5720	4260	6270	2810	2960	17500	10700
31	8770	11200	---	8440	---	5480	---	5550	2660	---	15100	---
Total	489320	497360	236270	545070	258410	157300	128340	168720	101710	89110	344180	543110
Mean	15780	16040	8438	17580	8614	5074	4278	5443	3281	2970	11100	18100

Year total 3,558,900 $(ft^3/s)\cdot d$ Mean 9,750 ft^3/s

Table 19. Daily maximum and minimum chloride concentrations, Delaware River at Fort Mifflin, Pa. (in milligrams per liter) December 1, 1994 to November 30, 1995

[Monitor was not in operation December 6, 1994 to March 14, 1995; --, missing data;*, less than 30 milligrams per liter; Max, maximum value; Min, minimum value]

	December		January		February		March		April		May		June		July		August		September		October		November	
Date	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	*	*							32	*	38	*	48	34	46	39	31	*	92	55	--	--	*	*
2	*	*							30	*	38	*	47	35	49	39	33	*	99	56	--	--	*	*
3	*	*							*	*	36	*	44	35	46	38	33	*	180	74	190	84	36	*
4	*	*							39	*	38	*	--	--	41	34	33	*	130	75	170	83	40	*
5	*	*							39	*	36	*	--	--	43	36	33	*	140	74	--	--	40	*
6									34	*	42	*	--	--	40	34	37	30	120	76	--	--	39	*
7									32	*	38	*	--	--	39	34	--	--	130	82	--	--	33	*
8									37	*	39	*	--	--	41	36	--	--	170	92	--	--	36	*
9									38	*	32	*	37	*	45	36	38	33	190	100	--	--	31	*
10									48	*	42	*	34	*	43	36	38	33	200	120	60	46	*	*
11									45	*	38	*	33	*	42	36	40	32	200	120	83	46	*	*
12									42	*	39	*	--	--	45	36	40	33	220	130	62	44	47	*
13									44	*	38	*	--	--	46	36	41	34	210	140	58	43	*	*
14									45	*	--	--	--	--	42	35	44	34	190	130	76	44	*	*
15							*	*	43	*	--	--	--	--	39	35	45	35	180	120	53	34	*	*
16							*	*	38	*	41	*	40	32	39	34	45	36	200	130	44	33	*	*
17							*	*	39	*	40	*	40	32	40	35	46	37	160	120	44	33	*	*
18							*	*	39	*	39	*	43	*	40	34	49	39	140	110	43	34	*	*
19							*	*	39	*	38	*	44	33	37	32	59	40	140	100	41	35	*	*
20							*	*	39	*	--	--	43	33	36	32	53	41	180	110	42	35	*	*
21							*	*	35	*	--	--	41	31	35	*	50	40	180	110	46	34	*	*
22							30	*	36	*	--	--	39	31	32	*	52	42	160	110	47	*	32	*
23							30	*	37	*	--	--	39	32	32	*	55	41	140	95	*	*	33	*
24							31	*	32	*	--	--	37	31	31	*	82	43	140	100	*	*	34	*
25							33	*	32	*	43	32	38	32	31	*	55	43	170	120	*	*	33	*
26							35	*	30	*	45	32	40	32	31	*	61	43	190	120	*	*	34	*
27							32	*	30	*	43	32	41	33	32	*	77	44	180	100	*	*	31	*
28							*	*	*	*	43	31	50	34	33	*	62	44	150	86	31	*	34	*
29							31	*	*	*	44	33	50	41	34	*	96	44	--	--	32	*	38	*
30							*	*	33	*	--	--	48	38	31	*	99	45	--	--	30	*	31	*
31							34	*			47	33			31	*	99	48			*	*		

Table 20. Daily maximum and minimum chloride concentrations, Delaware River at Reedy Island Jetty, Del. (in milligrams per liter) December 1, 1994 to November 30, 1995.

[--, missing data; Max, maximum value; Min, minimum value]

	December		January		February		March		April		May		June		July		August		September		October		November	
Date	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	5,000	1,600	5,800	2,200	--	--	5,400	2,500	4,000	1,300	--	--	5,100	2,000	6,000	3,700	5,900	2,700	6,900	4,800	7,900	5,200	--	--
2	4,700	1,500	4,000	2,000	--	--	5,200	2,400	4,100	1,400	--	--	4,700	2,200	6,000	3,600	5,200	2,700	7,500	4,600	7,900	5,300	--	--
3	3,800	1,400	4,200	1,900	--	--	5,300	2,400	3,600	1,400	--	--	4,400	2,200	6,000	3,500	5,100	2,500	8,200	4,600	7,900	5,300	--	--
4	4,100	1,300	4,000	1,700	--	--	5,200	2,400	3,800	1,200	--	--	4,300	2,000	6,300	3,600	--	--	7,900	5,300	7,500	5,400	--	--
5	4,100	1,300	3,600	1,500	--	--	5,100	2,300	2,700	1,200	--	--	4,700	2,100	5,900	3,600	--	--	7,800	5,200	7,600	5,300	3,400	700
6	3,400	1,000	3,900	1,200	--	--	5,600	2,300	3,100	1,200	--	--	4,600	2,300	5,400	3,700	--	--	7,800	5,100	7,500	5,000	3,800	760
7	3,000	1,000	3,000	970	--	--	4,100	2,300	3,800	1,300	--	--	5,900	2,500	5,900	3,200	--	--	7,800	5,200	6,800	4,600	4,500	990
8	2,800	780	3,200	920	--	--	4,400	2,400	4,300	1,900	5,600	2,100	5,200	2,600	6,000	3,200	--	--	--	--	6,800	4,300	3,800	770
9	2,800	730	3,900	930	--	--	2,400	1,200	4,600	1,800	6,500	2,600	6,000	2,600	6,300	3,100	--	--	--	--	6,800	4,100	3,000	710
10	3,100	740	3,800	1,300	--	--	2,800	860	4,600	2,000	6,300	2,900	6,000	2,700	6,500	3,200	--	--	--	--	6,400	4,200	4,000	770
11	3,400	720	4,300	1,300	--	--	3,700	1,200	5,000	2,100	6,900	2,900	6,000	2,800	6,500	3,100	--	--	--	--	6,000	4,100	3,700	820
12	2,900	640	4,700	1,700	--	--	3,700	1,100	5,100	2,100	6,800	3,100	6,000	2,700	6,000	3,100	--	--	7,500	5,100	5,900	4,000	3,000	320
13	2,700	700	4,400	1,600	--	--	4,100	790	5,100	2,000	6,800	3,200	5,300	2,700	6,300	3,100	--	--	7,100	5,200	6,000	3,900	2,000	300
14	4,000	1,200	4,300	1,700	--	--	3,900	920	3,900	1,800	6,900	3,400	6,500	2,900	6,000	2,900	--	--	6,900	5,000	6,400	4,000	3,800	380
15	4,000	1,300	5,100	1,900	--	--	3,700	880	4,200	1,300	6,600	3,100	6,400	2,800	5,400	2,800	5,900	3,400	7,600	5,000	5,300	3,700	3,800	540
16	4,000	1,400	3,900	1,700	--	--	3,500	900	4,500	1,500	6,300	3,100	6,000	2,800	--	--	6,000	3,600	7,800	5,200	5,100	3,200	2,300	270
17	4,500	1,200	4,000	1,400	5,900	2,600	3,200	920	4,200	1,500	6,400	3,200	5,400	2,700	5,500	2,900	6,400	3,700	7,500	5,200	6,000	2,900	2,700	340
18	4,600	1,500	4,500	1,300	5,500	2,700	3,000	790	4,200	1,500	5,900	3,000	5,200	2,600	5,200	2,900	7,100	3,900	7,900	5,000	7,000	3,700	2,700	320
19	4,000	1,400	4,000	1,400	5,500	2,700	3,400	800	4,000	1,600	5,900	3,100	5,100	2,800	5,200	2,900	7,600	4,200	8,000	5,200	7,700	3,800	2,700	410
20	4,400	1,300	4,000	1,200	5,900	2,900	3,100	880	3,600	1,400	6,000	3,100	4,800	2,600	5,500	2,900	7,900	4,300	8,300	5,300	7,900	4,000	2,800	420
21	3,800	1,300	2,300	770	6,000	3,000	2,800	830	3,700	1,500	5,900	3,000	6,000	2,700	5,100	2,700	7,100	4,300	7,800	5,400	7,900	4,200	2,800	490
22	3,200	1,200	1,400	690	6,000	3,200	2,400	830	3,400	1,500	5,100	3,000	5,900	2,900	5,800	2,700	7,500	3,900	7,800	5,300	6,400	3,300	2,700	440
23	4,600	1,500	840	420	6,400	2,800	2,600	780	3,400	1,300	5,200	2,900	6,300	3,300	5,900	2,600	8,100	3,900	7,500	4,600	5,200	2,500	2,900	440
24	5,900	2,000	1,500	390	5,900	3,100	2,700	800	3,900	1,300	4,600	2,700	6,000	3,400	6,000	2,800	8,100	4,400	7,800	5,100	4,400	2,100	2,200	440
25	6,300	2,500	2,600	330	4,600	2,600	3,500	800	4,000	1,400	4,500	2,300	6,300	3,100	6,000	2,600	7,700	4,300	8,100	5,300	3,700	1,800	2,600	460
26	5,900	1,900	2,600	350	5,100	2,500	4,400	890	3,700	1,300	5,200	2,500	6,300	3,500	5,900	2,800	8,100	4,400	7,900	5,300	4,100	1,600	2,800	460
27	6,000	2,200	3,000	290	5,600	2,400	4,800	1,000	3,700	1,300	5,200	2,400	6,200	3,700	5,800	2,500	7,900	4,600	7,800	5,500	4,500	1,600	2,500	490
28	6,000	2,200	3,100	360	5,900	2,500	4,400	1,400	--	--	5,200	2,600	6,900	3,800	4,700	2,800	7,800	4,800	7,400	5,200	--	--	1,300	440
29	5,200	2,200	3,600	470			4,500	1,500	--	--	4,400	2,400	6,400	3,700	5,900	2,500	7,900	4,500	7,800	5,300	--	--	2,200	460
30	4,800	2,000	3,400	670			4,500	1,600	--	--	4,100	2,000	6,200	3,600	5,200	2,300	7,800	5,100	7,900	5,300	--	--	2,800	530
31	5,900	2,100	3,600	700			3,700	1,500			4,400	2,000			5,500	2,400	7,800	5,200			--	--		

Table 21. Daily maximum and minimum chloride concentrations, Delaware River at Chester, Pa. (in milligrams per liter) December 1, 1994 to November 30, 1995. Collection and analysis by Kimberly Clark Chester Operations[1]

[--, missing data; Max, maximum value; Min, minimum value]

	December		January		February		March		April		May		June		July		August		September		October		November	
Date	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	51	32	48	28	35	22	62	40	34	26	55	31	56	44	133	80	80	52	330	192	560	546	35	22
2	40	28	44	32	55	30	66	44	34	26	48	32	62	42	137	82	80	52	330	226	510	410	38	26
3	44	26	48	30	30	24	49	44	45	32	36	28	58	42	132	87	90	65	330	220	510	410	50	30
4	34	27	42	32	28	24	48	43	41	32	36	28	65	46	130	78	100	64	330	220	500	430	38	30
5	32	28	47	34	32	24	45	38	45	32	47	32	48	38	140	82	80	62	355	230	510	384	35	32
6	32	26	36	26	55	25	65	40	42	28	52	30	49	40	140	80	90	72	530	250	365	241	35	26
7	32	22	35	26	38	25	63	38	48	28	45	38	56	48	120	95	140	68	532	370	320	296	40	28
8	30	25	32	30	43	26	62	38	--	--	43	34	62	51	100	90	86	68	658	410	420	358	63	23
9	32	25	65	30	45	24	56	30	33	30	35	30	58	52	82	78	140	68	680	280	365	246	64	26
10	36	28	44	28	48	30	49	32	--	--	48	35	60	50	158	74	130	86	740	268	350	220	35	32
11	54	27	54	24	38	32	45	31	--	--	48	35	62	49	189	74	154	86	400	270	310	207	38	26
12	44	22	48	26	50	29	58	30	--	--	52	32	62	56	95	74	134	94	821	521	367	210	36	28
13	52	24	43	29	38	32	34	30	--	--	52	34	62	52	140	78	130	98	606	440	370	190	60	32
14	28	25	55	26	36	30	34	30	--	--	56	30	62	53	125	74	190	95	756	592	380	195	61	35
15	35	26	54	28	48	30	46	29	--	--	38	28	57	54	119	78	235	122	703	520	390	100	61	27
16	45	28	32	22	65	37	45	28	--	--	46	32	69	56	131	84	175	92	704	430	300	146	50	26
17	34	28	34	28	75	30	68	30	--	--	40	33	69	56	110	74	137	126	820	440	201	102	62	26
18	36	28	43	33	65	36	48	30	--	--	47	32	72	48	96	62	170	100	170	100	260	140	46	28
19	32	28	49	32	62	40	45	28	37	32	65	40	70	55	99	70	310	160	636	370	150	100	32	18
20	30	26	55	32	58	42	39	32	34	30	48	44	67	52	93	60	290	145	420	386	146	100	32	22
21	29	25	46	26	48	42	44	30	35	28	68	42	90	54	90	65	260	173	400	366	126	91	32	25
22	30	24	52	26	42	40	32	28	37	30	62	40	69	65	74	56	220	138	510	374	160	78	52	25
23	36	28	52	24	48	42	34	28	49	31	53	38	85	60	70	56	245	135	680	296	100	45	52	27
24	30	26	48	24	63	38	51	28	54	16	52	42	100	58	67	54	260	144	760	376	80	40	72	20
25	28	24	30	28	63	38	47	28	58	26	52	44	110	68	70	60	334	265	846	500	82	60	92	25
26	44	22	32	25	64	40	32	28	58	30	50	38	110	59	75	52	308	138	820	367	61	46	48	30
27	30	25	46	26	60	40	29	26	50	30	46	40	110	65	72	66	340	184	496	370	40	32	32	27
28	48	26	48	26	68	40	32	26	38	30	46	41	140	82	85	57	380	200	450	366	40	26	42	28
29	40	34	46	24			33	27	34	28	72	40	115	77	78	59	555	215	600	345	33	24	40	28
30	42	24	54	20			30	26	34	26	52	47	102	74	70	53	250	220	611	580	53	33	34	28
31	41	25	44	25			34	26			52	42			72	52	250	205			54	35		

[1] The use of trade, product, or firm names in this table is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

Table 22. Dissolved oxygen, Delaware River at Benjamin Franklin Bridge at Philadelphia, Pa.
Daily mean dissolved oxygen in milligrams per liter
December 1, 1994 to November 30, 1995.
[Monitor was not in operation December 1, 1994, to March 7, 1995; --, missing data]

Date	December	January	February	March	April	May	June	July	August	September	October	November
1					10.1	8.8	6.5	4.8	5.0	6.4	6.1	8.1
2					10.0	8.4	6.6	4.7	5.0	6.4	6.2	7.9
3					10.0	8.1	6.4	4.8	4.8	6.5	6.3	7.8
4					--	8.1	6.2	5.0	4.8	6.5	6.2	8.2
5					10.2	8.2	6.1	5.1	4.7	6.6	5.8	8.4
6					10.0	8.2	5.8	5.3	4.2	6.5	--	8.6
7					9.8	8.2	5.6	5.3	4.1	6.5	--	8.5
8				11.4	9.8	8.2	5.3	5.0	--	6.6	--	8.4
9				11.5	9.6	8.2	5.3	5.1	4.7	6.3	--	8.4
10				11.3	9.6	8.0	5.0	5.1	4.7	6.1	--	8.4
11				10.6	9.6	7.8	4.6	5.3	4.9	6.1	6.5	8.5
12				11.2	9.5	7.5	4.3	5.2	5.0	6.2	6.3	8.8
13				11.9	9.2	7.4	4.1	5.2	5.1	6.1	6.3	--
14				12.3	9.4	7.4	3.9	5.3	5.3	5.8	6.2	--
15				12.2	9.6	7.2	3.9	5.2	5.2	5.8	6.0	--
16				11.8	9.8	7.1	4.1	5.2	5.1	5.8	6.6	--
17				11.4	9.9	7.1	4.3	5.1	5.3	5.7	6.9	--
18				11.0	9.9	6.9	4.7	4.9	5.4	5.7	6.9	--
19				10.5	9.7	6.8	4.9	4.8	5.7	5.8	7.0	--
20				10.3	9.8	6.7	5.1	4.9	6.2	5.9	7.0	--
21				10.2	9.9	6.7	5.3	5.0	6.4	5.9	6.9	11.0
22				10.0	9.9	6.8	5.2	4.9	--	5.8	7.6	11.4
23				10.0	10.0	6.9	5.0	4.7	6.5	5.6	7.9	11.5
24				10.1	10.1	7.0	4.7	4.5	--	5.6	7.8	11.5
25				10.2	10.1	7.0	4.3	4.6	--	5.6	7.9	11.4
26				10.1	10.1	6.9	4.2	4.6	--	5.4	8.0	11.3
27				10.1	10.0	6.8	4.2	4.6	--	5.3	7.9	11.1
28				10.1	9.8	6.7	4.6	4.7	--	5.5	7.7	10.8
29				10.1	9.6	6.5	4.9	4.8	--	5.8	8.0	11.0
30				10.1	9.4	6.5	4.9	4.8	6.3	6.1	8.1	10.9
31				10.0		6.5		4.9	6.4		8.1	

Table 23. Dissolved oxygen, Delaware River at Chester, Pa.
Daily mean dissolved oxygen in milligrams per liter
December 1, 1994 to November 30, 1995
[Monitor was not in operation December 6, 1994, to March 23, 1995; --, missing data]

Date	December	January	February	March	April	May	June	July	August	September	October	November
1	9.5				8.8	8.8	6.1	5.5	5.0	6.0	6.3	7.2
2	9.6				8.6	8.8	6.0	5.1	4.9	5.9	6.3	7.0
3	9.9				8.6	8.7	6.0	5.1	4.5	6.0	6.2	6.7
4	9.9				9.0	8.7	5.9	5.1	4.0	6.3	6.3	7.1
5	9.8				9.5	7.8	5.9	5.0	4.0	6.4	6.4	7.4
6					9.8	6.8	5.8	5.0	3.9	6.4	6.6	7.5
7					--	6.6	5.6	4.9	4.5	6.3	6.2	7.4
8					--	7.5	5.3	4.8	4.8	6.2	6.1	7.5
9					--	7.4	5.2	4.9	4.8	6.0	6.2	7.9
10					--	7.1	5.1	5.1	4.6	6.0	6.3	8.0
11					--	7.6	5.0	5.2	--	6.2	6.3	8.3
12					--	7.5	4.9	5.1	--	6.4	6.4	8.6
13					--	7.3	4.8	5.1	--	6.3	--	8.9
14					9.6	7.2	4.6	5.2	--	6.2	--	9.1
15					9.7	7.0	4.5	5.1	5.1	6.2	6.4	9.0
16					8.9	6.8	4.5	5.2	5.3	6.3	6.5	9.4
17					9.0	6.7	4.6	5.1	--	6.4	6.8	9.4
18					9.2	6.3	4.7	5.0	--	6.1	6.8	10.2
19					9.3	6.1	4.9	4.8	--	6.1	6.7	10.6
20					9.3	6.0	5.1	4.9	--	6.2	6.6	10.6
21					9.4	6.1	5.1	4.9	--	6.1	7.0	10.7
22					9.3	6.2	5.0	4.9	--	5.9	6.7	10.8
23					9.3	6.3	5.4	4.9	--	5.9	6.7	10.8
24				9.4	9.2	6.4	5.5	4.9	--	5.9	6.9	10.9
25				9.2	9.4	6.6	5.2	4.9	6.4	6.1	7.2	10.9
26				9.0	9.7	6.5	5.2	5.0	6.6	6.1	7.2	10.8
27				8.8	9.8	6.4	5.4	5.1	6.7	5.8	7.1	10.9
28				8.7	10.2	6.3	5.9	5.1	6.8	5.9	7.3	10.9
29				8.6	10.4	6.3	5.8	5.3	6.8	6.0	7.4	10.9
30				8.7	9.8	6.2	5.6	5.0	6.3	6.2	7.6	10.9
31				9.5		6.1		4.9	6.1		7.5	

Section IV

APPENDIX

AGREEMENT

The Parties to the U.S. Supreme Court Decree approved, on October 18, 1995, a proposal by NYSDEC pursuant to the Delaware River Basin Commission Resolution No. 83-13, to modify releases from the New York City reservoirs, and target flows at the Montague and Trenton gaging stations.

The modifications agreed to were:

1. Establishment of an emergency fisheries protection program designed to allow special stream releases designed by the NYSDEC within the terms specified by this Agreement as requested and specified in Section (d). The emergency program includes the following provisions:

   a. There will be no net loss of storage in the New York City Delaware River-Basin Reservoirs.

   b. The maximum use of 2,000 cfs-days (cubic feet per second-days) will be made available through reductions in releases required to meet the Montague target. There must be a positive cumulative credit from New York City Delaware Basin reservoir releases at any time special stream releases are made pursuant to this agreement.

   c. The credits from releases required for Montague targets may occur at the following rates:

When Trenton flow equals or exceeds	Allowed credit reduction in directed releases
3500 cfs	100 cfs
3300 cfs	50 cfs

   d. The term of this emergency program begins immediately and continues until one of the NYC Delaware reservoirs spills, or when all summer basic conservation releases are restored in accordance with Docket No. D-77-20 (Revision 2).

   e. The release rates under this program shall not exceed the summer basic level as established in Docket No. D-77-20 (Revision 2). (15 cfs at Neversink, 19 cfs at Pepacton, 23 cfs at Cannonsville). The cumulative releases shall at no time exceed the credits established under "c" above.

f. The releases pusuant to this emergency program will be designed by NYSDEC upon a continuing showing of need for these extra releases; and will be coordinated with the River Master and New York City. DRBC will be informed of the River Master's directed release each day when it is computed. The River Master's office will maintain the ongoing accounting for credits and releases, embodied in this agreement.

g. For purposes of defining drought conditions as per the operation curves for NYC reservoirs embodied in DRBC Resolution 83-13, the usable storage in the NYC Delaware basin reservoirs shall be reduced by the cumulative unexpended credits.

h. The parties to this agreement will reconvene as needed by meeting or telephone call to reconsider these arrangements should any party request it.

i. This agreement will take effect immediately and will continue until conditions described in "d" are met or modified by unanimous agreement of the Parties to the Decree or terminated by any one of these Parties, but in any case to be terminated automatically on June 15, 1996.

/S/ Robert R. Jordan	10/19/95	/S/ Steven Nieswand	10/25/95
State of Delaware	Date	State of New Jersey	Date
/S/ N. G. Kaul	10/25/95	/S/ Irene B. Brooks	10/25/95
State of New York	Date	Commonwealth of Pennsylvania	Date

/S/ Marilyn Gelber	10/20/95
City of New York	Date

Note: Original signatures on file in the Delaware River Master Office.

☆U.S. GOVERNMENT PRINTING OFFICE: 1997-506-672