REPORT OF THE RIVER MASTER OF THE DELAWARE RIVER

FOR THE PERIOD DECEMBER 1, 2004–NOVEMBER 30, 2005

Open-File Report 2010–1106

U.S. Department of the Interior
U.S. Geological Survey

C A L E N D A R F O R R E P O R T Y E A R 2005

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Report of the River Master of the Delaware River for the period December 1, 2004–November 30, 2005

By Bruce E. Krejmas, Gary N. Paulachok, and Stephen F. Blanchard

Open-File Report 2010–1106

U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Marcia K. McNutt, Director

U.S. Geological Survey, Reston, Virginia: 2010

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Conversion Factors and Vertical Datum

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

Datum: Vertical coordinate information is referenced to the North American Vertical Datum of 1988. Horizontal coordinate information is referenced to the North American Datum of 1983.

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:
°F=(1.8x°C)+32

CHEMICAL CONCENTRATIONS

In this report, concentrations of chloride and dissolved oxygen are given in milligrams per liter (mg/L). Milligrams per liter represents the mass of solute (milligrams) per unit volume (liter) of water.

RIVER MASTER LETTER OF TRANSMITTAL AND SPECIAL REPORT

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

August 1, 2010

The Honorable
John G. Roberts, Jr.
Chief Justice of the United States

The Honorable
Jack A. Markell
Governor of Delaware

The Honorable
Christopher J. Christie
Governor of New Jersey

The Honorable
David A. Paterson
Governor of New York

The Honorable
Edward G. Rendell
Governor of Pennsylvania

The Honorable
Michael R. Bloomberg
Mayor of the City of New York

No. 5, Original.—October Term, 1950
State of New Jersey, Complainant,
v.
State of New York and City of New York, Defendants,
Commonwealth of Pennsylvania and State of Delaware, Intervenors.

Dear Sirs:

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 hereby transmitting the 52nd Annual Report of the River Master of the Delaware River for the 12-month period from December 1, 2004, to November 30, 2005. In this report, this period is referred to as the River Master report year or the report year.

During the 2005 River Master report year, monthly precipitation in the upper Delaware River Basin ranged from 36 percent of the long-term average in May 2005 to 330 percent of the long-term average in October 2005. Total precipitation during the report year was 7.56 inches (in.) more than the long-term average. Precipitation during the December to May period, when reservoirs typically refill, was 3.80 in. more than the 64-year average. Precipitation during the report year was below normal in February and from May to September, and above normal in the other 6 months.

On December 1, 2004, when the report year began, combined storage in the New York City reservoirs in the upper Delaware River Basin was 267.816 billion gallons (Bgal) or 98.9 percent of combined storage capacity. Median combined storage on December 1, computed on the basis of 37 years of record, is 177.092 Bgal. Storage remained high throughout the winter and spring, then declined seasonally until early October, when storage began increasing rapidly. Throughout the report year, operations in the basin were conducted as stipulated by the Decree.

On May 11, 2005, the Delaware River Master Advisory Committee met at the New Jersey Water Supply Authority headquarters in Clinton, New Jersey to discuss hydrologic conditions in the basin and operational procedures for the 2005 reservoir-release season. During the report year, the following individuals served as members of the Advisory Committee:

Delaware	John H. Talley
New Jersey	Samuel A. Wolfe
New York	Sandra Allen
New York City	Michael A. Principe
Pennsylvania	Cathleen Curran Myers

The River Master informed the Advisory Committee that, on the basis of information provided by New York City, the excess-release quantity beginning June 15, 2005, was 7.381 Bgal. Based on reservoir release programs in Delaware River Basin Commission (DRBC) Docket No. D-77-20 CP (Revisions Nos. 7 and 8), the excess-release quantity was to be used for various purposes. On the basis of storage levels and hydrologic conditions, the Decree Parties unanimously agreed to temporarily suspend release of the down-basin portion of the excess release quantity several times during summer and fall.

During the report year, the River Master and staff participated in a number of water-supply related meetings of the DRBC. The Deputy Delaware River Master met periodically with representatives of the Parties to the Decree as a member of the Decree Parties Work Group and DRBC's Flow Management Technical Advisory Committee. Issues of particular interest to the River Master involved management of reservoir releases and regulated streamflow in the upper Delaware River Basin.

The U.S. Geological Survey (USGS) continued operation of its field office of the Delaware River Master at Milford, Pennsylvania. Gary N. Paulachok, Deputy Delaware River Master, continued in charge of the office, assisted by Bruce E. Krejmas, Hydrologist.

During the year, the River Master's office continued the weekly distribution of a summary hydrologic report. These reports contain provisional data on precipitation in the upper Delaware River Basin, releases and spills from 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 the USGS Montague, New Jersey, gaging station, and diversions by New Jersey. The reports were distributed to members of the Delaware River Master Advisory Committee and to other parties interested in Delaware River operations. A monthly summary of hydrologic conditions also was provided to Advisory Committee members. The weekly and monthly hydrologic reports were also posted on the River Master's web site.

The first section of this report documents Delaware River operations during the report year. During the year, the City of New York diverted 198.823 Bgal from the Delaware River Basin and released 117.161 Bgal from Pepacton, Cannonsville, and Neversink Reservoirs to the Delaware River. The River Master directed releases from these reservoirs to the Delaware River that totaled 70.355 Bgal.

The second section of this report describes water quality at various monitor sites on the Delaware Estuary. It includes basic data on chemical properties and physical characteristics of the water, and presents summary statistics on the data.

Throughout the year, diversions to New York City's water supply and releases designed to maintain the flow of the Delaware River at Montague were made as directed by the River Master. Diversions by New

York City from its reservoirs in the Delaware River Basin did not exceed the limit stipulated by the Decree. Diversions by New Jersey also were within stipulated limits.

The River Master and staff are grateful for the continued cooperation and support of the Decree Parties. Also, the contributions of the PPL Corporation and Mirant Corporation in informing the River Master of plans for power generation and furnishing data on reservoir releases are greatly appreciated.

Sincerely yours,

/Signed/

Stephen F. Blanchard
Delaware River Master

DELAWARE RIVER OPERATIONS

Abstract

A Decree of the Supreme Court of the United States, entered in 1954, established the position of Delaware River Master within the U.S. Geological Survey. In addition, the Decree authorizes diversions of water from the Delaware River Basin and requires compensating releases from certain reservoirs, owned by New York City, to be made under the supervision and direction of the River Master. The Decree stipulates that the River Master will furnish reports to the Court, not less frequently than annually. This report is the 52nd Annual Report of the River Master of the Delaware River. It covers the 2005 River Master report year; that is, the period from December 1, 2004, to November 30, 2005.

During the report year, precipitation in the upper Delaware River Basin was 7.56 in., or 117 percent of the long-term average. Combined storage in Pepacton, Cannonsville, and Neversink Reservoirs remained high from December 2004 to May 2005 and reached a record high level on April 3, 2005. Reservoir storage decreased steadily from May to early October, then increased rapidly through the end of November. Delaware River operations throughout the year were conducted as stipulated by the Decree.

Diversions from the Delaware River Basin by New York City and New Jersey were in compliance with the Decree. Reservoir releases were made as directed by the River Master at rates designed to meet the flow objective for the Delaware River at Montague, New Jersey, on 120 days during the report year. Releases were made at conservation rates—or rates designed to relieve thermal stress and protect the fishery and aquatic habitat in the tailwaters of the reservoirs—on all other days.

During the report year, New York City and New Jersey complied fully with the terms of the Decree, and directives and requests of the River Master.

As part of a long-term program, the quality of water in the Delaware Estuary between Trenton, New Jersey, and Reedy Island Jetty, Delaware, was monitored at various locations. Data on water temperature, specific conductance, dissolved oxygen, and pH were collected continuously by electronic instruments at four sites. In addition, selected water-quality data were collected at 3 sites on a monthly basis and at 19 sites on a twice-monthly basis.

Introduction

An Amended Decree of the Supreme Court of the United States, entered June 7, 1954, authorized diversions of water from the Delaware River Basin and provided for releases of water from three New York City reservoirs to the upper Delaware River. The Decree stipulated that these diversions and releases were to be made under the supervision and direction of the Delaware River Master. The Decree also stipulated that reports on Delaware River operations be made to the Court not less frequently than annually. This report documents operations from December 1, 2004, to November 30, 2005, or the 2005 River Master report year. The report also presents information on the quality of water in the Delaware Estuary during the report year.

Some hydrologic data presented in this report are records of streamflow and water quality for U.S. Geological Survey (USGS) data-collection stations. These records were collected, computed, and furnished by the offices of the USGS at Troy, New York; Exton and New Cumberland, 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. The locations of major streams and reservoirs, and selected streamflow-gaging stations in the Delaware River Basin are shown in figure 1.

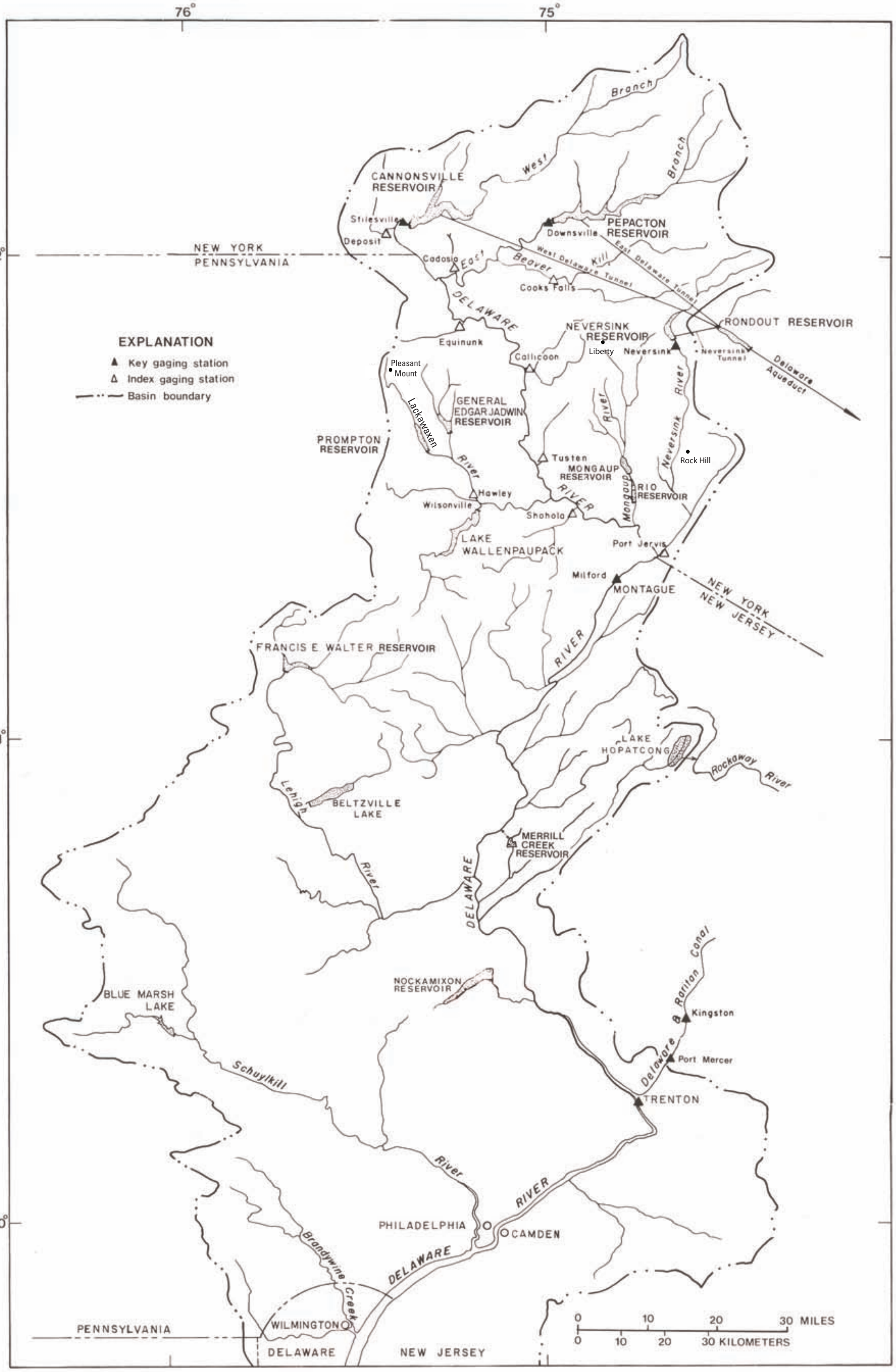

Figure 1. Delaware River Basin above Wilmington, Delaware.

Acknowledgments

The River Master's daily operation records were prepared from hydrologic data collected chiefly on a day-to-day basis. Data for these records were collected and computed by the Office of the Delaware River Master or were furnished by the following agencies and utilities: Data for Pepacton, Cannonsville, and Neversink Reservoirs by the New York City Department of Environmental Protection, Bureau of Water Supply; for Lake Wallenpaupack by the PPL Corporation; and for Rio Reservoir by Mirant Corporation. Precipitation data and quantitative precipitation forecasts were provided by the National Weather Service (NWS) office in Binghamton, New York.

Definition of Terms and Procedures

The following definitions apply to various terms and procedures used in the operations documented in this report. A table for converting inch-pound units to the International System of Units (SI) is given on page vi.

- **Balancing Adjustment**.—An operating procedure used by the River Master to correct for inaccuracies inherent in the design of releases from New York City reservoirs to meet the Montague flow objective. The balancing adjustment is computed as 10 percent of the difference between the cumulative adjusted directed release and the cumulative directed release required for exact forecasting. The balancing adjustment is applied to the following day's release design. The maximum daily balancing adjustment is intentionally limited to preclude unacceptably large variations in the adjusted flow objective.

- **Capacity**.—Total usable volume in a reservoir between the point of maximum depletion and the elevation of the lowest crest of the spillway.

- **Conservation releases**.—Controlled releases from Pepacton, Cannonsville, and Neversink Reservoirs designed to maintain specified minimum flows in stream channels below the reservoirs. The conservation rates shown in table 2[1] are defined as follows:

  - **Normal**.—Conservation releases when New York City combined reservoir storage is in the normal operations zone.

  - **Watch**.—Conservation releases when New York City combined reservoir storage is in the drought watch operations zone.

  - **Warning**.—Conservation releases when New York City combined reservoir storage is in the drought warning operations zone.

  - **Drought**.—Conservation releases when New York City combined reservoir storage is in the drought operations zone.

  The combined storage zones for the New York City Delaware Basin reservoirs are shown in figure 2.

- **Daily excess-release credits**.—Daily credits and deficits during the seasonal release period (June 15 to the following March 15) are computed as the arithmetic difference between the daily mean discharge of the Delaware River at Montague, New Jersey, and 1,750 cubic feet per second (ft^3/s). 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, except as follows: during the seasonal period, credits also are applied 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 applicable excess-release rate.

[1]All numbered tables in the section "Delaware River Operations" are grouped at the end of this section, beginning on page 22.

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

- **Diversions**.—The out-of-basin 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 the City's water-supply system. Also, the out-of-basin transfer of water by New Jersey from the Delaware River through the Delaware and Raritan Canal.

- **Excess quantity**.—As defined by the Decree, the excess quantity of water is equal to 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 million gallons per day (Mgal/d) stipulated by the 1954 Decree] from all its sources of supply obtainable without pumping, except that the excess quantity shall not exceed 70 Bgal. Each year, the seasonal period for release of the excess quantity begins on June 15. The flow objective for the seasonal period becomes effective at Montague on that date and remains in effect until the following March 15, or until the cumulative total of excess-release credits equals the applicable excess quantity, whichever occurs first.

- **Index gaging stations**.—Particular sites on tributaries of the upper Delaware River where systematic observations of gage height and discharge are made. These stations are used mainly during the directed-releases season to estimate inflows of surface water to the upper Delaware River.

- **Key gaging stations**.—Particular sites on the East Branch Delaware River, West Branch Delaware River, Neversink River, Delaware and Raritan Canal, and mainstem Delaware River where continu-

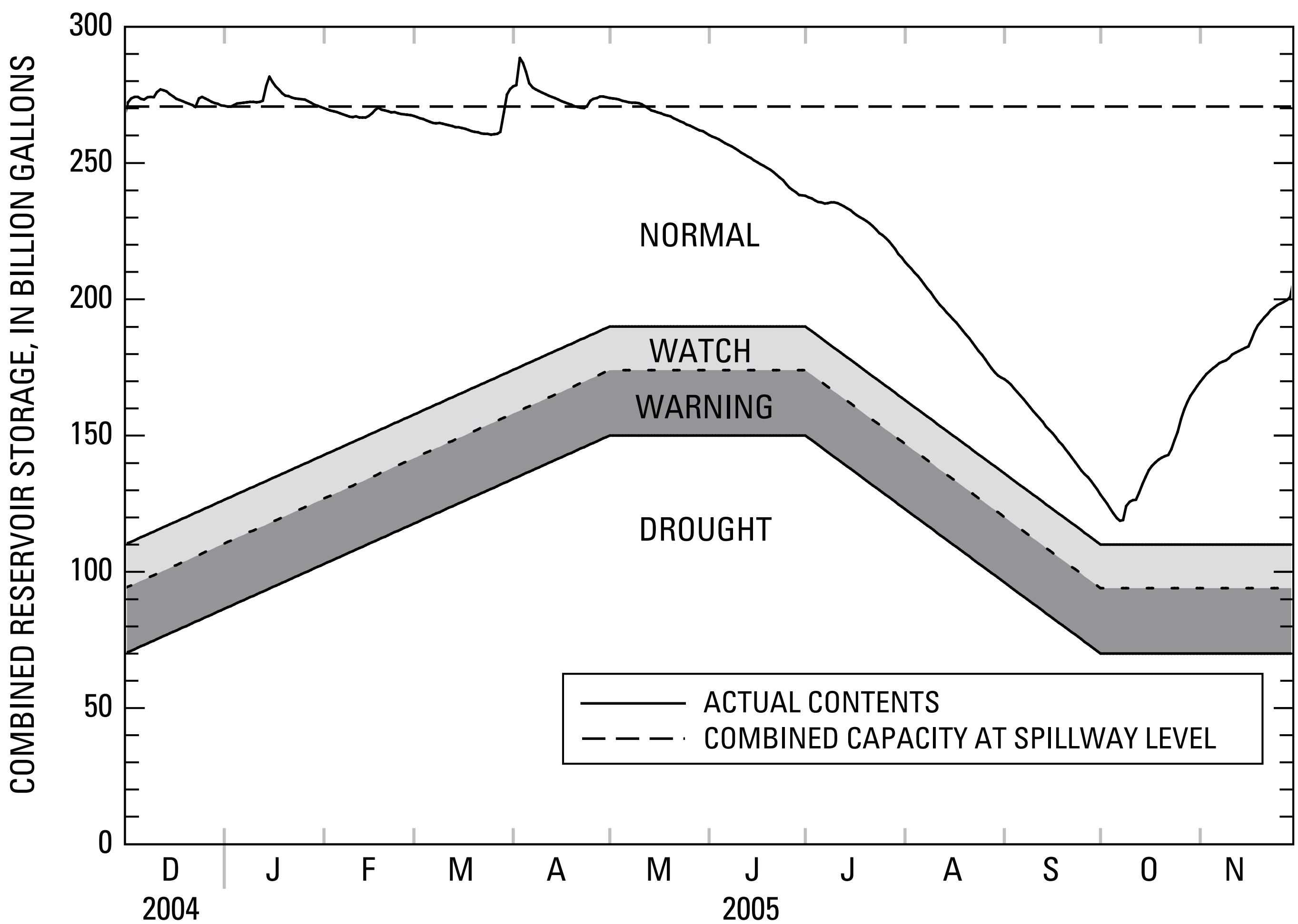

Figure 2. Operation curves and actual contents for New York City reservoirs in the Delaware River Basin, December 1, 2004, to November 30, 2005.

ous, systematic observations of gage height and discharge are made. These stations are used on a year-round basis in River Master operations.

- **Maximum reservoir depletion**.—The minimum water-surface level or elevation below which a reservoir ceases to continue making delivery of quantities of water for all purposes for which the reservoir was designed. Sometimes this is referred to as minimum full-operating level.
- **Rate of flow**.—Mean discharge for a specified 24-hour period, in cubic feet per second or million gallons per day.
- **Rate of flow at Montague**.—Daily mean discharge of the Delaware River at Montague, New Jersey, computed on a calendar-day basis.
- **Reservoir-controlled releases**.—Controlled releases from reservoirs passed through outlet valves in the dams or through turbines in powerplants. These releases do 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 during the report year included a 23-hour day on April 3 and a 25-hour day on October 30.
- **Uncontrolled runoff at Montague**.—Runoff from the 3,480 square mile (mi^2) drainage area above Montague, New Jersey, excluding the drainage area above Pepacton, Cannonsville, Neversink, Wallenpaupack, and Rio Dams, but including spillway overflow at these dams.

Precipitation

Precipitation in the Delaware River Basin above Montague, New Jersey, totaled 51.09 in. during the 2005 report year and was 7.56 in., or 117 percent of the long-term (64-year) average. Monthly precipitation ranged from 36 percent of the long-term average in May 2005 to 330 percent of average in October 2005. Data on monthly precipitation during the report year and long-term average precipitation are presented in table 1[2]. These data were computed from records collected at 10 geographically distributed stations by the National Weather Service; the New York City Department of Environmental Protection, Bureau of Water Supply; and the River Master office.

The seasonal period from December to May typically is when surface-water and ground-water reservoirs refill. During this period in 2004–2005, total precipitation was 24.07 in., which is 119 percent of the 64-year average. From June to November, total precipitation was 27.02 in., which is 116 percent of the long-term average. The maximum monthly precipitation was 16.81 in. in October 2005, measured at Rock Hill, New York; the minimum monthly precipitation was 0.71 in. in September 2005, measured at Hawley, Pennsylvania (locations shown on fig. 1).

Operations

December to May

Operations on December 1, 2004, were conducted as prescribed by the Decree. The Montague flow objective was 1,820 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 made at the rates shown in table 2. These rates went into effect on May 1, 2004, and are incorporated in DRBC Docket D-77-20 CP (Revision 7).

[2]All numbered tables in the section "Delaware River Operations" are grouped at the end of this section, beginning on page 22.

From December 2004 to May 2005, the first half of the report year, total precipitation was 3.80 in. above average. Monthly precipitation ranged from 36 percent of the long-term average in May 2005 to 201 percent in January 2005 (table 1). Runoff in the upper basin was above normal in December, January, and April, in the normal range during February and March, and below normal in May.

On December 1, 2004, when the 2005 report year began, Pepacton Reservoir contained 137.200 Bgal of water in storage above the point of maximum depletion, or 97.9 percent of the 140.190 Bgal storage capacity. Cannonsville Reservoir contained 99.392 Bgal, or 103.9 percent of the 95.706 Bgal storage capacity. Neversink Reservoir contained 31.224 Bgal, or 89.4 percent of the 34.941 Bgal storage capacity. Combined storage in these reservoirs on December 1, 2004, was 267.816 Bgal, or 98.9 percent of combined capacity. Daily storage in Pepacton, Cannonsville, and Neversink Reservoirs is given in tables 3, 4, and 5, respectively, and combined storage during the report year is shown in figure 2.

In January 2005, in consideration of the unusually high storage level of Pepacton Reservoir and accumulating snowpack in the watershed upstream of the reservoir, the Decree Parties implemented a temporary spill reduction program that was in effect from January 24 to March 31, 2005. This program attempted to manage a void in Pepacton Reservoir, based on the snow-water equivalent of the snowpack, through supplemental releases. The agreement for this temporary spill reduction program is presented in Appendix A.

Above-normal rainfall in late March and early April, combined with rapid snowmelt, resulted in a major flood in the Delaware River Basin. The USGS streamflow gaging station on Delaware River at Montague, New Jersey, recorded a peak stage of 31.69 feet (ft) on April 3, 2005, which corresponds to a discharge of 206,000 ft^3/s.

The Decree Parties established an experimental augmented conservation releases program beginning May 1, 2004, for the New York City Delaware Basin Reservoirs. This program established a habitat protection bank which consisted of an excess release quantity bank, a thermal bank, and a supplemental release bank. It also established flow targets for all three tailwaters at certain USGS gaging stations downstream of the reservoirs. Specific elements of this program are presented in DRBC Docket No. D-77-20 CP (Revision 7).

From December to May, inflow to the City's reservoirs typically exceeds outflow and, consequently, storage increases. The average inflow to Pepacton, Cannonsville, and Neversink Reservoirs for this 6-month period, computed on the basis of the 64-year period from December 1940 to May 2004, was 301.2 Bgal. During the corresponding 6 months of the report year, inflow to the three reservoirs totaled 368.4 Bgal. Evaporation loss is not included in the computations.

Precipitation was slightly above normal from December 2004 to May 2005. Combined storage remained high and fluctuated only slightly during this period. The combined storage of the reservoirs was about 96 percent of capacity on May 31, 2005.

Combined storage in the three New York City reservoirs was 266.335 Bgal on November 30, 2004, and 261.049 Bgal on May 31, 2005, a net decrease of 5.286 Bgal or about 2 percent of total capacity. The maximum combined storage from December to May was 288.588 Bgal on April 3, 2005. Maximum storage in Pepacton Reservoir during the December to May period was 147.082 Bgal on April 3; maximum storage in Cannonsville Reservoir was 106.654 Bgal on April 4; and maximum storage in Neversink Reservoir was 36.421 Bgal on April 3, 2005. Pepacton Reservoir spilled from December 2 to January 26, March 30 to April 17, and April 24 to May 7. Cannonsville Reservoir spilled on all days from December 1 to May 14, except for February 8–9. Except for January 20, Neversink Reservoir spilled on all days from January 13 to April 14, and from April 26 to May 2, 2005. The combined spill volume from the three reservoirs during this period was 257.887 Bgal.

During the December to May period, diversions to Rondout Reservoir by New York City totaled 88.531 Bgal (486 Mgal/d). The forecasted discharge at Montague, exclusive of water released from the City reservoirs, was less than the flow objective on 6 days in May, and releases were directed. The observed daily mean discharge at Montague exceeded the applicable flow objective on all days. Applicable design rates for the USGS gaging station on Delaware River at Montague, New Jersey, are presented in table 6.

June to November

Monthly precipitation for the June to November period was below average in June, July, August, and September and above average in October and November. Total precipitation during the period was 27.02 in. or 3.76 in. more than the 64-year average (table 1).

Combined storage in the three New York City reservoirs was 260.313 Bgal on June 1, 2005, and 206.391 Bgal on November 30, 2005, a net decrease of 53.922 Bgal or about 19.9 percent of total capacity. During the June to November period, maximum storage in Pepacton Reservoir was 134.192 Bgal on June 1; 91.766 Bgal in Cannonsville Reservoir on June 1; and 34.355 Bgal in Neversink Reservoir on June 1. Maximum combined storage in the three reservoirs was 260.313 Bgal on June 1, 2005. The resevoirs did not spill during the period.

Releases were directed to meet the Montague flow objective on 114 days between June 1 and November 30, 2005, when the forecasted discharge at Montague, exclusive of water released from the New York City reservoirs, was less than the flow objective. Releases at rates designed to protect the fishery and aquatic habitat were made at other times during the period.

From June 1 to June 14, the Montague flow objective was 1,750 ft^3/s. The forecasted flow, exclusive of releases from Pepacton, Cannonsville, and Neversink Reservoirs, was less than the flow objective on 10 days and releases were directed.

The New York City Department of Environmental Protection, Bureau of Water Supply, Quality, and Protection furnished the River Master with the following data for the 2005 calendar year, as stipulated by the Decree:

1. The estimated continuous safe yield from all the City’s sources, obtainable without pumping, is 1,665 Mgal/d, or a total during calendar year 2005 of 1.665 Bgal/d x 365 days = 607.725 Bgal.
2. The estimated consumption that the City must provide for, from all its sources of supply during calendar year 2005, is 591.582 + 7.250 = 598.832 Bgal.

On the basis of the Decree and the above-noted data, the aggregate quantity of excess-release water was 83 percent of (607.725 - 598.832), or 7.381 Bgal.

Data on water consumption by the City of New York for each calendar year since 1950, from all sources of supply, are presented in table 7.

In accordance with the reservoir releases program stipulated in DRBC Docket No. D-77-20 CP (Revision 7), about 42 percent of the annual excess-release quantity was placed in a habitat protection bank. The remainder of the excess-release quantity could be used to provide an increase in the Montague flow objective or could be banked in accordance with the procedures given in the DRBC’s Lower Basin Drought Management Plan.

On June 15, 2005, the beginning of the seasonal excess-release period, the Montague flow objective was increased to 1,800 ft^3/s. Combined storage in the New York City reservoirs declined steadily from June to early October, after which storage increased steadily to about 76 percent of capacity at the end of the report year.

On July 20, 2005, the Decree Parties agreed to temporarily suspend the downbasin portion of the excess-release quantity for two weeks. The decision was based on prevailing hydrologic conditions, storage levels in the New York City reservoirs, and the uncertain water-supply effects of the Swinging Bridge dam emergency in spring 2005. This agreement is presented in Appendix B.

On August 2, 2005, the above-noted agreement was modified and extended by the Decree Parties. This agreement is presented in Appendix C. This agreement was extended three more times—on August 25, September 29, and October 31, 2005—and is presented in Appendices D, E, and F, respectively.

On November 1, 2005, the Decree Parties approved interim spill reduction programs for Pepacton and Neversink Reservoirs that were based on watershed snowpack. The programs, which were in effect through May 31, 2007, are presented in Appendices G and H.

Between June 15 and November 30, 2005, the forecasted flow at Montague, exclusive of releases from the New York City reservoirs, was less than the flow objective on 104 days and releases were directed. On 34 days during the June 15 to November 30 period, the observed flows were less than the applicable flow objective. On 25 of these 34 days, observed flows were within 10 percent of the applicable flow objective. Design rates for the USGS gaging station on Delaware River at Montague, New Jersey, are presented in table 6.

The total discharge observed at Montague the portion derived from uncontrolled runoff from the drainage area below the reservoirs, the portion contributed by power reservoirs, and the portion contributed by New York City's Delaware Basin Reserviors—Pepacton, Cannonsville, and Neversink Reservoirs—from May to October are shown in figure 3. In developing the water budget for Montague, uncontrolled runoff was computed as the residual of observed flow minus releases from all reservoirs, and, consequently, was subject to errors in observations, transit times, and routing of the various components of flow. The conservation release from Rio Reservoir is included in the uncontrolled runoff component. The net effect of these uncertainties is incorporated in the computation of uncontrolled runoff. Spills from the reservoirs are considered a portion of the uncontrolled runoff. From June 1 to November 30, 2005, diversions from the three New York City Delaware Basin reservoirs to Rondout Reservoir totaled 110.292 Bgal.

Summary of Operations

From December 1, 2004, to November 30, 2005, diversions from the three New York City reservoirs in the upper Delaware River Basin to Rondout Reservoir totaled 198.823 Bgal, and all releases from the three reservoirs to the Delaware River totaled 117.161 Bgal. River Master directed releases to the Delaware River from these reservoirs totaled 70.355 Bgal.

During the year, maximum storage in Pepacton Reservoir was 147.082 Bgal (104.9 percent of capacity) on April 3; 106.654 Bgal (111.4 percent of capacity) in Cannonsville Reservoir on April 4; and 36.421 Bgal (104.2 percent of capacity) in Neversink Reservoir on April 3, 2005. Maximum combined storage in the three reservoirs was 288.588 Bgal (106.6 percent of combined capacity) on April 3, 2005. The combined spill volume for the year was 257.887 Bgal, which is equivalent to 95.2 percent of combined storage.

During the report year, minimum storage in Pepacton Reservoir was 77.588 Bgal (55.3 percent of capacity) on October 7; 24.626 Bgal (25.7 percent of capacity) in Cannonsville Reservoir on October 8; and 16.235 Bgal (46.5 percent of capacity) in Neversink Reservoir on October 7, 2005. Minimum combined storage in the three reservoirs was 118.713 Bgal (43.8 percent of combined capacity) on October 7, 2005.

On November 30, 2005, the end of the report year, combined storage in the three reservoirs was 206.391 Bgal or 76.2 percent of combined capacity. From December 1, 2004, to November 30, 2005, the net change in combined storage was -61.425 Bgal, or a decrease equivalent to nearly 23 percent of combined capacity.

Combined storage for the three New York City reservoirs on the first day of the month was above median in every month from December to May and in November, and below median in every month from June to October (fig. 4). A new record-high combined storage level for the first day of the month was set in April.

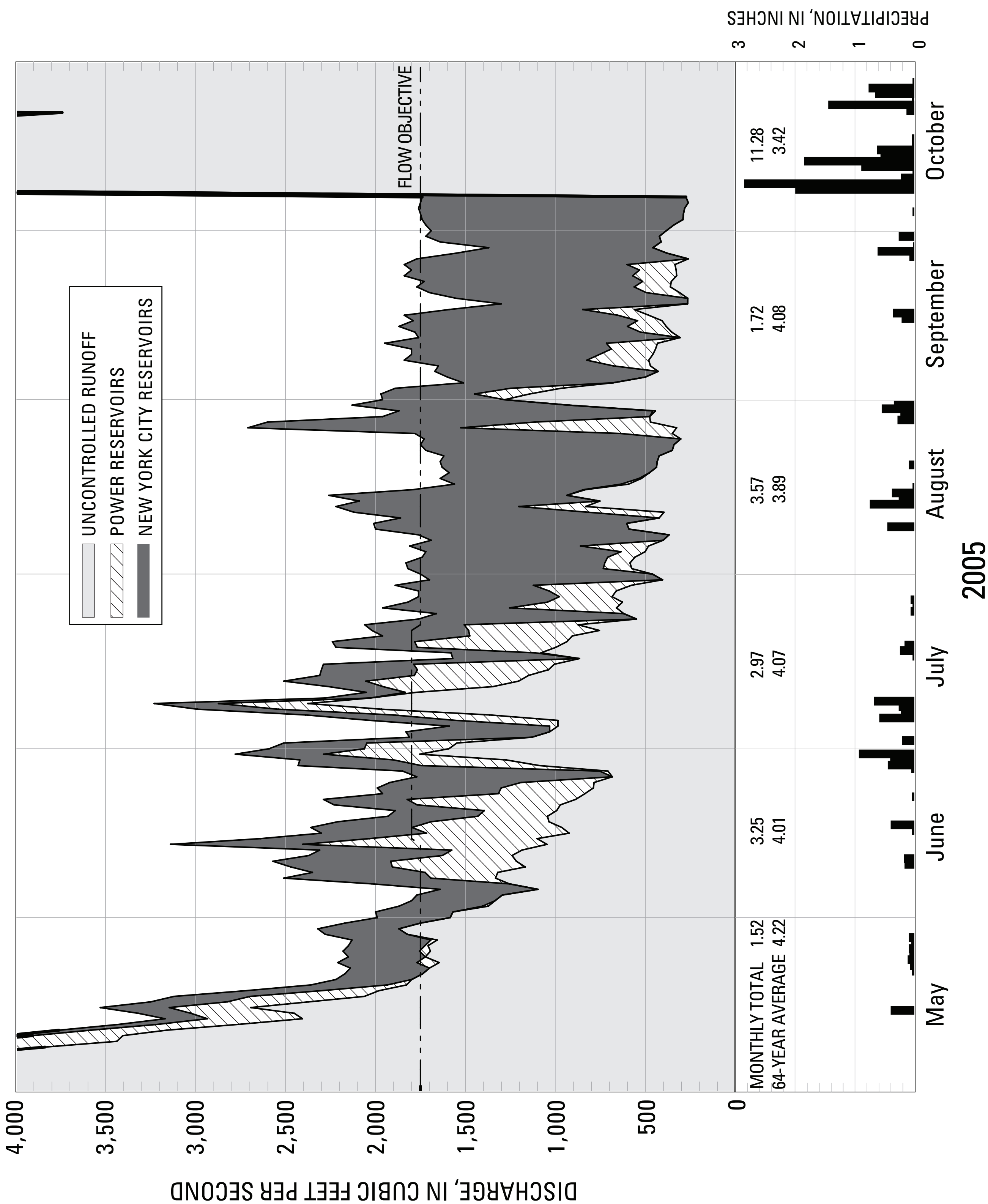

Figure 3. Components of flow, Delaware River at Montague, New Jersey, May 1 to October 31, 2005.

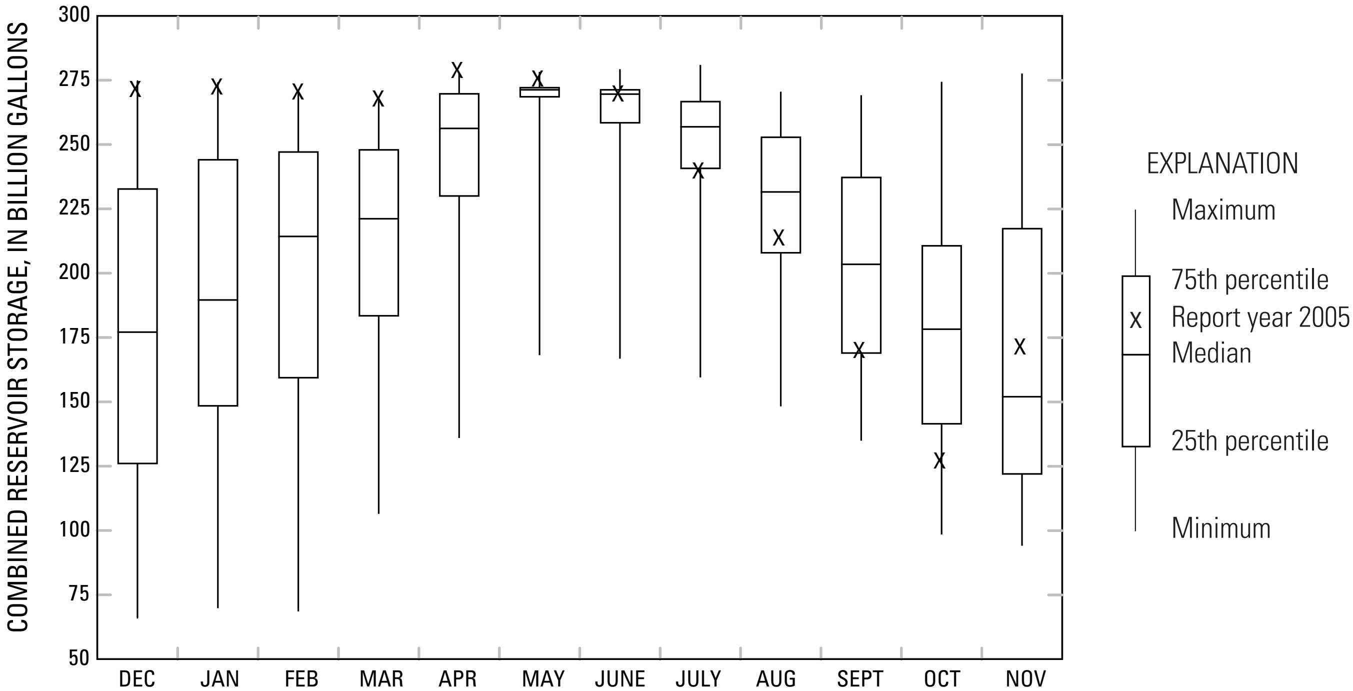

Figure 4. Combined storage in Pepacton, Cannonsville, and Neversink Reservoirs on the first day of the month, December 2004 to November 2005 (this report year), and summary statistics for the reference period, June 1967 to November 2004.

Streamflow

Components of Flow, Delaware River at Montague, New Jersey

The data and computations of the various components of flow form the basic operational records used by the River Master to carry out specific responsibilities related to the Montague formula. The operational record has two parts: forecasted flow at Montague, exclusive of controlled releases from New York City's reservoirs (table 8), and segregation of components of daily mean flow at Montague (table 9).

The following components may be present in the flow of the Delaware River at Montague:

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

The releases from New York City's reservoirs necessary to maintain the Montague flow objective were computed on the basis of the forecasted flow at Montague, exclusive of controlled releases from the reservoirs.

Time of Travel

Following are average times for the effective travel of water from the various sources of controlled supply to Montague, New Jersey. These times were used for flow routing during the 2005 report year.

Source	Travel time, in hours
Pepacton Reservoir	60
Cannonsville Reservoir	48
Neversink Reservoir	33
Lake Wallenpaupack	16
Rio Reservoir	8

The travel times were computed from reservoir and powerplant operations data and historical streamflow records. The travel times generally are suitable for use in the operations of the River Master. Occasionally, however, substantial exceptions are observed. For example, when a large release from Cannonsville Reservoir follows a small release, a substantial portion of the water fills the channel en route, and the remainder may arrive at Montague as much as 66 hours after the time of release. During winter, the formation of ice, together with lower streamflow, gradually increases the resistance to water flow, resulting in increased travel times. Because ice-affected travel times increase gradually over several days, and releases were not directed to meet the Montague flow objective during periods of ice cover, no adjustments were made to compensate for increased travel times during these periods of the report year.

Segregation of Flow at Montague

The River Master daily operations record of reservoir releases and segregation of the various components contributing to the flow of the Delaware River at Montague, New Jersey, are presented in table 9. The data are arranged to conform to the downstream movement of water from various sources to Montague. Summation of data along individual rows in the table is equivalent to routing the various flow contributions to Montague, using the above-noted average travel times. Uncontrolled runoff was computed as a residual by subtracting the flow contributions of all other sources from the observed discharge at Montague.

Computation of Directed Releases

During the report year, the River Master used the following information for daily operations: (1) discharges computed from recorded or reported stream gage heights, for various 24-hour periods, absent real-time information on any changes in stage-discharge relations; (2) daily discharge from New York City's three Delaware Basin reservoirs, measured with venturi meters; (3) precipitation reports for the previous 24 hours; (4) actual powerplant releases converted to daily discharges; (5) advance estimates of power demand converted to daily discharges; (6) advance estimates of uncontrolled runoff at Montague; and (7) average travel times for routing water from various sources. Although uncertainty is inherent in the advance estimates, this information is used by necessity in the daily design and direction of reservoir releases.

The 60-hour travel time of water from Pepacton Reservoir to Montague is greater than the travel time of water from any other reservoir in the upper Delaware River Basin. Releases from Cannonsville and Neversink Reservoirs were timed to arrive at Montague concurrently with releases from Pepacton Reservoir. To allow for differences in travel times, daily directed releases were scheduled to begin from Pepacton Reservoir at 1200 hours, from Cannonsville Reservoir at 2400 hours, and from Neversink Reservoir at 1500 hours the following day.

Releases from the City's reservoirs required to maintain the Montague flow objective were computed from forecasts of releases from Lake Wallenpaupack and Rio Reservoir, and estimates of uncontrolled runoff at Montague. To account for the travel times from these sources to Montague, the computation requires estimates of the following components of flow two or more days in advance: (1) release of water from Lake Wallenpaupack; (2) release of water from Rio Reservoir; and (3) uncontrolled runoff from the drainage area upstream of Montague. The River Master operations record for computing daily directed release requirements during periods of low flow is given in table 8.

The electric utilities furnished forecasts of power generation and releases. Because the hydroelectric plants were used chiefly for area regulation or meeting peak power demands, the forecasts were subject to various modifying factors including the vagaries of weather on electricity demand. In addition, because the power companies are members of regional transmission organizations, demand for power outside of the local service area may unexpectedly affect generation schedules. Consequently, at times, the actual use of water for power generation differs considerably from the forecasts used in the design of reservoir releases.

For computational purposes during periods of low flow, estimates of uncontrolled runoff at Montague were treated as two components: (1) current runoff and (2) forecasted increase in runoff from precipitation. Estimates of these components are given in table 8.

During ice-free conditions, current runoff was computed using a routing and recession procedure based on instantaneous discharges at 0800 hours at the following USGS gaging stations:

Station Name	Drainage Area (mi^2)
Beaver Kill at Cooks Falls, New York	241
Oquaga Creek at Deposit, New York	67.6
Equinunk Creek at Equinunk, Pennsylvania	56.3
Callicoon Creek at Callicoon, New York	110
Tenmile River at Tusten, New York	45.6
Lackawaxen River at Hawley, Pennsylvania	290
Shohola Creek near Shohola, Pennsylvania	83.6
Neversink River at Port Jervis, New York	336

During winter, the advance estimate of uncontrolled runoff (current conditions) was made on the basis of observed flows at a reduced network of gaging stations and the recession curve for computed uncontrolled flow at Montague.

The forecasted runoff from precipitation is shown in table 8 under the heading "Weather Adjustment." Throughout the year, the NWS office in Binghamton, New York, furnished quantitative forecasts of average precipitation and air temperatures for the 3,480 mi^2 drainage basin upstream of Montague, New Jersey. During winter, runoff was estimated on the basis of the current status of snow and ice, along with forecasted precipitation and temperature. During other periods, forecasted precipitation was used to estimate runoff.

The forecasted flow at Montague, exclusive of releases from New York City's reservoirs (table 8), is computed as the sum of forecasted releases from power reservoirs, estimated uncontrolled runoff including conservation releases from Rio Reservoir, and weather adjustments. If the computed total flow was less than the flow objective at Montague, then the deficiency was made up by releases from the City's reservoirs, as directed by the River Master.

When forecasts of precipitation or powerplant releases were revised appreciably after a release was directed, the release required from the City's reservoirs was recomputed. Commonly, this procedure resulted in a reduced release requirement for New York City reservoirs for that day. Only final figures for releases from New York City reservoirs are given in table 8.

Analysis of Forecasts

Forecasts of streamflow at Montague, developed on the basis of anticipated contributions from the components described previously but excluding releases from New York City's reservoirs, differed on most days from observed flow. Occasionally, variations in the components were partially compensating and observed flows compared favorably with forecasted flows.

The forecasted flow of the Delaware River at Montague, exclusive of releases from the New York City Delaware Basin reservoirs, was less than the flow objective on all days in August and September 2005. The following tabulation compares estimates of three components of flow at Montague with actual operations from August 1 to September 30.

Releases and Runoff	Forecasted flow [(ft^3/s)-d]	Actual flow [(ft^3/s)-d]
Power releases		
Lake Wallenpaupack	7,110	7,863
Rio Reservoir	64	308
Runoff from uncontrolled area	27,922	30,399

During August and September, actual releases from Lake Wallenpaupack averaged 10.6 percent more than forecasted releases, and actual and forecasted releases from Rio Reservoir were 0 ft^3/s on most days. Observed runoff from the uncontrolled area was about 8.9 percent more than forecasted runoff.

On any given day, forecasted releases and actual releases can differ considerably. The ranges of actual daily releases from August 1 to September 30, 2005, are as follows: daily releases at Lake Wallenpaupack differed from forecasted releases by 148 ft^3/s less to 776 ft^3/s more than forecasted releases, and daily releases at Rio Reservoir differed by 32 ft^3/s less to 103 ft^3/s more than forecasted releases. On the basis of observed flows at Montague, total directed releases from New York City's reservoirs during the report year were about 10 percent more than required for exact forecasting.

Comparison of hydrographs of forecasted daily runoff and computed daily runoff from the uncontrolled area (fig. 5) indicates that the forecasts generally were suitable for use in designing releases from New York City's Delaware Basin reservoirs. Numerical adjustments to the designs were made when needed to compensate for errors in the forecasts, but, because of travel times, the effects of the adjustments on flows at Montague were not evident until several days after the design date.

Analysis of the precipitation forecasts shows that the total precipitation amount forecasted for the 3-day design periods is reasonably accurate, but often the actual timing of precipitation events may be earlier or later than forecasted. The accuracy of the runoff forecasts is affected greatly by the timing of precipitation events. In addition, if the actual storm track differs from the forecasted track, the amount and timing of runoff can be substantially different than predicted.

Diversions to New York City Water Supply

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

Daily diversions during the report year from Pepacton, Cannonsville, and Neversink Reservoirs to the New York City water-supply system (Rondout Reservoir) are given in table 10. A running account of the average rates of combined diversions from the three reservoirs, computed as prescribed by the Decree, also

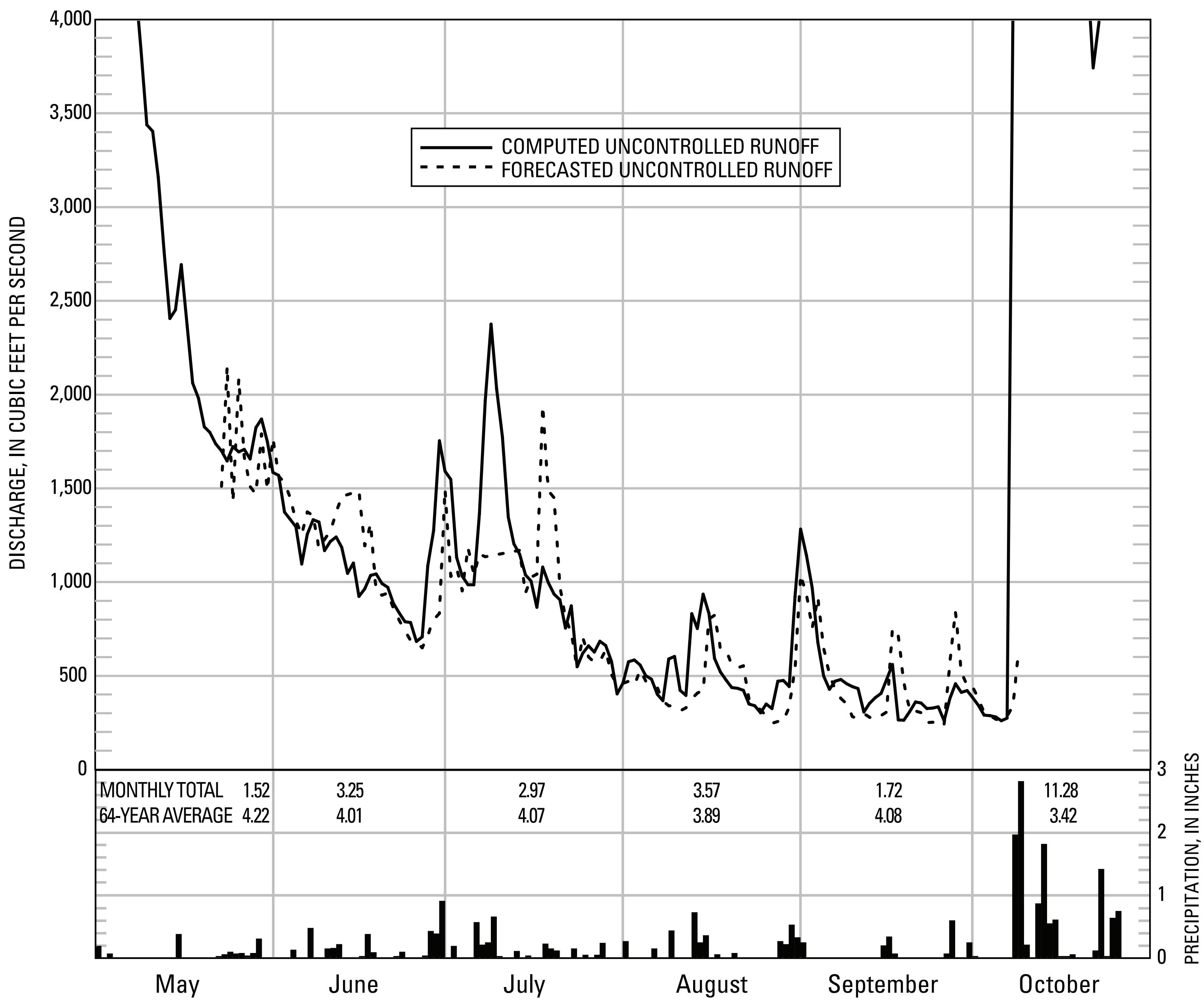

Figure 5. Uncontrolled runoff component, Delaware River at Montague, New Jersey, May 1 to October 31, 2005.

is shown. The following tabulation shows allowable maximum diversion rates and average actual diversions for various periods during the report year.

Effective dates	Allowable diversion (Mgal/d)	Average actual diversion (Mgal/d)
December 1, 2004, to May 31, 2005	800	503
June 1 to November 30, 2005	800	603

During the report year, a total of 198.823 Bgal of water was diverted to the New York City water-supply system. The allowable diversion was 343.280 Bgal.

Storage in New York City Reservoirs

The following tabulation summarizes the "point of maximum depletion" and other pertinent levels and contents of Pepacton, Cannonsville, and Neversink Reservoirs. This information was provided by the New York City Board of Water Supply.

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		1,020.50		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.

Daily storage in Pepacton, Cannonsville, and Neversink Reservoirs, above the "point of maximum depletion" or minimum full-operating level, is given in tables 3, 4, and 5.

On December 1, 2004, combined storage in the three reservoirs was 267.816 Bgal, or 98.9 percent of combined capacity. Combined storage remained high through winter and spring, declined seasonally until early October, then increased from early October to the end of November. The three reservoirs spilled a total of 257.887 Bgal during the year. Combined storage reached a maximum for the report year on April 3, 2005, at 288.588 Bgal. Combined storage was 206.391 Bgal, or 76.2 percent of combined capacity, on November 30, 2005.

Comparison of River Master Operations Data With Other Streamflow Records

River Master operations are conducted on a day-to-day basis and, by necessity, use preliminary data on streamflow. In this section, records used in River Master operations are compared to final data published for selected USGS gaging stations. Data on releases were reported in million gallons per day and converted to cubic feet per second for use in the comparisons.

Releases from New York City Reservoirs

River Master operations data on controlled releases from Pepacton, Cannonsville, and Neversink Reservoirs to the Delaware River were furnished by the New York City Department of Environmental Protection. These data were obtained from calibrated instruments connected to venturi meters installed in the outlet conduits of the reservoirs.

The USGS gaging station on East Branch Delaware River at Downsville, New York, is 0.5 mile downstream from Downsville Dam (fig. 1). Discharge measured at this station includes releases from Pepacton Reservoir and a small amount of seepage and any runoff that enters the channel between the dam and the gaging station. The drainage area is 371 mi^2 at the dam and 372 mi^2 at the gaging station.

The following tabulation compares releases from Pepacton Reservoir (table 9), reported by New York City, to the final records for the USGS gaging station on East Branch Delaware River at Downsville, New York (table 11), for the flow rates shown.

Flow rate (ft^3/s)	35	120–130	175–200	460–470	720–735
Number of USGS daily mean discharge values used in comparison	23	12	77	17	14
New York City-measured mean flow (ft^3/s)	35.6	124	189	464	729
USGS-computed mean flow (ft^3/s)	42.1	120	181	447	722
Percent difference	-15.4	+3.3	+4.4	+3.8	+1.0

The differences at the various flow rates show good agreement, except for the 35 ft^3/s flow rate, which showed a 15.4 percent difference. The instruments connected to the venturi meters were recalibrated periodically by New York City to improve the accuracy of the recorded flow data.

The USGS gaging station on West Branch Delaware River at Stilesville, New York, is 1.4 miles downstream from Cannonsville Dam (fig. 1). Discharge measured at this station includes releases from Cannonsville Reservoir and runoff from 2 mi^2 of drainage area between the dam and the gaging station. The drainage area is 454 mi^2 at the dam and 456 mi^2 at the gaging station. The gaging-station records are rated fair at flows greater than 100 ft^3/s and poor at flows less than 100 ft^3/s. A rating of “fair” means that about 95 percent of the daily discharges are within 15 percent of the true discharge, whereas a rating of “poor” means that daily discharges have less than “fair” accuracy. The records include runoff from the area between the dam and the gaging station, and seepage near the base of the dam.

The following tabulation compares releases from Cannonsville Reservoir (table 9), reported by New York City, to the final records for the USGS gaging station on West Branch Delaware River at Stilesville, New York (table 12), for the flow rates shown.

Flow rate (ft^3/s)	45	190–220	800–1200
Number of USGS daily mean discharge values used in comparison	34	20	53
New York City-measured mean flow (ft^3/s)	46.0	204	989
USGS-computed mean flow (ft^3/s)	47.1	201	999
Percent difference	-2.3	+1.5	-1.0

The USGS gaging station on Neversink River at Neversink, New York, is 1,650 ft downstream from Neversink Dam (fig. 1). Discharge measured at this station 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 is 92.5 mi^2 at the dam and 92.6 mi^2 at the gaging station.

The following tabulation compares releases from Neversink Reservoir (table 9), reported by New York City, to the final records for the USGS gaging station on Neversink River at Neversink, New York (table 13), for the flow rates shown.

Flow rate (ft^3/s)	25	100–125
Number of USGS daily mean discharge values used in comparison	89	74
New York City-measured mean flow (ft^3/s)	24.8	116
USGS-computed mean flow (ft^3/s)	27.9	116
Percent difference	-11.1	0.0

Releases from Lake Wallenpaupack

Records of daily discharge through the Wallenpaupack powerplant were furnished by the PPL Corporation and published by the USGS as Wallenpaupack Creek at Wilsonville, Pennsylvania (table 14). 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 a 24-hour basis beginning at 0800 hours to compensate for the 16-hour travel time to Montague, New Jersey (table 9).

From December 2004 to November 2005, the River Master's record generally agrees with the published USGS record except for some differences that result mainly from ice estimates and rounding of computations. Overall, the records agree to within 0.9 percent for the year.

Delaware River at Montague, New Jersey

The River Master's operations record for the Delaware River at Montague, New Jersey (table 9), showed 0.8 percent more discharge for the report year than the published USGS record for the gaging station (table 15). Daily values for the two records were in good agreement, except during ice-affected periods.

Diversion Tunnels

Records of diversions through the East Delaware, West Delaware, and Neversink Tunnels (fig. 1) were furnished by the New York City Department of Environmental Protection. These records were obtained from the City's calibrated instruments connected to venturi meters installed in the tunnel conduits. The measured flows were transmitted electronically on a 15-second interval to a City computer and, on 5-minute intervals, release and diversion quantities for the preceding 5-minute period were computed using the instantaneous rate-of-flow data from each instrument. These 5-minute quantities were then summed to compute daily total flows, which were reported to the River Master's office on a daily basis. On a weekly basis, the diversion figures were checked against the flow meter totalizer readings and corrected as necessary.

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 flow measurements during the report year because of high water levels in Rondout Reservoir.

The generating plant at the downstream end of the East Delaware Tunnel operated most days of the report year. When the powerplant was not in operation, some water leaked through the wicket gates and was not recorded on the totalizer. A current-meter measurement made in 1989 shows that the (assumed constant) rate of leakage is about 8.0 Mgal/d. Because the powerplant was not in operation for the equivalent of 110 days during the 2005 report year, the estimated quantity of unmeasured leakage was about 0.9 Bgal.

The West Delaware Tunnel is used to divert water from Cannonsville Reservoir to Rondout Reservoir. Inspections of the channel below the outlet, when valves were closed, revealed only negligible leakage. A hydroelectric powerplant uses water diverted through the West Delaware Tunnel, but the plant operates only when diversions are less than 300 Mgal/d. When the powerplant is not operating, the valves on the pipelines to the plant are closed, and there is no leakage through the system.

The Neversink Tunnel is used to divert water from Neversink Reservoir to Rondout Reservoir. A hydroelectric powerplant uses water diverted through the Neversink Tunnel. When the powerplant is not operating and the main valve on the diversion tunnel is open, leakage develops that is not recorded on the venturi instruments. One current-meter measurement made in 1999 showed a leakage rate of 16.2 ft^3/s (10.5 Mgal/d). When the powerplant is operating, the leakage is included in the recorded flow. No leakage occurs when the main valve on the tunnel is closed. During the 2005 report year, the powerplant operated part of the day on most days and was not operated the equivalent of 239 days. Using the leakage rate noted above and records of powerplant operation, about 2.5 Bgal of water was diverted but not recorded.

Diversions by New Jersey

The Amended Decree authorizes New Jersey to divert water from the Delaware River and its tributaries in New Jersey, to areas outside of the Delaware River Basin, without compensating releases. These diversions may not exceed 100 Mgal/d as a monthly average, and the daily mean diversion may not exceed 120 Mgal/d. The USGS gaging station on Delaware and Raritan Canal at Port Mercer, New Jersey (fig. 1), is used as the official control point for measuring diversions by New Jersey (table 16).

The following tabulation gives the allowable diversion by New Jersey, the period it was in effect, and the maximum monthly diversion during the report year.

Effective dates	Allowable monthly average diversion (Mgal/d)	Maximum monthly average diversion (Mgal/d)	Month of maximum average diversion
Dec. 1, 2004, to Nov. 30, 2005	100	96.5	August

The maximum daily mean diversion was 102 Mgal on February 6, 2005. Diversions by New Jersey did not exceed the limits prescribed by the Decree.

Conformance of Operations Under the Amended Decree of the U.S. Supreme Court Entered June 7, 1954

From December 1, 2004, to November 30, 2005, operations of the Delaware River Master were conducted as stipulated by the Decree.

Diversions from the Delaware River Basin to the New York City water-supply system did not exceed those authorized by 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 flow objectives at Montague, New Jersey. During the report year, New York City complied fully with all directives and requests of the River Master.

Diversions from the Delaware River Basin by New Jersey were within limits stipulated by the Decree. New Jersey complied fully with all directives and requests of the River Master.

Table 1. Precipitation in the Delaware River Basin above Montague, New Jersey.

[All values, except percentages, in inches]

Month	December 1940 to November 2004 Monthly Average	December 2004 to November 2005			
		Amount	Percent of Average	Excess (+) or Deficit (-)	
				Month	Cumulative
December	3.40	4.12	121	+.72	+.72
January	2.97	5.96	201	+2.99	+3.71
February	2.62	2.03	77	-.59	+3.12
March	3.34	4.66	140	+1.32	+4.44
April	3.72	5.78	155	+2.06	+6.50
May	4.22	1.52	36	-2.70	+3.80
June	4.01	3.25	81	-.76	+3.04
July	4.07	2.97	73	-1.10	+1.94
August	3.89	3.57	92	-.32	+1.62
September	4.08	1.72	42	-2.36	-.74
October	3.42	11.28	330	+7.86	+7.12
November	3.79	4.23	112	+.44	+7.56
12 months	43.53	51.09	117		

Table 2. Conservation release rates for New York City reservoirs in the Delaware River Basin. (Source: DRBC Docket No. D-77-20 CP (Revision 7))

[All values in cubic feet per second]

Reservoir	Effective dates	Conservation release rates			
		Normal	Watch	Warning	Drought
Pepacton	December 1 to November 30	35	30	25	19
Cannonsville	December 1 to May 31	45	38	32	23
	June 1 to August 31	60	51	43	23
	September 1 to November 30	45	38	32	23
Neversink	December 1 to November 30	25	21	18	15

Table 3. Storage in Pepacton Reservoir, New York, for year ending November 30, 2005.
(River Master daily operations record; gage reading at 0800 hours)

[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]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	137,200	141,005	138,590	135,801	141,598	140,838	134,192	123,893	113,371	96,993	80,795	98,537
2	139,583	140,709	138,369	135,475	142,230	140,727	133,995	123,669	112,909	96,552	80,220	99,244
3	140,820	140,560	138,058	135,185	147,082	140,653	133,797	123,548	112,448	96,008	79,645	99,877
4	141,319	140,746	137,839	134,895	144,626	140,542	133,581	123,187	111,890	95,448	79,046	100,481
5	141,375	140,820	137,583	134,534	143,163	140,468	133,366	122,895	111,431	94,936	78,437	100,978
6	141,357	140,764	137,291	134,210	142,435	140,375	133,132	122,929	110,925	94,381	77,829	101,476
7	141,282	140,764	137,036	133,923	142,080	140,282	132,952	122,670	110,387	93,842	77,588	101,976
8	141,338	140,653	136,781	133,599	141,894	140,153	132,719	122,515	109,835	93,259	77,655	102,148
9	141,301	140,727	136,544	133,473	141,802	140,061	132,486	122,515	109,299	92,769	78,640	102,257
10	141,301	140,634	136,199	133,294	141,617	139,951	132,272	122,275	108,733	92,219	79,128	102,476
11	142,043	140,505	135,873	133,024	141,431	139,767	132,004	122,104	108,088	91,658	79,277	102,790
12	142,174	140,542	135,584	132,755	141,301	139,510	131,737	121,762	107,508	91,291	79,332	102,900
13	141,969	140,542	135,475	132,486	141,227	139,271	131,487	121,368	107,124	90,849	79,947	103,026
14	141,801	142,976	135,348	132,111	140,857	138,977	131,202	121,009	106,612	90,292	81,278	103,073
15	141,616	143,536	135,439	131,862	140,616	138,866	130,741	120,565	106,148	89,855	82,469	103,199
16	141,394	142,547	135,873	131,648	140,412	138,682	130,369	120,157	105,605	89,374	83,625	103,183
17	141,245	142,043	136,363	131,434	140,282	138,535	130,014	119,699	105,114	88,864	84,425	104,177
18	141,208	141,764	136,763	131,184	140,080	138,186	129,625	119,308	104,526	88,273	85,046	105,048
19	141,079	141,486	136,726	130,865	139,914	138,040	129,201	118,867	103,956	87,756	85,526	105,784
20	140,987	141,412	136,599	130,599	139,712	137,875	128,761	118,427	103,436	87,166	85,867	106,356
21	140,894	141,190	136,436	130,351	139,675	137,564	128,286	117,938	102,916	86,594	86,137	106,868
22	140,709	140,894	136,417	130,049	139,638	137,218	127,811	117,433	102,398	85,995	86,408	107,300
23	140,542	140,820	136,381	129,837	139,455	136,908	127,302	116,964	101,882	85,385	87,466	107,782
24	141,876	140,727	136,309	129,731	139,785	136,599	126,848	116,478	101,320	84,791	89,024	108,152
25	141,727	140,672	136,127	129,483	140,412	136,218	126,307	116,261	100,745	84,201	90,350	108,363
26	141,431	140,616	136,000	129,501	140,709	135,928	125,731	116,194	100,156	83,611	92,694	108,568
27	141,227	140,153	136,000	129,589	140,820	135,584	125,279	115,725	99,552	83,094	94,141	108,911
28	140,987	139,583	135,982	129,908	141,134	135,258	124,759	115,260	98,952	82,483	95,357	109,251
29	141,079	139,161		133,653	141,134	134,986	124,291	114,762	98,399	81,871	96,370	109,770
30	141,098	139,013		138,021	140,968	134,768	124,170	114,246	97,862	81,319	97,176	112,037
31	141,042	138,829		140,283		134,408		113,865	97,434		97,877	
Change	+5,078	-2,213	-2,847	+4,301	+685	-6,560	-10,238	-10,305	-16,431	-16,115	+16,558	+14,160
Equiv. Mgal/d	+163.8	-71.4	-101.7	+138.7	+22.8	-211.6	-341.3	-332.4	-530.0	-537.2	+534.1	+472.0
Equiv. ft³/s	+253	-110	-157	+215	+35.3	-327	-528	-514	-820	-831	+826	+730

Change for year -23,927 Mgal | Equivalent for year -65.6 Mgal/d | Equivalent for year -101 ft^3/s

Table 4. Storage in Cannonsville Reservoir, New York, for year ending November 30, 2005.
(River Master daily operations record; gage reading at 0800 hours)

[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]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	99,392	97,830	96,543	96,398	101,275	98,040	91,766	80,585	76,398	50,823	29,292	39,779
2	100,276	97,701	96,350	96,350	101,033	97,991	91,492	80,488	75,610	50,356	28,532	40,483
3	99,987	97,621	96,221	96,237	105,085	97,927	91,218	80,460	74,865	49,737	27,851	41,312
4	99,666	97,878	96,141	96,173	106,654	97,830	90,884	80,432	74,133	48,926	26,932	41,953
5	99,311	98,023	96,076	96,060	105,016	97,685	90,488	80,446	73,411	48,158	26,192	42,499
6	98,490	98,056	95,899	95,931	101,548	97,573	89,986	80,543	72,510	47,480	25,502	43,025
7	98,072	98,104	95,786	95,786	100,470	97,460	89,545	80,654	71,517	46,735	24,890	43,588
8	98,426	98,120	95,615	95,931	99,890	97,347	89,211	81,149	70,563	45,979	24,626	44,188
9	98,458	98,120	95,432	96,125	99,392	97,251	88,739	81,683	69,649	45,145	24,805	44,700
10	98,345	97,959	95,615	96,044	99,006	97,170	88,298	82,088	68,656	44,411	24,958	45,378
11	99,295	97,814	96,173	96,092	98,651	96,880	87,782	82,319	67,742	43,722	25,018	46,312
12	99,954	97,830	96,092	96,044	98,313	96,495	87,320	82,405	66,923	43,109	25,068	47,002
13	99,842	98,120	96,237	96,044	98,088	96,173	86,872	82,492	66,070	42,373	25,510	47,647
14	99,601	100,325	96,334	96,028	97,911	95,835	86,626	82,521	65,192	41,575	26,056	48,203
15	99,022	102,675	96,719	96,269	97,766	95,569	86,279	82,579	64,606	40,913	26,618	48,792
16	98,458	101,902	97,315	96,125	97,605	95,311	85,976	82,492	63,892	40,461	27,238	49,516
17	98,040	100,792	98,023	96,044	97,476	95,144	85,730	82,477	63,128	39,610	27,698	51,173
18	97,846	99,938	98,345	95,931	97,395	94,946	85,514	82,477	62,339	38,727	28,046	53,051
19	97,766	99,134	97,830	95,803	97,267	94,747	85,296	82,463	61,473	37,896	28,337	54,463
20	97,524	98,571	97,653	95,803	97,186	94,611	85,007	82,434	60,671	37,044	28,541	55,616
21	97,428	98,394	97,412	95,835	97,106	94,322	84,675	82,333	59,779	36,231	28,680	56,580
22	97,395	98,023	97,106	95,770	97,073	94,063	84,212	82,175	58,802	35,400	28,801	57,460
23	97,170	97,862	97,186	95,819	97,025	93,851	83,764	81,669	57,826	34,577	29,283	58,387
24	98,394	97,766	96,945	95,931	97,315	93,653	83,215	81,308	56,898	33,834	30,618	59,206
25	99,102	97,637	96,832	95,931	97,814	93,410	82,507	81,091	56,092	33,102	31,628	59,853
26	98,989	97,589	96,752	95,980	97,911	93,211	81,856	80,599	55,200	32,685	33,507	60,378
27	98,716	97,540	96,687	96,108	97,878	92,998	81,423	80,060	54,183	32,249	35,083	60,842
28	98,458	97,428	96,527	96,478	98,104	92,786	81,062	79,562	53,225	31,582	36,370	61,333
29	98,249	97,235		99,569	98,168	92,512	80,640	78,926	52,304	30,933	37,381	62,046
30	98,152	96,929		101,774	98,136	92,284	80,571	78,001	51,651	30,191	38,275	63,867
31	97,798	96,735		101,597		92,040		77,365	51,208		39,054	
Change	-1,723	-1,063	-208	+5,070	-3,461	-6,096	-11,469	-3,206	-26,157	-21,017	+8,863	+24,813
Equiv. Mgal/d	-55.6	-34.3	-7.4	+163.5	-115.4	-196.6	-382.3	-103.4	-843.8	-700.6	+285.9	+827.1
Equiv. ft^3/s	-86.0	-53.0	-11.5	+253	-178	-304	-591	-160	-1,305	-1,084	+442	+1,280

Change for year -35,654 Mgal   Equivalent for year -97.7 Mgal/d   Equivalent for year -151 ft^3/s

Table 5. Storage in Neversink Reservoir, New York, for year ending November 30, 2005.
(River Master daily operations record; gage reading at 0800 hours)

[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]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	31,224	32,155	35,051	35,061	35,269	35,036	34,355	33,499	23,951	22,854	18,226	31,391
2	32,491	32,302	35,046	35,046	35,294	34,981	34,233	33,264	23,947	22,949	17,858	31,405
3	32,972	32,463	35,046	35,051	36,421	34,936	34,219	32,948	23,926	22,953	17,495	31,340
4	33,307	32,728	35,046	35,046	35,498	34,867	34,194	32,643	23,837	22,909	17,120	31,294
5	33,557	32,995	35,046	35,046	35,299	34,705	34,160	32,335	23,773	22,874	16,749	31,183
6	33,770	33,125	35,041	35,046	35,234	34,645	34,126	32,099	23,741	22,810	16,381	31,072
7	33,983	33,273	35,036	35,051	35,229	34,591	34,184	31,851	23,661	22,760	16,235	30,952
8	34,316	33,470	35,046	35,046	35,264	34,685	34,165	31,560	23,605	22,673	16,688	30,831
9	34,497	33,644	35,036	35,061	35,234	34,769	34,135	31,391	23,557	22,568	20,758	30,680
10	34,527	33,770	35,051	35,051	35,194	34,853	34,111	31,168	23,493	22,400	21,641	30,621
11	34,675	33,905	35,100	35,046	35,170	34,917	34,067	30,896	23,409	22,136	22,004	30,612
12	34,882	34,062	35,061	35,051	35,031	34,788	34,037	30,566	23,358	21,888	22,093	30,511
13	34,907	34,243	35,056	35,051	34,927	34,660	34,018	30,223	23,346	21,707	23,541	30,387
14	34,853	35,184	35,051	35,046	35,041	34,502	33,988	29,914	23,282	21,443	24,891	30,255
15	34,690	35,458	35,070	35,041	34,882	34,532	33,939	29,522	23,298	21,180	25,788	30,137
16	34,507	35,309	35,120	35,041	34,729	34,562	33,876	29,123	23,278	21,010	26,414	30,028
17	34,301	35,259	35,130	35,031	34,557	34,591	33,881	28,725	23,215	20,953	26,779	30,110
18	34,145	35,204	35,125	35,031	34,384	34,601	33,876	28,407	23,143	20,905	27,051	30,171
19	33,920	34,981	35,085	35,026	34,199	34,616	33,833	28,167	23,080	20,860	27,275	30,125
20	33,693	34,759	35,075	35,021	33,998	34,601	33,808	27,909	23,032	20,795	27,438	30,046
21	33,417	34,921	35,085	35,036	33,813	34,596	33,765	27,580	22,980	20,727	27,580	29,946
22	33,163	35,041	35,085	35,016	33,640	34,586	33,717	27,219	22,929	20,663	27,714	29,860
23	32,924	35,100	35,080	35,016	33,625	34,581	33,659	26,885	22,858	20,335	28,237	29,810
24	33,408	35,095	35,051	35,021	33,964	34,562	33,596	26,540	22,791	20,061	28,615	29,707
25	33,432	35,095	35,051	35,031	34,675	34,562	33,533	26,194	22,725	19,785	29,370	29,593
26	33,297	35,090	35,051	35,031	34,941	34,557	33,451	25,829	22,650	19,518	29,878	29,469
27	33,153	35,085	35,046	35,036	35,115	34,552	33,408	25,462	22,579	19,362	30,282	29,315
28	32,934	35,061	35,046	35,041	35,145	34,562	33,398	25,105	22,533	19,166	30,579	29,172
29	32,728	35,036		35,414	35,061	34,562	33,403	24,735	22,509	18,906	30,808	29,083
30	32,533	35,016		35,384	35,021	34,596	33,417	24,348	22,505	18,597	31,021	30,487
31	32,306	35,051		35,294		34,601		24,083	22,595		31,201	
Change	+1,456	+2,745	-5	+248	-273	-420	-1,184	-9,334	-1,488	-3,998	+12,604	-714
Equiv. Mgal/d	+47.0	+88.5	-0.2	+8.0	-9.1	-13.5	-39.5	-301.1	-48.0	-133.3	+406.6	-23.8
Equiv. ft^3/s	+72.7	+137	-0.3	+12.4	-14.1	-21.0	-61.1	-466	-74.3	-206	+629	-36.8

Change for year -363 Mgal   Equivalent for year -1.0 Mgal/d   Equivalent for year -1.5 ft^3/s

Table 6. Design rates for Delaware River at Montague, New Jersey, gaging station, December 1, 2004, to November 30, 2005.

[Rates in cubic feet per second]

Effective Dates	Montague Design Rate
December 1, 2004, to March 14, 2005	1,820
March 15 to June 14, 2005	1,750
June 15 to July 22, 2005	1,800
July 23 to November 3, 2005	1,750
November 4 to November 19, 2005	1,800
November 20 to November 30, 2005	1,750

Table 7. Consumption of water by New York City, 1950 to 2005.
(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 (Bgal)
	City Proper (Mgal/d)	Outside Communities (Mgal/d)	Total (Mgal/d)	
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
96	1,283.5	120.2	1,403.7	512.351
97	1,201.3	123.5	1,324.8	483.552
98	1,220.0	124.7	1,344.7	490.816
99	1,237.2	128.6	1,365.8	498.517
2000	1,240.4	124.9	1,365.3	499.700
01	1,184.0	128.4	1,312.4	479.026
02	1,135.6	121.1	1,256.7	458.696
03	1,093.7	115.9	1,209.6	441.516
04	1,099.6	117.5	1,217.1	445.461
2005	1,107.6	123.8	1,231.4	449.462

Table 8. 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; Col., Column]

Advance estimate of discharge of Delaware River at Montague, New Jersey, exclusive of New York City reservoir releases										Computation of balancing adjustment					
Date of advance estimate	Powerplant release forecasts		Uncontrolled runoff		Montague date	Discharge (ft^3/s)	Indicated deficiency	Balancing adjustment (ft^3/s)	Directed release (ft^3/s)	Adjusted directed release		Actual deficiency		Cumulative difference (ft^3/s)-d	Balancing adjustment (ft^3/s)
	Lake Wallenpaupack (ft^3/s)	Rio Reservoir (ft^3/s)	Current condition (ft^3/s)	Weather adjustment (ft^3/s)						Daily (ft^3/s)	Cumulative (ft^3/s)-d	Daily (ft^3/s)	Cumulative (ft^3/s)-d		
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13	Col. 14
MONTAGUE DESIGN RATE = 1,820 (ft^3/s) DECEMBER 1, 2004, to MARCH 14, 2005															
The estimated Montague discharge was greater than the Montague design rate from December 1, 2004, to March 14, 2005															
MONTAGUE DESIGN RATE = 1,750 (ft^3/s) MARCH 15, 2005, to JUNE 14, 2005															
The estimated Montague discharge was greater than the Montague design rate from March 15, 2005, to May 22, 2005															
May 20	0	0	1,500	10	May 23	1,510	240	--	240	240	240	50	63	+177	-18
21	0	35	1,420	730	24	2,185	0	--	0	0	240	0	63	+177	-18
22	0	35	1,375	55	25	1,465	285	--	285	285	525	28	91	+434	-43
23	0	53	1,325	760	26	2,138	0	+1	0	0	525	0	91	+434	-43
24	0	0	1,450	219	27	1,669	81	-18	63	63	588	25	116	+472	-47
25	0	0	1,420	89	28	1,509	241	-18	223	223	811	59	175	+636	-50
26	0	0	1,450	20	29	1,470	280	-43	237	237	1,048	0	175	+873	-50
27	0	0	1,450	340	30	1,790	0	-43	0	0	1,048	0	175	+873	-50
28	0	0	1,450	43	31	1,493	257	-47	210	210	1,258	1	176	+1,082	-50

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 quantitative precipitation forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Col. 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 9.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 9), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by -10, limited to ±50.

Table 8. 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; Col., Column]

Advance estimate of discharge of Delaware River at Montague, New Jersey, exclusive of New York City reservoir releases										Computation of balancing adjustment					
Date of advance estimate	Powerplant release forecasts		Uncontrolled runoff		Montague date	Discharge (ft^3/s)	Indicated deficiency	Balancing adjustment (ft^3/s)	Directed release (ft^3/s)	Adjusted directed release		Actual deficiency		Cumulative difference (ft^3/s)-d	Balancing adjustment (ft^3/s)
	Lake Wallenpaupack (ft^3/s)	Rio Reservoir (ft^3/s)	Current condition (ft^3/s)	Weather adjustment (ft^3/s)						Daily (ft^3/s)	Cumulative (ft^3/s)-d	Daily (ft^3/s)	Cumulative (ft^3/s)-d		
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13	Col. 14
May 29	0	0	1,450	316	June 1	1,766	0	-50	0	0	1,258	165	341	+917	-50
30	0	0	1,550	15	2	1,565	185	-50	135	135	1,393	181	522	+871	-50
31	0	0	1,500	30	3	1,530	220	-50	170	170	1,563	345	867	+696	-50
June 1	0	0	1,450	0	4	1,450	300	-50	250	250	1,813	415	1,282	+531	-50
2	0	0	1,250	78	5	1,328	422	-50	372	372	2,185	456	1,738	+447	-45
3	0	0	1,250	3	6	1,253	497	-50	447	447	2,632	654	2,392	+240	-24
4	0	0	1,250	124	7	1,374	376	-50	326	326	2,958	495	2,887	+71	-7
5	0	0	1,250	105	8	1,355	395	-50	345	345	3,303	59	2,946	+357	-36
6	0	0	1,000	179	9	1,179	571	-45	526	526	3,829	26	2,972	+857	-50
7	0	0	1,200	27	10	1,227	523	-24	499	499	4,328	0	2,972	+1,356	-50
8	0	383	1,200	71	11	1,654	96	-7	89	89	4,417	0	2,972	+1,445	-50
9	0	383	1,200	172	12	1,755	0	-36	0	0	4,417	122	3,094	+1,323	-50
10	0	383	1,300	157	13	1,840	0	-50	0	0	4,417	174	3,268	+1,149	-50
11	371	383	1,200	162	14	2,116	0	-50	0	0	4,417	0	3,268	+1,149	-50
MONTAGUE DESIGN RATE = 1,800 (ft^3/s) JUNE 15, 2005, to JULY 22, 2005.															
12	371	383	1,100	345	15	2,199	0	--	0	0	0	0	0	0	0
13	371	383	1,200	285	16	2,239	0	--	0	0	0	84	84	-84	+8
14	371	383	1,150	43	17	1,947	0	--	0	0	0	3	87	-87	+9
15	239	383	1,100	211	18	1,933	0	--	0	0	0	108	195	-195	+20
16	0	383	760	190	19	1,333	467	0	467	467	467	369	564	-97	+10
17	0	383	915	15	20	1,313	487	+8	495	496	963	406	970	-7	+1
18	371	383	942	0	21	1,696	104	+9	113	113	1,076	32	1,002	+74	-7
19	371	383	856	3	22	1,613	187	+20	207	207	1,283	0	1,002	+281	-28
20	371	0	796	0	23	1,167	633	+10	643	644	1,927	484	1,486	+441	-44
21	371	0	728	15	24	1,114	686	+1	687	688	2,615	498	1,984	+631	-50
22	371	0	688	0	25	1,059	741	-7	734	729	3,344	609	2,593	+751	-50
23	0	0	678	5	26	683	1,117	-28	1,089	1,087	4,431	1,117	3,710	+721	-50
24	0	0	637	13	27	650	1,150	-44	1,106	1,097	5,528	1,047	4,757	+771	-50
25	449	0	637	79	28	1,165	635	-50	585	585	6,113	56	4,813	+1,300	-50
26	449	0	612	188	29	1,249	551	-50	501	501	6,614	0	4,813	+1,801	-50
27	449	0	559	274	30	1,282	518	-50	468	468	7,082	0	4,813	+2,269	-50

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 quantitative precipitation forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Col. 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 9.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 9), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by -10, limited to ±50.

Table 8. New York City reservoir release design data—Continued.
(River Master daily operation record)

[ft³/s, cubic feet per second; (ft³/s)-d, cubic feet per second days; Col., Column]

Advance estimate of discharge of Delaware River at Montague, New Jersey, exclusive of New York City reservoir releases										Computation of balancing adjustment					
Date of advance estimate	Powerplant release forecasts		Uncontrolled runoff		Montague date	Discharge (ft³/s)	Indicated deficiency	Balancing adjustment (ft³/s)	Directed release (ft³/s)	Adjusted directed release		Actual deficiency		Cumulative difference (ft³/s)-d	Balancing adjustment (ft³/s)
	Lake Wallenpaupack (ft³/s)	Rio Reservoir (ft³/s)	Current condition (ft³/s)	Weather adjustment (ft³/s)						Daily (ft³/s)	Cumulative (ft³/s)-d	Daily (ft³/s)	Cumulative (ft³/s)-d		
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13	Col. 14
June 28	449	0	591	902	July 1	1,942	0	-50	0	0	7,082	0	4,813	+2,269	-50
29	449	0	626	404	2	1,479	321	-50	271	271	7,353	0	4,813	+2,540	-50
30	0	0	889	187	3	1,076	724	-50	674	679	8,032	669	5,482	+2,550	-50
July 1	0	0	890	63	4	953	847	-50	797	798	8,830	768	6,250	+2,580	-50
2	0	0	1,184	0	5	1,184	616	-50	566	559	9,389	769	7,019	+2,370	-50
3	384	0	1,007	33	6	1,424	376	-50	326	326	9,715	248	7,267	+2,448	-50
4	384	0	856	294	7	1,534	266	-50	216	216	9,931	0	7,267	+2,664	-50
5	384	0	653	483	8	1,520	280	-50	230	230	10,161	0	7,267	+2,894	-50
The estimated Montague discharge was greater than the Montague design rate from July 9, 2005 to July 13, 2005.															
11	384	0	1,143	26	14	1,553	247	-50	197	197	10,358	17	7,284	+3,074	-50
12	384	0	941	0	15	1,325	475	-50	425	425	10,783	33	7,317	+3,466	-50
13	455	0	932	93	16	1,480	320	-50	270	270	11,053	13	7,330	+3,723	-50
14	0	0	871	171	17	1,042	758	-50	708	705	11,758	935	8,265	+3,493	-50
15	0	0	799	1,140	18	1,939	0	-50	0	0	11,758	687	8,952	+2,806	-50
16	513	0	755	731	19	1,999	0	-50	0	0	11,758	33	8,985	+2,773	-50
17	513	0	742	708	20	1,963	0	-50	0	0	11,758	18	9,003	+2,775	-50
18	513	0	780	201	21	1,494	306	-50	256	256	12,014	324	9,327	+2,687	-50
19	513	0	777	30	22	1,320	480	-50	430	430	12,444	318	9,645	+2,799	-50
MONTAGUE DESIGN RATE = 1,750 (ft³/s) JULY 23, 2005, to NOVEMBER 3, 2005															
20	585	0	732	0	23	1,317	433	--	433	Balancing adjustment suspended					--
21	0	0	531	6	24	537	1,213		1,213						
22	0	0	634	75	25	709	1,041		1,041						
23	385	60	586	15	26	1,046	704		704						
24	385	14	552	21	27	972	778		778						
25	385	0	514	64	28	963	787		787						
26	385	0	492	145	29	1,022	728		728						
27	475	0	472	34	30	981	769		769						
28	0	0	453	0	31	453	1,297		1,297						

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 quantitative precipitation forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Col. 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 9.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 9), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by -10, limited to ±50.

Table 8. New York City reservoir release design data—Continued.
(River Master daily operation record)

[ft³/s, cubic feet per second; (ft³/s)-d, cubic feet per second days; Col., Column]

Advance estimate of discharge of Delaware River at Montague, New Jersey, exclusive of New York City reservoir releases										Computation of balancing adjustment					
Date of advance estimate	Powerplant release forecasts		Uncontrolled runoff		Montague date	Discharge (ft³/s)	Indicated deficiency	Balancing adjustment (ft³/s)	Directed release (ft³/s)	Adjusted directed release		Actual deficiency		Cumulative difference (ft³/s)-d	Balancing adjustment (ft³/s)
	Lake Wallenpaupack (ft³/s)	Rio Reservoir (ft³/s)	Current condition (ft³/s)	Weather adjustment (ft³/s)						Daily (ft³/s)	Cumulative (ft³/s)-d	Daily (ft³/s)	Cumulative (ft³/s)-d		
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13	Col. 14
July 29	0	0	459	0	Aug. 1	459	1,291		1,291						
30	193	0	455	16	2	664	1,086		1,086						
31	193	0	427	23	3	643	1,107		1,107						
Aug. 1	193	0	496	34	4	723	1,027		1,027						
2	193	0	466	6	5	665	1,085		1,085						
3	328	0	431	38	6	797	953		953						
4	0	0	414	23	7	437	1,313		1,313						
5	0	0	357	8	8	365	1,385		1,385						
6	0	0	333	7	9	340	1,410		1,410						
7	0	0	275	65	10	340	1,410		1,410						
8	0	0	274	39	11	313	1,437		1,437						
9	113	0	308	21	12	442	1,308		1,308						
10	353	0	377	3	13	733	1,017		1,017						
11	0	0	388	20	14	408	1,342		1,342						
12	0	0	366	57	15	423	1,327		1,327						
13	0	0	465	338	16	803	947		947						
14	0	0	658	166	17	824	926		926						
15	0	0	648	0	18	648	1,102		1,102						
16	0	0	634	0	19	634	1,116		1,116						
17	0	0	560	2	20	562	1,188		1,188						
18	0	0	472	69	21	541	1,209		1,209						
19	0	0	382	172	22	554	1,196		1,196						
20	0	0	344	32	23	376	1,374		1,374						
21	0	0	339	0	24	339	1,411		1,411						
22	0	0	319	0	25	319	1,431		1,431						
23	321	0	286	0	26	607	1,143		1,143						
24	321	0	247	0	27	568	1,182		1,182						
25	0	0	255	1	28	256	1,494		1,494						
26	0	0	240	21	29	261	1,489		1,489						
27	0	0	228	107	30	335	1,415		1,415						
28	0	0	257	284	31	541	1,209		1,209						

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 quantitative precipitation forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Col. 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 9.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 9), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by -10, limited to ±50.

Table 8. 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; Col., Column]

Advance estimate of discharge of Delaware River at Montague, New Jersey, exclusive of New York City reservoir releases										Computation of balancing adjustment					
Date of advance estimate	Powerplant release forecasts		Uncontrolled runoff		Montague date	Discharge (ft^3/s)	Indicated deficiency	Balancing adjustment (ft^3/s)	Directed release (ft^3/s)	Adjusted directed release		Actual deficiency		Cumulative difference (ft^3/s)-d	Balancing adjustment (ft^3/s)
	Lake Wallenpaupack (ft^3/s)	Rio Reservoir (ft^3/s)	Current condition (ft^3/s)	Weather adjustment (ft^3/s)						Daily (ft^3/s)	Cumulative (ft^3/s)-d	Daily (ft^3/s)	Cumulative (ft^3/s)-d		
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13	Col. 14
Aug. 29	0	32	372	667	Sept. 1	1,071	679		679						
30	353	32	387	548	2	1,320	430		430						
31	353	0	723	32	3	1,108	642		642						
Sept. 1	0	0	918	0	4	918	832		832						
2	0	0	650	0	5	650	1,100		1,100						
3	0	0	508	0	6	508	1,242		1,242						
4	353	0	426	0	7	779	971		971						
5	353	0	380	0	8	733	1,017		1,017						
6	353	0	350	0	9	703	1,047		1,047						
7	353	0	271	12	10	636	1,114		1,114						
8	248	0	260	9	11	517	1,233		1,233						
9	0	0	298	0	12	298	1,452		1,452						
10	213	0	280	0	13	493	1,257		1,257						
11	213	0	267	0	14	480	1,270		1,270						
12	213	0	267	22	15	502	1,248		1,248						
13	257	0	270	36	16	563	1,187		1,187						
14	257	0	245	511	17	1,013	737		737						
15	0	0	273	442	18	715	1,035		1,035						
16	0	0	274	189	19	463	1,287		1,287						
17	227	0	311	6	20	544	1,206		1,206						
18	227	0	301	12	21	540	1,210		1,210						
19	227	0	269	35	22	531	1,219		1,219						
20	227	0	245	6	23	478	1,272		1,272						
21	227	0	253	0	24	480	1,270		1,270						
22	248	0	259	3	25	510	1,240		1,240						
23	0	0	237	1	26	238	1,512		1,512						
24	0	0	233	342	27	575	1,175		1,175						
25	0	0	235	607	28	842	908		908						
26	0	0	230	291	29	521	1,229		1,229						
27	0	0	365	82	30	447	1,303		1,303						

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 quantitative precipitation forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Col. 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 9.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 9), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by -10, limited to ±50.

Table 8. New York City reservoir release design data—Continued.
(River Master daily operation record)

[ft³/s, cubic feet per second; (ft³/s)-d, cubic feet per second days; Col., Column]

Advance estimate of discharge of Delaware River at Montague, New Jersey, exclusive of New York City reservoir releases										Computation of balancing adjustment					
Date of advance estimate	Powerplant release forecasts		Uncontrolled runoff		Montague date	Discharge (ft³/s)	Indicated deficiency	Balancing adjustment (ft³/s)	Directed release (ft³/s)	Adjusted directed release		Actual deficiency		Cumulative difference (ft³/s)-d	Balancing adjustment (ft³/s)
	Lake Wallenpaupack (ft³/s)	Rio Reservoir (ft³/s)	Current condition (ft³/s)	Weather adjustment (ft³/s)						Daily (ft³/s)	Cumulative (ft³/s)-d	Daily (ft³/s)	Cumulative (ft³/s)-d		
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13	Col. 14
Sept. 28	0	0	312	130	Oct. 1	442	1,308	1,308							
29	0	0	276	98	2	374	1,376	1,376							
30	0	0	304	0	3	304	1,446	1,446							
Oct. 1	0	0	287	0	4	287	1,463	1,463							
2	0	0	269	0	5	269	1,481	1,481							
3	0	0	260	0	6	260	1,490	1,490							
4	0	0	257	27	7	284	1,466	1,466							
5	0	0	235	104	8	339	1,411	1,411							
6	0	0	244	390	9	634	1,116	1,116							

The estimated Montague discharge was greater than the Montague design rate from October 10, 2005, to November 3, 2005.

MONTAGUE DESIGN RATE = 1,800 (ft³/s) NOVEMBER 4, 2005, to NOVEMBER 19, 2005.
The estimated Montague discharge was greater than the Montague design rate from November 4, 2005, to November 19, 2005.

MONTAGUE DESIGN RATE = 1,750 (ft³/s) NOVEMBER 20, 2005, to NOVEMBER 30, 2005.
The estimated Montague discharge was greater than the Montague design rate from November 20, 2005, to November 30, 2005.

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 quantitative precipitation forecasts.
Col. 5 = Col. 1 + Col. 2 + Col. 3 + Col. 4.
Col. 6 = Design rate - Col. 5, when positive; otherwise Col. 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 9.
Col. 10 = Summation of Col. 9.
Col. 11 = Design rate - (Col. 9 + Col. 10 from Table 9), when positive; otherwise Col. 11 = 0.
Col. 12 = Summation of Col. 11.
Col. 13 = Col. 10 - Col. 12.
Col. 14 = Col. 13 divided by -10, limited to ±50.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs: Directed, Date 2004	Directed, Amount, Col. 1	Pepacton, Col. 2	Cannonsville, Col. 3	Neversink, Col. 4	Controlled Releases from Power Reservoirs: Date 2004	Lake Wallenpaupack, Col. 5	Rio Reservoir, Col. 6	Segregation of Flow, Delaware River at Montague, New Jersey: Date 2004	Controlled Releases, New York City Reservoirs, Directed, Col. 7	Controlled Releases, New York City Reservoirs, Other, Col. 8	Controlled Releases, Powerplants, Col. 9	Computed uncontrolled, Col. 10	Total, Col. 11	Excess Release Credits, Daily, Col. 12	Excess Release Credits, Cumul., Col. 13
Nov. 28	0	36	46	25	Nov. 30	1,159	504	Dec. 1	0	107	1,663	16,930	18,700	0	5,209
29	0	37	46	25	Dec. 1	1,159	1,567	2	0	108	2,726	23,966	26,800	0	5,209
30	0	37	46	25	2	1,148	1,195	3	0	108	2,343	16,949	19,400	0	5,209
Dec. 1	0	36	46	25	3	1,235	691	4	0	107	1,926	13,667	15,700	0	5,209
2	0	36	46	25	4	1,107	713	5	0	107	1,820	11,673	13,600	0	5,209
3	0	36	46	25	5	1,090	418	6	0	107	1,508	10,485	12,100	0	5,209
4	0	36	46	25	6	1,092	418	7	0	107	1,510	9,383	11,000	0	5,209
5	0	36	46	25	7	1,157	511	8	0	107	1,668	10,625	12,400	0	5,209
6	0	36	46	25	8	1,094	591	9	0	107	1,685	10,908	12,700	0	5,209
7	0	36	46	25	9	1,045	475	10	0	107	1,520	11,873	13,500	0	5,209
8	0	36	46	25	10	764	780	11	0	107	1,544	20,949	22,600	0	5,209
9	0	36	46	25	11	775	809	12	0	107	1,584	21,109	22,800	0	5,209
10	0	36	46	25	12	1,035	674	13	0	107	1,709	17,184	19,000	0	5,209
11	0	36	46	25	13	1,102	670	14	0	107	1,772	14,321	16,200	0	5,209
12	0	36	45	25	14	1,081	770	15	0	106	1,851	11,643	13,600	0	5,209
13	0	36	45	25	15	1,118	1,167	16	0	106	2,285	9,609	12,000	0	5,209
14	0	36	45	25	16	1,266	1,089	17	0	106	2,355	8,339	10,800	0	5,209
15	0	36	45	25	17	757	794	18	0	106	1,551	7,593	9,250	0	5,209
16	0	36	45	25	18	677	426	19	0	106	1,103	7,251	8,460	0	5,209
17	0	36	45	25	19	1,182	433	20	0	106	1,615	6,269	7,990	0	5,209
18	0	36	45	28	20	530	142	21	0	109	672	5,859	6,640	0	5,209
19	0	36	45	40	21	688	230	22	0	121	918	5,191	6,230	0	5,209
20	0	36	45	25	22	570	223	23	0	106	793	5,681	6,580	0	5,209
21	0	36	45	25	23	745	426	24	0	106	1,171	14,523	15,800	0	5,209
22	0	36	45	25	24	504	426	25	0	106	930	14,564	15,600	0	5,209
23	0	36	45	25	25	545	426	26	0	106	971	11,423	12,500	0	5,209
24	0	36	45	25	26	827	426	27	0	106	1,253	9,641	11,000	0	5,209
25	0	36	45	25	27	1,088	426	28	0	106	1,514	8,680	10,300	0	5,209
26	0	36	45	25	28	885	426	29	0	106	1,311	7,513	8,930	0	5,209
27	0	36	45	25	29	922	418	30	0	106	1,340	7,064	8,510	0	5,209
28	0	36	45	25	30	845	418	31	0	106	1,263	6,621	7,990	0	5,209
Total	0	1,118	1,409	793		29,192	18,682		0	3,320	47,874	357,486	408,690		

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 direction (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 arithmetically, but not greater than Col. 7; except that part of Col. 8 contributing to the excess-release increment of Col. 11.
Col. 13 = Summation of Col. 12.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey							
Directed		Pepac-ton	Cannons-ville	Never-sink	Date	Lake Wallenpau-pack	Rio Reservoir	Date	Controlled Releases			Computed uncon-trolled	Total	Excess Release Credits	
									New York City Reservoirs		Power-plants				
Date	Amount								Directed	Other				Daily	Cumul.
2004/2005	Col. 1	Col. 2	Col. 3	Col. 4	2004/2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13
Dec. 29	0	36	45	25	Dec. 31	631	418	Jan. 1	0	106	1,049	6,425	7,580	0	5,209
30	0	36	45	25	Jan. 1	597	418	2	0	106	1,015	6,319	7,440	0	5,209
31	0	36	45	25	2	596	411	3	0	106	1,007	5,757	6,870	0	5,209
Jan. 1	0	36	45	25	3	331	227	4	0	106	558	9,326	9,990	0	5,209
2	0	36	45	25	4	374	429	5	0	106	803	11,091	12,000	0	5,209
3	0	36	45	25	5	616	631	6	0	106	1,247	9,847	11,200	0	5,209
4	0	36	45	25	6	648	794	7	0	106	1,442	9,352	10,900	0	5,209
5	0	36	45	25	7	965	436	8	0	106	1,401	8,693	10,200	0	5,209
6	0	36	45	25	8	907	436	9	0	106	1,343	9,051	10,500	0	5,209
7	0	36	45	25	9	926	447	10	0	106	1,373	8,221	9,700	0	5,209
8	0	36	45	25	10	1,060	482	11	0	106	1,542	7,672	9,320	0	5,209
9	0	36	45	25	11	1,107	436	12	0	106	1,543	7,291	8,940	0	5,209
10	0	36	45	25	12	1,032	436	13	0	106	1,468	7,506	9,080	0	5,209
11	0	36	45	25	13	1,085	1,121	14	0	106	2,206	30,588	32,900	0	5,209
12	0	36	45	25	14	1,071	2,099	15	0	106	3,170	52,024	55,300	0	5,209
13	0	36	45	25	15	972	1,550	16	0	106	2,522	31,072	33,700	0	5,209
14	0	36	45	25	16	1,178	936	17	0	106	2,114	22,180	24,400	0	5,209
15	0	36	45	25	17	1,338	858	18	0	106	2,196	16,698	19,000	0	5,209
16	0	36	45	25	18	1,302	915	19	0	106	2,217	13,977	16,300	0	5,209
17	0	36	45	25	19	1,382	727	20	0	106	2,109	12,185	14,400	0	5,209
18	0	36	45	25	20	1,335	681	21	0	106	2,016	10,478	12,600	0	5,209
19	0	36	45	25	21	1,322	596	22	0	106	1,918	8,976	11,000	0	5,209
20	0	36	45	25	22	1,447	372	23	0	106	1,819	7,765	9,690	0	5,209
21	0	36	45	25	23	1,475	514	24	0	106	1,989	7,035	9,130	0	5,209
22	0	36	45	25	24	1,404	518	25	0	106	1,922	6,742	8,770	0	5,209
23	0	36	45	25	25	1,309	475	26	0	106	1,784	6,230	8,120	0	5,209
24	0	36	45	25	26	1,316	447	27	0	106	1,763	6,161	8,030	0	5,209
25	0	50	45	25	27	1,339	426	28	0	120	1,765	5,815	7,700	0	5,209
26	0	648	45	25	28	1,454	426	29	0	718	1,880	4,902	7,500	0	5,209
27	0	733	45	25	29	1,417	372	30	0	803	1,789	4,508	7,100	0	5,209
28	0	733	45	25	30	1,233	0	31	0	803	1,233	4,514	6,550	0	5,209
Total	0	3,136	1,395	775		33,169	19,034		0	5,306	52,203	358,401	415,910		

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 direction (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 arithmetically, but not greater than Col. 7; except that part of Col. 8 contributing to the excess-release increment of Col. 11.
Col. 13 = Summation of Col. 12.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey							
Directed		Pepac-ton	Cannons-ville	Never-sink	Date	Lake Wallenpau-pack	Rio Reservoir	Date	Controlled Releases			Computed uncon-trolled	Total	Excess Release Credits	
									New York City Reservoirs		Power-plants				
Date 2005	Amount								Directed	Other				Daily	Cumul.
	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13
Jan. 29	0	732	45	25	Jan. 31	771	0	Feb. 1	0	802	771	4,097	5,670	0	5,209
30	0	732	45	25	Feb. 1	729	301	2	0	802	1,030	3,658	5,490	0	5,209
31	0	730	45	25	2	615	355	3	0	800	970	3,570	5,340	0	5,209
Feb. 1	0	730	45	25	3	807	426	4	0	800	1,233	3,267	5,300	0	5,209
2	0	730	45	25	4	623	89	5	0	800	712	3,228	4,740	0	5,209
3	0	730	82	25	5	373	85	6	0	837	458	3,095	4,390	0	5,209
4	0	729	107	25	6	498	280	7	0	861	778	3,031	4,670	0	5,209
5	0	736	149	25	7	451	0	8	0	910	451	3,109	4,470	0	5,209
6	0	727	170	25	8	440	11	9	0	922	451	3,177	4,550	0	5,209
7	0	726	181	25	9	533	226	10	0	932	759	4,219	5,910	0	5,209
8	0	724	181	25	10	536	287	11	0	930	823	6,107	7,860	0	5,209
9	0	722	135	25	11	510	135	12	0	882	645	5,113	6,640	0	5,209
10	0	722	93	25	12	0	99	13	0	840	99	4,401	5,340	0	5,209
11	0	269	68	25	13	9	184	14	0	362	193	4,175	4,730	0	5,209
12	0	74	46	25	14	284	372	15	0	145	656	5,469	6,270	0	5,209
13	0	56	48	25	15	323	202	16	0	129	525	8,946	9,600	0	5,209
14	0	51	46	25	16	261	167	17	0	122	428	10,950	11,500	0	5,209
15	0	36	45	25	17	329	174	18	0	106	503	9,991	10,600	0	5,209
16	0	36	46	25	18	261	223	19	0	107	484	8,269	8,860	0	5,209
17	0	62	46	25	19	0	489	20	0	133	489	7,638	8,260	0	5,209
18	0	463	46	25	20	0	256	21	0	534	256	6,700	7,490	0	5,209
19	0	463	46	25	21	1	404	22	0	534	405	6,061	7,000	0	5,209
20	0	334	46	25	22	667	305	23	0	405	972	5,563	6,940	0	5,209
21	0	164	45	25	23	829	174	24	0	234	1,003	5,083	6,320	0	5,209
22	0	54	45	25	24	570	277	25	0	124	847	4,629	5,600	0	5,209
23	0	110	45	25	25	537	326	26	0	180	863	4,207	5,250	0	5,209
24	0	272	45	25	26	501	326	27	0	342	827	3,941	5,110	0	5,209
25	0	452	45	25	27	592	291	28	0	522	883	3,875	5,280	0	5,209
Total	0	12,366	2,031	700		12,050	6,464		0	15,097	18,514	145,569	179,180		

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 direction (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 arithmetically, but not greater than Col. 7; except that part of Col. 8 contributing to the excess-release increment of Col. 11.
Col. 13 = Summation of Col. 12.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey							
Directed		Pepacton	Cannonsville	Neversink	Date	Lake Wallenpaupack	Rio Reservoir	Date	Controlled Releases			Computed uncontrolled	Total	Excess Release Credits	
									New York City Reservoirs		Powerplants				
Date	Amount								Directed	Other				Daily	Cumul.
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13
Feb. 26	0	464	45	25	Feb. 28	544	287	Mar. 1	0	534	831	3,675	5,040	0	5,209
27	0	464	45	25	Mar. 1	696	287	2	0	534	983	3,523	5,040	0	5,209
28	0	463	45	25	2	701	309	3	0	533	1,010	3,427	4,970	0	5,209
Mar. 1	0	463	45	25	3	531	305	4	0	533	836	3,051	4,420	0	5,209
2	0	464	45	25	4	691	117	5	0	534	808	3,018	4,360	0	5,209
3	0	464	79	25	5	430	71	6	0	568	501	3,051	4,120	0	5,209
4	0	464	138	25	6	576	67	7	0	627	643	3,090	4,360	0	5,209
5	0	463	173	25	7	615	362	8	0	661	977	3,972	5,610	0	5,209
6	0	464	183	25	8	630	578	9	0	672	1,208	4,550	6,430	0	5,209
7	0	464	156	25	9	589	387	10	0	645	976	4,009	5,630	0	5,209
8	0	464	90	25	10	627	266	11	0	579	893	3,648	5,120	0	5,209
9	0	464	60	25	11	339	443	12	0	549	782	3,469	4,800	0	5,209
10	0	464	62	25	12	0	443	13	0	551	443	3,766	4,760	0	5,209
11	0	464	62	25	13	4	379	14	0	551	383	3,466	4,400	0	5,209
12	0	464	62	25	14	419	348	15	0	551	767	3,102	4,420	0	5,209
13	0	464	62	25	15	371	82	16	0	551	453	3,106	4,110		
14	0	463	77	25	16	444	85	17	0	565	529	2,966	4,060		
15	0	320	114	25	17	387	82	18	0	459	469	2,912	3,840		
16	0	158	127	25	18	400	82	19	0	310	482	2,978	3,770		
17	0	155	127	25	19	0	0	20	0	307	0	3,213	3,520		
18	0	155	127	25	20	12	96	21	0	307	108	3,455	3,870		
19	0	155	122	25	21	346	181	22	0	302	527	3,661	4,490		
20	0	155	124	25	22	464	85	23	0	304	549	4,357	5,210		
21	0	155	130	25	23	529	202	24	0	310	731	4,579	5,620		
22	0	150	155	25	24	440	266	25	0	330	706	4,464	5,500		
23	0	124	156	25	25	379	390	26	0	305	769	4,146	5,220		
24	0	118	111	25	26	0	174	27	0	254	174	4,422	4,850		
25	0	77	93	25	27	0	227	28	0	195	227	7,478	7,900		
26	0	77	84	25	28	363	1,429	29	0	186	1,792	55,022	57,000		
27	0	70	50	25	29	657	1,234	30	0	145	1,891	53,964	56,000		
28	0	36	45	25	30	712	1,443	31	0	106	2,155	37,939	40,200		
Total	0	9,789	2,994	775		12,896	10,707		0	13,558	23,603	251,479	288,640		

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 direction (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.

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Col. 13 = Summation of Col. 12.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey					
Directed		Pepacton	Cannons-ville	Never-sink	Date	Lake Wallenpaupack	Rio Reservoir	Date	Controlled Releases: New York City Reservoirs		Controlled Releases: Power-plants	Computed uncon-trolled	Total
Date 2005	Amount								Directed	Other			
	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11
Mar. 29	0	48	45	25	Mar. 31	1,528	1,472	Apr. 1	0	118	3,000	32,882	36,000
30	0	678	45	25	Apr. 1	1,665	1,720	2	0	748	3,385	46,867	51,000
31	0	415	45	25	2	1,664	6,000	3	0	485	7,664	167,851	176,000
Apr. 1	0	36	45	25	3	1,667	4,426	4	0	106	6,093	104,801	111,000
2	0	36	45	25	4	1,721	2,759	5	0	106	4,480	50,114	54,700
3	0	36	45	25	5	1,721	1,550	6	0	106	3,271	34,223	37,600
4	0	36	45	25	6	1,719	1,901	7	0	106	3,620	25,574	29,300
5	0	36	45	25	7	1,714	1,443	8	0	106	3,157	20,337	23,600
6	0	36	45	25	8	1,714	1,082	9	0	106	2,796	16,798	19,700
7	0	36	45	25	9	1,721	1,082	10	0	106	2,803	13,791	16,700
8	0	36	45	25	10	1,701	961	11	0	106	2,662	10,932	13,700
9	0	36	45	25	11	1,719	947	12	0	106	2,666	9,028	11,800
10	0	36	45	25	12	1,724	968	13	0	106	2,692	7,702	10,500
11	0	36	45	25	13	1,683	979	14	0	106	2,662	6,822	9,590
12	0	36	45	25	14	1,728	936	15	0	106	2,664	5,880	8,650
13	0	36	45	29	15	1,165	1,447	16	0	110	2,612	4,308	7,030
14	0	36	45	68	16	0	947	17	0	149	947	4,434	5,530
15	0	36	45	87	17	0	571	18	0	168	571	4,311	5,050
16	0	36	45	93	18	867	170	19	0	174	1,037	4,029	5,240
17	0	37	45	105	19	901	152	20	0	187	1,053	3,820	5,060
18	0	68	45	105	20	967	191	21	0	218	1,158	3,574	4,950
19	0	93	45	93	21	802	174	22	0	231	976	3,463	4,670
20	0	93	45	97	22	348	0	23	0	235	348	3,517	4,100
21	0	96	45	108	23	0	121	24	0	249	121	7,280	7,650
22	0	108	45	65	24	4	154	25	0	218	158	11,424	11,800
23	0	84	45	25	25	857	121	26	0	154	978	8,838	9,970
24	0	36	46	25	26	887	121	27	0	107	1,008	8,045	9,160
25	0	36	45	25	27	613	103	28	0	106	716	10,078	10,900
26	0	36	46	25	28	458	241	29	0	107	699	9,594	10,400
27	0	36	46	25	29	234	241	30	0	107	475	8,178	8,760
Total	0	2,440	1,353	1,350		33,492	32,980		0	5,143	66,472	648,495	720,110

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 direction (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 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey					
Directed		Pepacton	Cannons-ville	Never-sink	Date	Lake Wallenpaupack	Rio Reservoir	Date	Controlled Releases			Computed uncon-trolled	Total
									New York City Reservoirs		Power-plants		
Date 2005	Amount Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Directed Col. 7	Other Col. 8	Col. 9	Col. 10	Col. 11
Apr. 28	0	36	46	25	Apr. 30	0	241	May 1	0	107	241	7,932	8,280
29	0	36	46	25	May 1	4	190	2	0	107	194	7,659	7,960
30	0	36	45	25	2	246	190	3	0	106	436	6,828	7,370
May 1	0	36	45	25	3	250	261	4	0	106	511	6,263	6,880
2	0	36	46	25	4	359	422	5	0	107	781	5,592	6,480
3	0	36	46	39	5	385	1,443	6	0	121	1,828	4,691	6,640
4	0	36	46	40	6	311	1,018	7	0	122	1,329	4,279	5,730
5	0	36	46	56	7	0	989	8	0	138	989	4,183	5,310
6	0	36	45	67	8	0	986	9	0	148	986	3,836	4,970
7	0	36	45	71	9	0	780	10	0	152	780	3,438	4,370
8	0	39	45	71	10	0	500	11	0	155	500	3,405	4,060
9	0	62	45	71	11	0	422	12	0	178	422	3,160	3,760
10	0	90	45	79	12	0	450	13	0	214	450	2,766	3,430
11	0	110	45	82	13	0	528	14	0	237	528	2,405	3,170
12	0	114	87	93	14	0	574	15	0	294	574	2,452	3,320
13	0	124	166	93	15	0	454	16	0	383	454	2,693	3,530
14	0	124	209	93	16	0	454	17	0	426	454	2,370	3,250
15	0	124	207	93	17	0	634	18	0	424	634	2,062	3,120
16	0	124	196	101	18	0	319	19	0	421	319	1,980	2,720
17	0	130	192	104	19	0	106	20	0	426	106	1,828	2,360
18	0	119	193	110	20	0	0	21	0	422	0	1,798	2,220
19	0	121	198	114	21	0	0	22	0	433	0	1,737	2,170
20	240	124	200	116	22	0	0	23	240	200	0	1,700	2,140
21	0	124	200	116	23	0	124	24	0	440	124	1,646	2,210
22	285	124	196	108	24	0	0	25	285	143	0	1,722	2,150
23	0	124	193	108	25	0	61	26	0	425	61	1,694	2,180
24	63	124	193	108	26	0	17	27	63	362	17	1,708	2,150
25	223	125	206	108	27	0	35	28	223	216	35	1,656	2,130
26	237	139	209	108	28	0	0	29	237	219	0	1,824	2,280
27	0	139	209	102	29	0	0	30	0	450	0	1,870	2,320
28	210	138	206	77	30	0	0	31	210	211	0	1,749	2,170
Total	1,258	2,802	3,896	2,453		1,555	11,198		1,258	7,893	12,753	98,926	120,830

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 direction (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 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey							
Directed		Pepac-ton	Cannons-ville	Never-sink	Date	Lake Wallenpau-pack	Rio Reservoir	Date	Controlled Releases			Computed uncon-trolled	Total	Excess Release Credits	
									New York City Reservoirs		Power-plants				
Date	Amount								Directed	Other				Daily	Cumul.
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13
May 29	0	124	201	80	May 31	0	0	June 1	0	405	0	1,585	1,990		
30	135	125	212	94	June 1	0	0	2	135	296	0	1,569	2,000		
31	170	139	218	108	2	0	32	3	170	295	32	1,373	1,870		
June 1	250	139	218	108	3	0	0	4	250	215	0	1,335	1,800		
2	372	139	221	116	4	0	0	5	372	104	0	1,294	1,770		
3	447	145	283	116	5	0	0	6	447	97	0	1,096	1,640		
4	326	145	504	116	6	0	0	7	326	439	0	1,255	2,020		
5	345	145	560	114	7	0	358	8	345	474	358	1,333	2,510		
6	526	145	373	108	8	18	386	9	526	100	404	1,320	2,350		
7	499	139	309	116	9	362	376	10	499	65	738	1,168	2,470		
8	89	145	393	116	10	312	387	11	89	565	699	1,217	2,570		
9	0	142	484	116	11	0	387	12	0	742	387	1,241	2,370		
10	0	136	459	139	12	4	387	13	0	734	391	1,185	2,310		
11	0	170	450	116	13	975	383	14	0	736	1,358	1,046	3,140		
12	0	164	323	118	14	579	354	15	0	605	933	1,102	2,640	0	0
13	0	155	305	124	15	406	387	16	0	584	793	923	2,300	50	50
14	0	155	277	131	16	446	387	17	0	563	833	964	2,360	3	53
15	0	147	240	131	17	269	387	18	0	518	656	1,036	2,210	50	103
16	467	147	221	131	18	0	387	19	467	32	387	1,044	1,930	148	251
17	495	131	241	124	19	23	379	20	496	0	402	992	1,890	140	391
18	113	131	215	116	20	420	376	21	113	349	796	972	2,230	113	504
19	207	133	217	116	21	600	337	22	207	259	937	887	2,290	207	711
20	643	139	374	131	22	480	0	23	644	0	480	836	1,960	210	921
21	687	147	410	131	23	514	0	24	688	0	514	788	1,990	240	1,161
22	734	145	453	131	24	406	0	25	729	0	406	785	1,920	170	1,331
23	1,089	147	767	173	25	0	0	26	1,087	0	0	683	1,770	20	1,351
24	1,106	170	772	155	26	13	32	27	1,097	0	45	708	1,850	100	1,451
25	585	178	377	131	27	551	106	28	585	101	657	1,087	2,430	579	2,030
26	501	139	257	124	28	580	46	29	501	19	626	1,274	2,420	501	2,531
27	468	145	260	87	29	502	32	30	468	24	534	1,754	2,780	468	2,999
Total	10,254	4,351	10,594	3,617		7,460	5,906		10,241	8,321	13,366	33,852	65,780		

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 direction (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 arithmetically, 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, 2005 = 11,418 $(ft^3/s)\cdot d$. A total of 5,718 $(ft^3/s)\cdot d$ is available for release.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey							
Directed		Pepacton	Cannonsville	Neversink	Date	Lake Wallenpaupack	Rio Reservoir	Date	Controlled Releases			Computed uncontrolled	Total	Excess Release Credits	
									New York City Reservoirs		Powerplants				
Date 2005	Amount								Directed	Other				Daily	Cumul.
	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13
June 28	0	145	316	68	June 30	302	168	July 1	0	529	470	1,591	2,590	0	2,999
29	271	145	277	40	July 1	441	60	2	271	191	501	1,547	2,510	271	3,270
30	674	118	476	85	2	0	0	3	679	0	0	1,131	1,810	60	3,330
July 1	797	145	588	65	3	0	0	4	798	0	0	1,032	1,830	80	3,410
2	566	139	340	80	4	0	46	5	559	0	46	985	1,590	-160	3,250
3	326	139	246	93	5	460	106	6	326	152	566	986	2,030	128	3,378
4	216	155	246	87	6	416	121	7	216	272	537	1,365	2,390	216	3,594
5	230	141	229	80	7	513	60	8	230	220	573	1,967	2,990	230	3,824
6	0	97	209	51	8	497	0	9	0	357	497	2,376	3,230	0	3,824
7	0	104	114	31	9	0	0	10	0	249	0	2,031	2,280	0	3,824
8	0	88	101	28	10	0	60	11	0	217	60	1,773	2,050	0	3,824
9	0	99	152	51	11	505	106	12	0	302	611	1,347	2,260	0	3,824
10	0	118	215	124	12	743	106	13	0	457	849	1,204	2,510	0	3,824
11	197	131	246	150	13	513	121	14	197	330	634	1,149	2,310	197	4,021
12	425	131	278	124	14	594	135	15	425	108	729	1,038	2,300	425	4,446
13	270	131	248	124	15	703	78	16	270	233	781	1,006	2,290	270	4,716
14	708	135	446	124	16	0	0	17	705	0	0	865	1,570	-180	4,536
15	0	139	238	90	17	1	32	18	0	467	33	1,080	1,580	-170	4,366
16	0	139	234	80	18	663	106	19	0	453	769	998	2,220	33	4,399
17	0	139	234	85	19	711	135	20	0	458	846	936	2,240	18	4,417
18	256	142	254	88	20	542	28	21	256	228	570	906	1,960	50	4,467
19	430	169	255	114	21	632	96	22	430	108	728	754	2,020	162	4,629
20	433	186	252	116	22	632	0	23	433	121	632	874	2,060	suspended	
21	1,213	186	910	116	23	0	0	24	1,212	0	0	548	1,760		
22	1,041	186	738	116	24	0	0	25	1,040	0	0	620	1,660		
23	704	186	404	116	25	534	60	26	706	0	594	660	1,960		
24	778	186	447	144	26	313	103	27	777	0	416	627	1,820		
25	787	186	449	147	27	294	0	28	782	0	294	684	1,760		
26	728	186	416	124	28	373	0	29	726	0	373	661	1,760		
27	769	178	466	124	29	546	0	30	768	0	546	576	1,890		
28	1,297	178	1,002	116	30	0	0	31	1,296	0	0	404	1,700		
Total	13,116	4,547	11,026	2,981		10,928	1,727		13,102	5,452	12,655	33,721	64,930		

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 direction (Col. 1).
Col. 8 = Col. 2 + Col. 3 + Col. 4 - Col. 7.
Col. 9 = Col. 5 + Col. 6.
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Col. 13 = Season limit of cumulative credit beginning June 15, 2005 = 11,418 $(ft^3/s)\cdot d$. A total of 5,718 $(ft^3/s)\cdot d$ is available for release.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs: Directed, Date 2005	Directed, Amount Col. 1	Pepacton Col. 2	Cannonsville Col. 3	Neversink Col. 4	Controlled Releases from Power Reservoirs: Date 2005	Lake Wallenpaupack Col. 5	Rio Reservoir Col. 6	Segregation of Flow, Delaware River at Montague, New Jersey: Date 2005	Controlled Releases, New York City Reservoirs, Directed Col. 7	Controlled Releases, New York City Reservoirs, Other Col. 8	Controlled Releases, Power-plants Col. 9	Computed uncontrolled Col. 10	Total Col. 11	Excess Release Credits, Daily Col. 12	Excess Release Credits, Cumul. Col. 13
July 29	1,291	178	996	116	July 31	0	0	Aug. 1	1,290	0	0	460	1,750		
30	1,086	183	794	110	Aug. 1	158	0	2	1,087	0	158	575	1,820		
31	1,107	161	828	116	2	140	0	3	1,105	0	140	585	1,830		
Aug. 1	1,027	183	724	124	3	151	0	4	1,031	0	151	558	1,740		
2	1,085	186	753	147	4	133	0	5	1,086	0	133	501	1,720		
3	953	186	640	124	5	378	0	6	950	0	378	482	1,810		
4	1,313	186	979	124	6	0	0	7	1,289	0	0	401	1,690		
5	1,385	186	1,091	116	7	0	0	8	1,393	0	0	367	1,760		
6	1,410	186	1,108	116	8	0	0	9	1,410	0	0	590	2,000		
7	1,410	186	1,097	124	9	0	0	10	1,407	0	0	603	2,010		
8	1,437	186	1,128	124	10	0	0	11	1,438	0	0	422	1,860		
9	1,308	186	992	124	11	378	45	12	1,302	0	423	395	2,120		
10	1,017	186	715	116	12	357	14	13	1,017	0	371	832	2,220		
11	1,342	186	1,030	122	13	0	0	14	1,338	0	0	752	2,090		
12	1,327	186	1,015	124	14	0	0	15	1,325	0	0	935	2,260		
13	947	186	637	124	15	0	11	16	947	0	11	832	1,790		
14	926	186	631	108	16	0	43	17	925	0	43	592	1,560		
15	1,102	186	811	108	17	0	14	18	1,105	0	14	521	1,640		
16	1,116	186	818	110	18	0	0	19	1,114	0	0	476	1,590		
17	1,188	186	891	116	19	0	0	20	1,193	0	0	437	1,630		
18	1,209	193	897	116	20	0	0	21	1,206	0	0	434	1,640		
19	1,196	193	888	116	21	0	0	22	1,197	0	0	423	1,620		
20	1,374	193	1,061	116	22	0	0	23	1,370	0	0	350	1,720		
21	1,411	193	1,101	116	23	0	0	24	1,410	0	0	340	1,750		
22	1,431	193	1,118	116	24	0	0	25	1,427	0	0	303	1,730		
23	1,143	193	832	116	25	257	32	26	1,141	0	289	350	1,780		
24	1,182	193	873	118	26	1,097	103	27	1,184	0	1,200	326	2,710		
25	1,494	193	1,171	124	27	595	46	28	1,488	0	641	471	2,600		
26	1,489	193	1,168	124	28	0	0	29	1,485	0	0	475	1,960		
27	1,415	193	1,095	124	29	15	0	30	1,412	0	15	443	1,870		
28	1,209	193	905	108	30	0	0	31	1,206	0	0	924	2,130		
Total	38,330	5,804	28,787	3,687		3,659	308		38,278	0	3,967	16,155	58,400		

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Col. 7 = Col. 2 + Col. 3 + Col. 4 in response to direction (Col. 1).
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Col. 12 = Col. 11 - Col. 8 - 1,750 ft^3/s computed arithmetically, 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, 2005 = 11,418 $(ft^3/s)\cdot d$. A total of 5,718 $(ft^3/s)\cdot d$ is available for release.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey							
Directed		Pepacton	Cannonsville	Neversink	Date	Lake Wallenpaupack	Rio Reservoir	Date	Controlled Releases			Computed uncontrolled	Total	Excess Release Credits	
									New York City Reservoirs		Power-plants				
Date	Amount								Directed	Other				Daily	Cumul.
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13
Aug. 29	679	193	377	108	Aug. 31	0	0	Sept. 1	678	0	0	1,282	1,960		
30	430	178	234	108	Sept. 1	306	0	2	430	90	306	1,144	1,970		
31	642	178	357	108	2	279	0	3	643	0	279	968	1,890		
Sept. 1	832	178	529	124	3	0	0	4	831	0	0	679	1,510		
2	1,100	193	783	124	4	0	0	5	1,100	0	0	500	1,600		
3	1,242	193	925	124	5	0	0	6	1,242	0	0	428	1,670		
4	971	193	657	124	6	205	0	7	974	0	205	471	1,650		
5	1,017	173	718	124	7	345	0	8	1,015	0	345	480	1,840		
6	1,047	172	750	124	8	296	0	9	1,046	0	296	458	1,800		
7	1,114	173	815	124	9	245	0	10	1,112	0	245	443	1,800		
8	1,233	173	937	124	10	284	0	11	1,234	0	284	432	1,950		
9	1,452	193	1,137	124	11	0	0	12	1,454	0	0	306	1,760		
10	1,257	193	937	124	12	174	0	13	1,254	0	174	352	1,780		
11	1,270	193	954	124	13	215	0	14	1,271	0	215	384	1,870		
12	1,248	193	930	124	14	136	0	15	1,247	0	136	407	1,790		
13	1,137	193	871	124	15	171	0	16	1,188	0	171	481	1,840		
14	737	193	433	116	16	288	0	17	742	0	288	560	1,590		
15	1,035	193	726	116	17	0	0	18	1,035	0	0	265	1,300		
16	1,287	193	978	116	18	0	0	19	1,287	0	0	263	1,550		
17	1,206	193	897	116	19	185	0	20	1,206	0	185	309	1,700		
18	1,210	193	900	116	20	201	0	21	1,209	0	201	360	1,770		
19	1,219	193	907	116	21	159	0	22	1,216	0	159	355	1,730		
20	1,272	193	961	116	22	245	0	23	1,270	0	245	325	1,840		
21	1,270	193	959	116	23	204	0	24	1,268	0	204	328	1,800		
22	1,240	193	930	116	24	266	0	25	1,239	0	266	335	1,840		
23	1,512	193	1,193	124	25	0	0	26	1,510	0	0	260	1,770		
24	1,175	201	846	124	26	0	0	27	1,171	0	0	379	1,550		
25	908	201	588	124	27	0	0	28	913	0	0	457	1,370		
26	1,229	201	903	124	28	0	0	29	1,228	0	0	412	1,640		
27	1,303	201	982	116	29	0	0	30	1,299	0	0	421	1,720		
Total	33,324	5,696	24,114	3,592		4,204	0		33,312	90	4,204	14,244	51,850		

Col. 2 - 24 hours beginning 1200 of date shown.
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[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey							
Directed		Pepacton	Cannonsville	Neversink	Date	Lake Wallenpaupack	Rio Reservoir	Date	Controlled Releases			Computed uncontrolled	Total	Excess Release Credits	
									New York City Reservoirs		Powerplants				
Date	Amount								Directed	Other				Daily	Cumul.
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13
Sept. 28	1,308	193	998	116	Sept. 30	0	0	Oct. 1	1,307	0	0	383	1,690		
29	1,376	193	1,067	118	Oct. 1	0	0	2	1,378	0	0	342	1,720		
30	1,446	195	1,139	116	2	0	0	3	1,450	0	0	290	1,740		
Oct. 1	1,463	193	1,154	116	3	0	0	4	1,463	0	0	287	1,750		
2	1,481	193	1,170	116	4	0	0	5	1,479	0	0	281	1,760		
3	1,490	193	1,180	116	5	0	0	6	1,489	0	0	261	1,750		
4	1,466	201	1,149	116	6	0	0	7	1,466	0	0	274	1,740		
5	1,411	201	1,091	116	7	0	0	8	1,408	0	0	4,042	5,450		
6	1,116	201	787	116	8	0	212	9	1,104	0	212	14,284	15,600		
7	0	195	325	26	9	0	391	10	0	546	391	10,363	11,300		
8	0	136	155	80	10	0	188	11	0	371	188	5,881	6,440		
9	0	190	218	36	11	0	369	12	0	444	369	6,847	7,660		
10	0	183	179	25	12	0	571	13	0	387	571	23,742	24,700		
11	0	172	127	25	13	0	688	14	0	324	688	23,488	24,500		
12	0	105	48	25	14	31	734	15	0	178	765	19,557	20,500		
13	0	36	48	25	15	0	741	16	0	109	741	15,350	16,200		
14	0	36	48	25	16	0	745	17	0	109	745	10,546	11,400		
15	0	36	48	25	17	176	741	18	0	109	917	8,074	9,100		
16	0	36	48	25	18	88	918	19	0	109	1,006	6,125	7,240		
17	0	36	46	25	19	0	826	20	0	107	826	4,977	5,910		
18	0	54	59	37	20	319	740	21	0	150	1,059	4,261	5,470		
19	0	84	105	37	21	332	730	22	0	226	1,062	3,742	5,030		
20	0	128	139	25	22	430	716	23	0	292	1,146	9,262	10,700		
21	0	138	124	25	23	447	709	24	0	287	1,156	13,657	15,100		
22	0	107	65	25	24	530	720	25	0	197	1,250	12,753	14,200		
23	0	36	46	25	25	417	716	26	0	107	1,133	22,660	23,900		
24	0	36	43	25	26	597	730	27	0	104	1,327	16,569	18,000		
25	0	36	46	25	27	652	723	28	0	107	1,375	11,818	13,300		
26	0	36	45	25	28	780	734	29	0	106	1,514	9,180	10,800		
27	0	36	46	25	29	747	766	30	0	107	1,513	7,610	9,230		
28	0	36	46	26	30	837	738	31	0	108	1,575	6,437	8,120		
Total	12,557	3,651	11,789	1,688		6,383	15,146		12,544	4,584	21,529	273,343	312,000		

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 direction (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 arithmetically, 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, 2005 = 11,418 $(ft^3/s)\cdot d$. A total of 5,718 $(ft^3/s)\cdot d$ is available for release.

Table 9. Controlled releases from reservoirs in the upper Delaware River Basin and segregation of flow of Delaware River at Montague, New Jersey—Continued. (River Master daily operation record)

[Mean discharge in cubic feet per second for 24 hours; Col., Column; Cumul., Cumulative]

Controlled Releases from New York City Reservoirs					Controlled Releases from Power Reservoirs			Segregation of Flow, Delaware River at Montague, New Jersey							
Directed		Pepacton	Cannonsville	Neversink	Date	Lake Wallenpaupack	Rio Reservoir	Date	Controlled Releases			Computed uncontrolled	Total	Excess Release Credits	
									New York City Reservoirs		Powerplants				
Date	Amount								Directed	Other				Daily	Cumul.
2005	Col. 1	Col. 2	Col. 3	Col. 4	2005	Col. 5	Col. 6	2005	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13
Oct. 29	0	37	48	25	Oct. 31	890	732	Nov. 1	0	110	1,622	5,468	7,200		
30	0	36	48	25	Nov. 1	825	727	2	0	109	1,552	4,879	6,540		
31	0	36	45	25	2	681	738	3	0	106	1,419	4,845	6,370		
Nov. 1	0	36	45	25	3	845	266	4	0	106	1,111	4,393	5,610	0	4,629
2	0	36	43	25	4	754	351	5	0	104	1,105	3,781	4,990	0	4,629
3	0	45	45	25	5	823	0	6	0	115	823	3,502	4,440	0	4,629
4	0	63	46	25	6	759	0	7	0	134	759	3,397	4,290	0	4,629
5	0	76	45	25	7	541	0	8	0	146	541	3,503	4,190	0	4,629
6	0	91	45	25	8	521	40	9	0	161	561	3,258	3,980	0	4,629
7	0	91	45	25	9	743	344	10	0	161	1,087	3,562	4,810	0	4,629
8	0	91	45	25	10	637	344	11	0	161	981	4,728	5,870	0	4,629
9	0	84	46	25	11	433	390	12	0	155	823	4,182	5,160	0	4,629
10	0	68	46	25	12	0	387	13	0	139	387	3,704	4,230	0	4,629
11	0	48	46	25	13	0	252	14	0	119	252	3,389	3,760	0	4,629
12	0	36	46	25	14	481	0	15	0	107	481	3,242	3,830	0	4,629
13	0	45	46	25	15	386	64	16	0	116	450	3,944	4,510	0	4,629
14	0	73	46	25	16	483	163	17	0	144	646	7,960	8,750	0	4,629
15	0	50	46	25	17	491	96	18	0	121	587	9,692	10,400	0	4,629
16	0	36	45	25	18	387	330	19	0	106	717	6,977	7,800	0	4,629
17	0	36	46	25	19	0	89	20	0	107	89	6,064	6,260	suspended	
18	0	36	46	25	20	0	177	21	0	107	177	5,306	5,590		
19	0	36	46	25	21	503	163	22	0	107	666	5,337	6,110		
20	0	36	46	25	22	210	284	23	0	107	494	6,069	6,670		
21	0	36	46	25	23	172	486	24	0	107	658	5,365	6,130		
22	0	36	46	25	24	303	645	25	0	107	948	4,645	5,700		
23	0	36	46	25	25	282	567	26	0	107	849	4,124	5,080		
24	0	36	46	25	26	0	411	27	0	107	411	3,662	4,180		
25	0	51	48	25	27	0	305	28	0	124	305	3,551	3,980		
26	0	79	63	25	28	157	0	29	0	167	157	3,676	4,000		
27	0	97	60	25	29	213	103	30	0	182	316	14,502	15,000		
Total	0	1,593	1,406	750		12,520	8,454		0	3,749	20,974	150,707	175,430		

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 direction (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 arithmetically, 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, 2005 = 11,418 $(ft^3/s)\cdot d$. A total of 5,718 $(ft^3/s)\cdot d$ is available for release.

Table 10. Diversions to New York City water-supply system.
(River Master daily operation record)

[Million gallons per day for 24-hour period beginning 0800 local time]

Date 2004	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2004, to date	Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2004, to date
Dec. 1	0	0	0	517	Jan. 1	446	0	0	493
2	0	0	0	514	2	446	0	0	493
3	0	0	0	511	3	446	0	0	493
4	0	0	0	509	4	446	0	0	493
5	0	0	0	506	5	446	0	0	493
6	0	0	0	503	6	446	0	0	492
7	0	0	0	501	7	446	0	0	492
8	0	0	189	499	8	446	0	0	492
9	0	0	303	498	9	446	0	0	492
10	0	0	313	497	10	446	0	0	491
11	0	0	324	496	11	446	0	0	491
12	0	0	321	495	12	446	0	0	491
13	0	0	324	494	13	447	0	0	491
14	0	0	386	494	14	444	0	0	491
15	0	0	387	493	15	442	0	0	490
16	0	0	387	493	16	310	0	0	490
17	0	0	338	492	17	0	0	0	488
18	0	0	386	491	18	0	0	270	487
19	0	0	387	491	19	0	0	384	486
20	0	0	357	490	20	242	0	26	485
21	229	0	378	491	21	286	0	0	484
22	283	0	389	492	22	297	0	0	484
23	294	0	389	493	23	294	0	0	483
24	288	0	388	494	24	297	0	0	482
25	287	0	387	494	25	298	0	0	481
26	289	0	386	495	26	428	0	0	481
27	303	0	387	496	27	445	0	0	481
28	0	0	388	496	28	222	0	0	480
29	0	0	382	495	29	0	299	0	479
30	0	0	388	495	30	0	301	0	478
31	1	0	276	494	31	0	301	0	478
Total	1,974	0	8,540			9,804	901	680	

Table 10. Diversions to New York City water-supply system—Continued.
(River Master daily operation record)

[Million gallons per day for 24-hour period beginning 0800 local time]

Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2004, to date	Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2004, to date
Feb. 1	0	301	0	477	Mar. 1	312	300	0	487
2	0	300	0	476	2	277	300	0	487
3	0	300	0	475	3	261	297	0	487
4	0	301	0	475	4	276	300	0	488
5	0	300	0	474	5	260	300	0	488
6	0	300	0	473	6	299	300	0	488
7	0	300	0	473	7	262	300	0	489
8	0	300	0	472	8	292	300	0	489
9	227	300	0	472	9	264	300	0	489
10	444	301	0	473	10	282	300	0	489
11	448	301	0	474	11	258	300	0	490
12	448	301	0	475	12	298	300	0	490
13	448	301	0	477	13	341	300	0	491
14	443	298	0	478	14	218	13	0	490
15	448	300	0	479	15	203	296	0	490
16	449	300	0	480	16	269	297	0	490
17	449	300	0	481	17	445	300	0	491
18	448	300	0	482	18	447	293	0	492
19	443	300	0	483	19	447	300	0	493
20	448	300	0	484	20	447	300	0	494
21	448	300	0	485	21	447	300	0	494
22	448	300	0	486	22	447	300	0	495
23	447	300	0	487	23	445	300	0	496
24	447	300	0	488	24	450	275	0	497
25	180	300	0	488	25	182	200	0	496
26	0	300	0	487	26	200	200	0	496
27	0	300	0	486	27	200	200	0	496
28	208	300	0	486	28	0	0	0	494
					29	0	0	0	493
					30	0	0	0	491
					31	0	0	0	489
Total	7,321	8,404	0			8,529	7,471	0	

Table 10. Diversions to New York City water-supply system—Continued.
(River Master daily operation record)

[Million gallons per day for 24-hour period beginning 0800 local time]

Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2004, to date	Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2004, to date
Apr. 1	0	0	0	488	May 1	450	0	272	482
2	0	0	0	486	2	450	0	271	482
3	0	0	0	485	3	450	0	271	483
4	0	0	0	483	4	449	0	328	484
5	0	0	0	481	5	449	0	215	485
6	0	0	0	480	6	450	0	209	485
7	0	0	0	478	7	450	0	0	485
8	0	0	0	477	8	450	0	0	485
9	0	0	0	475	9	450	0	0	485
10	72	0	0	474	10	450	269	0	485
11	0	0	244	473	11	450	427	174	487
12	0	0	277	473	12	450	490	197	489
13	371	0	21	472	13	449	490	212	491
14	447	0	326	473	14	449	490	0	492
15	480	0	294	474	15	332	490	0	493
16	501	0	274	475	16	281	305	0	493
17	501	0	274	476	17	429	300	0	494
18	501	0	269	477	18	300	300	0	494
19	455	0	273	478	19	273	300	0	495
20	297	0	273	478	20	440	299	0	495
21	303	0	273	478	21	448	300	0	496
22	450	0	75	479	22	448	299	0	497
23	450	0	0	478	23	448	299	0	497
24	445	0	0	478	24	447	299	0	498
25	445	0	0	478	25	447	300	0	499
26	450	0	0	478	26	461	300	0	499
27	451	0	248	479	27	446	300	0	500
28	450	0	273	480	28	450	300	0	501
29	445	0	273	480	29	450	300	0	502
30	450	0	271	481	30	445	297	0	502
					31	298	300	263	503
Total	7,964	0	3,938			13,139	7,454	2,412	

Table 10. Diversions to New York City water-supply system—Continued.
(River Master daily operation record)

[Million gallons per day for 24-hour period beginning 0800 local time]

Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2005, to date	Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2005, to date
June 1	301	300	112	713	July 1	347	1	385	709
2	280	299	0	646	2	246	0	384	706
3	297	299	0	629	3	339	0	326	705
4	278	299	0	616	4	340	0	325	704
5	290	296	0	610	5	339	0	341	703
6	283	300	0	606	6	343	0	345	703
7	312	300	0	607	7	339	0	346	702
8	290	300	0	605	8	211	0	346	698
9	289	300	0	603	9	339	0	346	698
10	282	300	0	601	10	335	0	346	698
11	303	300	0	601	11	427	0	346	699
12	304	299	0	601	12	452	0	343	702
13	305	291	0	601	13	452	0	268	702
14	441	297	0	611	14	452	0	381	705
15	448	298	9	620	15	447	0	391	708
16	489	301	0	631	16	447	0	396	711
17	501	300	0	641	17	452	0	397	714
18	501	300	0	650	18	452	0	358	716
19	500	300	0	658	19	452	0	355	718
20	500	300	0	665	20	447	0	352	719
21	501	300	0	671	21	451	0	352	721
22	495	297	0	677	22	446	0	338	722
23	495	297	0	682	23	446	0	332	723
24	495	296	0	686	24	120	0	336	718
25	500	299	0	691	25	0	288	337	717
26	494	296	0	695	26	275	300	337	720
27	494	296	0	698	27	448	300	343	727
28	499	299	0	702	28	448	300	355	733
29	499	299	0	705	29	448	299	357	739
30	498	291	0	708	30	448	299	355	745
					31	422	286	0	745
Total	12,164	8,949	121			11,610	2,073	10,519	

Table 10. Diversions to New York City water-supply system—Continued.
(River Master daily operation record)

[Million gallons per day for 24-hour period beginning 0800 local time]

Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2005, to date	Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2005, to date
Aug. 1	448	299	0	745	Sept. 1	449	300	0	748
2	450	299	0	745	2	449	301	0	748
3	448	299	0	745	3	449	300	0	748
4	450	299	0	745	4	448	299	0	748
5	450	299	0	745	5	448	299	0	748
6	448	298	0	745	6	447	298	0	748
7	448	298	0	745	7	443	297	0	748
8	448	300	0	745	8	447	299	2	748
9	447	300	0	745	9	447	126	164	747
10	447	299	0	745	10	446	0	216	747
11	447	299	0	745	11	269	46	198	744
12	447	298	0	745	12	261	146	132	742
13	447	298	0	745	13	437	240	218	744
14	447	298	0	745	14	441	245	219	745
15	446	299	0	745	15	440	242	130	746
16	446	299	0	745	16	444	269	0	746
17	445	299	0	745	17	446	298	0	746
18	444	299	0	745	18	446	299	0	746
19	444	299	0	745	19	449	298	0	746
20	444	299	0	745	20	497	255	0	746
21	444	299	0	745	21	496	263	0	746
22	444	300	0	745	22	496	264	279	748
23	445	300	0	745	23	496	119	236	749
24	446	296	0	745	24	495	0	221	749
25	490	298	0	746	25	498	0	221	749
26	498	299	0	746	26	499	117	185	749
27	498	298	0	747	27	499	118	188	750
28	492	297	0	747	28	499	0	217	749
29	492	297	0	748	29	497	200	370	752
30	450	299	0	748	30	498	201	334	754
31	450	299	0	748					
Total	14,090	9,259	0			13,576	6,139	3,530	

Table 10. Diversions to New York City water-supply system—Continued.
(River Master daily operation record)

[Million gallons per day for 24-hour period beginning 0800 local time]

Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2005, to date	Date 2005	East Delaware Tunnel	West Delaware Tunnel	Neversink Tunnel	Average June 1, 2005, to date
Oct. 1	497	50	328	755	Nov. 1	0	0	213	629
2	498	4	329	756	2	0	0	272	627
3	497	201	332	758	3	0	0	273	625
4	492	33	333	759	4	0	0	273	623
5	497	0	333	759	5	0	0	272	620
6	184	0	89	756	6	0	0	272	618
7	0	0	0	750	7	248	0	272	618
8	0	0	0	744	8	283	0	272	617
9	0	0	0	738	9	282	0	272	617
10	0	0	0	733	10	321	0	272	617
11	0	0	0	727	11	377	0	269	617
12	0	0	0	722	12	393	0	269	617
13	0	0	0	716	13	393	0	269	617
14	0	0	0	711	14	398	0	272	618
15	0	0	0	706	15	399	0	272	618
16	0	0	0	701	16	399	0	271	618
17	0	0	0	696	17	399	0	271	619
18	0	0	0	691	18	261	0	271	618
19	0	0	0	686	19	262	0	272	618
20	0	0	0	681	20	264	0	271	617
21	0	0	0	676	21	267	0	271	617
22	0	0	0	672	22	268	0	271	616
23	0	0	0	667	23	268	0	271	616
24	0	0	0	663	24	268	0	271	615
25	0	0	0	658	25	260	0	271	615
26	0	0	0	654	26	0	0	271	613
27	0	0	0	649	27	0	0	271	611
28	0	0	0	645	28	0	0	271	609
29	0	0	0	641	29	0	0	17	606
30	0	0	0	636	30	0	0	0	603
31	0	0	0	632					
Total	2,665	288	1,744			6,010	0	7,555	

Table 11. Daily mean discharge, East Branch Delaware River at Downsville, New York (station number 01417000), for report year ending November 30, 2005. (U.S. Geological Survey published record)

[All values except total are in cubic feet per second, ft^3/s; total in cubic feet per second days, (ft^3/s)-d; e, estimated]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	40	708	719	446	2,460	560	139	119	151	168	192	43
2	60	364	718	445	5,920	454	139	128	172	180	193	43
3	797	237	718	446	16,600	377	143	125	172	188	193	43
4	1,370	395	719	447	8,530	282	148	131	173	189	197	53
5	1,370	414	718	447	4,700	191	148	133	173	190	201	69
6	1,270	456	726	448	3,090	125	145	96	173	169	200	81
7	1,180	406	726	447	2,490	81	139	94	169	168	201	90
8	1,240	360	729	448	2,320	47	139	88	169	169	159	88
9	1,150	319	729	447	1,970	51	143	76	169	168	165	90
10	1,320	227	728	448	1,610	69	143	96	170	188	188	69
11	2,660	174	562	448	1,340	95	159	111	172	188	174	62
12	2,730	176	92	448	1,180	105	170	115	175	192	143	45
13	2,380	503	56	449	961	112	150	114	174	193	64	43
14	1,910	e3,600	48	448	515	116	150	113	174	193	43	58
15	1,530	e6,000	42	408	274	116	144	119	174	193	43	64
16	1,280	e3,700	39	201	123	116	138	119	175	193	43	45
17	1,110	2,430	39	143	54	120	130	119	174	193	43	43
18	975	1,840	260	145	47	122	122	119	179	188	46	40
19	858	1,390	440	145	72	115	122	134	182	188	73	40
20	723	1,240	400	146	82	122	126	157	183	188	104	41
21	532	831	213	146	83	122	132	162	186	187	136	40
22	336	541	109	146	94	122	135	162	187	188	128	40
23	629	440	51	133	98	122	135	158	187	192	65	39
24	2,360	345	173	115	52	123	136	158	188	197	43	40
25	1,880	296	360	104	203	123	168	158	188	200	43	42
26	1,380	498	446	71	353	133	142	158	188	201	43	57
27	1,060	728	446	71	561	139	128	159	188	200	42	86
28	807	720	445	53	788	139	131	160	183	196	43	85
29	916	720	---	41	738	131	132	160	183	192	43	59
30	913	718	---	366	636	125	116	161	176	192	43	44
31	841	718	---	1,260	---	135	---	165	168	---	42	---
Total	37,607	31,494	11,451	9,956	57,944	4,790	4,192	4,067	5,475	5,631	3,336	1,682
Mean	1,213	1,016	409	321	1,931	155	140	131	177	188	108	56.1

Year total 177,625 (ft^3/s)-d

Mean 487 ft^3/s

Table 12. Daily mean discharge, West Branch Delaware River at Stilesville, New York (station number 01425000), for report year ending November 30, 2005. (U.S. Geological Survey published record)

[All values except total are in cubic feet per second, ft^3/s; total in cubic feet per second days, (ft^3/s)-d; e, estimated]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	3,410	1,180	254	e230	5,420	1,340	214	440	857	340	1,140	46
2	4,230	1,120	194	e190	5,890	1,270	217	535	771	488	1,150	46
3	3,810	1,080	146	e170	13,300	1,220	218	325	774	767	1,160	42
4	3,210	1,290	140	e160	11,700	1,130	265	246	628	920	1,170	42
5	2,650	1,460	137	e190	7,570	1,030	467	245	1,010	634	1,150	44
6	2,170	1,520	150	e190	5,330	930	539	230	1,100	711	1,090	45
7	1,840	1,550	161	e190	4,010	856	377	217	1,130	735	768	45
8	1,810	1,540	e180	e200	3,280	782	297	125	1,120	813	323	44
9	1,710	1,510	e180	e160	2,680	715	368	109	1,150	936	151	45
10	1,720	1,390	e190	e120	2,190	601	458	142	1,030	1,150	213	48
11	2,690	1,280	e190	e130	1,790	415	420	211	798	941	173	47
12	3,180	1,250	e170	e130	1,510	245	414	237	1,050	958	157	46
13	3,070	1,500	e190	e130	1,310	156	310	264	1,030	936	74	46
14	2,770	4,550	e300	e150	1,170	164	287	244	644	873	58	46
15	2,340	6,380	e560	e200	1,030	206	268	416	607	409	57	48
16	1,940	5,210	e1,000	e190	914	203	239	243	823	659	55	49
17	1,670	4,030	e1,600	e170	822	193	223	233	828	989	54	49
18	1,460	3,020	e1,400	e150	748	188	234	231	908	903	52	48
19	1,280	2,170	e1,100	e130	679	190	218	250	916	910	55	48
20	1,140	1,740	e900	e140	611	194	215	250	911	914	91	47
21	943	1,530	e800	e130	597	198	346	252	1,090	962	131	47
22	858	1,250	e660	e130	566	199	389	895	1,130	962	129	47
23	999	1,110	e640	156	563	196	428	727	1,140	933	95	47
24	2,190	989	e600	175	855	191	753	389	841	1,200	54	47
25	2,430	922	e500	167	1,180	192	791	424	875	846	54	47
26	2,150	906	e410	133	1,220	201	351	422	1,180	557	55	47
27	1,890	842	e340	154	1,230	208	256	395	1,190	890	49	60
28	1,570	739	e270	494	1,410	208	255	442	1,100	975	47	70
29	1,410	601	---	3,780	1,450	204	293	999	921	991	46	52
30	1,330	423	---	6,070	1,400	200	268	989	365	1,080	46	63
31	1,220	327	---	5,870	---	207	---	807	237	---	46	---
Total	65,090	54,409	13,362	20,579	82,425	14,232	10,378	11,934	28,154	25,382	9,893	1,448
Mean	2,100	1,755	477	664	2,748	459	346	385	908	846	319	48.3

Year total 337,286 (ft^3/s)-d

Mean 924 ft^3/s

Table 13. Daily mean discharge, Neversink River at Neversink, New York (station number 01436000), for report year ending November 30, 2005.

[All values except total are in cubic feet per second, ft^3/s; total in cubic feet per second days, (ft^3/s)-d]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	29	26	117	171	940	85	101	67	108	108	117	27
2	28	27	115	148	3,590	46	108	79	116	113	117	26
3	28	27	109	130	6,920	29	111	73	129	120	117	27
4	28	27	98	122	1,900	30	117	89	134	120	117	27
5	28	27	93	120	980	39	117	95	123	120	116	27
6	28	27	88	123	721	39	117	82	120	120	115	28
7	28	27	85	125	796	49	112	78	117	122	115	27
8	31	27	89	160	913	61	114	48	119	124	84	27
9	28	27	101	138	664	71	117	27	123	123	33	28
10	28	27	193	125	507	70	120	36	123	123	86	27
11	28	27	186	124	324	75	125	87	119	123	27	27
12	46	27	155	126	86	82	132	130	118	123	28	27
13	45	27	145	120	48	86	117	141	122	123	28	27
14	49	1,510	141	108	110	90	121	120	123	123	27	27
15	29	1,350	283	98	43	90	129	120	117	120	26	28
16	28	666	313	99	74	90	132	110	108	117	25	28
17	27	477	290	97	86	93	132	86	108	117	25	28
18	27	281	233	99	92	98	129	82	111	117	26	27
19	26	25	184	98	103	104	123	85	116	117	29	28
20	36	21	181	105	95	111	120	99	115	117	46	28
21	38	22	201	112	89	114	125	114	114	117	33	27
22	27	112	184	111	99	114	132	114	114	117	27	27
23	27	160	176	126	100	112	132	114	114	117	27	27
24	26	151	158	149	37	108	139	114	114	119	27	27
25	27	149	159	123	25	108	171	123	114	123	28	27
26	27	159	139	112	78	108	144	142	120	123	26	27
27	26	147	145	112	369	110	129	133	123	122	27	27
28	27	123	141	338	301	111	117	120	123	120	27	27
29	27	123	---	2,010	101	91	81	117	117	116	26	28
30	27	123	---	1,470	43	80	50	114	108	117	26	29
31	27	118	---	1,050	---	88	---	113	108	---	27	---
Total	931	6,067	4,502	8,149	20,234	2,582	3,614	3,052	3,638	3,581	1,605	819
Mean	30.0	196	161	263	674	83.3	120	98.5	117	119	51.8	27.3

Year total 58,774 (ft^3/s)-d

Mean 161 ft^3/s

Table 14. Daily mean discharge, Wallenpaupack Creek at Wilsonville, Pennsylvania (station number 01432000), for report year ending November 30, 2005. (Record furnished by PPL Corporation. Record no longer published by USGS after September 30, 2005)

[All values except total are in cubic feet per second, ft^3/s; total in cubic feet per second days, (ft^3/s)-d]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	1,070	597	645	647	1,650	0	0	453	158	306	---	---
2	1,140	582	674	694	1,670	238	0	0	140	279	---	---
3	1,210	268	684	592	6,260	250	0	0	151	0	---	---
4	1,190	375	866	594	3,170	336	0	0	133	0	---	---
5	1,080	548	467	582	3,430	401	0	458	378	0	---	---
6	1,090	689	400	509	3,600	328	0	418	0	205	---	---
7	1,170	799	497	660	2,950	0	0	513	0	345	---	---
8	1,060	878	430	564	1,910	0	0	497	0	296	---	---
9	1,120	887	526	617	1,720	0	371	0	0	245	---	---
10	1,060	1,060	558	574	1,720	0	324	0	0	284	---	---
11	779	1,130	570	526	1,720	0	0	505	378	0	---	---
12	704	1,060	2	45	1,720	0	0	731	357	168	---	---
13	1,080	1,050	0	0	1,720	0	847	490	0	222	---	---
14	1,060	1,070	277	404	1,730	0	710	615	0	136	---	---
15	1,180	1,000	321	375	1,720	0	389	637	0	171	---	---
16	1,200	1,000	266	452	20	0	449	81	0	288	---	---
17	1,150	1,390	329	383	0	0	280	0	0	0	---	---
18	676	1,310	274	414	510	0	0	650	0	0	---	---
19	839	1,390	0	0	942	0	0	712	0	180	---	---
20	707	1,320	0	0	965	0	433	530	0	207	---	---
21	606	1,340	0	349	804	0	582	634	0	159	---	---
22	737	1,390	494	464	667	0	490	649	0	241	---	---
23	662	1,460	763	521	0	0	520	5	0	209	---	---
24	671	1,430	646	447	0	0	419	0	0	266	---	---
25	422	1,350	477	393	546	0	0	534	257	0	---	---
26	847	1,360	558	0	904	0	0	313	623	0	---	---
27	869	1,290	597	0	708	0	545	292	1,070	0	---	---
28	954	1,410	547	353	635	0	575	375	0	0	---	---
29	833	1,470	---	400	260	0	517	546	0	0	---	---
30	930	1,370	---	731	0	0	295	0	15	0	---	---
31	903	877	---	1,250	---	0	---	0	0	---	---	---
Total	28,999	33,150	11,868	13,540	43,651	1,553	7,746	10,638	3,660	4,207	---	---
Mean	935	1,069	424	437	1,455	50.1	258	343	118	140	---	---

Table 15. Daily mean discharge, Delaware River at Montague, New Jersey (station number 01438500), for report year ending November 30, 2005. (U.S. Geological Survey published record)

[All values except total are in cubic feet per second, ft^3/s; total in cubic feet per second days, (ft^3/s)-d; e, estimated]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	18,700	7,590	5,680	5,050	36,000	8,260	1,910	2,600	1,740	1,950	1,680	7,200
2	26,800	7,460	5,500	5,050	51,000	7,920	1,920	2,500	1,810	1,970	1,710	6,550
3	19,500	6,890	5,350	4,980	176,000	7,320	1,800	1,790	1,820	1,880	1,730	6,380
4	15,700	9,990	5,310	4,420	111,000	6,820	1,730	1,810	1,740	1,500	1,740	5,620
5	13,600	12,000	4,740	4,360	54,900	6,410	1,700	1,560	1,710	1,590	1,740	5,000
6	12,100	11,200	4,390	4,120	37,500	6,580	1,680	1,980	1,810	1,670	1,740	4,470
7	11,000	10,900	4,680	4,360	29,000	5,650	2,060	2,330	1,680	1,640	1,740	4,320
8	12,400	10,200	4,470	5,610	23,200	5,230	2,560	2,920	1,760	1,830	5,370	4,210
9	12,700	10,500	4,550	6,440	19,300	4,890	2,390	3,160	1,990	1,790	16,000	4,010
10	13,500	9,710	5,920	5,630	16,200	4,280	2,520	2,290	2,000	1,790	11,400	4,830
11	22,600	9,320	7,870	5,120	13,900	3,970	2,620	2,040	1,850	1,950	6,450	5,880
12	22,800	8,950	6,650	4,800	12,000	3,660	2,410	2,260	2,110	1,770	7,720	5,180
13	19,000	9,090	5,360	4,760	10,700	3,340	2,350	2,530	2,210	1,800	25,300	4,250
14	16,200	32,800	4,730	4,390	9,720	3,070	3,180	2,330	2,080	1,890	25,100	3,800
15	13,600	55,300	6,270	4,420	8,750	3,220	2,680	2,360	2,250	1,820	21,000	3,860
16	12,000	33,800	9,600	4,110	7,090	3,440	2,340	2,320	1,780	1,860	16,600	4,530
17	10,800	24,400	11,500	4,060	5,560	3,160	2,400	1,600	1,550	1,620	11,600	8,810
18	9,250	e17,000	10,600	3,830	4,990	3,030	2,250	1,570	1,630	1,330	9,100	10,500
19	8,470	e13,500	8,870	3,770	5,200	2,630	1,970	2,210	1,580	1,570	7,240	7,800
20	e7,200	e12,500	8,270	3,530	5,010	2,270	1,930	2,240	1,630	1,730	5,920	6,270
21	e5,900	e9,900	7,500	3,870	4,870	2,140	2,270	1,950	1,630	1,790	5,490	5,600
22	e5,100	e7,800	7,010	4,490	4,580	2,080	2,330	2,010	1,610	1,760	5,050	6,120
23	6,590	e7,100	6,950	5,220	4,010	2,060	2,000	2,050	1,710	1,860	10,800	6,670
24	15,800	e6,900	6,340	5,630	7,610	2,130	2,040	1,750	1,750	1,820	15,500	6,150
25	15,600	e7,700	5,610	5,510	12,000	2,070	1,960	1,650	1,720	1870	14,600	5,720
26	12,500	e8,000	5,250	5,230	10,000	2,100	1,810	1,960	1,770	1,770	24,500	5,100
27	e10,500	e6,900	5,120	4,850	9,140	2,070	1,890	1,830	2,710	1,560	18,400	4,200
28	e9,500	e6,200	5,290	7,900	11,000	2,050	2,470	1,770	2,600	1,370	13,500	4,010
29	8,940	e6,500	---	57,000	10,400	2,200	2,450	1,780	1,950	1,640	10,700	4,030
30	8,520	e6,700	---	56,100	8,750	2,230	2,800	1,920	1,860	1,720	9,040	15,300
31	8,000	6,560	---	40,200	---	2,090	---	1,740	2,120	---	8,000	---
Total	404,870	393,360	179,380	288,810	719,380	118,370	66,420	64,810	58,160	52,110	316,460	176,370
Mean	13,060	12,690	6,406	9,316	23,980	3,818	2,214	2,091	1,876	1,737	10,210	5,879

Year total 2,838,500 (ft^3/s)-d

Mean 7,777 ft^3/s

Table 16. Diversions by New Jersey; daily mean discharge, Delaware and Raritan Canal at Port Mercer, New Jersey (station number 01460440), for report year ending November 30, 2005.
(U.S. Geological Survey published record)

[All data except total are in million gallons per day, Mgal/d; total in Million gallons, Mgal; e, estimated]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	61	83	e68	89	91	74	88	88	e98	e92	80	e85
2	76	84	e71	89	33	86	88	75	e96	e89	82	e84
3	78	83	e78	89	3.6	89	92	93	e96	e85	83	e85
4	77	86	e90	89	57	90	87	90	e97	e89	83	e85
5	81	84	e100	90	63	91	88	93	e99	e94	84	e84
6	83	78	102	89	67	91	90	97	e98	e94	89	e74
7	81	76	100	89	68	94	88	96	e98	e93	90	e80
8	71	79	99	88	48	93	86	85	e98	e92	61	e74
9	79	77	98	88	70	93	87	82	e98	e93	6.6	e83
10	64	80	90	88	77	94	90	89	e97	e90	86	e83
11	73	82	86	89	81	94	88	93	e98	e89	79	e69
12	76	80	86	90	81	94	90	95	e98	e89	e-13	e80
13	78	80	87	91	82	93	91	95	e98	e90	e36	e81
14	78	57	88	92	78	92	91	95	e100	e92	e56	e83
15	79	69	67	91	75	92	92	96	e96	e95	e71	e85
16	80	80	84	92	80	91	93	94	e95	e94	e89	e87
17	82	78	84	91	83	91	93	98	e94	e96	e91	e82
18	83	79	87	91	85	93	94	96	e94	e94	e90	e94
19	83	84	87	92	83	92	95	96	e93	e92	e90	87
20	81	89	87	93	82	91	95	96	e96	e88	e78	90
21	86	88	89	91	78	91	94	95	e96	e87	e94	87
22	86	85	89	91	73	89	92	95	e97	e85	e93	73
23	72	e81	88	92	74	92	94	94	e97	e86	e90	82
24	75	e78	90	81	75	90	91	94	e97	e87	e91	88
25	80	e74	90	84	76	90	89	e96	e96	e86	e87	88
26	82	e68	90	90	76	90	53	e98	e96	e83	e81	92
27	84	e65	90	91	82	92	62	e96	e96	e84	e84	92
28	85	e65	91	64	80	91	87	e98	e97	e84	e88	94
29	89	e68	---	53	80	90	80	e98	e96	e83	e87	94
30	84	e74	---	82	88	89	89	e98	e93	e83	e90	70
31	83	e71	---	87	---	90	---	e98	e92	---	e89	---
Total	2,450	2,405	2,456	2,706	2,170	2,812	2,637	2,902	2,990	2,678	2,386	2,515
Mean	79.0	77.6	87.7	87.3	72.3	90.7	87.9	93.6	96.5	89.3	77.0	83.8

Year total 31,106 Mgal

Mean 85.2 Mgal/d

QUALITY OF WATER IN THE DELAWARE ESTUARY

Introduction

This section describes the water-quality monitoring program for the Delaware Estuary during the River Master 2005 report year, December 1, 2004, to November 30, 2005. This program is conducted by the USGS, in cooperation with the DRBC. Selected data collected for this program are presented and water-quality conditions are summarized. The DRBC and others use these data to assess water-quality conditions and track the movement of the "salt front" in the Delaware Estuary.

Water-Quality Monitoring Program

As part of a long-term program, the quality of water in the Delaware Estuary between Trenton, New Jersey, and Reedy Island Jetty, Delaware, is monitored at various locations (fig. 6). Data on water temperature, specific conductance, dissolved oxygen, and pH were collected by electronic instruments at four sites—Trenton, Benjamin Franklin Bridge (Philadelphia), Chester, and Reedy Island Jetty. Water-quality monitors at Trenton and Reedy Island Jetty were operated continuously throughout the report year and seasonally at Benjamin Franklin Bridge and Chester.

The frequency of water-quality sampling was once monthly in March, June, July, and October, and twice monthly in April, May, August, and September 2005 at 19 sites between Biles Channel and Mahon River (sites A–T on fig. 6). These samples were collected and analyzed by the State of Delaware for the DRBC. At each of these sites, water samples were collected near the center of the channel at a depth of 3 ft below the surface and analyzed for selected physical properties and chemical constituents including, but not limited to, water temperature, chloride, alkalinity, specific conductance, dissolved oxygen, pH, selected nutrients, and trace metals. These analyses consist of field measurements and laboratory determinations.

From March to October, water-quality data were obtained on a once-monthly basis at three additional sites in the lower Delaware Bay (sites U–W on fig. 6). Water samples were analyzed for selected physical properties and chemical constituents.

Data obtained from the electronic water-quality monitors are processed and stored in the USGS National Water Information System database. These data are published annually by the USGS in water resources data reports for New Jersey and Pennsylvania. Water-quality data for the other sampling sites are not presented in this report but are available from DRBC and STORET, an environmental quality database operated by the U.S. Environmental Protection Agency.

Water Quality During the 2005 Report Year

Streamflow

Streamflow has a major effect on the quality of water in the Delaware Estuary. High freshwater flows commonly result in improved water quality by limiting the upstream movement of seawater and reducing the concentration of dissolved substances. High flows also aid in maintaining lower water temperatures during warm weather and in supporting higher concentrations of dissolved oxygen. Under certain conditions, however, high streamflows can transport large quantities of nutrients to the estuary, which may result in excessive levels of algae.

Streamflow from the Delaware River Basin upstream of Trenton, New Jersey, is the major source of freshwater inflow to the Delaware Estuary. During the report year, monthly mean streamflow measured at the USGS gaging station Delaware River at Trenton, New Jersey, was highest during April 2005

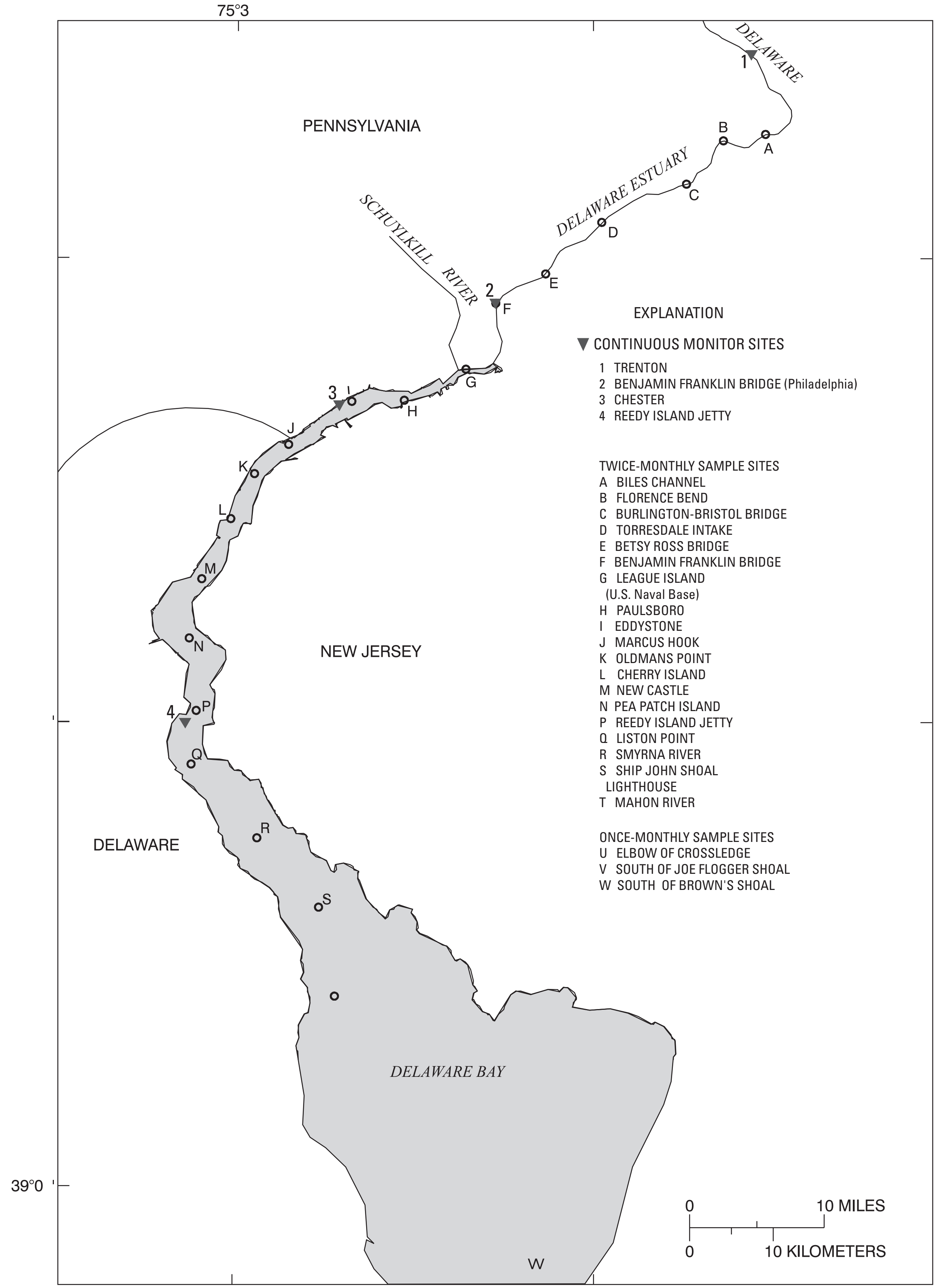

Figure 6. Location of water-quality monitoring sites on the Delaware Estuary.

(44,020 ft^3/s) and lowest during September 2005 (3,017 ft^3/s; table 17). Monthly mean streamflows were greater than long-term mean monthly flows in December 2004 and January, February, April, October, and November 2005 and less than the long-term flows in the other 6 months. The greatest percentage flow deficiency was in September 2005, when monthly mean streamflow was about 49 percent of the long-term mean monthly flow. Long-term mean monthly streamflow was computed on the basis of data for the period from 1913 to 2004. The highest daily mean streamflow during the report year was 230,000 ft^3/s on April 4, 2005. The lowest daily mean streamflow was 2,520 ft^3/s on September 20, 2005.

Water Temperature

Water temperature has an important influence on water quality, because it affects various physical, chemical, and biological properties of water. Generally, increases in water temperature have detrimental effects on water quality by decreasing the saturation level of dissolved oxygen and increasing the biological activity of aquatic organisms. Although the primary factors that affect water temperature in the Delaware Estuary are climatic, various kinds of water use, especially powerplant cooling, also can have substantial effects.

At the Benjamin Franklin Bridge, Philadelphia, Pennsylvania, water-temperature data were collected continuously from April to November 2005. Monthly mean water temperatures were greater than the long-term mean monthly temperatures in April 2005 and from June to September 2005. Long-term mean water temperatures were computed using data for the period from 1964 to 2004 (fig. 7). The maximum daily mean water temperature of 29.1˚C was recorded on August 14, 2005.

Specific Conductance and Chloride

Specific conductance is a measure of the capacity of water to conduct an electrical current and is a function of the types and quantities of dissolved substances in water. As concentrations of dissolved ions increase, specific conductance of the water also increases. Specific conductance measurements are good indicators of dissolved solids content and total ion concentrations. Seawater and some man-made constituents can cause the specific conductance of estuary water to increase substantially. Dilution associated with high streamflows results in decreased levels of dissolved solids and lower specific conductance whereas low streamflows have the opposite effect.

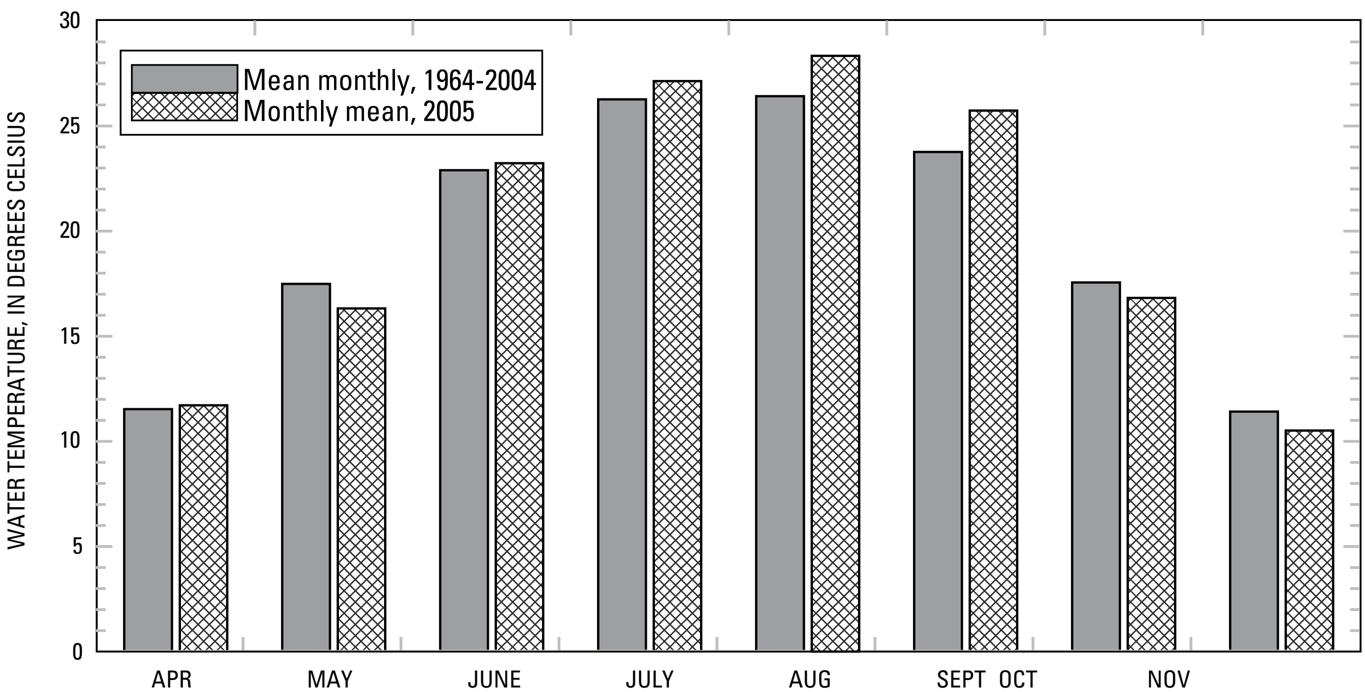

Figure 7. Water temperature in the Delaware Estuary at Benjamin Franklin Bridge at Philadelphia, Pennsylvania, April to November 2005.

The upstream movement of seawater and the accompanying increase in chloride concentrations is an important concern for water supplies obtained from the Delaware Estuary. Water with chloride concentrations greater than 250 milligrams per liter (mg/L) is considered undesirable for domestic use, and water with concentrations exceeding 50 mg/L is unsatisfactory for some industrial processes. Chloride concentrations in the estuary increase in a downstream direction, with proximity to the Atlantic Ocean.

Chloride concentration was not measured directly at the monitor site at Reedy Island Jetty, Delaware. Instead, a mathematical relation between specific conductance and chloride concentration, developed on the basis of long-term field measurements of specific conductance and laboratory analyses of chloride, was used to estimate chloride concentrations from specific conductance values. Chloride concentrations estimated from the relation are presented in table 18. The specific conductance-chloride relation is less reliable when chloride concentrations are less than 30 mg/L, because other chemical substances may be present in amounts large enough to affect the relation. Therefore, chloride concentrations estimated from specific conductance data are not presented when concentrations of less than 30 mg/L would result from the relation. Instead, estimated values less than 30 mg/L are reported as <30 mg/L. Chloride concentrations at Chester, Pennsylvania (table 19), were measured directly by Kimberly Clark Chester Operations and are not derived from specific conductance data.

At Chester, the highest daily maximum chloride concentration was 639 mg/L on October 8, 2005 (table 19). During the report year, daily maximum concentrations exceeded 50 mg/L on nearly 42 percent of the days. The lowest daily minimum chloride concentration was 21 mg/L on several days in October. Daily minimum concentrations exceeded 50 mg/L on about 31 percent of the days. Chloride concentrations were persistently high from August 9 to October 10, when daily minimum concentrations exceeded 50 mg/L on most days.

At Reedy Island Jetty, the highest daily maximum chloride concentration was 7,400 mg/L on September 28, 2005 (table 18). Daily maximum chloride concentrations during the report year exceeded 1,000 mg/L on 93 percent of the days. The lowest daily minimum chloride concentration for the report year was <30 mg/L on one day in December 2004 and several days in January and April 2005. Daily minimum chloride concentrations exceeded 1,000 mg/L on 59 percent of the days. From December to May, daily maximum chloride concentrations at Reedy Island Jetty ranged from <30 to 5,700 mg/L. From June to November, daily maximum chloride concentrations ranged from 1,600 to 7,400 mg/L.

Dissolved Oxygen

Dissolved oxygen in water is necessary for the respiratory processes of aquatic organisms and for chemical reactions in aquatic environments. Fish and many other clean-water species require relatively high dissolved-oxygen concentrations at all times. The major source of dissolved oxygen in the Delaware Estuary is diffusion from the atmosphere, and, to a lesser extent, photosynthetic activity of aquatic plants. The principal factors that affect dissolved-oxygen concentrations in the estuary are water temperature, biochemical oxygen demand, freshwater inflow, phytoplankton, turbidity, salinity, and tidal- and wind-driven mixing.

Concentrations of dissolved oxygen at several sites on the Delaware Estuary have been measured since 1962 by the USGS. Two of these sites, Delaware River at Benjamin Franklin Bridge at Philadelphia, Pennsylvania, and Delaware River at Chester, Pennsylvania, have nearly continuous records and are in the reach of the estuary most affected by effluent discharges. The mean and minimum daily mean dissolved-oxygen concentrations from July to September at these stations during the 1965–2005 report years are shown in figure 8. Although concentrations have increased considerably over this 41-year period, mean concentrations can vary considerably from year to year.

Concentrations of dissolved oxygen in the Delaware Estuary generally are greatest near Trenton and decrease in a downstream direction. In an area just downstream of the Benjamin Franklin Bridge, concentrations usually reach minimum levels. During the report year, daily mean concentrations of dissolved oxygen at the Benjamin Franklin Bridge monitor site were lowest in late July, and the lowest recorded

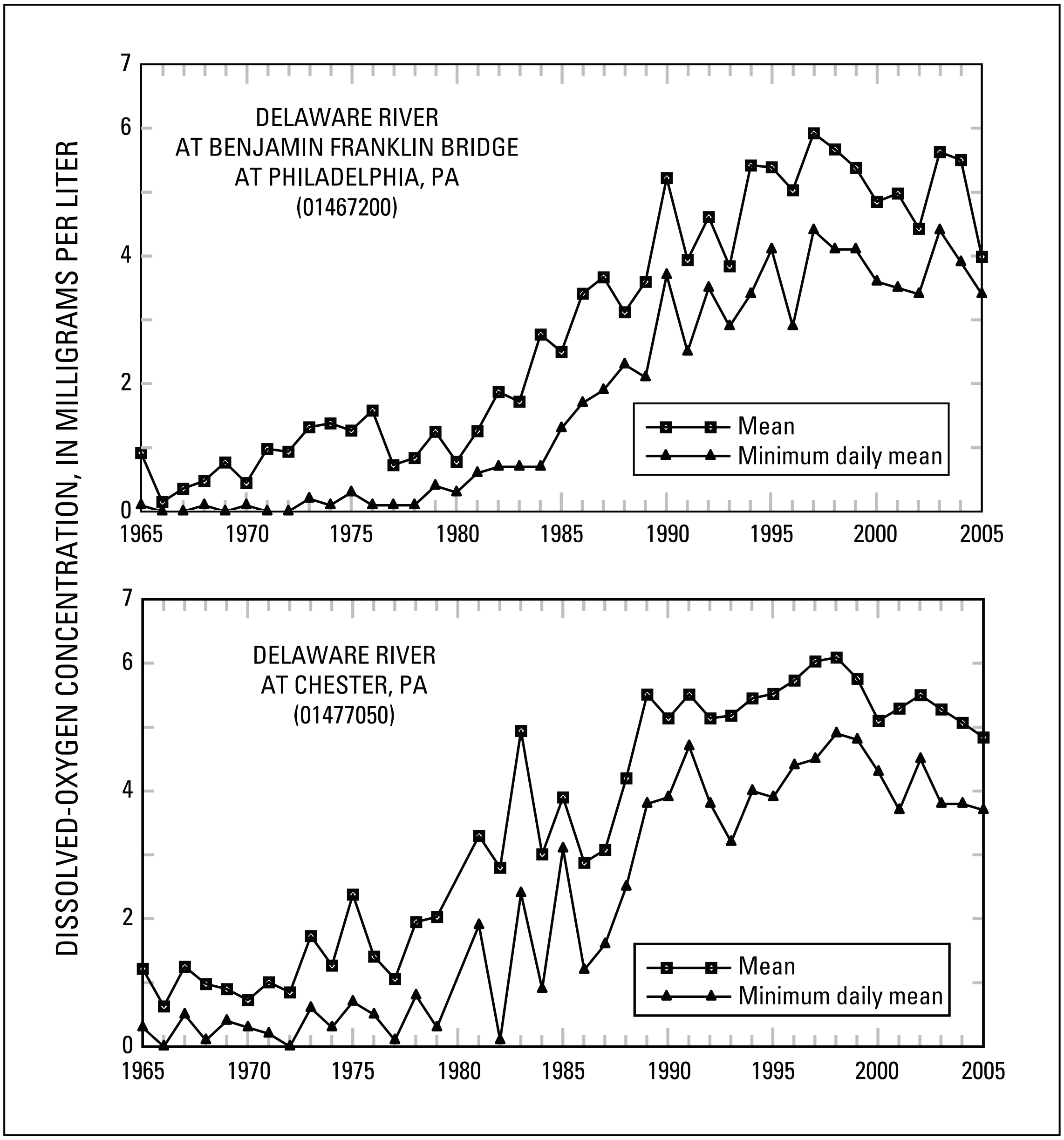

Figure 8. Mean and minimum daily mean dissolved-oxygen concentrations from July to September at two monitor sites on the Delaware Estuary, 1965–2005.

daily mean concentration was 3.4 mg/L on July 19 (table 20). Daily mean concentrations of dissolved oxygen were consistently 6.0 mg/L or greater on most days from April 1 to May 27 and from October 15 to November 28, 2005. At Chester, daily mean dissolved-oxygen concentrations were lowest during late July, and the lowest recorded daily mean concentration was 3.7 mg/L on July 19 and 20 (table 21).

Histograms of hourly dissolved-oxygen concentrations at the Benjamin Franklin Bridge and Chester monitor sites during the critical summer period—July to September 2005—are presented in figure 9. Hourly concentrations at the Benjamin Franklin Bridge were 4 mg/L or less during 75 percent of this period. At Chester, hourly dissolved-oxygen concentrations were 4 mg/L or less during 12.5 percent of the 2005 critical summer period. Dissolved-oxygen concentrations less than 4 mg/L can have adverse, and possibly lethal, effects on fish and other aquatic organisms.

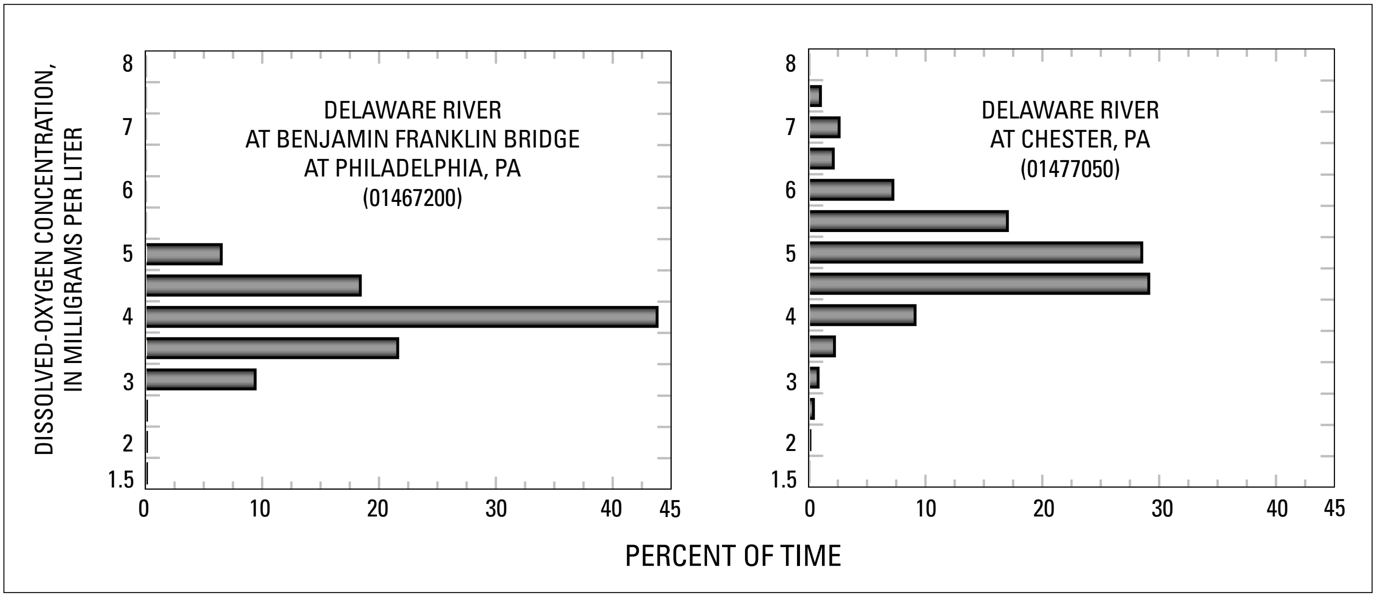

Figure 9. Distribution of hourly dissolved-oxygen concentrations at two monitor sites on the Delaware Estuary, July to September 2005.

Hydrogen-Ion Activity (pH)

The pH of a solution is a measure of the effective concentration (activity) of dissolved hydrogen ions. Solutions having pH less than 7 are characterized as acidic, whereas solutions with pH greater than 7 are considered basic or alkaline. The pH of uncontaminated surface water generally ranges from 6.5 to 8.5. Major factors affecting the pH of surface water include the geologic composition of the drainage basin and human inputs, including effluent discharges. In addition, photosynthetic activity, and dissolved gases including carbon dioxide, hydrogen sulfide, and ammonia can have a substantial effect on pH. During the report year, pH was measured seasonally at the Benjamin Franklin Bridge and Chester monitor sites, and continuously at the Reedy Island Jetty site. During this period, the ranges of median pH measured at these stations were as follows: Benjamin Franklin Bridge, 6.8 to 7.6; Chester, 6.9 to 7.4; and Reedy Island Jetty, 6.8 to 7.9. Generally, the pH of water in the Delaware Estuary is lowest near Trenton, New Jersey, and increases (that is, water becomes more alkaline) in a downstream direction. The pH of water in the Delaware Estuary between the Benjamin Franklin Bridge and Reedy Island Jetty is not a limiting factor for aquatic health or other beneficial uses of the water.

Table 17. Daily mean discharge, Delaware River at Trenton, New Jersey (station number 01463500) for year ending November 30, 2005. (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)-d]

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
1	47,300	16,200	13,400	11,900	62,500	17,700	5,690	6,170	3,530	3,380	2,720	16,400
2	48,800	15,600	12,100	11,700	72,100	16,700	5,380	6,050	3,290	3,610	2,840	14,800
3	48,100	15,000	11,600	11,200	161,000	15,900	5,180	5,510	3,250	3,380	2,770	13,700
4	38,000	15,100	11,400	10,800	230,000	14,900	5,510	5,040	3,260	3,300	2,810	13,000
5	31,700	19,300	11,500	10,000	140,000	14,000	5,430	4,360	3,200	3,170	2,840	12,100
6	28,100	25,600	11,300	9,830	81,900	13,100	5,180	4,080	3,070	2,780	2,890	11,300
7	25,100	26,600	10,600	9,700	62,500	13,000	6,220	4,070	3,070	2,740	2,930	10,400
8	25,200	26,200	10,800	12,300	56,900	12,100	6,270	6,050	3,470	2,800	12,200	10,000
9	25,500	29,500	11,100	14,300	45,400	11,300	5,910	9,740	3,610	2,800	78,900	9,640
10	30,100	26,600	12,700	13,800	38,400	10,700	5,950	7,760	3,780	2,960	43,500	9,730
11	34,400	23,700	14,600	12,600	33,700	9,970	6,070	6,370	3,820	2,950	26,200	10,300
12	41,800	23,400	15,600	12,100	28,700	9,330	6,150	5,140	3,610	2,940	29,200	11,100
13	38,000	22,800	13,900	11,900	24,500	8,830	5,960	4,710	3,430	3,110	35,400	10,700
14	33,300	35,000	12,400	11,400	21,500	8,320	5,580	5,010	3,620	3,030	49,900	9,430
15	29,000	88,900	20,200	10,800	19,400	8,310	5,470	5,210	4,150	3,360	46,800	8,750
16	24,600	78,200	20,800	10,600	17,500	8,590	5,700	4,940	4,150	3,550	38,800	8,490
17	22,000	55,100	23,500	10,200	15,900	8,380	5,300	5,570	4,080	3,240	30,400	11,600
18	20,100	43,200	23,600	10,100	14,100	7,940	5,030	6,910	3,430	3,420	23,000	15,500
19	17,900	34,500	20,500	10,000	13,100	7,400	4,970	5,170	3,100	2,940	18,700	17,100
20	16,600	30,100	17,200	9,900	12,700	7,280	4,620	4,360	3,170	2,520	15,900	14,200
21	15,000	28,200	16,500	9,790	12,000	6,930	4,310	4,700	3,110	2,700	13,900	12,400
22	13,000	23,800	16,000	10,200	11,600	6,520	4,220	4,340	3,090	2,760	12,700	13,900
23	13,300	17,900	15,300	11,600	11,500	6,160	4,490	3,990	3,000	2,890	15,400	15,400
24	25,300	17,000	14,900	16,200	17,200	5,980	4,440	3,950	2,930	2,830	21,500	14,600
25	33,200	18,000	14,000	16,400	19,300	5,960	4,070	4,170	2,990	2,920	28,000	13,600
26	29,800	17,800	12,800	15,400	21,200	6,010	3,990	4,310	3,030	2,970	33,800	12,600
27	25,100	17,100	12,000	14,600	18,900	5,890	4,360	3,650	3,020	3,080	39,500	11,300
28	21,500	15,900	11,600	18,500	19,000	5,690	4,150	3,810	3,140	2,980	31,100	10,200
29	19,100	14,600		53,500	19,600	5,830	4,140	3,730	4,690	2,790	24,600	9,960
30	17,500	14,100		98,800	18,600	6,190	6,880	3,590	4,180	2,620	20,700	18,600
31	16,800	14,300		80,400		6,000		3,500	3,610		18,000	
Total	855,200	849,300	411,900	570,520	1,320,700	290,910	156,620	155,960	106,880	90,520	727,900	370,800
Mean	27,590	27,400	14,710	18,400	44,020	9,384	5,221	5,031	3,448	3,017	23,480	12,360

Year total 5,907,210 (ft^3/s)-d

Mean 16,180 ft^3/s

Table 18. Daily maximum and minimum chloride concentrations estimated from values of specific conductance, Delaware River at Reedy Island Jetty, Delaware (station number 01482800), for report year ending November 30, 2005.

[Concentrations in milligrams per liter; ---, missing data; Max, maximum value; Min, minimum value; <, less than; n.d., not determined]

DAY	DEC		JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV	
	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	1,300	290	1,800	440	4,600	1,700	4,600	1,700	310	110	950	310	4,600	2,400	5,300	2,700	5,200	2,400	5,800	2,700	6,300	3,800	4,700	1,400
2	390	98	2,100	380	4,200	1,600	3,000	1,000	430	99	1,100	270	4,500	2,300	5,000	2,700	5,200	2,600	6,000	3,100	6,400	3,700	3,700	1,300
3	430	92	2,200	380	4,400	1,700	2,300	840	180	<30	1,300	250	3,900	2,300	5,400	2,600	5,300	2,500	6,200	3,100	6,000	3,700	4,100	1,200
4	1,600	83	1,900	420	5,300	1,800	3,500	920	250	<30	1,300	240	4,300	2,200	5,400	2,600	5,800	2,600	6,200	3,300	6,100	3,800	3,200	920
5	1,900	85	2,500	520	5,400	1,800	5,000	1,200	170	<30	1,300	250	4,300	2,200	5,000	2,700	5,900	2,700	6,200	3,500	6,200	3,900	3,800	860
6	1,700	110	3,100	500	5,400	1,700	5,100	1,400	---	---	1,300	250	4,600	2,000	4,600	2,400	5,500	2,600	6,600	3,600	6,000	3,900	3,600	990
7	2,100	270	2,500	400	5,300	1,800	5,400	1,500	---	---	2,500	440	4,300	2,100	4,900	2,500	5,800	2,700	5,700	3,600	6,500	4,100	3,200	1,000
8	2,100	390	2,600	370	5,000	1,900	5,600	1,300	---	---	2,600	550	4,100	1,800	5,200	2,200	5,800	2,800	6,200	3,700	6,000	3,500	3,200	930
9	1,800	310	2,100	330	4,500	1,800	---	---	---	---	---	640	4,100	1,800	4,500	2,200	5,400	2,900	6,300	3,800	3,600	1,900	3,900	850
10	2,100	300	2,300	270	4,400	1,800	---	---	---	---	---	660	4,000	1,800	4,200	2,100	5,300	2,800	6,600	3,800	3,600	1,500	3,000	1,000
11	2,200	210	1,200	230	3,200	1,400	4,100	830	---	---	2,600	710	3,700	1,600	4,100	2,100	5,500	2,800	6,500	3,500	3,200	1,000	3,100	870
12	830	150	1,300	200	3,300	1,300	4,400	1,200	---	---	2,400	660	3,200	1,500	4,600	1,900	5,800	2,800	6,100	3,400	3,600	1,200	3,200	1,000
13	350	110	1,400	180	3,500	1,000	3,600	1,200	---	---	1,900	610	3,100	1,400	4,800	2,200	5,500	2,500	---	---	4,300	1,600	3,100	1,000
14	170	44	530	90	3,800	1,000	4,100	1,100	---	---	2,400	610	3,700	1,500	4,500	2,500	5,700	2,400	7,200	3,400	4,900	1,000	3,000	910
15	340	44	210	32	3,200	930	3,000	620	<30	<30	2,200	680	4,200	1,700	4,800	2,300	6,000	2,400	6,800	3,500	3,900	720	3,600	840
16	710	39	44	<30	1,900	770	3,400	960	420	<30	2,700	750	5,500	2,100	5,000	2,300	6,400	2,700	6,800	3,800	3,900	480	3,300	990
17	77	33	<30	<30	2,200	650	3,600	1,200	630	<30	3,400	860	5,600	2,400	4,900	2,400	5,900	2,900	6,800	3,900	1,600	550	2,200	720
18	640	32	750	<30	2,600	440	4,100	1,400	930	<30	3,900	1,100	6,200	2,400	4,700	2,200	5,900	2,900	6,800	3,900	3,100	590	3,000	720
19	910	39	2,000	43	3,700	480	4,400	1,700	1,800	220	4,900	1,500	6,500	2,400	4,900	2,000	6,400	3,100	6,600	3,800	3,000	570	3,300	690
20	1,100	<30	1,600	210	4,200	1,200	4,900	2,000	2,000	370	4,700	2,100	6,500	2,700	4,900	2,000	5,900	3,100	6,400	3,900	2,700	610	2,400	560
21	2,100	110	1,900	180	5,100	1,500	5,000	1,900	2,600	390	5,500	1,900	6,200	2,700	5,000	2,100	6,000	3,200	6,000	3,900	2,800	610	2,200	510
22	2,200	210	2,700	260	5,100	1,600	5,200	2,200	2,600	540	5,500	2,000	6,000	2,700	5,000	2,200	6,000	3,200	6,500	3,900	3,200	680	2,600	560
23	2,500	310	2,700	670	4,300	1,600	5,700	2,000	2,100	590	4,900	2,000	5,900	2,700	5,000	2,300	5,800	3,200	6,200	3,800	2,800	710	2,900	880
24	1,400	260	4,800	1,000	3,800	1,700	5,500	2,300	2,300	630	5,400	2,200	6,300	2,800	5,000	2,300	5,800	3,200	7,300	3,600	3,100	640	3,400	1,200
25	1,900	160	4,800	1,600	4,700	1,600	5,300	1,800	2,300	540	5,200	2,600	5,600	2,800	4,900	2,400	5,800	3,300	6,400	4,100	4,800	2,000	2,900	590
26	1,700	150	4,200	1,500	4,100	1,600	3,700	1,700	1,800	510	5,300	2,500	5,400	2,700	4,400	2,300	6,100	3,500	6,200	3,900	3,800	1,800	3,400	670
27	2,300	180	4,100	1,600	2,700	1,400	3,700	1,600	1,400	420	5,000	2,600	5,300	2,800	4,600	2,400	6,400	3,600	6,300	3,200	4,100	1,400	4,000	970
28	2,900	590	4,600	1,500	3,000	1,300	---	---	1,400	400	---	2,300	5,400	2,700	5,000	2,300	6,000	3,600	7,400	3,600	4,900	1,100	4,200	1,000
29	2,200	330	4,400	1,600			---	---	1,600	410	---	2,200	4,700	2,800	5,000	2,400	6,300	3,300	6,400	4,300	5,000	1,400	4,000	1,400
30	2,400	350	3,900	1,500			---	---	1,400	390	---	2,200	4,900	2,600	5,000	2,400	6,500	3,200	6,300	3,600	4,500	1,400	3,000	900
31	2,400	440	4,800	1,500			---	---			---	2,200			5,200	2,400	6,200	3,200			3,200	1,500		
Mean	1,500	n.d.	n.d.	n.d.	4,000	1,400	4,300	1,400	n.d.	n.d.	3,200	1,200	4,900	2,300	4,900	2,300	5,800	2,900	6,400	3,600	4,300	1,800	3,300	910
Max	2,900	590	4,800	1,600	5,400	1,900	5,700	2,300	2,600	630	5,500	2,600	6,500	2,800	5,400	2,700	6,500	3,600	7,400	4,300	6,500	4,100	4,700	1,400
Min	77	<30	<30	<30	1,900	440	2,300	620	<30	<30	950	240	3,100	1,400	4,100	1,900	5,200	2,400	5,700	2,700	1,600	480	2,200	510

Table 19. Daily maximum and minimum chloride concentrations, Delaware River at Chester, Pennsylvania (station number 01477050), for report year ending November 30, 2005.
(Record furnished by Kimberly Clark Chester Operations)

[Concentrations in milligrams per liter; Max, maximum value; Min, minimum value; ---, missing data]

DAY	DEC		JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV	
	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	33	33	33	33	39	33	61	54	33	33	37	31	46	37	81	54	57	50	142	96	466	303	33	26
2	33	31	37	31	39	39	61	61	33	33	37	31	39	33	64	45	57	50	184	118	433	303	33	33
3	36	31	31	31	46	39	69	61	61	33	37	31	39	39	72	42	100	100	184	129	303	266	33	27
4	31	31	31	31	39	39	54	37	61	27	37	31	46	39	64	36	57	50	200	155	433	375	33	27
5	36	31	31	31	37	31	61	54	37	31	37	31	46	46	42	36	57	57	255	155	502	403	33	27
6	31	31	31	31	46	37	61	54	54	33	31	31	54	46	64	42	50	50	200	155	466	433	33	27
7	31	31	31	31	43	37	61	54	39	33	37	31	46	46	64	36	50	50	217	169	502	466	33	27
8	31	31	31	31	42	37	61	61	27	27	31	31	46	46	54	54	50	50	345	155	639	466	33	33
9	31	31	31	31	43	37	61	54	27	27	37	31	46	46	56	56	91	73	255	169	208	112	33	33
10	31	27	31	31	43	37	78	61	22	26	37	31	46	46	56	56	120	112	345	255	72	56	33	33
11	27	27	33	31	43	43	88	70	26	26	37	31	54	46	56	49	82	77	430	255	49	42	33	27
12	39	31	33	31	43	43	88	78	61	25	37	31	54	46	56	49	87	78	297	200	36	42	33	27
13	31	31	33	31	43	37	88	78	61	31	43	37	54	54	49	49	91	82	70	70	36	36	33	33
14	31	31	33	31	43	37	93	88	61	25	31	31	46	46	49	49	97	88	255	225	36	31	100	100
15	31	26	33	31	43	37	61	54	31	31	31	31	54	46	42	42	97	70	255	235	31	25	33	27
16	31	31	31	31	43	37	61	54	31	31	31	31	54	46	42	31	78	61	332	332	31	21	33	27
17	31	31	31	31	43	37	61	54	31	31	37	31	54	46	62	42	108	100	285	284	36	51	33	33
18	31	31	31	31	43	43	54	54	31	31	37	31	54	46	56	42	108	61	245	245	31	21	33	33
19	31	31	31	31	43	37	70	70	31	31	39	37	54	46	49	42	88	46	285	285	31	21	33	33
20	31	31	31	31	43	37	78	70	31	31	37	31	54	54	50	42	88	70	308	226	31	21	39	39
21	31	31	31	31	54	46	70	61	37	31	37	31	54	54	50	43	88	88	338	235	33	33	39	33
22	31	31	31	31	46	54	70	61	37	31	37	31	61	54	50	37	97	97	358	332	33	33	33	33
23	31	31	31	31	54	46	70	60	31	25	37	31	54	54	50	43	170	156	358	264	33	27	33	33
24	31	31	31	31	56	46	70	61	31	25	37	37	54	54	50	50	185	170	614	264	33	33	---	---
25	31	31	33	33	56	46	97	54	31	37	37	37	54	54	57	57	185	170	523	264	33	27	39	33
26	31	31	32	32	61	54	61	54	31	31	37	37	54	54	57	43	185	170	566	332	33	27	36	31
27	31	31	32	32	61	54	61	54	31	31	39	39	54	54	57	43	295	143	245	245	33	27	31	31
28	31	31	33	31	54	54	61	54	31	31	46	39	61	54	57	50	200	100	245	245	80	33	31	31
29	31	31	33	31			54	46	37	31	39	31	69	69	57	50	185	143	245	245	33	33	36	31
30	31	31	39	31			46	46	37	31	37	33	69	54	64	50	185	108	566	264	33	33	31	31
31	31	31	39	33			46	46			43	39			50	50	185	170			33	33		
Mean	32	31	32	31	46	41	67	59	37	30	37	33	52	49	56	45	115	93	305	220	154	124	36	33
Max	39	33	39	33	61	54	97	88	61	37	46	39	69	69	81	57	295	170	614	332	639	466	100	100
Min	27	26	31	31	37	31	46	37	22	25	31	31	39	33	42	31	50	46	70	70	31	21	31	26

Table 20. Daily mean dissolved-oxygen concentration, Delaware River at Benjamin Franklin Bridge at Philadelphia, Pennsylvania, (station number 01467200), April 1 to November 30, 2005.
(U.S. Geological Survey published record)

[Concentrations in milligrams per liter; Max, maximum value; Min, minimum value; ---, missing data]

DAY	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	11.8	9.8	5.5	**	3.9	4.2	4.7	10.5
2	11.5	10.0	5.7	4.1	3.8	4.2	4.6	10.5
3	10.8	10.0	5.8	4.3	3.9	4.3	4.7	10.5
4	10.8	9.9	5.7	4.4	3.9	4.3	4.7	10.4
5	11.4	9.8	5.7	4.3	4.0	4.5	4.5	10.1
6	11.6	9.8	6.0	4.1	4.1	4.6	4.4	9.9
7	11.5	9.8	5.9	3.9	4.1	4.6	4.4	9.5
8	---	9.8	6.0	4.0	4.1	4.7	4.7	9.2
9	---	9.8	5.9	3.8	3.9	4.7	**	9.2
10	---	9.7	5.7	3.8	3.7	4.6	**	9.0
11	---	9.5	5.4	3.8	3.6	4.5	**	9.0
12	10.5	9.3	5.4	3.8	3.6	4.6	**	8.9
13	10.4	9.2	5.3	3.8	3.8	4.6	**	9.0
14	10.4	9.1	5.0	3.7	3.9	4.4	**	8.9
15	10.5	9.0	4.8	3.7	3.7	4.1	8.1	8.8
16	10.5	8.6	4.6	3.6	3.7	3.9	8.2	8.7
17	10.4	8.2	4.2	3.6	3.6	3.8	8.2	8.7
18	10.4	7.9	4.0	3.6	3.7	3.7	8.1	8.9
19	10.3	7.6	4.1	3.4	3.7	3.6	8.1	9.1
20	10.1	7.5	4.0	3.5	3.7	3.7	8.1	9.4
21	10.0	7.2	3.8	3.5	3.6	3.7	8.1	9.5
22	9.9	7.0	---	3.5	3.7	3.9	8.1	9.5
23	9.6	6.7	---	3.5	---	3.9	8.0	10.0
24	9.4	6.5	3.7	3.5	---	4.4	8.3	10.3
25	9.3	6.4	3.9	3.6	4.0	4.5	8.5	10.9
26	9.3	6.2	4.1	3.6	4.2	4.5	9.1	11.0
27	9.4	6.0	4.1	3.8	4.3	4.6	9.8	11.0
28	9.5	5.9	3.9	3.9	---	4.6	10.0	11.0
29	9.6	5.7	3.9	4.0	---	4.7	10.2	---
30	9.8	5.6		4.0	3.9	4.7	10.4	---
31		5.5		4.0	4.1		10.5	
Mean	10.3	8.2	4.9	3.8	3.9	4.3	7.5	9.7
Max	11.8	10.0	6.0	4.4	4.3	4.7	10.5	11.0
Min	9.3	5.5	3.7	3.4	3.6	3.6	4.4	8.7

Table 21. Daily mean dissolved-oxygen concentration, Delaware River at Chester, Pennsylvania (station number 01477050), April 1 to November 30, 2005.
(U.S. Geological Survey published record)

[Concentrations in milligrams per liter; Max, maximum value; Min, minimum value; ---, missing data]

DAY	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	10.2	7.4	5.9	4.6	4.7	---	6.7	8.6
2	10.1	7.5	6.1	4.3	4.8	---	6.6	8.7
3	9.9	7.5	6.2	4.2	4.7	---	---	8.7
4	10.1	7.2	6.1	4.4	4.6	---	---	8.7
5	10.3	7.2	5.9	4.6	4.8	---	---	8.7
6	10.4	7.0	6.0	4.5	4.9	---	---	8.6
7	10.3	7.2	6.0	4.5	4.8	---	---	8.6
8	10.1	7.3	5.8	5.1	4.8	---	---	8.7
9	10.0	7.4	**	4.8	4.8	5.6	---	8.7
10	9.9	7.6	**	4.3	4.6	5.6	---	8.7
11	9.6	7.5	5.5	4.3	4.5	5.5	---	8.7
12	9.4	7.4	5.3	4.4	4.5	5.6	6.0	8.6
13	9.2	7.3	5.1	4.6	4.7	5.5	6.3	8.5
14	9.0	7.3	5.0	4.5	4.8	5.5	6.5	8.5
15	9.2	7.1	5.0	4.3	4.9	5.3	6.9	8.4
16	9.2	6.9	5.0	4.1	4.9	5.2	7.2	8.3
17	9.1	6.7	---	4.2	4.9	5.0	7.4	8.4
18	8.9	6.6	---	4.0	4.9	5.0	7.3	8.4
19	8.8	6.7	---	3.7	4.9	4.9	7.3	---
20	8.6	6.8	---	3.7	4.9	5.0	7.2	---
21	8.5	6.8	4.9	3.8	4.9	5.0	7.1	---
22	8.4	6.5	4.8	3.9	5.0	5.1	7.2	---
23	8.2	6.2	4.8	4.1	**	5.2	7.3	8.7
24	8.1	6.0	5.0	4.3	**	5.6	7.4	8.7
25	8.2	6.0	5.0	4.6	5.2	5.9	7.6	9.1
26	8.1	5.8	5.0	4.5	5.1	6.0	7.6	9.1
27	7.9	5.7	4.9	4.5	5.2	6.0	7.8	9.1
28	7.8	5.7	---	4.5	5.2	6.2	8.0	9.0
29	7.7	5.6	---	4.5	---	6.4	8.2	9.1
30	7.5	5.6	---	4.5	---	6.4	8.4	9.3
31		5.7		4.6	---		8.5	
Mean	9.1	6.7	5.4	4.4	4.8	5.5	7.3	8.7
Max	10.4	7.6	6.2	5.1	5.2	6.4	8.5	9.3
Min	7.5	5.6	4.8	3.7	4.5	4.9	6.0	8.3

Appendix A

Pepacton Reservoir Temporary Spill Reduction Program
January 24–March 31, 2005

Given the unusually high storage level of Pepacton Reservoir and the total storage conditions in the New York City (NYC) Delaware Basin Reservoirs for this time of the year, the temporary program described below is being implemented to reduce the volume of water spilled from Pepacton Reservoir. The program will attempt to manage a void in Pepacton Reservoir, based on snowpack in the reservoir's watershed, through supplemental releases above normal conservation rates from the East Delaware Release Chamber and maintain that void until March 31, 2005. This is a one-time temporary program implemented in response to extraordinary hydrologic conditions. The program is not part of any regular release program and does not establish a precedent for any future releases or actions.

Although the total volume of water spilled from Pepacton Reservoir will be reduced by this temporary program, it is unlikely that peak flows downstream will be significantly reduced. The spillway at Pepacton Reservoir provides substantial attenuation of peak flows downstream even when the reservoir is spilling. Pepacton Reservoir was not designed as a flood control reservoir; consequently, the Parties to the 1954 Supreme Court Decree strongly urge communities downstream of the reservoir to take all necessary and prudent actions to improve (1) awareness of flooding potential and (2) flood preparedness.

Temporary Pepacton Reservoir Spill Reduction Program:

1. Upon approval of this agreement by the Decree Parties, the City of New York will implement a temporary program to achieve limited reduction of Pepacton Reservoir storage through supplemental releases from the East Delaware Release Chamber.
2. The recommended rate of the supplemental release shall be established daily by NYC in consultation with the Delaware River Master. Releases above the normal conservation rate will be accounted for as "special releases" and be considered neither River Master directed nor conservation in accordance with DRBC Docket D-77-20 (Revision 7).
3. The River Master will manage the recommended supplemental releases in such a manner as to conserve the waters of the Delaware Basin in accordance with the following guidance—The flood stage for the East Branch Delaware River at Fishs Eddy is 15.0 ft. Accordingly, supplemental releases will not be made when the river stage for the East Branch Delaware River at Fishs Eddy is above 13.0 ft. or is forecast to be above 13.0 ft. within 48 hours of a planned supplemental release from Pepacton Reservoir. This procedure may be modified at any time if additional information demonstrates that a lower cautionary stage should be used to limit the supplemental releases.
4. Supplemental releases may be suspended if ice conditions threaten flood prone areas of the East Branch.
5. Supplemental releases will be designed so that the combined discharge from the East Delaware Release Chamber and the Downsville Dam spillway does not exceed 2,000 cubic feet per second (cfs). All supplemental releases will be discontinued when the spillway discharge exceeds 2,000 cfs.
6. Supplemental releases will be made as necessary to maintain to the extent practicable a void in Pepacton Reservoir not to exceed fifty percent (50%) of the water equivalent of the watershed snowpack above Pepacton Reservoir.
7. This program will expire on March 31, 2005. This program may be terminated at any time at the request of any Decree Party or may be modified with the unanimous consent of the Decree Parties.

Consent to Action by The City of New York

Consent of the Parties to the U.S. Supreme Court Decree in New Jersey v. New York, 347 U.S. 995 (1954), approving the Pepacton Reservoir Temporary Spill Reduction Program January 24–March 31, 2005 by the City of New York.

/s/ Samuel A. Wolfe		/s/ Fred Nuffer	
State of New Jersey	Date	State of New York	Date
/s/ John H. Talley		/s/ Cathy Curran Myers	
State of Delaware	Date	Commonwealth of Pennsylvania	Date
/s/ Kevin C. Donnelly		/s/ Michael A. Principe	
State of Delaware	Date	City of New York	Date

Appendix B

Temporary Suspension of the Downbasin Portion of the Excess Release Quantity
Prepared by the Office of the Delaware River Master
July 20, 2005

WHEREAS the City of New York operates Pepacton, Cannonsville, and Neversink Reservoirs in the upper Delaware River Basin (“the Reservoirs”); and

WHEREAS diversions of water from the Reservoirs by the City are authorized and compensating releases of water from the Reservoirs downstream are stipulated under the terms of the Amended Decree of the United States Supreme Court in New Jersey v. New York, 347 U.S. 995 (1954) (“the 1954 Decree”); and

WHEREAS the 1954 Decree requires releases of water from the Reservoirs at the direction and under the supervision of the Delaware River Master, which releases are designed to maintain a minimum basic rate of flow of 1,750 cubic feet per second at the U.S. Geological Survey gaging station Delaware River at Montague, New Jersey; and

WHEREAS the 1954 Decree provides, under Paragraph III B 1 (c), for the computation of an annual Excess Release Quantity, and under Paragraph III B 1 (d) for the release of the annual Excess Quantity; and

WHEREAS the Decree Parties, in recognition of the current level of storage in the Reservoirs and possible short- and long-term effects of the Spring 2005 Swinging Bridge Dam emergency on total basin storage, desire to suspend release to the downbasin of the remaining Excess Quantity not set aside for tailwaters fishery protection—a quantity of 1,089 cfs-days—for a consecutive two-week period beginning July 20, 2005 and ending on August 2, 2005 to allow for additional consideration among the Decree Parties of basinwide hydrologic and storage conditions:

NOW THEREFORE the undersigned Parties to the 1954 Decree unanimously agree to a two-week suspension of the release of the remaining downbasin ERQ and the Parties unanimously request the Delaware River Master to suspend release of this water from July 20, 2005 through August 2, 2005.

Consent to Action by The Delaware River Master

Consent of the Parties to the U.S. Supreme Court Decree in New Jersey v. New York, 347 U.S. 995 (1954), approving the Temporary Suspension of the Remaining Downbasin Portion of the Excess Release Quantity.

/s/ Samuel A. Wolfe		/s/ Fred Nuffer	
State of New Jersey	Date	State of New York	Date
/s/ John H. Talley		/s/ Cathleen Curran Myers	
State of Delaware	Date	Commonwealth of Pennsylvania	Date
/s/ Kevin C. Donnelly		/s/ Michael A. Principe	
State of Delaware	Date	City of New York	Date

Appendix C

Temporary Suspension of the Downbasin Portion of the Excess Release Quantity
Prepared by the Office of the Delaware River Master
August 2, 2005

WHEREAS the City of New York operates Pepacton, Cannonsville, and Neversink Reservoirs in the upper Delaware River Basin (“the Reservoirs”); and

WHEREAS diversions of water from the Reservoirs by the City are authorized and compensating releases of water from the Reservoirs downstream are stipulated under the terms of the Amended Decree of the United States Supreme Court in New Jersey v. New York, 347 U.S. 995 (1954) (“the 1954 Decree”); and

WHEREAS the 1954 Decree requires releases of water from the Reservoirs at the direction and under the supervision of the Delaware River Master, which releases are designed to maintain a minimum basic rate of flow of 1,750 cubic feet per second (cfs) at the U.S. Geological Survey gaging station Delaware River at Montague, New Jersey; and

WHEREAS the 1954 Decree provides, under Paragraph III B 1 (c), for the computation of an annual Excess Release Quantity, and under Paragraph III B 1 (d) for the release of the annual Excess Quantity; and

WHEREAS the Decree Parties, in recognition of the current level of storage in the Reservoirs and possible short- and long-term effects of the Spring 2005 Swinging Bridge Dam emergency on total basin storage, desire to suspend release to the downbasin of the remaining Excess Quantity not set aside for tailwaters fishery protection—a quantity of 1,089 cfs-days—for a consecutive period beginning August 3, 2005 and ending on August 31, 2005 to allow for additional consideration among the Decree Parties of basinwide hydrologic and storage conditions and to delay any possible entry into drought watch that may result from the current conditions; and

WHEREAS the Decree Parties recognize that suspension of Excess Quantity releases may on certain days result in additional drawdowns of the Habitat Protection Bank; and

WHEREAS the Decree Parties seek to preserve the Habitat Protection Bank to the extent practicable:

NOW THEREFORE the undersigned Parties to the 1954 Decree unanimously agree to a temporary suspension of the release of the remaining downbasin ERQ and the Parties unanimously request the Delaware River Master to suspend release of this water from August 3, 2005 through August 31, 2005; provided that on any day during such suspension, when releases in excess of 50 cfs may be required from the Habitat Protection Bank, at the request of the New York State Department of Environmental Conservation to the River Master’s office, a release of 50 cfs may be made from the remaining downbasin ERQ for the purpose of preserving storage in the Habitat Protection Bank. A balancing adjustment will not be applied while this release program is in effect.

Consent to Action by The Delaware River Master

Consent of the Parties to the U.S. Supreme Court Decree in New Jersey v. New York, 347 U.S. 995 (1954), approving the continued Temporary Suspension of the Remaining Downbasin Portion of the Excess Release Quantity.

/s/ Samuel A. Wolfe	/s/ Fred Nuffer
State of New Jersey Date	State of New York Date
/s/ John H. Talley	/s/ Cathy Curran Myers
State of Delaware Date	Commonwealth of Pennsylvania Date
/s/ Kevin C. Donnelly	/s/ Michael A. Principe
State of Delaware Date	City of New York Date

Appendix D

Temporary Suspension of the Downbasin Portion of the Excess Release Quantity
Prepared by the Office of the Delaware River Master
August 25, 2005

WHEREAS the City of New York operates Pepacton, Cannonsville, and Neversink Reservoirs in the upper Delaware River Basin (“the Reservoirs”); and

WHEREAS diversions of water from the Reservoirs by the City are authorized and compensating releases of water from the Reservoirs downstream are stipulated under the terms of the Amended Decree of the United States Supreme Court in New Jersey v. New York, 347 U.S. 995 (1954) (“the 1954 Decree”); and

WHEREAS the 1954 Decree requires releases of water from the Reservoirs at the direction and under the supervision of the Delaware River Master, which releases are designed to maintain a minimum basic rate of flow of 1,750 cubic feet per second (cfs) at the U.S. Geological Survey gaging station Delaware River at Montague, New Jersey; and

WHEREAS the 1954 Decree provides, under Paragraph III B 1 (c), for the computation of an annual Excess Release Quantity, and under Paragraph III B 1 (d) for the release of the annual Excess Quantity; and

WHEREAS the Decree Parties, in recognition of the current level of storage in the Reservoirs and possible short- and long-term effects of the Spring 2005 Swinging Bridge Dam emergency on total basin storage, desire to suspend release to the downbasin of the remaining Excess Quantity not set aside for tailwaters fishery protection—a quantity of 1,089 cfs-days—for a consecutive period beginning September 1, 2005 and ending on September 30, 2005 to allow for additional consideration among the Decree Parties of basin-wide hydrologic and storage conditions and to delay any possible entry into drought watch that may result from the current conditions; and

WHEREAS the Decree Parties recognize that suspension of Excess Quantity releases may on certain days result in additional drawdowns of the Habitat Protection Bank; and

WHEREAS the Decree Parties seek to preserve the Habitat Protection Bank to the extent practicable:

NOW THEREFORE the undersigned Parties to the 1954 Decree unanimously agree to a temporary suspension of the release of the remaining downbasin ERQ and the Parties unanimously request the Delaware River Master to suspend release of this water from September 1, 2005 through September 30, 2005; provided that on any day during such suspension, when releases in excess of 50 cfs may be required from the Habitat Protection Bank, at the request of the New York State Department of Environmental Conservation to the River Master’s office, a release of 50 cfs may be made from the remaining downbasin ERQ for the purpose of preserving storage in the Habitat Protection Bank. A balancing adjustment will not be applied while this release program is in effect.

Consent to Action by The Delaware River Master

Consent of the Parties to the U.S. Supreme Court Decree in New Jersey v. New York, 347 U.S. 995 (1954), approving the continued Temporary Suspension of the Remaining Downbasin Portion of the Excess Release Quantity.

/s/ Samuel A. Wolfe	/s/ Fred Nuffer
State of New Jersey — Date	State of New York — Date
/s/ John H. Talley	/s/ Cathy Curran Myers
State of Delaware — Date	Commonwealth of Pennsylvania — Date
/s/ Kevin C. Donnelly	/s/ Michael A. Principe
State of Delaware — Date	City of New York — Date

Appendix E

**Temporary Suspension of the Downbasin Portion of the Excess Release Quantity
Prepared by the Office of the Delaware River Master
September 29, 2005**

WHEREAS the City of New York operates Pepacton, Cannonsville, and Neversink Reservoirs in the upper Delaware River Basin (“the Reservoirs”); and

WHEREAS diversions of water from the Reservoirs by the City are authorized and compensating releases of water from the Reservoirs downstream are stipulated under the terms of the Amended Decree of the United States Supreme Court in New Jersey v. New York, 347 U.S. 995 (1954) (“the 1954 Decree”); and

WHEREAS the 1954 Decree requires releases of water from the Reservoirs at the direction and under the supervision of the Delaware River Master, which releases are designed to maintain a minimum basic rate of flow of 1,750 cubic feet per second (cfs) at the U.S. Geological Survey gaging station Delaware River at Montague, New Jersey; and

WHEREAS the 1954 Decree provides, under Paragraph III B 1 (c), for the computation of an annual Excess Release Quantity, and under Paragraph III B 1 (d) for the release of the annual Excess Quantity; and

WHEREAS the Decree Parties, in recognition of the current level of storage in the Reservoirs and possible short- and long-term effects of the Spring 2005 Swinging Bridge Dam emergency on total basin storage, desire to suspend release to the downbasin of the remaining Excess Quantity not set aside for tailwaters fishery protection, for a consecutive period beginning October 1, 2005 and ending on October 31, 2005, to allow for additional consideration among the Decree Parties of basinwide hydrologic and storage conditions and to delay any possible entry into drought watch that may result from the current conditions; and

WHEREAS the Decree Parties recognize that suspension of Excess Quantity releases may on certain days result in additional drawdown of the Habitat Protection Bank; and

WHEREAS the Decree Parties seek to preserve the Habitat Protection Bank to the extent practicable:

NOW THEREFORE the undersigned Parties to the 1954 Decree unanimously agree to a temporary suspension of the release of the remaining downbasin ERQ and the Parties unanimously request the Delaware River Master to suspend release of this water from October 1, 2005 through October 31, 2005; provided that on any day during such suspension, when releases in excess of 50 cfs may be required from the Habitat Protection Bank, at the request of the New York State Department of Environmental Conservation to the River Master’s office, a release of 50 cfs may be made from the remaining downbasin ERQ for the purpose of preserving storage in the Habitat Protection Bank. A balancing adjustment will not be applied while this release program is in effect.

Consent to Action by The Delaware River Master

Consent of the Parties to the U.S. Supreme Court Decree in New Jersey v. New York, 347 U.S. 995 (1954), approving the continued Temporary Suspension of the Remaining Downbasin Portion of the Excess Release Quantity.

/s/ Samuel A. Wolfe State of New Jersey Date	/s/ Fred Nuffer State of New York Date
/s/ John H. Talley State of Delaware Date	/s/ Cathy Curran Myers Commonwealth of Pennsylvania Date
/s/ Harry W. Otto State of Delaware Date	/s/ Mark D. Hoffer City of New York Date

Appendix F

Temporary Suspension of the Downbasin Portion of the Excess Release Quantity
Prepared by the Office of the Delaware River Master
October 31, 2005

WHEREAS the City of New York operates Pepacton, Cannonsville, and Neversink Reservoirs in the upper Delaware River Basin ("the Reservoirs"); and

WHEREAS diversions of water from the Reservoirs by the City are authorized and compensating releases of water from the Reservoirs downstream are stipulated under the terms of the Amended Decree of the United States Supreme Court in New Jersey v. New York, 347 U.S. 995 (1954) ("the 1954 Decree"); and

WHEREAS the 1954 Decree requires releases of water from the Reservoirs at the direction and under the supervision of the Delaware River Master, which releases are designed to maintain a minimum basic rate of flow of 1,750 cubic feet per second (cfs) at the U.S. Geological Survey gaging station Delaware River at Montague, New Jersey; and

WHEREAS the 1954 Decree provides, under Paragraph III B 1 (c), for the computation of an annual Excess Release Quantity, and under Paragraph III B 1 (d) for the release of the annual Excess Quantity; and

WHEREAS the Decree Parties, in recognition of the current level of storage in the Reservoirs and possible short- and long-term effects of the Spring 2005 Swinging Bridge Dam emergency on total basin storage, desire to suspend release to the downbasin of the remaining Excess Quantity not set aside for tailwaters fishery protection, for a consecutive period beginning November 1, 2005 and ending on December 15, 2005, to allow for additional consideration among the Decree Parties of basinwide hydrologic and storage conditions and to delay any possible entry into drought watch that may result from the current conditions; and

WHEREAS the Decree Parties recognize that suspension of Excess Quantity releases may on certain days result in additional drawdown of the Habitat Protection Bank; and

WHEREAS the Decree Parties seek to preserve the Habitat Protection Bank to the extent practicable:

NOW THEREFORE the undersigned Parties to the 1954 Decree unanimously agree to a temporary suspension of the release of the remaining downbasin ERQ and the Parties unanimously request the Delaware River Master to suspend release of this water from November 1, 2005 through December 15, 2005; provided that on any day during such suspension, when releases in excess of 50 cfs may be required from the Habitat Protection Bank, at the request of the New York State Department of Environmental Conservation to the River Master's office, a release of 50 cfs may be made from the remaining downbasin ERQ for the purpose of preserving storage in the Habitat Protection Bank. A balancing adjustment will not be applied while this release program is in effect.

Consent to Action by The Delaware River Master

Consent of the Parties to the U.S. Supreme Court Decree in New Jersey v. New York, 347 U.S. 995 (1954), approving the continued Temporary Suspension of the Remaining Downbasin Portion of the Excess Release Quantity.

/s/ Samuel A. Wolfe	/s/ Fred Nuffer
State of New Jersey Date	State of New York Date
/s/ Stefanie J. Baxter	/s/ Cathy Curran Myers
State of Delaware Date	Commonwealth of Pennsylvania Date
/s/ Kevin C. Donnelly	/s/ Michael A. Principe
State of Delaware Date	City of New York Date

Appendix G

Interim Program
for
Pepacton Reservoir Spill Reduction

On April 21, 2004, the Parties to the 1954 U.S. Supreme Court Decree (Decree Parties) approved an interim program for managing releases from the New York City Delaware Basin reservoirs. That interim program was embodied in Delaware River Basin Commission (DRBC) Resolution No. 2004-3 Docket No. D-77-20 (Revision 7). In approving that resolution, the Decree Parties committed to continuing discussions to develop and implement by May 31, 2007 a long-term flexible program to manage releases from the City Delaware Basin reservoirs to better address fisheries in the tailwaters below those reservoirs; the Decree Parties agreed that implementation of such a program required consideration of other related issues.

On several occasions in the past, the Decree Parties have implemented temporary programs to manage spills from Pepacton Reservoir during periods of unusually high storage, combined with significant snowpack or exceptionally wet hydrologic conditions, to reduce the potential volume of water spilled from Pepacton Reservoir during flood conditions.

The Decree Parties agree that reduction of Pepacton Reservoir spills during flood events is a related issue that should be considered in the development of the long-term flexible program. The Decree Parties also agree that reduction of Pepacton Reservoir spills should not be delayed until final approval of the long-term flexible program occurs. Therefore the Decree Parties hereby agree to implement an interim spill reduction program for Pepacton Reservoir that will expire on March 31, 2007.

During hydrological conditions resulting in full or near-full storage in Pepacton Reservoir individually and overall in the New York City (NYC) Delaware Basin Reservoirs, the interim spill reduction program described below will be implemented to reduce the volume of water spilled from Pepacton Reservoir. The program will attempt to manage a void in Pepacton Reservoir, based on snowpack in the reservoir's watershed, through supplemental releases above normal conservation rates from the East Delaware Release Chamber and maintain that void during the period November 1 through March 31 each water year. This interim program is not part of any regular release program and does not establish a precedent for any future releases or actions.

Although the total volume of water spilled from Pepacton Reservoir may be reduced by this interim program, it is unlikely that peak flows downstream will be significantly reduced. Pepacton Reservoir provides substantial attenuation of peak flows downstream even when the reservoir is spilling. Pepacton Reservoir was not designed as a flood control reservoir and does not contain release works capable of releasing water at rates necessary for effective flood management operation; consequently, the Decree Parties strongly urge communities downstream of the reservoir to take all necessary and prudent actions to improve flood preparedness and awareness of flood potential.

<u>Interim Pepacton Reservoir Spill Reduction Program</u>:

1. Upon approval of this agreement by the Decree Parties, the City of New York will implement an interim program to achieve limited reduction of Pepacton Reservoir storage through supplemental releases from the East Delaware Release Chamber.

2. During the period November 1 to March 31 of each water year, whenever a continuous snowpack monitoring program acceptable to the Decree Parties is in effect, supplemental releases will be made as necessary to maintain to the extent practicable a void in Pepacton Reservoir not to exceed fifty percent (50%) of the water equivalent of the watershed snowpack above Pepacton Reservoir.

3. The recommended rate of the supplemental release shall be established daily by NYC in consultation with the Delaware River Master. Releases above the normal conservation rate will be accounted for as

special releases and be considered neither River Master directed releases nor conservation releases in accordance with DRBC Docket D-77-20 (Revision 7).

4. The River Master will manage the recommended supplemental releases in such a manner as to conserve the waters of the Delaware Basin in accordance with the following guidance:

    The flood stage for the East Branch Delaware River at Fishs Eddy is 13 feet. Accordingly, supplemental releases will not be made when the river stage for the East Branch Delaware River at Fishs Eddy is above 11 feet, or is forecast to be above 11 feet within 48 hours of a planned supplemental release from Pepacton Reservoir. This guidance may be modified at any time if additional information demonstrates that a lower cautionary stage should be used to limit the supplemental releases.

5. Supplemental releases may be suspended if ice conditions threaten flood prone areas of the East Branch.

6. Supplemental releases will be designed so that the combined discharge from the East Delaware Release Chamber and the Downsville Dam spillway does not exceed 2,000 cubic feet per second (cfs). All supplemental releases will be discontinued when the spillway discharge exceeds 2,000 cfs.

7. This interim program will expire on May 31, 2007 and may be terminated at any time at the request of any Decree Party or may be modified with the unanimous consent of the Decree Parties.

Consent to Action by The City of New York

Consent of the Parties to the U.S. Supreme Court Decree in New Jersey v. New York, 347 U.S. 995 (1954), approving the Pepacton Reservoir Interim Spill Reduction Program, November 1, 2005 through May 31, 2006, and November 1, 2006 through May 31, 2007, implemented by the City of New York

/s/ Samuel A. Wolfe	/s/ Fred Nuffer
State of New Jersey Date	State of New York Date
/s/ Stefanie J. Baxter	/s/ Cathleen Curran Myers
State of Delaware Date	Commonwealth of Pennsylvania Date
/s/ Kevin C. Donnelly	/s/ Michael A. Principe
State of Delaware Date	City of New York Date

Appendix H

Interim Program
for
Neversink Reservoir Spill Reduction

On April 21, 2004, the Parties to the 1954 U.S. Supreme Court Decree (Decree Parties) approved an interim program for managing releases from the New York City Delaware Basin reservoirs. That interim program was embodied in Delaware River Basin Commission (DRBC) Resolution No. 2004-3 Docket No. D-77-20 (Revision 7). In approving that resolution, the Decree Parties committed to continuing discussions to develop and implement by May 31, 2007 a long-term flexible program to manage releases from the City Delaware Basin reservoirs to better address fisheries in the tailwaters below those reservoirs; the Decree Parties agreed that implementation of such a program required consideration of other related issues.

The Decree Parties agree that reduction of Neversink Reservoir spills during flood events is a related issue that should be considered in the development of the long-term flexible program. The Decree Parties also agree that reduction of Neversink Reservoir spills should not be delayed until final approval of the long-term flexible program occurs. Therefore the Decree Parties hereby agree to implement an interim spill reduction program for Neversink Reservoir that will expire on March 31, 2007.

During hydrological conditions resulting in full or near-full storage in Neversink Reservoir individually and overall in the New York City (NYC) Delaware Basin Reservoirs, the interim spill reduction program described below will be implemented to reduce the volume of water spilled from Neversink Reservoir. The program will attempt to manage a void in Neversink Reservoir, based on snowpack in the reservoir's watershed, through supplemental releases above normal conservation rates from the Neversink Release Chamber and maintain that void during the period November 1 through March 31 each water year. This interim program is not part of any regular release program and does not establish a precedent for any future releases or actions.

Although the total volume of water spilled from Neversink Reservoir may be reduced by this interim program, it is unlikely that peak flows downstream will be significantly reduced. Neversink Reservoir provides substantial attenuation of peak flows downstream even when the reservoir is spilling. Neversink Reservoir was not designed as a flood control reservoir and does not contain release works capable of releasing water at rates necessary for effective flood management operation; consequently, the Decree Parties strongly urge communities downstream of the reservoir to take all necessary and prudent actions to improve flood preparedness and awareness of flood potential.

<u>Interim Neversink Reservoir Spill Reduction Program</u>:

1. Upon approval of this agreement by the Decree Parties, the City of New York will implement an interim program to achieve limited reduction of Neversink Reservoir storage through supplemental releases from the Neversink Release Chamber.

2. During the period November 1 to March 31 of each water year, whenever the water equivalent of the watershed snowpack above Neversink Reservoir is equal to or greater than twice the quantity of water that can be released from the Neversink Release Chamber during a snowpack measurement interval or whenever a continuous snowpack monitoring program acceptable to the Decree Parties is in effect, supplemental releases will be made as necessary to maintain to the extent practicable a void in Neversink Reservoir not to exceed fifty percent (50%) of the water equivalent of the watershed snowpack above Neversink Reservoir.

3. The recommended rate of the supplemental release shall be established daily by NYC in consultation with the Delaware River Master. Releases above the normal conservation rate will be accounted for as special releases and be considered neither River Master directed releases nor conservation releases in accordance with DRBC Docket D-77-20 (Revision 7).

4. The River Master will manage the recommended supplemental releases in such a manner as to conserve the waters of the Delaware Basin in accordance with the following guidance:

    The flood stage for the Neversink River at Bridgeville is 8 feet. Accordingly, supplemental releases will not be made when the river stage for the Neversink River at Bridgeville is above 6 feet, or is forecast to be above 6 feet within 48 hours of a planned supplemental release from Neversink Reservoir. This guidance may be modified at any time if additional information demonstrates that a lower cautionary stage should be used to limit the supplemental releases.

5. Supplemental releases may be suspended if ice conditions threaten flood prone areas of the Neversink.
6. Supplemental releases will be designed so that the combined discharge from the Neversink Release Chamber and the Neversink Dam spillway does not exceed 750 cubic feet per second (cfs). All supplemental releases will be discontinued when the spillway discharge exceeds 750 cfs.
7. This interim program will expire on May 31, 2007 and may be terminated at any time at the request of any Decree Party or may be modified with the unanimous consent of the Decree Parties.

Consent to Action by The City of New York

Consent of the Parties to the U.S. Supreme Court Decree in New Jersey v. New York, 347 U.S. 995 (1954), approving the Neversink Reservoir Interim Spill Reduction Program, November 1, 2005 through May 31, 2006, and November 1, 2006 through May 31, 2007, implemented by the City of New York.

/s/ Samuel A. Wolfe	/s/ Fred Nuffer
State of New Jersey Date	State of New York Date
/s/ Stefanie J. Baxter	/s/ Cathy Curran Myers
State of Delaware Date	Commonwealth of Pennsylvania Date
/s/ Kevin C. Donnelly	/s/ Michael A. Principe
State of Delaware Date	City of New York Date

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