

May 22, 2009

To:

Jeremy Rosenthal, Environmental Analyst  
NYS DEC, Division of Environmental Permits  
625 Broadway, 4th Floor  
Albany, NY 12233-1750  
Phone: (518) 402-9159  
[deprmt@gw.dec.state.ny.us](mailto:deprmt@gw.dec.state.ny.us)

RE: UWNY Scoping  
Haverstraw Water Supply Project Draft Environmental Impact Statement

From:

Bob Dillon  
Phone: 845-553-5259  
[DillonFloods@verizon.net](mailto:DillonFloods@verizon.net)

ROCKLAND R.A.F.T.  
(ROCKLAND RESIDENTS AGAINST FLOODING TOMORROW)  
[HTTP://ROCKLANDRAFT.COM](http://ROCKLANDRAFT.COM)  
FOUNDING MEMBER

Rockland County Water Quality Committee  
Associate Member

**TAPPAN ZEE BRIDGE/I-287**  
**ENVIRONMENTAL REVIEW**  
Environmental Stakeholders' Advisory Working Group  
Member

**Rockland Coalition for Sustainable Water**  
Member

The comments attached are my own and do not represent the views of others.

Dear Mr. Rosenthal,

I respectfully request that the Haverstraw Water Supply Project Environmental Impact Statement address the following :

# **Significant Relevant Environmental Issues And Potential Impacts**

## **Adverse Impacts**

### **1. Flooding Caused By Cross-Basin Export**

Exporting Hudson River water from the Haverstraw Water Supply Project through United Water's Rockland County distribution system to the Hackensack River, Saddle River, Mahwah River and Ramapo River basins will result in additional flows in those basins.

- Adding up to 10 million gallons per day to United Water's Rockland County distribution system will result in additional flows in the Hackensack River and Ramapo River basins in proportion to the decreased demands on the Lake DeForest and Ramapo Well Field water treatment plants.

Augmentations from the Haverstraw Water Supply Project will allow United Water to reduce production from the existing treatment plants so that more water can flow downriver to New Jersey.

Reduced demand on the Lake DeForest reservoir will cause the Lake to be at higher levels and spill over more frequently sending additional runoff downriver to New Jersey causing additional flooding.

- Development that could not otherwise be supported by the resources available will occur. Water from the Hudson River will have to be imported into the Hackensack River, Saddle River, Mahwah River and Ramapo River basins to supply these new customers. This cross-basin export could bring up to 10 million additional gallons per day into these basins causing additional flooding.

New construction will destroy watershed and create additional impervious surface causing additional flooding.

Developers are already referring to the availability of the additional water supply from the Haverstraw Water Supply Project in their project Draft Environmental Impact Statements.

(See page III E-3 of the Draft Environmental Impact Statement for the Rockland County Psychiatric Center development project click on <http://www.orangetown.com/docs/Chapter%203E-Utilities.pdf>

This cross-basin export will result in additional flooding in New York and New Jersey.

What mitigation and remediation measures will be taken?

## **2. Transporting Water Out Of New York State By Artificial Means**

Using pipelines and artificial canals to transport water out of New York State is a violation of state law. The desalination plant will by artificial means, divert Hudson River water into the United Water pipeline system and result in additional flows in the Hackensack River, Saddle River, Mahwah River and Ramapo River basins which flow to New Jersey.

Can this project be approved in violation of New York State Law?

## **3. Legal Liability**

As Builders, Developers, Sponsors, Regulators or Approvers of this proposed project; United Water, NYS PSC, NYS DEC, Town of Haverstraw, County of Rockland and others will be exposed to legal liability because of the adverse impacts of this project, including but not limited to increased flooding.

See NYS DEC Commissioner's Flood Summit held in Kingston, New York on October 16th, 2008 <http://www.dec.ny.gov/lands/51372.html>  
Ed Thomas, **No Adverse Impact Approach to Decreasing Risk and Liability**, [Slides 1-35](#) (PDF, 1.2 MB) and [Slides 36-80](#) (PDF, 993 KB) and **No Adverse Impact Power Point Presentation**  
[http://www.floods.org/NoAdverseImpact/NAI\\_PPT.ppt](http://www.floods.org/NoAdverseImpact/NAI_PPT.ppt)

(To learn more about Hackensack River Flooding and United Water  
[Click here to read: Hackensack River Report Update 2-05-09](#) or go to <http://rocklandraft.com/>)

## **Reasonable Project Alternatives To Avoid Or Minimize Specific Potential Impacts**

### **1. Determine If This Project Is Needed**

**An independent forensic audit of United Water's production, distribution and discharge records in both New York and New Jersey must be conducted.**

- **Excessive Releases From Lake DeForest 1980**

From Rockland County Petition For Permit Modification  
Concerning The Operation Of Lake DeForest Reservoir and The Ramapo Valley Well Field, November 8, 1999 (See Pages 17-23 of this document)

As a result of some problems with excessive releases from Lake DeForest by the SVWC (Spring Valley Water Company / United Water) to Rockland's detriment and severe drought conditions occurring in the County in 1980, the then

Commissioner of the DEC, Robert R. Flacke, in October of that year directed that a special study be made of water supply conditions in Rockland County.

(For the entire petition click on [Spring Valley Rockland Petition for Modification](#) or go to the documents section of <http://rocklandraft.com/>)

This file takes a few seconds to download.

Once on the document right click to rotate the view.)

- **Drought of 1999**

From Rockland County Petition For Permit Modification Concerning The Operation Of Lake DeForest Reservoir and The Ramapo Valley Well Field (RVWF), November 8, 1999 (See Pages 17-23 of this document)

On July 13, 1999, in order to drastically reduce water usage, Rockland implemented a Stage I Water Emergency.

Due to the serious ongoing drought conditions, the Rockland County Acting Commissioner of Health declared a Stage II Mandatory Water Conservation Emergency on July 21, 1999 at the urging of UWNJ. See Exhibit F annexed hereto, letter from C. Scott Vanderhoef to Donald Cornell dated July 28, 1999.

The Stage II determination prohibited the watering of lawns, the noncommercial washing of cars and the use of water for ornamental purposes.

Upon information and belief in contrast to the customers of United Water New Jersey ("UWNJ"), located in Bergen and Hudson Counties in that State, had been free to use potable water without any restrictions.

In or about August 1999, when Rockland was in the middle of its drought, representatives from UWNJ announced that pursuant to the terms and conditions in Water Supply Application No. 2189, as modified in 1982, water releases from Lake DeForest were increased from the mandatory minimum of 9.75 mgd to 25 mgd. Such an increase in the release of water to New Jersey in the midst of a severe drought in Rockland is unfair and completely disregards the increased water supply needs of Rockland County.

The preservation of the maximum amount possible of water in Lake DeForest is not only beneficial to the residents of Rockland County, but also to the residents of New Jersey since water "saved" in Lake DeForest, may be sent south to New Jersey, if necessary.

Bergen County's much larger geographical area and interconnecting water systems, makes it much less susceptible than Rockland to the effects of a drought because of its larger drainage basin. This was underscored by New Jersey Governor Whitman's statement in the Bergen Record of August 3, 1999 that a drought emergency in New Jersey was "still more than a month or two

away if Mother Nature doesn't cooperate.” She added, “If we thought it was absolutely necessary to go right to an emergency, we’d do it today.”

In contrast, Rockland County has only three major sources of water production, specifically, Lake DeForest the so-called "rock wells" or "system wells" and the RVWF.

Because water production from RVWF, which accounts for approximately 30 percent of Rockland County's water production, has been adversely affected by the declining flow in the Ramapo River and contaminants, Rockland residents must rely and depend on the stability of Lake DeForest's water supply.

Relationship between Lake DeForest Plant Production and the RVWF Pump Station Production:

An examination of the RVWF pump station production, Lake DeForest plant production and total system production figures throughout 1999 reveals an interesting correlation.

An examination of the monthly reports with respect to the monthly average RVWF pump station and Deforest plant production in July and August reveals that during the drought emergency in the County from July 21, 1999 to September 5, 1999, UWNY underutilized Lake DeForest to the detriment of the County's residents.

Upon information and belief, during drought conditions, UWNY is producing less water for Rockland County, while at the same time releasing water from Lake DeForest downstream for the benefit of non-Rockland residents.

For example, the monthly report shows that Lake DeForest experienced a significant drop in production from an average of 15.009 mgd in July to 9.791 mgd in August. During the month of August, the County was in the middle of Stage II drought restrictions.

This 9.791 mgd, while within the parameters of the 17-year-old 1982 permit, is nowhere near the 20 mgd dependable safe yield that can be sustained by Lake Deforest for Rockland County in critical periods of low stream-flow.

This drop to 9.791 mgd in the middle of August when the County of Rockland needs water most, shows that water production in Lake DeForest should be better utilized for the increased water needs of Rockland County residents. Such a situation must be examined.

(For the entire petition click on [Spring Valley Rockland Petition for Modification](#) or go to the documents section of <http://rocklandraft.com/>)

This file takes a few seconds to download.

Once on the document right click to rotate the view.)

- **Drought of 2002**

From June 21, 2002 through December the New York State DEC authorized United Water to release a minimum of 6 million gallons per day from Lake DeForest. (See Temporary Permit Modification for Reduced Release – Lake DeForest)

Apparently the Ramapo Well Field was being underutilized and water treatment at Lake DeForest was doubled from 10 million gallons per day to 20 million gallons per day.

The USGS monitoring site for the Ramapo River at Suffern, NY recorded an average excess flow of 22.81 million gallons per day over the historic median flow from June 1, 2002 to November 30.

The USGS monitoring site for Woodcliff Lake recorded an average excess flow of 5.33 million gallons per day over the historic median flow from June 1, 2002 to November 30.

The USGS monitoring site for Oradell Reservoir recorded an average excess flow of 2.81 million gallons per day over the historic median flow from June 1, 2002 to November 30.

Although Lake DeForest discharge averaged 1.88 million gallons per day under the historic median flow from June 1, 2002 to November 30 the other tributaries to the Hackensack River seemed to have adequate flows.

A water treatment plant that took water directly from the Ramapo River with an excess average flow of 22.81 million gallons per day from June 1, 2002 to November 30 would have eliminated the need to double the production at Lake DeForest.

(For Temporary Permit Modification click on [UWNY temporary amendment of WS2189 for drought](#) or go to the documents section of <http://rocklandraft.com/>)

**Discharges or Flow**

**Excess or (Deficit)**

**June 1, 2002 to November 30**

**Based on data from U.S. Geological Survey monitoring sites**

Computations By Bob Dillon

**Total                      Per Mo.                      Per Day**

**In Comparison to 9.75 Million Gallons Per Day Flow**

**Lake DeForest\*    (343.8)                      (57.3)                      (1.88)**  
**Gallons                      Million                      Million                      Million**  
**Discharged to Lake Tappan**

**In Comparison to Daily Median Flow Over History**

**Lake DeForest\*    (851.71)                      (141.95)                      (4.65)**  
**Gallons                      Million                      Million                      Million**  
**Discharged to Lake Tappan**

**Lake Tappan\*        (821.88)                      (136.98)                      (4.49)**  
**Gallons                      Million                      Million                      Million**  
**Discharged to Oradell Reservoir**

**Woodcliff Lake\*    975.64                      162.61                      5.33**  
**Gallons                      Million                      Million                      Million**  
**Discharged to Oradell Reservoir**

**Oradell Reservoir    514.07                      85.68                      2.81**  
**Gallons                      Million                      Million                      Million**  
**Discharged to Meadowlands and on to Atlantic Ocean**

**Ramapo River**

**At Ramapo                      4,122.70                      687.12                      22.53**  
**Gallons                      Million                      Million                      Million**

**At Suffern                      4,173.62                      695.6                      22.81**  
**Gallons                      Million                      Million                      Million**

**At Mahwah                      4,731.32                      788.55                      25.85**  
**Gallons                      Million                      Million                      Million**

\* Operated with United Water's cooperation  
<http://RocklandRAFT.com/> For U.S. Geological Survey monitoring sites

- **Excess Discharges**  
**Hackensack River Watershed**  
**June 2007 – November 2007**

In October of 2007 all four of the Hackensack River Basin reservoirs reached unusually low percentages of their storage capacity. Lake DeForest was at 58 percent of its storage capacity and the three New Jersey reservoirs (Lake Tappan, Woodcliff Lake and Oradell Reservoir) were also low, but over 50 percent of their storage capacity.

Throughout the summer of 2007 members of Rockland RAFT (Rockland Residents Against Flooding Tomorrow) were studying data from the U.S. Geological Survey monitoring site for the Hackensack River at West Nyack and noticed that discharges from Lake DeForest were unusually high. This information was presented to governmental authorities. Independent of RAFT's observations the County of Rockland Department of Health had already started investigating.

Investigations by the County of Rockland Department of Health and the NYS DEC determined that between June 1, 2007 and September 22 United Water discharged **231 million gallons** more than it was allowed under the terms of its NYS DEC issued Lake DeForest permit. The NYS DEC fined United Water \$10,000.

United Water claimed that a release valve had been broken for 18 months and that the company could not precisely measure the volume of water being discharged from Lake DeForest. **Apparently United Water did not utilize the U.S. Geological Survey monitoring site in West Nyack that is operated with United Water's cooperation to determine the amount of Lake DeForest discharges.**

### **Further Investigation**

Utilizing data retrieved from the U.S. Geological Survey monitoring site for the Hackensack River at West Nyack, it appears that between September 23, 2007 and December 31 an additional **566 million gallons** over the minimum permitted amount of 9.75 million gallons per day was discharged from Lake DeForest. In the month of October 2007 alone **254 million gallons** over the minimum permitted amount was discharged.

Between June 1, 2007 and November 30 excess discharges from Lake DeForest averaged **3.72 million gallons per day**.

## **Excess Discharges in New Jersey**

The amounts of water discharged from Lake Tappan, Woodcliff Lake and Oradell Reservoir have an impact on Rockland County's water supply. When their combined storage capacity drops to 50 percent, United Water may be required to discharge more than the minimum 9.75 million gallons per day from Lake DeForest to replenish New Jersey's supply.

Excess discharges from New Jersey's three Hackensack River basin reservoirs can unnecessarily reduce New Jersey's amount of stored water. This triggers additionally mandated discharges from Lake DeForest resulting in a reduction in Rockland County's water supply.

In 2007 excess discharges from all three New Jersey reservoirs were well documented by the USGS monitoring sites.

## **Excess Discharges in New Jersey**

**June 1, 2007 to November 30**

**Based on data from U.S. Geological Survey monitoring sites**

Computations By Bob Dillon

	<b>Total</b>	<b>Per Mo.</b>	<b>Per Day</b>
--	--------------	----------------	----------------

### **In Comparison to Daily Median Flow Over History**

<b>Lake Tappan*</b>	<b>1,134.05</b>	<b>189.01</b>	<b>6.20</b>
<b>Gallons</b>	<b>Million</b>	<b>Million</b>	<b>Million</b>
<b>Discharged to Oradell Reservoir</b>			

<b>Woodcliff Lake*</b>	<b>874.34</b>	<b>145.72</b>	<b>4.78</b>
<b>Gallons</b>	<b>Million</b>	<b>Million</b>	<b>Million</b>
<b>Discharged to Oradell Reservoir</b>			

<b>Oradell Reservoir</b>	<b>1,338.46</b>	<b>223.08</b>	<b>7.31</b>
<b>Gallons</b>	<b>Million</b>	<b>Million</b>	<b>Million</b>
<b>Discharged to Meadowlands and on to Atlantic Ocean</b>			

The excess **7.31 million gallons per day** discharged from the Oradell Reservoir to the Atlantic Ocean is nearly equal to the **7.5 million gallons per day** that United Water hopes to produce from a Desalination Plant in Haverstraw, NY.

For more in-depth data see the attached spreadsheets

\* Operated with United Water's cooperation

<http://RocklandRAFT.com/> For U.S. Geological Survey monitoring sites

## **2. Real-time Monitoring Of Water Resources By Enforcement Agencies**

- Develop a real time water resource management model for Rockland to monitor Water Supply, Sewage Discharges and Flood Waters.
- Monitor daily all water suppliers in Rockland County (including United Water, Nyack, Suffern).
- Monitor daily all Discharges and Distribution from New Jersey reservoirs downstream from Rockland watersheds (excessive discharges can trigger releases from DeForest under the “rule-curve”).
- Implement real-time enforcement of Discharge Rules for Lake DeForest and any future reservoirs in Rockland.

## **3. Lake Tappan**

From Lake Tappan 1965 Decision  
(See Pages 15-16 of this document)

The Hackensack Water Company reportedly has future plans for the installation of pumps and transmission facilities which could be utilized to pump water from River Vale Reservoir to DeForest Lake in years such as the present one when DeForest Lake does not fill from snowmelt and spring runoff.

The Commission will reserve to itself the right to consider future applications for the taking of water by communities in New York State from the Hackensack River for public water supply purposes.

(For the entire decision click on [1965 Lake Tappan Decision](#) or go to the documents section of <http://rocklandraft.com/>)

## **4. Municipal Water Supply As Alternative To United Water**

The County of Rockland or other municipalities should consider developing and administering water resources independent from United Water. (See number 5 and 6 below)

The County of Rockland could sell water to United Water or possibly take over United Water’s Rockland operation.

## **5. Construct New Fresh Water Treatment Plants**

The Villages of Nyack and Suffern have for over a century successfully operated water treatment plants that skim water from the Hackensack River and Mahwah River respectively.

Water treatment plants that skim the Ramapo River and Pascack Creek should also be considered. Treated water could be added directly to the distribution system.

The Ramapo River, with excess average flow of 25.81 million gallons per day of flow during the peak demand months of the Drought of 2002, could have supported such a plant. (See page 7 of this document)

## **6. Increase Storage Capacity**

The Tompkins Cove Tilcon quarry could hold approximately 1 billion gallons (7.5 million gallons per day for 4½ months). The same watershed used to fill the Ambrey Pond could be diverted to the quarry just before draining to the Hudson River or United Waters distribution system could be used to replenish the quarry during the time of year when water is in abundance.

The Haverstraw / Clarkstown, West Nyack and Suffern quarries also have potential for water storage and flood mitigation.

## **Measures That Could Mitigate Potential Impacts**

### **Flooding**

#### **1. Controlled Release Of Excess Water Being Stored**

The most immediate step that could be taken is the controlled release of excess water being stored in both Lake Deforest and Lake Tappan in advance of expected flooding. Pre-determined controlled release protocols established by The Army Corps of Engineers should require the controlled release of water from all Hackensack River Watershed dams in anticipation of flood events. Lake DeForest has two 50 feet x 5 foot high bascule gates, one 12 inch outlet valve and one 24 inch outlet valve that should be used to release water in advance of major storms. Controlled releases at the Lake Tappan Dam must also be required to eliminate back flooding of Lake Tappan into West Nyack. (See Army Corps of Engineers 1978 inspection report for the Lake Deforest Dam

(Click on [1978 Dam Study](#) or go to the documents section of <http://rocklandraft.com/>)

and United Water's 1999 Emergency Action Plan for Lake DeForest.

(Click on [UWNY Emergency Action Plan](#) or go to the documents section of <http://rocklandraft.com/>)

## **2. Proper Remediation And Maintenance Of Watersheds**

- Restore channels and wetlands to eliminate back flooding.
- Protect existing wetlands.
- Eliminate choke points. Remove all impediments to channel flow such as weirs, abandoned abutments and replacement of all bridges to conform to minimum standards for distance between bridge abutments and heights above historic waterlines.
- Complete and improve the levee system from Lake DeForest to Western Highway.
- Institute an ongoing silt removal program including controlled releases to cleanse rivers.

## **3. Diversion To The Hudson River During Flood Events**

Floodwaters pooling on Lake DeForest could be diverted directly to the Hudson River via a tunnel. The Lake is at a pool elevation of eighty-five (85) feet above sea level when at the top of the dam's bascule gates and is less than one mile from the Hudson River at the north end of the Lake. This would reduce if not eliminate flooding of the Hackensack River in Rockland and greatly reduce flooding in New Jersey.

The Tilcon quarries east of Lake DeForest are expected to be mined out in 50 years or less and could be integrated into the Hudson River diversion systems and also expand the storage capacity of Lake DeForest at that time.

## **Depth and Detail Of Information Required To Adequately Address Impacts, Alternatives And Mitigation**

Some of the depth and detail of information required to adequately address the impacts, alternatives and mitigation of this project have been addressed above in this submission. Here are a few more.

### **1. Operation**

- Will this plant be operated on a need to augment supply basis?
- Will this plant be operated on a seasonal basis?
- Will this plant be operated continuously?

## **2. Who Are The Beneficiaries?**

Who are the beneficiaries of this project, the water ratepayers of Rockland County or New Jersey?

If Rockland is not in need of the extra water produced by this plant, will the Ratepayers of United Water New Jersey be paying for the capital construction costs and operating expenses of this facility if approved?

## **3. Should This Project Be Sighted in New Jersey?**

### **Recommended Studies Whose Results Should be Included In The DEIS**

- Independent Forensic Audit of United Water's production, distribution and discharge records in both New York and New Jersey.
- Independent Financial Cost Benefit Analysis incorporating the results of the Independent forensic audit of United Water's production, distribution and discharge records in both New York and New Jersey to determine if the water rate-payers of Rockland County or New Jersey should pay for the proposed plant.
- USGS Rockland County Water-Resource Assessment
- Independent Hydrological Study to review all the alternatives to this project that have been proposed during this scoping process.
- US Army Corps of Engineers Study of the Adverse Flood Impact on the Hackensack River, Saddle River, Mahwah River, Ramapo River and Passaic River basins.
- All Past NYS DEC (Department of Conservation) decisions, permits and modifications thereof, relating to United Water or its predecessors.

## Supporting Information

From  
Lake DeForest Decision  
July 23, 1952

(In Part)

For the entire decision go to the documents section of <http://rocklandraft.com/> and see [Spring Valley 1952 Decision](#)

Or click on [Spring Valley 1952 Decision](#)  
[http://rocklandraft.com/database/Spring\\_Valley\\_1952\\_Decision.pdf](http://rocklandraft.com/database/Spring_Valley_1952_Decision.pdf)

Findings of Fact

31. The proposed reservoir will impound approximately 5.6 billion gallons of water, of which 25% or 1.4 billion gallons will be dead storage or water to be retained in the reservoir at all times to prevent exposition of the bottom and growth of weeds and grasses during extremely dry periods. **The estimated dependable yield with a use of the remaining 4.2 billion gallons is 20 million gallons per day.**

37. The distribution in one State of water impounded in another is a complex situation fraught with many legal problems of interstate law and in this State, Section 525 of the Conservation Law prevents the transportation of water across State lines through pipes or conduits. **This Commission has full power to see that this project is operated solely for the benefit of the citizens of Rockland County. The Only benefit to the Hackensack Water Company and the people of New Jersey is the incidental benefit of a regulated flow in the river.**

56. Exhibit 60 in this proceeding shows that for the 58 square miles of drainage area of the Hackensack River above Rivervale, New Jersey, a flow of about 0.45 cubic feet per second per square mile was exceeded 80% of the time. The drainage area above the proposed dam is 26.6 square miles and applying the above rate of flow proportionately results in a required flow below the proposed dam for the aforementioned purposes of 7.75 million gallons daily. To this flow, however, must be added a quantity of water sufficient for the needs of the Village of Nyack, whose water works plant presently is situated about one mile below the proposed dam.

57. Nyack's water supply is a complete diversion from the Hackensack to the Hudson watershed, thus depriving downstream owners or users of the amount taken by the village. This plant has a capacity of 1.5 million gallons daily and the record indicates an average daily use in the village of 900,000 gallons. Consumption in Nyack by the year 1980, it is estimated, may be about 1.12

million gallons daily. It thus appears equitable for the Commission to reserve for the Village of Nyack a flow in the stream of at least 2 million gallons daily.

58. If, in the future, the village of Nyack should elect to obtain its water supply directly from this proposed reservoir the applicant can eliminate the discharge of this additional 2 million gallons daily into the stream below the dam.

59. The Spring Valley Water Works and Supply Company should install suitable and satisfactory measuring devices to record the discharge of water into the stream from the reservoir and it must be required that the records of these discharges be preserved.

#### Conditions

I. Applicant must, upon completion of this project, release from the reservoir at least 9.75 million gallons daily so that a flow equivalent to that amount will be maintained at all times in the stream immediately above the intake works of the Village of Nyack. If the Village of Nyack should in the future elect to take its water supply directly from this reservoir, the release of water herein required from the reservoir can at that time be reduced by 2 million gallons daily.

L. Of the daily yield of this watershed at least 10 million gallons are forever reserved for the needs of the inhabitants of Rockland County. No part of these waters shall be transported across the State line through pipes, conduits or artificially constructed ditches or canals.

From  
Lake Tappan Decision  
July 22, 1965

(In Part)

For the entire decision go to the documents section of <http://rocklandraft.com/> and see [1965 Lake Tappan Decision](#)

Or click on [1965 Lake Tappan Decision](#)  
[http://rocklandraft.com/database/1965\\_Lake\\_Tappan\\_Decision.pdf](http://rocklandraft.com/database/1965_Lake_Tappan_Decision.pdf)

#### Findings of Fact

6. DeForest Lake, having a capacity of 5,600 million gallons (5.6 billion gallons), has a safe dependable yield of 20 million gallons a day, of which 10 million gallons a day has been reserved by the said Water Power and Control Commission for Rockland County. Under the decision of that Commission in Water Supply Application No. 2139, water could not be distributed in New York State from DeForest Lake until a filter plant had been built by Spring Valley. This plant has now been completed and residents of New York State are now able to

use those portions of the waters of DeForest Lake, which were reserved for them.

13. **The Village of Nyack** operates the only public water supply system in New York State other than Spring Valley Water Company, which utilizes water from the Hackensack River. That village **has been authorized** by the Water Power and Control Commission in a decision of December 9, 1958 in Water Supply Application No. 3431, **to divert an annual average of 3.0 million gallons of water per day from the river for use in its public water supply system.**

14. The Commission's action in approving the instant application will in no way affect the rights of the Village of Nyack nor prohibit it from applying to the Commission for an additional quantity of water from the Hackensack River at some time in the future if its water supply requirements necessitate such action.

16. **Hackensack Water Company reportedly has future plans for the installation of pumps and transmission facilities which could be utilized to pump water from River Vale Reservoir to DeForest Lake in years such as the present one when DeForest Lake does not fill from snowmelt and spring runoff.** The installation of such equipment is not a part of the instant proposal.

17. In view of the above facts, the Commission will not reserve to New York State any portion of the yield of the Hackensack River attributable to the River Vale Reservoir. **The Commission will however reserve to itself the right to consider future applications for the taking of water by communities in New York State from the Hackensack River for public water supply purposes.**

21. The carrying out of this project will have no adverse effect on the water supply interests of any other municipality or civil division of the State.

#### Conditions

In granting its approval of the instant application the Water Resources Commission in no way relinquishes its right to consider any future application which may come before it for the taking of a supply of water from the Hackensack River in New York State whether from the River Vale Reservoir or otherwise.

#### Statutory Determinations

Fifth. That said plans are just and equitable to the other municipalities and civil divisions of the State affected thereby and to the inhabitants thereof, particular consideration being given to their present and future necessities for sources of water supply.

(End of Lake Tappan Decision July 22, 1965 in part)

**It should be noted that the Lake Tappan watershed is located almost exclusively in Rockland County, NY.**

Rockland County Petition For Permit Modification  
Concerning The Operation Of  
Lake DeForest Reservoir and The Ramapo Valley Well Field  
November 8, 1999

(In Part)

For the entire petition go to the documents section of <http://rocklandraft.com/>  
and see [Spring Valley Rockland Petition for Modification](#).

This file takes a few seconds to download.

Once on the document right click to rotate the view.

Or click on [Spring Valley Rockland Petition for Modification](#)  
[http://rocklandraft.com/database/Spring\\_Valley\\_Rockland\\_Petition\\_for\\_Modification.pdf](http://rocklandraft.com/database/Spring_Valley_Rockland_Petition_for_Modification.pdf)

14. In 1982, an operating curve, commonly called a "rule curve" was established by the interested parties with respect to the releases from Lake DeForest.

15. The rule curve was established for more effective future operation of Lake DeForest to insure that Rockland county's water supply needs and those of downstream users were met under both normal and drought conditions. This rule curve was decided upon based on the quantity of water in the Reservoir and the water storage of other stream reservoirs.

18. Since (1980), Rockland has declared three drought emergencies, specifically, 1980, 1995, and 1999.

21. The Petitioner requests that the DEC review and modify the terms and conditions of Water Supply Application (WSA) Nos. 2189 and 6507 so as to provide better management of production and releases from Lake DeForest and the RVWF (Ramapo Valley Well Field) by taking into consideration the lack of stored surface water available in Rockland and the water needs and availability of both Rockland and Bergen Counties.

## Background:

### Lake DeForest

#### (A) 1952 Decision

22. The original decision for WSA No. 2189 was issued on July 23, 1952. See Exhibit B.

23. Reports and studies estimated the dependable safe yield of the DeForest Reservoir at 20 mgd (million gallons per day).

24. Within the 20 mgd parameter, the 1952 permit specified three important requirements with respect to the Lake DeForest Reservoir:

25. First, condition 'H' to the 1952 permit provided that the SVWC (Spring Valley Water Company – Now United Water New York) was to maintain, at all times, "a quantity of water in storage and the level of water therein was never to be lowered to reduce the so-called 'dead storage' below [the level] of 1.4 billion gallons. See Exhibit B p.19.

26. Second, condition 'I' to the '1952 permit provided that downstream releases were to maintain a minimum flow of 9.75 mgd at all times in that portion of the Hackensack River immediately above the intake works of the Village of Nyack. Of the 9.75 mgd downstream release, 7.75 mgd was allocated for New Jersey and 2 mgd for the Village of Nyack. See Exhibit B par. 56 and 57'

27. Third, condition 'L' to the 1952 permit provided that out of reservoir's 20 mgd dependable safe yield, 10 mgd was to be "forever reserved for the needs of the inhabitants of Rockland County." See Exhibit B p. 19.

28. Accordingly, at times when water is more abundant in Lake DeForest, greater downstream releases could be made.

29. However, this issue of greater water production to Rockland County from Lake DeForest was not addressed in the original 1952 decision.

## (B) 1982 Decision

30. Thirty years later, as a result of some problems with excessive releases from Lake DeForest by the SVWC to Rockland's detriment and severe drought conditions occurring in the County in 1980, the then Commissioner of the DEC, Robert R. Flacke, in October of that year directed that a special study be made of water supply conditions in Rockland County.

31. That DEC study was completed and a final report issued entitled, 'Rockland County Water Supply Study - Final Report,' dated June 1982. A copy of the report is attached hereto as Exhibit D'

32. Certain assumptions were made by the DEC in the report, patricianly as to the RVWF, which have turned out to be incorrect or outdated due to changed circumstances.

33. For example, when the Lake DeForest permit was modified in 1982, it was based, in part on a yield from the RVWF which, as discussed below, is no longer a reliable and sustainable water source for Rockland County residents.

34. Of the various recommendations for immediate implementation made in the report, it was noted that the:

DEC should initiate actions to modify the 1952 permit for DeForest Reservoir to include a reservoir operating curve, commonly called a rule curve, and other provisions for more effective future operation of DeForest Reservoir to ensure that Rockland County's water supply needs and those of down stream users are met under both normal and drought conditions.

35. This report, and the conclusions/recommendations set forth herein, led to the Sixth Modification of WSA No. 2189, which established rules for releases in excess of the minimum 9.75 mgd.

36. The 1982 modification replaced conditions 'H' and 'I' of the original 1952 permit and replaced them with the following Lake Demorest's "operating procedures":

If the DeForest Reservoir storage is below the rule curve (see Exhibit C) at any time of the year, release from DeForest Reservoir shall be made to maintain a daily average flow of 9.75 mgd in the stream immediately above the intake works of the Village of Nyack.

If the DeForest Reservoir Storage is above the rule curve at any time of the year and

When the total storage in the three down stream water supply reservoirs (Lake Tappan, Woodcliff Lake, and Oradell Reservoir with a total combined available storage capacity of 7.74 billion gallons) is more than 50% of their capacity, or 3.87 billion gallons, release from the DeForest Reservoir shall be made to maintain a daily average flow of 9.75 mgd in the stream immediately above the intake works at the Village of Nyack.

When the total storage in the three down stream reservoirs is less than 50% of their capacity and at a higher parentage storage than the percentage storage in the DeForest Reservoir, a larger release may be made to maintain a monthly average flow of up to 15 mgd in the stream immediately below the intake works of the Village of Nyack.

When the total storage in the three downstream reservoirs is less than 50% of their capacity and at a lower percentage than the percentage storage in DeForest Reservoir a larger release may be made to maintain a monthly average flow of up to 25 mgd in the stream immediately below the intake works at the Village of Nyack.<sup>3</sup>

---

<sup>3</sup> In a November 17, 1998 letter from Warren T. Lavery, P.E., DEC Director of the Bureau of Water Permits, to James A. Glozzy of UWNJ (annexed hereto as Exhibit E) the abundant in New Jersey (three reservoir total above 50% of capacity), only the minimum release may be made. [2] If water is scarce in New Jersey (three-reservoir total below 50%) the release to New Jersey may be increased to: [a] 15 mgd if New Jersey is in a relatively better position than New York (Jersey).

37. Essentially, with the 1982 modifications, a rule curve was established whereby the releases from Lake DeForest were contingent upon the quantity of water in the reservoir and the total storage in the several downstream reservoirs.

38. In 1982, it was thought that the modifications made to the WSA would guarantee a sufficient water supply to both the residents of Rockland County in New York, and Bergen and Hudson Counties in New Jersey.

39. In fact, the DEC, in 1982, recommended that the then SVWC review and re-evaluate its demand projections every five years. See Exhibit D p. 14.

40. Upon information and belief this has not been done since the last modifications of the Lake DeForest and RVWF permits, 1982 and 1976, respectively.

47. Another aspect of the RVWF's unreliability, as discussed below, comes from the contamination of several wells from trichlorofluoromethane (aka freon R-11).

#### Drought of 1999:

48. This past summer, Rockland County, as well as other municipalities in the Lower-Hudson region, experienced a severe drought.

49. On July 13, 1999, in order to drastically reduce water usage, Rockland implemented a Stage I Water Emergency.

50. Due to the serious ongoing drought conditions, the Rockland County Acting Commissioner of Health declared a Stage II Mandatory Water Conservation Emergency on July 21, 1999 at the urging of UWNJ. See Exhibit F annexed hereto, letter from C. Scott Vanderhoef to Donald Cornell dated July 28, 1999.

51. The Stage II determination prohibited the watering of lawns, the noncommercial washing of cars and the use of water for ornamental purposes.

52. Upon information and belief in contrast to the customers of United Water New Jersey ("UWNJ"), located in Bergen and Hudson Counties in that State, had been free to use potable water without any restrictions.<sup>4</sup>

---

percentage storage greater than DeForest percentage storage); or [b] 25 mgd if New Jersey is in relatively worse position than New York (Jersey percentage less than DeForest percentage)." The DEC in that letter stated that the rule is "intended to prevent excess releases from DeForest when there is no need for them. Under the DEC interpretation, it makes no difference where the New Jersey storage comes. "If New Jersey has plenty of water...releases from DeForest must be held to the minimum 9.75 mgd."DEC interpreted the Sixth modification's rule and the rationale therefore. "...when water is more abundant in New York ([i.e.,] DeForest above the rule curve), the release may be increased, depending on the situation in the three New Jersey reservoirs and their relative position with regard to DeForest: [1] If ,the water is also

53. In or about August 1999, when Rockland was in the middle of its drought, representatives from UWNY announced that pursuant to the terms and conditions in Water Supply Application No. 2189, as modified in 1982, water releases from Lake DeForest were increased from the mandatory minimum of 9.75 mgd to 25 mgd. Such an increase in the release of water to New Jersey in the midst of a severe drought in Rockland is unfair and completely disregards the increased water supply needs of Rockland County.

54. The preservation of the maximum amount possible of water in Lake DeForest is not only beneficial to the residents of Rockland County, but also to the residents of New Jersey since water “saved” in Lake DeForest, may be sent south to New Jersey, if necessary.

55. Bergen County's much larger geographical area and interconnecting water systems, makes it much less susceptible than Rockland to the effects of a drought because of its larger drainage basin. This was underscored by New Jersey Governor Whitman's statement in the Bergen Record of August 3, 1999 that a drought emergency in the New Jersey was "still more than a month or two away if Mother Nature doesn't cooperate." She added, "if we thought it was absolutely necessary to go right to an emergency, we'd do it today."

56. In contrast, Rockland County has only three major sources of water production, specifically, Lake DeForest the so-called "rock wells" or "system wells" and the RVWF.

57. Because water production from RVWF, which accounts for approximately 30 percent of Rockland County's water production, has been adversely affected by the declining flow in the Ramapo River and contaminants, Rockland residents must rely and depend on the stability of Lake DeForest's water supply.

Relationship between Lake DeForest Plant Production and the RVWF Pump Station Production:

61. An examination of the RVWF pump station production, Lake DeForest plant production and total system production figures throughout 1999 reveals an interesting correlation. A copy of the UWNY monthly reports from January 1, 1999 to August 31, 1999 are annexed hereto as Exhibit H.

62. An examination of the monthly reports with respect to the monthly average RVWF pump station and DeForest plant production in July and August reveals that during the drought emergency in the County from July 21, 1999 to September 5, 1999, UWNY underutilized Lake DeForest to the detriment of the Counties residents.

---

<sup>4</sup> Voluntary restrictions were implemented in New Jersey on or about August 5, 1999 (See Executive Order No. 98 by Governor Whitman, annexed hereto as Exhibit G). However, this occurred after UWNY had recommended to Rockland to implement Stage II mandatory water restrictions. Mandatory restrictions were not in effect in New Jersey until the end of August.

63. Upon information and belief, during drought conditions, UWNY is producing less water for Rockland County, while at the same time releasing water from Lake DeForest downstream for the benefit of non-Rockland residents.

64. For example, the monthly report shows that Lake DeForest experienced a significant drop in production from an average of 15.009 mgd in July to 9.791 mgd in August. During the month of August, the County was in the middle of Stage II drought restrictions.

65. This 9.791 mgd, while within the parameters of the 17 year old 1982 permit, is no where near the 20 mgd dependable safe yield that can be sustained by Lake DeForest for Rockland County in critical periods of low stream-flow.

66. This drop to 9.791 mgd in the middle of August when the County of Rockland needs water most, shows that water production in Lake DeForest should be better utilized for the increased water needs of Rockland County residents. Such a situation must be examined.

#### Changed Circumstances

67. In addition to the drought, the petitioner believes that a number of changing circumstances demand immediate and substantial review of the WSA No. 2189 because its application as presently written undermines the water supply needs of Rockland residents.

68. Changed circumstances warrant the modification of the DeForest permit, which was modified almost 20 years ago and the RVWF permit which is almost a quarter century old.

69. As to the reliability of the RVWF, the restriction on pumping when the flow of the Ramapo River is less than 8 mgd undermines the reliability of this major water production source for Rockland.

70. This is highlighted by UWNY frequent requests for the waiver of this minimum flow requirement For example:

a) For example, in a letter dated June 9, 1999 to Joseph Marcogliese of DEC from Carla E. Hjelm of UWNY, UWNJ requested that the DEC waive the 8mgd minimum flow requirement. A copy of the letter is annexed here in as Exhibit I.

b) On July 22, 1999 UWNY requested another emergency waiver of the minimum requirement. A copy of a July 23, 1999 letter from the DEC is annexed hereto as Exhibit J.

c) Again on August 18, 1999, UWNY, in a letter to Alexander F. Cieisuk, Jr., of the DEC requested an additional 30 day extension of the DEC's July 28, 1999 temporary permit modification. A copy of the letter and DEC temporary permit modification are annexed hereto as Exhibit K and L, respectively.

82. In the past, UWNY has limited water production from Lake DeForest during the winter months. For the past several years, Lake DeForest has been in almost constant use. This practice makes water less available to the citizens of Rockland during the critical summer months. This was the case during the summer of 1999 when more water was being released from DeForest to accommodate New Jersey residents leaving less for Rockland residents.

83. Accordingly, the issue of the 10 mgd reserve for Rockland County (on an annual average) should be revisited.

(End of Rockland County Petition For Permit Modification Concerning The Operation Of Lake DeForest Reservoir and The Ramapo Valley Well Field November 8, 1999 in part)

**Hackensack River at West Nyack NY**  
**(1958-10-01->2007-09-30) "Historic Median Flow Over 49 Years"**  
**USGS 01376800 / 1.0 mi Downstream of Lake DeForest**

50<sup>th</sup> percentile (median) of daily mean values for each day of 49 years of records

Cubic Feet Per Second

Click> [http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01376800&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01376800&agency_cd=USGS)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	24	23	32	57	41	24	19	19	16	21	20	23
2	31	23	34	58	40	21	18	17	18	20	21	31
3	30	21	32	58	38	23	21	17	17	20	22	31
4	31	33	38	58	36	23	20	18	17	20	20	28
5	31	28	36	54	34	22	19	17	16	21	25	26
6	25	30	41	50	32	24	19	18	18	20	21	25
7	23	30	42	49	31	22	17	18	17	19	22	24
8	27	37	39	51	32	20	19	17	19	19	22	22
9	23	30	44	52	31	20	19	17	20	19	20	22
10	23	22	45	50	31	20	18	17	18	18	21	20
11	20	24	44	54	33	20	18	18	20	20	23	21
12	22	28	42	47	33	20	18	17	18	20	21	22
13	23	34	45	49	31	20	18	16	19	20	21	21
14	23	33	46	48	28	20	18	17	20	18	21	22
15	20	25	45	42	28	19	19	17	21	19	20	19
16	23	27	44	44	29	18	18	17	21	19	20	22
17	20	28	47	41	25	18	17	18	21	19	20	24
18	25	27	50	45	26	18	17	17	22	19	21	21
19	24	27	49	41	29	21	17	16	25	20	20	20
20	26	28	49	43	30	21	17	15	22	20	19	22
21	25	29	53	46	27	21	17	16	22	21	21	25
22	27	28	56	41	23	20	17	17	23	20	21	25
23	27	30	51	35	22	18	18	17	24	20	20	22
24	28	34	47	39	23	19	16	17	24	20	19	22
25	34	28	45	41	22	19	17	17	22	20	22	25
26	31	26	48	45	21	19	17	17	22	19	25	26
27	30	27	41	47	21	19	18	17	22	17	22	22
28	31	29	46	42	20	18	17	17	21	20	26	21
29	29	47	38	38	19	18	17	18	22	18	24	24
30	28		43	39	21	19	17	17	21	19	23	20
31	26		46		23		16	16		20		21
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

**Cubic Feet Per Second (Monthly Mean of Daily Median Values)\***

26.13    28.83    43.81    46.80    28.39    20.13    17.84    17.06    20.27    19.52    21.43    23.19

**Million Gallons Per Day\***

16.89    18.63    28.31    30.25    18.35    13.01    11.53    11.03    13.10    12.61    13.85    14.99

## Hackensack River at West Nyack NY

2007 (01-01->12-31)

### USGS 01376800 / 1.0 mi Downstream of Lake DeForest

50<sup>th</sup> percentile (median) of daily mean values for each day of 2007

Cubic Feet Per Second

Click> [http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01376800&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01376800&agency_cd=USGS)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	204	15	18	33	60	13	12	14	16	38	14	17
2	140	15	632	37	61	11	14	16	16	38	12	5.4
3	68	17	271	35	61	15	21	18	16	38	14	15
4	52	15	101	58	58	41	25	18	16	38	22	4.9
5	44	14	69	85	51	13	26	18	16	38	29	8.5
6	48	13	56	62	53	16	23	18	15	40	29	5.4
7	46	12	42	50	35	14	23	19	15	42	25	8.9
8	200	12	37	40	33	14	21	36	19	36	31	11
9	134	16	32	34	29	14	18	18	20	42	31	12
10	79	15	28	31	28	14	18	32	18	42	29	18
11	60	13	38	27	33	14	32	21	25	20	26	17
12	51	12	37	144	31	14	22	18	21	14	17	14
13	52	12	35	168	29	14	17	18	20	14	30	15
14	54	19	37	73	17	13	16	17	22	20	33	18
15	56	18	43	684	19	14	14	18	21	18	26	21
16	56	15	74	1,490	33	13	14	19	21	18	33	19
17	45	14	103	452	38	12	14	20	21	18	32	20
18	38	13	61	189	33	13	19	22	19	17	31	25
19	38	12	49	146	31	21	15	19	18	17	23	23
20	37	12	52	121	33	21	16	19	17	23	12	25
21	28	14	57	99	32	21	15	36	17	18	6.6	39
22	27	16	70	84	28	21	15	25	19	22	9.2	39
23	24	21	182	67	23	19	35	21	24	25	12	73
24	19	18	175	66	14	20	20	19	26	24	9.8	52
25	21	16	160	63	15	19	16	17	28	34	14	20
26	20	18	104	63	12	17	15	16	18	33	29	19
27	17	17	66	229	12	19	15	17	18	67	23	26
28	18	18	65	134	13	22	16	18	23	19	9.4	12
29	19		59	82	14	14	15	19	35	14	9.7	30
30	18		44	69	13	13	15	18	29	16	26	14
31	17		38		13		16	19		18		22
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

#### Cubic Feet Per Second (Monthly Mean of Daily Median Values)\*

55.81    15.07    91.45    163.83    30.81    16.63    18.48    20.10    20.30    27.77    21.59    20.94

#### Million Gallons Per Day\*

36.07    9.74    59.11    105.89    19.91    10.75    11.95    12.99    13.12    17.95    13.95    13.53

**Hackensack River at West Nyack NY**  
**2007 In Comparison to 49 Years of History\***  
**1.0 mi Downstream of Lake DeForest**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Million Gallons Per Day Over or (Under) Historic Median Flow</b>	19.18	(8.89)	30.79	75.64	1.56	(2.26)	0.42	1.96	0.02	5.34	0.10	(1.46)
<b>Million Gallons Per Month Over or (Under) Historic Median Flow</b>	594.61	(248.94)	954.61	2,269.22	48.47	(70.13)	12.93	60.75	0.65	165.46	3.04	(45.18)

**Excess Gallons Released From June 2007 Through November 2007**

**October 2007, Lake DeForest at 58 Percent of Capacity**

**172.70 Million Gallons**

**28.78 Million Gallons Per Month**

**0.94 Million Gallons Per Day**

**October Only**

**165.46 Million Gal. / Mo.**

**5.34 Million Gal. / Day**

**Hackensack River at West Nyack NY**  
**2007 In Comparison to 9.75 Million Gallon Minimum Daily Flow Required\*\***  
**1.0 mi Downstream of Lake DeForest**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Million Gallons Per Day Over or (Under) 9.75 Million Gallon Minimum Daily Flow Required</b>	26.32	(0.01)	49.36	96.14	10.16	1.00	2.20	3.24	3.37	8.20	4.20	3.78
<b>Million Gallons Per Month Over or (Under) 9.75 Million Gallon Minimum Daily Flow Required</b>	815.88	(0.25)	1530.06	2884.15	314.98	30.01	68.09	100.41	101.11	254.23	126.12	117.27

**Excess Gallons Released From June 2007 Through November 2007**

**October 2007, Lake DeForest at 58 Percent of Capacity**

**679.96 Million Gallons**

**113.33 Million Gallons Per Month**

**3.72 Million Gallons Per Day**

**October Only**

**254.23 Million Gal. / Mo.**

**8.20 Million Gal. / Day**

(Gallons per day = 7.48051945 gallons per cubic foot x 86,400 seconds per day x Cubic Feet Per Second)\*

Raw data from USGS \*Computations By Bob Dillon Click> <http://rocklandraft.com/>

\*\*NYS DEC Permit for Lake DeForest requires a minimum flow of 9.75 million gallons per day from DeForest.

If Lakes Tappan, Woodcliff and Oradell drop to 50 percent capacity more water can be sent downriver to New Jersey.

Note: 2007-12-31 / Lake Deforest was at 73.5% of capacity

**Hackensack River at Rivervale NJ  
(1941-10-01->2008-12-16)**

**“Historic Median Flow Over 67 Years”**

**USGS 01377000 / 4.1 mi Downstream of Lake Tappan**

50<sup>th</sup> percentile (median) of daily mean values for each day of 67 years of records

Cubic Feet Per Second

Click> [http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01377000&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01377000&agency_cd=USGS)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	63	67	68	97	80	60	57	51	50	52	39	52
2	69	68	68	110	76	58	56	54	52	51	39	48
3	70	63	76	103	80	65	51	50	52	47	50	49
4	58	68	74	110	79	58	47	49	48	41	43	47
5	59	74	79	119	72	57	54	45	41	44	50	54
6	60	73	83	101	68	55	55	44	39	49	48	48
7	63	81	80	98	63	60	51	50	40	49	47	50
8	60	79	79	93	62	49	56	47	40	54	49	57
9	60	76	111	91	71	49	57	55	45	55	50	56
10	60	79	102	96	72	47	57	53	42	47	49	45
11	57	74	86	90	68	45	55	58	46	44	48	47
12	60	73	83	86	70	48	59	59	45	49	46	47
13	61	76	83	91	64	49	55	53	45	41	45	48
14	57	71	96	97	72	50	58	65	49	39	41	52
15	63	64	101	97	60	48	61	66	50	46	40	54
16	63	62	104	86	63	48	59	60	48	40	42	55
17	59	70	94	82	63	45	67	58	52	38	48	51
18	59	70	110	98	60	45	68	54	60	37	49	47
19	55	68	106	97	63	45	63	57	60	42	47	50
20	55	75	108	89	58	47	56	56	53	39	50	54
21	58	74	116	93	64	47	68	59	52	39	50	56
22	56	63	123	89	62	49	71	60	47	39	52	52
23	55	63	115	82	60	54	66	63	45	39	52	57
24	59	62	106	86	63	50	64	59	48	40	50	60
25	62	63	100	89	59	49	56	64	51	40	55	66
26	59	62	93	85	62	49	60	63	56	41	63	60
27	62	66	90	93	58	48	58	51	52	40	58	61
28	68	66	94	87	53	47	50	53	54	45	53	62
29	71	91	92	84	51	49	51	50	56	41	53	71
30	70		88	84	52	55	51	56	54	40	50	64
31	69		101		55		50	47		39		60
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

**Cubic Feet Per Second (Monthly Mean of Daily Median Values)\***

61.29    70.38    93.84    93.43    64.61    50.83    57.65    55.13    49.07    43.45    48.53    54.19

**Million Gallons Per Day\***

39.61    45.49    60.65    60.39    41.76    32.85    37.26    35.63    31.71    28.08    31.37    35.03

## Hackensack River at Rivervale NJ

2007 (01-01->12-31)

### USGS 01377000 / 4.1 mi Downstream of Lake Tappan

50<sup>th</sup> percentile (median) of daily mean values for each day of 2007

Cubic Feet Per Second

Click> [http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01377000&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01377000&agency_cd=USGS)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	399	33	128	70	101	48	58	52	19	56	45	20
2	404	32	554	69	106	48	58	51	19	56	45	20
3	164	32	1,120	68	94	49	56	52	19	56	45	34
4	117	31	390	99	85	90	53	55	18	60	45	22
5	95	31	131	140	80	59	59	51	19	66	46	19
6	87	34	43	119	77	53	50	50	19	66	52	18
7	82	42	50	98	68	52	51	49	19	66	48	17
8	296	42	56	81	60	52	46	111	19	66	46	14
9	319	42	54	72	57	52	45	44	19	66	51	14
10	168	42	54	64	55	52	51	39	29	77	70	21
11	119	41	65	58	62	52	76	26	63	74	69	15
12	96	45	68	185	64	52	73	23	47	77	68	14
13	94	52	68	367	59	52	80	23	45	56	71	14
14	96	52	68	246	46	52	157	22	41	51	70	14
15	98	53	73	995	39	52	181	22	36	51	65	14
16	95	54	118	4,380	52	50	170	21	38	49	61	13
17	83	53	178	2,350	112	51	165	22	48	48	58	13
18	73	52	142	723	78	50	130	23	60	48	56	16
19	70	58	108	240	63	87	55	21	60	49	56	40
20	69	51	103	71	58	210	91	21	59	58	56	40
21	60	55	117	108	53	210	171	43	56	48	56	40
22	56	59	134	117	46	191	165	27	57	48	52	40
23	53	59	279	110	42	130	205	23	56	48	53	78
24	49	54	306	103	38	103	178	23	56	47	51	80
25	46	53	280	99	35	59	165	22	56	45	50	45
26	43	53	202	104	30	57	163	22	56	47	63	43
27	40	52	151	355	29	58	130	21	56	107	67	49
28	39	56	123	347	39	69	43	21	56	59	48	26
29	37		103	166	49	65	43	19	56	53	25	44
30	35		86	123	48	59	46	19	56	47	22	17
31	33		76		48		53	19		46		28
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Cubic Feet Per Second (Monthly Mean of Daily Median Values)\*

113.39    46.89    175.10    404.23    60.42    75.47    98.94    33.45    41.90    57.77    53.67    28.45

Million Gallons Per Day\*

73.28    30.31    113.17    261.26    39.05    48.78    63.94    21.62    27.08    37.34    34.69    18.39

## Hackensack River at Rivervale NJ

2007 In Comparison to 67 Years of History\*

### 4.1 mi Downstream of Lake Tappan

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Million Gallons Per Day Over or (Under) Historic Median Flow

33.67    (15.18)    52.52    200.88    (2.71)    15.92    26.69    (14.01)    (4.63)    9.26    3.32    (16.64)

Million Gallons Per Month Over or (Under) Historic Median Flow

1,043.80    (425.03)    1,628.07    6,026.26    (84.02)    493.55    827.29    (434.32)    (138.96)    286.96    99.53    (515.76)

### Excess Gallons Released From June 2007 Through November 2007

1,134.05 Million Gallons

189.01 Million Gallons Per Month

6.20 Million Gallons Per Day

October Only

286.96 Million Gal. / Mo.

9.26 Million Gal. / Day

(Gallons per day = 7.48051945 gallons per cubic foot x 86,400 seconds per day x Cubic Feet Per Second)\*

Raw data from USGS    \*Computations By Bob Dillon

Click> <http://rocklandraft.com/>

**Pascack Brook at Westwood NJ**

**(1934-10-01->2009-01-31)**

**“Historic Median Flow Over 74 Years”**

**USGS 01377500 / Downstream of Woodcliff Lake Reservoir**

50<sup>th</sup> percentile (median) of daily mean values for each day of 74 years of records

Cubic Feet Per Second

Click> [http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01377500&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01377500&agency_cd=USGS)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	42	40	47	60	49	43	34	30	28	32	31	39
2	43	42	47	59	49	42	32	31	28	34	33	38
3	45	42	53	63	47	40	32	29	29	31	33	37
4	45	42	56	62	46	43	31	28	29	29	34	36
5	41	43	58	61	46	40	32	28	28	28	33	36
6	40	45	57	56	43	42	33	30	28	28	34	36
7	43	45	56	56	43	43	32	29	28	28	34	39
8	43	43	56	54	44	41	31	29	28	29	34	37
9	44	40	53	59	47	41	32	30	28	28	33	38
10	41	42	55	55	43	36	30	34	28	28	36	39
11	42	40	55	55	43	35	29	35	27	30	36	41
12	40	43	56	53	48	35	33	34	28	29	36	41
13	40	43	58	56	47	35	33	33	28	28	38	41
14	36	46	62	55	47	36	33	33	29	28	36	43
15	39	46	64	55	47	39	33	32	29	30	35	45
16	41	50	60	54	48	36	34	30	29	29	34	43
17	40	52	66	58	48	35	34	32	30	30	35	42
18	36	51	65	60	48	34	35	32	28	29	36	39
19	36	49	60	57	49	34	35	31	28	29	36	38
20	38	48	64	56	50	35	33	30	30	29	35	41
21	36	47	66	52	50	35	34	28	29	28	38	41
22	39	45	71	53	45	40	36	28	28	30	38	38
23	40	49	69	53	43	37	38	29	29	30	36	41
24	41	53	60	54	45	34	38	31	28	30	38	38
25	40	55	60	52	41	33	34	30	28	30	36	41
26	39	49	60	52	43	33	34	29	29	32	38	40
27	39	47	58	56	41	30	34	30	32	32	36	41
28	38	48	55	55	42	33	33	30	31	32	36	41
29	35	51	53	50	40	34	31	27	33	33	41	41
30	38		55	51	39	35	29	28	29	30	39	38
31	43		57		39		30	27		30		37
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

**Cubic Feet Per Second (Monthly Mean of Daily Median Values)\***

40.10    46.07    58.45    55.73    45.16    36.97    32.97    30.23    28.80    29.77    35.60    39.55

**Million Gallons Per Day\***

25.92    29.78    37.78    36.02    29.19    23.89    21.31    19.54    18.61    19.24    23.01    25.56

## Pascack Brook at Westwood NJ

2007 (01-01->12-31)

### USGS 01377500 / Downstream of Woodcliff Lake Reservoir

50<sup>th</sup> percentile (median) of daily mean values for each day of 2007

Cubic Feet Per Second

Click> [http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01377500&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01377500&agency_cd=USGS)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	385	28	47	39	96	43	26	34	24	16	29	36
2	99	30	766	42	54	47	25	34	23	17	29	32
3	51	33	144	40	44	56	25	46	24	19	29	47
4	44	29	70	109	43	139	30	38	26	18	27	35
5	41	26	51	91	42	69	46	26	29	17	29	34
6	45	25	41	47	40	62	35	30	31	16	39	35
7	40	34	36	41	39	61	26	37	31	15	33	36
8	308	39	44	39	38	60	23	176	31	15	29	36
9	91	36	51	37	38	60	27	100	27	22	28	33
10	55	36	50	40	46	59	26	150	36	42	32	39
11	45	35	54	44	56	58	66	43	66	43	28	43
12	42	35	40	267	46	58	49	38	34	58	29	44
13	49	35	40	127	39	57	26	39	39	29	34	44
14	50	37	56	81	38	56	33	41	37	22	31	45
15	54	35	77	867	42	55	24	42	26	25	40	46
16	48	34	118	1,950	72	56	23	49	24	25	34	45
17	39	34	84	313	91	43	25	67	24	31	29	38
18	37	34	30	161	109	23	76	77	29	29	27	41
19	39	33	26	125	68	20	50	70	28	26	30	43
20	38	34	52	104	66	27	40	69	39	37	34	45
21	33	37	74	92	44	22	23	131	26	24	36	45
22	35	42	75	83	34	22	25	79	26	23	39	45
23	35	36	154	76	33	21	111	69	24	20	30	126
24	34	31	93	96	32	18	43	54	28	20	28	346
25	34	30	91	135	34	21	34	47	20	25	28	72
26	31	32	61	152	36	25	35	41	20	28	49	65
27	30	32	57	387	36	29	35	33	19	240	52	141
28	31	34	51	144	31	58	42	35	18	74	37	82
29	30		45	106	28	42	40	26	17	35	41	136
30	28		41	101	28	36	30	30	16	37	39	76
31	29		39		43		35	31		38		113
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Cubic Feet Per Second (Monthly Mean of Daily Median Values)\*

62.90 33.43 85.74 197.87 47.94 46.77 37.23 57.48 28.07 35.03 33.30 65.94

Million Gallons Per Day\*

40.66 21.61 55.42 127.88 30.98 30.23 24.06 37.15 18.14 22.64 21.52 42.62

## Pascack Brook at Westwood NJ

2007 In Comparison to 74 Years of History\*

### USGS 01377500 / Downstream of Woodcliff Lake Reservoir

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Million Gallons Per Day Over or (Under) Historic Median Flow

14.74 (8.17) 17.64 91.86 1.79 6.33 2.75 17.62 (0.47) 3.40 (1.49) 17.05

Million Gallons Per Month Over or (Under) Historic Median Flow

456.95 (228.75) 546.78 2,755.90 55.58 196.35 85.31 546.14 (14.22) 105.35 (44.60) 528.69

### Excess Gallons Released From June 2007 Through November 2007

874.34 Million Gallons

145.72 Million Gallons Per Month

4.78 Million Gallons Per Day

October Only

105.35 Million Gal. / Mo.

3.40 Million Gal. / Day

(Gallons per day = 7.48051945 gallons per cubic foot x 86,400 seconds per day x Cubic Feet Per Second)\*

Raw data from USGS \*Computations By Bob Dillon

Click> <http://rocklandraft.com/>

## Hackensack River at New Milford NJ

(1921-10-01->2009-01-31)

“Historic Median Flow Over 87 Years”

USGS 01378500 / 0.6 mi Downstream of Oradell Reservoir

50<sup>th</sup> percentile (median) of daily mean values for each day of 87 years of records

Cubic Feet Per Second

Click>

[http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01378500&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01378500&agency_cd=USGS)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	23	26	50	120	65	18	2.6	0.63	0.73	0.8	2	12
2	31	21	55	143	60	22	2	0.6	0.6	1.1	2	12
3	28	20	76	120	53	21	1.7	0.53	0.55	1.1	1.4	14
4	26	26	88	126	58	20	1.4	0.49	0.6	0.84	1	12
5	26	31	99	133	51	19	1.1	0.4	0.58	0.77	2	19
6	29	35	112	133	32	17	1	0.48	0.58	0.68	1.2	16
7	26	57	112	128	27	18	0.55	0.43	0.57	0.88	1.8	16
8	23	50	154	95	28	17	0.61	0.45	0.75	0.65	2	17
9	20	41	128	110	46	16	0.8	0.5	0.58	0.8	2	15
10	21	41	130	90	38	15	1	0.53	1.2	0.64	3	17
11	25	30	108	104	34	14	1.7	0.5	0.8	0.65	2.2	16
12	27	51	95	89	38	14	1	0.48	0.78	1.1	2.8	16
13	23	42	89	108	37	17	0.92	0.57	0.79	0.82	3	17
14	25	43	124	114	40	16	1.5	0.42	0.78	0.96	2.2	17
15	20	39	137	108	48	10	1.2	0.54	1.2	1	5.9	17
16	27	52	120	107	43	10	0.96	0.52	1.1	1.5	3.2	15
17	23	51	152	97	36	7.8	1.9	1	0.8	1.2	3.9	17
18	22	51	137	90	30	7.4	1.1	0.53	0.56	1.5	5.1	17
19	23	75	154	75	28	10	1.2	0.57	1	1.3	5.8	17
20	25	78	155	72	25	11	1	0.65	1.5	2	5.3	16
21	33	63	154	72	20	7	1.8	0.5	1.1	2	6.1	18
22	30	59	154	74	25	5.7	1.3	0.9	0.83	1.1	13	17
23	42	56	150	54	29	7.5	2	0.64	0.59	2	11	18
24	43	58	133	73	25	4.2	0.62	0.89	0.57	1.3	13	19
25	29	56	136	53	20	3	1.6	1.1	0.63	1.4	11	20
26	43	56	115	52	19	3	0.57	1.5	0.66	1.2	9.5	20
27	36	58	104	66	21	2	0.61	0.8	0.52	1.4	10	21
28	28	71	112	72	21	4.1	0.63	0.89	0.63	1.2	13	20
29	31	83	88	55	19	4.1	0.61	1.6	1	1.6	11	21
30	28		100	62	17	2	0.57	0.65	0.84	2	9.6	20
31	28		129		18		0.69	0.53		2		20
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Cubic Feet Per Second (Monthly Mean of Daily Median Values)\*

27.87    48.97    117.74    93.17    33.90    11.43    1.17    0.67    0.78    1.21    5.50    17.06

Million Gallons Per Day\*

18.01    31.65    76.10    60.22    21.91    7.39    0.76    0.43    0.50    0.78    3.55    11.03

## Hackensack River at New Milford NJ

2007(01-01->12-31)

### USGS 01378500 / 0.6 mi Downstream of Oradell Reservoir

50<sup>th</sup> percentile (median) of daily mean values for each day

Cubic Feet Per Second

Click>

[http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01378500&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01378500&agency_cd=USGS)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	576	21	14	20	147	18	17	18	17	18	11	5
2	643	25	117	19	124	15	17	18	16	15	10	6.7
3	228	20	1,010	16	61	16	17	22	16	13	11	9.4
4	121	17	513	103	40	18	16	20	15	13	10	6.5
5	97	11	217	220	29	17	16	19	14	13	9.6	7.7
6	49	14	40	125	23	17	15	24	14	14	11	4.2
7	49	14	17	79	22	17	14	21	16	16	12	6.8
8	628	13	16	48	20	17	14	24	17	13	14	3.1
9	444	14	15	32	16	16	16	15	16	13	14	6.9
10	190	15	20	16	12	15	18	16	14	15	8.3	7.3
11	119	14	18	17	13	17	20	14	17	13	9.1	5.2
12	74	13	14	341	12	17	16	14	16	11	15	6.1
13	62	13	14	590	12	17	14	13	15	18	19	9.8
14	70	14	16	573	12	16	14	13	14	12	11	7.4
15	74	16	16	1,900	14	15	14	15	14	12	10	5.4
16	66	14	61	10,500	14	20	14	15	14	12	8.8	7.7
17	41	14	216	4,190	12	16	14	15	17	13	8.4	5.7
18	28	14	132	1,190	15	15	22	15	22	14	5.4	4.4
19	23	14	62	523	15	15	18	16	15	13	9	7.1
20	22	17	38	162	13	15	18	16	16	17	11	6.8
21	16	16	123	110	15	16	18	17	14	12	8.9	3.9
22	17	13	145	132	15	16	18	14	14	12	10	3.2
23	30	16	405	116	16	18	21	15	13	11	11	5.9
24	29	15	432	103	14	17	19	14	17	11	6.9	7.8
25	21	12	339	140	14	15	18	14	16	9.6	10	5.5
26	19	14	237	395	14	17	20	14	12	10	9.5	6.4
27	17	14	168	1,000	14	17	20	15	13	12	10	4.9
28	17	14	119	716	13	16	20	16	13	10	7.1	6.1
29	15		75	129	14	17	19	14	12	9.7	11	7.4
30	16		44	110	14	17	17	15	15	9.5	6.3	6.5
31	15		30		17		18	17		9.5		5.8
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Cubic Feet Per Second (Monthly Mean of Daily Median Values)\*

123.10 15.04 151.06 787.17 25.35 16.50 17.16 16.39 15.13 12.72 10.28 6.21

Million Gallons Per Day\*

79.56 9.72 97.64 508.76 16.39 10.66 11.09 10.59 9.78 8.22 6.64 4.02

## Hackensack River at New Milford NJ

2007 In Comparison to 87 Years of History\*

### USGS 01378500 / 0.6 mi Downstream of Oradell Reservoir

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Million Gallons Per Day Over or (Under) Historic Median Flow

61.55 (21.93) 21.54 448.54 (5.52) 3.28 10.34 10.16 9.28 7.44 3.09 (7.01)

Million Gallons Per Month Over or (Under) Historic Median Flow

1,907.93 (614.02) 667.65 13,456.32 (171.27) 101.65 320.42 314.87 278.29 230.61 92.62 (217.42)

### 2007 Excess or (Deficit) Gallons Released From June Through November

1,338.46 Million Gallons

223.08 Million Gallons Per Month

7.31 Million Gallons Per Day

(Gallons per day = 7.48051945 gallons per cubic foot x 86,400 seconds per day x Cubic Feet Per Second)\*

Raw data from USGS \*Computations By Bob Dillon

Click> <http://rocklandraft.com/>