

Water-Data Report 2011

**01377000 HACKENSACK RIVER AT RIVERVALE, NJ**

HACKENSACK RIVER BASIN

LOCATION.--Lat 40°59'57", long 73°59'21" referenced to North American Datum of 1983, River Vale Township, Bergen County, NJ, Hydrologic Unit 02030103, on upstream right bank at bridge on Westwood Avenue in Rivervale, 1.5 mi upstream from Pascack Brook, 4.1 mi downstream of Lake Tappan, and 4.6 mi upstream from Oradell Dam.

DRAINAGE AREA.--58.0 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WDR NJ-80-1: 1968-79(M).

GAGE.--Water-stage recorder, crest-stage gages, and concrete control. Datum of gage is 22.51 ft above NGVD of 1929.

REMARKS.--Records fair, except for estimated daily discharges, which are poor. Flow regulated by DeForest Lake (since 1956, see 01376700) and Lake Tappan (since 1965, see 01376950). Diversions from DeForest Lake (see 01376699) and Hackensack River at West Nyack, NY (see 01376790), for municipal water supply. Several measurements of water temperature were made during the year. Satellite telemetry at station.

## 01377000 HACKENSACK RIVER AT RIVERVALE, NJ—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	191	54	90	52	27	45	76	134	65	59	81	133
2	64	54	59	54	33	38	83	110	59	53	54	73
3	59	52	49	54	32	35	81	102	48	60	58	45
4	59	67	47	52	29	35	77	121	43	59	73	44
5	60	59	48	52	29	35	79	141	41	53	52	44
6	58	53	47	52	34	79	78	112	41	50	52	241
7	57	51	47	52	32	1,840	83	93	40	50	72	1,260
8	57	50	46	52	40	1,580	72	81	40	90	69	1,080
9	57	50	45	52	33	584	71	74	39	253	73	634
10	56	50	47	46	30	337	64	63	41	250	61	323
11	55	51	50	28	29	1,400	58	55	57	133	54	264
12	19	50	78	29	29	1,270	85	51	41	89	53	209
13	39	50	65	28	28	572	462	47	43	68	52	119
14	49	50	56	26	31	246	307	46	50	56	172	93
15	61	50	54	24	35	225	166	176	51	50	171	61
16	48	50	52	25	31	225	187	186	49	50	361	58
17	47	71	e52	24	33	233	2,300	367	61	50	227	58
18	47	53	52	31	42	215	1,130	639	49	50	142	57
19	47	51	52	36	43	64	293	1,090	50	50	138	52
20	47	50	52	31	33	40	127	430	50	73	141	48
21	50	50	51	29	33	69	148	199	48	106	99	47
22	50	50	50	27	32	110	125	152	65	106	120	52
23	51	49	50	26	31	130	222	130	472	106	84	61
24	53	49	50	25	31	158	341	140	1,410	106	71	57
25	54	48	50	27	94	139	215	122	417	107	82	49
26	54	49	51	27	47	119	159	102	171	91	206	47
27	54	46	54	28	39	109	133	90	121	84	252	47
28	54	46	52	27	62	102	202	78	94	103	3,080	62
29	53	45	51	27	---	93	460	69	80	108	3,180	129
30	53	45	51	27	---	72	194	74	68	105	1,000	164
31	54	---	51	27	---	65	---	75	---	101	399	---
<b>Total</b>	1,757	1,543	1,649	1,097	1,022	10,264	8,078	5,349	3,904	2,769	10,729	5,611
<b>Mean</b>	56.7	51.4	53.2	35.4	36.5	331	269	173	130	89.3	346	187
<b>Max</b>	191	71	90	54	94	1,840	2,300	1,090	1,410	253	3,180	1,260
<b>Min</b>	19	45	45	24	27	35	58	46	39	50	52	44

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2011, BY WATER YEAR (WY)**

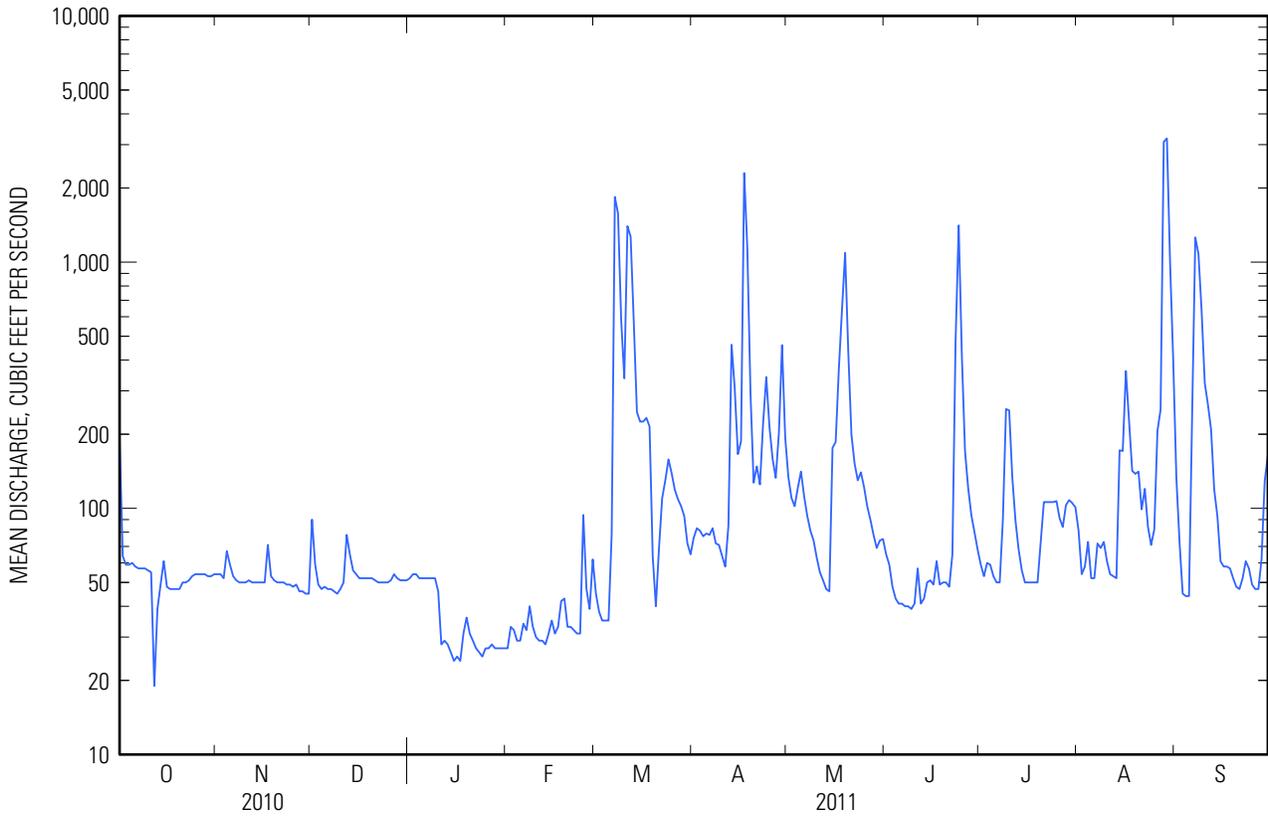
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	58.7	68.7	80.8	87.9	87.8	138	138	96.6	78.9	77.8	74.8	69.9
<b>Max</b>	312	240	248	251	221	424	438	310	319	339	346	325
<b>(WY)</b>	(1956)	(1956)	(1997)	(1949)	(1951)	(2010)	(1983)	(1989)	(1972)	(1945)	(2011)	(2004)
<b>Min</b>	12.1	16.6	12.6	18.0	19.9	11.2	14.5	20.4	13.4	11.6	11.4	7.87
<b>(WY)</b>	(1942)	(1996)	(1981)	(2008)	(2002)	(1981)	(1981)	(1981)	(1957)	(1954)	(1944)	(1953)

01377000 HACKENSACK RIVER AT RIVERVALE, NJ—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1942 - 2011	
<b>Annual total</b>	36,299		53,772			
<b>Annual mean</b>	99.4		147		88.1	
<b>Highest annual mean</b>					156	1952
<b>Lowest annual mean</b>					30.9	1981
<b>Highest daily mean</b>	2,250	Mar 14	3,180	Aug 29	4,380	Apr 16, 2007
<b>Lowest daily mean</b>	19	Oct 12	19	Oct 12	4.4	Oct 10, 1995
<b>Annual seven-day minimum</b>	35	May 24	26	Jan 11	5.0	Oct 7, 1995
<b>Maximum peak flow</b>			4,660	Aug 28	4,660	Aug 28, 2011
<b>Maximum peak stage</b>			12.26	Aug 28	12.26	Aug 28, 2011
<b>Instantaneous low flow</b>			14	Oct 12, 13	<sup>a</sup> 0.00	Jan 16, 1970
<b>10 percent exceeds</b>	161		236		165	
<b>50 percent exceeds</b>	57		56		59	
<b>90 percent exceeds</b>	46		33		22	

<sup>a</sup> Due to upstream regulation.



## 01377000 HACKENSACK RIVER AT RIVERVALE, NJ—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962, 1964 to current year.

REMARKS.--Cooperative Network Site Descriptor: Urban Land Use Indicator, NJ Department of Environmental Protection Watershed Management Area 5.

COOPERATION.--Physical measurements and samples for laboratory analyses were provided by personnel of the NJ Department of Environmental Protection. Determination of concentrations of ammonia in filtered water was performed by the NJ Department of Health and Senior Services, Environmental and Chemical Laboratory (DHSS-ECL) except during the period May 12 through August 25, 2011 when the determination was performed by the National Water-Quality Laboratory. Determination of concentrations of suspended solids in unfiltered water was performed by the DHSS-ECL except during the period June 17 through August 25, 2011 when samples could not be accepted.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

Part 1 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Absorbance, UV, 254 nm, 1 cm path length, water, filtered, units per centimeter (50624)	Absorbance, UV, organic constituents, 280 nm, 1 cm path length, water, filtered, units per centimeter (61726)	Discharge, instantaneous, ft <sup>3</sup> /s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)
11-17-2010	0930	751	16.0	.329	.270	91	7.7	70	7.5
03-16-2011	1200	764	9.0	.141	.107	230	10.9	88	7.6
06-22-2011	1130	760	22.6	.131	.095	50	5.3	63	7.6
09-14-2011	1000	759	25.0	.162	.121	116	6.0	68	7.5

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

Part 2 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	Specific conductance, water, unfiltered, µS/cm at 25 °C (00095)	Temperature, water, °C (00010)	Turbidity, water, unfiltered, broad band light source (400-680 nm), detectors at multiple angles including 90 +/- 30 degrees, ratiometric correction, NTRU (63676)	Dissolved solids dried at 180 °C, water, filtered, mg/L (70300)	Dissolved solids, water, filtered, sum of constituents, mg/L (70301)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Suspended solids, water, unfiltered, mg/L (00530)	Calcium, water, filtered, mg/L (00915)
11-17-2010	0930	369	11.3	17	214	202	113	6	35.0
03-16-2011	1200	451	6.2	13	251	236	95.2	22	29.5
06-22-2011	1130	443	22.6	4.5	258	228	109	--	33.7
09-14-2011	1000	295	22.0	6.1	159	148	75.3	8	23.0

## 01377000 HACKENSACK RIVER AT RIVERVALE, NJ—Continued

## WATER-QUALITY DATA

## WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 3 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium, water, filtered, mg/L (00930)	ANC, water, unfiltered, fixed endpoint titration, mg/L as CaCO <sub>3</sub> (90410)	Carbon (inorganic plus organic), suspended sediment, total, mg/L (00694)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Inorganic carbon, suspended sediment, total, mg/L (00688)	Silica, water, filtered, mg/L as SiO <sub>2</sub> (00955)
11-17-2010	0930	6.21	2.60	29.9	81	2.06	56.5	.06	< .03	6.8
03-16-2011	1200	5.23	1.61	50.5	60	1.08	95.2	< .04	< .03	4.8
06-22-2011	1130	6.09	1.68	40.8	87	.68	76.1	.06	< .03	5.1
09-14-2011	1000	4.34	1.89	24.5	62	1.16	41.5	< .04	< .03	5.7

## WATER-QUALITY DATA

## WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 4 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	Sulfate, water, filtered, mg/L (00945)	Ammonia plus organic nitrogen, water, filtered, mg/L as N (00623)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Particulate nitrogen, suspended in water, mg/L (49570)	Phosphorus, water, filtered, mg/L as P (00666)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, filtered, mg/L (00602)	Total nitrogen, water, unfiltered, mg/L (00600)
11-17-2010	0930	14.6	.41	.026	.27	.32	.083	.150	.68	1.0
03-16-2011	1200	10.8	.40	.069	.56	.13	.018	.068	.96	1.1
06-22-2011	1130	11.1	.34	.062	.35	.09	.021	.042	.69	.77
09-14-2011	1000	7.94	.45	.063	.36	.23	.016	.055	.81	1.0

**01377000 HACKENSACK RIVER AT RIVERVALE, NJ—Continued****WATER-QUALITY DATA  
WATER YEAR OCTOBER 2010 TO SEPTEMBER  
2011**

Part 5 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; μS/cm, microsiemens per centimeter; <, less than]

<b>Date</b>	<b>Sample start time</b>	<b>Organic carbon, suspended sediment, total, mg/L (00689)</b>	<b>Organic carbon, water, filtered, mg/L (00681)</b>
<b>11-17-2010</b>	<b>0930</b>	2.05	10.8
<b>03-16-2011</b>	<b>1200</b>	1.08	4.0
<b>06-22-2011</b>	<b>1130</b>	.68	4.6
<b>09-14-2011</b>	<b>1000</b>	1.16	5.0