

# New Jersey Water Withdrawals, Uses, Transfers, and Discharges by HUC11, 1990 to 1999

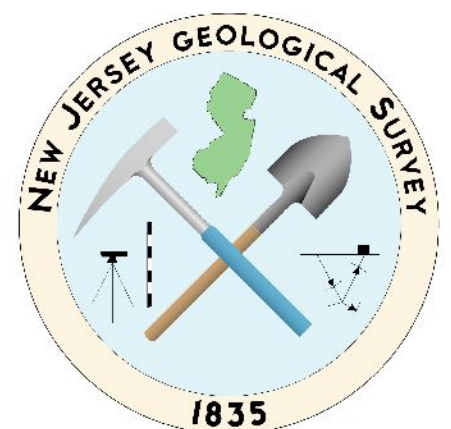
## Appendix 6: HUC11 Tables, Figures and Maps WMA 6 - Upper and Mid Passaic, Whippany and Rockaway



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**Water Withdrawals, Transfers and Discharges for UPPER PASSAIC RIVER (ABOVE PINE BRK) --- 02030103010**

<b>WMA:</b>	<b>Upper Passaic, Whippany, and Rockaway</b>	<b>06</b>
<b>HUC11:</b>	<b>Upper Passaic River (above Pine Bk)</b>	<b>02030103010</b>

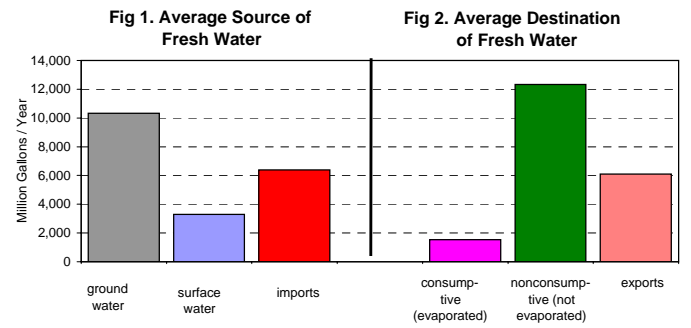
**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<i>surface water:</i> <sup>2</sup>											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	6,076	3,705	2,743	3,449	2,746	3,670	2,940	2,316	2,390	2,921	3,296
sum	6,076	3,705	2,743	3,449	2,746	3,670	2,940	2,316	2,390	2,921	3,296
<i>ground-water:</i> <sup>3</sup>											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	10,340	10,331	10,076	10,148	10,077	10,038	10,167	10,423	10,887	10,885	10,337
sum	10,340	10,331	10,076	10,148	10,077	10,038	10,167	10,423	10,887	10,885	10,337
<b>total withdrawals:</b>	<b>16,416</b>	<b>14,036</b>	<b>12,820</b>	<b>13,597</b>	<b>12,824</b>	<b>13,708</b>	<b>13,108</b>	<b>12,739</b>	<b>13,277</b>	<b>13,806</b>	<b>13,633</b>

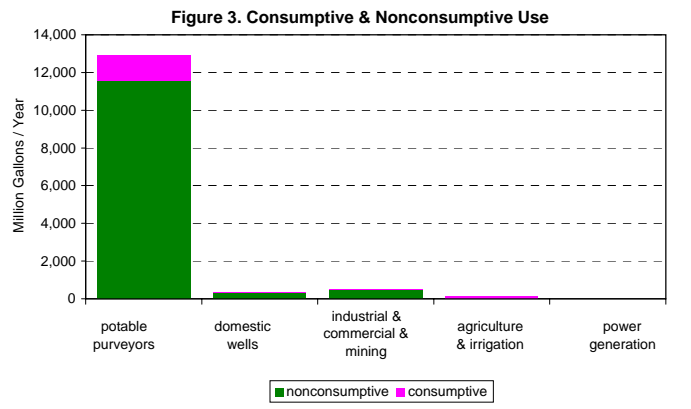
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports <sup>11</sup>	6,071	6,577	6,097	6,396	6,439	6,330	6,228	6,536	6,617	6,574	6,387
exports <sup>11</sup>	7,173	6,177	5,915	6,097	5,617	6,071	6,078	5,836	5,911	6,144	6,102
net	(1,101)	400	183	299	822	260	150	701	705	430	285



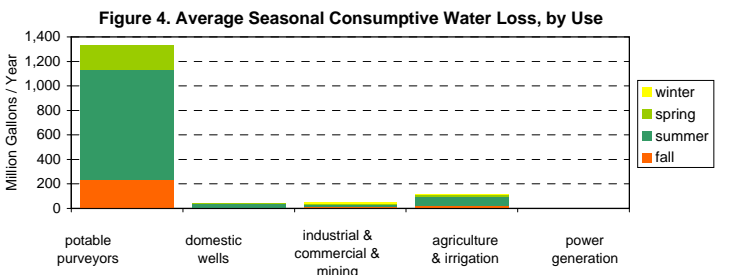
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<i>potable purveyors</i>											
nonconsumptive	13,030	12,034	10,807	11,416	11,427	11,575	11,004	11,110	11,477	11,701	11,558
consumptive	1,265	1,343	1,152	1,491	1,272	1,325	1,257	1,300	1,420	1,485	1,331
<i>domestic wells</i>											
nonconsumptive	294	294	296	299	301	305	308	311	314	317	304
consumptive	41	41	42	42	42	43	43	44	44	45	43
<i>industrial &amp; commercial &amp; mining</i>											
nonconsumptive	500	517	567	415	394	470	466	442	433	421	463
consumptive	57	61	65	44	41	50	49	47	46	45	51
<i>agricultural &amp; non-agricultural irrigation</i>											
nonconsumptive	6	10	6	17	14	16	9	16	20	17	13
consumptive	52	89	57	150	129	141	80	140	182	156	118
<i>power generation</i>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	13,829	12,856	11,677	12,146	12,137	12,366	11,787	11,878	12,244	12,457	12,338
consumptive	1,416	1,535	1,316	1,727	1,485	1,559	1,430	1,530	1,692	1,731	1,542
<b>PERCENTAGES:</b>											
nonconsumptive	90.7%	89.3%	89.9%	87.6%	89.1%	88.8%	89.2%	88.6%	87.9%	87.8%	88.9%
consumptive	9.3%	10.7%	10.1%	12.4%	10.9%	11.2%	10.8%	11.4%	12.1%	12.2%	11.1%



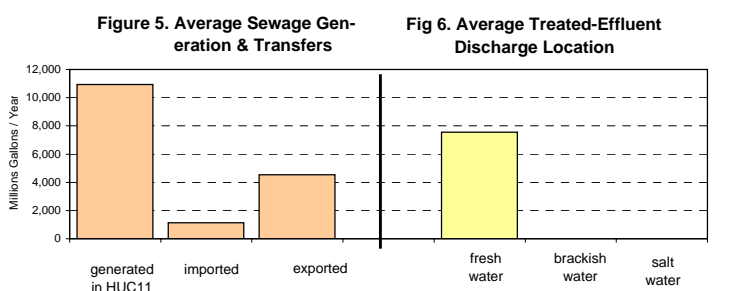
**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive
potable purveyors	3,164	0	2,995	198	2,598	900	2,838	233	11,595	1,332
domestic wells	70	0	72	5	88	31	74	7	304	43
industrial & commercial & mining	110	12	113	12	128	14	112	12	463	51
agricultural & non-agricultural irrig.	0	4	2	19	8	72	3	23	13	118
power generation	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>	<b>3,344</b>	<b>16</b>	<b>3,181</b>	<b>235</b>	<b>2,823</b>	<b>1,016</b>	<b>3,026</b>	<b>275</b>	<b>12,374</b>	<b>1,543</b>



**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	8,571	10,603	10,818	11,605	11,449	10,774	12,453	11,036	11,574	10,467	10,935
imported to HUC11	828	1,019	1,228	1,236	1,151	1,092	1,290	1,125	1,278	1,184	1,143
exported from HUC11	4,596	4,604	4,087	4,604	4,838	4,111	4,951	4,481	4,608	4,429	4,531



**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	1,608
ground water	16,978
<b>total</b>	<b>18,586</b>

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

Use Group	MGY
agricultural	0
commercial	149
industrial	719
irrigation	591
mining	0
potable supply	17,127
power generation	0
<b>total</b>	<b>18,586</b>

**Table 9. HUC11 Descriptive Statistics**

--- **Area:**

in this HUC11 only	143.2	sq. mi.
upstream HUC11s	206.4	sq. mi.
total watershed	349.6	sq. mi.

(this HUC11 onshore area: 143.2 sq. mi.)

--- **Population of this HUC11:**

Year	Population	Change
1940	72,133	-
1950	94,985	31.7%
1960	150,248	58.2%
1970	187,310	24.7%
1980	179,653	-4.1%
1990	180,047	0.2%
2000	198,969	10.5%
2010	207,915	4.5% est. <sup>12</sup>
2020	213,807	2.8% est. <sup>12</sup>
2030	223,807	4.7% est. <sup>12</sup>

--- **Land Use of this HUC11:**

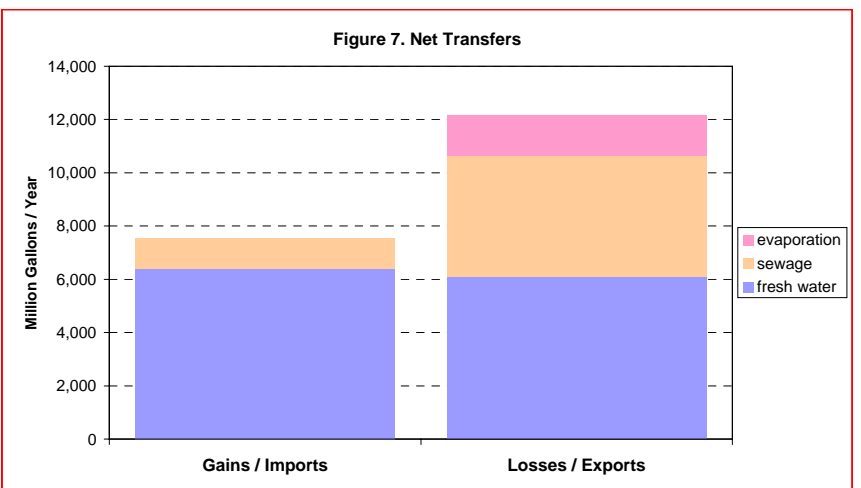
Type	Year		Change
	1986	1995	
ag.	5.0%	3.9%	-1.1%
barren	0.9%	0.7%	-0.2%
forest	24.8%	22.9%	-1.9%
urban	45.3%	48.9%	3.5%
water	1.3%	1.3%	0.0%
wetlands	22.7%	22.3%	-0.3%

--- **% of this HUC11 in:**

Pinelands:	0.0%
Highlands:	39.1%

**Table 10. Upstream and downstream HUC11s (in NJ)**

location	#	name
downstream:	02030103040	Passaic River Upr (Pompton to Pine Bk)
(if any)		
upstream:	02030103020	Whippany River
(if any)	02030103030	Rockaway River
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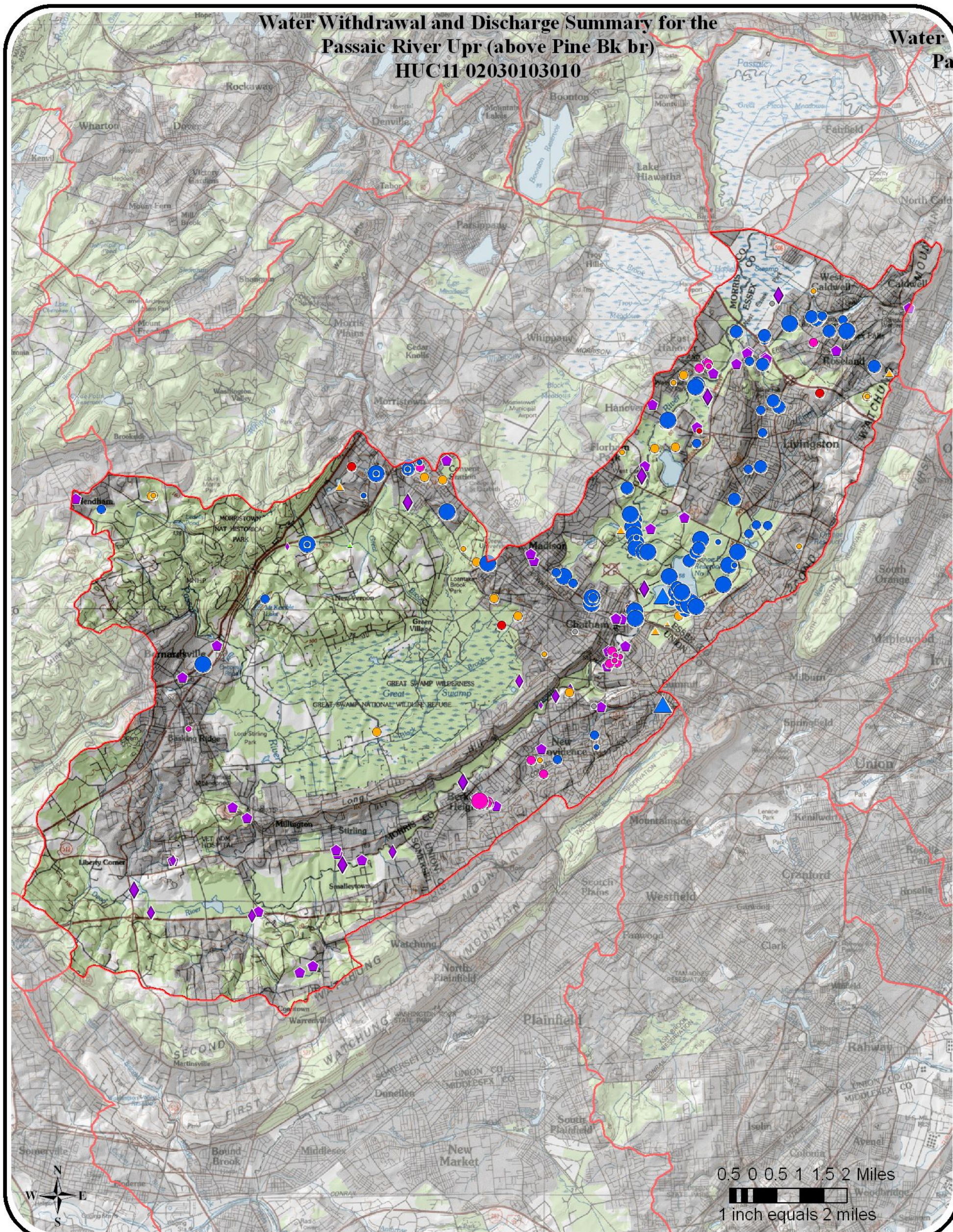
**NOTES:**

- 1 Salt and brackish water withdrawal and use is not included in this data.
- 2 This does not account for water released from onstream reservoirs for downstream intakes.
- 3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
- 4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
- 5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
- 6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
- 7 Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
- 8 Sewage generation and transfers are based on intersection of sewer service areas with HUC11s.
- 9 Based on discharge volumes reported under NJPDES program.
- 10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
- 11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
- 12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
- 13 Subject to revision.
- 14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.



# Water Withdrawal and Discharge Summary for the Passaic River Upr (above Pine Bk br) HUC11 02030103010

Water  
Pa



### Key for Discharge Data

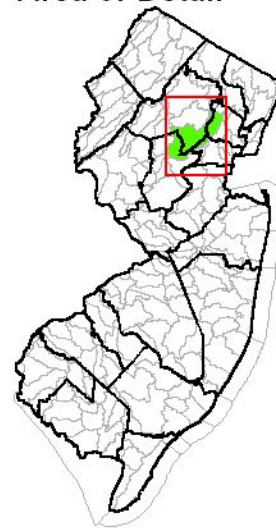
1999 Treated Effluent Discharge	
0 - 50 MGY	◆
50 - 100 MGY	◆
100 - 500 MGY	◆
> 500 MGY	◆
Other Permitted Discharge	
	◆

### Key for Withdrawal Data

Source	1999 Withdrawal	Use Group
GW Confined	□	Agricultural
GW Unconfined	○	Commercial
SW	△	Industrial
	●▲	Irrigation
	■●▲	Mining
	■●▲	Not Classified
	■●▲	Potable Supply
	■●▲	Power Generation

MGY = millions of gallons per year

### Area of Detail





**Water Withdrawals, Transfers and Discharges for WHIPPANY RIVER --- 02030103020**

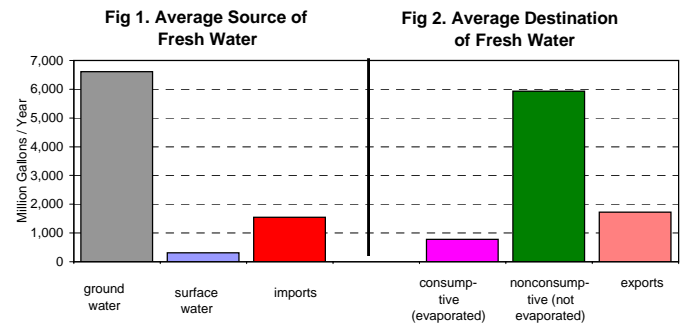
<b>WMA:</b>	<b>Upper Passaic, Whippany, and Rockaway</b>	<b>06</b>
<b>HUC11:</b>	<b>Whippany River</b>	<b>02030103020</b>

**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>surface water:<sup>2</sup></b>											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	722	795	521	679	132	0	0	15	148	106	312
sum	722	795	521	679	132	0	0	15	148	106	312
<b>ground-water:<sup>3</sup></b>											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	6,561	7,131	6,615	6,748	6,669	6,293	6,295	6,442	6,537	6,801	6,609
sum	6,561	7,131	6,615	6,748	6,669	6,293	6,295	6,442	6,537	6,801	6,609
<b>total withdrawals:</b>	<b>7,283</b>	<b>7,925</b>	<b>7,136</b>	<b>7,427</b>	<b>6,801</b>	<b>6,293</b>	<b>6,295</b>	<b>6,457</b>	<b>6,685</b>	<b>6,907</b>	<b>6,921</b>

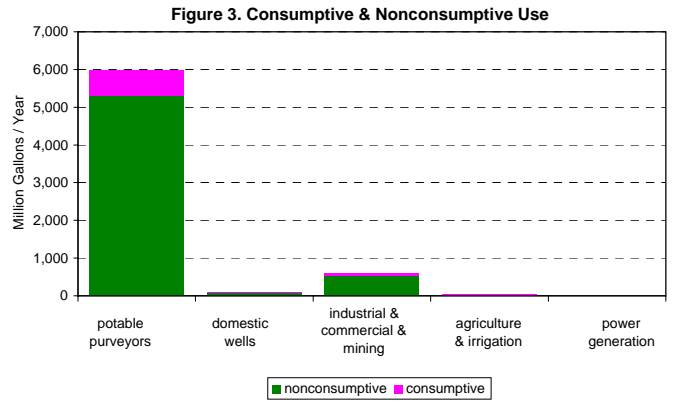
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports <sup>11</sup>	1,280	1,275	1,206	1,512	1,689	1,697	1,576	1,813	1,774	1,654	1,548
exports <sup>11</sup>	1,792	1,979	1,703	1,814	1,671	1,541	1,564	1,623	1,686	1,838	1,721
net	(513)	(704)	(497)	(303)	18	155	12	190	88	(184)	(174)



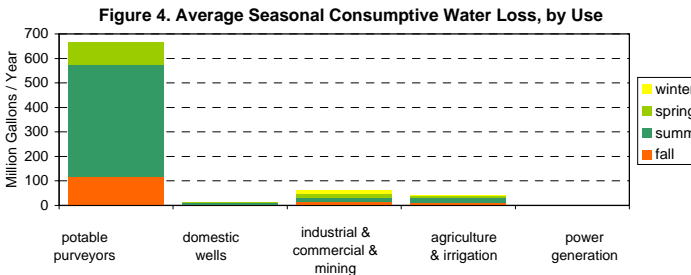
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>potable purveyors</b>											
nonconsumptive	5,268	5,606	5,165	5,500	5,455	5,133	5,039	5,252	5,393	5,421	5,323
consumptive	622	707	608	734	644	638	602	678	718	714	666
<b>domestic wells</b>											
nonconsumptive	78	78	79	79	80	80	81	81	82	82	80
consumptive	11	11	11	11	11	11	11	11	12	12	11
<b>industrial &amp; commercial &amp; mining</b>											
nonconsumptive	695	670	620	650	475	460	460	460	433	356	528
consumptive	78	76	71	74	55	52	53	53	50	40	60
<b>agricultural &amp; non-agricultural irrigation</b>											
nonconsumptive	2	6	5	6	6	5	4	5	3	6	5
consumptive	18	53	42	57	51	43	32	48	31	58	43
<b>power generation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	6,042	6,360	5,868	6,235	6,016	5,678	5,583	5,799	5,911	5,867	5,936
consumptive	729	847	733	876	761	744	699	791	810	824	781
<b>PERCENTAGES:</b>											
nonconsumptive	89.2%	88.3%	88.9%	87.7%	88.8%	88.4%	88.9%	88.0%	87.9%	87.7%	88.4%
consumptive	10.8%	11.7%	11.1%	12.3%	11.2%	11.6%	11.1%	12.0%	12.1%	12.3%	11.6%



**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive
potable purveyors	1,359	0	1,342	91	1,328	461	1,324	115	5,354	666
domestic wells	18	0	19	1	23	8	20	2	80	11
industrial & commercial & mining	119	13	129	14	155	19	125	14	528	60
agricultural & non-agricultural irrig.	0	1	1	10	3	23	1	9	5	43
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	1,497	14	1,492	117	1,509	511	1,469	139	5,966	781

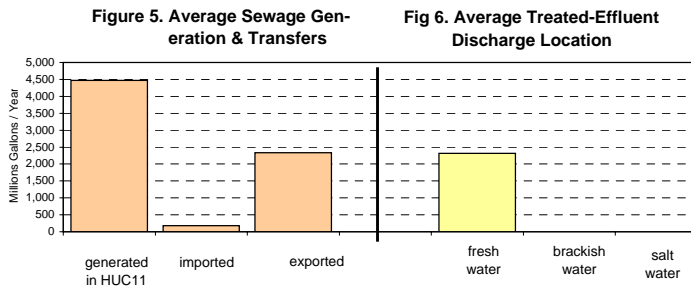


**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	4,438	4,331	4,351	4,306	4,572	4,264	4,703	4,466	4,641	4,603	4,468
imported to HUC11	245	225	193	122	156	142	184	162	200	210	184
exported from HUC11	2,105	2,092	2,247	2,402	2,507	2,317	2,460	2,377	2,407	2,401	2,332

**Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges<sup>9</sup> in the HUC11 (millions of gallons)**

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	2,578	2,464	2,298	2,026	2,221	2,089	2,426	2,251	2,434	2,413	2,320
brackish water	0	0	0	0	0	0	0	0	0	0	0
salt water	0	0	0	0	0	0	0	0	0	0	0
sum:	2,578	2,464	2,298	2,026	2,221	2,089	2,426	2,251	2,434	2,413	2,320



**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	795
ground water	7,443
total	8,238

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

Use Group	MGY
agricultural	0
commercial	0
industrial	1,554
irrigation	139
mining	0
potable supply	6,545
power generation	0
total	8,238

**Table 9. HUC11 Descriptive Statistics**

--- **Area:**

in this HUC11 only	69.6	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	69.6	sq. mi.

(this HUC11 onshore area: 69.6 sq. mi.)

--- **Population of this HUC11:**

Year	Population	Change
1940	35,053	-
1950	44,738	27.6%
1960	71,064	58.8%
1970	105,873	49.0%
1980	103,078	-2.6%
1990	102,427	-0.6%
2000	111,107	8.5%
2010	117,407	5.7% est. <sup>12</sup>
2020	117,478	0.1% est. <sup>12</sup>
2030	121,535	3.5% est. <sup>12</sup>

--- **Land Use of this HUC11:**

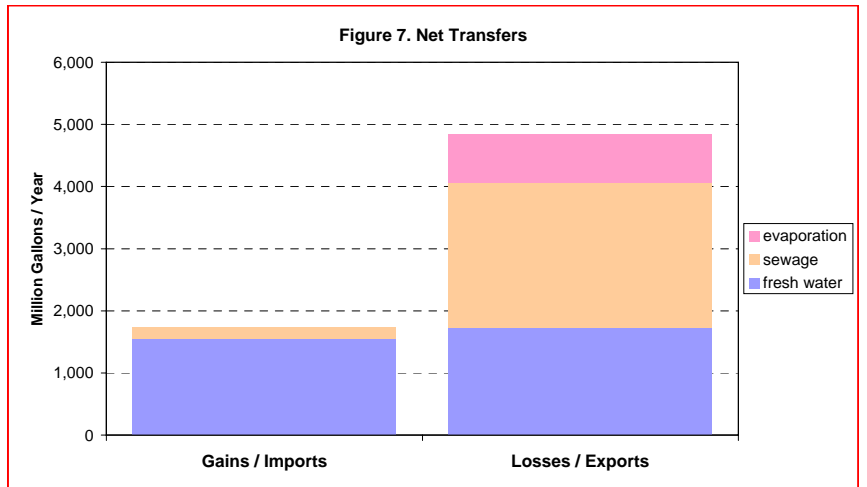
Type	Year		Change
	1986	1995	
ag.	1.6%	1.2%	-0.4%
barren	0.2%	0.6%	0.4%
forest	29.7%	26.7%	-3.0%
urban	52.2%	55.8%	3.5%
water	1.7%	1.8%	0.1%
wetlands	14.5%	14.0%	-0.6%

--- **% of this HUC11 in:**

Pinelands:	0.0%
Highlands:	85.6%

**Table 10. Upstream and downstream HUC11s (in NJ)**

location	#	name
downstream:	02030103030	Rockaway River
(if any)	--	--
upstream:	--	--
(if any)	--	--

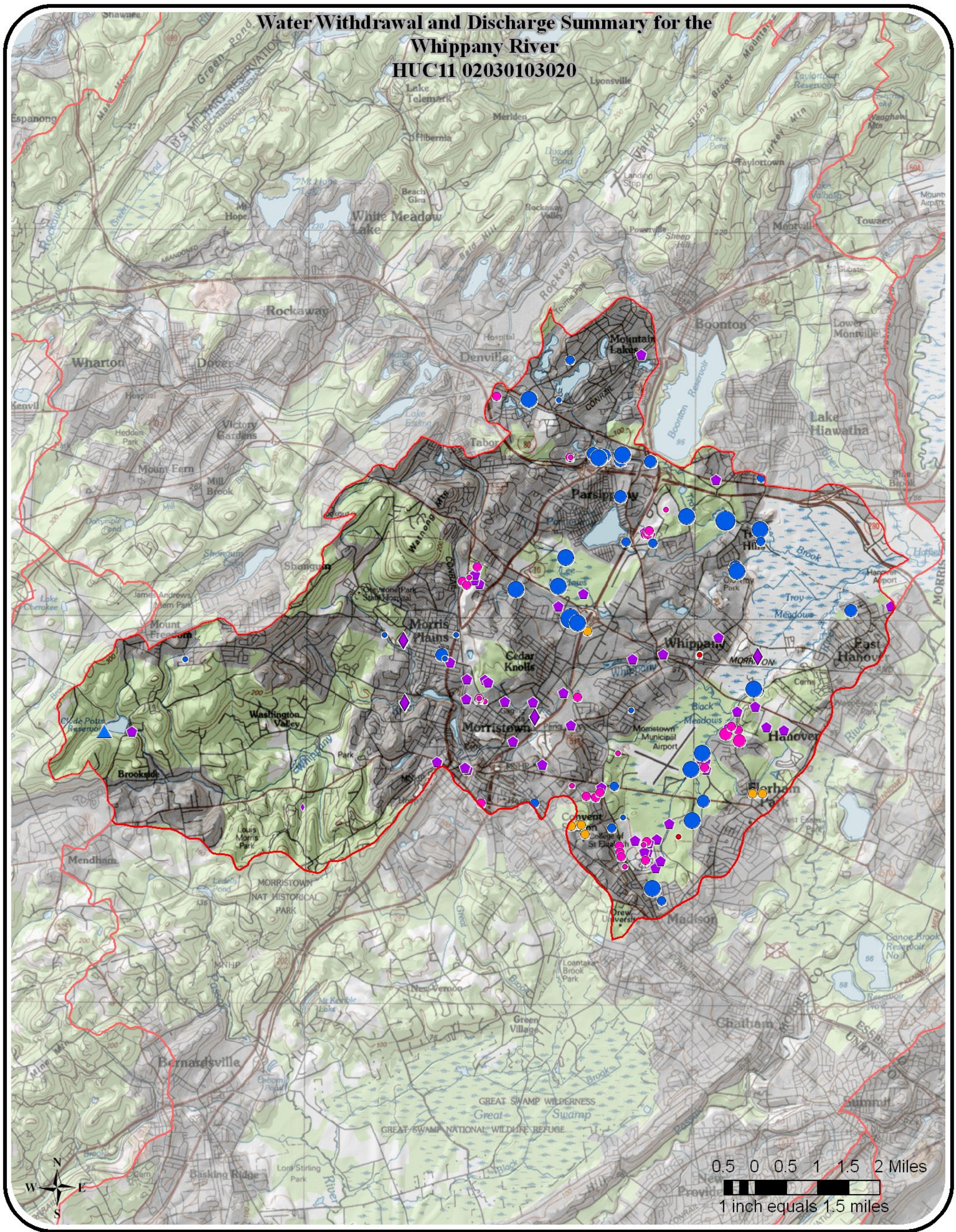


**NOTES:**

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- 2 This does not account for water released from onstream reservoirs for downstream intakes.
- 3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
- 4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
- 5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
- 6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
- 7 Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
- 8 Sewage generation and transfers are based on intersection of sewer service areas with HUC11s.
- 9 Based on discharge volumes reported under NJPDES program.
- 10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
- 11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
- 12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
- 13 Subject to revision.
- 14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.

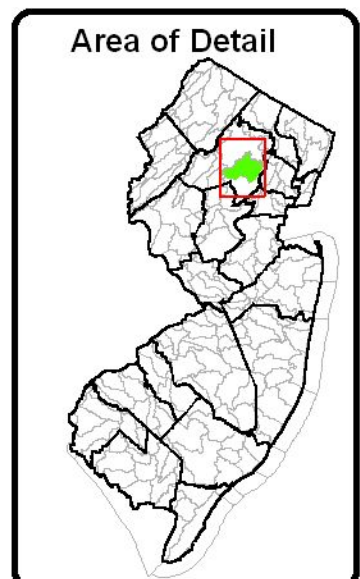


# Water Withdrawal and Discharge Summary for the Whippany River HUC11 02030103020



Key for Discharge Data	
1999 Treated Effluent Discharge	
0 - 50 MGY	◆
50 - 100 MGY	◆
100 - 500 MGY	◆
> 500 MGY	◆
Other Permitted Discharge	
	◆

Key for Withdrawal Data	
Source	
GW Confined	□
GW Unconfined	○
SW	△
1999 Withdrawal	
No 1999 Use	●▲
1 - 50 MGY	■●▲
51 - 100 MGY	■●▲
101 - 500 MGY	■●▲
> 500 MGY	■●▲
MGY = millions of gallons per year	
Use Group	
Agricultural	●
Commercial	●
Industrial	●
Irrigation	●
Mining	●
Not Classified	●
Potable Supply	●
Power Generation	●





**Water Withdrawals, Transfers and Discharges for ROCKAWAY RIVER --- 02030103030**

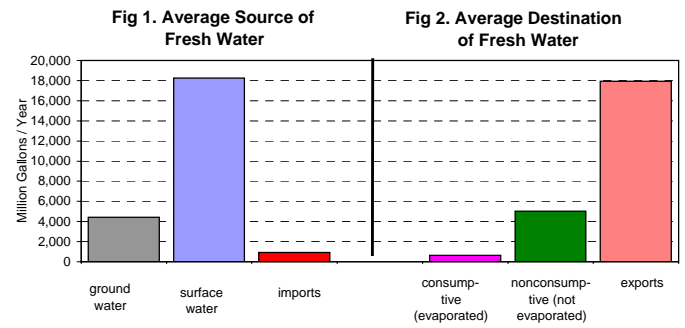
<b>WMA:</b>	<b>Upper Passaic, Whippany, and Rockaway</b>	<b>06</b>
<b>HUC11:</b>	<b>Rockaway River</b>	<b>02030103030</b>

**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>surface water:<sup>2</sup></b>											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	18,488	18,356	18,371	17,647	16,629	16,491	17,821	19,876	19,102	19,695	18,248
sum	18,488	18,356	18,371	17,647	16,629	16,491	17,821	19,876	19,102	19,695	18,248
<b>ground-water:<sup>3</sup></b>											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	4,160	4,377	4,267	4,670	4,387	4,121	4,388	4,294	4,739	4,832	4,424
sum	4,160	4,377	4,267	4,670	4,387	4,121	4,388	4,294	4,739	4,832	4,424
<b>total withdrawals:</b>	<b>22,648</b>	<b>22,733</b>	<b>22,638</b>	<b>22,317</b>	<b>21,016</b>	<b>20,612</b>	<b>22,209</b>	<b>24,170</b>	<b>23,841</b>	<b>24,527</b>	<b>22,671</b>

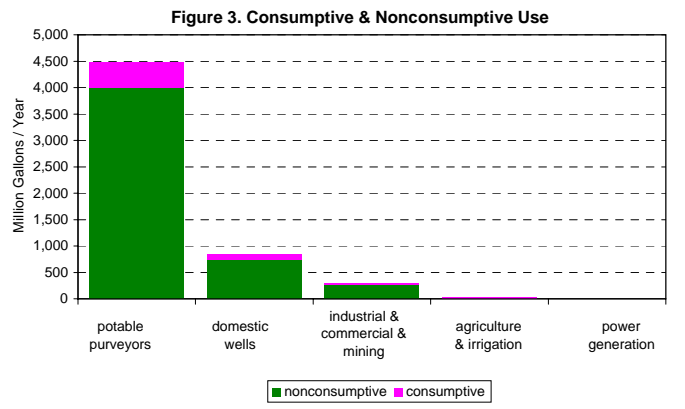
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports <sup>11</sup>	749	798	726	904	906	992	954	1,080	1,126	1,073	931
exports <sup>11</sup>	18,883	17,779	17,659	17,608	16,530	16,188	17,549	19,686	18,335	18,973	17,919
net	(18,135)	(16,982)	(16,933)	(16,704)	(15,624)	(15,196)	(16,595)	(18,606)	(17,210)	(17,900)	(16,988)



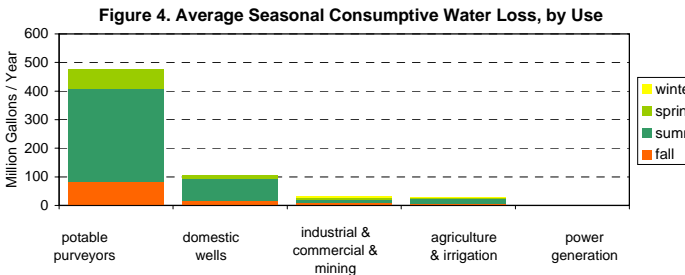
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>potable purveyors</b>											
nonconsumptive	3,107	4,110	4,118	3,914	3,656	3,691	3,957	3,875	4,745	4,758	3,993
consumptive	365	482	479	477	439	437	441	481	609	569	478
<b>domestic wells</b>											
nonconsumptive	719	722	729	736	744	750	754	758	764	770	745
consumptive	101	102	103	104	105	106	106	107	108	108	105
<b>industrial &amp; commercial &amp; mining</b>											
nonconsumptive	146	262	216	303	350	307	254	243	300	315	270
consumptive	19	32	25	37	43	37	30	30	36	38	33
<b>agricultural &amp; non-agricultural irrigation</b>											
nonconsumptive	3	2	2	3	3	7	3	3	4	4	3
consumptive	30	17	15	24	23	62	23	28	35	32	29
<b>power generation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	3,976	5,095	5,064	4,956	4,752	4,755	4,967	4,879	5,813	5,847	5,011
consumptive	516	633	622	642	609	642	600	646	788	748	645
<b>PERCENTAGES:</b>											
nonconsumptive	88.5%	89.0%	89.1%	88.5%	88.6%	88.1%	89.2%	88.3%	88.1%	88.7%	88.6%
consumptive	11.5%	11.0%	10.9%	11.5%	11.4%	11.9%	10.8%	11.7%	11.9%	11.3%	11.4%



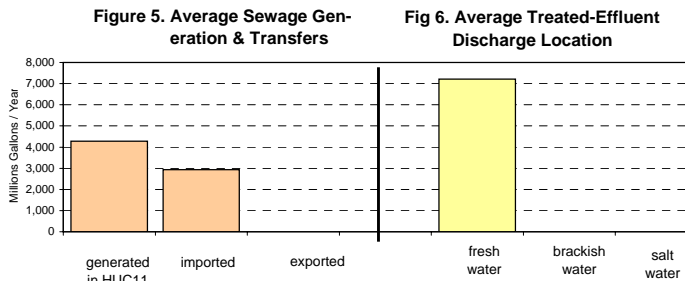
**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive
potable purveyors	1,074	0	1,041	68	944	327	963	83	4,021	478
domestic wells	171	0	175	13	217	75	182	17	745	105
industrial & commercial & mining	50	6	68	8	80	10	71	9	270	33
agricultural & non-agricultural irrig.	0	2	0	4	2	17	1	5	3	29
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	1,295	8	1,285	94	1,242	430	1,216	113	5,038	645



**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	1,543	2,031	4,574	4,824	4,953	4,426	5,507	4,928	5,100	4,924	4,281
imported to HUC11	2,790	2,751	2,811	2,998	3,126	2,897	3,055	2,955	2,985	2,993	2,936
exported from HUC11	1	1	1	1	1	1	1	1	1	1	1



**Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges<sup>9</sup> in the HUC11 (millions of gallons)**

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	4,333	4,782	7,384	7,820	8,078	7,322	8,561	7,882	8,084	7,916	7,216
brackish water	0	0	0	0	0	0	0	0	0	0	0
salt water	0	0	0	0	0	0	0	0	0	0	0
sum:	4,333	4,782	7,384	7,820	8,078	7,322	8,561	7,882	8,084	7,916	7,216

**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	21,464
ground water	5,957
total	27,420

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

Use Group	MGY
agricultural	199
commercial	0
industrial	166
irrigation	146
mining	273
potable supply	26,637
power generation	0
total	27,420

**Table 9. HUC11 Descriptive Statistics**

--- Area:

in this HUC11 only	136.8	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	136.8	sq. mi.

(this HUC11 onshore area: 136.8 sq. mi.)

--- Population of this HUC11:

Year	Population	Change
1940	39,075	-
1950	49,418	26.5%
1960	76,988	55.8%
1970	113,300	47.2%
1980	118,413	4.5%
1990	120,620	1.9%
2000	139,251	15.4%
2010	145,463	4.5% est. <sup>12</sup>
2020	148,472	2.1% est. <sup>12</sup>
2030	156,378	5.3% est. <sup>12</sup>

--- Land Use of this HUC11:

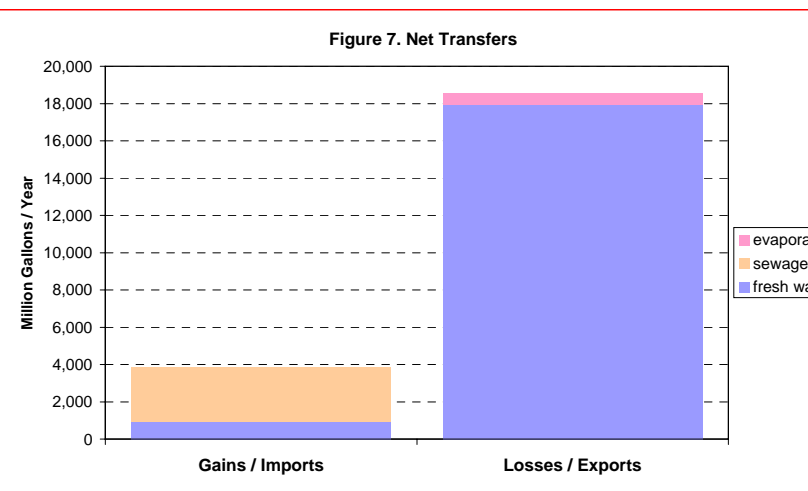
Type	Year		Change
	1986	1995	
ag.	0.9%	0.7%	-0.2%
barren	0.7%	1.3%	0.6%
forest	53.8%	50.5%	-3.3%
urban	28.5%	31.7%	3.2%
water	5.1%	5.1%	0.0%
wetlands	11.0%	10.7%	-0.3%

--- % of this HUC11 in:

Pinelands:	0.0%
Highlands:	99.8%

**Table 10. Upstream and downstream HUC11s (in NJ)**

location	#	name
downstream:	02030103010	Passaic River Upr (above Pine Bk)
(if any)	--	--
upstream:	--	--
(if any)	--	--

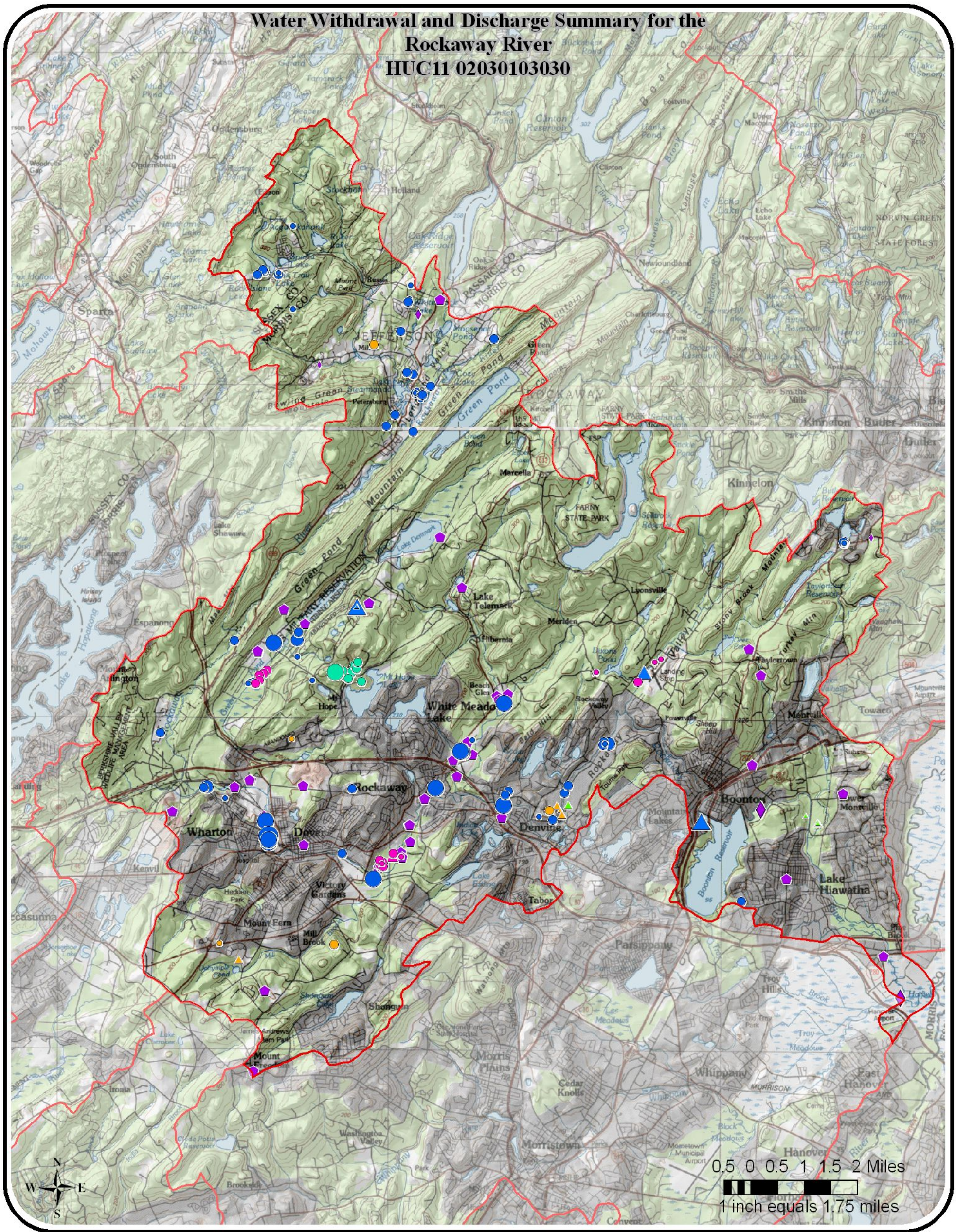


**NOTES:**

- 1 Salt and brackish water withdrawal and use is not included in this data.
- 2 This does not account for water released from onstream reservoirs for downstream intakes.
- 3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
- 4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
- 5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
- 6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
- 7 Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
- 8 Sewage generation and transfers are based on intersection of sewer service areas with HUC11s.
- 9 Based on discharge volumes reported under NJPDES program.
- 10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
- 11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
- 12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
- 13 Subject to revision.
- 14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.



# Water Withdrawal and Discharge Summary for the Rockaway River HUC11 02030103030

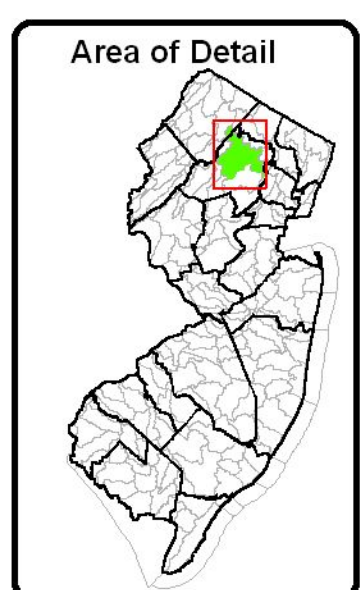


Key for Discharge Data	
1999 Treated Effluent Discharge	
0 - 50 MGY	◆
50 - 100 MGY	◆
100 - 500 MGY	◆
> 500 MGY	◆
Other Permitted Discharge	◆

Key for Withdrawal Data	
Source	
GW Confined	□
GW Unconfined	○
SW	△
1999 Withdrawal	
No 1999 Use	●▲
1 - 50 MGY	■●▲
51 - 100 MGY	■●▲
101 - 500 MGY	■●▲
> 500 MGY	■●▲

Use Group	
Agricultural	●
Commercial	●
Industrial	●
Irrigation	●
Mining	●
Not Classified	●
Potable Supply	●
Power Generation	●

MGY = millions of gallons per year





**Water Withdrawals, Transfers and Discharges for UPPER PASSAIC RIVER (POMPTON R. TO PINE BRK) --- 02030103040**

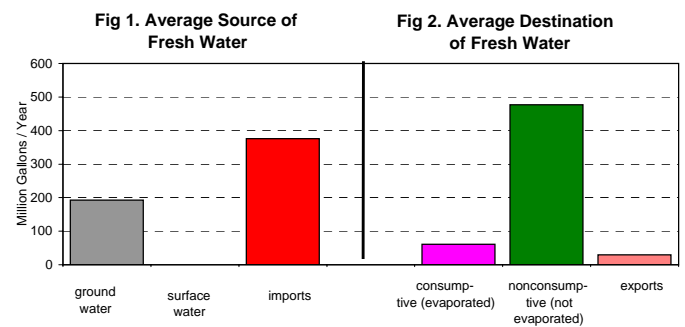
<b>WMA:</b>	<b>Upper Passaic, Whippany, and Rockaway</b>	<b>06</b>
<b>HUC11:</b>	<b>Upper Passaic River (Pompton to Pine Bk)</b>	<b>02030103040</b>

**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>surface water:<sup>2</sup></b>											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	0	0	0	0	0	0	0	0	0	0	0
sum	0	0	0	0	0	0	0	0	0	0	0
<b>ground-water:<sup>3</sup></b>											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	421	141	138	139	139	140	139	140	378	152	193
sum	421	141	138	139	139	140	139	140	378	152	193
<b>total withdrawals:</b>	<b>421</b>	<b>141</b>	<b>138</b>	<b>139</b>	<b>139</b>	<b>140</b>	<b>139</b>	<b>140</b>	<b>378</b>	<b>152</b>	<b>193</b>

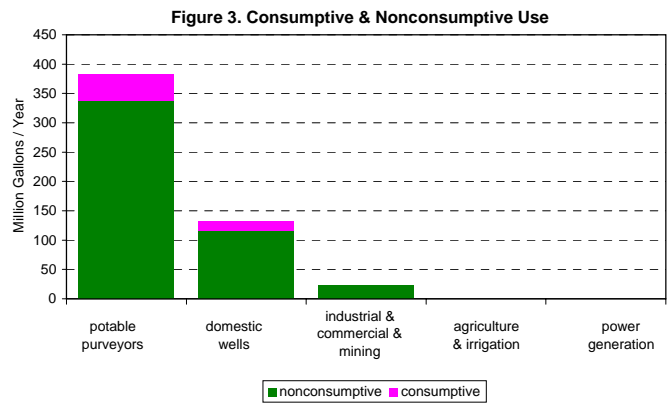
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports <sup>11</sup>	311	424	394	440	400	346	350	371	381	344	376
exports <sup>11</sup>	254	6	3	4	4	4	4	4	6	5	29
net	57	419	391	436	396	342	346	367	375	339	347



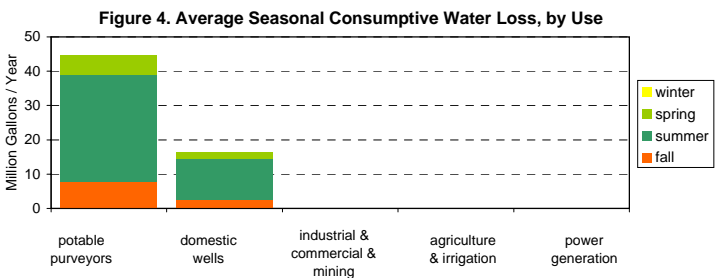
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>potable purveyors</b>											
nonconsumptive	309	376	352	387	354	307	311	330	338	307	337
consumptive	36	51	43	55	48	41	40	44	48	41	45
<b>domestic wells</b>											
nonconsumptive	117	117	117	117	117	117	117	117	117	117	117
consumptive	16	16	16	16	16	16	16	16	16	16	16
<b>industrial &amp; commercial &amp; mining</b>											
nonconsumptive	0	0	0	0	0	0	0	0	226	0	23
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>agricultural &amp; non-agricultural irrigation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>power generation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	426	493	469	504	471	424	428	447	681	424	477
consumptive	52	67	60	71	65	58	57	60	64	58	61
<b>PERCENTAGES:</b>											
nonconsumptive	89.1%	88.0%	88.7%	87.6%	87.9%	88.0%	88.3%	88.1%	91.4%	88.0%	88.6%
consumptive	10.9%	12.0%	11.3%	12.4%	12.1%	12.0%	11.7%	11.9%	8.6%	12.0%	11.4%



**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive
potable purveyors	82	0	81	6	91	31	85	8	339	45
domestic wells	27	0	28	2	34	12	28	3	117	16
industrial & commercial & mining	17	0	0	0	0	0	5	0	23	0
agricultural & non-agricultural irrig.	0	0	0	0	0	0	0	0	0	0
power generation	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>	<b>126</b>	<b>0</b>	<b>109</b>	<b>8</b>	<b>125</b>	<b>43</b>	<b>118</b>	<b>10</b>	<b>478</b>	<b>61</b>

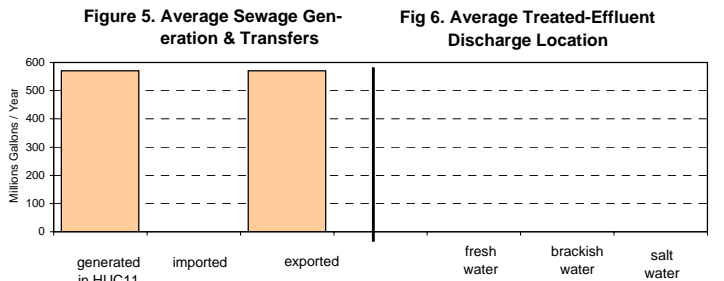


**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	563	538	573	590	586	537	583	593	576	566	571
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	563	538	573	590	586	537	583	593	576	566	571

**Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges<sup>9</sup> in the HUC11 (millions of gallons)**

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	0	0	0	0	0	0	0	0	0	0	0
brackish water	0	0	0	0	0	0	0	0	0	0	0
salt water	0	0	0	0	0	0	0	0	0	0	0
sum:	0	0	0	0	0	0	0	0	0	0	0



**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	0
ground water	74
total	74

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

Use Group	MGY
agricultural	0
commercial	0
industrial	0
irrigation	0
mining	0
potable supply	74
power generation	0
total	74

**Table 9. HUC11 Descriptive Statistics**

--- **Area:**

in this HUC11 only	11.9	sq. mi.
upstream HUC11s	349.6	sq. mi.
total watershed	361.5	sq. mi.

(this HUC11 onshore area: 11.9 sq. mi.)

--- **Population of this HUC11:**

Year	Population	Change	
1940	2,093	-	
1950	2,960	41.4%	
1960	5,139	73.6%	
1970	9,226	79.5%	
1980	10,231	10.9%	
1990	10,867	6.2%	
2000	11,188	3.0%	
2010	11,338	1.3%	est. <sup>12</sup>
2020	11,464	1.1%	est. <sup>12</sup>
2030	11,965	4.4%	est. <sup>12</sup>

--- **Land Use of this HUC11:**

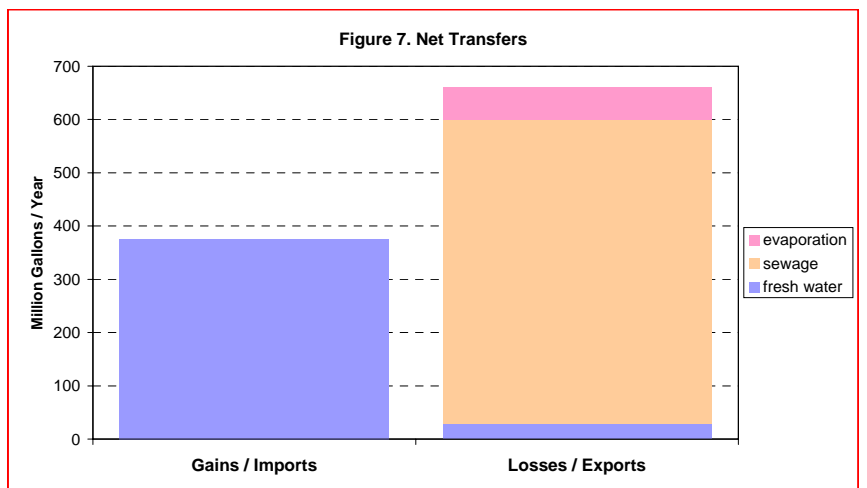
Type	Year		Change
	1986	1995	
ag.	0.4%	0.4%	0.0%
barren	1.6%	0.6%	-0.9%
forest	9.6%	9.6%	-0.1%
urban	32.9%	34.0%	1.2%
water	4.2%	4.1%	-0.1%
wetlands	51.4%	51.3%	-0.1%

--- **% of this HUC11 in:**

Pinelands:	0.0%
Highlands:	21.7%

**Table 10. Upstream and downstream HUC11s (in NJ)**

location	#	name
downstream:	02030103120	Passaic River Lower (Saddle to Pompton)
(if any)		
upstream:	02030103010	Passaic River Upr (above Pine Bk)
(if any)	02030103020	Whippany River
	02030103030	Rockaway River
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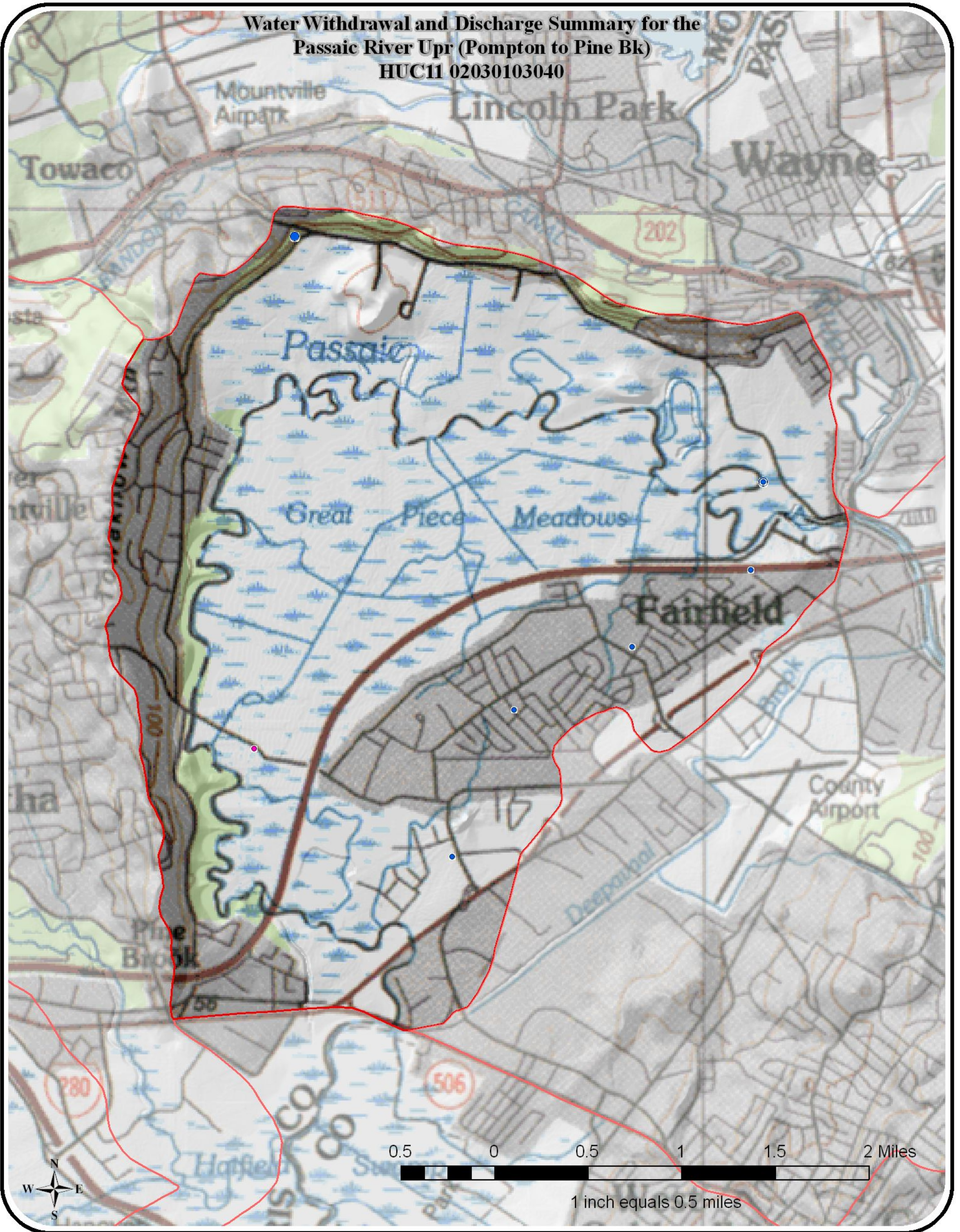


**NOTES:**

- 1 Salt and brackish water withdrawal and use is not included in this data.
- 2 This does not account for water released from onstream reservoirs for downstream intakes.
- 3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
- 4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
- 5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
- 6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
- 7 Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
- 8 Sewage generation and transfers are based on intersection of sewer service areas with HUC11s.
- 9 Based on discharge volumes reported under NJPDES program.
- 10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
- 11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
- 12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
- 13 Subject to revision.
- 14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.



**Water Withdrawal and Discharge Summary for the  
Passaic River Upr (Pompton to Pine Bk)  
HUC11 02030103040**



Key for Discharge Data			Key for Withdrawal Data			Area of Detail					
<b>1999 Treated Effluent Discharge</b>			<b>Source</b>			<b>1999 Withdrawal</b>			<b>Use Group</b>		
0 - 50	MGY	◆	GW Confined	□	No 1999 Use	●●▲	Agricultural	●			
50 - 100	MGY	◆	GW Unconfined	○	1 - 50	■●▲	Commercial	●			
100 - 500	MGY	◆	SW	△	51 - 100	■●▲	Industrial	●			
> 500	MGY	◆			101 - 500	■●▲	Irrigation	●			
Other Permitted Discharge		◆			> 500	■●▲	Mining	●			
							Not Classified	●			
							Potable Supply	●			
							Power Generation	●			

MGY = millions of gallons per year