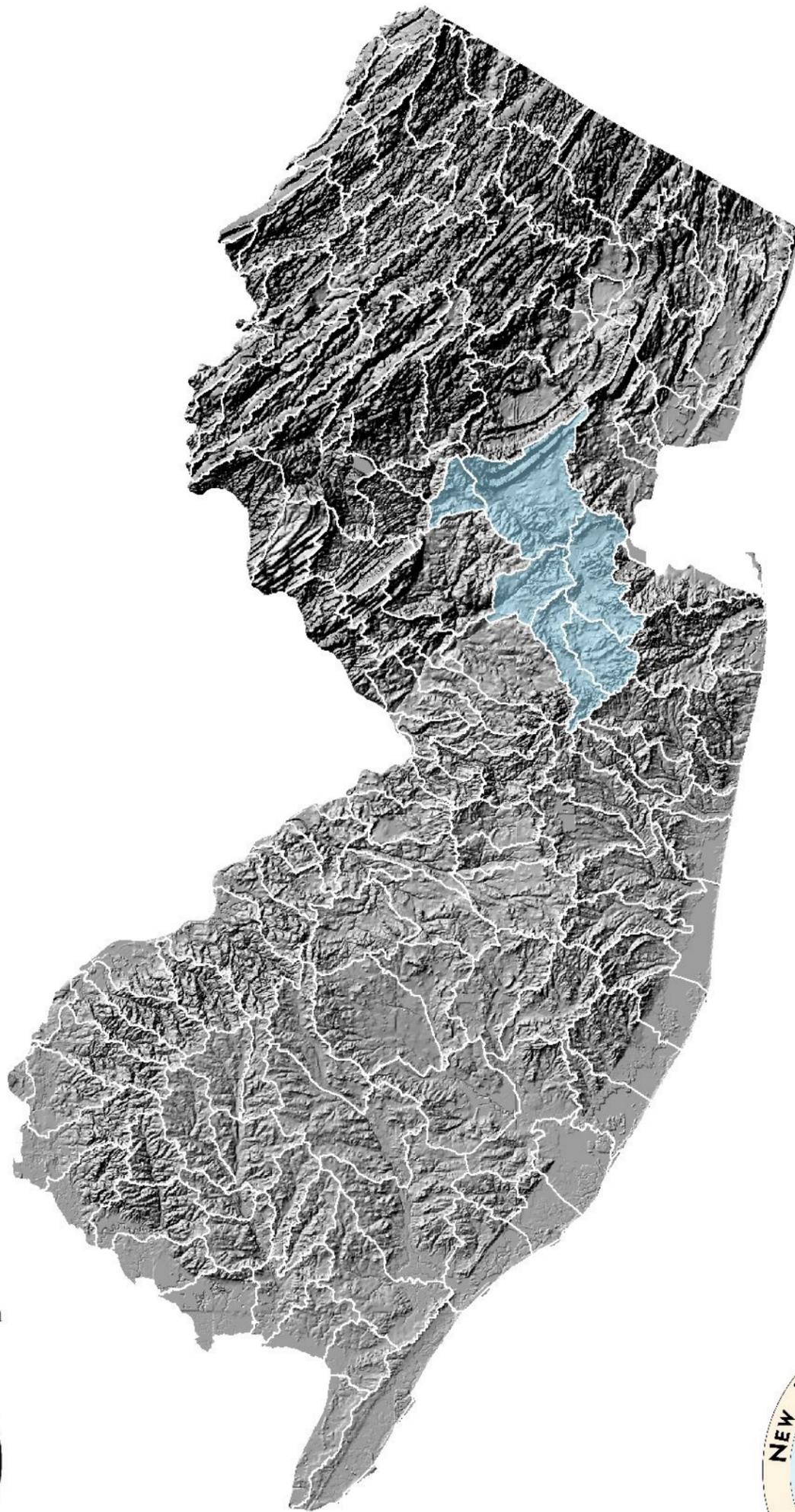


New Jersey Water Withdrawals, Uses, Transfers, and Discharges by HUC11, 1990 to 1999

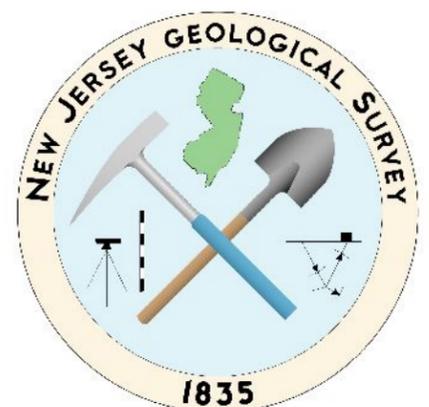
Appendix 9: HUC11 Tables, Figures and Maps WMA 9 - Lower Raritan, South River and Lawrence



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NEW JERSEY DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Water Withdrawals, Transfers and Discharges for LOWER RARITAN RIVER (MILLSTONE R TO NB/SB CONFLUENCE) --- 02030105080

WMA:	Lower Raritan, South, and Lawrence	09
HUC11:	Lower Raritan River (Millstone to NB/SB)	02030105080

Table 1. Freshwater¹ Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:²											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	37,012	35,384	33,915	36,706	42,550	42,636	41,483	42,653	43,320	44,546	40,021
sum	37,012	35,384	33,915	36,706	42,550	42,636	41,483	42,653	43,320	44,546	40,021
ground-water:³											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	618	1,571	1,916	1,853	410	397	397	407	414	369	835
sum	618	1,571	1,916	1,853	410	397	397	407	414	369	835
total withdrawals:	37,630	36,955	35,831	38,559	42,960	43,034	41,879	43,060	43,734	44,915	40,856

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

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports ¹¹	238	285	278	288	335	328	325	324	306	354	306
exports ¹¹	36,001	35,308	34,199	36,896	41,348	41,446	40,321	41,404	42,042	43,174	39,214
net	(35,763)	(35,023)	(33,921)	(36,608)	(41,013)	(41,117)	(39,996)	(41,080)	(41,736)	(42,820)	(38,908)

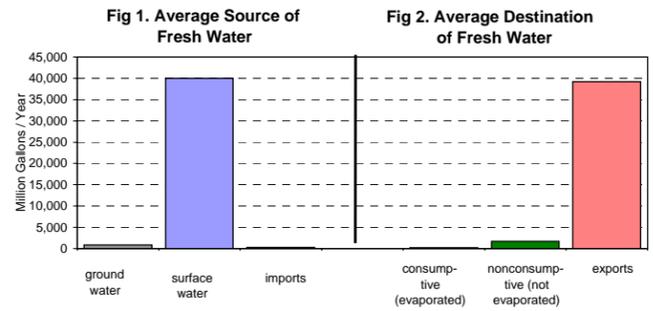


Table 3. Nonconsumptive⁴ & Consumptive⁵ Water Use⁶ in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	1,220	1,240	1,185	1,255	1,467	1,495	1,476	1,538	1,535	1,589	1,400
consumptive	134	143	133	159	174	182	171	189	192	202	168
domestic wells											
nonconsumptive	148	149	149	150	151	151	152	152	153	153	151
consumptive	21	21	21	21	21	21	21	21	21	22	21
industrial & commercial & mining											
nonconsumptive	266	296	338	283	88	19	24	21	19	48	140
consumptive	30	33	38	31	10	2	3	2	2	2	15
agricultural & non-agricultural irrigation											
nonconsumptive	4	4	4	5	3	3	3	6	8	8	5
consumptive	34	39	36	43	27	31	29	50	68	71	43
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	1,638	1,689	1,676	1,693	1,709	1,669	1,654	1,717	1,715	1,798	1,696
consumptive	218	236	227	255	232	236	224	262	284	297	247
PERCENTAGES:											
nonconsumptive	88.2%	87.8%	88.1%	86.9%	88.0%	87.6%	88.1%	86.7%	85.8%	85.8%	87.3%
consumptive	11.8%	12.2%	11.9%	13.1%	12.0%	12.4%	11.9%	13.3%	14.2%	14.2%	12.7%

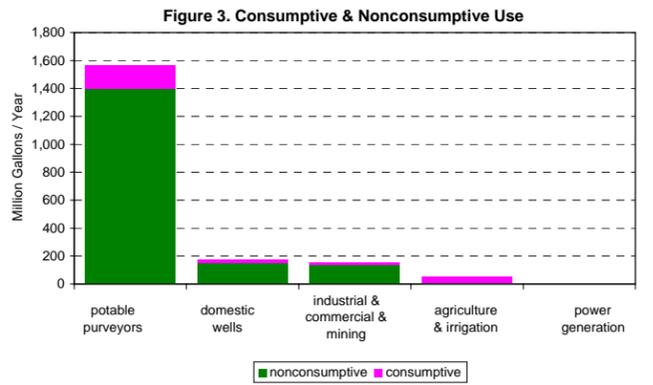


Table 4. Average Seasonal⁷ Use - Nonconsumptive⁴ & Consumptive⁵ (millions of gallons)

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	370	0	366	25	331	115	338	29	1,405	168
domestic wells	35	0	36	3	44	15	37	3	151	21
industrial & commercial & mining	32	3	34	4	40	4	35	4	140	15
agricultural & non-agricultural irrig.	0	3	1	6	3	26	1	9	5	43
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	437	6	436	36	417	160	410	45	1,701	247

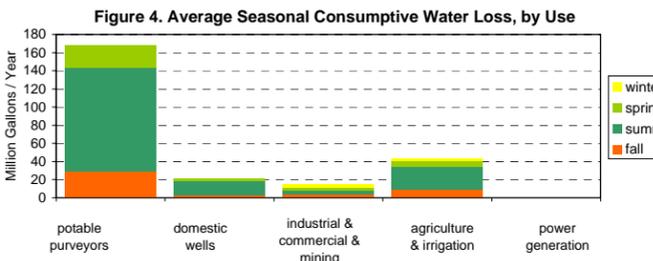


Table 5. Sewage Generation & Transfers⁸ in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	1,387	1,433	1,389	1,509	1,537	1,405	1,850	1,599	1,515	1,263	1,489
imported to HUC11	4,074	4,208	4,079	4,431	4,515	4,126	5,433	4,697	4,448	3,709	4,372
exported from HUC11	0	0	0	0	0	0	0	0	0	0	0

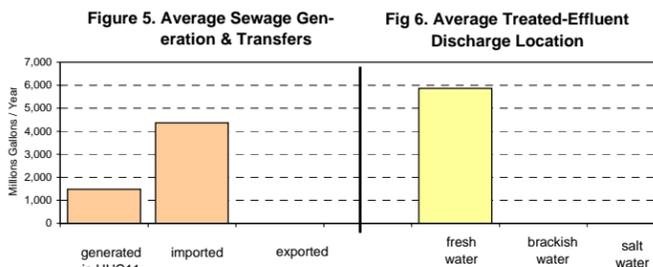


Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges⁹ in the HUC11 (millions of gallons)

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	5,461	5,641	5,468	5,939	6,053	5,531	7,283	6,296	5,963	4,972	5,861
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:	5,461	5,641	5,468	5,939	6,053	5,531	7,283	6,296	5,963	4,972	5,861

Table 7. 1999 Water Allocations¹⁰ in HUC11 by Water Source

Water Source	MGY
surface water	45,692
ground water	400
total	46,092

Table 8. 1999 Water Allocations¹⁰ in HUC11 by Water Use Group

Use Group	MGY
agricultural	431
commercial	0
industrial	53
irrigation	150
mining	0
potable supply	45,458
power generation	0
total	46,092

Table 9. HUC11 Descriptive Statistics

--- Area:

in this HUC11 only	24.7	sq. mi.
upstream HUC11s	468.3	sq. mi.
total watershed	493.0	sq. mi.

(this HUC11 onshore area: 24.7 sq. mi.)

--- Population of this HUC11:

Year	Population	Change
1940	18,217	-
1950	23,862	31.0%
1960	30,035	25.9%
1970	38,371	27.8%
1980	36,071	-6.0%
1990	37,628	4.3%
2000	43,658	16.0%
2010	46,098	5.6% est. ¹²
2020	49,056	6.4% est. ¹²
2030	51,242	4.5% est. ¹²

--- Land Use of this HUC11:

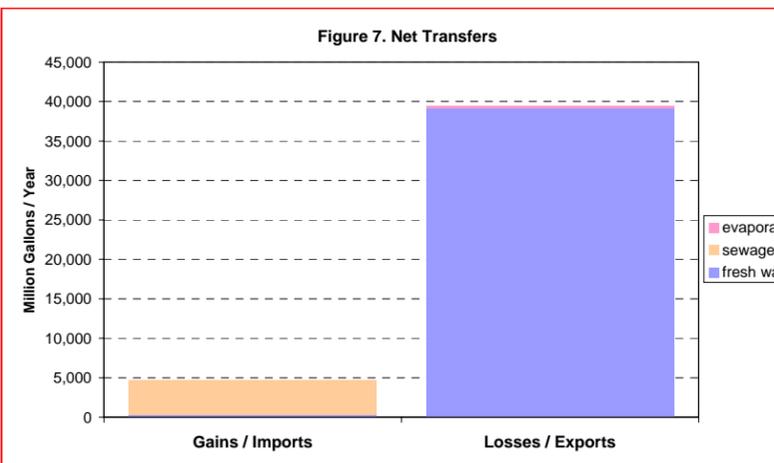
Type	Year		Change
	1986	1995	
ag.	15.5%	13.6%	-1.8%
barren	1.4%	1.8%	0.4%
forest	16.9%	15.2%	-1.7%
urban	50.8%	54.5%	3.7%
water	2.2%	2.2%	0.0%
wetlands	13.2%	12.6%	-0.6%

--- % of this HUC11 in:

Pinelands:	0.0%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

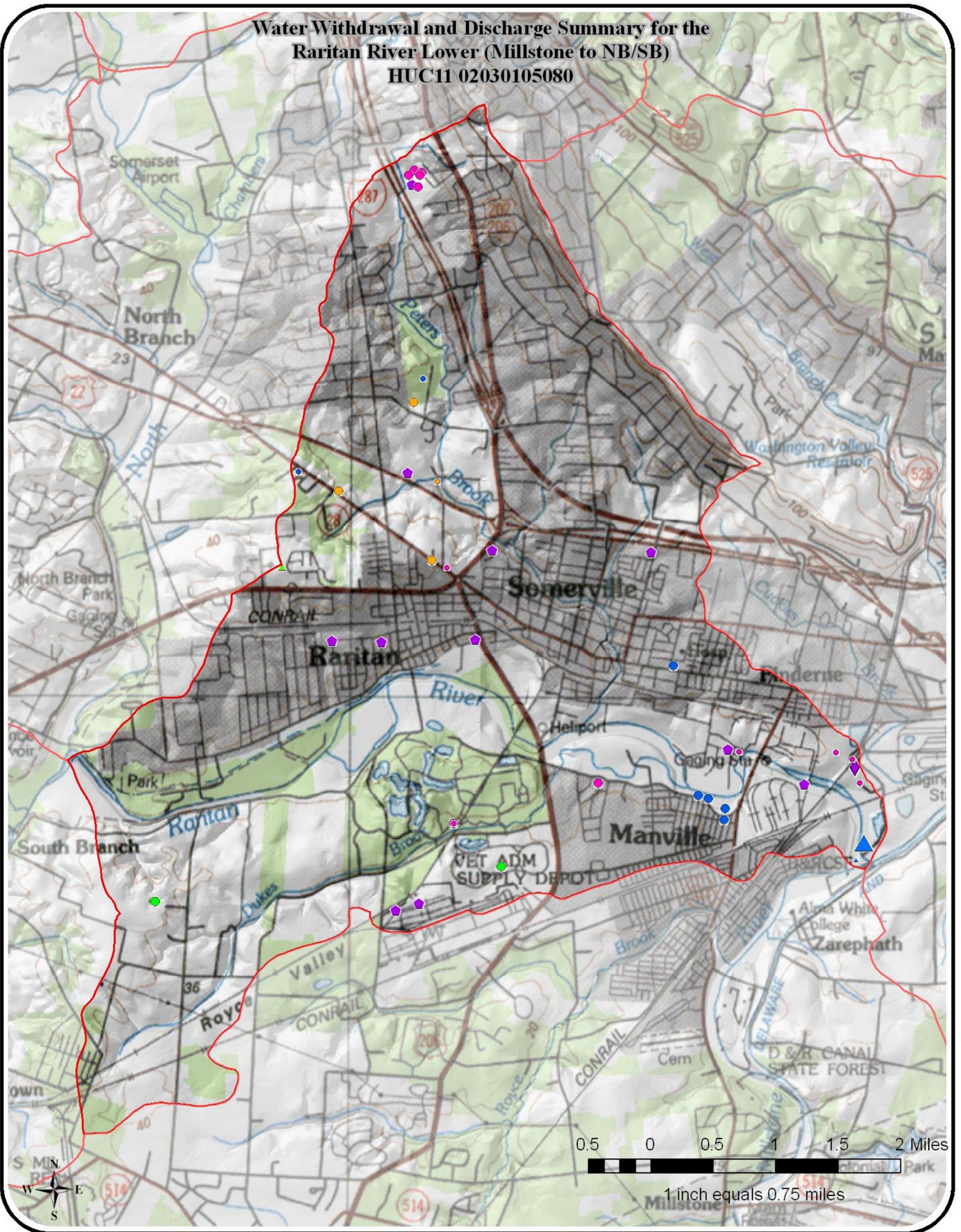
location	#	name
downstream:	02030105120	Raritan R Lower (Lawrence to Millstone)
(if any)		
upstream:	02030105010	Raritan River SB (above Spruce Run)
(if any)	02030105020	Raritan River SB (3 Brgds to Spruce Run)
	02030105030	Neshanic River
	02030105040	Raritan River SB (NB to Three Bridges)
	02030105050	Lamington River
	02030105060	Raritan River NB (above Lamington)
	02030105070	Raritan River NB (SB to Lamington)
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NOTES:

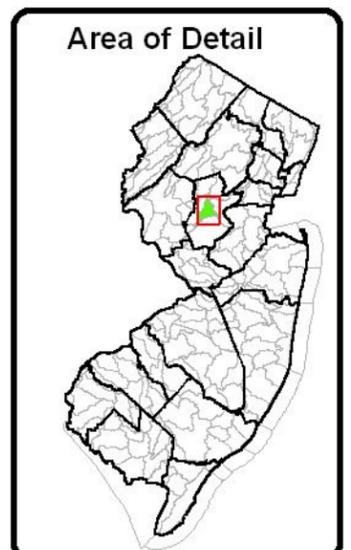
- 1 Salt and brackish water withdrawal and use is not included in this data.
- 2 This does not account for water released from onstream reservoirs for downstream intakes.
- 3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
- 4 Nonconsumptive water use refers 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
Raritan River Lower (Millstone to NB/SB)
HUC11 02030105080**



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	
GW Confined	□	No 1999 Use	●●▲
GW Unconfined	○	1 - 50 MGY	■●▲
SW	△	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 LOWER RARITAN RIVER (LAWRENCE BRK TO MILLSTONE R) --- 02030105120

WMA:	Lower Raritan, South, and Lawrence	09
HUC11:	Lower Raritan River (Lawrence to Millstone)	02030105120

Table 1. Freshwater¹ Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:²											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	64	64	47	45	40	51	40	54	80	71	56
sum	64	64	47	45	40	51	40	54	80	71	56
ground-water:³											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	5,184	5,727	5,508	6,881	9,373	9,101	8,841	8,744	8,369	8,108	7,584
sum	5,184	5,727	5,508	6,881	9,373	9,101	8,841	8,744	8,369	8,108	7,584
total withdrawals:	5,248	5,792	5,556	6,926	9,413	9,152	8,880	8,799	8,449	8,179	7,639

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

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports ¹¹	35,232	32,347	30,708	33,175	34,018	35,087	33,081	37,220	34,870	36,020	34,176
exports ¹¹	6,522	7,161	7,051	8,337	10,229	10,061	9,808	9,875	9,639	9,518	8,820
net	28,710	25,186	23,657	24,838	23,789	25,025	23,273	27,345	25,231	26,503	25,356

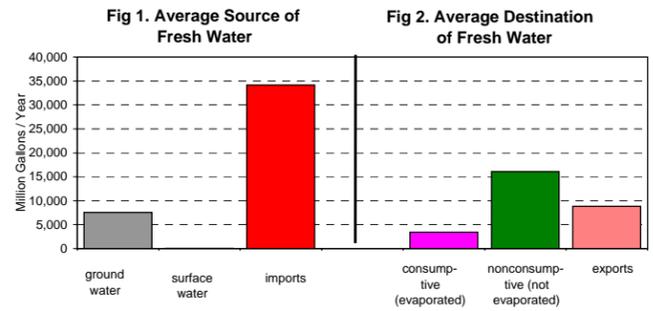


Table 3. Nonconsumptive⁴ & Consumptive⁵ Water Use⁶ in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	14,037	14,061	13,424	14,436	15,883	15,637	15,373	15,665	15,489	15,650	14,965
consumptive	1,578	3,116	3,090	3,170	3,256	3,398	3,043	3,605	3,403	4,069	3,173
domestic wells											
nonconsumptive	667	668	669	671	673	676	677	678	680	681	674
consumptive	94	94	94	94	95	95	95	95	96	96	95
industrial & commercial & mining											
nonconsumptive	439	408	315	332	486	540	525	498	516	557	462
consumptive	49	46	35	37	54	60	59	56	58	62	52
agricultural & non-agricultural irrigation											
nonconsumptive	5	9	7	12	10	11	7	13	14	14	10
consumptive	46	84	61	109	88	103	66	119	124	125	93
power generation											
nonconsumptive	0	10	1	0	8	8	6	5	4	0	4
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	15,148	15,156	14,416	15,451	17,060	16,873	16,587	16,859	16,703	16,903	16,116
consumptive	1,767	3,339	3,281	3,410	3,493	3,657	3,263	3,875	3,680	4,353	3,412
PERCENTAGES:											
nonconsumptive	89.6%	81.9%	81.5%	81.9%	83.0%	82.2%	83.6%	81.3%	81.9%	79.5%	82.5%
consumptive	10.4%	18.1%	18.5%	18.1%	17.0%	17.8%	16.4%	18.7%	18.1%	20.5%	17.5%

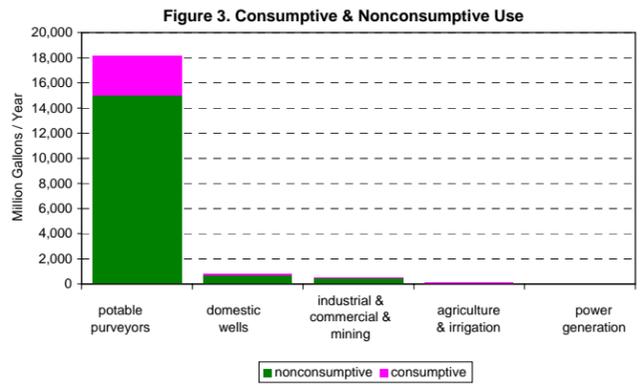


Table 4. Average Seasonal⁷ Use - Nonconsumptive⁴ & Consumptive⁵ (millions of gallons)

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	7,482	0	7,319	504	6,453	2,231	7,019	598	28,273	3,333
domestic wells	155	0	159	12	196	68	164	15	674	95
industrial & commercial & mining	112	12	118	13	117	13	115	13	462	52
agricultural & non-agricultural irrig.	0	0	1	11	7	62	2	19	10	93
power generation	0	0	1	0	3	0	1	0	4	0
SUM:	7,748	13	7,597	540	6,776	2,375	7,301	645	29,423	3,572

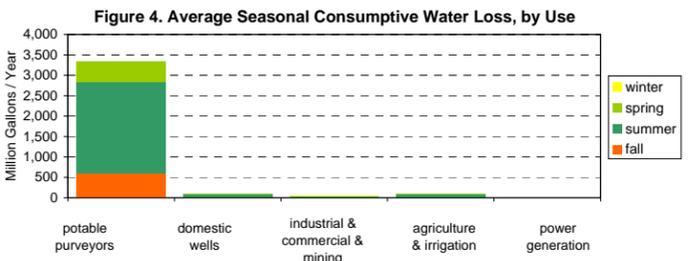


Table 5. Sewage Generation & Transfers⁸ in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	12,089	13,963	15,163	16,922	17,409	15,431	18,816	17,128	17,053	16,836	16,081
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	12,088	13,962	15,163	16,921	17,409	15,430	18,809	17,123	17,049	16,832	16,079

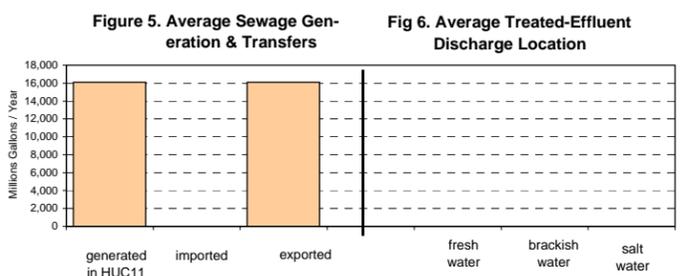


Table 7. 1999 Water Allocations¹⁰ in HUC11 by Water Source

Water Source	MGY
surface water	297
ground water	13,746
total	14,044

Table 8. 1999 Water Allocations¹⁰ in HUC11 by Water Use Group

Use Group	MGY
agricultural	8
commercial	37
industrial	932
irrigation	426
mining	0
potable supply	12,641
power generation	0
total	14,044

Table 9. HUC11 Descriptive Statistics

--- **Area:**

in this HUC11 only	119.3 sq. mi.
upstream HUC11s	777.6 sq. mi.
total watershed	896.9 sq. mi.

(this HUC11 onshore area: 118.7 sq. mi.)

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

Year	Population	Change
1940	134,738	-
1950	168,113	24.8%
1960	239,892	42.7%
1970	303,383	26.5%
1980	300,000	-1.1%
1990	316,190	5.4%
2000	348,098	10.1%
2010	372,958	7.1% est. ¹²
2020	400,617	7.4% est. ¹²
2030	420,748	5.0% est. ¹²

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

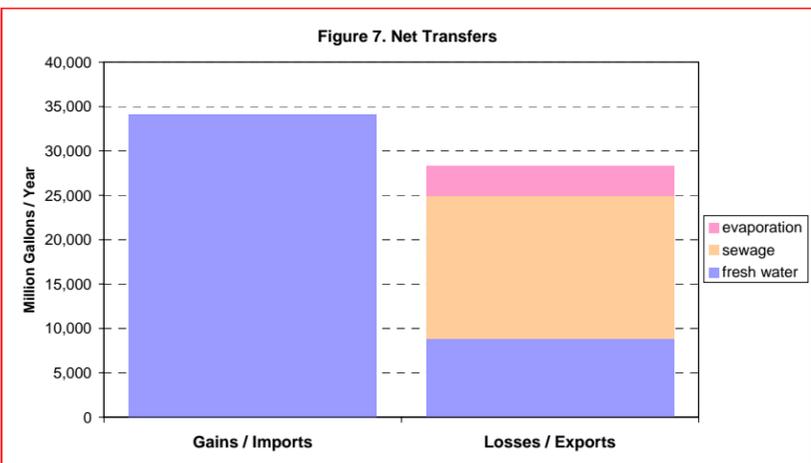
Type	Year		Change
	1986	1995	
ag.	2.7%	1.8%	-0.9%
barren	1.0%	1.0%	0.0%
forest	16.4%	15.3%	-1.0%
urban	62.7%	66.4%	3.7%
water	1.3%	1.3%	0.0%
wetlands	15.9%	14.2%	-1.8%

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

Pinelands:	0.0%
Highlands:	0.9%

Table 10. Upstream and downstream HUC11s (in NJ)

location	#	name
downstream:	02030105160	Raritan R Lower (below Lawrence)
(if any)		
upstream:	02030105010	Raritan River SB (above Spruce Run)
(if any)	02030105020	Raritan River SB (3 Brgds to Spruce Run)
	02030105030	Neshanic River
	02030105040	Raritan River SB (NB to Three Bridges)
	02030105050	Lamington River
	02030105060	Raritan River NB (above Lamington)
	02030105070	Raritan River NB (SB to Lamington)
	02030105080	Raritan River Lower (Millstone to NB/SB)
	02030105090	Stony Brook
	02030105100	Millstone River (above Carnegie Lake)
	02030105110	Millstone River (below/incl Carnegie Lk)
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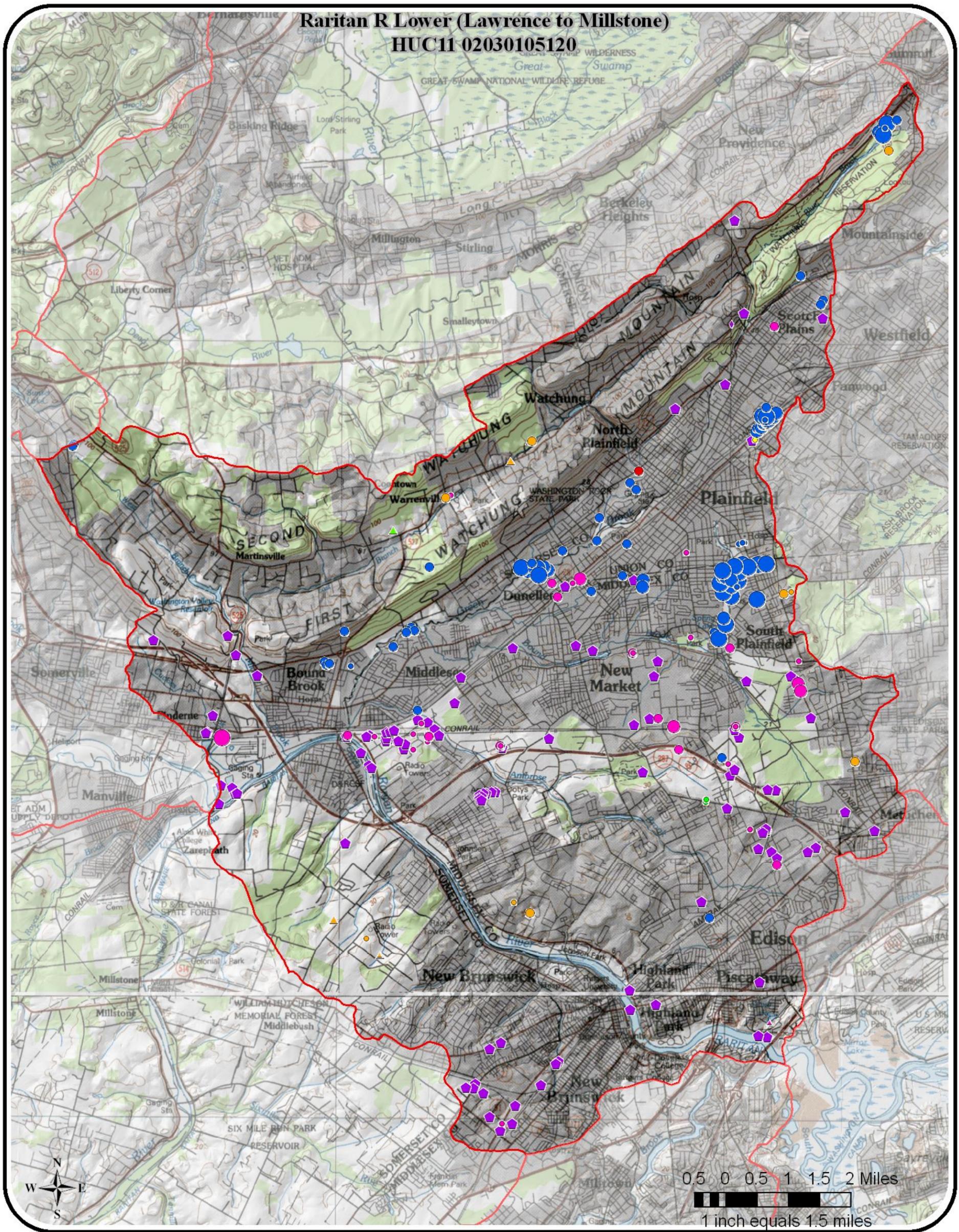


NOTES:

- 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.

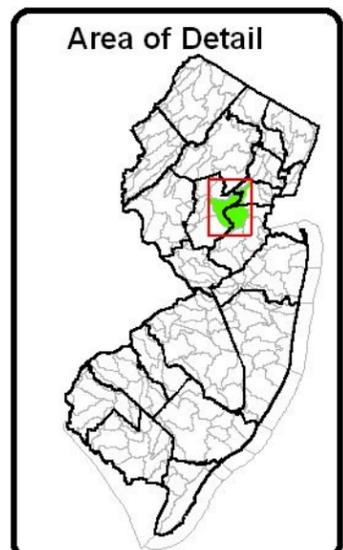
Raritan R Lower (Lawrence to Millstone)

HUC11 02030105120



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 LAWRENCE BROOK --- 02030105130

WMA:	Lower Raritan, South, and Lawrence	09
HUC11:	Lawrence Brook	02030105130

Table 1. Freshwater¹ Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:²											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	287	623	233	298	329	408	1,232	1,132	706	1,031	628
sum	287	623	233	298	329	408	1,232	1,132	706	1,031	628
ground-water:³											
confined	135	172	191	176	148	143	734	740	641	705	378
unconfined	864	922	1,038	1,061	1,278	602	1,128	1,002	906	671	947
sum	999	1,093	1,229	1,237	1,426	745	1,862	1,742	1,547	1,376	1,326
total withdrawals:	1,286	1,716	1,462	1,535	1,755	1,153	3,094	2,874	2,253	2,407	1,954

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

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports ¹¹	5,162	5,500	5,309	5,709	5,450	5,933	5,088	4,956	5,229	5,416	5,375
exports ¹¹	173	422	101	151	177	255	1,015	995	655	935	488
net	4,989	5,077	5,208	5,558	5,273	5,678	4,073	3,960	4,574	4,481	4,887

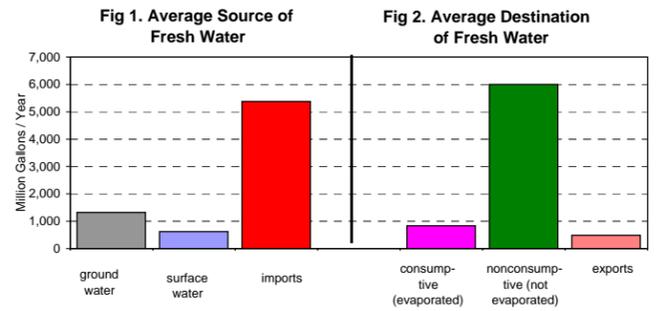


Table 3. Nonconsumptive⁴ & Consumptive⁵ Water Use⁶ in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	4,620	4,945	4,765	5,103	4,917	5,312	4,713	4,464	4,647	4,806	4,829
consumptive	555	625	556	629	557	660	542	569	592	631	592
domestic wells											
nonconsumptive	60	60	60	60	60	60	60	60	60	61	60
consumptive	8	8	8	8	8	8	8	9	9	9	8
industrial & commercial & mining											
nonconsumptive	854	906	1,036	1,019	1,213	594	1,590	1,412	1,265	1,128	1,102
consumptive	111	117	134	135	162	78	200	176	158	138	141
agricultural & non-agricultural irrigation											
nonconsumptive	7	13	11	14	11	12	5	15	10	12	11
consumptive	60	118	100	126	99	106	48	131	86	104	98
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	5,541	5,925	5,872	6,195	6,201	5,979	6,369	5,950	5,981	6,007	6,002
consumptive	734	869	798	898	826	853	798	884	845	882	839
PERCENTAGES:											
nonconsumptive	88.3%	87.2%	88.0%	87.3%	88.2%	87.5%	88.9%	87.1%	87.6%	87.2%	87.7%
consumptive	11.7%	12.8%	12.0%	12.7%	11.8%	12.5%	11.1%	12.9%	12.4%	12.8%	12.3%

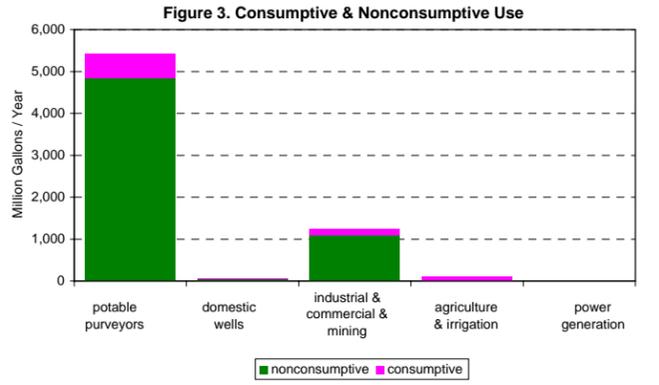


Table 4. Average Seasonal⁷ Use - Nonconsumptive⁴ & Consumptive⁵ (millions of gallons)

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	1,213	0	1,220	82	1,161	402	1,235	108	4,829	592
domestic wells	14	0	14	1	18	6	15	1	60	8
industrial & commercial & mining	161	20	248	31	333	43	360	47	1,102	141
agricultural & non-agricultural irrig.	0	1	1	12	7	65	2	20	11	98
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	1,388	21	1,483	126	1,518	517	1,612	176	6,002	839

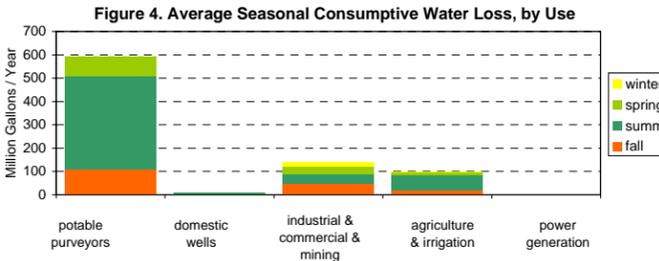


Table 5. Sewage Generation & Transfers⁸ in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	3,976	4,845	5,270	5,888	6,141	5,417	6,573	6,007	5,964	5,951	5,603
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	3,976	4,845	5,270	5,888	6,141	5,417	6,573	6,007	5,964	5,951	5,603

Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges⁹ 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

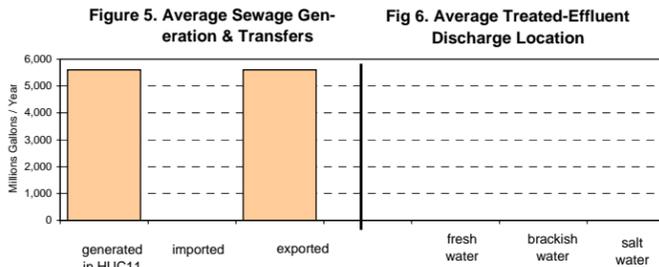


Table 7. 1999 Water Allocations¹⁰ in HUC11 by Water Source

Water Source	MGY
surface water	3,912
ground water	2,867
total	6,779

Table 8. 1999 Water Allocations¹⁰ in HUC11 by Water Use Group

Use Group	MGY
agricultural	195
commercial	0
industrial	799
irrigation	65
mining	2,000
potable supply	3,720
power generation	0
total	6,779

Table 9. HUC11 Descriptive Statistics

--- Area:

in this HUC11 only	46.2	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	46.2	sq. mi.

(this HUC11 onshore area: 46.2 sq. mi.)

--- Population of this HUC11:

Year	Population	Change
1940	16,146	-
1950	20,377	26.2%
1960	37,678	84.9%
1970	55,012	46.0%
1980	63,103	14.7%
1990	77,124	22.2%
2000	89,670	16.3%
2010	97,196	8.4% est. ¹²
2020	106,805	9.9% est. ¹²
2030	118,693	11.1% est. ¹²

--- Land Use of this HUC11:

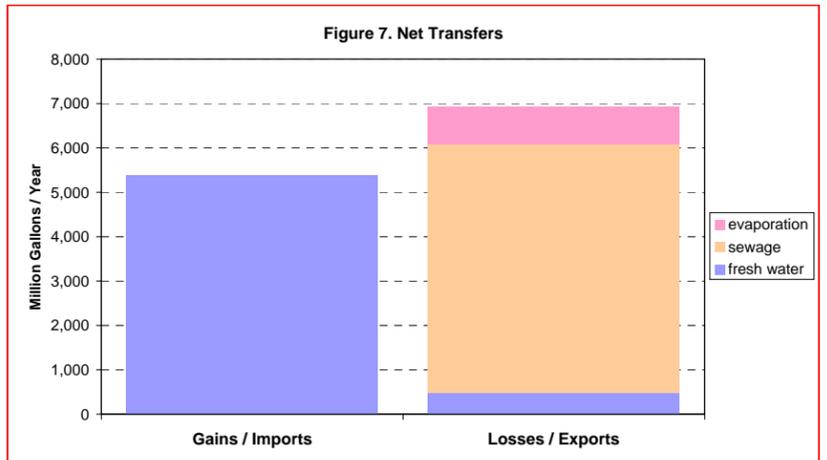
Type	Year		Change
	1986	1995	
ag.	14.6%	11.7%	-2.8%
barren	2.6%	1.9%	-0.7%
forest	19.2%	17.5%	-1.7%
urban	43.3%	48.9%	5.7%
water	2.1%	2.4%	0.3%
wetlands	18.2%	17.5%	-0.7%

--- % of this HUC11 in:

Pinelands:	0.0%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

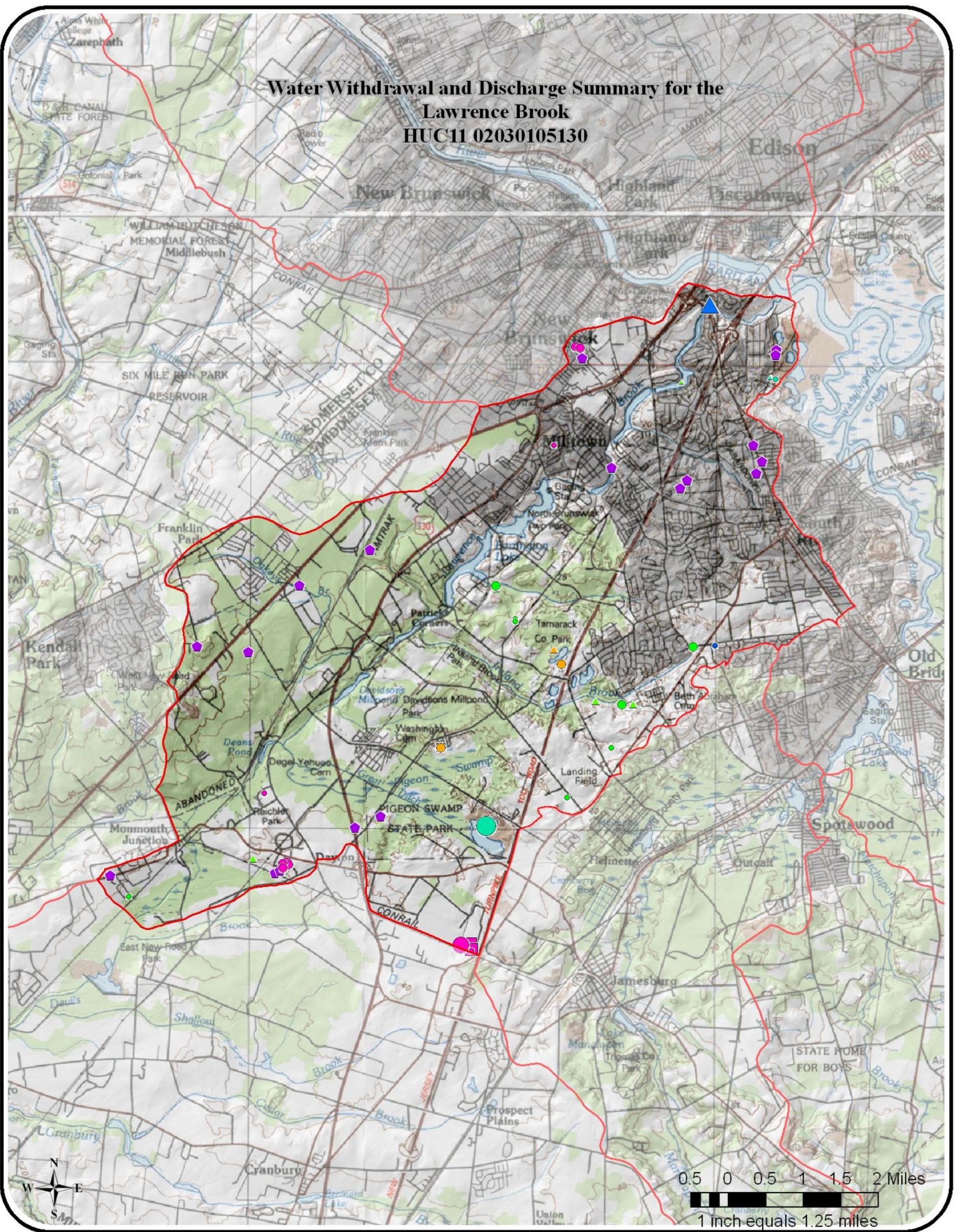
location	#	name
downstream:	02030105160	Raritan R Lower (below Lawrence)
(if any)	--	--
upstream:	--	--
(if any)	--	--



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 Lawrence Brook HUC11 02030105130

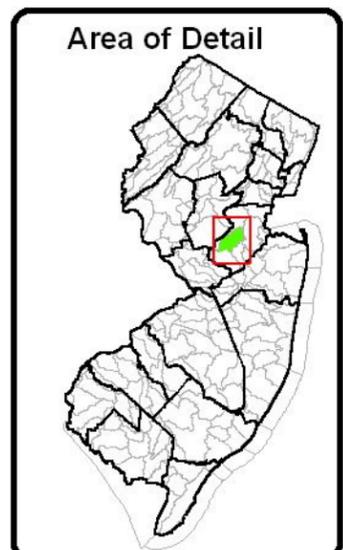


Key for Discharge Data	
1999 Treated Effluent Discharge	
0 - 50 MGY	◆
50 - 100 MGY	◆
100 - 500 MGY	◆
> 500 MGY	◆
Other Permitted Discharge	◆

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 MANALAPAN BROOK --- 02030105140

WMA:	Lower Raritan, South, and Lawrence	09
HUC11:	Manalapan Brook	02030105140

Table 1. Freshwater¹ Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:²											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	13	22	18	27	24	19	13	51	86	104	38
sum	13	22	18	27	24	19	13	51	86	104	38
ground-water:³											
confined	650	309	281	358	332	380	392	269	294	185	345
unconfined	245	605	517	587	556	504	522	594	510	520	516
sum	895	914	797	945	888	884	914	863	804	705	861
total withdrawals:	908	935	815	972	912	902	927	914	891	809	898

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

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports ¹¹	273	316	749	1,176	1,070	1,191	1,185	1,197	1,246	1,294	970
exports ¹¹	352	343	274	343	343	334	253	269	276	181	297
net	(79)	(28)	475	833	727	857	933	927	970	1,113	673

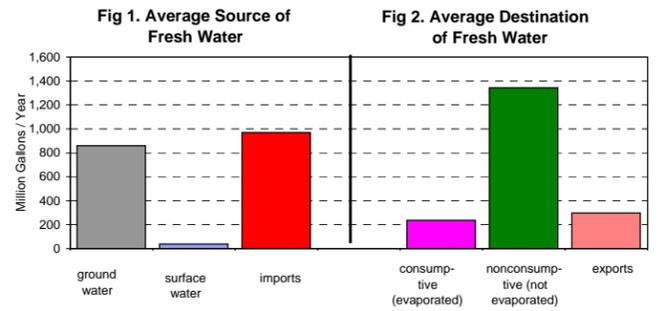


Table 3. Nonconsumptive⁴ & Consumptive⁵ Water Use⁶ in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	566	610	962	1,364	1,278	1,377	1,339	1,366	1,412	1,425	1,170
consumptive	72	85	129	183	153	171	160	171	178	177	148
domestic wells											
nonconsumptive	129	131	134	137	141	144	148	151	154	157	143
consumptive	18	18	19	19	20	20	21	21	22	22	20
industrial & commercial & mining											
nonconsumptive	0	0	0	0	0	0	163	0	15	52	23
consumptive	0	0	0	0	0	0	0	0	2	2	0
agricultural & non-agricultural irrigation											
nonconsumptive	5	7	6	10	5	6	4	14	9	9	8
consumptive	47	65	50	92	49	50	34	128	78	85	68
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	701	748	1,102	1,512	1,425	1,527	1,654	1,531	1,590	1,644	1,343
consumptive	137	169	198	295	222	242	215	320	280	287	236
PERCENTAGES:											
nonconsumptive	83.7%	81.6%	84.8%	83.7%	86.5%	86.3%	88.5%	82.7%	85.0%	85.1%	85.0%
consumptive	16.3%	18.4%	15.2%	16.3%	13.5%	13.7%	11.5%	17.3%	15.0%	14.9%	15.0%

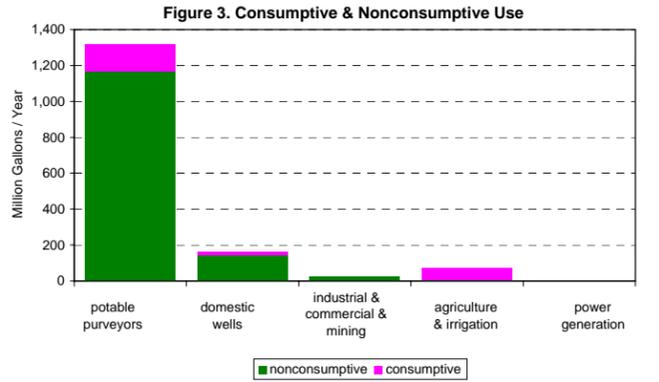


Table 4. Average Seasonal⁷ Use - Nonconsumptive⁴ & Consumptive⁵ (millions of gallons)

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	281	0	291	20	293	102	306	27	1,171	148
domestic wells	33	0	33	2	42	14	35	3	143	20
industrial & commercial & mining	0	0	12	0	9	0	2	0	23	0
agricultural & non-agricultural irrig.	0	3	1	11	5	42	1	12	8	68
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	314	3	337	33	348	159	344	42	1,344	236

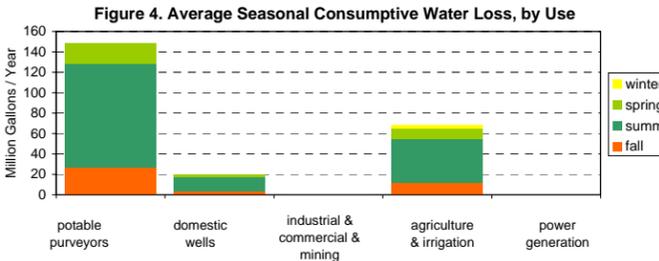


Table 5. Sewage Generation & Transfers⁸ in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	2,514	2,999	3,256	3,642	3,774	3,353	4,024	3,709	3,696	3,683	3,465
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	2,514	2,999	3,256	3,642	3,774	3,353	4,024	3,709	3,696	3,683	3,465

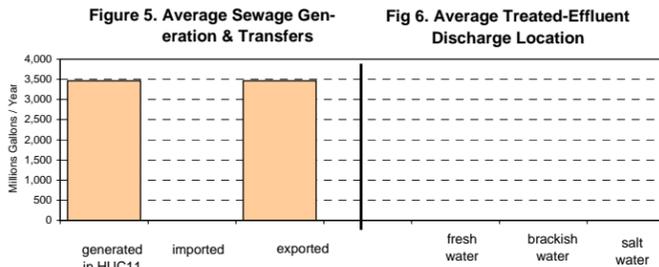


Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges⁹ in the HUC11 (millions of gallons)

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 Allocations¹⁰ in HUC11 by Water Source

Water Source	MGY
surface water	479
ground water	1,182
total	1,661

Table 8. 1999 Water Allocations¹⁰ in HUC11 by Water Use Group

Use Group	MGY
agricultural	822
commercial	0
industrial	36
irrigation	70
mining	0
potable supply	733
power generation	0
total	1,661

Table 9. HUC11 Descriptive Statistics

--- **Area:**

in this HUC11 only	43.9	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	43.9	sq. mi.

(this HUC11 onshore area: 43.9 sq. mi.)

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

Year	Population	Change
1940	6,443	-
1950	8,582	33.2%
1960	14,689	71.2%
1970	26,314	79.1%
1980	31,795	20.8%
1990	40,943	28.8%
2000	49,036	19.8%
2010	57,734	17.7% est. ¹²
2020	63,480	10.0% est. ¹²
2030	68,675	8.2% est. ¹²

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

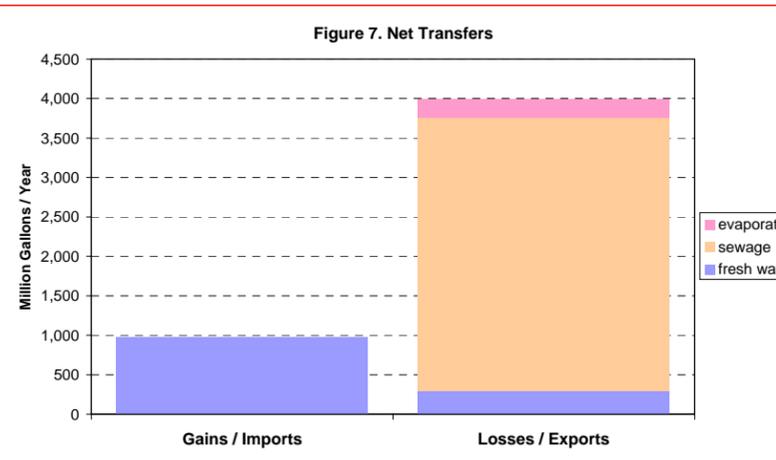
Type	Year		Change
	1986	1995	
ag.	23.8%	17.8%	-6.0%
barren	1.9%	2.1%	0.2%
forest	27.0%	25.7%	-1.2%
urban	20.5%	27.9%	7.4%
water	1.0%	1.1%	0.1%
wetlands	25.8%	25.3%	-0.5%

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

Pinelands:	0.0%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

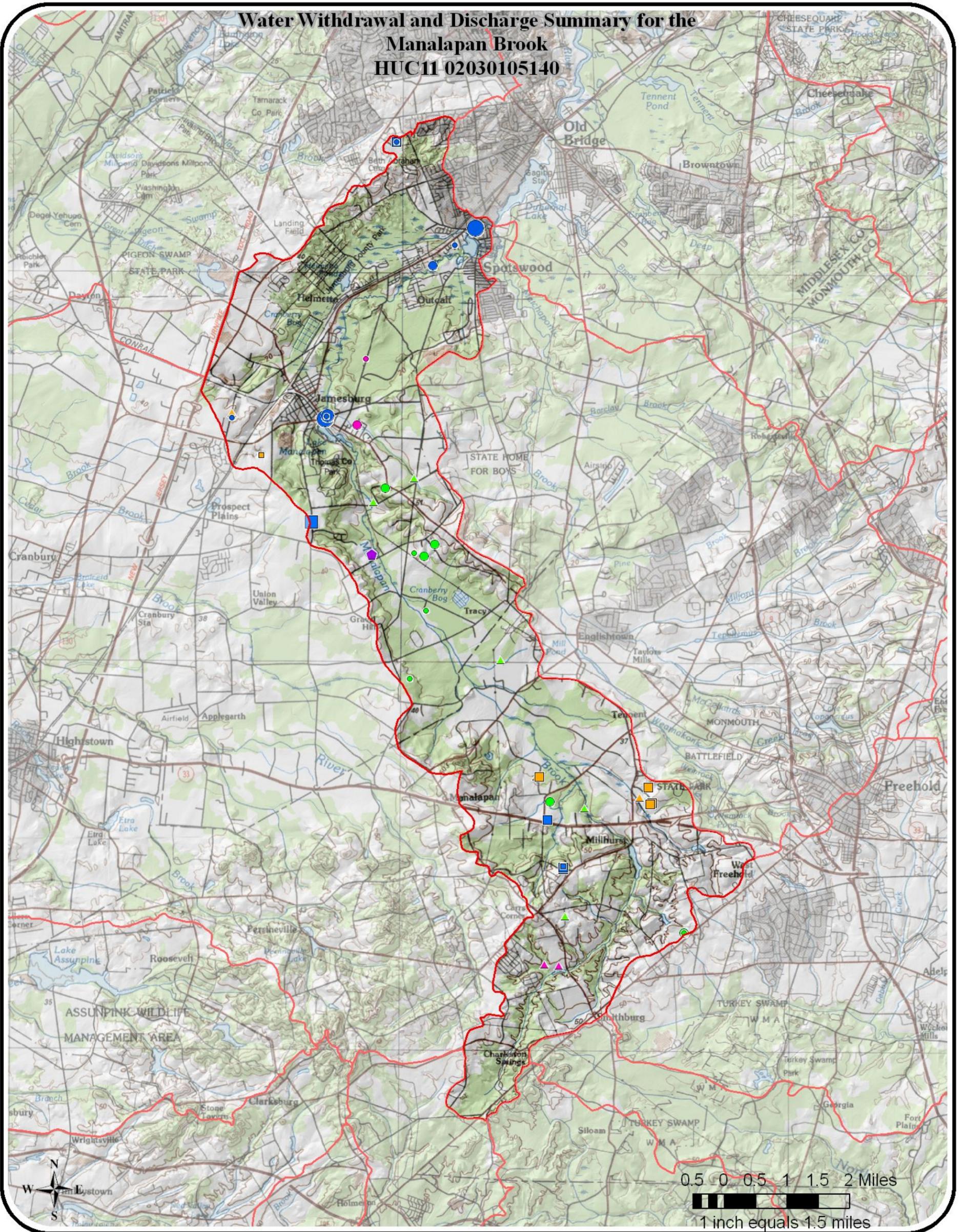
location	#	name
downstream:	02030105160	Raritan R Lower (below Lawrence)
(if any)	--	--
upstream:	--	--
(if any)	--	--



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.

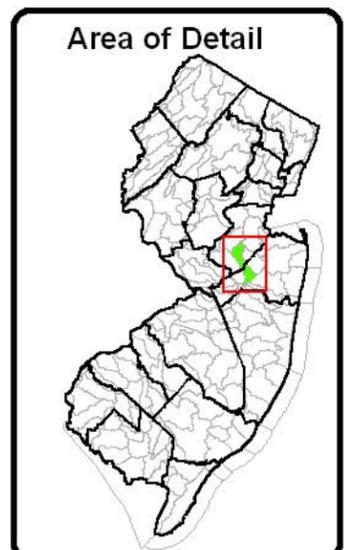
Water Withdrawal and Discharge Summary for the Manalapan Brook HUC11 02030105140



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	
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 MATCHAPONIX BROOK --- 02030105150

WMA:	Lower Raritan, South, and Lawrence	09
HUC11:	Matchaponix Brook	02030105150

Table 1. Freshwater¹ Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:²											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	2	7	428	843	749	792	822	839	843	851	618
sum	2	7	428	843	749	792	822	839	843	851	618
ground-water:³											
confined	1,912	2,178	1,587	1,437	1,450	1,502	1,283	1,436	1,471	1,494	1,575
unconfined	1,237	1,335	1,367	1,474	1,817	1,727	1,752	1,419	1,487	1,704	1,532
sum	3,150	3,513	2,954	2,911	3,267	3,228	3,035	2,855	2,958	3,198	3,107
total withdrawals:	3,152	3,520	3,382	3,754	4,016	4,020	3,857	3,694	3,801	4,049	3,724

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

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports ¹¹	533	629	367	460	462	486	455	481	515	519	491
exports ¹¹	2,008	2,227	2,459	2,899	3,138	3,129	3,101	2,849	2,923	3,147	2,788
net	(1,476)	(1,599)	(2,092)	(2,439)	(2,676)	(2,642)	(2,646)	(2,367)	(2,408)	(2,628)	(2,297)

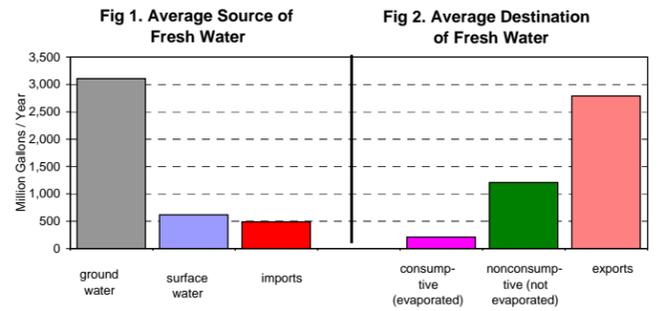


Table 3. Nonconsumptive⁴ & Consumptive⁵ Water Use⁶ in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	1,322	1,505	959	960	988	1,006	916	1,005	1,057	1,090	1,081
consumptive	173	222	142	159	153	159	131	155	175	176	164
domestic wells											
nonconsumptive	111	112	114	117	121	124	126	129	131	134	122
consumptive	16	16	16	17	17	17	18	18	18	19	17
industrial & commercial & mining											
nonconsumptive	3	13	0	0	0	0	0	0	0	0	2
consumptive	0	1	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrigation											
nonconsumptive	5	5	6	6	4	5	0	2	1	0	4
consumptive	46	47	53	55	39	48	4	16	9	1	32
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	1,441	1,635	1,079	1,084	1,113	1,135	1,043	1,136	1,189	1,224	1,208
consumptive	235	286	211	231	209	225	153	189	202	196	214
PERCENTAGES:											
nonconsumptive	86.0%	85.1%	83.6%	82.4%	84.2%	83.5%	87.2%	85.7%	85.5%	86.2%	85.0%
consumptive	14.0%	14.9%	16.4%	17.6%	15.8%	16.5%	12.8%	14.3%	14.5%	13.8%	15.0%

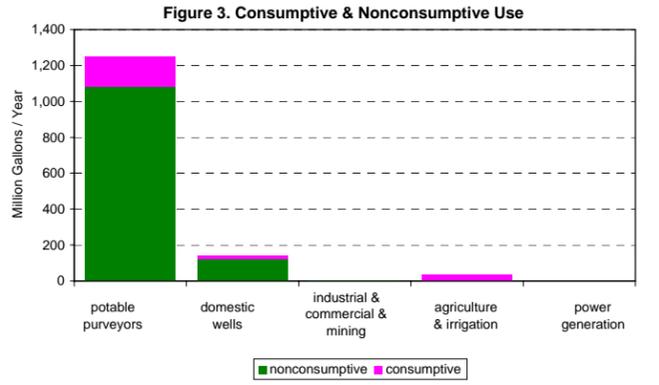


Table 4. Average Seasonal⁷ Use - Nonconsumptive⁴ & Consumptive⁵ (millions of gallons)

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	224	0	259	20	345	120	259	25	1,087	164
domestic wells	28	0	29	2	35	12	30	3	122	17
industrial & commercial & mining	0	0	1	0	0	0	0	0	2	0
agricultural & non-agricultural irrig.	0	3	1	7	2	15	1	7	4	32
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	253	3	289	29	382	147	289	34	1,214	214

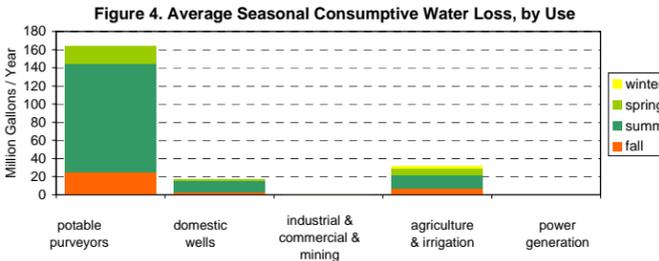


Table 5. Sewage Generation & Transfers⁸ in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	2,483	2,911	3,064	3,388	3,509	3,204	3,708	3,515	3,596	3,525	3,290
imported to HUC11	468	542	537	576	598	577	622	639	680	652	589
exported from HUC11	1,570	1,868	2,033	2,276	2,355	2,090	2,515	2,306	2,298	2,286	2,160

Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges⁹ in the HUC11 (millions of gallons)

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	1,381	1,585	1,568	1,687	1,752	1,691	1,815	1,847	1,978	1,891	1,719
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:	1,381	1,585	1,568	1,687	1,752	1,691	1,815	1,847	1,978	1,891	1,719

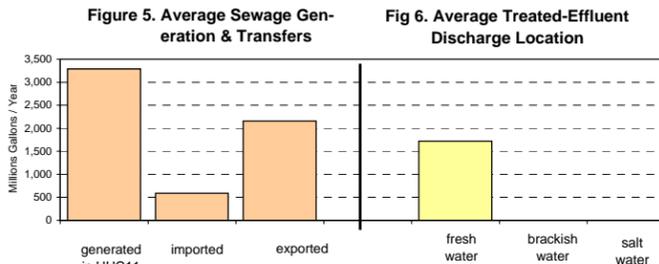


Table 7. 1999 Water Allocations¹⁰ in HUC11 by Water Source

Water Source	MGY
surface water	1,041
ground water	4,893
total	5,934

Table 8. 1999 Water Allocations¹⁰ in HUC11 by Water Use Group

Use Group	MGY
agricultural	111
commercial	0
industrial	0
irrigation	0
mining	0
potable supply	5,823
power generation	0
total	5,934

Table 9. HUC11 Descriptive Statistics

--- **Area:**

in this HUC11 only	44.3	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	44.3	sq. mi.

(this HUC11 onshore area: 44.3 sq. mi.)

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

Year	Population	Change
1940	7,708	-
1950	10,105	31.1%
1960	15,059	49.0%
1970	28,122	86.7%
1980	34,094	21.2%
1990	44,046	29.2%
2000	52,833	20.0%
2010	60,086	13.7% est. ¹²
2020	65,318	8.7% est. ¹²
2030	68,734	5.2% est. ¹²

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

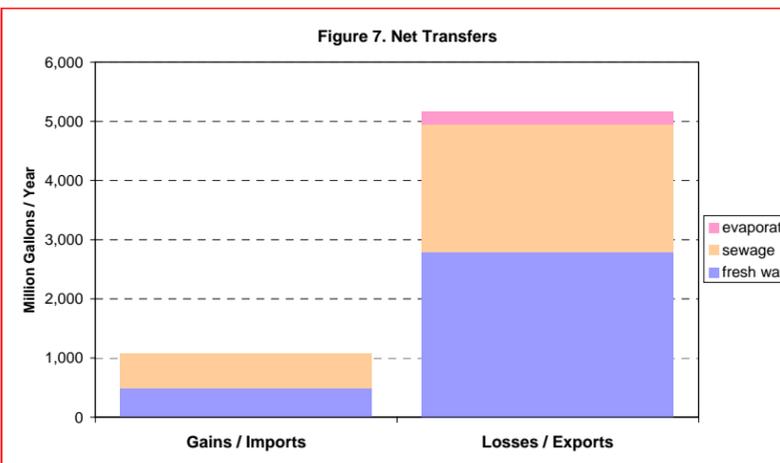
Type	Year		Change
	1986	1995	
ag.	12.5%	10.0%	-2.5%
barren	2.0%	1.9%	-0.1%
forest	18.8%	16.4%	-2.5%
urban	37.0%	44.0%	6.9%
water	0.5%	0.5%	0.0%
wetlands	29.2%	27.3%	-1.9%

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

Pinelands:	0.0%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

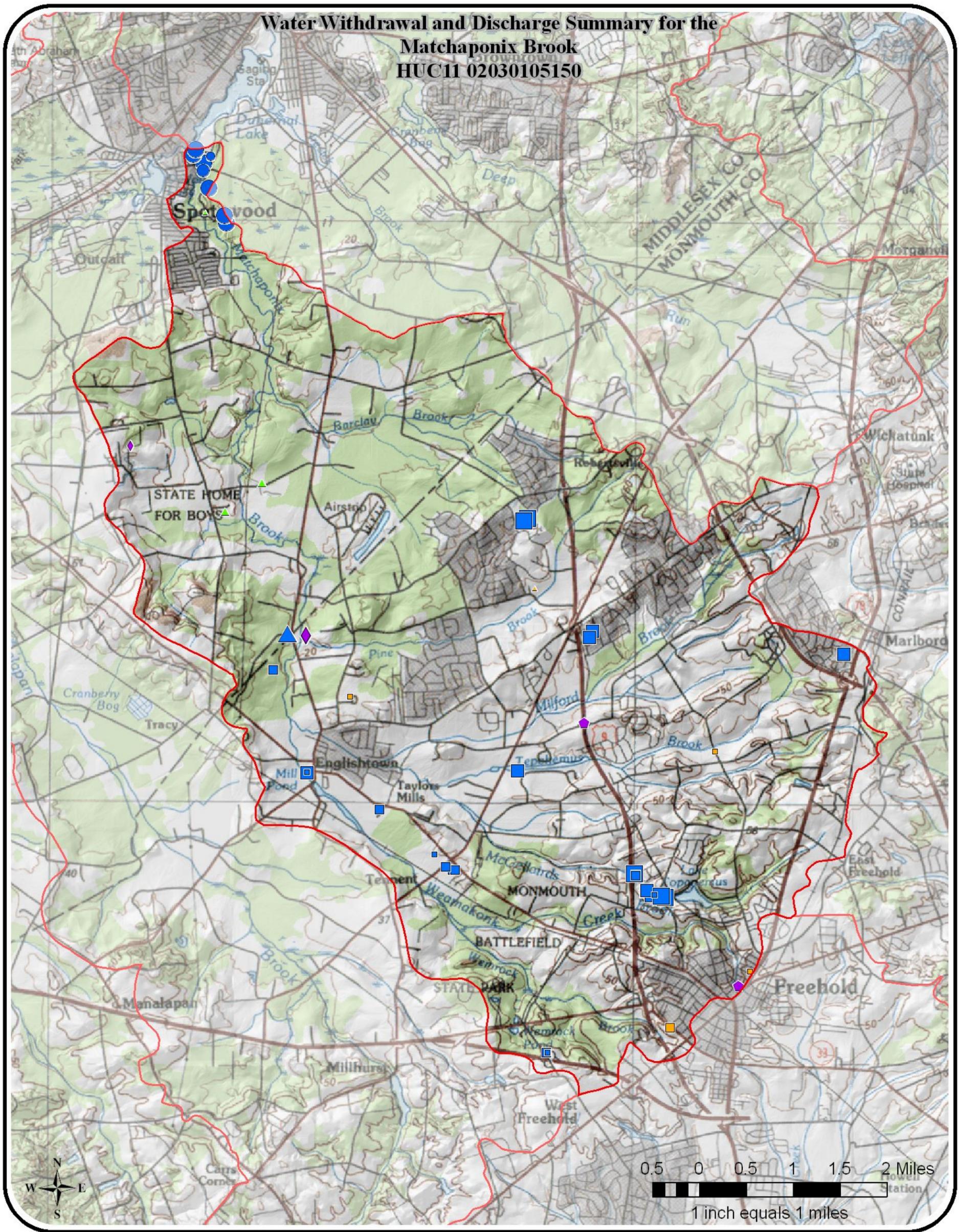
location	#	name
downstream: (if any)	02030105160	Raritan R Lower (below Lawrence)
upstream: (if any)	--	--



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.

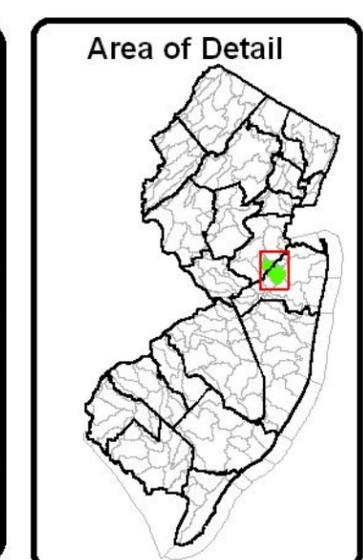
Water Withdrawal and Discharge Summary for the Matchaponix Brook HUC11 02030105150



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	
GW Confined	□	No 1999 Use	●▲
GW Unconfined	○	1 - 50 MGY	■●▲
SW	△	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 LOWER RARITAN RIVER (BELOW LAWRENCE BRK) --- 02030105160

WMA:	Lower Raritan, South, and Lawrence	09
HUC11:	Lower Raritan River (below Lawrence)	02030105160

Table 1. Freshwater¹ Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:²											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	117	97	107	144	201	152	148	168	136	92	136
sum	117	97	107	144	201	152	148	168	136	92	136
ground-water:³											
confined	5,617	3,399	3,062	3,199	3,120	2,515	2,078	2,210	2,659	2,050	2,991
unconfined	2,055	4,029	4,346	4,672	4,430	4,678	4,380	4,439	4,418	4,252	4,170
sum	7,671	7,428	7,408	7,870	7,549	7,193	6,459	6,649	7,076	6,302	7,161
total withdrawals:	7,788	7,526	7,515	8,015	7,750	7,345	6,607	6,817	7,212	6,394	7,297

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

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports ¹¹	3,082	3,372	3,550	3,847	4,228	4,150	4,017	3,750	3,859	4,140	3,800
exports ¹¹	4,111	4,046	4,074	4,452	4,339	4,639	4,026	4,223	4,340	3,806	4,206
net	(1,029)	(674)	(524)	(605)	(111)	(488)	(9)	(473)	(480)	334	(406)

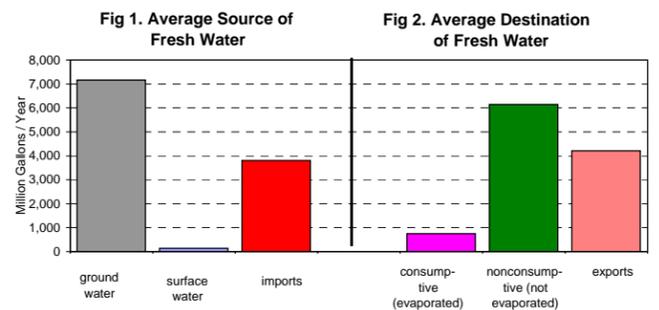


Table 3. Nonconsumptive⁴ & Consumptive⁵ Water Use⁶ in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	4,199	4,215	4,422	4,682	4,896	4,851	4,719	4,367	4,587	4,637	4,558
consumptive	489	504	512	581	572	600	539	544	553	616	551
domestic wells											
nonconsumptive	22	22	23	23	24	24	25	25	25	25	24
consumptive	3	3	3	3	3	3	3	4	4	4	3
industrial & commercial & mining											
nonconsumptive	1,828	1,842	1,797	1,889	1,919	1,225	1,170	1,246	1,384	1,280	1,558
consumptive	206	206	201	211	214	137	133	140	156	144	175
agricultural & non-agricultural irrigation											
nonconsumptive	1	6	3	2	1	1	1	1	1	1	2
consumptive	9	53	29	19	10	13	9	9	12	10	17
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	6,051	6,085	6,245	6,596	6,840	6,102	5,915	5,639	5,998	5,943	6,141
consumptive	708	766	745	814	800	754	683	697	723	774	746
PERCENTAGES:											
nonconsumptive	89.5%	88.8%	89.3%	89.0%	89.5%	89.0%	89.6%	89.0%	89.2%	88.5%	89.2%
consumptive	10.5%	11.2%	10.7%	11.0%	10.5%	11.0%	10.4%	11.0%	10.8%	11.5%	10.8%

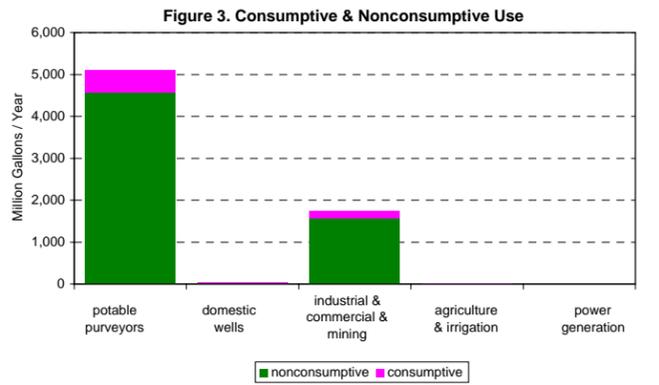


Table 4. Average Seasonal⁷ Use - Nonconsumptive⁴ & Consumptive⁵ (millions of gallons)

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	1,175	0	1,143	76	1,080	374	1,162	101	4,561	551
domestic wells	5	0	6	0	7	2	6	1	24	3
industrial & commercial & mining	345	39	381	43	441	49	391	44	1,558	175
agricultural & non-agricultural irrig.	0	0	0	2	1	11	0	3	2	17
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	1,525	39	1,530	122	1,530	437	1,560	149	6,144	746

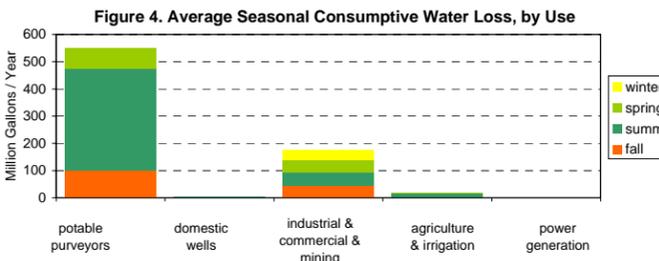


Table 5. Sewage Generation & Transfers⁸ in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	6,438	7,689	8,378	9,387	9,737	8,628	10,386	9,547	9,491	9,474	8,916
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	6,434	7,682	8,371	9,380	9,730	8,621	10,380	9,541	9,482	9,465	8,909

Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges⁹ in the HUC11 (millions of gallons)

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	4	7	7	7	7	7	6	6	9	9	7
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	7	7	7	7	7	6	6	9	9	7

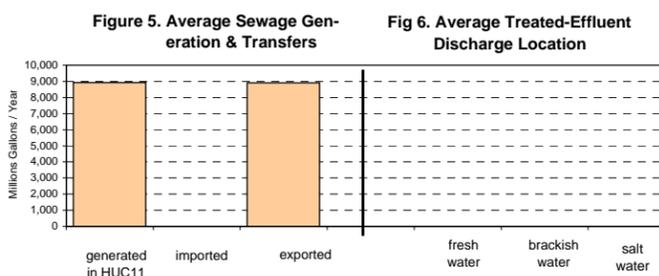


Table 7. 1999 Water Allocations¹⁰ in HUC11 by Water Source

Water Source	MGY
surface water	141
ground water	11,164
total	11,305

Table 8. 1999 Water Allocations¹⁰ in HUC11 by Water Use Group

Use Group	MGY
agricultural	7
commercial	25
industrial	2,609
irrigation	74
mining	0
potable supply	8,589
power generation	0
total	11,305

Table 9. HUC11 Descriptive Statistics

--- **Area:**

in this HUC11 only	73.2	sq. mi.
upstream HUC11s	1,031.3	sq. mi.
total watershed	1,104.5	sq. mi.

(this HUC11 onshore area: 70.5 sq. mi.)

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

Year	Population	Change
1940	50,087	-
1950	60,086	20.0%
1960	102,450	70.5%
1970	144,677	41.2%
1980	143,911	-0.5%
1990	161,907	12.5%
2000	179,003	10.6%
2010	192,706	7.7% est. ¹²
2020	208,202	8.0% est. ¹²
2030	220,675	6.0% est. ¹²

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

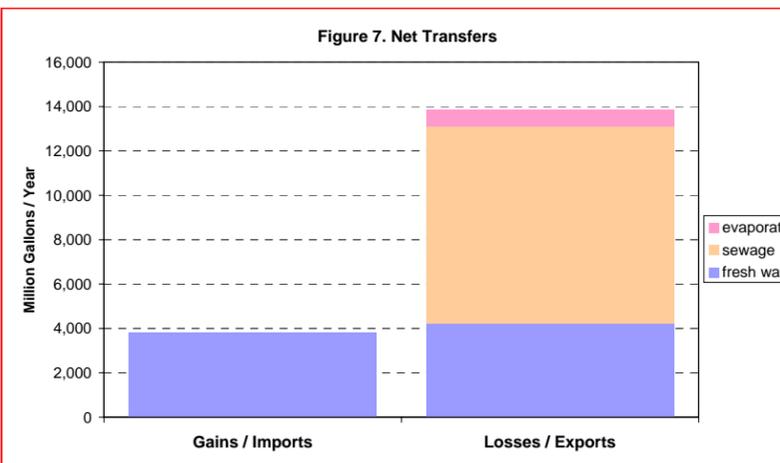
Type	Year		Change
	1986	1995	
ag.	2.6%	2.3%	-0.3%
barren	5.8%	4.2%	-1.6%
forest	18.7%	17.7%	-1.0%
urban	41.7%	45.6%	3.9%
water	6.0%	6.0%	0.0%
wetlands	25.3%	24.3%	-1.0%

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

Pinelands:	0.0%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

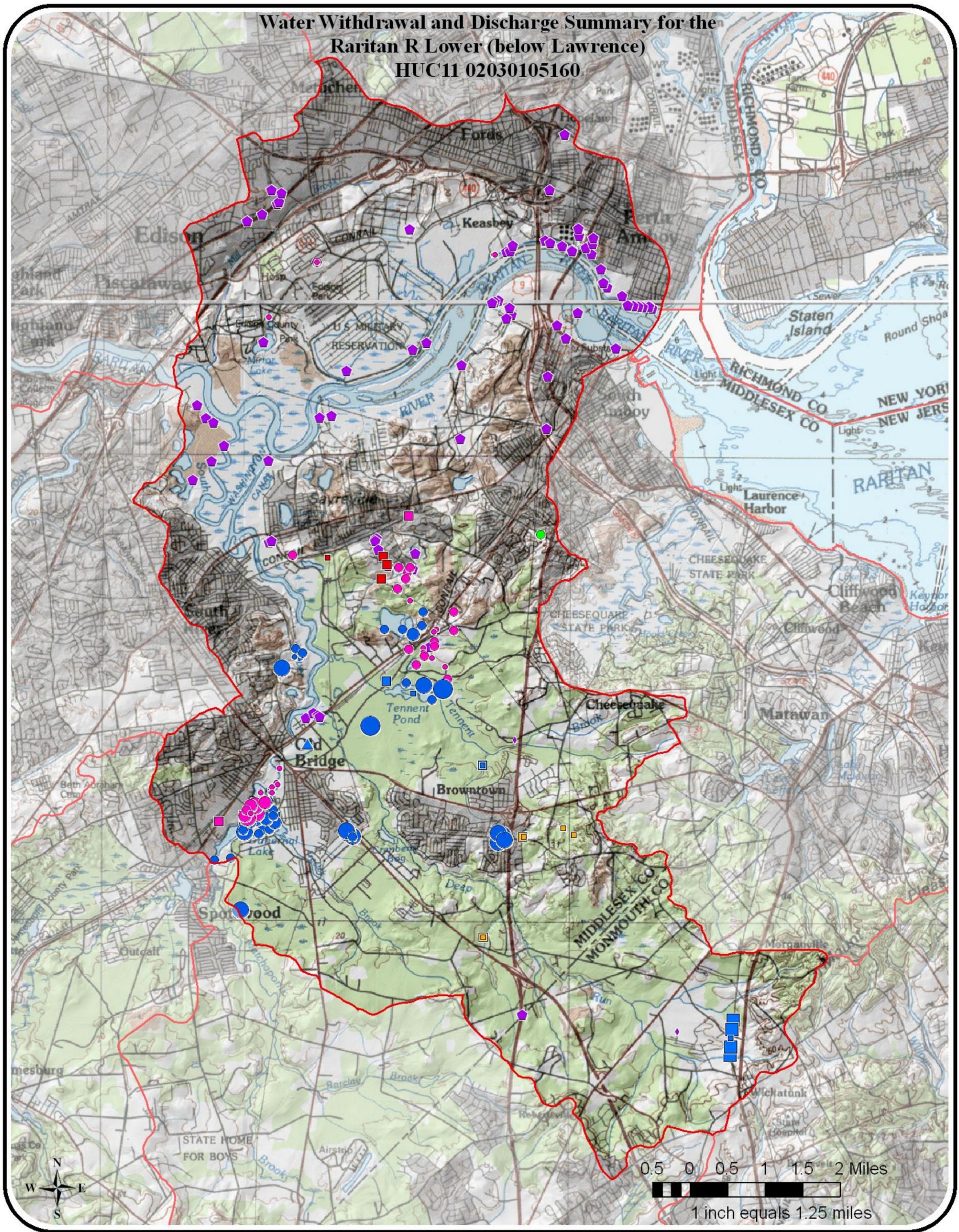
location	#	name
downstream:	02030104910	Raritan Bay / Sandy Hook Bay
(if any)		
upstream:	02030105010	Raritan River SB (above Spruce Run)
(if any)	02030105020	Raritan River SB (3 Brgds to Spruce Run)
	02030105030	Neshanic River
	02030105040	Raritan River SB (NB to Three Bridges)
	02030105050	Lamington River
	02030105060	Raritan River NB (above Lamington)
	02030105070	Raritan River NB (SB to Lamington)
	02030105080	Raritan River Lower (Millstone to NB/SB)
	02030105090	Stony Brook
	02030105100	Millstone River (above Carnegie Lake)
	02030105110	Millstone River (below/incl Carnegie Lk)
	02030105120	Raritan R Lower (Lawrence to Millstone)
	02030105130	Lawrence Brook
	02030105140	Manalapan Brook
	02030105150	Matchaponix Brook



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
Raritan R Lower (below Lawrence)
HUC11 02030105160**



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
GW Confined □	No 1999 Use ■●▲
GW Unconfined ○	1 - 50 MGY ■●▲
SW △	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

