ANNUAL REPORT

of the

GREAT LAKES REGIONAL WATER USE DATABASE REPOSITORY

REPRESENTING 2000 WATER USE DATA IN GALLONS

Prepared by

The Great Lakes Commission

August 04

ACKNOWLEDGEMENTS

The author of this report is Marilyn Ratliff, Great Lakes Commission Database Administrator. Thomas R. Crane, Program Manager of Resource Management, provided oversight and thanks go to Dr. Michael J. Donahue, Great Lakes Commission President/CEO, for his overall guidance.

The Great Lakes Commission wishes to thank the members of the Water Withdrawal and Use Technical Subcommittee formed under the *Water Resources Management Decision Support System for the Great Lakes* project for their involvement and participation in the preparation of this report.

FOREWARD

The Great Lakes Regional Water Use Database partially fulfills the recommendation in the Great Lakes Charter of 1985 that calls for a uniform, consistent base of data of Great Lakes water withdrawals, diversions and consumptive uses. Water use data are submitted to the repository on an annual basis and reports are provided to assist the jurisdictions in Great Lakes-St. Lawrence River water resources planning and management. As specified by the Water Resources Management Committee in its 1987 report, *Managing the Waters of the Great Lakes Basin*, the database catalogs withdrawals by water use category, sub-basin, and jurisdiction.

The operation and use of this database represents one of several ongoing activities on behalf of the Great Lakes states and provinces to fulfill obligations of the Charter and Charter Annex of 2001. Continued state and provincial involvement in refining and expanding the database is necessary to ensure that the database can support other ongoing Charter initiatives, such as improving consumptive use information, conducting trend analysis, developing uniform and consistent demand forecasting applications and promoting regional water conservation programs.

The database became operational in the summer of 1988 following a multi-year cooperative effort. Design and development involved input from many state, provincial, and federal agencies, with the U.S. Geological Survey providing much of the leadership.

The customized program was developed in 1987 by Acres International on the MS/DOS platform using a modified version of DbaseIII. With the rapid advancement of computer hardware and software and the evolving needs of the Great Lakes state and provincial water resources management programs, the old system soon became outdated. In July 1998, the Great Lakes Commission and Eastern Michigan University's Institute for Geospatial Research and Education (formerly the Center for Environmental Information Technology and Application) began work on the revised database. The new system was developed using Visual Basic for Applications, based on Microsoft Access®, and contains all of the functions of the old system (including data entry, a data check facility and report generation), in addition to new features such as a flexible data interface and automatic data checking.

TABLE OF CONTENTS

TABLE OF FIGURES

I. GREAT LAKES BASIN OVERVIEW

Introduction

All data are submitted in one of two unit measures--millions of U.S. gallons per day (mgd) or millions of liters per day (mld)—and values are initially set to zero. Numeric values are required for all categories of use. A value of zero indicates either zero water use or water use which does not meet the Charter trigger level for water use reporting of 100,000 gallons per day (380,000 liters per day) average over a 30-day period.

The quality of data for each entry is rated as a 1, 2 or 3 indicating the level of accuracy as 1) measured 2) partially measured or 3) estimated; and a 1 or 2 indicating the level of aggregation as 1) originating from site-specific sources or 2) from higher level aggregate sources such as county or census databases. Both measures of quality are based on percentages of total volume.

For this report, self-supply – hydroelectric (water used in the generation of electricity at plants where turbine generators are driven by falling water) is treated as a withdrawal, even though all water for this purpose is considered to be returned to the basin. As the following chart illustrates, this is the largest single category of withdrawal and represents 95% of the total amount of water "withdrawn" in 2000.

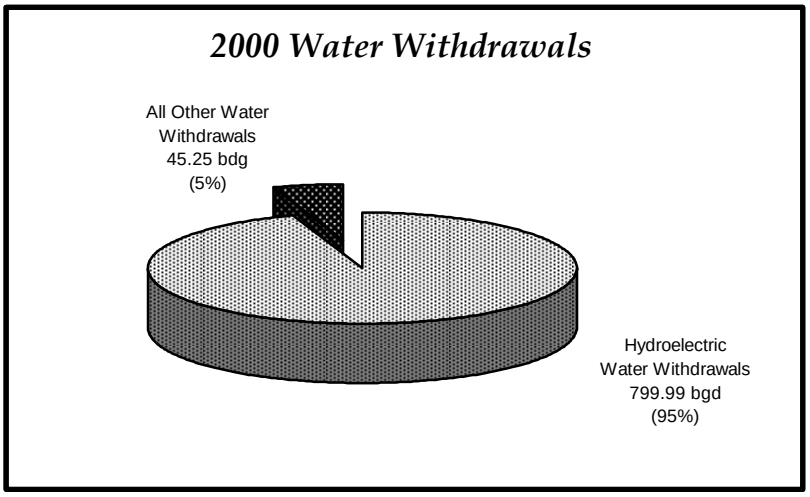

Figure 1

Each of the ten jurisdictions' water uses is represented in the following charts. The first chart includes self-supply – hydroelectric use. In total, water withdrawals for the year 2000 were approximately 845 billion gallons per day, or about 3,199 billion liters per day.

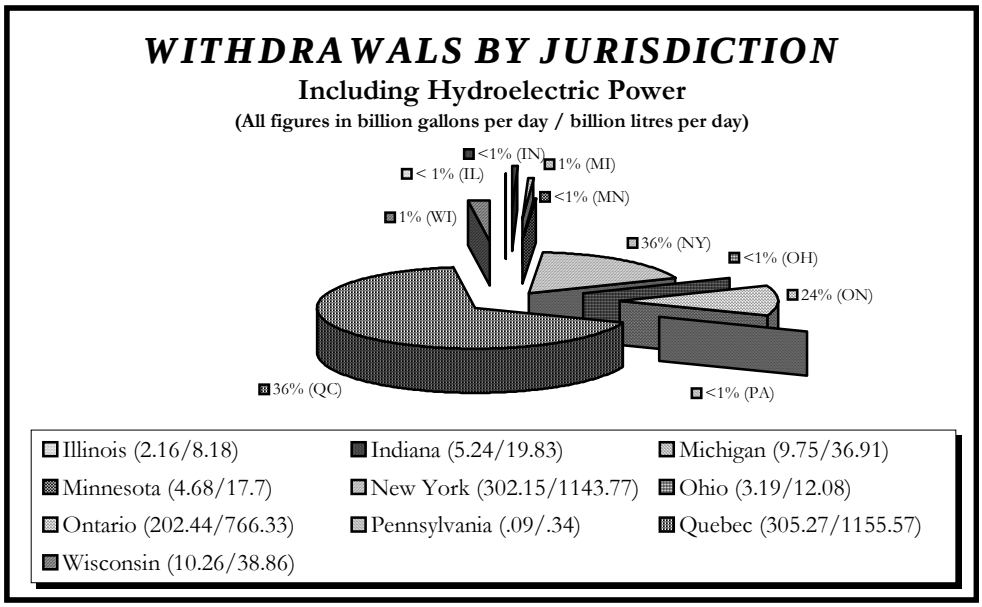

Figure 2

This second chart more accurately reflects the true water use within the basin, as it excludes self-supply – hydroelectric use. Water withdrawals for the eight remaining off-stream categories totaled 45 billion gallons per day, or 171 billion liters per day, reflecting a decrease of 3 bgd (10 bld). Piecharts showing individual jurisdictional water use, starting with Illinois on page 15, are in million liters per day and do not include hydroelectric use.

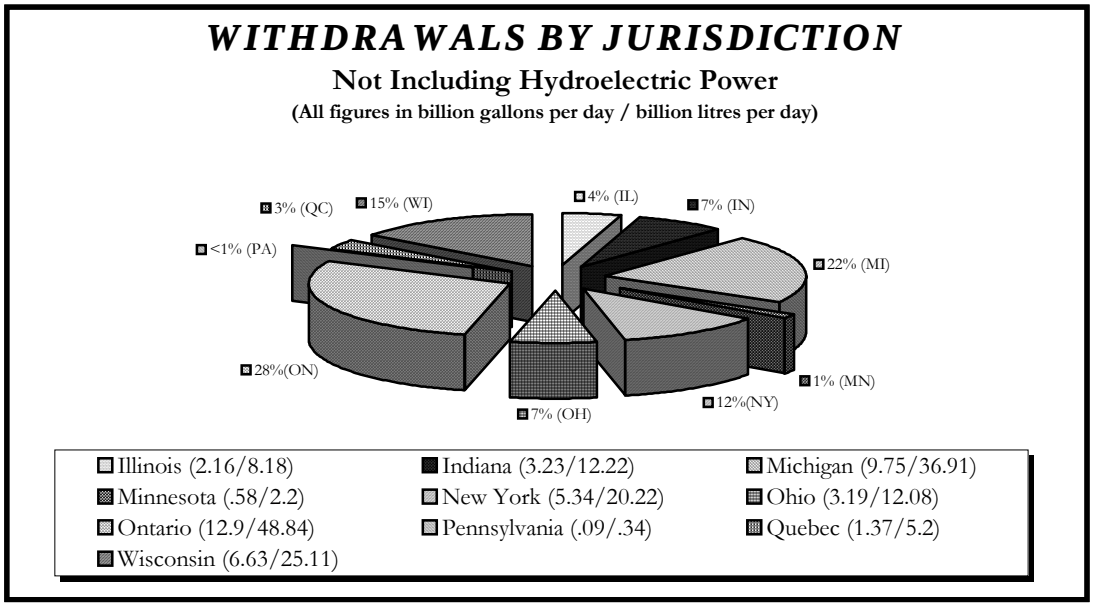

Figure 3

Topics of Interest

Diversions

Two types of diversions are reported by the water use database: interbasin (transfers that take place between the Great Lakes basin and another watershed) and intrabasin (transfers that take place between one of the Great Lakes basins and another); both types can be either incoming or outgoing.

Of the two types, interbasin diversions (transfers that take place between the Great Lakes basin and another watershed) have traditionally been of greater interest. Outgoing interbasin diversions--those **without** a minus sign--indicate water leaving the Great Lakes basin; incoming interbasin diversions--indicated **with** a minus sign—indicate water entering the Great Lakes basin.

For a summary of all diversions and removals, please see *Great Lakes Diversions and Other Removals* by Frank Quinn and Jeff Edstrom, **Canadian Water Resources Journal**, 2000, vol. 25, #2. Copies of this article can be obtained through the CWRJ website at www.cwra.org/Publications, or by calling (519)622-4764.

Consumptive Use

Collecting and reporting defensible data for consumptive uses of Great Lakes water continues to be a major challenge for the Great Lakes jurisdictions. The states and provinces currently use a variety of methods to obtain consumptive use figures, including measurement and estimation at the facility level. However, the most common practice is to calculate consumptive use for each water use category by multiplying the withdrawal amount by an agreed-upon percentage (consumptive use coefficient). Figure 4 on page 6 shows the consumptive use coefficients that were used for this report. For consumptive use values by jurisdiction, basin or water use category, please refer to the tables in chapters II through V. Total consumptive use in the basin for 2000 was calculated to be 1.86 bgd (7.02 bld).

For a scholarly overview, please see the **Annotated Bibliography of Consumptive Use in the Great Lakes Region and Basin** (www.glc.org/wateruse/wrmdss/finalreport/pdf/CU_biblio.pdf) and **Measuring and Estimating Consumptive Use of Great Lakes Water** (www.glc.org/wateruse/wrmdss/finalreport/pdf/CU_briefing.pdf).

Water Use Category	ILLINOIS	INDIANA	MICHIGAN	MINNESOTA	NEW YORK	OHIO	ONTARIO	PENNSYLVANIA	QUEBEC	WISCONSIN
Public Supply	10-15%	15%	10-15%	10-15%	10%	10-15%	15%	10%	10-15%	10-15%
Self-Supply Domestic	10-15%	15%	10-15%	10-15%	10%	10-15%	15%	10%	10-15%	10-15%
Self-Supply Irrigation	90%	90%	90%	90%	90%	90%	78%	90%	90%	70%
Self-Supply Livestock	80%	80%	80%	80%	90%	80%	80%	80%	80%	90%
Self-Supply Industrial	Varies by plant & SIC code	6%	10-15%	Varies by plant & SIC code	25%	10%; salt mining is 90%	Varies by plant & SIC code	Varies by plant & SIC code	10% for pulp & paper industry	10.2% for manufac-turing & mining
Self-Supply Thermoelectric (Fossil Fuel)	Individually estimated based on the quantity of make-up water	2%	1-2% for plants using once-through cooling; individual analysis for wet cooling towers	2%	2%	Individually estimated based on the quantity of make-up water	.9% based on reports of increased local lake evaporation due to discharge of heated water to lakes	NA (Pennsyl-vania has no facilities in the basin)	10%; estimates obtained from USGS report	.5-1%
Self-Supply Thermoelectric (Nuclear)	Individually estimated based on the quantity of make-up water	NA (Indiana has no facilities in the basin)	1-2% for plants using once-through cooling; individual analysis for wet cooling towers	NA (Minnesota has no facilities in the basin)	5%	14% based on reports of increased local lake evaporation due to discharge of heated water to lakes	.9% based on reports of increased local lake evaporation due to discharge of heated water to lakes	NA (Pennsyl-vania has no facilities in the basin)	NA (Quebec has no facilities in the basin)	.5-1%
Hydroelectric	Coefficient for all states and provinces is 0%									
Self-Supply Other	Varies based on use	12%	Varies based on use	Varies based on use	Varies based on use	Varies based on use	Varies based on use	Varies based on use	Varies based on use	Varies based on use

Figure 4

Definitions and Abbreviations

General Definitions and Abbreviations

- **bgd**: billion gallons per day
- **bld**: billion liters per day
- **consumptive use**: that portion of water withdrawn or withheld from the Great Lakes basin and assumed to be lost or otherwise not returned to the Great Lakes basin due to evapotranspiration, incorporation into products, or other processes
- **Great Lakes surface water (GLSW)**: the Great Lakes, their connecting channels (the St. Clair River, the Detroit River, the Niagara River and the St. Marys River), and the St. Lawrence River
- **groundwater (GW)**: all subsurface water
- **interbasin diversion**: the amount of water transferred from the Great Lakes basin into another watershed
- **intrabasin diversion**: the amount of water transferred from the watershed of one of the Great Lakes into another
- **level of accuracy**: the quality of data based on percentage of total volume and rated as 1) measured; 2) partially measured or: 3) estimated,
- **level of aggregation**: the quality of data based on percentage of total volume and rated as 1) originating from site-specific sources or 2) originating from higher level aggregate sources, such as county or census databases
- **mgd**: million gallons per day
- **mld**: million liters per day
- **other surface water (OSW)**: tributary streams, lakes, ponds, and reservoirs within the Great Lakes basin
- **principal facility**: facilities withdrawing in excess of the Great Lakes Charter uniform trigger level of 100,000 U.S. gallons/day (380,000 liters/day) average over a 30-day period. A principal facility is determined by the total withdrawal (or consumption) of all sources combined (Great Lakes surface water, other surface water, and groundwater) rather than a single source. The combined withdrawals (or consumption) of separate wells or operations undertaken by the same facility or company will be evaluated separately for the purpose of determining principal facility status unless those operations are covered under the same registration (or permit) or are physically contiguous. Principal facilities are a subset of all facilities in the database.
- **tgd**: trillion gallons per day
- **tld**: trillion liters per day
- **withdrawal amount**: water removed or taken from surface or groundwater (including hydroelectric use)

Water Use Category Definitions

1. **Public Water Supply:** Water withdrawn for all uses by public and private water suppliers and delivered to users that do not supply their own water. (Water suppliers provide water for a variety of uses such as residential, commercial, industrial, and public water use.)
2. **Self-Supply Domestic: (residential, commercial, institutional):** Water used for normal household purposes. Also referred to as residential water use, this category includes water used for drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns. Commercial uses include water used by motels, hotels, restaurants, office buildings and institutions, both civilian and military. This category also includes water for mobile homes, hospitals, schools, fire fighting, air conditioning and other similar uses not covered under a public supply. In addition, this category includes amusement and recreational water uses such as snowmaking and water slides. The coefficient for domestic per capita water use is 75 gallons a day (U.S.) unless otherwise indicated by the reporting state or province.
3. **Self-Supply Irrigation:** Water artificially applied on lands to assist in the growing of crops and pastures or in the maintenance of recreational lands, such as parks and golf courses.
4. **Self-Supply Livestock**: Water used by horses, cattle, sheep, goats, hogs, poultry, and other commercially important animals. Water used in fish hatchery operations are also included under this category.
5. **Self-Supply Industrial (manufacturing and mining):** Industrial water includes water used in the manufacture of metals, chemicals, paper, and allied products. Mining water use includes water used in the extraction or washing of minerals; for example solids, such as coal and ores, and liquids such as crude petroleum and natural gas. Water used in quarrying and milling is also included in the industrial category. Brine extraction from oil and gas operations is not included. Withdrawals and consumptive uses for industrial and mining purposes (including dewatering operations) recorded under another category (e.g., public supply) will not be recorded here. Water used in a closed cycle (recirculation) will not be reported as a withdrawal. Other situations should be evaluated on a case-by-case basis.
6. **Self-Supply Thermoelectric Power (fossil fuel plants):** Water used by plants fueled by fossil fuels such as coal, oil or natural gas. Withdrawals and consumptive uses already recorded under another category (e.g., public supply) will not be reported here.
7. **Self-Supply Thermoelectric Power (nuclear plants):** Water used by plants fueled by nuclear generation. Withdrawals and consumptive uses already recorded under another category (e.g., public supply) will not be reported here.
8. **Self-Supply Hydroelectric Power:** Water used to drive turbines that generate electric power. This category includes both "instream use" where water is used on a once-through basis and "offstream use" where water is recycled through pumped-storage systems. Neither use is considered a consumptive use.
9. **Self-Supply - Other**: Water used for purposes not reported in categories one through nine. Examples include, but are not limited to, withdrawals for fish/wildlife, environmental, recreation, navigation, and water quality purposes. Specifically, water used to maintain levels for navigation, for recreation, for fish and wildlife habitat creation and enhancement (excluding fish hatchery operations included under Category 5), for flow augmentation (or diversion), for sanitation, pollution confinement, and other water quality purposes and agricultural activities (services) other than those directly related to irrigation such as field drainage are included. Water used in temporary or immediate emergency situations (e.g., fighting forest or peat fires) is also reported here.

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II. GREAT LAKES BASIN SUMMARY TABLES

Water Use by Jurisdiction
Water Use by Basin
Water Use by Category

SUMMARY REPORT - GREAT LAKES BASIN

Units: Mgal(US)/d
Year Of Data: 2000

Water-Use by Jurisdiction - All Facilities

Jurisdiction	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Illinois	2155.55	0.00	4.38	2159.93	0.00	1407.53	17.02
Indiana	2649.96	2453.80	135.77	5239.53	0.00	-2.24	196.16
Michigan	8808.26	455.36	487.45	9751.07	0.00	0.00	495.73
Minnesota	313.56	4357.88	4.96	4676.39	0.00	0.00	45.06
New York	121595.26	180419.11	138.94	302153.31	711.00	41.62	340.56
Ohio	2755.95	280.81	155.59	3192.35	0.00	-9.59	186.48
Ontario	143002.93	59956.58	279.43	203238.94	61.97	-4007.75	279.92
Pennsylvania	81.65	2.90	4.49	89.04	0.00	-0.86	13.94
Quebec	171588.19	133580.18	99.91	305268.28	0.00	0.00	157.86
Wisconsin	6133.01	3901.61	230.08	10264.70	0.00	0.93	213.43
Total:	**459084.31**	**385408.23**	**1541.00**	**846033.54**	**772.97**	**-2570.36**	**1946.16**

Water-Use by Jurisdiction - Principal Facilities

Jurisdiction	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Illinois	2155.55	0.00	4.38	2159.93	0.00	1407.53	17.02
Indiana	2649.96	2453.31	103.44	5206.71	0.00	0.00	188.60
Michigan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Minnesota	312.83	4357.30	4.15	4674.27	0.00	0.00	44.77
New York	121168.39	533.27	11.65	121713.31	711.00	41.62	230.53
Ohio	2755.51	276.06	79.93	3111.50	0.00	0.29	162.73
Ontario	493.17	376.22	87.00	956.38	61.97	0.00	113.52
Pennsylvania	81.65	2.78	1.64	86.07	0.00	0.00	13.60
Quebec	171587.93	133575.95	48.61	305212.48	0.00	0.00	131.58
Wisconsin	6116.74	3896.18	125.30	10138.22	0.00	0.32	154.12
Total:	**307321.72**	**145471.06**	**466.09**	**453258.87**	**772.97**	**1449.76**	**1056.47**

SUMMARY REPORT - GREAT LAKES BASIN

Units: Mgal(US)/d
Year Of Data: 2000

Water-Use by Basin - All Facilities

Basin	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Lake Superior	1116.68	42737.36	29.29	43883.33	0.00	-4007.75	74.77
Lake Michigan	13343.40	6501.77	700.96	20546.13	0.00	1406.22	661.30
Lake Huron	26026.26	13722.00	88.98	39837.24	47.97	0.00	134.26
Lake Erie	50454.83	474.12	386.51	51315.47	5105.39	-10.45	526.44
Lake Ontario	43394.05	89484.80	194.53	133073.38	-4380.39	41.62	353.21
St. Lawrence River	324749.09	232488.18	140.72	557377.98	0.00	0.00	196.18
Total:	**459084.31**	**385408.23**	**1541.00**	**846033.54**	**772.97**	**-2570.36**	**1946.16**

Water-Use by Basin - Principal Facilities

Basin	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Lake Superior	359.48	4579.69	6.69	4945.86	0.00	0.00	52.31
Lake Michigan	10905.67	6098.52	217.69	17221.88	0.00	1407.85	350.82
Lake Huron	42.02	71.20	16.40	129.63	47.97	0.00	12.25
Lake Erie	44626.38	350.64	152.01	45129.02	5105.39	0.29	280.57
Lake Ontario	2955.29	706.49	19.74	3681.52	-4380.39	41.62	212.92
St. Lawrence River	248432.89	133664.52	53.54	382150.95	0.00	0.00	147.60
Total:	**307321.72**	**145471.06**	**466.09**	**453258.87**	**772.97**	**1449.76**	**1056.47**

SUMMARY REPORT - GREAT LAKES BASIN

Units: Mgal(US)/d
Year Of Data: 2000

Water-Use by Category - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	4311.72	1177.12	572.02	6060.85	0.00	1103.54	630.85
Domestic Supply	36.91	51.20	375.61	463.72	0.00	0.00	58.99
Irrigation	6.17	128.51	241.98	376.65	0.00	0.00	264.15
Livestock	10.90	14.83	101.01	126.73	0.00	0.00	69.88
Industrial	3433.65	1112.64	246.61	4792.90	0.00	2.94	442.57
Fossil Fuel Power	17186.87	862.33	3.29	18052.49	0.00	0.00	223.34
Nuclear Power	14907.96	0.00	0.13	14908.09	0.00	0.00	223.42
Hydroelectric Power	418169.73	381817.60	0.00	799987.32	0.00	-4007.75	0.00
Other	1020.42	244.01	0.36	1264.79	772.97	330.90	32.97
Total:	**459084.31**	**385408.23**	**1541.00**	**846033.54**	**772.97**	**-2570.36**	**1946.16**

Water-Use by Category - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	3050.38	865.95	261.09	4177.42	0.00	1106.03	403.33
Domestic Supply	0.91	51.16	58.92	110.99	0.00	0.00	12.24
Irrigation	0.00	17.47	30.67	48.14	0.00	0.00	37.30
Livestock	0.71	2.15	1.94	4.80	0.00	0.00	3.92
Industrial	2059.33	992.34	112.93	3164.59	0.00	2.94	313.71
Fossil Fuel Power	9562.13	611.84	0.39	10174.36	0.00	0.00	146.60
Nuclear Power	3469.23	0.00	0.00	3469.23	0.00	0.00	107.34
Hydroelectric Power	288159.25	142686.23	0.00	430845.48	0.00	0.00	0.00
Other	1019.78	243.93	0.15	1263.86	772.97	340.78	32.02
Total:	**307321.72**	**145471.06**	**466.09**	**453258.87**	**772.97**	**1449.76**	**1056.47**

III. JURISDICTION TABLES AND ANALYSES

Each jurisdictional summary includes a water use analysis and three tables:

Withdrawals, Diversions and Consumptive Uses

Withdrawals by Source

Jurisdiction Totals

Illinois
Indiana
Michigan
Minnesota
New York
Ohio
Ontario
Pennsylvania
Quebec
Wisconsin

Illinois

Data Source: Water use data for Illinois was provided by the Department of Natural Resources-Office of Water Resources, and the State Water Survey.

Withdrawals: Illinois' water withdrawals from Lake Michigan in 2000 totaled 2,159.93 mgd—up from 1999 by 20 mgd. Usage in all water use categories in 2000 was comparable to usage in 1999.

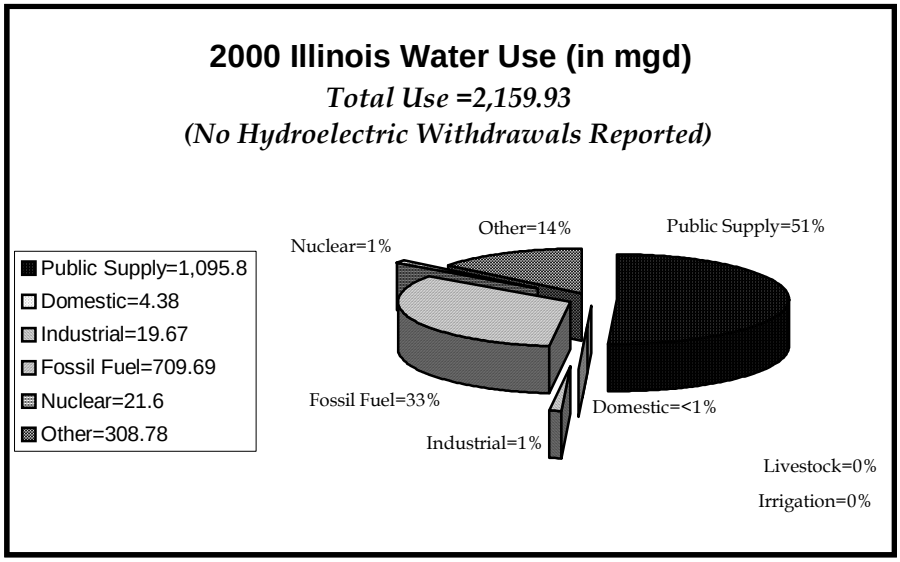

Figure 5

Consumptive Use: As in 1999, there was no consumptive value reported in any water use category.

Diversions: Total diversions from the Lake Michigan basin in 2000 were 1,407.5 mgd, a slight decrease from the 1999 figure of 1,507.8 mgd. Public water supply accounted for about 78% of these diversions. All diversions for Illinois are outgoing interbasin diversions—water transferred from the Chicago River in the Great Lakes basin to the Illinois River in the Mississippi River basin.

Data Quality: Illinois's withdrawal data for this report were 100% measured; the level of aggregation was 100% site-specific.

JURISDICTION REPORT- Illinois

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Michigan							
	Public Supply	1095.80	0.00	0.00	1095.80	0.00	0.00
	Domestic Supply	0.00	0.00	4.38	0.00	0.00	4.38
	Irrigation	0.00	0.00	0.00	0.00	0.00	0.00
	Livestock	0.00	0.00	0.00	0.00	0.00	0.00
	Industrial	19.67	0.00	0.00	19.67	0.00	0.00
	Fossil Fuel Power	709.69	0.00	0.00	709.69	0.00	0.00
	Nuclear Power	21.60	0.00	0.00	21.60	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other	308.78	0.00	0.00	308.78	0.00	0.00
	Total:	**2155.55**	**0.00**	**4.38**	**2155.55**	**0.00**	**4.38**
Grand Total:		**2155.55**	**0.00**	**4.38**	**2155.55**	**0.00**	**4.38**

JURISDICTION REPORT- Illinois

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Michigan							
	Public Supply	1095.80	0.00	0.00	1095.80	0.00	0.00
	Domestic Supply	0.00	0.00	4.38	0.00	0.00	4.38
	Irrigation	0.00	0.00	0.00	0.00	0.00	0.00
	Livestock	0.00	0.00	0.00	0.00	0.00	0.00
	Industrial	19.67	0.00	0.00	19.67	0.00	0.00
	Fossil Fuel Power	709.69	0.00	0.00	709.69	0.00	0.00
	Nuclear Power	21.60	0.00	0.00	21.60	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other	308.78	0.00	0.00	308.78	0.00	0.00
	Total:	**2155.55**	**0.00**	**4.38**	**2155.55**	**0.00**	**4.38**
Grand Total:		**2155.55**	**0.00**	**4.38**	**2155.55**	**0.00**	**4.38**

JURISDICTION REPORT- Illinois

Jurisdiction Totals | **Units: Mgal(US)/d** | **Year Of Data: 2000**

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	1095.80	0.00	0.00	1095.80	0.00	1095.80	0.00
Domestic Supply	0.00	0.00	4.38	4.38	0.00	0.00	0.44
Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Livestock	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	19.67	0.00	0.00	19.67	0.00	2.94	1.96
Fossil Fuel Power	709.69	0.00	0.00	709.69	0.00	0.00	14.19
Nuclear Power	21.60	0.00	0.00	21.60	0.00	0.00	0.43
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	308.78	0.00	0.00	308.78	0.00	308.78	0.00

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	1095.80	0.00	0.00	1095.80	0.00	1095.80	0.00
Domestic Supply	0.00	0.00	4.38	4.38	0.00	0.00	0.44
Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Livestock	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	19.67	0.00	0.00	19.67	0.00	2.94	1.96
Fossil Fuel Power	709.69	0.00	0.00	709.69	0.00	0.00	14.19
Nuclear Power	21.60	0.00	0.00	21.60	0.00	0.00	0.43
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	308.78	0.00	0.00	308.78	0.00	308.78	0.00

Indiana

Data Source: The Indiana Department of Natural Resources—Division of Water compiled the 2000 data for the regional water use database for the Lake Erie and Lake Michigan basins. The Indiana Business Research Center at Indiana University provides population estimates for counties used in calculating self-supply domestic withdrawals. The Indiana Agricultural Statistics service at Purdue University provides livestock estimates by county. The local office of USGS Water Resources Division provides estimates of percent of population by county on domestic wells. Hydroelectric data are from 1997.

Withdrawals: In 2000, total withdrawals were 5,175.2 mgd, up from the 1999 amount by 275 mgd. More than 98% of the water withdrawn was from Lake Michigan. Hydroelectric use was responsible for one third of Indiana's Lake Michigan withdrawals, with two plants on the St. Joseph River accounting for more than 95% of hydroelectric use. The primary purpose of Lake Erie withdrawals was public supply, which accounted for more than 70%.

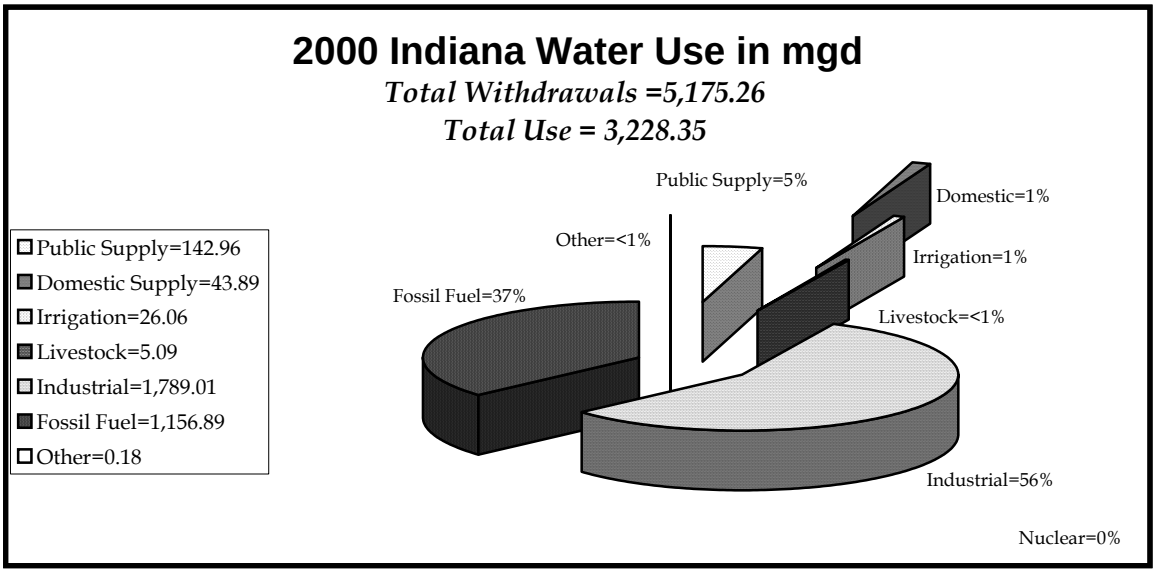

Figure 6

Consumptive Use: The total consumptive use of water in Indiana's portion of the Great Lakes basin was 196.16 mgd, compared to 188 mgd in 1999. In the Lake Michigan basin, industrial is the largest consumptive use, at 58% (107.35 mgd of a total of 186.08 mgd) and in the Lake Erie basin public supply is the largest consumptive use, at 68% (6.83 mgd of a total of 10.08 mgd).

Diversions: Diversions by public water suppliers into Lake Michigan from outside the Great Lakes basin totaled 2.24 mgd.

Data Quality: Indiana's withdrawal data for this report were 52% measured, 8% partially measured, and 40% calculated or estimated; the level of aggregation was 99% site-specific and 1% aggregated.

JURISDICTION REPORT - Indiana

Withdrawals, Diversions and Consumptive Uses **Units: Mgal(US)/d** **Year Of Data: 2000**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
Lake Michigan							
	Public Supply	142.96	-2.24	21.45	142.66	0.00	21.40
	Domestic Supply	43.89	0.00	6.58	22.12	0.00	3.32
	Irrigation	26.06	0.00	23.46	25.44	0.00	22.89
	Livestock	5.09	0.00	4.07	2.88	0.00	2.31
	Industrial	1789.01	0.00	107.35	1788.49	0.00	107.31
	Fossil Fuel Power	1156.89	0.00	23.14	1156.89	0.00	23.14
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	2011.18	0.00	0.00	2011.18	0.00	0.00
	Other	0.18	0.00	0.03	0.09	0.00	0.01
	Total:	**5175.26**	**-2.24**	**186.08**	**5149.75**	**0.00**	**180.38**
Lake Erie							
	Public Supply	45.19	0.00	6.83	45.13	0.00	6.82
	Domestic Supply	6.09	0.00	0.91	0.30	0.00	0.04
	Irrigation	1.00	0.00	0.90	0.81	0.00	0.72
	Livestock	0.98	0.00	0.79	0.00	0.00	0.00
	Industrial	10.74	0.00	0.64	10.45	0.00	0.63
	Fossil Fuel Power	0.27	0.00	0.01	0.27	0.00	0.01
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	**64.27**	**0.00**	**10.08**	**56.96**	**0.00**	**8.22**
Grand Total:		**5239.53**	**-2.24**	**196.16**	**5206.71**	**0.00**	**188.60**

JURISDICTION REPORT- Indiana

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Michigan							
	Public Supply	95.12	0.00	47.84	95.12	0.00	47.54
	Domestic Supply	0.00	16.50	27.39	0.00	16.49	5.63
	Irrigation	0.00	6.93	19.13	0.00	6.62	18.82
	Livestock	0.00	1.36	3.73	0.00	1.36	1.52
	Industrial	1397.95	376.10	14.96	1397.95	376.08	14.46
	Fossil Fuel Power	1156.89	0.00	0.00	1156.89	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	2011.18	0.00	0.00	2011.18	0.00
	Other	0.00	0.05	0.13	0.00	0.05	0.04
	Total:	**2649.96**	**2412.12**	**113.18**	**2649.96**	**2411.78**	**88.01**
Lake Erie							
	Public Supply	0.00	36.35	8.84	0.00	36.35	8.78
	Domestic Supply	0.00	0.00	6.09	0.00	0.00	0.30
	Irrigation	0.00	0.29	0.71	0.00	0.17	0.64
	Livestock	0.00	0.00	0.98	0.00	0.00	0.00
	Industrial	0.00	5.04	5.70	0.00	5.01	5.44
	Fossil Fuel Power	0.00	0.00	0.27	0.00	0.00	0.27
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	**0.00**	**41.68**	**22.59**	**0.00**	**41.53**	**15.43**
Grand Total:		**2649.96**	**2453.80**	**135.77**	**2649.96**	**2453.31**	**103.44**

JURISDICTION REPORT- Indiana

Jurisdiction Totals | **Units: Mgal(US)/d** | **Year Of Data: 2000**

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	95.12	36.35	56.68	188.15	0.00	-2.24	28.28
Domestic Supply	0.00	16.50	33.48	49.98	0.00	0.00	7.49
Irrigation	0.00	7.22	19.84	27.06	0.00	0.00	24.36
Livestock	0.00	1.36	4.71	6.07	0.00	0.00	4.86
Industrial	1397.95	381.14	20.66	1799.75	0.00	0.00	107.99
Fossil Fuel Power	1156.89	0.00	0.27	1157.16	0.00	0.00	23.15
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	0.00	2011.18	0.00	2011.18	0.00	0.00	0.00
Other	0.00	0.05	0.13	0.18	0.00	0.00	0.03

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	95.12	36.35	56.32	187.79	0.00	0.00	28.22
Domestic Supply	0.00	16.49	5.93	22.42	0.00	0.00	3.36
Irrigation	0.00	6.79	19.46	26.25	0.00	0.00	23.61
Livestock	0.00	1.36	1.52	2.88	0.00	0.00	2.31
Industrial	1397.95	381.09	19.90	1798.94	0.00	0.00	107.94
Fossil Fuel Power	1156.89	0.00	0.27	1157.16	0.00	0.00	23.15
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	0.00	2011.18	0.00	2011.18	0.00	0.00	0.00
Other	0.00	0.05	0.04	0.09	0.00	0.00	0.01

Michigan

Data Source: 2000 water use data for Michigan were submitted by the Michigan Department of Environmental Quality (DEQ). All data are reported to the Michigan DEQ by the facilities within each category except irrigation, which is divided into agricultural and nonagricultural (golf course, park, etc.) irrigation. Agricultural irrigation is estimated using federal Agricultural Census data and a water use estimation model developed for Michigan. Nonagricultural irrigation facilities report directly to the DEQ.

Due to system limitations, the large number of facilities and lack of staff resources, water use data for principal facilities in 2000 has not been reported. Most of the data are available at the state database at www.michigan.gov/deq. Click on **Water Use, Levels & Diversion** and go to the **Michigan Water Use Reporting Program.**

Withdrawals: Water withdrawals for the Lake Superior, Lake Michigan, Lake Huron, and Lake Erie basins of Michigan were approximately 9,751.07 mgd, an increase of 6% from 1999. Of the four basins, Michigan withdraws the most from Lake Erie (5094.37 mgd) and the least from Lake Superior (308.48 mgd), with withdrawals from Lake Erie accounting for about 52% of the total. Thermoelectric power- fossil fuel, at 65%, was Michigan's largest withdrawal category.

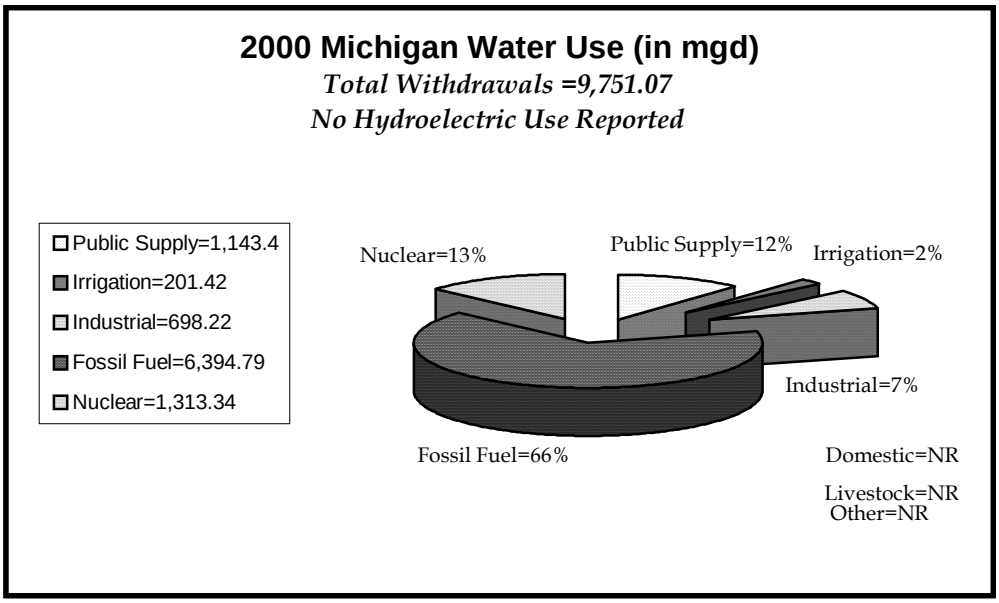

Figure 7

Consumptive Use: Consumptive uses in the Michigan Great Lakes basin were calculated to be approximately 495.73 mgd; irrigation was the largest single consumptive use (because the coefficient for irrigation is 90%) at 181.29 mgd, more than 36% of the total.

Diversions: Not able to report.

Data Quality: Michigan's withdrawal data for this report were 91% measured, 7% partially measured, and 2% calculated or estimated; the level of aggregation was 100% site-specific.

JURISDICTION REPORT - Michigan

Withdrawals, Diversions and Consumptive Uses **Units: Mgal(US)/d** **Year Of Data: 2000**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
Lake Superior							
	Public Supply	13.75	0.00	1.72		0.00	
	Domestic Supply		0.00			0.00	
	Irrigation	0.26	0.00	0.24		0.00	
	Livestock		0.00			0.00	
	Industrial	25.23	0.00	2.53		0.00	
	Fossil Fuel Power	269.24	0.00	3.23		0.00	
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other		0.00			0.00	
	Total:	**308.48**	**0.00**	**7.72**	**0.00**	**0.00**	**0.00**
Lake Michigan							
	Public Supply	293.42	0.00	36.68		0.00	
	Domestic Supply		0.00			0.00	
	Irrigation	161.54	0.00	145.39		0.00	
	Livestock		0.00			0.00	
	Industrial	292.74	0.00	29.28		0.00	
	Fossil Fuel Power	1169.01	0.00	14.02		0.00	
	Nuclear Power	1266.00	0.00	24.05	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other		0.00			0.00	
	Total:	**3182.71**	**0.00**	**249.42**	**0.00**	**0.00**	**0.00**
Lake Huron							
	Public Supply	255.46	0.00	31.93		0.00	
	Domestic Supply		0.00			0.00	
	Irrigation	22.03	0.00	19.83		0.00	
	Livestock		0.00			0.00	
	Industrial	37.96	0.00	3.80		0.00	
	Fossil Fuel Power	850.06	0.00	10.20		0.00	
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other		0.00			0.00	
	Total:	**1165.51**	**0.00**	**65.76**	**0.00**	**0.00**	**0.00**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
Lake Erie							
	Public Supply	580.67	0.00	72.59		0.00	
	Domestic Supply		0.00			0.00	
	Irrigation	17.59	0.00	15.83		0.00	
	Livestock		0.00			0.00	
	Industrial	342.29	0.00	34.23		0.00	
	Fossil Fuel Power	4106.48	0.00	49.28		0.00	
	Nuclear Power	47.34	0.00	0.90	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other		0.00			0.00	
	Total:	**5094.37**	**0.00**	**172.83**	**0.00**	**0.00**	**0.00**
Grand Total:		**9751.07**	**0.00**	**495.73**	**0.00**	**0.00**	**0.00**

JURISDICTION REPORT - Michigan

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Superior							
	Public Supply	3.95	0.00	9.80			
	Domestic Supply						
	Irrigation	0.01	0.10	0.15			
	Livestock						
	Industrial	24.88	0.00	0.35			
	Fossil Fuel Power	269.24	0.00	0.00			
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other						
	Total:	**298.08**	**0.10**	**10.30**	**0.00**	**0.00**	**0.00**
Lake Michigan							
	Public Supply	124.81	2.93	165.68			
	Domestic Supply						
	Irrigation	1.44	50.89	109.21			
	Livestock						
	Industrial	113.27	93.40	86.07			
	Fossil Fuel Power	916.65	250.41	1.95			
	Nuclear Power	1266.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other						
	Total:	**2422.17**	**397.63**	**362.91**	**0.00**	**0.00**	**0.00**
Lake Huron							
	Public Supply	223.01	0.75	31.70			
	Domestic Supply						
	Irrigation	2.33	8.38	11.32			
	Livestock						
	Industrial	20.95	15.19	1.82			
	Fossil Fuel Power	849.21	0.00	0.85			
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other						
	Total:	**1095.50**	**24.32**	**45.69**	**0.00**	**0.00**	**0.00**

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Erie							
	Public Supply	523.96	16.86	39.85			
	Domestic Supply						
	Irrigation	0.32	9.68	7.59			
	Livestock						
	Industrial	314.48	6.77	21.04			
	Fossil Fuel Power	4106.41	0.00	0.07			
	Nuclear Power	47.34	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other						
	Total:	**4992.51**	**33.31**	**68.55**	**0.00**	**0.00**	**0.00**
Grand Total:		**8808.26**	**455.36**	**487.45**	**0.00**	**0.00**	**0.00**

JURISDICTION REPORT- Michigan

Jurisdiction Totals | **Units: Mgal(US)/d** | **Year Of Data: 2000**

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	875.73	20.54	247.03	1143.30	0.00	0.00	142.92
Domestic Supply					0.00	0.00	
Irrigation	4.10	69.05	128.27	201.42	0.00	0.00	181.29
Livestock					0.00	0.00	
Industrial	473.58	115.36	109.28	698.22	0.00	0.00	69.84
Fossil Fuel Power	6141.51	250.41	2.87	6394.79	0.00	0.00	76.73
Nuclear Power	1313.34	0.00	0.00	1313.34	0.00	0.00	24.95
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other					0.00	0.00	

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply					0.00	0.00	
Domestic Supply					0.00	0.00	
Irrigation					0.00	0.00	
Livestock					0.00	0.00	
Industrial					0.00	0.00	
Fossil Fuel Power					0.00	0.00	
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other					0.00	0.00	

Minnesota

Data Source: The Minnesota Department of Natural Resources, Division of Waters provides the data on the Lake Superior basin to the regional water use database.

Withdrawals: Withdrawals from the Minnesota portion of the Lake Superior basin were 4,676.39 mgd, showing a 1,000 mgd decrease from 1999. Hydroelectric use, which accounts for over 90% of Minnesota's total water withdrawals, was also lower than in 1999—4,094.12 mgd compared to 5,110.67 mgd in 1999. Of the remainder, industrial use accounts for more than half.

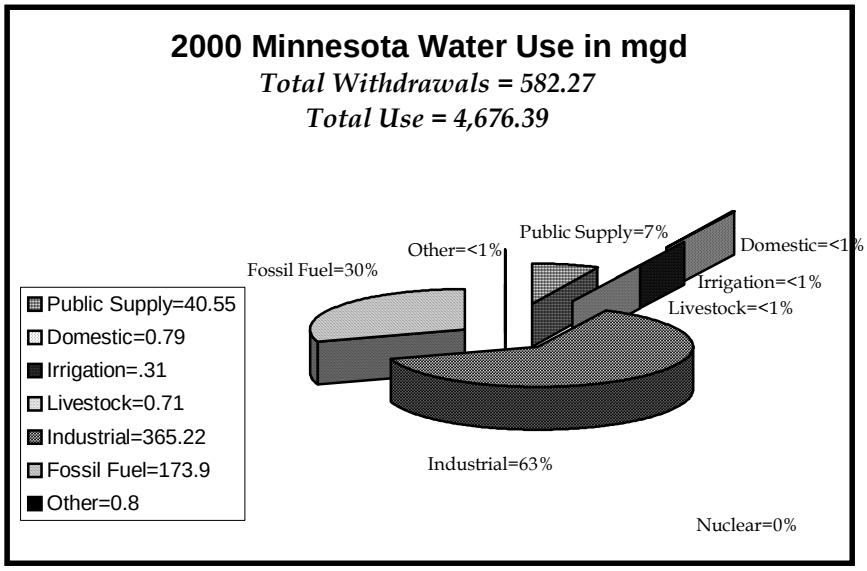

Figure 8

Consumptive Use: The largest consumptive use was industrial, at 36.52 mgd, or 81% of total consumption. Public supply, the second largest consumptive use, was calculated to be 9% of public supply withdrawals at 4.06 mgd.

Diversions: None reported.

Data Quality: Minnesota's withdrawal data for this report were 100% measured; the level of aggregation was 100% site-specific.

JURISDICTION REPORT - Minnesota

Withdrawals, Diversions and Consumptive Uses **Units: Mgal(US)/d** **Year Of Data: 2000**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
Lake Superior							
	Public Supply	40.55	0.00	4.06	39.76	0.00	3.98
	Domestic Supply	0.79	0.00	0.08	0.73	0.00	0.07
	Irrigation	0.31	0.00	0.28	0.14	0.00	0.13
	Livestock	0.71	0.00	0.64	0.71	0.00	0.64
	Industrial	365.22	0.00	36.52	364.82	0.00	36.48
	Fossil Fuel Power	173.90	0.00	3.47	173.81	0.00	3.47
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	4094.12	0.00	0.00	4094.12	0.00	0.00
	Other	0.80	0.00	0.00	0.18	0.00	0.00
	Total:	**4676.39**	**0.00**	**45.06**	**4674.27**	**0.00**	**44.77**
Grand Total:		**4676.39**	**0.00**	**45.06**	**4674.27**	**0.00**	**44.77**

JURISDICTION REPORT- Minnesota

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Superior							
	Public Supply	32.79	3.00	4.76	32.74	2.99	4.02
	Domestic Supply	0.56	0.22	0.01	0.54	0.19	0.00
	Irrigation	0.03	0.28	0.01	0.00	0.14	0.00
	Livestock	0.71	0.00	0.00	0.71	0.00	0.00
	Industrial	278.27	86.92	0.03	278.24	86.58	0.00
	Fossil Fuel Power	0.60	173.16	0.14	0.60	173.09	0.12
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	4094.12	0.00	0.00	4094.12	0.00
	Other	0.60	0.18	0.02	0.00	0.18	0.00
	Total:	**313.56**	**4357.88**	**4.96**	**312.83**	**4357.30**	**4.15**
Grand Total:		**313.56**	**4357.88**	**4.96**	**312.83**	**4357.30**	**4.15**

JURISDICTION REPORT- Minnesota

Jurisdiction Totals | **Units: Mgal(US)/d** | **Year Of Data: 2000**

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	32.79	3.00	4.76	40.55	0.00	0.00	4.06
Domestic Supply	0.56	0.22	0.01	0.79	0.00	0.00	0.08
Irrigation	0.03	0.28	0.01	0.31	0.00	0.00	0.28
Livestock	0.71	0.00	0.00	0.71	0.00	0.00	0.64
Industrial	278.27	86.92	0.03	365.22	0.00	0.00	36.52
Fossil Fuel Power	0.60	173.16	0.14	173.90	0.00	0.00	3.47
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	0.00	4094.12	0.00	4094.12	0.00	0.00	0.00
Other	0.60	0.18	0.02	0.80	0.00	0.00	0.00

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	32.74	2.99	4.02	39.76	0.00	0.00	3.98
Domestic Supply	0.54	0.19	0.00	0.73	0.00	0.00	0.07
Irrigation	0.00	0.14	0.00	0.14	0.00	0.00	0.13
Livestock	0.71	0.00	0.00	0.71	0.00	0.00	0.64
Industrial	278.24	86.58	0.00	364.82	0.00	0.00	36.48
Fossil Fuel Power	0.60	173.09	0.12	173.81	0.00	0.00	3.47
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	0.00	4094.12	0.00	4094.12	0.00	0.00	0.00
Other	0.00	0.18	0.00	0.18	0.00	0.00	0.00

New York

Data Source: Water use data collection in New York is performed by the Department of Environmental Conservation (DEC), the Department of Health, and the U.S. Geological Survey.

Withdrawals: In 2000, New York withdrawals totaled 302,153.31 mgd, showing a continuing decrease from 305,000 mgd in 1999 and 333,000 mgd in 1998. Excluding hydroelectric uses however, the total use shows fluctuation with 5340 mgd in 2000 compared to 5,400 mgd in 1999 and 4,700 in 1998. Hydroelectric withdrawals on the St. Lawrence River accounted for 58% of all New York water withdrawals (175,519 mgd of 302,153 mgd); Lakes Ontario and Erie uses were 84,478 mgd and 42,073 mgd respectively. Hydroelectric power is by far the largest utilization of water in New York State at 296,813 mgd, down from 299,800 mgd in 1999.

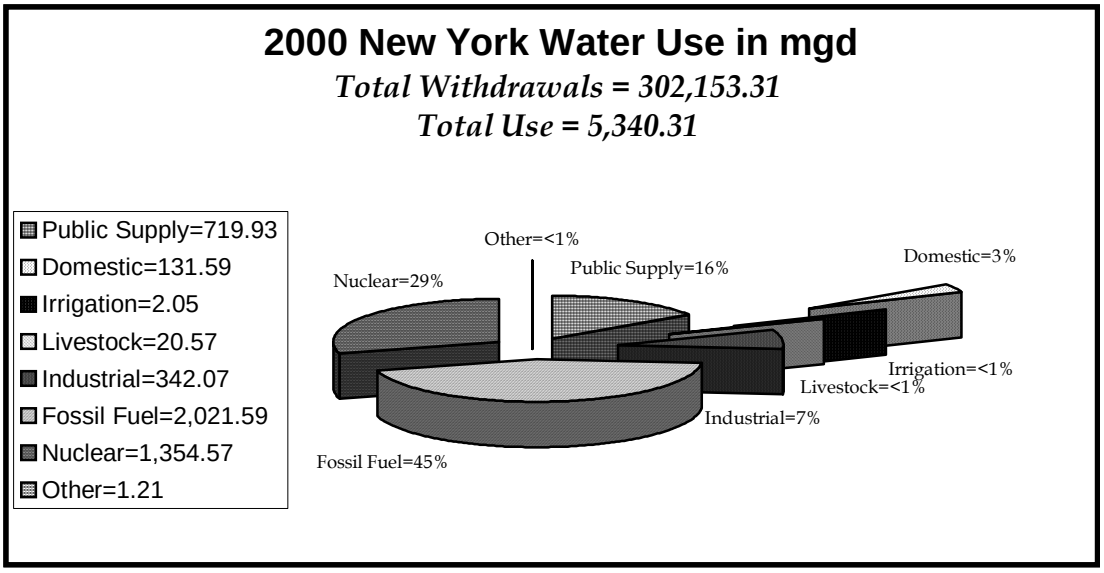

Figure 9

Consumptive Use: New York reported total consumptive uses of 340.56 mgd. Consumptive uses were calculated to be 114.68 mgd from Lake Erie, 210.36 mgd from Lake Ontario, and 15.52 mgd from the St. Lawrence River. The largest categories of consumptive use were industrial (85.25 mgd) and public water supply (80.64 mgd).

Diversions: The Forestport/Black River Canal interbasin diversion accounts for 9.62 mgd for public supply and the New York State Barge Canal intrabasin diversion accounts for 711 for "other."

Data Quality: New York's withdrawal data for this report were 39% measured and 61% calculated or estimated; the level of aggregation was 39% site-specific and 61% aggregated.

JURISDICTION REPORT- New York

Withdrawals, Diversions and Consumptive Uses **Units: Mgal(US)/d** **Year Of Data: 2000**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
Lake Erie							
	Public Supply	264.15	0.00	26.42		0.00	
	Domestic Supply	22.94	0.00	2.29	0.00	0.00	0.00
	Irrigation	0.08	0.00	0.07	0.08	0.00	0.07
	Livestock	4.30	0.00	3.87		0.00	
	Industrial	235.28	0.00	58.82	235.28	0.00	58.82
	Fossil Fuel Power	1160.30	0.00	23.21	1160.30	0.00	23.21
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	40386.00	0.00	0.00	40386.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	**42073.05**	**0.00**	**114.68**	**41781.66**	**0.00**	**82.10**
Lake Ontario							
	Public Supply	412.91	9.62	49.94		9.62	
	Domestic Supply	93.41	0.00	9.34	31.52	0.00	3.15
	Irrigation	1.54	0.00	1.38	1.54	0.00	1.38
	Livestock	11.19	0.00	10.07		0.00	
	Industrial	87.79	0.00	21.95	87.79	0.00	21.95
	Fossil Fuel Power	861.19	0.00	17.23	861.19	0.00	17.23
	Nuclear Power	1350.21	0.00	67.51	1350.21	0.00	67.51
	Hydroelectric Power	80908.00	0.00	0.00	0.00	0.00	0.00
	Other	752.30	32.00	32.94	752.30	32.00	32.01
	Total:	**84478.54**	**41.62**	**210.36**	**3084.55**	**41.62**	**143.23**
St. Lawrence River							
	Public Supply	42.87	0.00	4.28		0.00	
	Domestic Supply	15.24	0.00	1.53	0.57	0.00	0.06
	Irrigation	0.43	0.00	0.39	0.43	0.00	0.39
	Livestock	5.08	0.00	4.57		0.00	
	Industrial	19.00	0.00	4.75	19.00	0.00	4.75
	Fossil Fuel Power	0.10	0.00	0.00	0.10	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	175519.00	0.00	0.00	76827.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	**175601.72**	**0.00**	**15.52**	**76847.10**	**0.00**	**5.20**
Grand Total:		**302153.31**	**41.62**	**340.56**	**121713.31**	**41.62**	**230.53**

JURISDICTION REPORT - New York

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Erie							
	Public Supply	184.58	72.12	7.45			
	Domestic Supply	12.33	0.00	10.61	0.00	0.00	0.00
	Irrigation	0.00	0.08	0.00	0.00	0.08	0.00
	Livestock	1.54	0.00	2.76			
	Industrial	233.95	0.96	0.37	233.95	0.96	0.37
	Fossil Fuel Power	1160.30	0.00	0.00	1160.30	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	40386.00	0.00	0.00	40386.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	**41978.70**	**73.16**	**21.19**	**41780.25**	**1.04**	**0.37**
Lake Ontario							
	Public Supply	196.24	178.40	38.27			
	Domestic Supply	21.10	31.52	40.79	0.00	31.52	0.00
	Irrigation	0.00	1.49	0.05	0.00	1.49	0.05
	Livestock	3.93	0.00	7.26			
	Industrial	40.32	38.36	9.11	40.32	38.36	9.11
	Fossil Fuel Power	452.29	408.90	0.00	452.29	408.90	0.00
	Nuclear Power	1350.21	0.00	0.00	1350.21	0.00	0.00
	Hydroelectric Power	0.00	80908.00	0.00	0.00	0.00	0.00
	Other	711.00	41.19	0.11	711.00	41.19	0.11
	Total:	**2775.09**	**81607.86**	**95.59**	**2553.82**	**521.46**	**9.27**
St. Lawrence River							
	Public Supply	2.83	35.32	4.72			
	Domestic Supply	2.55	0.57	12.12	0.00	0.57	0.00
	Irrigation	0.00	0.43	0.00	0.00	0.43	0.00
	Livestock	1.77	0.00	3.31			
	Industrial	7.22	9.77	2.01	7.22	9.77	2.01
	Fossil Fuel Power	0.10	0.00	0.00	0.10	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	76827.00	98692.00	0.00	76827.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	**76841.47**	**98738.09**	**22.16**	**76834.32**	**10.77**	**2.01**
Grand Total:		**121595.26**	**180419.11**	**138.94**	**121168.39**	**533.27**	**11.65**

JURISDICTION REPORT- New York

Jurisdiction Totals | **Units: Mgal(US)/d** | **Year Of Data: 2000**

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	383.65	285.84	50.44	719.93	0.00	9.62	80.64
Domestic Supply	35.98	32.09	63.52	131.59	0.00	0.00	13.16
Irrigation	0.00	2.00	0.05	2.05	0.00	0.00	1.84
Livestock	7.24	0.00	13.33	20.57	0.00	0.00	18.51
Industrial	281.49	49.09	11.49	342.07	0.00	0.00	85.52
Fossil Fuel Power	1612.69	408.90	0.00	2021.59	0.00	0.00	40.44
Nuclear Power	1350.21	0.00	0.00	1350.21	0.00	0.00	67.51
Hydroelectric Power	117213.00	179600.00	0.00	296813.00	0.00	0.00	0.00
Other	711.00	41.19	0.11	752.30	711.00	32.00	32.94

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply					0.00	9.62	
Domestic Supply	0.00	32.09	0.00	32.09	0.00	0.00	3.21
Irrigation	0.00	2.00	0.05	2.05	0.00	0.00	1.84
Livestock					0.00	0.00	
Industrial	281.49	49.09	11.49	342.07	0.00	0.00	85.52
Fossil Fuel Power	1612.69	408.90	0.00	2021.59	0.00	0.00	40.44
Nuclear Power	1350.21	0.00	0.00	1350.21	0.00	0.00	67.51
Hydroelectric Power	117213.00	0.00	0.00	117213.00	0.00	0.00	0.00
Other	711.00	41.19	0.11	752.30	711.00	32.00	32.01

Ohio

Data Source: Water use data for Ohio is collected by the Ohio Department of Natural Resources-Division of Water, the Ohio Environmental Protection Agency, and the U.S. Geological Survey.

Withdrawals: Total withdrawals from the Ohio Lake Erie basin for 2000 were 3,192.35 mgd—up slightly from the 1999 figure of 3.080.60 mgd. As in 1999, thermoelectric-fossil fuel was by far the largest use of water at 2,160.05 mgd (68%); public supply was the second largest at 596.62 mgd (19%).

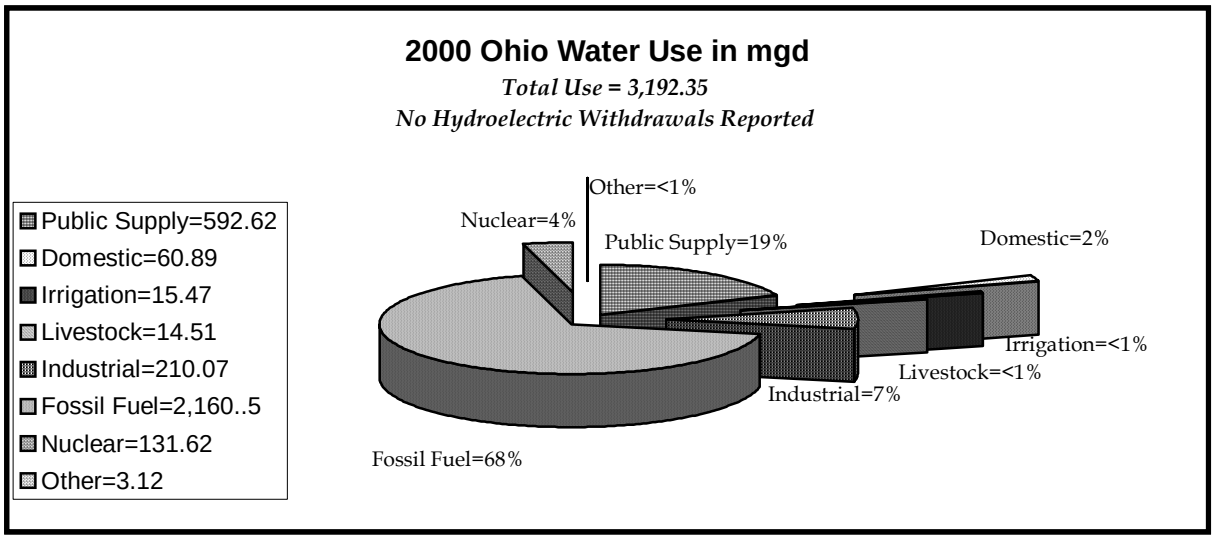

Figure 10

Consumptive Use: Total consumptive uses were calculated to be 186.48 mgd. Public supply represents the largest consumptive use sector at 89.49 mgd and accounts for over 48% of the total. The next three largest consumptive uses were thermoelectric-fossil fuel at 21.60 mgd, industrial facilities at 21.0 mgd and nuclear power at 19.74 mgd.

Diversions: Diversions by public water suppliers out of the Lake Erie basin totaled 0.29 mgd; diversions into the Lake Erie basin totaled 9.88 mgd.

Data Quality: Ohio's withdrawal data for this report were 100% measured; the level of aggregation was 100% site-specific.

JURISDICTION REPORT - Ohio

Withdrawals, Diversions and Consumptive Uses **Units: Mgal(US)/d** **Year Of Data: 2000**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
Lake Erie							
	Public Supply	596.62	0.29	89.49	592.80	0.29	88.92
	Domestic Supply	60.89	0.00	9.12	2.76	0.00	0.41
	Irrigation	15.47	0.00	13.92	11.36	0.00	10.22
	Livestock	14.51	0.00	11.61	1.21	0.00	0.97
	Industrial	210.07	0.00	21.00	208.80	0.00	20.87
	Fossil Fuel Power	2160.05	0.00	21.60	2160.05	0.00	21.60
	Nuclear Power	131.62	0.00	19.74	131.62	0.00	19.74
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other	3.12	-9.88	0.00	2.90	0.00	0.00
	Total:	**3192.35**	**-9.59**	**186.48**	**3111.50**	**0.29**	**162.73**
Grand Total:		**3192.35**	**-9.59**	**186.48**	**3111.50**	**0.29**	**162.73**

JURISDICTION REPORT- Ohio

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Erie							
	Public Supply	430.54	129.81	36.27	430.32	129.69	32.79
	Domestic Supply	0.37	2.39	58.13	0.37	2.39	0.00
	Irrigation	0.18	10.28	5.01	0.00	8.27	3.09
	Livestock	0.00	2.94	11.57	0.00	0.79	0.42
	Industrial	39.52	126.04	44.51	39.52	125.65	43.63
	Fossil Fuel Power	2153.68	6.37	0.00	2153.68	6.37	0.00
	Nuclear Power	131.62	0.00	0.00	131.62	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other	0.04	2.98	0.10	0.00	2.90	0.00
	Total:	**2755.95**	**280.81**	**155.59**	**2755.51**	**276.06**	**79.93**
Grand Total:		**2755.95**	**280.81**	**155.59**	**2755.51**	**276.06**	**79.93**

JURISDICTION REPORT- Ohio

Jurisdiction Totals | **Units: Mgal(US)/d** | **Year Of Data: 2000**

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	430.54	129.81	36.27	596.62	0.00	0.29	89.49
Domestic Supply	0.37	2.39	58.13	60.89	0.00	0.00	9.12
Irrigation	0.18	10.28	5.01	15.47	0.00	0.00	13.92
Livestock	0.00	2.94	11.57	14.51	0.00	0.00	11.61
Industrial	39.52	126.04	44.51	210.07	0.00	0.00	21.00
Fossil Fuel Power	2153.68	6.37	0.00	2160.05	0.00	0.00	21.60
Nuclear Power	131.62	0.00	0.00	131.62	0.00	0.00	19.74
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.04	2.98	0.10	3.12	0.00	-9.88	0.00

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	430.32	129.69	32.79	592.80	0.00	0.29	88.92
Domestic Supply	0.37	2.39	0.00	2.76	0.00	0.00	0.41
Irrigation	0.00	8.27	3.09	11.36	0.00	0.00	10.22
Livestock	0.00	0.79	0.42	1.21	0.00	0.00	0.97
Industrial	39.52	125.65	43.63	208.80	0.00	0.00	20.87
Fossil Fuel Power	2153.68	6.37	0.00	2160.05	0.00	0.00	21.60
Nuclear Power	131.62	0.00	0.00	131.62	0.00	0.00	19.74
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	2.90	0.00	2.90	0.00	0.00	0.00

Ontario

Data Source: Water use data for Ontario was prepared by the Ontario Ministry of Natural Resources, Science and Information Branch. Data for the public supply sector were obtained from the Ministry of the Environment Interim Inspection System Reports. In past years, Environment Canada's Municipal Water Use Database was used, but it is only available every two to three years. Between years estimations must be made, so this source was sought as an alternative. Domestic use figures were estimated with the use of Environment Canada's municipal water use database and Statistics Canada Population Census data. *Agricultural Water Use 1996* and *Agricultural Water Use 2001* were the sources for irrigation and livestock data, while data for the "Other" category were taken from the National Canal Survey. Data for the power sector categories were obtained through contact with individual operators and generation companies. As no viable source of current data is available for industrial water use, the reported industrial data are from 1996. Environment Canada's Industrial Water Use Survey has been discontinued. This water withdrawal report accounts for the majority of water use within Ontario, although data for a limited number of water users is not available and therefore this database does not represent all water use in the province.

Withdrawals: Total 2000 Great Lakes water uses for Ontario were approximately 766,329 mld, or 202,442 mgd. Of this, hydroelectric uses represented more than 94% of the total (717,493 mld, or 189,541 mgd). Of the remainder, thermoelectric—nuclear plant withdrawals were the second largest at 5% (35,3105 mld, or 9,329 mgd).

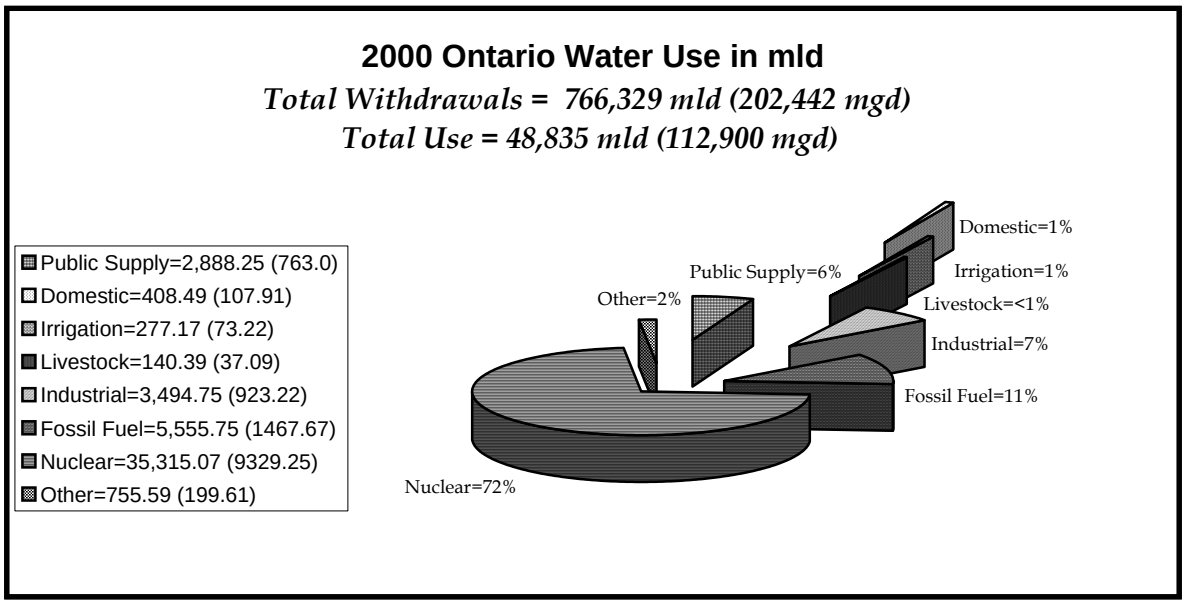

Figure 11

Consumptive Use: Total consumptive uses were calculated to be 714.66 mld (188.79 mgd). Public supply represents the largest consumptive use sector at 433.24 mld (114.45 mgd) and accounts for over 60% of the total. The next two largest consumptive uses were from nuclear facilities and the industrial use category, at 344.96 mld (91.13 mgd) and 220.15 mld (58.16 mgd) respectively.

Diversions: Ontario reported incoming interbasin diversions for Lake Superior and intrabasin diversions (incoming and outgoing) for Lakes Huron, Erie, and Ontario.

Data Quality: Ontario's withdrawal data for this report were 21% measured, 79% partially measured, and <1% calculated or estimated; the level of aggregation was 99% site-specific and <1% aggregated.

JURISDICTION REPORT- Ontario

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Diver.	Consum.	Withdr.	Diver.	Consum.
Lake Superior							
	Public Supply	30.10	13.03	2.65	30.07	12.96	2.55
	Domestic Supply	0.00	0.00	1.75	0.00	0.00	0.00
	Irrigation	0.02	0.31	0.05			
	Livestock	0.00	0.14	0.00			
	Industrial	162.12	0.00	0.00	0.00	0.00	0.00
	Fossil Fuel Power	295.52	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	38156.31	0.00	0.00	0.00	0.00
	Other						
	Total:	**487.76**	**38169.79**	**4.44**	**30.07**	**12.96**	**2.55**
Lake Huron							
	Public Supply	42.66	23.57	18.14	42.02	23.23	16.40
	Domestic Supply	0.00	0.00	10.61	0.00	0.00	0.00
	Irrigation	0.15	15.41	5.35			
	Livestock	2.93	3.07	6.41			
	Industrial	187.41	0.00	2.78	0.00	0.00	0.00
	Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	4697.20	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	20000.41	13607.66	0.00	0.00	0.00	0.00
	Other	0.00	47.97	0.00	0.00	47.97	0.00
	Total:	**24930.76**	**13697.68**	**43.29**	**42.02**	**71.20**	**16.40**
Lake Erie							
	Public Supply	8.97	29.26	55.66	8.97	29.23	54.64
	Domestic Supply	0.00	0.00	19.94	0.00	0.00	0.00
	Irrigation	0.59	12.11	19.15			
	Livestock	0.02	0.89	12.31			
	Industrial	173.24	0.00	7.21	0.00	0.00	0.00
	Fossil Fuel Power	463.20	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other						
	Total:	**646.02**	**42.26**	**114.27**	**8.97**	**29.23**	**54.64**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Diver.	Consum.	Withdr.	Diver.	Consum.
Lake Ontario							
	Public Supply	401.52	52.86	11.56	401.47	52.68	10.47
	Domestic Supply	0.00	0.00	64.17	0.00	0.00	0.00
	Irrigation	1.08	9.53	7.12			
	Livestock	0.00	0.94	4.46			
	Industrial	218.17	0.00	11.46	0.00	0.00	0.00
	Fossil Fuel Power	708.95	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	5428.19	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	33861.04	7681.26	0.00	0.00	0.00	0.00
	Other	0.00	132.35	0.00	0.00	132.35	0.00
	Total:	**40618.96**	**7876.94**	**98.77**	**401.47**	**185.03**	**10.47**
St. Lawrence River							
	Public Supply	10.64	58.84	3.56	10.64	58.52	2.93
	Domestic Supply	0.00	0.00	11.45	0.00	0.00	0.00
	Irrigation	0.01	2.04	0.30			
	Livestock	0.00	3.63	2.28			
	Industrial	159.76	0.00	1.05	0.00	0.00	0.00
	Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	76149.02	86.13	0.00	0.00	0.00	0.00
	Other	0.00	19.28	0.00	0.00	19.28	0.00
	Total:	**76319.43**	**169.91**	**18.65**	**10.64**	**77.80**	**2.93**
Grand Total:		**143002.93**	**59956.58**	**279.43**	**493.17**	**376.22**	**87.00**

JURISDICTION REPORT - Ontario

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Superior							
	Public Supply	30.10	13.03	2.65	30.07	12.96	2.55
	Domestic Supply	0.00	0.00	1.75	0.00	0.00	0.00
	Irrigation	0.02	0.31	0.05			
	Livestock	0.00	0.14	0.00			
	Industrial	162.12	0.00	0.00	0.00	0.00	0.00
	Fossil Fuel Power	295.52	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	38156.31	0.00	0.00	0.00	0.00
	Other						
	Total:	**487.76**	**38169.79**	**4.44**	**30.07**	**12.96**	**2.55**
Lake Huron							
	Public Supply	42.66	23.57	18.14	42.02	23.23	16.40
	Domestic Supply	0.00	0.00	10.61	0.00	0.00	0.00
	Irrigation	0.15	15.41	5.35			
	Livestock	2.93	3.07	6.41			
	Industrial	187.41	0.00	2.78	0.00	0.00	0.00
	Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	4697.20	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	20000.41	13607.66	0.00	0.00	0.00	0.00
	Other	0.00	47.97	0.00	0.00	47.97	0.00
	Total:	**24930.76**	**13697.68**	**43.29**	**42.02**	**71.20**	**16.40**
Lake Erie							
	Public Supply	8.97	29.26	55.66	8.97	29.23	54.64
	Domestic Supply	0.00	0.00	19.94	0.00	0.00	0.00
	Irrigation	0.59	12.11	19.15			
	Livestock	0.02	0.89	12.31			
	Industrial	173.24	0.00	7.21	0.00	0.00	0.00
	Fossil Fuel Power	463.20	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other						
	Total:	**646.02**	**42.26**	**114.27**	**8.97**	**29.23**	**54.64**

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Ontario							
	Public Supply	401.52	52.86	11.56	401.47	52.68	10.47
	Domestic Supply	0.00	0.00	64.17	0.00	0.00	0.00
	Irrigation	1.08	9.53	7.12			
	Livestock	0.00	0.94	4.46			
	Industrial	218.17	0.00	11.46	0.00	0.00	0.00
	Fossil Fuel Power	708.95	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	5428.19	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	33861.04	7681.26	0.00	0.00	0.00	0.00
	Other	0.00	132.35	0.00	0.00	132.35	0.00
	Total:	**40618.96**	**7876.94**	**98.77**	**401.47**	**185.03**	**10.47**
St. Lawrence River							
	Public Supply	10.64	58.84	3.56	10.64	58.52	2.93
	Domestic Supply	0.00	0.00	11.45	0.00	0.00	0.00
	Irrigation	0.01	2.04	0.30			
	Livestock	0.00	3.63	2.28			
	Industrial	159.76	0.00	1.05	0.00	0.00	0.00
	Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	76149.02	86.13	0.00	0.00	0.00	0.00
	Other	0.00	19.28	0.00	0.00	19.28	0.00
	Total:	**76319.43**	**169.91**	**18.65**	**10.64**	**77.80**	**2.93**
Grand Total:		**143002.93**	**59956.58**	**279.43**	**493.17**	**376.22**	**87.00**

JURISDICTION REPORT- Ontario

Jurisdiction Totals

Units: Mgal(US)/d
Year Of Data: 2000

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	493.88	177.55	91.57	763.00	0.00	0.00	114.45
Domestic Supply	0.00	0.00	107.91	107.91	0.00	0.00	16.19
Irrigation	1.86	39.39	31.97	73.22	0.00	0.00	
Livestock	2.95	8.67	25.47	37.09	0.00	0.00	
Industrial	900.71	0.00	22.51	923.22	0.00	0.00	58.16
Fossil Fuel Power	1467.67	0.00	0.00	1467.67	0.00	0.00	0.00
Nuclear Power	10125.39	0.00	0.00	10125.39	0.00	0.00	91.13
Hydroelectric Power	130010.47	59531.37	0.00	189541.84	0.00	-4007.75	0.00
Other	0.00	199.61	0.00	199.61	61.97	0.00	0.00

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	493.17	176.61	87.00	756.78	0.00	0.00	113.52
Domestic Supply	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation					0.00	0.00	
Livestock					0.00	0.00	
Industrial	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	199.61	0.00	199.61	61.97	0.00	0.00

Pennsylvania

Data Source: Due to staffing and other programmatic constraints, this report utilizes 1994 data. The Department of Environmental Protection – Bureau of Water Supply and Community Health submitted water use data for the Lake Erie and Lake Ontario basins of Pennsylvania.

Withdrawals: Total withdrawals from the two basins were 89 mgd, up from 86.3 mgd in 1993. Industrial uses, which account for more than 47% of withdrawals, increased from 39.6 mgd in 1993, to 41.9 mgd in 1994. Nearly 100% of withdrawals were from the Lake Erie basin (88.8 mgd).

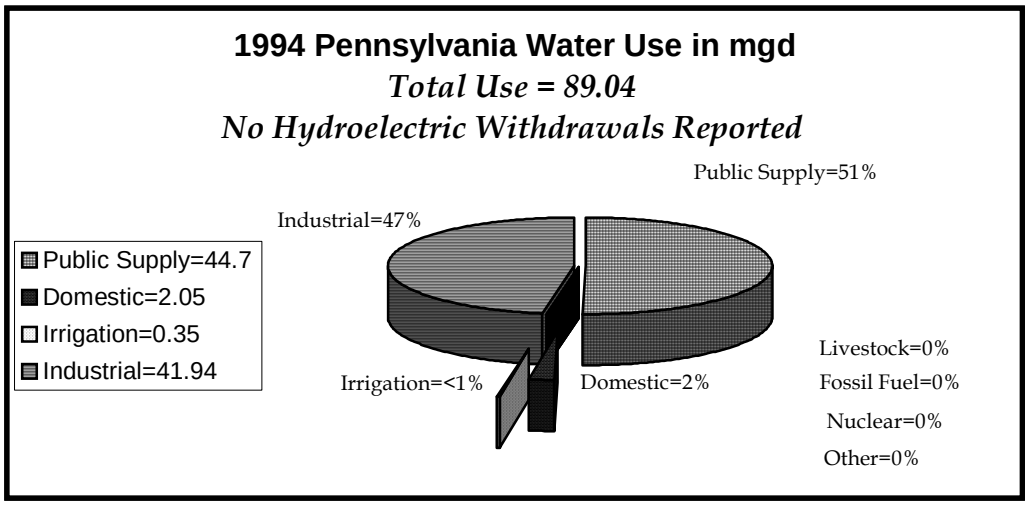

Figure 12

Consumptive Use: Consumptive use totaled 13.9 mgd, up from 13 mgd in 1993. The consumptive use from Lake Ontario was calculated to be .02 mgd, in comparison to a consumptive use of 13.9 mgd from the Lake Erie basin.

Diversions: None reported.

Data Quality: Pennsylvania's withdrawal data for this report were 50% measured and 50% calculated or estimated; the level of aggregation was 98% site-specific and 2% aggregated.

JURISDICTION REPORT - Pennsylvania

Withdrawals, Diversions and Consumptive Uses **Units: Mgal(US)/d** **Year Of Data: 2000**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
Lake Erie							
	Public Supply	44.61	-0.86	4.46	44.05	0.00	4.41
	Domestic Supply	1.97	0.00	0.20	0.00	0.00	0.00
	Irrigation	0.35	0.00	0.32	0.33	0.00	0.30
	Livestock		0.00			0.00	
	Industrial	41.94	0.00	8.95	41.69	0.00	8.89
	Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other		0.00			0.00	
	Total:	**88.87**	**-0.86**	**13.93**	**86.07**	**0.00**	**13.60**
Lake Ontario							
	Public Supply	0.09	0.00	0.01	0.00	0.00	0.00
	Domestic Supply	0.07	0.00	0.01	0.00	0.00	0.00
	Irrigation	0.00	0.00	0.00	0.00	0.00	0.00
	Livestock	0.00	0.00	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00	0.00	0.00
	Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	**0.17**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**
Grand Total:		**89.04**	**-0.86**	**13.94**	**86.07**	**0.00**	**13.60**

JURISDICTION REPORT - Pennsylvania

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Erie							
	Public Supply	40.80	1.77	2.04	40.80	1.74	1.51
	Domestic Supply	0.00	0.00	1.97	0.00	0.00	0.00
	Irrigation	0.00	0.29	0.06	0.00	0.27	0.06
	Livestock						
	Industrial	40.85	0.84	0.25	40.85	0.78	0.07
	Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other						
	Total:	**81.65**	**2.90**	**4.32**	**81.65**	**2.78**	**1.64**
Lake Ontario							
	Public Supply	0.00	0.00	0.09	0.00	0.00	0.00
	Domestic Supply	0.00	0.00	0.07	0.00	0.00	0.00
	Irrigation	0.00	0.00	0.00	0.00	0.00	0.00
	Livestock	0.00	0.00	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00	0.00	0.00
	Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	**0.00**	**0.00**	**0.17**	**0.00**	**0.00**	**0.00**
Grand Total:		**81.65**	**2.90**	**4.49**	**81.65**	**2.78**	**1.64**

JURISDICTION REPORT- Pennsylvania

Jurisdiction Totals

Units: Mgal(US)/d
Year Of Data: 2000

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	40.80	1.77	2.13	44.70	0.00	-0.86	4.47
Domestic Supply	0.00	0.00	2.05	2.05	0.00	0.00	0.20
Irrigation	0.00	0.29	0.06	0.35	0.00	0.00	0.32
Livestock	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	40.85	0.84	0.25	41.94	0.00	0.00	8.95
Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	40.80	1.74	1.51	44.05	0.00	0.00	4.41
Domestic Supply	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation	0.00	0.27	0.06	0.33	0.00	0.00	0.30
Livestock	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	40.85	0.78	0.07	41.69	0.00	0.00	8.89
Fossil Fuel Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quebec

Data Source: Due to staffing and other programmatic constraints, this report utilizes 1993 data. The Ministre de l'Environment—Centre d'expertise hydrique du Quebec provided Quebec water use data.

Withdrawals: Water uses in Quebec's St. Lawrence River basin were approximately 115.5 bld (305 bgd) in 1998. Nearly 100% of these uses were for hydroelectric power purposes. There continues to be an increase in industrial withdrawals, as reflected in the most recent available figures.

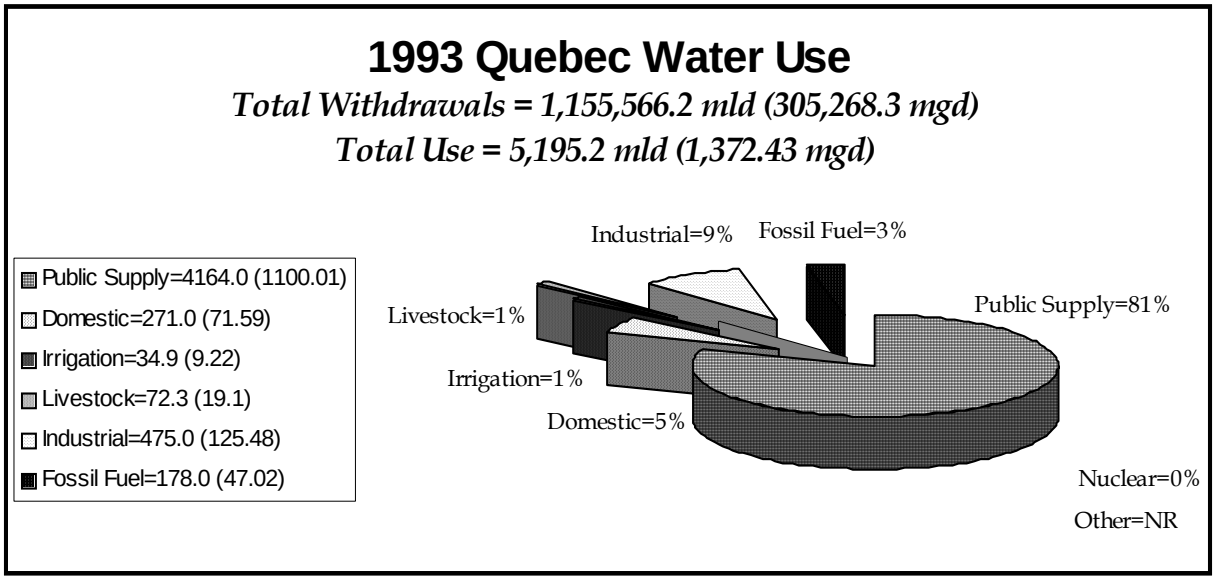

Figure 13

Consumptive Use: Total consumptive use in 1993 was 597.5 mld (157.9 mgd). Public supply accounted for 416 mld (109.9 mgd), or nearly 70% of the total consumptive use.

Diversions: None reported

Data Quality: Quebec's withdrawal data for this report were 99% measured, <1% partially measured, and <1% calculated or estimated; the level of aggregation was 100% aggregated.

In November 2002, Québec adopted a new water policy. Based on the principles of sustainable development, the policy will guide the actions of the government in the implementation of water governance in Québec.

The policy furthers the objectives of the Great Lakes Charter and the Great Lakes Charter Annex 2001 by committing to the establishment of organizations to oversee integrated water policy management for major basins and the St. Lawrence River. The policy will institute the "user-pays" principle and extend existing policies for the protection of fish and their habitats to other aquatic ecosystems.

To address withdrawals, Québec will evaluate the possibility of adopting the criteria of the common standard to water removals and watercourse diversion proposals for its entire territory upon completion of the Annex 2001 negotiations. These criteria will take into account the hydrological characteristics, location of each drainage basin, and regional disparities. These criteria will also take into account cumulative impacts, as well as the requirements of the policy on reserved flows. A water withdrawal reading will be taken in each watershed to provide input for an information system.

These criteria will allow for better management of current and future needs and more equitable resource usage; they will also be used to determine the procedures for implementing the "user-pays" principle and resolving potential conflicts over usage. Among other services, they will grant authorizations and issue a wide range of permits and certificates.

Although Québec doesn't have legislation or a permit system relating to water withdrawals, several water management tools are currently in place. Since October 1999, the Water Resources Preservation Act prohibits the transfer outside Québec of any water taken in Québec (both surface water and groundwater). Exceptions are: to produce electric power; to market water for human consumption if packaged in Québec in containers of 20 liters or less; to supply potable water to establishments or dwellings situated in a bordering zone; to supply vehicles (vessels, aircraft, etc.) with ballast or other requirements for operation of the vehicle or to be used by the persons or animals being transported in the vehicle, or for emergency or humanitarian reasons on the ground. Furthermore, the recently modified regulation on groundwater catchment has provisions to provide data for wells which pump over 75 cubic meters per day.

Lastly, the major piece of legislation concerning water use is the Environment Quality Act, which deals mainly with the quality of the environment. Although regulations under this act do not specifically address water withdrawal, some regulations provide qualitative standards for wastewater in particular sectors, like pulp and paper mills, refinery, agriculture, etc., or for waterworks and sewer services. Water quantity is taken into account in the analysis prior to the issuance of an authorization under the Environment Quality Act, particularly when a project is likely to have an impact on the environment. Authorization might require an impact assessment and eventually, if the need arises, a public consultation. However, there is no provision for follow-up on water withdrawal, thus no means to evaluate how much water is consumed on a regular basis.

In Québec, individual municipalities are responsible for providing drinking water and wastewater treatment, and fixing the appropriate rate. They are not obliged to put meters on industry, commerce, institutions or residential water pipes. Although water withdrawal data are available

for some large municipalities, many do not have any data on their withdrawal of water. Through the water policy, Québec intends to develop a water conservation strategy which will render financial support conditional to the implementation of water conservation measures, including leak detection and repair programs.

Historically, water withdrawals have not been a source of great conflict in Québec. Not until some recent isolated cases (precipitated by installation of a bottled water facility or fish hatchery, construction of a dam for hydroelectricity, or water shortages because of a severe drought in the summer months) did such problems arise.

Discussions with the Water Management Working Group are ongoing to determine what additional data and information is needed to implement the Annex. The Great Lakes Water Use Database is also in transition and further efforts will have to be made by individual jurisdictions and the Great Lakes Commission to significantly improve its reliability and respond to the Annex requirements. Such improvement could require modification to reporting programs currently in place.

The Centre d'expertise hydrique du Québec submitted figures to the water use database in the early 90’s to meet the objectives of the Great Lakes Charter. The centre is concerned with hydrologic and hydraulic studies, floodplain delineation and mapping and hydrometric network management and the data they provide are collected exclusively for this purpose.

JURISDICTION REPORT- Quebec

Withdrawals, Diversions and Consumptive Uses **Units: Mgal(US)/d** **Year Of Data: 2000**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
St. Lawrence River							
	Public Supply	1100.01	0.00	109.90	1096.05	0.00	109.63
	Domestic Supply	71.59	0.00	7.13	48.61	0.00	4.76
	Irrigation	9.22	0.00	8.30		0.00	
	Livestock	19.10	0.00	15.28		0.00	
	Industrial	125.48	0.00	12.55	124.95	0.00	12.50
	Fossil Fuel Power	47.02	0.00	4.70	47.02	0.00	4.70
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	303895.85	0.00	0.00	303895.85	0.00	0.00
	Other		0.00			0.00	
	Total:	**305268.28**	**0.00**	**157.86**	**305212.48**	**0.00**	**131.58**
Grand Total:		**305268.28**	**0.00**	**157.86**	**305212.48**	**0.00**	**131.58**

JURISDICTION REPORT - Quebec

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
St. Lawrence River							
	Public Supply	602.84	497.17	0.00	602.58	493.47	0.00
	Domestic Supply	0.00	0.00	71.59	0.00	0.00	48.61
	Irrigation	0.00	0.00	9.22			
	Livestock	0.00	0.00	19.10			
	Industrial	0.00	125.48	0.00	0.00	124.95	0.00
	Fossil Fuel Power	39.10	7.93	0.00	39.10	7.93	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	170946.25	132949.60	0.00	170946.25	132949.60	0.00
	Other						
	Total:	**171588.19**	**133580.18**	**99.91**	**171587.93**	**133575.95**	**48.61**
Grand Total:		**171588.19**	**133580.18**	**99.91**	**171587.93**	**133575.95**	**48.61**

JURISDICTION REPORT- Quebec

Jurisdiction Totals | **Units: Mgal(US)/d** | **Year Of Data: 2000**

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	602.84	497.17	0.00	1100.01	0.00	0.00	109.90
Domestic Supply	0.00	0.00	71.59	71.59	0.00	0.00	7.13
Irrigation	0.00	0.00	9.22	9.22	0.00	0.00	8.30
Livestock	0.00	0.00	19.10	19.10	0.00	0.00	15.28
Industrial	0.00	125.48	0.00	125.48	0.00	0.00	12.55
Fossil Fuel Power	39.10	7.93	0.00	47.02	0.00	0.00	4.70
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	170946.25	132949.60	0.00	303895.85	0.00	0.00	0.00
Other					0.00	0.00	

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	602.58	493.47	0.00	1096.05	0.00	0.00	109.63
Domestic Supply	0.00	0.00	48.61	48.61	0.00	0.00	4.76
Irrigation					0.00	0.00	
Livestock					0.00	0.00	
Industrial	0.00	124.95	0.00	124.95	0.00	0.00	12.50
Fossil Fuel Power	39.10	7.93	0.00	47.02	0.00	0.00	4.70
Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroelectric Power	170946.25	132949.60	0.00	303895.85	0.00	0.00	0.00
Other					0.00	0.00	

Wisconsin

Data Source: Due to budgetary and staffing restraints, Wisconsin was unable to submit water use data for 1999. 1998 water use data for the Lake Michigan and Lake Superior basins of Wisconsin were submitted by the Wisconsin Department of Natural Resources—Bureau of Water Resources Management.

Withdrawals: Withdrawals from Lake Michigan and Lake Superior basins totaled 10,264 mgd, a decrease of 1,600 mgd from 1993 figures. More than 97% of the total withdrawals were from the Lake Michigan basin; only 236.5 mgd were withdrawn from Lake Superior. Of the Lake Superior uses, 209.4 mgd or 88% were for hydroelectric purposes. Water uses in the Lake Michigan basin were primarily for fossil fuel and hydroelectric power purposes—at 39% and 34% of total use respectively.

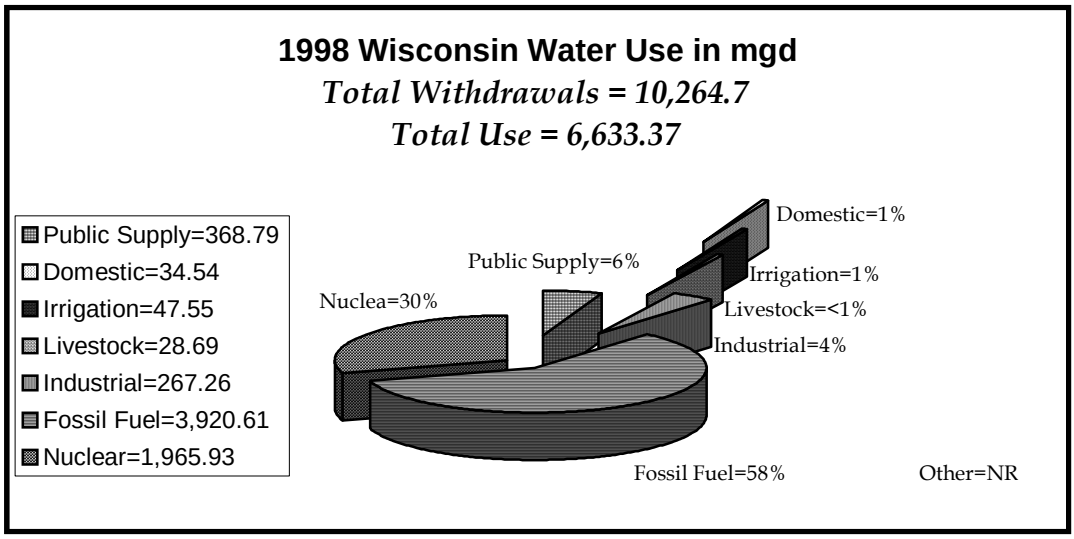

Figure 14

Consumptive Use: 98% of Wisconsin's 1998 consumptive uses were from the Lake Michigan basin (208.8 mgd). Of this amount, consumptive uses from public supply, industrial, fossil fuel, and irrigation were 55.4 mgd, 40.1 mgd, 38.9 mgd, and 33.8 mgd respectively.

Diversions: None reported.

Data Quality: Wisconsin's withdrawal data for this report were 100% calculated or estimated; the level of aggregation was 100% aggregated.

JURISDICTION REPORT - Wisconsin

Withdrawals, Diversions and Consumptive Uses **Units: Mgal(US)/d** **Year Of Data: 2000**

Basin	Category	All Facilities			Principal Facilities		
		Withdr.	Inter-Basin Diver.	Consum.	Withdr.	Inter-Basin Diver.	Consum.
Lake Superior							
	Public Supply	8.24	0.00	1.23	3.84	0.00	0.57
	Domestic Supply	2.23	0.00	0.33	0.00	0.00	0.00
	Irrigation		0.00			0.00	
	Livestock	3.65	0.00	2.94	0.00	0.00	0.00
	Industrial	0.17	0.00	0.02	0.00	0.00	0.00
	Fossil Fuel Power	12.74	0.00	0.13	12.74	0.00	0.13
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	209.44	0.00	0.00	209.44	0.00	0.00
	Other		0.00			0.00	
	Total:	**236.47**	**0.00**	**4.65**	**226.02**	**0.00**	**0.70**
Lake Michigan							
	Public Supply	360.55	0.93	55.41	360.55	0.32	54.09
	Domestic Supply	32.31	0.00	4.85	0.00	0.00	0.00
	Irrigation	47.55	0.00	33.84	8.01	0.00	1.20
	Livestock	25.04	0.00	16.04	0.00	0.00	0.00
	Industrial	267.09	0.00	40.06	263.65	0.00	39.55
	Fossil Fuel Power	3907.87	0.00	38.92	3892.30	0.00	38.92
	Nuclear Power	1965.93	0.00	19.66	1965.80	0.00	19.66
	Hydroelectric Power	3421.89	0.00	0.00	3421.89	0.00	0.00
	Other		0.00			0.00	
	Total:	**10028.23**	**0.93**	**208.78**	**9912.20**	**0.32**	**153.42**
Grand Total:		**10264.70**	**0.93**	**213.43**	**10138.22**	**0.32**	**154.12**

JURISDICTION REPORT - Wisconsin

Withdrawals by Source

Units: Mgal(US)/d

Year Of Data: 2000

Basin	Category	All Facilities			Principal Facilities		
		GLSW	OSW	GW	GLSW	OSW	GW
Lake Superior							
	Public Supply	4.55	0.00	3.69	3.84	0.00	0.00
	Domestic Supply	0.00	0.00	2.23	0.00	0.00	0.00
	Irrigation						
	Livestock	0.00	0.02	3.63	0.00	0.00	0.00
	Industrial	0.00	0.13	0.04	0.00	0.00	0.00
	Fossil Fuel Power	12.74	0.00	0.00	12.74	0.00	0.00
	Nuclear Power	0.00	0.00	0.00	0.00	0.00	0.00
	Hydroelectric Power	0.00	209.44	0.00	0.00	209.44	0.00
	Other						
	Total:	**17.29**	**209.59**	**9.59**	**16.58**	**209.44**	**0.00**
Lake Michigan							
	Public Supply	256.01	25.09	79.45	256.01	25.09	79.45
	Domestic Supply	0.00	0.00	32.31	0.00	0.00	0.00
	Irrigation	0.00	0.00	47.55	0.00	0.00	8.01
	Livestock	0.00	1.84	23.20	0.00	0.00	0.00
	Industrial	1.61	227.64	37.84	1.61	224.20	37.84
	Fossil Fuel Power	3892.30	15.56	0.01	3876.74	15.56	0.00
	Nuclear Power	1965.80	0.00	0.13	1965.80	0.00	0.00
	Hydroelectric Power	0.00	3421.89	0.00	0.00	3421.89	0.00
	Other						
	Total:	**6115.72**	**3692.02**	**220.49**	**6100.16**	**3686.74**	**125.30**
Grand Total:		**6133.01**	**3901.61**	**230.08**	**6116.74**	**3896.18**	**125.30**

JURISDICTION REPORT- Wisconsin

Jurisdiction Totals | **Units: Mgal(US)/d** | **Year Of Data: 2000**

Total Report - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	260.56	25.09	83.14	368.79	0.00	0.93	56.64
Domestic Supply	0.00	0.00	34.54	34.54	0.00	0.00	5.18
Irrigation	0.00	0.00	47.55	47.55	0.00	0.00	33.84
Livestock	0.00	1.86	26.83	28.69	0.00	0.00	18.98
Industrial	1.61	227.77	37.88	267.26	0.00	0.00	40.08
Fossil Fuel Power	3905.04	15.56	0.01	3920.61	0.00	0.00	39.05
Nuclear Power	1965.80	0.00	0.13	1965.93	0.00	0.00	19.66
Hydroelectric Power	0.00	3631.33	0.00	3631.33	0.00	0.00	0.00
Other					0.00	0.00	

Total Report - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	259.85	25.09	79.45	364.39	0.00	0.32	54.66
Domestic Supply	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation	0.00	0.00	8.01	8.01	0.00	0.00	1.20
Livestock	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	1.61	224.20	37.84	263.65	0.00	0.00	39.55
Fossil Fuel Power	3889.48	15.56	0.00	3905.04	0.00	0.00	39.05
Nuclear Power	1965.80	0.00	0.00	1965.80	0.00	0.00	19.66
Hydroelectric Power	0.00	3631.33	0.00	3631.33	0.00	0.00	0.00
Other					0.00	0.00	