



WISCONSIN LEGISLATIVE COUNCIL STAFF MEMORANDUM

Memo No. 8

TO: MEMBERS OF THE SPECIAL COMMITTEE ON GREAT LAKES WATER REOSURCES COMPACT

FROM: John Stolzenberg, Chief of Research Services

RE: Information on Major Water Withdrawals and Users in Wisconsin

DATE: November 8, 2006

Committee members have received Memo No. 7, *Options on the Registration and Reporting by Water Users and State Water Resources Inventory Required Under the Great Lakes-St. Lawrence River Basin Water Resources Compact* (November 6, 2006). This Memo provides additional background information that is intended to assist the committee in its review of the options in Memo No. 7.

The Memo provides a summary of available information on the total amount of average daily withdrawals for the specified categories of withdrawers and the number of withdrawers in each category for the following types of withdrawals:

- Withdrawals from Lake Michigan and Lake Superior.
- Withdrawals from Lake Michigan, Lake Superior, and Mississippi River Tributaries.
- Withdrawals from Groundwater via High Capacity Wells.

This summary is based on individual withdrawals of at least 100,000 gallons of water per day averaged over one or more years. It does not address the maximum amount of withdrawals that occur for shorter periods due to seasonal use or changes in seasonal demand, etc., or the potential or permitted capacity of the withdrawal equipment and systems operated by these withdrawers. It also does not include any information on the “consumptive use” of water by these withdrawers, as defined in the Great Lakes-St. Lawrence River Basin Water Resources Compact (the “compact”), as set forth in LRB-0058/P1.

The information summarized in the three tables presented below was obtained from the Department of Natural Resources (DNR) and Public Service Commission (PSC). This information was collected or estimated by the agencies for a variety of reasons and represent varying degrees of

accuracy. The average amounts of daily withdrawals in the tables are reported in millions of gallons of water per day (MGD). Data on water utilities that purchase their water from other utilities are not included in the tables.

The notes following each table provide information on the categories of withdrawers identified in the table, the period covered in determining the specified amount of average daily withdrawals and other relevant information on the category or summary data.

Due to the varying quality of the data on the amounts of the withdrawals, this summary should be interpreted as providing the relative magnitudes of the quantities of withdrawals by different categories of withdrawers from each of the sources of water addressed in a table. It also helps identify gaps in data collection that the committee may wish to consider as it develops its legislative recommendations to implement the registry and annual report reporting requirements in the compact.

Withdrawals from Lake Michigan and Lake Superior

The table in this section provides information on withdrawals directly from Lake Michigan and Lake Superior. The relatively large amount of withdrawals listed for fossil fuel and nuclear power plants can be attributed to the fact that all of them, except for the Pleasant Prairie plant, use once through cooling systems.

Withdrawals from Lake Michigan and Lake Superior

Category of Withdrawers	Withdrawals from Lake Michigan		Withdrawals from Lake Superior	
	Total Amount of Average Daily Withdrawals (MGD)	Number of Withdrawers in the Category	Total Amount of Average Daily Withdrawals (MGD)	Number of Withdrawers in the Category
Fossil Fuel Power Plants ¹	1,692	6	38	1
Nuclear Power Plants ¹	1,195	2	0	0
Water utilities regulated by the PSC ²	223	14	3	1

Notes on categories:

1. The amounts of withdrawals were estimated by DNR staff based on annual average wastewater discharge data and personal communications with utility staff. The averaging period varies by power plant, and can be an average for 1999-2003, 2003 or 2004.

- Data for this category on the total average daily withdrawals were computed by Legislative Council staff based on total annual water supply data reported in 2005 annual reports submitted to the PSC by water utilities. These reports are available at <http://psc.wi.gov/utilityinfo/water/newsinfo/newsinfo-index.htm>.

Withdrawals from Tributary Rivers and Lakes

The table in this section provides information on withdrawals from Lake Michigan, Lake Superior, and Mississippi River tributary rivers and lakes.

Withdrawals from Lake Michigan, Lake Superior, and Mississippi River Tributaries

Category of Withdrawers	Withdrawals from Lake Michigan Tributaries		Withdrawals from Lake Superior Tributaries		Withdrawals from Mississippi River Tributaries	
	Total Amount of Average Daily Withdrawals (MGD)	Number of Withdrawers in the Category	Total Amount of Average Daily Withdrawals (MGD)	Number of Withdrawers in the Category	Total Amount of Average Daily Withdrawals (MGD)	Number of Withdrawers in the Category
Industrial Facilities (Paper Mills) ¹	187	15	0	0	256	13
Fossil Fuel Power Plants ²	33	1	0	0	1,054	9
Water utilities regulated by the PSC (from Fox River or Lake Winnebago) ³	24	4	0	0	0	0
s. 30.18 Permittees ⁴	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available

Notes on categories:

- The amounts of withdrawals were estimated by DNR staff based on annual average wastewater discharge data from 2003 or 2004.
- The amounts of withdrawals were estimated by DNR staff based on annual average wastewater discharge data and personal communications with utility staff. The averaging period varies by power plant, and can be an average for 2001-03, 2003 or 2004. These

amounts do not include withdrawals by the Columbia and Blackhawk power plants in the Mississippi River Basin.

3. Data for this category on the total average daily withdrawals were computed by Legislative Council staff based on total annual water supply data reported in 2005 annual reports submitted to the PSC by water utilities. These reports are available at <http://psc.wi.gov/utilityinfo/water/newsinfo/newsinfo-index.htm>.
4. Section 30.18 water diversion permits are identified in Memo No. 7. DNR staff report that many of these permits are for surface water withdrawals during droughts. DNR staff did not provide aggregated information on withdrawals by these permittees.

Withdrawals from Groundwater

The table in this section provides information on withdrawals from groundwater via high capacity wells. It does not include information on withdrawals by wells smaller than high capacity wells (i.e. wells with a capacity less than or equal to 100,000 gallons per day), such as a residential well in a rural area.

As noted in Memo No. 7, the DNR has recently initiated a rule-making process to promulgate a rule requiring the reporting of annual pumping data from the operation of high capacity wells. Thus, the only statewide data on the amounts of withdrawals from high capacity wells presently available is the pumping data reported to the PSC in annual reports filed by water utilities. DNR staff provided information reported in the table on the number of active wells in each category of withdrawers. These numbers are for the active high capacity wells presently in the department's high capacity well database. "Active wells" are wells that are in service at any time in a one year period or that have been recently approved and are not yet in service. In addition to the 6,496 wells identified in the table, there are 35 other active wells in the DNR's database that do not have a basin designation at this time. DNR's database includes 12,443 currently approved active, inactive, or abandoned high capacity wells on 6,140 properties.

The assignment of wells to a particular basin in this table is based upon the location of the well at the surface of the earth. This treatment is consistent with the compact's directive that "the basin surface water divide shall be used for the purpose of managing and regulating new or increased diversions, consumptive uses, or withdrawals of surface water and groundwater." [Proposed s. 281.343 (4t) (e), as created by LRB-0058/P1.] Wells located in a "straddling community," as that term is defined in the compact, are included in the appropriate Great Lake basin.

Withdrawals from Groundwater Via High Capacity Wells

Category of Withdrawers	Groundwater Withdrawals from Lake Michigan Basin		Groundwater Withdrawals from Lake Superior Basin		Groundwater Withdrawals from Mississippi River Basin	
	Total Amount of Average Daily Withdrawals (MGD)	Number of Active Wells in the Category	Total Amount of Average Daily Withdrawals (MGD)	Number of Active Wells in the Category	Total Amount of Average Daily Withdrawals (MGD)	Number of Active Wells in the Category
State Institutions ¹	Not Available	6	Not Available	0	Not Available	0
Irrigation ²	Not Available	692	Not Available	2	Not Available	3,332
Community other than municipal ³	Not Available	46	Not Available	0	Not Available	29
Industrial ⁴	Not Available	203	Not Available	2	Not Available	416
Wastewater Treatment Plant ⁵	Not Available	0	Not Available	0	Not Available	1
School ⁶	Not Available	7	Not Available	0	Not Available	4
Miscellaneous ⁷	Not Available	98	Not Available	4	Not Available	269
Misc. (Nov - Mar) ⁸	Not Available	4	Not Available	0	Not Available	19
Misc. (Apr - Oct) ⁹	Not Available	24	Not Available	0	Not Available	37
Municipal ¹⁰	114	359 (161 utilities)	2	14 (14 utilities)	231	930 (388 utilities)

Notes on categories:

1. Category includes state run prisons, hospitals, institutions, nursing homes, and universities.

2. Category includes wells providing water to irrigate agricultural crops, golf courses, parks, and school fields.
3. Category includes community public wells such as those serving mobile home parks, apartments, and condominiums.
4. Category includes factories, dairy farms, and ethanol plants.
5. Category includes wastewater treatment plants whose primary water use is not industrial.
6. Category includes public and private K-12 schools. The category does not include home-day schools, day care centers, or Sunday schools at churches.
7. Category includes wells that do not fit another category, including water parks, fish hatcheries, and condominiums and apartment complexes with less than 10 units.
8. Category includes ski resorts and snow-making equipment.
9. Category includes campgrounds and non-irrigating parks.
10. Category includes cities, villages, sanitary district, and utility districts. Data for this category on the total average daily withdrawals were computed by Legislative Council staff based on total annual water supply data reported in 2005 annual reports submitted to the PSC by water utilities. These reports are available at <http://psc.wi.gov/utilityinfo/water/newsinfo/newsinfo-index.htm>. The number of utilities given in parentheses is based on this analysis of the water utility annual reports. The number of wells in the Lake Superior basin is based on the number of water utilities identified in this analysis that are in the Lake Superior basin and obtain water from wells.

JES:tlu