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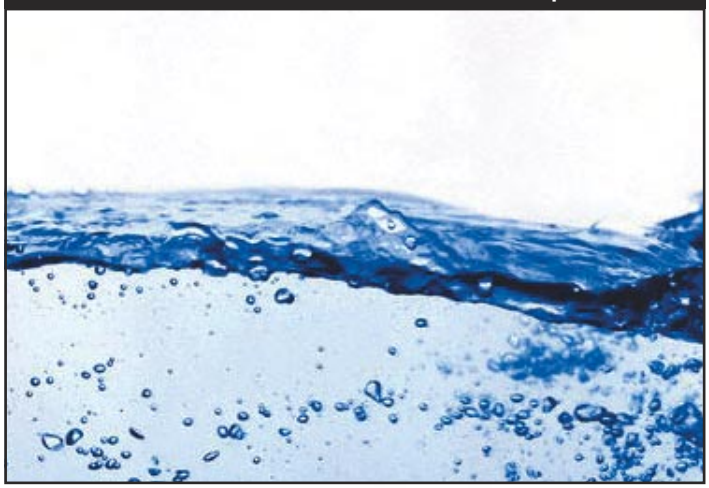

A Mackinac Center Report

Groundwater Regulation:
An Assessment

Russ Harding

A review of state laws in the Great Lakes region and recommendations for improvement.

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Executive Summary

In proposing the Water Legacy Act, Gov. Jennifer Granholm is attempting to increase state regulation of groundwater use through a costly and intrusive permit regime. If enacted, this drastic change would upend longstanding water rights and further weaken Michigan's economy.

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According to the governor, Michigan currently lags other Great Lakes states in controlling groundwater withdrawals, as well as in preventing diversions of surface water and groundwater outside the basin. The Water Legacy Act, now pending in the Legislature, supposedly would fulfill the state's obligations to preserve and protect a threatened natural resource and bring Michigan into partial compliance with the so-called Annex 2001, a voluntary regulatory code under consideration by the eight states and two Canadian provinces that cooperatively exercise jurisdiction over the Great Lakes.

"We are the only state that hasn't lived up to its end of the bargain," the governor stated in unveiling her proposal to the Legislature. "If we do not take action to regulate withdrawals of water from the Great Lakes Basin, those who are already eyeing our treasured lakes as the solution to their water shortages will begin arriving with their pumps and hoses to take their bounty home."[1]

The importance of water supplies to Michigan and its neighbors demands caution in its regulation. The lives of thousands of property owners, and the livelihoods of millions more, would be jeopardized by ill-conceived government actions. The Mackinac Center for Public Policy thus examined Gov. Granholm's arguments for so radical a change in water law, as well as the likely consequences of the proposed regulatory crackdown. Our findings on these matters argue against enactment of the Water Legacy Act.

Michigan is not a regulatory backwater, as the governor contends. Legal mechanisms already exist to protect groundwater supplies and limit large-scale diversions from the Great Lakes. Our review of statutes throughout the region found only a single instance of a regulatory scheme as stringent as that proposed by the

Granholm administration. Moreover, the governor's proposals to restrict water diversions far exceed the draft rules of Annex 2001.

Also inaccurate is the governor's characterization of the Great Lakes as "more threatened today than perhaps they have ever been."[2] The truth is, more water is diverted *into* the Great Lakes than is siphoned out,[3] and groundwater supplies are regularly replenished and remain abundant. The Michigan Department of Environmental Quality recently characterized the water quality of Lakes Superior, Michigan, Huron and Erie as "good to excellent."[4]

To the extent water shortages loom or exist, government mismanagement is largely to blame.

Notably lacking from the governor's plan are the scientific underpinnings so necessary for sound policy. Yet in a matter of months, a statewide mapping of groundwater supplies and an evaluation of existing government controls are slated for completion by the Groundwater Conservation Advisory Council, which was established by the Michigan Legislature in 2003. At the very least, lawmakers should delay consideration of the governor's proposal until the council reports its findings.

It is also premature for the governor to attempt to codify elements of the draft Annex 2001. As Dave Naftzger, executive director of the Council of Great Lakes Governors, recently said, the provisions of the draft annex "remain a work in progress and are continuing to evolve. Changes are being considered to reflect the numerous public comments we received. … [A]lmost all of the key issues of the draft agreements are being carefully reexamined."[5]

The proposed regulatory scheme also wholly ignores market-based incentives, such as tradable water rights, as a stewardship method. But incentive programs have proven far more effective than a flood of government dictates in conserving and protecting natural resources. According to water researchers Clay J. Landry and Laurel E. Phoenix, "[T]here is a broad recognition and understanding among researchers and policy makers that well defined property rights to resources such as water are fundamental to giving people the proper incentives for sustainable management."[6] In fact, to the extent water shortages loom or exist, government mismanagement is largely to blame.[7]

Stewardship of our waters can and should be improved, of course. The proliferation of non-native species throughout the Great Lakes ecosystem presents difficult challenges. Also, the United States and Canada have identified 14 areas within Michigan's jurisdiction in which water quality does not support a full range of uses.

The Granholm administration and the Michigan Legislature would do well to focus attention on real environmental problems and resist the impulse to indulge in ill-conceived regulation that would do more harm than good to Michigan and the remarkable Great Lakes.

I. Introduction

Where water has flowed, so has the course of human history. Societies have flourished or foundered based on the availability of water for agriculture, the production of goods, trade routes, and military might. No less today than in centuries past, secure water rights are essential to our individual and collective well-being.

Michigan is most blessed by an unparalleled abundance of rivers, lakes, and streams. With more than 3,288 miles of shoreline,[8] the state is bordered by lakes containing nearly 20 percent of the Earth's surface fresh-water supply. Spread evenly across the contiguous 48 states, the Great Lakes waters would measure 9.5 feet deep.[9]

Michigan is most blessed by an unparalleled abundance of rivers, lakes, and streams.

Graphic 1: The Great Lakes Region

Despite these water riches, the Granholm administration claims that a crisis looms unless longstanding water rights are abolished and replaced with regulations requiring, in part, a government permit to use water, a five-year water-management plan, and documentation that water use is justified. Such requirements also are necessary, the governor claims, to bring Michigan into compliance with the so-called Annex 2001, a voluntary code under consideration by the eight states and two Canadian provinces that cooperatively exercise jurisdiction over the Great Lakes.

This report examines the veracity of such claims, including Gov. Jennifer Granholm's repeated assertions that Michigan lags other Great Lakes states in protecting groundwater supplies and lacks the means to prevent large-scale diversions that supposedly could turn the Great Lakes into mere puddles.

In the pages that follow we review data on groundwater supplies, current Michigan law with respect to water use, and the extent of regulation in other Great Lakes states. These sections are followed by an examination of the governor's proposed legislation, and the likely consequences of replacing existing water rights with unnecessarily stringent government controls.

The stakes are high in this latest debate over water regulation. Agriculture and manufacturing, staples of Michigan's economy, rely on ready access to water. Enactment of the proposed Water Legacy Act and provisions of Annex 2001 would create a costly and intrusive regulatory regime that would undermine the state's economy and override centuries of property rights secured under common law.

The proposed Water Legacy Act would create a costly and intrusive regulatory regime.

The governor's focus on regulating groundwater is also misplaced. The vast majority of water withdrawals — 90 percent — are taken directly from the lakes. Only 10 percent is drawn from tributary streams and groundwater sources.[10]

Disputes over water use in the Great Lakes Basin are hardly new; they date back more than a century. In 1889, for example, the Illinois Legislature approved construction of a 28-mile canal to replace the puny Chicago River to transport the city's growing loads of sewage to the Mississippi. The canal was engineered to draw water from Lake Michigan with which to wash the diluted waste westward (in effect, creating the world's only backward-flowing river). Subsequently, the federal government sued the Sanitary District of Chicago to limit the diversion, which was said to have lowered water levels across the Great Lakes basin and thus interfered with navigation. The U.S. Supreme Court, in a 1925 opinion penned by Justice Oliver Wendell Holmes, ordered limits on the diversion that remain in effect today.[11]

A lawsuit over water withdrawals also plays a role in the current debate over passage of the Water Legacy Act. In promoting the proposed regulations, the Granholm administration has repeatedly cited the case of Nestlé Waters, whose state permit to pump spring water for its Ice Mountain brand is under challenge by a citizens group in Mecosta County. On Nov. 25, 2003, Mecosta County Circuit Court Judge Lawrence Root, defying basic provisions of Michigan water law, ordered the plant to cease all withdrawals. But the shutdown order has been blocked by the Michigan Court of Appeals pending an appeal by Nestlé.

The company is permitted to continue pumping, but at a reduced rate of 250 gallons per minute rather than the rate of 400 gallons per minute originally authorized under its permit. Recent monitoring of the area by state officials documented water levels at an "all time high."[12] Meanwhile, the northern Michigan town of Evart initiated negotiations and reached agreement with Nestlé to supply the bottling operation with additional water from its municipal system.

Should Judge Root's reasoning in this case be allowed to stand, groundwater use across the state would be open to legal challenge.

The Michigan Department of Environmental Quality issued the permit to Nestlé after intensively studying the aquifer and surrounding environs from which the company proposed to draw water. The operation met or exceeded all legal requirements, including the federal Safe Drinking Water Act. As stated in the DEQ's summary of the case:

> The Drinking Water and Radiological Protection Division (DWRPD) review included an independent analysis of aquifer test data, a determination of aquifer hydraulic characteristics, and an estimate of the impact the proposed ground water withdrawal would have on area aquifer levels. The DWRPD is confident the aquifer at the Sanctuary site can sustain the ground water withdrawal desired by [Nestlé]. The projected decline in ground water levels is so minimal there is no reason to believe there will be an adverse impact to adjacent users of the ground water resource in the vicinity of the Sanctuary well site.[13]

The proposed legislation would allow political calculations to override science and common law in water-use management.

Although critics protest Nestlé's "export" of water, the Great Lakes basin actually imports more bottled water than it exports — 37 million gallons imported compared to 2.6 million gallons exported.[14] In its latest report on the Great Lakes, the International Joint Commission concluded: "[B]ottled water appears to have no effect on water levels in the Great Lakes Basin.[15]

The opposition to the Nestlé permit exposes the dangers of the proposed Water Legacy Act. In spite of the scientific evidence and the law, Gov. Granholm and some activists regard the Ice Mountain operation as ideologically unsound. The proposed legislation would allow such political calculations to override science and common law in water-use management. But such unchecked regulatory power would violate fundamental principles of due process and equal protection.

This is evident in the sweeping language of the proposed legislation. For example, Senate Bill 7 grants the DEQ the discretion to reject a groundwater permit if regulators deem an applicant's "five-year water management and conservation plan" or its "water management practices" as not "beneficial." A permit could also be denied if regulators decide that there are better means to obtain water than the applicant proposes. Moreover, regulators would be allowed to dictate "any other conditions, limitations, and restrictions that the Department determines are necessary to protect the environment and the public health, safety, and welfare and to ensure the conservation and proper management of the waters of the state." [16]

Simply put, the Water Legacy Act would grant the DEQ broad power to dictate the terms of water use. Insofar as water is a valuable resource, such a shift in control would amount to a massive transfer of wealth from private property owners to the government.

As it is, numerous federal and state statutes, as well as treaties with Canada, already govern groundwater and the Great Lakes.

Were Michigan to actually face a water shortage, a case for legislative action could be made. That is not the reality today, nor is it likely to be in the future given science-based forecasts. In fact, the U.S. Geological Service is forecasting a decline of 2 to 3 percent in the consumptive use of water withdrawn from within the U.S. boundaries of the Great Lakes by 2020.[17]

Far more threatening to the state today is the parched business climate that has been induced, in part, by onerous regulation. Gov. Granholm can't credibly call for improving the state's economy while at the same time imposing more of the same type of regulation that has chased business investment beyond Michigan's borders.

Groundwater supplies are naturally "recharged" through precipitation, lakes and rivers exchange, and surface runoff.

II. Water Supplies

The term "groundwater" refers to the rain and snowmelt that soaks into the ground and percolates between particles of sand, soil and rock. (In contrast, "surface water" remains above ground, forming lakes, rivers and streams.) In Michigan, groundwater may infiltrate below the surface by as little as two inches per day in clay or as much as four feet per day in sand.[18]

Pools of groundwater that saturate porous rock formations or fill subterranean caverns are called "aquifers," which are tapped for wells. Groundwater also returns to the surface through springs, lake bottoms and streambeds.

Groundwater constitutes 98 percent of all the potable water on the Earth, according to the U.S. Geological Survey. Half the U.S. population — and 76 percent of all Michigan communities — use groundwater for drinking and most household functions. Groundwater is also a primary source for crop irrigation, food processing and some manufacturing processes.

Groundwater supplies are naturally "recharged" through precipitation (rain and snowmelt), lakes and rivers exchange, and surface runoff. Recharge rates in Michigan range from four to 20 inches per year.[19] Aquifers are also replenished "artificially" through direct injection of recycled water or from filtration basins.

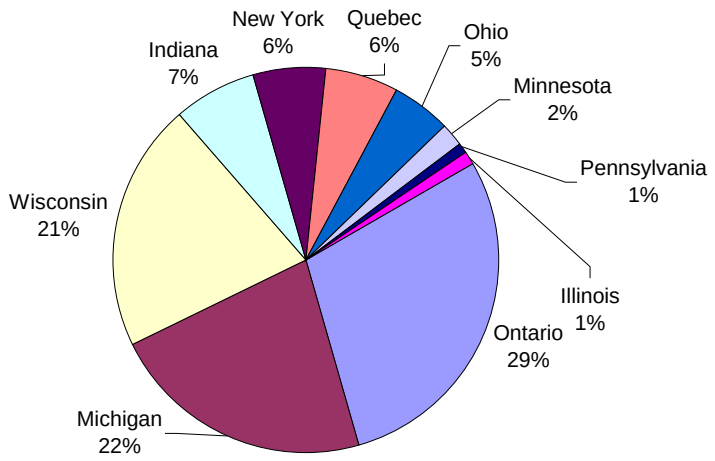
There is a hydrological connection between groundwater and surface water. Lakes, rivers and streams are fed by groundwater and, conversely, lakes, rivers and streams also replenish groundwater supplies. This hydrologic interplay is complex due to variations in topography, geology and climate.

There are two categories of water use: withdrawal and consumption. "Withdrawal" refers to water drawn from surface or groundwater sources that eventually is returned to the area from where it came. "Consumption" refers to water that is withdrawn but not returned to the region. But it is important to remember that water is never actually lost, no matter what its use. Every molecule is continuously recycled through the "hydrology cycle," in which water evaporates, condenses into clouds and returns to Earth's surface as precipitation.

In the Great Lakes basin, withdrawals comprise 95 percent of water use, consumption 5 percent. The vast majority of withdrawals — 90 percent — are from lakes, while 5 percent is withdrawn from streams and 5 percent from groundwater sources. Interestingly, Canada, with roughly a tenth of the U.S. population, accounts for 35 percent of the water withdrawals in the Great Lakes basin, compared to 65 percent by the United States. The graphic below illustrates the water withdrawals of each of the Great Lakes states and provinces.

Withdrawals and consumption of Great Lakes water actually have* decreased *by 48 percent in the past two decades.

Graphic 2: Non-Consumptive Water Use in the Great Lakes Basin



Source: Great Lakes Commission

Despite gloomy predictions of water shortages, withdrawals and consumption of Great Lakes water actually have *decreased* by 48 percent in the past two decades.[20] The decrease is largely a result of technological innovations, many of which improve the quality of water discharged back to the basin. All manner of water-efficient appliances — toilets, washing machines and dishwashers, for example — have come to market, along with a variety of leak-detection and pressure-control equipment. (A faucet leaking one drop per second will lose 6.6 gallons per day, or more than 2,640 gallons a year.[21])

Public data on withdrawals can also be misleading. For example, hydroelectric utilities routinely are cited as among the largest users of Great Lakes water. In fact, all but about 1 percent of the billions of gallons of water used to drive turbine generators are returned to the basin.[22] When taking the true nature of hydroelectric use into account, the volume of Great Lakes withdrawals decreases from 845 billion gallons per day to 45 billion gallons per day, a 95 percent difference.

Fears of groundwater depletion are likewise unfounded. Of the 5 percent of basin water that is "consumed," only 5 percent is groundwater.[23] Thus groundwater constitutes only one-quarter of 1 percent of the water "lost" to the Great Lakes basin.

Human effects on lake levels have been relatively small compared to the changes caused by natural factors.

Technological advances also are increasing water supplies the world over. From improved disinfection chemistry to fuel-cell-powered desalination plants, more efficient and affordable water-treatment methods are making more water available to more people. Worldwide, seawater-desalination plants now produce over 3.5 billion gallons of potable water each day.[24]

Lake levels do fluctuate from year to year, and even hour to hour, largely depending on precipitation, wind and air temperatures. Levels are typically lowest in winter, when runoff largely halts and masses of cold, dry air over the lakes increase evaporation. Lake levels tend to rise in summer, fed by rain and snowmelt. Over the past century, lake levels have varied by as much as five feet, as indicated in the chart below.

Graphic 3: Lake Levels Fluctuate Naturally

(Lake levels measured in number of feet above sea level.)

	Superior	Michigan/Huron	St. Clair	Erie	Ontario
Maximum	602.4	581.1	576.8	573.8	247.3
Year	*1986*	*1986*	*1986*	*1986*	*1952*
Minimum	599.5	576.0	571.0	568.2	242.6
Year	*1926*	*1964*	*1934*	*1934*	*1935*
Long-term Avg.	601.2	578.6	573.9	571.1	245.0
February 2005 Avg.	601.3	577.8	574.2	571.8	245.6

Source: *U,S, Army Corps of Engineers*

The primary factors influencing lake levels are variations in precipitation and temperature, not water use. Human effects on lake levels have been relatively small compared to the changes caused by natural factors.[25]

Concern over water diversion has intensified in recent years, but not because pipelines to parched regions are draining the Great Lakes — or ever will. In fact, more water is now diverted into the Great Lakes basin than is siphoned away.

A similar scare arose in the 1980s, after schemes were floated to divert Great Lakes water to raise the Mississippi and Missouri rivers, and to recharge Nevada's Ogallala aquifer, the country's largest. Public outrage was further aroused after Ontario's environment ministry issued a five-year permit to a Canadian firm to ship 159 million gallons of Lake Superior water to Asia annually. The permit was rescinded, while the other proposed diversions were abandoned as technically unworkable and unaffordable.

There's little likelihood that large diversions will become feasible in the foreseeable future.

Despite the rhetoric employed by the Granholm administration and other proponents of new water restrictions, there's little likelihood that large diversions will become feasible in the foreseeable future. As noted by the International Joint Commission, which manages water disputes between the United States and Canada:

> Future mega-diversions would present many additional engineering challenges. …[T]he costs of such projects, whether by pipeline or channel, remain enormous. Not only must capital be invested in the construction of the project, but also operating and maintenance funds must be found to support the effort. Every study of such projects has highlighted the high energy costs associated with the pumping of water over topographic barriers. Mega-diversions also require rights-of-way for their passage and security for the products being transported, which would be difficult to obtain.

Existing water diversions date back decades. The major diversions that remain operational include:

- Lake Michigan at Chicago (1900). An average of 3,200 cubic feet per second is diverted from Lake Michigan into the Illinois and Mississippi drainage basins. This was originally devised to dilute and transport sewage to the Mississippi.

- The New York State Barge Canal (1918). Water from the upper Niagara River at Buffalo is diverted *to* Lake Ontario to facilitate navigation between Lake Erie, Lake Ontario and the Erie Canal.

- The Long Lac and Ogoki diversions (1941, 1943). Both diversions send water from Hudson Bay *to* Lake Superior for hydropower generation. The combined diversions average water volume of about 5,000 cubic feet per second.

- Welland Canal diversion (1932). Water from the Lake Erie basin is diverted *to* the Lake Ontario basin. Originally constructed to support navigation, the diversion now facilitates hydropower generation with an annual average flow of 9,200 cubic feet per second.

Great Lakes diversions are governed by three legal instruments, all of which promote cooperative management among the eight states and two Canadian provinces in the Great Lakes basin.

From its inception as a state, Michigan has recognized the rights of landowners to the "reasonable" use of groundwater.

The Boundary Waters Treaty between the United States and Canada, signed in 1909 by President Theodore Roosevelt and King Edward VII, established the International Joint Commission to prevent or settle disputes over the boundary waters between the United States and Canada. Article III of the treaty requires commission approval for any diversion or obstruction that would "affect … the natural level or flow of boundary waters." (The IJC does not exercise jurisdiction over Lake Michigan because there is no common boundary between the United States and Canada.)

Diversions are also limited by the Great Lakes Charter of 1985, a cooperative agreement for lakes management among the eight states and two Canadian provinces within the basin. Under the charter, "diversions of Basin water resources will not be allowed if individually or cumulatively they would have any significant adverse impacts on lake levels, in-basin uses, and the Great Lakes Ecosystem." Nor are diversions permitted without "the consent and concurrence of all affected Great Lakes States and Provinces." In 2001 the governors and premiers of the signatory states and provinces proposed amending the charter to incorporate more stringent controls over withdrawals and diversions. The proposed amendments, known collectively as Annex 2001, require legislative enactment by each state and province. Some provisions of the proposed Annex are contained in the proposed Water Legacy Act.

At the federal level, water diversions are regulated under the Water Resources Development Act of 1986. The statute requires the approval of all Great Lakes governors for the export of water outside the basin. Whether this statute can withstand constitutional scrutiny remains a matter of debate. The U.S. Supreme Court has declared water to be an article of commerce and therefore immune from regulation that discriminates between states.

III. Michigan Water Law

Water law in Michigan is principally derived from English common law, the culmination of centuries of judicial decisions. From its inception as a state, Michigan has recognized the rights of landowners to the "reasonable" use of groundwater and surface waters adjacent to their property. These "riparian" rights (from the Latin

"ripa," meaning the bank of a watercourse) are not absolute; water use cannot excessively diminish the quality or quantity of water to adjacent landowners, nor may the water be used on non-riparian lands.

Water quality also is protected under the state's Natural Resources and Environmental Protection Act. The statute prohibits water discharges that could harm:

- Public health, safety or welfare;
- Domestic, commercial, industrial, agricultural, recreational or other water uses;
- The value or utility of riparian lands;
- Livestock, wildlife, or plants.

The Michigan Legislature in 2003 enacted safeguards for sustaining Michigan aquifers.

Additionally, a state permit is required to discharge waste or waste effluent into surface water or groundwater.

As required by the state's Natural Resources and Environmental Protection Act, annual reports on withdrawals are submitted by water users with a capacity to withdraw more than 100,000 gallons of water per day over any 30-day period — even if actual withdrawals are less. The graphic below lists the number of facilities currently reporting withdrawals and the aggregate volume of water withdrawn.

Graphic 4: Water Withdrawals Currently Registered in Michigan

Type	No. of Facilities	Withdrawals*
Agriculture	2,334	243.24
Industrial	410	632.98
Public Water Works	1,474	1,191.36
Utilities	42	8,564.94

*Millions of gallons/day

Source: Michigan Department of Environmental Quality

Proponents of stricter regulation claim that Michigan lacks statutory authority to protect groundwater supplies. In fact, the Michigan Legislature in 2003 enacted safeguards for sustaining Michigan aquifers.

The Aquifer Protection and Dispute Resolution Act (PA 177) empowers the DEQ to investigate whether high-capacity wells are depleting groundwater supplies and, if so, to order remedies. (Construction-project dewatering wells and some

municipal water wells are exempt. Cases involving agricultural wells are handled by the Michigan Department of Agriculture.)

State action is instigated under PA 177 when a well owner reports a drop in water supply or change in water quality. The complainant must have reason to believe that their water supply is being diminished or compromised by a higher-capacity well in the region.

The agency is required to determine if there is indeed a causal connection between the high-capacity withdrawals and the reported impairment. If the high-capacity well is found to be the cause, the state proposes a remedy.

No groundwater-dispute orders have been issued, indicating that all remedial actions deemed necessary were undertaken voluntarily.

In the event that DEQ officials are unable to negotiate a resolution with the owner of the high-capacity well, they may designate the case a "groundwater dispute" and order the offending party to supply water to the complainant, reduce withdrawals and/or compensate the complainant for costs incurred up to 30 days before the complaint was filed.

A well owner to whom a dispute order is issued must reimburse the state for the costs of the investigation and resolution of the complaint. Failure to abide by a groundwater-dispute order also carries a maximum fine of $1,000 for each day of violation.

To date, the DEQ has investigated 16 complaints. No groundwater-dispute orders have been issued, indicating that all remedial actions deemed necessary were undertaken voluntarily. Given the success of the program, the governor's proposed withdrawal of funding for the program appears unjustified.

IV. Water Regulations in Other States

Advocates of new water regulation contend that Michigan lags other Great Lakes states in protecting groundwater and surface water withdrawals. It is a claim that Gov. Granholm has repeated on numerous occasions, as in her letter to the Legislature urging passage of the Water Legacy Act. "We're the only state in the Great Lakes that doesn't have a law protecting our greatest resource," she said.

In fact, most other states in the region do not require permits for groundwater withdrawals, nor are existing regulations elsewhere as stringent as those the governor has proposed.

Water is intensively regulated by all states, as well as by the federal government, both to ensure the safety of drinking water and to protect surface and groundwater from contamination. Also common are state standards for the design and

construction of wells and water-system infrastructure. The current debate, however, is focused on regulating the *volume* of groundwater withdrawals. What follows are synopses of these regulations in other Great Lakes states drawn from the statutory language as well as information provided by regulators.

Indiana

Permits: Indiana does not require permits for groundwater withdrawals.

Registration: All facilities with a capacity for withdrawing 100,000 gallons of water per day are required to register with the Indiana Department of Natural Resources as "significant water withdrawal facilities."

Reporting: Annual reports on water withdrawals are required for every facility with the capacity to withdraw more than 100,000 gallons of water per day.

Aquifer Protection: Indiana law empowers the Department of Natural Resources to restrict withdrawals by a "significant water withdrawal facility" if water levels fall below normal fluctuations, or neighboring wells fail to furnish normal supplies of water. On proof of a causal connection, a "significant" water withdrawal facility may be required to provide potable water to affected well owners and reimburse expenses.

Most other states in the region do not require permits for groundwater withdrawals, nor are existing regulations elsewhere as stringent as those the governor has proposed.

Ohio

Permits: Ohio does not require permits for groundwater withdrawals.

Registration: All facilities with a capacity for withdrawing 100,000 gallons of water per day are required to register with the Ohio Department of Natural Resources.

Reporting: Annual reports on water withdrawals are required for every facility with the capacity to withdraw more than 100,000 gallons of water per day.

Aquifer Protection: The Ohio Department of Natural Resources may limit water withdrawals where the agency designates a "groundwater stress area." (To date, no such designations have been made.) The agency also is empowered to require owners of high-capacity wells to supply water to neighboring well owners if the larger facility is found to be diminishing the supplies of smaller wells.

Illinois

Permit: Illinois does not require permits for groundwater withdrawals. State regulators may restrict withdrawals in the counties of Iroquois, Kankakee, McLean and Tazewell. State law also allows voters to establish by referendum a local authority to regulate groundwater withdrawals. (Withdrawals for agriculture and domestic use are exempt from such regulation.)

Registration: Facilities that can be expected to withdraw more than 100,000 gallons of groundwater per day must register with their local Soil and Water Conservation District.

Reporting: The Illinois Water Inventory Program tracks withdrawals of groundwater and surface water.

New York

Permits: New York does not require permits for groundwater withdrawals used for private purposes. A permit is required to install or expand a public water supply, although exemptions exist for some municipal and county systems.

Registration: Facilities planning to withdraw an average of 100,000 gallons of water per day in a consecutive 30-day period must register with the New York Department of Conservation.

Reporting: Facilities that withdraw more than an average of two million gallons per day in a consecutive 30-day period must report to the state any new or increased operating capacity, as well as the average monthly and annual rates of discharge or return flow.

Pennsylvania

Permits: Pennsylvania does not require permits for most groundwater withdrawals. A permit is required in the five-county region designated as the "Southeastern Pennsylvania Ground Water Protected Area" if a well system withdraws an average of more than 10,000 gallons per day over a 30-day period. A permit is also required in the Susquehanna River Basin for groundwater withdrawals that exceed an average of 100,000 gallons per day for any consecutive 30-day period.

Registration: Registration with the state is required for all public water agencies, hydropower facilities and operations that withdraw or use more than 10,000 gallons per day over any 30-day period.

Reporting: Reports are required of facilities within the Delaware River Basin if groundwater withdrawals exceed 100,000 gallons per day during any 30-day period.

Wisconsin

Permits: Wisconsin requires approval from the state Department of Natural Resources to construct a "high-capacity well," defined as a well that, together with all other wells on the same property, has a capacity of withdrawing more than 100,000 gallons of groundwater per day.

The DNR undertakes an environmental review for any well proposed within 1,200 feet of an "outstanding resource water," (such as a pristine lake, wild river or trout stream); a well that may have a "significant" environmental impact on a spring; a well to be located in an area of groundwater discharge at the land's surface that results in a flow of at least one cubic foot per second for at least 80 percent of the time; or a well from which more than 95 percent of the withdrawal will be diverted from the basin or consumed.

Reporting: Annual reports are required for facilities that withdraw an average of more than 100,000 gallons of groundwater per day in any 30-day period.

Minnesota

Permit: A permit from the Minnesota Department of Natural Resources is required for groundwater withdrawals of more than 10,000 gallons per day, or one million gallons per year. Permit exemptions include:

- Facilities supplying residential water to fewer than 25 persons;
- Test pumping of a groundwater source;
- Reuse of groundwater supplied by an authorized facility, e.g., a municipal water system;
- Certain agricultural drainage systems.

Reporting:	Permit holders must submit annual reports that track monthly water withdrawals.
Aquifer Protection	If demand for groundwater exceeds the safe annual yield of the aquifer, the state is required to distribute supplies proportionally based on allocation priorities set by state statute.

Graphic 5: Groundwater Regulation in the Great Lakes States

State	General Permit Requirement	Registration Requirement	Reporting Requirement
Indiana	None	Facilities with a capacity to withdraw 100,000 gallons per day.	Annual reports from facilities with a capacity to withdraw 100,000 gallons per day.
Ohio	None	Facilities with a capacity to withdraw 100,000 gallons per day.	Annual reports from facilities with a capacity to withdraw 100,000 gallons per day.
Illinois	None	Facilities with a capacity to withdraw 100,000 gallons per day.	Illinois conducts an annual inventory of water use by survey.
New York	None	Facilities planning to withdraw an average of 100,000 gallons per day in a consecutive 30-day period.	Facilities that withdraw more than an average of two million gallons per day in a consecutive 30-day period.
Pennsylvania	None	Facilities that withdraw or use more than 10,000 gallons per day over any 30-day period.	Facilities within the Delaware River basin if withdrawals exceed 100,000 gallons per day in any 30-day period.
Wisconsin	Facilities with the capacity from all wells on a property to withdraw more than 100,000 gallons per day.		Facilities that withdraw 100,000 gallons per day, on average, in any 30-day period.
Minnesota	Facilities that withdraw more than 10,000 gallons per day (with exceptions).		Facilities that withdraw more than 10,000 gallons per day.
Proposed for Michigan Under Water Legacy Act	• Withdrawals exceeding 100,000 gallons per day in any 30-day period if considered likely to cause "adverse impact." • All withdrawals averaging two million gallons per day in a 30-day period, or 100 million gallons per year. • As of 2010, all withdrawals averaging 100,000 gallons per day in any 30-day period.	Facilities with the capacity to withdraw 100,000 gallons per day, on average, in a consecutive 30-day period.	• All registered facilities. • Permitted facilities, as required by the Department of Natural Resources.
Annex 2001 as Proposed	Withdrawals greater than 100,000 gallons per day, on average, in any 120-day period (as of 2010).	All withdrawals greater than 100,000 gallons per day, on average, in any 30-day period.	

V. Provisions of the Proposed Water Legacy Act

The proposed Water Legacy Act would amend Michigan's principal environmental statute, the Natural Resources and Environmental Protection Act. Gov. Granholm first called for new groundwater regulations in her January 2004 "special message" to the Legislature. The proposed act was introduced the following March, but failed to win lawmakers' approval. The package of bills was reintroduced in the Senate on Jan. 12, 2005, and awaits action in the Committee on Natural Resources and Environmental Affairs. Companion legislation was introduced in the House on Feb. 2, 2005, and referred to the Committee on Natural Resources, Great Lakes, Land Use, and Environment.

The legislation would substantially increase the powers of the Department of Environmental Quality to control groundwater use.

The legislation would substantially increase the powers of the Department of Environmental Quality to control groundwater use. A permit from the department would be required for the following groundwater withdrawals:

- A new or increased withdrawal averaging two million gallons per day in any 30-day period, or 100 million gallons per year. (Effective 18 months after the effective date of legislation.)

- Any withdrawal in excess of 100,000 gallons per day in any 30-day period deemed by the DEQ to cause or likely to cause "an adverse impact on the quantity or quality of the waters or water-dependent natural resources of the Great Lakes basin, to the public health, safety, or welfare or the environment, or to the public trust in the natural resources of the state or public rights in navigable waters." (Beginning 18 months after the effective date of the legislation.)

- A new or increased withdrawal that averages 100,000 gallons per day in any 30-day period. (Effective Jan. 1, 2010.)

Each permit application would be required to include:

- The anticipated effects of the withdrawal on water resources and land use in the Great Lakes basin.

- A five-year water-conservation plan detailing management practices to reduce withdrawals or consumptive uses, and proposed improvements.

- An explanation of why alternative conservation measures will not be undertaken.

- Evidence that all adjacent property owners have received written notification of the proposed withdrawal.

- Any other information required by the DEQ.

- A permit application for new or increased consumptive use averaging more than five million gallons per day in any 30-day period must undergo review by all states and provinces under the Great Lakes Charter. A public hearing also must be held for all such applications.

Registration with the DEQ would be required for:

- An industrial or processing facility, or well or pump with the capacity to withdraw over 100,000 gallons of water per day, on average, in any consecutive 30-day period.

- An irrigation facility with the capacity to withdraw over 100,000 gallons of water per day, on average, in any consecutive 30-day period.

- A farm with the capacity to withdraw over 100,000 gallons of water per day, on average, in any 30-day period (unless in possession of a water-withdraw permit from the DEQ or reporting water use and submitting a conservation plan to the Department of Agriculture).

- A public water-supply system with the capacity to withdraw over 100,000 gallons of water per day, on average, in any consecutive 30-day period (unless already reporting withdrawals under the Safe Drinking Water Act).

If enacted by state legislatures and Canadian lawmakers, Annex 2001 would bind Michigan and other Great Lakes states and provinces to a more stringent standard for the granting of permits.

VI. The Proposed Annex 2001

If enacted by state legislatures and Canadian lawmakers, Annex 2001 would bind Michigan and other Great Lakes states and provinces to a more stringent standard for the granting of permits.

The proposed standard goes well beyond the more conventional requirement that withdrawals cause no harm to public health, safety or the environment. Instead, approval for new or increased withdrawals would require implementation of a water-conservation plan. New or increased consumptive uses and diversions — including intra-basin diversions — would be required to produce "an improvement to the waters and water-dependent natural resources of the Great Lakes Basin."[26]

"Improvement" is defined in the Proposed Annex as "additional beneficial, restorative effects to the physical, chemical, and biological integrity of the Waters and Water-Dependent Natural Resources of the Basin, resulting from associated conservation measures, enhancement or restoration measures which include, but are

not limited to, such practices as mitigating adverse effects of existing water withdrawals, restoring environmentally sensitive areas or implementing conservation measures in areas or facilities that are not part of the specific proposal undertaken by or on behalf of the withdrawer."

As currently drafted, Annex 2001 would impose on applicants the burden of proving the adequacy of proposed conservation plans and "improvements." This shift in the burden of proof would allow regulators virtually unchecked discretion to deny permit applications.

The proposed standard goes well beyond the conventional requirement that withdrawals cause no harm.

The regulatory changes proposed by the Granholm administration exceed the requirements of the draft Annex. For example, the governor is proposing to require a groundwater permit for a large-scale withdrawal within 18 months of enactment of the Water Legacy Act, while the Annex would only require registration. The Department of Environmental Quality would also be granted broad discretion to require a permit for much smaller withdrawals that otherwise would not be so regulated under the Annex for 10 years after enactment. The major provisions of the proposed Annex are summarized below.

Withdrawals

Registration would be required for all withdrawals greater than 100,000 gallons per day, on average, in any 30-day period.

No later than ten years from enactment of the Annex, permits would be required for all withdrawals greater than 100,000 gallons per day, on average, in any 120-day period. Approval would be contingent on implementation of conservation measures, and permit applicants would have to prove that the:

- Need for all or part of the proposed withdrawal cannot be avoided;
- Withdrawal is "reasonable";
- Water will be returned to the watershed from which it was withdrawn; and
- Withdrawal will not produce harm.

Consumptive Uses

New or increased consumptive uses of five million gallons per day, on average, in any 120-day period would require approval by signatories to the Annex. Applications could be rejected if opposed by three states or provinces. Approval would be contingent on proof that the:

- Need for all or part of the proposed consumption cannot be avoided;
- Consumption is "reasonable";

- Water will be returned to the watershed from which it was taken; and
- Consumption will not produce harm.

Applications for consumption must also include:

- A conservation plan demonstrating how withdrawals and consumption would be minimized, and
- A plan for "improving" the physical, chemical or biological integrity of the Great Lakes ecosystem.

As currently drafted, Annex 2001 would allow regulators virtually unchecked discretion to deny permit applications.

Diversions

New or increased diversions of one million gallons per day or greater, on average, in any 120-day period would require the approval of signatories to the Annex. Applications could be rejected if opposed by three states or provinces. Approval would be contingent on proof that the:

- Need for all or part of the proposed diversion cannot be avoided;
- Diversion is "reasonable";
- Water will be returned to the watershed from which it was diverted; and
- Diversion will not produce harm.

Diversion applications must also include:

- A conservation plan demonstrating how withdrawals and consumption would be minimized.
- A plan for "improving" the physical, chemical or biological integrity of the Great Lakes ecosystem.

New or increased diversions of less than one million gallons per day, on average, in any 120-day period would require states to ensure that:

- The need for all or part of the proposed diversion cannot be avoided;
- The diversion is "reasonable";
- The water will be returned to the watershed from which it was withdrawn (except for public water-supply systems diverting less than 250,000 gallons per day, on average, in a 120-day period, for use in areas less than

12 miles from the basin boundary where potable water is otherwise unavailable);

- The diversion will not produce harm;
- Conservation measures will be implemented to minimize withdrawals and consumptive use; and
- Measures will be implemented to improve the physical, chemical or biological integrity of the Great Lakes ecosystem.

Fears of a water crisis are disturbingly overblown. There is an abundance of groundwater in nearly every area of Michigan.

VII. Conclusions

Proponents of strict new groundwater regulation contend that Michigan lags other Great Lakes states in statutory protections of groundwater. Our review finds that only one state in the region — Minnesota — broadly regulates groundwater withdrawals.

Minnesota is distinct from Michigan and other Great Lakes states both geographically and meteorologically. The climate in the western half of the state resembles the semi-arid western plains, where evaporation and transpiration exceed precipitation and thus create a water deficit. It is not surprising, then, that Minnesota would enact a more restrictive water-allocation system. Whether that state's permitting regime is the most effective conservation method is certainly debatable.

A groundwater statute recently enacted in Wisconsin does require groundwater permits, but only in limited circumstances that affect a small number of wells. Still, the Wisconsin regulations are far more limited than those crafted by the Granholm administration in the proposed Water Legacy Act.

Fears of a water crisis are disturbingly overblown. There is an abundance of groundwater in nearly every area of Michigan, and no evidence of a looming scarcity. The greater threats are the economic impact of draconian regulations and the forfeiture of riparian rights.

The Water Legacy Act would encumber thousands of Michigan businesses, including factories, farms and even recreational facilities, as well as public water systems. Merely complying with application requirements, such as evaluating alternative water supplies, modeling withdrawal impacts and devising new conservation measures, would require the services of hydrologists or other specialists and cost each applicant hundreds of thousands of dollars per permit.

A recent analysis by the Michigan Chamber of Commerce calculated application costs ranging from $315,000 to $800,000, depending on the scope of the proposed withdrawal.[27] Applicants also would be taxed to cover the state's administrative costs. Such costs exceed $1 million annually in Minnesota, where a more limited permit program requires the full-time attention of six government workers and part-time assistance from 23 others.[28]

Harder to quantify, but certainly no less severe, are the indirect costs of needlessly broad regulation. As currently drafted, the Water Legacy Act would grant the DEQ virtually unlimited discretion in permit decisions. The legislation fails to specify the standards necessary for a permit. To the extent that every groundwater-permit application becomes a regulatory crap shoot, investors understandably will prefer to do business elsewhere.

Agriculture, too, would be hard hit. With a good many farmers already struggling to remain economically viable, additional regulatory costs would increase the likelihood of farmland conversions.

Allowing the state a full *six months* to process each permit application, as called for in the proposed legislation, would only exacerbate the regulatory uncertainties. With the highest unemployment in the nation, as reported in February by the U.S. Bureau of Labor Statistics, Michigan cannot afford to further alienate job providers — especially in the absence of any environmental threat.

The proposed regulations also are needlessly arbitrary. Groundwater supplies vary across the state, as do recharge rates. Yet the Water Legacy Act would treat all watersheds and aquifers as identical. That hardly constitutes sound stewardship.

Beyond the practical defects of the proposed regulations, the imposition of permit requirements would eviscerate the common-law water rights that have prevailed since the state's founding. This shift from individual control to state control of groundwater would invite mismanagement. Centralized authority is simply too distant and convoluted to make informed and timely decisions. Moreover, government bureaucracies are often driven by politics rather than by an intention to maximize the value of resources. This common phenomenon, in which public employees often act out of self-interest rather than in the public interest, is widely recognized by numerous economists, including Nobel prizewinners James Buchanan and Vernon L. Smith.

Were it not for government mismanagement, in fact, there arguably would not be water shortages in arid regions or so much waste. But federal reclamation projects and a slew of subsidies have encouraged water-intensive crop production and industrial developments where natural supplies are inadequate.

Water rights secured under common law impose direct accountability on landowners for resource use. Simple proof of unreasonable use or contamination is

Beyond the practical defects of the proposed regulations, the imposition of permit requirements would eviscerate the common-law water rights that have prevailed since the state's founding.

enough to merit judicial intervention. Individuals have legal recourse regardless of whether their injury precisely fits the definition of harm as prescribed by state statute, and complainants need not compete for the attention of overextended government officials (or suffer the painfully slow pace of bureaucratic procedures).

Greater private control over water resources would actually enhance water conservation. As it is, the artificially low water rates set by government encourage unfettered water consumption. But privatization would likely produce water rates that would balance demand with supplies.

Greater private control over water resources would actually enhance water conservation.

Water trading is on the rise, according to the Center for Free Market Environmentalism.[29] For example, California instituted a "water bank" to allow water transfers from farms to drought-plagued areas of the state. Montana allows riparians to lease their water rights to anyone wishing to maintain stream flows for fish.

VIII. Recommendations

1. Suspend any action on the proposed Water Legacy Act, or any other groundwater regulations, until the Groundwater Conservation Advisory Council completes its mapping of groundwater supplies and evaluation of existing controls.

2. Postpone consideration of any elements of the draft Annex 2001 until all provisions are finalized by the Council of Great Lakes Governors.

3. Ensure continued funding for the administration of Public Act 177, the Aquifer Protection and Dispute Resolution Act.

4. To the extent lawmakers believe it necessary to regulate groundwater withdrawals, controls should be limited to specific aquifers for which there is scientific evidence of significant, harmful and irreversible depletion.

5. In determining whether to limit groundwater withdrawals, the burden of proof should be borne by the state rather than citizens.

6. Absent proof of significant, harmful and irreversible depletion of an aquifer, any new limits imposed on groundwater withdrawals should be treated as a regulatory taking for which the state must compensate citizens for the loss of water rights.

7. In the event that new groundwater controls are enacted, lawmakers should utilize incentive-based methods, including privatization and water trading, to achieve the intended results.

8. Any new controls on groundwater withdrawals enacted by the Legislature should specify all regulatory standards to minimize the discretion of the Departments of Environmental Quality and Agriculture.

9. Any future codification by the Legislature of amendments to the Great Lakes Charter should guarantee state sovereignty over water use within Michigan.

10. Michigan should vigorously oppose through the appellate process any ruling that upholds the decision of Mecosta County Circuit Court Judge Lawrence Root in the case of Nestlé Waters.

In determining whether to limit groundwater withdrawals, the burden of proof should be borne by the state rather than citizens.

About the Author

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