Submission to the Standing Committee on Finance - Pre Budget Consultations

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Funding for Lake Winnipeg Initiatives

Subject: Lake Winnipeg Basin Stewardship Fund

Issue:

Lake Winnipeg is the 10th largest freshwater lake in the world and is integral to Manitoba's economy, recreational activities, and its culture. Recently Lake Winnipeg has become one of the most eutrophic large lakes in the world. Excessive amounts of nutrients, mainly phosphorus, flow into the lake from its surrounding watershed that is approximately 1,000,000 square kilometres and encompasses parts of four Canadian provinces and four U.S. states.

Human activity is largely to blame for the nutrients coming into Lake Winnipeg. These nutrients come into Lake Winnipeg from many urban and rural sources, including flooded lands, excess fertilizers, livestock manure, loss of wetlands, substandard septic systems, inadequately treated municipal sewage, and many others. This over enrichment of our waters or eutrophication is causing large blue green (cyanobacteria) blooms that can deprive the lake of oxygen killing aquatic life and causing permanent habitat destruction. Blue green algae can produce potent toxins that can harm the health of humans and animals and can result in death.

Eutrophication, or the over enrichment of our waters caused by nutrient influx (phosphorous and nitrogen) from various point source (municipal wastewater, factory farming) and non point sources (agricultural runoff, atmospheric discharge), is the one of the most significant environmental problems and threatens the integrity of aquatic resources throughout the world.

In 2008, as a response to the deteriorating water quality in Lake Winnipeg, leaders from nine communities on the shores of Lake Winnipeg; Alexander, Bifrost, Dunnottar, Gimli, Selkirk, St. Andrews, St. Clements, Winnipeg Beach and Victoria Beach came together to form the South Basin Mayors and Reeves Inc.. Since 2009, the South Basin Mayors and Reeves have worked tirelessly to engage their communities, residents, visitors, business, organizations and other local governments to join them in protecting and preserving Lake Winnipeg one of Manitoba′s most precious resources.

The South Basin Mayors and Reeves engaged their communities through the Lake Friendly Initiative; a community to community approach designed to create awareness of the serious issue facing Lake Winnipeg and other freshwater lakes throughout Canada and to give achievable and important ways for all to participate in the challenge before us. The ultimate purpose of the Lake Friendly Initiative is to engage all sectors of society in solutions that connect them to the issue and ultimately halt the further destruction

of our freshwater resources. The tremendous success of the Lake Friendly Initiative has been made possible by contributions from the Lake Winnipeg Basin Stewardship Fund. This important fund has also supported many other projects focussing on Lake Winnipeg and Canada's freshwater resources. These varied projects provide crucial scientific information, an opportunity to create innovative solutions and encourage the development of new technologies that will make Manitoba a leader in innovation as we work to solve the serious problem occurring in Lake Winnipeg.

The importance of the Lake Winnipeg Basin Stewardship Fund cannot be underestimated as we have only begun to understand the full extent of the crisis and the implications to Manitoba's natural resources and economy if lake health across the province continues to decline. The Lake Winnipeg Basin Stewardship Fund's importance also cannot be over stated in the development of new and innovative practices, new technologies and a sustainable economy based on new approaches to managing our fresh water resources and our ecological goods and services.

Background:

Since the earliest days of European settlement Lake Winnipeg has been profoundly altered to accommodate extensive and intensive export oriented agriculture. Regions like the Lake Winnipeg Basin, which encompass 90 percent of the agricultural land base of the prairies, have typically responded to increased global food demand by intensifying production through the application of critical agricultural nutrients, in particular phosphorous, which has a finite supply and is therefore becoming a scarce and strategic nutrient. The effects of agriculture on Lake Winnipeg and other factors, including intensive livestock production, municipal wastewater from urban and rural communities, and other natural process such as flooding and erosion, have created a perfect storm of circumstances that have seriously affected water quality.

Since the early 1970's, the total annual influxes of Nitrogen and Phosphorous to Lake Winnipeg have risen 13% and 10%, respectively, primarily due to increased nutrient imputes from the Red and Winnipeg river systems (Jones and Armstrong 2001; Bourne et al. 2002; Manitoba Water Stewardship 2006). In the last 10 years, Lake Winnipeg has experienced severe blooms of N2-fixing cyanobacteria or blue green algae that permanently threaten the health of the ecosystem.

Economic Value:

Surface water is a vital element for human life, as well as, a wide variety of economic uses. About 73 percent of Manitobans rely on surface water for their drinking water. Most of Manitoba's electrical energy

is generated from surface waters, and the province's other industrial water needs are also provided by our lakes and rivers. Many Manitobans rely on our water bodies for their livelihoods.

Dugouts, ponds, and streams are used extensively by Manitoba farmers for watering livestock, irrigating crops and drinking water. Though much less significant today on a province-wide basis, surface water is still an essential mode of transportation of goods and raw materials for many communities along the northeast shore of Lake Winnipeg. In addition to providing an essential raw material for our economic needs, surface water across the province is used to absorb our domestic, municipal and industrial wastes.

Lake Winnipeg is a valuable resource to Manitoba to Canada. The lake supports over 100 commercial fishers, many of whom are from First Nation communities, with an annual catch of over $25 million. The loss or decline of this commercial fisheries would cause social disruption of fisheries-based communities and great economic hardship. Lake Winnipeg is the 3rd largest reservoir in the world and Manitoba Hydro generates $350 to $580 million per year in export power sales. Many communities surrounding the south basin of Lake Winnipeg rely on tourism as a financial basis. Recreation and tourism generates more than $100 million annually. (Lake Winnipeg Stewardship Board 2006).

Ecological Value:

As well as economic interests, the significance of Lake Winnipeg for its ecological value cannot be overshadowed. Surface water provides vital habitat for a wide range of aquatic life including fish, insects, aquatic plants, and algae. Lake Winnipeg's water quality influences the productivity and biota found in the Nelson delta of Hudson Bay. Ponds, streams and other surface waters also provide drinking water and habitat for wildlife.

Many of our economic uses rely directly and indirectly on vital ecological processes to produce clean, abundant freshwater of the highest quality. Across Manitoba, our lakes and rivers support a $30 million commercial fishery, a domestic fishery that provides a major protein source for remote aboriginal communities, and a recreational fishery valued at many tens of millions of dollars.

As well as economic importance, Lake Winnipeg has deep cultural ties for many communities along the lake including many first nations communities that will be severely effected by loss of this important habitat.

Current Status:

Nutrient imputes are the primary cause of aquatic pollution in many regions of the world (Smith 2003; Schindler 2006) including Lake Winnipeg. The nutrient imputes to Lake Winnipeg are from many

sources both point source and non-point source. In cases where eutrophication has been caused by nutrient influx from point sources, significant improvements in water quality have been achieved following specific and targeted reductions of these nutrients (Schindler 1977, Jeppesen et al. 2005).

5In contrast, eutrophication by non-point nutrient sources, as in the case of Lake Winnipeg, has been more difficult to quantify and regulate because non-point sources are often intermittent (Bennett et al. 2001), derived from large-scale land-use practices (Carpenter et al. 1998), or are regulated by opposing management strategies for food production and environmental quality (Bunting et al. 2007).

Conclusions:

The health of Lake Winnipeg, the tenth largest freshwater lake in the world, has been seriously and profoundly effected by the influx of excess nutrients from various sources. This over enrichment of the waters is causing a serious deterioration in water quality and massive blue green algal blooms that can become a human health risk. Eutrophication of Lake Winnipeg has begun to cause serious financial and social affects for those who make their livelihood from the lake; and if this nutrient enrichment cycle continues, the financial and societal implications will be incredibly significant for all Manitobans, especially the aboriginal peoples who rely on the lake for many of their needs.

Because nutrient influx to Lake Winnipeg is from non-point sources, immediate and urgent attention must be given to this potential ecological disaster and all levels of government and all sectors of society must be engaged through immediate and diverse actions.

A recent study by Dr. Peter Leavitt that precipitated the Province of Manitoba enacting Bill 46, *The Save Lake Winnipeg Act*, concluded that Lake Winnipeg requires immediate and urgent attention and a reduction of ~ 50% (to suppress N2-fixing cyanobacteria and 500% to reestablish 60 baseline conditions) of Phosphorus (nutrients) entering Lake Winnipeg must be undertaken immediately.

Furthermore, many studies have concluded that persistent fertilization of lakes may lead to potentially irreversible changes in the structure and function of lake ecosystems (Scheffer et al. 2001; Scheffer and Carpenter 2003; Carpenter 2003).

Despite significant progress, Lake Winnipeg and its watershed continue to receive excessive amounts of Phosphorus and Nitrogen that result in algae blooms of increasing intensity and frequency; recent studies demonstrate that without significant reductions of nutrients and, in particular, Phosphorus, Lake Winnipeg′s ecological health will continue to decline, making restoration efforts increasingly more difficult and more costly.

The Lake Winnipeg issue must be perceived not only as an environmental issue of concern, but as an economic issue, and we must seek opportunities to transform this pending crisis with immediate action and innovation, and solutions must be sought to address the environmental social and economic imperatives.

As well as the Lake Friendly Initiative that encourages social change and action, scientific research and technological innovation must also be supported if we are to head off this crisis and create an opportunity for innovative and sustainable development.

The Lake Winnipeg Basin Stewardship Fund has been a vital part of ongoing efforts and is a necessary and critical part of the continued effort to save Lake Winnipeg.

Recommendations:

1. That the Lake Winnipeg Basin Stewardship Fund be reestablished for the long-term; and that the Lake Winnipeg Basin Stewardship Fund contain provisions for long term funding options for organizations and groups performing vital work on Lake Winnipeg to secure the balance of economic, societal, and environmental health.

2. That the Lake Winnipeg Basin Stewardship Fund create incentive programs to encourage the development of new and innovative technologies and practices for wastewater treatment, land use and protection of wetlands, all vital components of a healthy and sustainable ecosystem and economy.

3. That the Lake Winnipeg Basin Stewardship Fund include social marketing and education as core funding principles.