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See my answers below the question.

1) Canada currently has an \$88 billion water infrastructure deficit (Our Living Waters Call to Action for the Next Government of Canada). Increasingly frequent extreme weather events caused by a changing climate are introducing additional uncertainties and costs. The City of Winnipeg's North End Water Pollution Control Centre, immediately upstream of Lake Winnipeg, is the fourth-largest phosphorus polluter among all wastewater treatment facilities in Canada (National Pollutant Release Inventory, Environment Canada) and costs for much-needed upgrades continue to rise. **How will your party address Canada's water infrastructure deficit to protect our fresh water in the context of a changing climate?**

From Our 2015 plan to Aid municipalities:

While maintaining the gas tax revenue earmarked for municipalities, the Green Party also has proposed encouraging RRSP tax treatment for investments made in municipal bonds. As well, the Green Party maintains our previous commitment to funding immediately from the federal budget expanded programmes for six areas of key infrastructure needs:

- Community Brownfield Remediation
- Water and Wastewater treatment facilities
- Sports, recreational and cultural facilities,
- Public Transit
- Cycling and Pedestrian Promotion
- Community Housing

The Green Party maintains a commitment to fund these areas immediately to a total of \$3 billion (\$500 million/fund/year).

Still, given the scale of the problem, that will be insufficient. The full one percentage point of GST dedicated to municipal infrastructure will generate roughly \$6.5 billion/year. Greens support the direct granting of these funds toward municipal infrastructure needs, without one-third/one-third/one-third financing requirements that hobble investments. Investing in infrastructure generates economic activity and jobs.

But even with over \$6 billion/year to municipal infrastructure investments, more creative financing is needed.

That is why in 2015 we are advocating the creation of an Infrastructure Bank. The Green Party believes that a federal iBank set up as an independent, autonomous Crown Corporation would be a useful institution. An iBank can leverage the federal government's expansive access to credit at the lowest possible interest rates on behalf of all municipalities. (In effect this is building on the successful stand-alone FCM funds created in the late 1990's - the Green Municipal Fund and Partners in Climate Protection.)

2) Across the vast prairie landscape that drains into Lake Winnipeg, approximately 17.5 hectares of wetland habitat are destroyed every day (Ducks Unlimited Canada). Without these natural ecosystems to act as filters for melt and storm water, excess nutrients continue to flow unchecked into Lake Winnipeg, causing harmful algae blooms. Wetland destruction also exacerbates drought and flooding at enormous cost. In 2011 alone, flood-related costs in Manitoba exceeded \$1.2 billion (Manitoba 2011 Flood Review Task Force Report). A strong, coordinated approach to wetland protection is necessary in the Prairie provinces. With the health of Lake Winnipeg at stake, time is of the essence; leadership is critical in the next four years. **How will your party ensure wetlands protection is in place by 2019?**

Answer: The following is from Vision Green:

- Work with provinces to restore riparian ecosystems. Restore critical wetlands, especially where they might serve to dampen flood levels. The U.S. has invested billions in restoring riparian buffers, while we have done little. Federal programs could be delivered through existing government agencies, such as the Prairie Farm Rehabilitation Administration (PFRA) and NGOs like Ducks Unlimited
- Work with landowners (provide incentives/tax breaks) to restore and/or forego drainage on prairie potholes and wetlands that currently receive much of spring meltwater. There are some excellent models in existing provincial programs; for example, the Wetland Restoration Incentive Program (WRIP) initiated in 2008/09 as a partnership between Manitoba, DUC, and the Manitoba Habitat Heritage Corporation (MHHC).

3) The current federal investment in Lake Winnipeg is \$18 million over five years, \$7.4 million of which was administered through the Lake Winnipeg Basin Stewardship Fund (Lake Winnipeg Basin Initiative, Environment Canada). This funding is insufficient, as evidenced by the fact that the fund – intended to last until 2017 – ran out of money in early 2015. **How much more will your party invest in new research and coordinated regional solutions to address the root causes of harmful algae blooms in Lake Winnipeg?**

Answer: OK; without a clear summary of what has been done with the money spent so far and what it has been spent on, it is tough for me to know how much money is needed and what priority focuses should be. Also, what progress at nutrient control has been made to date? All these factors have to be considered before committing additional funds, which I am sure you realise are in short supply.

So I guess that my short answer is that the first step towards additional funding should be to identify the progress to date and key points of intervention that can maximize nutrient removal. Another thing that needs to be determined is the balance between original research and long term monitoring. My experience as a scientist has been that long term monitoring often falls through the cracks.

Third, in conversations I have had with scientists involved in Lake Winnipeg, I have heard that the Lake itself is not adequately monitored or researched. There are large gaps in our knowledge of the fate of nutrients once they enter the lake. There are significant gaps in our knowledge of nutrient pathways through the food web, and of nutrient retention and remobilization from sediments.

So the watershed is one thing, but we must also devote resources to understanding the ecology of the lake and the fate of nutrients once they enter the lake. An endowed chair in lake biogeochemistry or in food web ecology might be a good start in this direction, since we have to build research capacity as well as fill gaps left by DFO cutbacks.

4) Strong leadership is necessary to protect Lake Winnipeg and to ensure our solutions are commensurate with the scale of the problem. LWF's Lake Winnipeg Health Plan includes eight concrete, sector-specific actions to restore Lake Winnipeg (The Lake Winnipeg Foundation). Guided by the scientific advice of nationally recognized freshwater researchers, it is now being realized in partnership with conservation organizations, industry associations, educational institutions and community groups. The Lake Winnipeg Health Plan is a vehicle for collaborative action. **Will you support this plan? How?**

I've reviewed this plan online and it is a general outline of actions that are needed to safeguard the health of the lake. But what we need to do is to get from the rather general recommendations on your web site (do you have a more detailed technical report?) to specific actions on the ground in specific geographical locations. Again, as a scientist, I understand that the devil's in the details. If elected, a first step in determining the best way to support the plan would be to convene a multidisciplinary workshop under the umbrella of an appropriate institution, such as the Canadian Society of Limnologists.