

WE ARE ALL WATER-KEEPERS

A Call to Action to Restore the Qu'Appelle Watershed

\$5.00

A black and white photograph of a river flowing through a landscape with rolling hills and tall grasses in the foreground. The river is the central focus, winding through the scene. The hills in the background are covered in sparse vegetation, and the foreground is dominated by tall, textured grasses. The overall tone is somber and naturalistic.

The Fort Qu'Appelle Kairos hosted the June 22, 2013 community forum "Water Equals Life". This featured water scientist Dr. Marley Waiser who reported on her research on what Regina's untreated sewage is doing to Wascana Creek and the Lower Qu'Appelle watershed. Research now shows that nitrites, phosphates, heavy metals and pharmaceuticals all pose a threat to water quality.

The forum brought together over one hundred people from a diversity of community, ecumenical, First Nations, municipal and provincial bodies. It received extensive news coverage in the June 18, 2013 Fort Times and the June 28, 2013 R-Town News.

After the forum Kairos held further public discussions to lay out the changes required to better protect the Qu'Appelle watershed. These discussions first pin-pointed areas of common concern; these are listed on the inside back cover. We then formed a Water Research Group which met over the winter. It posed the important questions that needed to be addressed and divided up the responsibility to get more solid answers. Its report is now being released to serve the public interest.

Public interest in the water quality of the Calling Lakes continues to grow. The summer 2014 flooding, Regina dumping untreated sewage into the watershed, and beaches being closed due to high E.coli sparked a new level of public concern. Another forum sponsored by the File Hills Qu'Appelle Tribal Council and Friends of Katopwa Provincial Park was held August 20, 2014 at the Treaty Four Governance Centre. This was attended by around 200 people, including cottagers from several lakes who are concerned about the state of the watershed. This event received extensive coverage, including in the Regina media.¹

It is hoped that our report will be of interest and helpful to the growing body of citizens who want to see the Qu'Appelle watershed protected and its health restored. We do not pretend to have answered all the questions we have raised, but we believe that all these questions must be seriously addressed if there is going to be a successful restoration of this watershed.

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SUMMARY OF REPORT

WATER: A HUMAN RIGHT

Water is life and no matter what watershed we live within we are obliged to protect water for future generations and for life itself. *Humans everywhere were empowered by the United Nations 2010 declaration that there is a “human right to safe and clean drinking water and sanitation”. Water protection groups are expressing solidarity with the water rights contained within the UN’s 2007 Declaration on the Rights of Indigenous Peoples.*

CALL TO ACTION

We live within the lower part of the Qu’Appelle watershed, which includes the Calling Lakes. All indigenous and settler communities, fishers, farmers and cottagers alike, depend upon and benefit from the protection of this watershed. The health of the wildlife depends upon it. *There is an urgent need for a common call to action for this is one of the most stressed watersheds in all of Saskatchewan.*

REGINA’S SEWAGE

A major source of the contamination building up in the watershed for decades is Regina’s poorly treated sewage. To enable water quality to begin to improve, so the Calling Lakes

don’t become *more of a green slime in the summer, the province must require that Regina’s upgraded wastewater treatment system provides full biological nutrient removal and removes additional chemical contaminants, such as pharmaceuticals that threaten the biological health of the watershed.* The technology is available and in use elsewhere.

Regina must also immediately upgrade its lagoons and no longer be allowed to rely on our watershed for dumping sewage as it did in the summer of 2014. We can no longer accept that “dilution is the solution to pollution”.

WETLAND PROTECTION

The growing use of fertilizers-chemicals in agri-business can also threaten the health of our watershed. *Evidence is mounting that the insecticides called neonics widely used for treating seeds are already building up in our wetlands. These have been banned elsewhere because they are suspect in the rapid decline of bee populations.* Without protection of pollination there will be no long-term food security.

Also the ongoing, unregulated destruction of ecologically-valuable wetlands has increased the threat of flooding, as we saw again in the summer of 2014.

INDUSTRIAL DEMANDS

The provincial government and their creation, the *Lower Qu'Appelle Watershed Stewards* (LQWS), say that we must learn to accept the existing level of degradation in the Calling Lakes. We do not agree; water quality must be restored.

Meanwhile the province carries on with its plans to greatly “industrialize” the use of our watershed. ***Government-commissioned studies project a 200% increase in demand for water in our upper watershed over coming decades, mostly for irrigation and mining.*** This would lead to three-quarters of the water being used for industrial purposes.

This is unacceptable. There is much uncertainty that the proposed construction of an Upland Canal from Lake Diefenbaker to Buffalo Pound would provide a reliable supply of the quantity and quality of water required for domestic use, recreation and most vitally, to restore the health of the Calling Lakes.

CLIMATE CHANGE

Increases in extreme weather, including droughts, and the steady decline in the mountain-glacial flow into our waterway will surely come with climate change. It is highly irresponsible to plan economic growth that depends upon the seemingly perpetual growth in the supply of water.

Water is a non-renewable and a sacred element which requires our utmost respect. We abuse water at our own peril; water cannot be treated as just another commodity. ***Massive amounts of fresh water will be completely lost through the continued expansion of solution mining and fracking under the province's corporate strategy.***

WATER PRESERVATION

Water protection and preservation therefore need to become our new bottom line. Conservation in Regina contributed to reducing water consumption until 2010. ***However, the city now loses one in five gallons of the water it brings from Buffalo Pound, and it considers it “uneconomical” to make further improvements in its infrastructure.*** The view that water has no intrinsic value unless it is used for economic growth is part of an obsolete, unsustainable view of economics.

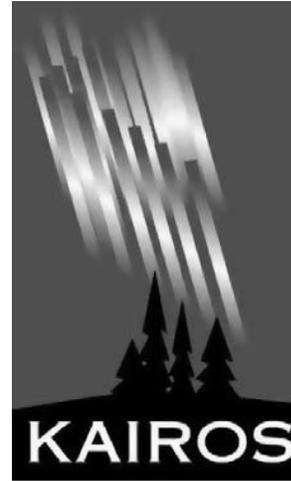
We are moving towards an inevitable clash between the growing corporate demands for water and the preservation of the health of the watershed. The provincial government is already on record that industry's “water rights” based on licenses, will trump human rights and ecological needs when water scarcity occurs. ***The province must accept that water is a universal human right, insist that Regina fully clean up its act and that agri-business stop contaminating the wetlands and our waterways.***

WATER-KEEPERS

Federal and provincial de-regulation of water protection goes hand in hand with the industrializing of water and the threat to our watershed. Inter-provincial agreements need to provide even better oversight and protection. The globally-embarrassing degradation of Lake Winnipeg is the consequence of ongoing abuses all along the waterway, including in the Qu'Appelle watershed. Recreational and agricultural activities in our watershed have to become more ecologically responsible. ***Any successful ecological restoration will require grass-roots co-operation and governments providing proactive leadership to protect the complete waterway, from Alberta to Manitoba.***

Watershed Steward groups can play a positive role if they are aware of the larger threats and don't act as a mouthpiece for the province's unsustainable policies. ***However, more independent monitoring, including of cumulative impacts from all point sources and tributaries into the Calling Lakes, with full public disclosure, is urgently required.*** We must get to the bottom of the large-scale 2014 E. coli contamination to ensure this doesn't occur again.

The public has a right and responsibility to become better informed about threats to our watershed. No matter what interest or identity - whether recreational, indigenous, environmental, ecumenical and/or scientific - we must now all unite as water-keepers. Please join in however you can to protect and restore the Qu'Appelle watershed.



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OUR WATERSHED

We live in the Lower Qu'Appelle watershed, one stretch of the larger waterway fed by the Upper Qu'Appelle and South Saskatchewan Rivers. These in turn come from Lake Diefenbaker and before that from the Rockies in Alberta. It is a magnificent waterway which carries on into Manitoba and Lake Winnipeg and then to its final destination in Hudson Bay.

Our watershed covers nearly 18,000 square miles of diverse land and stretches from Craven and Southey in the west to Rocanville in the east. It includes the city of Melville and the towns of Fort Qu'Appelle, Broadview and Esterhazy to the north and Indian Head, Wolseley, Grenfell and Whitewood to the south. It includes several Rural Municipalities (RMs). It includes people from "cottage country" all along the watershed. It is home to indigenous people from sixteen First Nations including Gordon, Piapot, Pasqua, Standing Buffalo, Peepeekisis, Okanese, Star Blanket, Sakimay and Carry the Kettle, whose ancestors knew this waterway intimately long before settler Canadians arrived.

First Nations within the Treaty Four boundaries are greatly impacted by the water quality in the Qu'Appelle watershed. These include independent First Nations and First Nations affiliated with Touchwood Agency Tribal Council, File Hills Qu'Appelle Tribal Council, Yorkton Tribal Council and First

Nations affected by the waters flowing into Manitoba.

All of us depend upon the streams and rivers that flow into the Calling Lakes - Pasqua, Echo, Mission, Katepwa, Crooked and Round Lake, which were left from glacial melt thousands of years ago. We all depend on this magnificent watershed for our domestic health, for agriculture, for recreation and the jobs and services that water-based, water-dependent activities generate in our local economies. Yet within just a few generations the health and biodiversity of this grand watershed has been denigrated and is now under further threat.

WATER: A HUMAN RIGHT

Thankfully scientists who are studying what's harming this watershed can give us clues about what we can do to restore the waters, but to have the will to do this we have to change the way we see water. This change is happening globally and locally. In 2010 the United Nations (UN) General Assembly declared that there is a "*human right to safe and clean drinking water and sanitation*".¹ No matter where we live, all humans have a right to access safe, clean and affordable water as well as safe collection, transport, disposal or reuse of human waste water. Without this human right to water and sanitation, all other rights, including the right to food, health and life itself, are in jeopardy.

It's a natural contract: we must take care of the water if the water is going to continue to nurture us. We have to treat water as sacred because water is indeed the wellspring of all life. It is the wellspring of our lives and the quality of life of future generations.

The UN General Assembly's resolution on water as a Human Right is built upon previous resolutions, declarations, covenants, studies and proclamations. In 2007 the UN adopted the *Declaration on the Rights of Indigenous Peoples* (UNDRIP). The Declaration contains forty-six Articles that speak to the responsibility of states to uphold the rights of Indigenous peoples worldwide. Article 25 refers to the right of Indigenous peoples "*to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard.*"

Canada was one of the few countries that initially did not support or sign the Declaration. Among the Harper government's concerns were references to traditional territories, appropriate redress, the requirements for "*free, prior and informed*" consent, as well as concerns that Canada would not be in a position to resolve land claims in its favour. Canada finally signed the Declaration with qualifications in 2010. However, its record on the tar-sands, potash, oil and gas exploitation and the

environmental deregulation of waterways is what counts.

The ability of First Nations to protect and preserve water as one of the fundamental treaty rights remains in constant jeopardy. Meanwhile the Canadian population at large does not enjoy access to safe water and sanitation as a human right.

Both the federal Harper government and provincial Wall government continue to treat water as a commodity to be bought and sold as a resource. Trade agreements like NAFTA and the coming European CETA agreement do not respect water as either a human right or sacred element, but rather see water as another exploitable economic resource. This crass view will not engender the vision of a sustainable society.

A HIGHLY STRESSED WATERSHED

Every five years Saskatchewan's *Water Security Agency* (WSA) is to issue a *State of the Watershed Report*, which evaluates the condition and health of all watersheds and the human impacts on these. It also proposes water management responses. Impacts on our Lower Qu'Appelle River watershed already make it one of the most stressed and unhealthy in all Saskatchewan.

In its 2010 report the WSA gave a health grade for all

watersheds for a large range of stressors. The list of areas where the Lower Qu'Appelle gets a grade of “high intensity” stress is very long: surface water allocation and ground water use, roads, aquatic fragmentation and impact of landfills, livestock and fertilizer inputs, pesticide inputs and contaminated sites .²

The 2013 report specifically on the Lower Qu'Appelle noted that surface and ground water as well as riparian areas are all “stressed”. The health of the overall watershed is “stressed”. The WSA still claims that our watershed “*has no degradation in function or the service it provides*”, but this is questionable, for the report admits that our stressed watershed “*has lost resistance to change*”.³

There is a slow and diminished overall flow as the Calling Lakes continue to accumulate more nutrients and toxins. This means this watershed is already very vulnerable. The “*loss of resistance to change*” means that the ecological system is no longer self-regulating. We are seeing ever more serious fish die-offs during winter and late summer, more oxygen depletion and more extreme algal and cyanobacterial blooms, all of which harm current high priority uses and the overall enjoyment of the Calling Lakes.

Agencies of the Sask Party government have unfortunately adopted a view that this state of degradation is the new norm which we should accept. In the watershed plan created by

the WSA for the government-created NGO, the *Lower Qu'Appelle Watershed Stewards (LQWS)*, the goal set for water quality was only to prevent “*a decline in quality from current levels*”.⁴ This is tantamount to accepting the high and sometimes dangerous levels of algae that can choke the Calling Lakes in the hot summer months. Even if stopping further degradation was an acceptable goal, which it is not, the WSA lacks the baseline and ongoing monitoring capacity and the preventative policy tools needed to even accomplish this.

Member groups at the first LQWS AGM rejected this severely compromised and methodologically-bankrupt objective and yet the positive changes proposed by members have not been incorporated into a revised watershed plan. Also, due to serious summer flooding the LQWS cancelled its 2014 AGM; the serious flooding and contamination of the watershed is precisely why that meeting was a high priority. Clearly the LQWS has to be democratized or replaced.

REGINA'S POLLUTION

Our watershed is stressed in large part because it is downstream from some of the province's major

environmental pressures. This has created heavy metal, nitrogen, phosphorous and pharmaceutical contamination.

Metal contamination increases with the growth of agriculture, industry and urbanization. Most of the catchment area for the Qu'Appelle River drainage basin includes industrial exposure – e.g. a steel plant, oil refinery, fertilizer plant and potash mine near Regina. And major industrial expansion within the Qu'Appelle watershed is on the drawing board. Metal contamination from erosion is increased by agricultural tilling, irrigation and the use of chemicals; coal plants and waste incineration also send metals into the atmosphere and some find their way into our surface and ground water.

Metal pollutants accumulate in lake sediment and eventually enter aquatic food webs. University of Regina biologist Peter Leavitt's research suggests that small aquatic invertebrates in the Qu'Appelle system *“may have been exposed to damaging levels of toxic metals for 100 years”*. This research concluded that *“overall, potential toxic metals from urban and industrial sources accumulate significantly within invertebrate diapausing (dormant) eggs, while less toxic metals preferentially accumulate in the sediment matrix”*.⁵ The more toxic metals include cadmium, chromium and molybdenum.

Sediment analysis also suggests that perhaps as much as 70% of the nitrogen pollution in the Qu'Appelle watershed has come from Regina's pollution. Much phosphorous also comes from

agriculture. This elevated influx results in heavy algal blooms which can reach toxic levels. This excessive algal growth depletes oxygen levels in lakes and results in mass die offs of fish and other aquatic organisms.

Pasqua is the first Lake, 175 km downstream from Regina, and is the most heavily affected. In earlier research it was estimated that this fairly shallow lake contained about 300% more algae than in pre-colonial times; currently it's estimated to be 500% or more. Most nitrogen gets sequestered in lake sediment but nutrients are also passed downstream when saturation occurs, first to Echo, then to Mission and on to Katepwa and the other lakes. This degradation continues on downstream in Manitoba, where Lake Winnipeg has become one of the world's more polluted fresh water bodies.

At the August 20, 2014 water quality forum at the Treaty Four Governance Centre, Peter Leavitt again aired his warnings about Pasqua Lake, saying *“...some of the toxin levels in Pasqua Lake are among the highest that I've seen in the country in a survey of about 100 lakes.”*⁶

Research done on the Lower Qu'Appelle watershed by retired *Environment Canada* scientist Marley Waiser shows the *“widespread presence”* of residues from pharmaceutical and personal care products flushed into Regina's and Moose

Jaw's sewage systems.⁷ This includes everything from antibiotics to anti-infective hand soaps to birth control drugs. Older sewage treatment plants were not designed to remove these and there is now scientific concern that "*chronic exposure of low concentrations*" may alter the aquatic food chain. Waiser reports that studies have shown that some hormone-altering contaminants lead to sex changes within fish.

This pollution is spreading and the research site 105 km downstream from Regina has detected contaminants. Waiser notes that you can't depend on dilution from high water flows to flush the system; sometimes effluent from Regina can be "*100% of the flow in Wascana Creek*". She advocates stringent monitoring while noting that there aren't even water quality objectives for pharmaceuticals.

The Regina referendum decision in the fall of 2013 to build a P3 sewage treatment plant not only carries economic risks for the Regina taxpayer, but it may make it more difficult to ensure that high water quality objectives and standards are applied and enforced to restore the ecological health of our watershed.

Based on the WSA's original plan for our watershed, it may be acceptable for Regina to just meet minimum standards. This would be unacceptable, in view of the lengthy period required to begin to clear the contaminants that have built up in the Calling Lakes for decades. We must do all we can to ensure that the province requires maximum protection from Regina's wastewater releases.

REGINA'S WASTEWATER TREATMENT

It is vital that Regina's new wastewater plant be designed from the outset to remove, neutralize and recycle the toxic materials now contaminating our waterway. The initial capital costs must be weighed against maximizing ecological, health and economic outcomes.

At present Regina is the only major prairie city without full biological nutrient removal (BNR). The city now appears committed to developing BNR; it's just not clear that it will fully "turn it on". Full BNR can remove 95% or more of the nitrogen (N) and phosphorous (P) as well as organic carbon. It converts nearly all the dissolved N to N₂ gas which can be released without harm to the environment. Any process that is proposed because it may seem to initially be cheaper, such as converting poisonous ammonia to slightly less toxic nitrite, must ensure removal of the N by denitrification, a microbial conversion of ammonia to an inert N₂ gas.

Wascana Creek is very vulnerable to tiny amounts of these toxins both because it is such a small waterway and because it has an abundance of other nutrients. Overall, Regina's effluent accounts for 52% of the flow in Wascana Creek and in winter and during droughts this can go as high as 100%. It contributes around 80% of the contaminants found in this waterway.⁸ As such, current limits for releases (e.g. 1 mg P/L) are inadequate

and should be lowered by at least one half or more.

Furthermore, Regina's new wastewater plant could collect waste products for recycling. Methane gas produced during the process can be harvested to provide more energy efficient power, reduce GHG emissions and also to heat wastewater for more effective microbial treatment. The nutrients collected can be harvested and sold as fertilizer to regional farmers, which in turn could reduce the importation of new nutrients and even help reduce total agricultural runoff. Recycling could also create additional revenue for the City to operate its water treatment system, a practice already used in other cities including Saskatoon which upgraded its wastewater treatment system back in 1991.⁹

We need to ask why nearly a quarter of a century later Regina still has not accomplished such an upgrade. The Saskatchewan government must be held accountable and not be allowed to downplay regulations and the federal regulatory process has to be carefully monitored. Negotiations for Regina to sell wastewater to Western Potash or any other company cannot be used to downplay the need to fully upgrade water quality. Nor can any such diversion be allowed to reduce the flow into the Wascana and Lower Qu'Appelle system.

As an incentive to release clean water, some urban centres in Europe are required to release their wastewater upstream from their water intake systems. At the very

least the water quality coming out of Regina's treatment system should be equal to or better than that coming into Regina.

AGRI-BUSINESS

Run-off of agricultural wastes, nutrients and chemicals has additional severe impacts on our watershed where much of the soil is already naturally high in phosphorous. Tributaries should be monitored to establish baselines, evaluate impacts and develop a comprehensive plan for watershed restoration.

The effectiveness of encouraging agricultural "best-practices" depends upon this larger strategy and needs to constantly be assessed and improved. For example, is continual cropping really an environmental safeguard, since it can involve more nitrogen and chemical use in an era of relatively cheap oil and gas?

Some farmers may be more sympathetic to helping with effective watershed protection when they realize the overall threat from the increased industrialization of water. However, in large corporate farms water is viewed much the same way as among industrial users. Recent research by University of Saskatchewan scientist Christy Morrissey suggests that industrial agriculture is already a threat to our watershed. She found that wetlands are being contaminated by a line of

insecticides called the neonicotinoids or neonics in use since 2000. In 2014 the CBC reported that “virtually all” of the 8.5 million hectares growing canola on the prairies use seeds treated with these neonics.¹⁰ Morrissey conservatively estimates that 44% of prairie crop land was treated with neonics during her study.¹¹

This could be an ecological disaster waiting to happen. Morrissey found that 80-90% of the wetlands she sampled had concentrations of neonics at least 3 to 4 times, and in peak concentrations of 100 times, what is “*deemed habitable*” for insects. She found these chemicals were persisting in the environment which could have a domino-effect on the aquatic food chain: a decline in mosquito and midge populations can affect the health of ducks and other bird populations.

The *American Bird Conservancy* is now calling on the U.S. EPA to ban neonics for seed treatment. They cite the work of Pierre Mineau, past eco-toxicity scientist at *Environment Canada*, who has written that existing concentrations of the neonics are “*high enough to be causing impacts on the aquatic food chain.*” Industrial spokesmen for Bayer CropScience and Syngenta are attempting to “green” the neonics, saying there is no hard evidence that there is any bioaccumulation. They also argue that the neonics are a better practice than spraying and that treating seeds can prevent over-spraying. Morrissey rebuts by reminding us that this standardized method contaminates even

larger tracks of land that drain into our watersheds.

In 2013 the EU placed a two-year ban on these insecticides because they may be playing a major role in the rapid decline of bee populations. Bees are the real bottom line since without pollination there will be no canola or other food crops, and no fundamental food security. *Health Canada* has also expressed concern, especially about the use of neonics in Ontario’s corn-growing areas. It has reported that 70% of the dead bee samples in their research had a neonic residue. They are presently doing a scientific re-evaluation of these chemicals.

The Lower Qu’Appelle watershed has one of the highest concentrations of canola cropping anywhere. The widespread insecticide contamination across the whole prairies, however, shows that it is not adequate to have separate watershed strategies; there must be an overall, integrated plan.

Even if Regina reduces its contamination of our watershed, water quality could continue to degrade from industrial agriculture. We therefore have to work with any and all groups willing to work in coalition to protect wetlands and ban chemicals such as the neonics that threaten aquatic health and water quality.

INDUSTRIALIZING WATER

Is there a reason why the province of Saskatchewan is promoting such low water quality standards in our watershed? The Saskatchewan government has plans to greatly expand the exploitation of the waterway for the potash, oil and gas industries. There are several new potash mines on the drawing board, and the steady contamination of both surface and ground water from fracking is occurring at an accelerating rate.

Canada is the world's largest producer of potash, accounting for one-third of the global market. When the industry was expanding in the 1970s, Saskatchewan's reserves were estimated at 107 billion tonnes; they are now considered even greater. The Bureau of Statistics reported the province's potash sales in 2011 were worth 7 billion dollars.

With ten mines operating, as many as six more proposed and others in the planning process, Saskatchewan is at the centre of the global industry. From extraction to ore handling and from refining to waste disposal the potash industry degrades waterways. It draws down surface and ground water and can lower water tables while degrading water quality.

First Nations issued the warning call as far back as 1998¹² and we should all be listening. Chief Todd Peigan of Pasqua First Nation has noted that if the Western mine near Milestone uses

Regina's waste water, even more water may have to be diverted from Lake Diefenbaker to maintain the existing flow in the Qu'Appelle River. Most proposed new potash mines plan to get water from Buffalo Pound which is in the Upper Qu'Appelle.

In March 2012 the *File Hills Qu'Appelle Tribal Council* (FHQTC) held a summit on water and industry where they discussed the proposed new potash mines that would stretch from Moose Jaw to Regina and Melville. The Summit estimated that, excluding some "*Mosaic requirements*", existing and proposed potash mines could use over "*62 million cubic meters of water annually*".¹³

The province is proposing a new channel from Lake Diefenbaker to Buffalo Pound to increase the supply of water. There's also talk of creating an irrigated agri-business corridor along this channel. But as Chief Peigan continually asks, "*where is all this water to come from?*"

Industry exploits water on a mammoth scale. According to *Statistics Canada*, in 2009 manufacturing industries across Canada consumed 355 million cubic meters of water. The amount had risen to 450 million cubic meters by 2011. Forty percent of this was used by the metal industries, which includes potash. The scale of the industrial uses of water can be unimaginable. The expansion of just one Alberta tar-sands project, the Southern Pacific project, will use another 2 million litres of water **each day**. If you include electrical generation,

then coal and nuclear thermal plants would be right at the top of the industrial users of water in Canada. As such, the shift towards renewable energy is part of any water quality preservation strategy.

Nearly 80% of the water used in mining comes from freshwater sources and 73% of this is discharged directly back into local watersheds. Overall, 60% of this water is not treated at all before discharge and only 11% goes into tailing ponds. In 2009 the Canadian mining industry spent only \$166 million for all the water it takes from natural systems, which is a pittance compared to the huge profits it extracts from natural resources. Almost half of this was for treating effluent while water intake treatment accounted for 11%.

Water acquisition costs were only \$ 28 million dollars or 17% of the total. In comparison to other costs, water is almost a free resource for the taking by the mining industry. Industrial profits are being made at the expense of long-term water quality and environmental health.

The WSA's 25 year plan admits that the "*South Saskatchewan and Qu'Appelle River basins are experiencing the greatest growth and development related pressure in the Province*". The extraction of huge volumes of upstream water for industry will impact both the quantity and quality of water flowing into these basins. Most of the planned expansion of potash mining will affect the Lower Qu'Appelle watershed which is already one of the most stressed in the province.

UPLAND CANAL PROJECT

The province has been looking at options for increasing water supply in the Qu'Appelle Basin. Six studies related to this were done from 2009-2012. *Enterprise Saskatchewan* funded a Nov. 26, 2012 report by Clifton Associates which was done in partnership with the *South Central Enterprise Region* and the WSA. Downstream First Nations and municipalities which would be affected were not consulted or involved.

Building pipelines from Lake Diefenbaker to Buffalo Pound, upgrading the existing channel, or building a new canal in or out of the valley have all been considered. An upland canal which would go near Tugaske, Eyebrow, Brownlee and Keeler is recommended in the Clifton report. It is estimated that this 6 to 7-year megaproject would cost \$1.2 billion to build and another \$4.5 to \$11.5 million yearly to operate. Half of these operating costs would be for the energy to operate pumps.

At present the flow in the first 35 km of the Upper Qu'Appelle reaches 14 cubic meters per second (m³/s) but this can go down to 6 m³/s during the dry summer months. The proposed upland canal would hypothetically increase peak flow out of Lake Diefenbaker to 70 m³/s. With the uncertainties of climate change and all the projected industrial uses of this water, it remains highly uncertain what the flow would be by the time it reaches the Lower Qu'Appelle.

The Clifton report argues that without this new “conveyance” system we will face serious “water constraints”. However, it is important to ask who would face these constraints. Clifton refers to an earlier *Saskatchewan Watershed Authority (SWA)* report which concluded “*Increased amount of irrigated area and expansion of the potash sector are the main forces behind the change in water demands*”.

While municipal and recreational uses are listed as part of the projected “*doubling of water demands...over the fifty years*”, the report says that “*The main source of water growth are to be found in the growth of irrigated agriculture and the expansion of industry and mining*”. It continues, “*Municipal water consumption was found to be static over the period in spite of a growing population.*” It notes “*the effects of municipal pricing in stimulating water conservation*”.¹⁴

The report includes projected demands for water by sector. Demand for municipal uses of water in the Qu’Appelle River Watershed would increase by 0% from 2010 to 2060; demand in agriculture, primarily for irrigation, would increase by 219% and in industry and mining it would increase by 172% over this half century.

The projected growth in volume is staggering. Whereas municipal demand would remain around 45,000 cubic decameters (dam³)¹⁵, in agriculture it would grow from 65,000 to 206,000 dam³ by 2060. The projected growth for industry

and mining would be from 32,000 to 87,000 dam³ by 2060. Municipal uses of water would remain stable while uses for agriculture and industry and mining would grow three-fold.

Notice how the term “*water growth*” comes into the language. But in reality, there is no growth in water, only growth in the availability and use of water. And depending upon the uses, this can degrade water, making even less available for the regeneration of life. And though there is some lip service to the impact of climate change on prairie water, this fifty year scenario is likely closer to industrial fantasy than ecological reality.

But it clearly articulates the ambitions of corporations looking for the government to provide them with “*water security*”. It does not articulate a strategy of sustainability of water quality and quantity, which is what we so urgently require.

The report does, however, try to create a consensus for “*water growth*”. Section Six on *Environmental Implications* acknowledges that “*Water quality declines throughout the system. In the upper reaches of the Qu’Appelle algae blooms, silting and farm chemicals reduce the purity of the water leaving the lake. When waters are returned from industrial or municipal use there are more chemicals and raw sewage introduced into the Qu’Appelle River, further reducing water quality, increasing algae bloom in the lower lakes and reducing the environmental purity of the rivers creating hazards for fish and wildlife.*”

This is all true. But what is their perspective on how to deal with these problems? They don't mention the importance of upgrading Regina's wastewater treatment. Instead they write: "The Conveyance will address some of these water quality issues." They claim that, "Lake Diefenbaker waters are remarkably pure", which is debatable,¹⁶ and that "The upland canal route will end loading of farm chemicals from natural runoff". It continues, "Contaminants in the Upper Qu'Appelle from silting, algae and other sources will no longer be added to the water supply. Waters

to be returned into the Lower Qu'Appelle lakes will have fewer contaminants and limit downstream algae bloom for all of the residents and cabin owners throughout the valley".¹⁷

THE LIMITS TO GROWTH

This makes it sound like we will all be winners. But can economic growth built on unrealistic views about "water growth" become the solution to water quality problems



arising from past economic growth? Or is this just another ploy to get rural and urban support for more and very expensive water security for agribusiness, industry and mining?

The Executive Summary makes the goals quite clear by saying, *“With higher rates of economic growth and in an era of climate change it has become clear that water security will be a priority for generations to come.”* But the fundamental question is how to prevent the worst case scenarios of climate change and still try

to adapt to early climate changes in an ecologically and socially sensible way? Or will it be “business as usual” and the denial that goes with this?

The proposals in this report bypass all the fundamental considerations about sustainability and simply assert that the benefits will include *“improvements in the investment climate for the area”*, which is clearly the bottom line. It then alleges without any serious investigation that there will be *“water quality benefits for the Lower Qu’Appelle River and lakes*



Qu’appelle Valley Panorama by Daneimrie at en.wikipedia

downstream...” In other words the upland canal will simply be good for everything, for “wildlife habitat and recreational benefits” and apparently even for “drought and flood proofing”.

After the primary motivation becomes transparent, this seems like a lot of window dressing. The Executive Summary says “...there is some urgency to resolving the water supply issues. Existing levels of growth are already laying the water demand foundations for water deficits in the region in the next decade”. It continues: “with several billion dollars investment decisions looking for water security it will be important to secure a long term sustainable water supply”. Notice that “sustainability” has been altered from its intended meaning of inter-generational-justice, to mean sustaining profitable economic growth.

The motive is clear. The Introduction says, “Studies of water demands in the region suggest that by 2023 water supplies to the area from existing sources may become a constraint on industrial growth and agricultural value added development”. Earlier the report appealed to “a planet that needs more food and fertilizer to feed a growing population”. It continued, “These are all long projects with substantial water demands”. Then when it discussed the water supply project it comes right to the point, saying “...water demand in the Qu’Appelle Basin...will rise in the future as a result of the expansion of irrigation and potash mining that together could account for three-quarters of the total water use in the basin by 2060”.¹⁸

This project would perpetuate a short-term, unsustainable resource export economy that ignores that the rest of the world is presently being challenged to move towards more food self-sufficiency. Expanding intensive irrigation in a drought-prone region facing the challenges of climate change is not going to resolve these.

If we wish to protect our common watershed we will need to collectively steward a shift away from ideology premised upon unsustainable economic growth that largely takes water for granted, to one that makes a priority out of sustaining the watershed itself. Water will have to become the new bottom line.

URBAN WATER DEMAND

Both Regina and Moose Jaw fully depend upon Buffalo Pound for their water, and the capital city is now undergoing a residential boom. Without responsible infrastructure maintenance and improvements, this growth will create demands for more water and place greater pressures on our watershed.

From 1955 to 2010, water consumption from Buffalo Pound increased nearly ten-fold, from 4,000 to 37,000 megalitres (ML)¹⁹. Water purchased by Regina between 1966 and 2012 increased more than three-fold, from 9,000 to 29,000 ML.²⁰

The rate of increase started to slow in the late 1980s, partly due to some conservation programs, and the absolute volume used started to decrease in the late nineties. From 1995-99 the use of metered water peaked at 24.4 million cubic meters (MCM). It continued to drop until 2010, when it was 21.1 MCMs. However, in 2011 it went back up to 22.1 MCM and the projected total for 2013 was again up, at 23.1 MCM.

Conservation measures to reduce the waste of precious water seem to have stalled. In 2006 Regina began to use the Infrastructure Leakage Index (ILI). The percentage of water unaccounted for is calculated by subtracting the amount billed to ratepayers from the amount purchased from Buffalo Pound. From 2007 to 2011 this continued to rise, from 16.8% to 18.25%.

This means Regina is close to wasting one gallon in every five gallons that it takes out of the watershed. In its *Water and Sewer Utility Budget for 2013* the City admits “*there is potential for marked improvements*” but it adds “*that further water loss reduction, although possible, may be uneconomical*”.²¹

The way Regina prices water shows disregard for the water itself. The water rate in 2013 was set at \$225 for one million litres. Compare this to the \$1.50 it costs for one bottle of water. The 4% increase over 2012 was reported as being due to the rising costs of electricity, chemicals, equipment and labour. The water itself is not mentioned and there is no intrinsic value

placed on the watershed itself. The cost for the actual water from Buffalo Pound was only \$6.4 million, a pittance of the overall utility costs of the City.²²

When the growing costs of supplying water are discussed the impression is sometimes left that this is due to the growth in residential sub-divisions. In other words these costs are the result of more people building homes in the city. Yet in 2013 nearly one-third or 7.1 MCM of the billable water was used for non-residential purposes. Commercial and industrial uses of water are a significant part of Regina’s growing water demand.

Regina is still using an old-world view of the “economics of water”. Its approach ignores the coming challenges and costs of providing safe water through a reliable, conserving infrastructure. The City finally admits that its continued use of chlorination for disinfection creates toxic by-products that “*are dangerous to human health*”.²³ Their *Long Term Water Utility Plan* even recommends the increased use of ultraviolet light disinfection, something Saskatoon expanded years ago. It then admits that the need to control serious taste and odour problems with these toxic chemicals is on the increase.

This 2013 report also admits that Regina’s “*wastewater lagoons are overloaded and under review*”.²⁴ **So we now know that Regina knew its lagoons were problematic long before it dumped untreated sewage into the Wascana Creek and Lower Qu’Appelle during the 2014 summer**

flooding. How does the capital city get away with this?

The City report also says that the treated water is corrosive and leading to “*slow deterioration of piping and fitting*” as well as concrete tanks, though they displace this problem onto future generations saying it is not of “*immediate concern*”. Meanwhile there is evidence that full biological nutrient removal (BNR) can reduce the wear and repair costs of wastewater treatment technology. Finally they admit that the nine wells in and around the City that act as backup to the Buffalo Pound source are “*less than the City’s typical needs*” and that this water has levels of iron, magnesium and hardness that don’t meet what they call their “*aesthetic objectives*”.

Regina’s contributions of 10% of its general water charges to a Capital Replacement Fund are likely to be sorrowfully below the requirements to address all these challenges. We have already seen the rising costs resulting from Regina procrastinating for nearly a quarter of a century with its wastewater treatment upgrade. Had it been planned for when the need was first discussed in the mid-1990s, the costs to the taxpayer would have been many factors less.

The spending needed to reduce water waste and water demand and to upgrade water quality, safety and the viability of the infrastructure is considered “*uneconomic*”. Yet, according to the *Annual Report of the Buffalo Pound Administration Board*, the *South Central Enterprise Region* in consultation with the

WSA is devising a very expensive “*plan for a flow rate of up to 25 cubic meters per second in the Upper Qu’Appelle River; more than three times the volume the current channel can presently accommodate*”.²⁵

CLIMATE CHANGE AND OUR WATERSHED

Climate change is already affecting our watershed and it will do so more severely in the future.

Studies of glaciers on the eastern slopes of the Rockies estimate that even if the climate were to somehow stabilize, from 31 % to 46 % of current glacier volume will be lost by 2100. A more realistic forecast of continuing global warming suggests that glacier volumes will decline 79% to 89% by then.²⁶

Between 1985 and 2005 the eastern slopes of the Rockies had a glacial loss exceeding 20%. The Bow and Red Deer River basins are major sources for the South Saskatchewan River. By 2100 the estimated losses of the current ice volumes that feed these basins will be 66% and 71%, respectively. “*These impacts on the river systems will be concentrated in late summer*”, after melting and runoff of seasonal snow which contributes the bulk of the discharge in the early summer.

Will this dynamic affect water quality and quantity in the Lower Qu’Appelle? To understand the effects of retreating

glaciers on our watershed, we need to better understand how glaciers work. The bulk of the research uses methods that are not the most accurate; ground and aerial radar ice thickness mapping would give us more accurate results.

How can governments and industry make accurate projections of future water availability without more accurate assessments of future supply? And will this research be undertaken with the Harper government's hostility towards science and evidence-based policies?

There are significant reductions in snowfall in the eastern slopes of the Rockies compared with those on the B.C. side. Alberta WaterPortal reports that "*The precipitation gradient in the eastern slopes is dramatic*", ranging between 2002-2009 from 1900 mm at Haig glacier, to 430 mm over this period in Calgary. It adds that we tend to think that, "...runoff from the seasonal snow pack on glaciers is presumably 'renewable' - it will continue to feed the rivers even if the glaciers disappear. However, with the loss of glacier ice this snowpack contribution may also decline, as glaciers act as snow traps that encourage snow accumulation."²⁷

It continues that, "...the cold environment on glaciers also preserves much of this snow until later in the summer melt season, while routing through the glacier can introduce delays of weeks to months in delivering of melt-water to the rivers, particularly in the early summer. Glacier retreat is therefore expected to result in earlier melting and runoff of seasonal snow from sites that are presently glaciated."

"Glacier runoff is proportional to available melt energy, whereas runoff in non-glaciated catchments is governed by precipitation. This means that discharge from glaciated catchments is less sensitive to weather fluctuations, with a supply of runoff in periods of drought that is lacking in other non-glaciated catchments."

"Glacier inputs to the Bow River at Banff can exceed 50% in the late summer of a dry year, although glacier melt constitutes only 2% of the average annual. Annual discharge statistics therefore mask the importance of glacier contributions to stream flow. In most summers in the Canadian Rockies, seasonal snow persists until July at low elevations on the glaciers, and until August at higher elevations. There is little seasonal snow remaining elsewhere in the mountains at this time. Once this snow cover is removed, glacier runoff is dominated by melt from the low-albedo glacier ice²⁸. In summers of drought, groundwater recharge and ice melt are the sole sources of sustenance for mountain streams." With sustained glacier retreat, "long term water storage is being tapped to augment the runoff derived from rainfall and seasonal snow. This means that current and future runoff is likely to be less than mean historical runoff."

The Saskatchewan River has seen its flow drop by 12% in the last century. Once it enters Saskatchewan, it receives only a 2% increase in volume in its journey through our province. Despite our relatively low population, existing demands

consume about one third of its historically decreasing flow. With human induced climate change expected to hit hard in the Palliser Triangle, the semi-arid region in southern Alberta and Saskatchewan, we can expect huge challenges.

One major challenge is undertaking accurate glacier volume research. Another is the lack of coordination between the many government, academic and stewardship agencies at federal, provincial and municipal levels.²⁹

The *Prairie Adaptation Research Collaborative* or PARC has published findings about climate change impacts on the prairies, which have implications for the Qu' watershed. PARC's Norm Henderson writes that, "*Reduced winter snowfall in the latter half of the 20th century contributed to the observed trend of declining stream flows... Winter warming will reduce snow accumulation in alpine areas and across the prairies.*" This is already a critical issue for many rivers including the Bow and Oldman Rivers which both feed into the South Saskatchewan River. "*This will cause declines in annual streamflow and a shift in streamflow timing to earlier in the year, resulting in lower summer water supplies... Continued glacier retreat will exacerbate water shortages already apparent... during drought years. Drier soils result in decreased subsurface recharge, which will lead to a decline in the water table in many regions.*"³⁰

PARC's summary report continues, "*In the Alberta Rockies, an*

increased frequency of landslides, debris flows, rock avalanches and outburst floods is probable... Current and projected trends... include increased rainfall, especially in winter, rapid snowmelt and shrinking glaciers... and decay of permafrost... at higher elevations."

Henderson continues that, "...in agricultural areas, droughts could result in enhanced soil erosion and increased sand dune activity. Slopes and stream channels exposed to less frequent but more intense rainfall will also be more vulnerable to increased erosion and shallow slope failures. Erosion will increase stream sediment and the nutrient loads in local water systems could lead to eutrophication of water bodies and increased pathogen loadings in streams, especially during the summer... the joint effects of climate change and nutrient over-enrichment (are seen) as the major threat to agro-ecosystems. Phosphorus and nitrogen ... impinge water quality and encourage eutrophication when run-off events move these nutrients into waterbodies."

Models have shown that with climate change there will be a northern shift of plant species. Henderson writes that, "... drought conditions can weaken trees' defenses to more virulent pathogens". In the parklands "*there will be the shrinking of aspen groves and decreasing shrub cover.*" Could these changes and stresses limit the ability of plant species in the Qu'Appelle Valley to withstand the growing likelihood of erosion and fire?

Henderson continues that, "*aquatic eco-systems will be stressed*

by warmer and drier conditions. A large number of prairie aquatic species are at risk of extirpation. Many fish species and amphibians are sensitive to small changes in temperature, turbidity, salinity or oxygen levels. ..Larger algal blooms accelerate lake eutrophication..."

Most compelling, PARC's research notes that "Drought can increase concentrations of pathogens and toxins in domestic water supplies." Increasing water scarcity and water supply variability will also affect industries that want more access to more water, such as all the projected potash mines. Henderson continues, "**Outbreaks of waterborne disease have been linked to intense precipitation, flooding and runoff from agricultural livestock areas.**" Do we even know what happened in this regard after the 2011 flooding? We are already facing the convergence, as beaches throughout the Calling Lakes had to be closed due to elevated E.coli in the aftermath of the 2014 summer flood.

It is vital to know "...when, within the year, extra heat and water will be available...Most of the warming is occurring in the winter...most of the extra precipitation is expected in the winter and spring and increasingly in the form of rain as the climate warms. Scenarios of summer precipitation are less consistent but many include decreased summer precipitation falling in fewer and more intense storms." Meanwhile "...the mid to later stages of longer, warmer summers will tend to be drier, possibly much drier."

The conclusion is that "There is a huge gap in our understanding of the extent to which existing management practices and public policies either encourage or discourage the implementation of adaptive strategies. There is also a need to determine the relative importance of adaptive responses versus other priorities, and to develop approaches that incorporate climate change considerations into existing policy instruments."

We do not see much evidence-based foresight in Saskatchewan's plans to industrialize the use of water. Now is the time to build back capacities for policy research and planning that have been squandered or downplayed in today's cavalier obsession with growth and unfettered resource extraction.

INDUSTRIAL "WATER RIGHTS"

The numbers just don't add up. There will almost certainly be more demand for water than supply and this discrepancy is projected to increase with the extreme weather that comes with climate change. And as the supply of water becomes more questionable, the water quality will become even more at risk.

Yet, even without the effects of climate change our human right to safe, clean, affordable water is under threat. On the cusp of tremendous industrial mining expansion, our provincial government is treating water as an industrial

property right. Are they perhaps preparing us for water scarcity in the name of corporate-driven economic growth?

In April 2013 the Environment Minister was asked by members of the *Calling Lakes District Planning Commission* “how will priorities be established in drought years?” His answer: “Licensed users will be accorded first priority to water”. He added: “However, municipal or community uses and the water needed to maintain the ecology of the river system are also considered...” But he ended: “During extreme drought years, lakes within the Qu’Appelle basin will fall below their desirable operating ranges for recreation.”³¹

Sustainable development means that water quality and eco-system health can no longer be traded off for short-term economic benefits. It means we must start to take the limits of growth to heart if we ever expect to restore and protect our watershed.

Industrial self-regulation resulting from deregulation and off-loading goes hand in hand with the shift towards treating water as a commodity. The Harper government’s 2012 Omnibus Bill has already removed much federal oversight from our watershed. And the province is not providing the resources required to make up for the shortfall

The Saskatchewan government created the *Water Security*

Agency in 2010 primarily to oversee and implement its policy of greatly expanding the use of water as a commodity. This agency has the unenviable task of trying to balance the uses of water for industry, agriculture, recreation and domestic purposes, while paying some attention to protecting biodiversity and eco-system health. But can this be done? The numbers simply don’t add up. Nor do the policies and resources being provided.

The WSA is being promoted as a one-stop public agency to address concerns about water, but there continues to be split jurisdiction over water quality (e.g. Sask Water, Environment and Health). This can be confusing and leave cracks where there can be little or no coordination or integrated oversight.

Regina released untreated sewage and there was unprecedented additional agricultural and other runoff into the Lower Qu’Appelle during the flooding in summer 2014. Beaches had to be closed due to elevated E.coli. All the jurisdictions dealing with water should have been getting together to integrate their information as a basis for heightened public awareness and evidence-based water policy. But the coordination across these ministries seemed to have more to do with managing “spin”.³²

Outright deregulation is adding to the reduction of oversight. The federal role in protecting eco-systems and fish habitats has been steadily declining under the Harper government. It’s debatable how much regulation actually occurs, for water

quality objectives act more as guidelines than regulations. Oversight with enforcement doesn't occur except in blatant cases and usually after the fact, which won't encourage a proactive approach to watershed protection. Nor does it encourage public awareness about the kinds and levels of ongoing contamination. We must ensure that this practice of "out of sight, out of mind" self-regulation does not become the new norm for Saskatchewan!

INTER-PROVINCIAL AGREEMENTS

Watersheds need to be understood and protected as they have evolved. They will never be understood solely in terms of the resource extraction ambitions of politicians and corporations operating within the legal-political jurisdictions that watersheds happen to flow through. The degradation of Lake Winnipeg is the outcome of ongoing historical neglect along the whole inter-provincial waterway and the lake becoming a huge sink for pollutants.

The inter-provincial prairie flow of water received some attention, especially after 1948. In 1969 the *Master Agreement on Apportionment* (MAA) was negotiated and in 1992 this was amended to include water quality. Recently the *Canadian Council Of Ministers on the Environment* also adopted a "multi-barrier approach" which highlights protecting lakes, rivers

and aquifers which are the source of our drinking water. This declaration of support for a more integrated, preventative approach is encouraging.

In contrast, the Saskatchewan government is presently taking a very different stance, attempting to normalize the present level of degradation in the Lower Qu'Appelle watershed and get on with quick expansion of the resource industry. They are not treating water as a human right and an ecological need. For them "water rights" has come to mean the property rights of industries who obtain water licenses.

And local politicians aren't necessarily encouraging water quality protection. In his defense of a P3 waste water treatment plant, Regina's mayor Fougere went completely against the good sense of the Council of Ministers, trying to separate and isolate the quality of drinking water from the adequacy of waste water treatment. He wouldn't be able to do this if Regina's poorly treated water was released upstream from the City. It's ultimately all interconnected and it must all be protected.

How much can the public who cares for watershed protection count on inter-provincial oversight? The MAA is overseen by the *Prairie Provinces Water Board* (PPWB). According to Schedule E in the 1992 agreement the PPWB is to monitor the aquatic environment, issue reports on water quality, promote comparable quality objectives across the prairies and promote a

preventive and proactive eco-systems approach that recognizes the interdependence of water quantity and quality. This is something that Regina and Saskatchewan politicians have largely ignored.

The PPWB can even propose measures to maintain water quality "...if the assessment of the impact of a proposed development indicates that water quality has been or may be significantly altered..." Surely these conditions apply to the already degraded Lower Qu'Appelle. But will federal and provincial policies wedded to unrealistic views of water supply encourage such a proactive approach? And how much does the public even know about these elusive protections?

Can we count on these wise objectives to protect our watershed? The PPWB has two federal members and one from each prairie province. All its recommendations, bylaws and budgets require unanimous approval, which means each party (the federal government and each province) has a veto. So the Harper government or the Saskatchewan Party government can stop any effective action if they think it will slow down their resource extraction agenda. Further, *Environment Canada* does the monitoring and the Harper government has already meddled in their affairs by shifting some monitoring resources to the higher profile tar sands projects.

Integrated science may be on the side of protecting eco-systems. But before we can count on the PPWB to lead

the way, we will need more politicians and governments that make decisions based on evidence. And the PPWB will likely become even more vulnerable if the Harper Conservatives are re-elected in 2015.

BECOMING WATERKEEPERS

To make serious headway we need to recognize that watershed protection in Saskatchewan is at a fairly rudimentary stage and so is public participation in the endeavour. It is an open question how able the WSA is to implement a watershed plan designed to prevent further degradation of water quality in the Lower Qu'Appelle basin. This would mean that it ensures that everyone meets provincial and federal water quality objectives (WQO's) for all uses and that there is no degradation trend in water and biotic quality or bottom sediment. Biological indicators such as algal biomass would be required. It is debateable whether this is even what the WSA is all about. Meanwhile a concerned public wants the government and their water agency to be committed to enhancing water quality objectives and improving water quality, if necessary by using pre-set targets.

The planned reduction in Regina sewage nutrient releases can be expected to produce some level of improvement, certainly to Wascana Creek and perhaps even to the

Calling Lakes. It is therefore not clear why the *Lower Qu'Appelle River Watershed Plan* did not refer to the potential for such improvements at the time the *Lower Plan* was announced in July 2013. Were they perhaps covering their bases?

One difficulty with setting any targets for the Calling Lakes in the Lower Qu'Appelle Plan, beyond Regina reducing its nutrients, is that there is inadequate knowledge on which to base any such objectives. Non-point nutrient sources have not been adequately measured through the monitoring of flow and concentrations coming from the major tributaries. These carry runoff from cropping, grazing and winter feeding, cottages, roads and other rural land uses throughout the watershed.

WSA recently initiated a program intended to measure water flows and nutrient levels over at least two years, which includes the spring 2013 high snowmelt and the following lower runoff year. This is to be done at seventeen main stem and eleven tributary sites distributed over the entire basin. This information could provide nutrient loading estimates that could then be used to more precisely model the effects of both non-point and the Regina and Moose Jaw point sources on river and lake environments. This data could also begin to provide an independent basis for evaluating various strategies for improving lake water quality. But this research must be fully transparent and relevant to restoring the watershed.

Collection of this information is critical to assessing the site-specific and cumulative effects of any new projects such as approved or proposed potash operations. But effective foresight and preventative management of cumulative effects requires more than monitoring. These research results can be used to rank pollutant sources and water users, to focus reduction measures on the greatest contributors to degraded water quality, and to prepare a management plan that identifies these measures and sets implementation schedules. Government policies, including pollution and water allocation management legislation, however, must support these measures. At present this is not the case.

There has to be regulatory and non-regulatory actions, such as education, financial incentives and the use of permits. Most vital, government assessment requirements have to include procedures for evaluating the cumulative effects of new impact sources; planning processes for any new development must be tested and amended to attain watershed protection and restoration management objectives. And there has to be inter-jurisdictional collaboration.³³

It seems clear that much work by local governments and mobilization by non-governmental groups remains to be done before there will be any public confidence that further deterioration can be prevented and real improvements can follow. But we must get on with it.

This does not yet seem to be what the government wants. After its formation in 2012 the WSA absorbed the *Saskatchewan Watershed Authority*. Since then the WSA has been creating *Watershed Steward* groups to work with it to achieve the Saskatchewan government's mainly industrial goals. In March 2013 it established the *Lower Qu'Appelle Watershed Stewards*. The plan it created for the community-based group to implement is seriously lacking. It concentrates on education, enhanced best-practices and self-regulation among farmers and individuals regarding their waste management, but it has hardly any plans or processes to address industrial uses of water, which will be among the biggest factors shaping our future water quantity and quality. It encourages volunteers to clean up debris along rivers and streams while industrial groups are laying plans to exploit the overall waterways. It gives little attention to protected areas including wetlands that have a huge function in sustaining and restoring watershed health.

Its approach boxes us in with a simplistic and poorly conceived “*interest based model*” that avoids facing some of the underlying conflicts of interest. It places the priority on the greatest set of interests, by which it surely means industrial uses of water.³⁴ This can take attention away from the whole watershed, which must be understood and approached from an integrated, ecological perspective.

For an integrated plan to develop there must be open

access and sharing of information, including relevant federal research, among all stakeholders. We can't have community-based groups expected to help protect their watershed while private information sharing and water-use planning is occurring behind closed doors between industry and government. Both First Nations and settler environmental interests must be at the table. There must be transparency and true collaboration to effectively restore and protect our watershed.

Water in Saskatchewan needs to be respected as a human right and a sacred source of all life. We will need more than government-animating “community oversight” or veto-restricted inter-provincial bodies to achieve this goal. Indigenous and settler communities, ecumenical and environmental groups, scientists and local governments will need to become ever-more engaged with each other to meet the common challenge. And this will have to take a long overdue leap into ever-more respectful, post-colonial relationships among communities. Perhaps it is time to consider a more independent waterkeepers organization³⁵ to fully and honestly monitor, advocate for and protect our watershed for ourselves and future generations.

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Endnotes

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3. *Lower Qu'Appelle River Watershed Plan, Water Security Agency, March 2013*, p. 9.
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5. See B. Wyn et al, Historical Metal Concentrations In Lacustrine Food Webs Revealed Using Fossil Ehipippia From Daphnia, *Ecological Applications*, 17(3), 2007, pp. 754-764; also see P.R.

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6. Breanne Massey, "Group Wants Solutions to Water Issues, *Fort Times*, August 29, 2014, p. 1.
 7. Much of this information is taken from Waiser's presentation to the community forum in Fort Qu'Appelle on June 22, 2013.
 8. These figures have been double-checked with the WSA.
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 10. Pesticides Contaminating Prairie Wetlands, *CBC News*, Jan. 8, 2014.
 11. One ongoing project is "*Distribution and Impact of Neonicotinoid insecticides on wetland ecosystems of Prairie Canada*". More information at: Christy.morrissey@usask.ca
 12. This occurred when the *Qu'Appelle Valley Indian Development Authority* (QVIDA) was in existence.
 13. FHQTC Summit on water, March 2012.
 14. Clifton Associates, *Upper Qu'Appelle Water Supply Project*, 2012, p. 47.
 15. A decameter is equal to 1,000 cubic meters (1,000m³).
 16. This is disputed by researchers at the U of S's *Global Institute for Water Security* who say there are large amounts of phosphorous coming into Lake Diefenbaker all the way from Alberta.
 17. Clifton, op. cit., p. 53. The matter of the level of evaporation along the concrete conveyance and its deterioration are ignored.
 18. *Ibid.*, p. 6
 19. A megalitre (ML) is equal to a million litres.
 20. See *Buffalo Pound Water Administration Board*, Annual Report, 2012, p. 13.
 21. Water and Sewer Utility Budget, City of Regina, 2013, p. 32. Other quotes in this sub-section are from pp. 29-33 of this report.
 22. The City reports that this is only 13% of the total costs for utilities, excluding "debt and transfer to the General Operating Fund". *Ibid.*, p. 29.
 23. Trihalomethanes (THM's) are byproducts of algae and chlorine. Guidelines were established in 1993 and since then epidemiological research has found more associations with "*bladder and colon cancer and adverse pregnancy outcomes*."
 24. *Ibid.*, p. 29.

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28. Albedo refers to the reflectivity of a substance.
29. This is paraphrased from Allan Casey, The South Saskatchewan River Runs Dry, *Canadian Geographic*, Oct. 2010.
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31. Letter from Minister Cheveldayoff to *Calling Lakes District Planning Commission*, April 5, 2013.
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33. Regina should continue to be encouraged to be proactive and participate in the *Cumulative Impacts Assessment* that came out of the Standing Buffalo First Nations court case on water.
34. *Lower Qu'Appelle River Watershed Plan*, p. 33.
35. The Waterkeeper Alliance, based in New York, started in 1999.

There are now over 200 waterkeeper groups around the world, including Waterkeepers Canada at: waterkeepers.ca

ACKNOWLEDGEMENTS

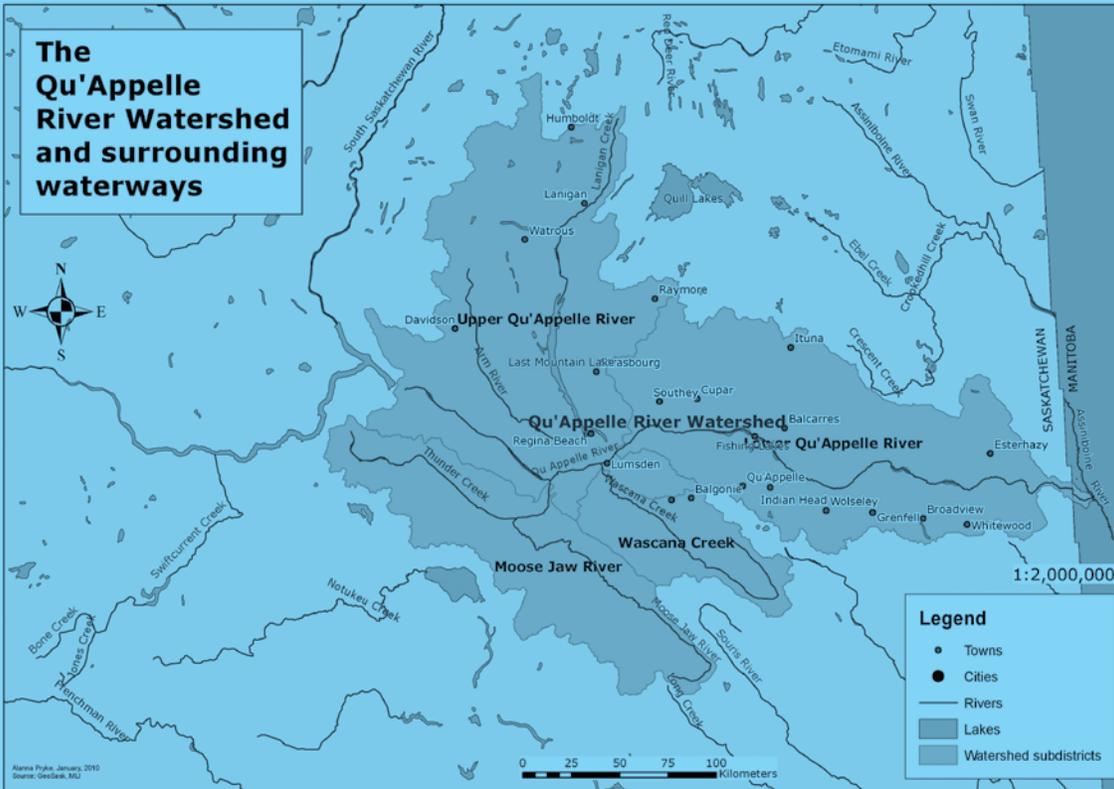
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“Water is Life”

- 1. WORK WITH NOT AGAINST NATURE:** Protect and restore valley wetlands and marshes which play vital roles in flood control and water purification. It is time we put value on “ecological services.”
- 2. ANIMATE AWARENESS AND RESPECT FOR WATER:** Encourage, participate and facilitate ecumenical and other spiritual rituals, services and practices that deepen the community’s awareness of our living relationship and interdependence with water.
- 3. STOP CONTAMINATION AT SOURCE:** Stop urban, industrial and agricultural contamination at their source. The biggest issue in this regard is quickly getting Regina to stop dumping poorly treated sewage into the Qu’Appelle system.
- 4. SUPPORT ECOLOGICALLY SUSTAINABLE DEVELOPMENT:** New sub-divisions need to be located outside flood plains and where they do not detrimentally affect shorelines or the overall integrity of the Qu’Appelle waterways.
- 5. CONSERVATION OF WATER:** Alter the uses of water to reduce waste and contamination. There are new technologies such as recycling “grey water” that can greatly reduce demand on costly public water infrastructures.
- 6. RECREATIONAL RESPECT FOR WATER:** Work towards recreational uses of the Qu’Appelle waterways that respect, preserve and restore ecological integrity (biodiversity). Areas could be targeted for low impact recreation such as sailing, canoeing and kayaking.
- 7. WATER QUALITY AND FOOD SECURITY:** Protect the natural food chain from industrial toxins and accelerate conversion to sustainable (organic, non-toxic) food production to enhance regional food markets and food security. Remember that upwards of 80% of the water we ingest comes from our food.
- 8. WATER AS A HUMAN RIGHT:** Research and monitor provincial policies and regulations re water use to ensure that these will truly enhance and not further degrade water quality. Critically assess the industrialization of water for more mining, fracking and irrigation and its threat to future water quality. Work to make water a human not a property right to ensure that when there is a scarcity of water human domestic use gets priority over industry.
- 9. BUILD STRONG ALLIANCES:** Work with and when possible ally with indigenous, farm, labour, environmental, cottager, regional planning, municipal, watershed, water-keeper and other groups to meet common ends to protect and restore water quality. Keep engaging new people in the watershed protection campaign.

The Qu'Appelle River Watershed and surrounding waterways



Alanna Pyke, January, 2010
Source: GeoData, BCJ