Water and Energy Planning Strategies and Resources for Fisher River Cree Nation

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This project is a product of partnerships between the Assembly of Manitoba Chiefs, the Canadian Mortgage and Housing Corporation, Fisher River Cree Nation and the University of Manitoba, Department of City Planning.

Thank you to Fisher River Cree Nation for their cooperative work on this project.

Thank you to all those who contributed their time, energy and resources into this project.

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Executive Summary

This report focuses on community planning initiatives related to water and energy for Fisher River Cree Nation. It best functions as a resource guide that is accessed selectively as needed. The projects in this report make an effort to tie into existing planning initiatives already underway in the community. The watershed mapping and water education projects tie into the Integrated Watershed Management Plan that Fisher River Cree Nation and other communities in the Fisher River Watershed are developing in conjunction with Manitoba Conservation and Manitoba Water Stewardship. The renewable energy and energy conservation projects help lay the foundation, next steps, and research potential options for FRCN as the community moves forward with community energy planning initiatives.

Students met with Fisher River Cree Nation Chief and Council, as well as community members, multiple times over the course of the semester. Initial meetings focused on topics of interest and potential projects. Once the projects were confirmed, the meetings focused on gaining community input for the projects. Chief and Council were updated on project progression throughout the process.

The end product includes watershed maps of local knowledge based on community members' concerns, solutions, and ideas; water related educational materials; community energy planning information regarding energy conservation; and options for renewable energy. There is a particular emphasis on education, as Chief and Council emphasized that this was a high priority. It is also hoped that this report and other supplementary materials (www.firstnationshousinginitiative.ca) can be used to contribute to the knowledge exchange the Assembly of Manitoba Chiefs is facilitating, contributing to building community planning knowledge in First Nations communities throughout Manitoba.

Introduction

This document is a guide containing a collection of works on the topic of water and energy. Information on water includes: watershed mapping, water education and juristictional resposibilities. Information on energy includes: energy conservation tips and renewable energy sources, products, funding opportunities and precedents. We have also included copies of education material that can be printed from the jump drive and distrubuted on mass scale. The materials, including the magnets, pamphlets and recipie cards are included for educational purposes. The information and style can be adapted anytime using the electronic copy provided. They were created to help bring environmental awareness to the wider commnity.

The planning process between FRCN and U of M planning students has resulted in much more than this document could possibly convey. As students, we have merely stepped into an already active planning process, as there are ongoing environmental plans unfolding with CIER, the Community Health Work Plan, as well as the environmental vision facilitated by last year's U of M planning students.

Now more than ever, the words energy and environment are moving to the forefront of community agendas. For Fisher River Cree Nation, there is an image of the land and all of the natural and cosmological systems that live there: The sun, the moon, the water, the soil, the rocks, the wind, the rain and the snow. These are all natural and clean ecological systems that can be uncovered and harvested as renewable energy. We are also beginning to truly see the value in raising environmental awareness through education in schools and environmental committees in communities. Understanding the link between oil, chemicals, water, animals, food and our health as humans is key to making positive choices and respectful decisions. Our decisions and actions are engrained in the perceived value of economic gain. Our traditional economic systems have not been favourable to the natural environment. Thankfully, we can see a change happening: one that affixes greater value to the remediation and sustainability of the earth.

As governments continue to invest in the clean economy, jobs and employment are being made available in what is called the green collar sector. Green collar workers may include work that is related to the securing, financing, teaching, engineering, recycling and documenting of natural energy systems. For example, trade-level workers who install solar panels, plumbers who install solar water heaters, and construction workers who build energy-efficient green buildings would all be a part of the green-color division of labour. They also include organic farmers, renewable energy engineers, environmental lawyers and educators and eco-technology workers. As fossil fuels become more expensive to find, extract, and bring to market, the economy of work transitions from that of the short-term extraction and processing of nature to that of long-term protection and adaptation of nature. The shift into the new economy is an easy decision to make, especially when the measurable financial benefits to improving energy systems are tangible and all around positive – starting with improvements to our physical, mental and spiritual health and

transpiring into our larger political, economic, social and cultural realms. People are beginning to understand the connection between cutting emissions and saving money and how it all adds up to a recipe for balance and health.

Fisher River has already started a unique long-term journey on the path towards environmental protection and adaption. This document is a testament of the journey and may serve as a symbol of the story that is unfolding. Last year's students with the water and climate change initiatives provided us with inspiration and direction in both the material and immaterial sense: stories, collective memories and dreams permeate and complement the more tangible entities, like the water maps, the tool kits, the power predictor, the magnets and pamphlets, the long-term relationships, and on-going knowledge exchange. It is hoped that these deliverables serve as a touchstone for moving conversations about Fisher River Cree Nation's land towards a balanced and sustainable economy of living.

Community Involvement

The Department of City Planning at the University of Manitoba began its relationship with Fisher River Cree Nation in 2010-11 academic year. The first group of Master's students worked on several plans for the community: Cemetery Design Project, National Cree Gathering Site Plan, Housing Report and Maintenance Quick Reference Guide, Street Naming and Addressing Plan, Watershed Report, and Climate Change Adaptation Plan. This year, four new Master's students worked with FRCN on two new projects, outlined by Chief and Council: Water Pollution and Conservation, and Energy Conservation and Renewable Energy Options; with a heavy emphasis on education in both projects.

Beginning in September of 2011, the group began meeting with FRCN Chief and Council, as well as other community members. Meetings were held at Fisher River Cree Nation on the following dates, and minutes of each meeting are included in Appendix III:

September 20
Meeting with Chief and Council for introductions and to discuss topics for projects.

September 29
Meeting with Council to discuss projects ideas for water and energy.

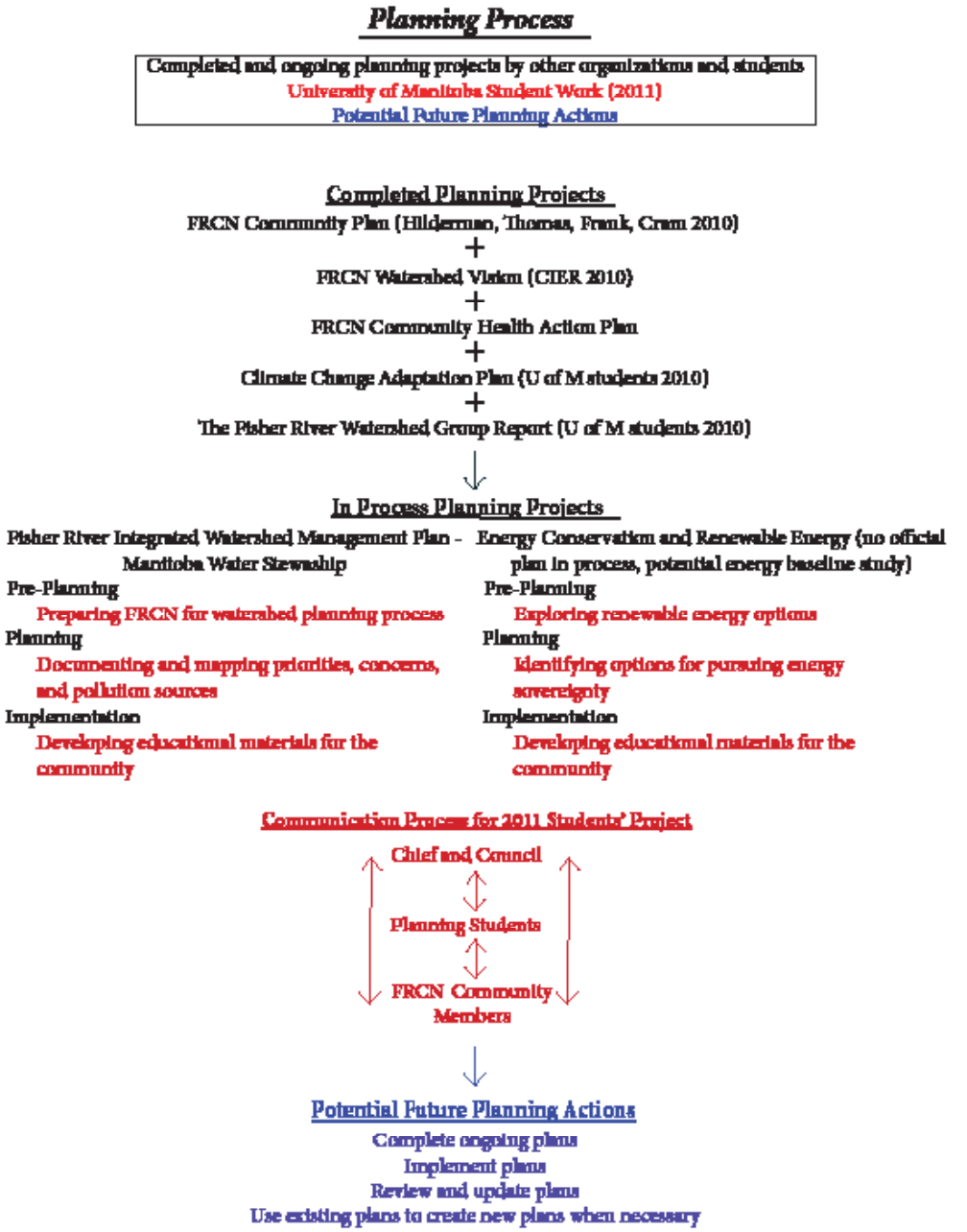
October 21
Meeting with band office employees and council members to conduct watershed mapping exercise and discuss energy ideas, particularly with regards to educattion.

November 1

Meeting with elders to conduct watershed mapping exercise and discuss energy ideas. Also updated Chief and Council on project progression.

November 14
Meeting with Chief and Council to review project progress and gain feedback on final product outline. Also met with grade 11 highschool class to discuss projects and conduct watershed mapping exercise.

Meetings often involved sharing stories. Community members provided valuable input and were very patient in working with the students. Chief and Council provided direction throughout the process. Below is a diagram showing how this project fits in with a larger planning process in Fisher River Cree Nation.



Water

Major concerns for flooding in Fisher River Cree Nation, Peguis and the region were expressed. Overland flooding was identified by the community as coming from man-made water diversions and strategic drainage systems. Also, overland flooding occurs when northwest winds push the water overland and upstream.

Community members felt that water pollution was another area of concern. Activities in communities upstream, such as the Rural Municipality of Fisher and Peguis First Nation, may be contributing to pollution problems. Waste products from intensive agricultural practices entering the water cycle are of concern as are human waste management practices. Fisher River Cree Nation has expressed that surrounding communities have had burst sewage pipes, mismanaged lagoon operations and are not always building to standard. Fisher River Cree Nation would like to be notified when disasters such as sewage spills occur in the future.

There was also concern over waste management practices in the past, both in Fisher River Cree Nation and throughout the watershed. Other waste management practices that need improving have been identified. Fisher River Cree Nation just recently began a recycling program for the community and are altering their landfill to be able to process recyclables. Chief and Council have also expressed an interest in a hazardous waste disposal site because there is a need in the community and region to process hazardous and bulky waste. Used oil, gas cans, appliances and old cars are hazardous to the environment and cannot be buried in the land.

Major water concerns were expressed in these priority areas: drinking water quality, surface water quality, fisheries, water use (quantity), traditional medicines, wildlife, and recreation.

Energy

The topic of energy emerged as a priority for FRCN. Specifically, Chief and Council said that they would like some guidance on energy conservation practices for both homes and community facilities. They also expressed their desire to learn more about renewable energy options. Community members specifically expressed their seasonal energy conservation practices by using wood burning stoves in the winter. Community members also expressed that more information on renewable energy would be beneficial, since Manitoba Hydro energy bills are very expensive, especially in the winter months.

Water

Watershed Mapping of Local Knowledge

Fisher River Cree Nation is currently involved in an Integrated Watershed Management Plan [IWMP]. At this point the process is in the early stages of a 10 step plan that will be developed over 2 years and implemented over 10 years (MWS, 2011). The steps are flexible and the process can jump back and forth as is needed. In speaking with Fisher River Cree Nation, they indicated an interest identifying water pollutant sources and issues of flooding and drainage. This mapping process is one component of a larger effort to address these issues, focusing on community engagement and documenting local knowledge.

Improvements in water quality do not happen overnight but if problems are addressed the ecosystem and water quality have the potential to improve. Some pollutant sources are visible (e.g. unfenced streams in livestock fields) others are not (e.g. septic fields, sewage spills). For these reasons a combination of observations, local knowledge, and environmental monitoring are needed to identify pollutant sources. Manitoba Water Stewardship staff also noted in informal interviews that communities are more likely to act upon these plans when they have had personal input in developing them.

A meeting with Manitoba Water Stewardship staff indicated that mapping concerns and pollutant sources in the watershed using local knowledge would be very useful, making a valuable contribution to the overall IWMP process by working with Fisher River Cree Nation to express their priorities, concerns, and ideas. The scope of this project also was within the capacity of the students both in terms of technical skills and time, while also providing valuable experience for the students in the form of multiple engagements and an opportunity for learning.

Purpose

The purpose of this exercise was for the students to learn Indigenous local knowledge on the watershed that will be used to develop an Integrated Watershed Management Plan for the Fisher River watershed. The information from these community engagements can be used to establish priorities for the plan, identify causes of problems, seek out potential practical solutions, and establish what success would look like in 10 years. Fisher River Cree Nation has a representative on the Project Management team for the IWMP, and will be able to take this information into those meetings to express what the priorities, concerns, causes, solutions, and potential successes would be from Fisher River Cree Nation's perspective.

Participants

Mapping sessions were held with band office employees, council members, elders, and a group of high school students. Future sessions involving other people would be beneficial to further build upon the documented local knowledge in this report.

Tools, methods, and process

Five maps were used to facilitate the mapping exercises. Base maps of the reserve and the watershed were used to document information. Maps of elevation, land use, and soil capability were used for reference information.

Student facilitators asked participants to fill out questionnaires, provided by Manitoba Water Stewardship and altered by the students to best apply to Fisher River Cree Nation. Participants ranked their top priorities in the watershed. They then answered questions regarding their top three priority items, notably their main concerns and suspected causes, some practical solutions, and what success would look like in ten years.

The sessions then became more interactive, with participants encouraged to draw and place stickers on the maps showing where their areas of concerns were and what they felt were the cause of problems associated with the priorities they listed. During these times there was open dialogue between student facilitators and participants with students recording information gained from conversations as well. The participants were very open to discussing the land and surrounding area, especially since many have lived in Fisher River for generations.

Results

The end product is a collection of maps showing where the top concerns and causes of problems are, as well as descriptions of input community members gave on each of their priorities. This information can be used to guide the planning process through the establishment of priorities for the plan and also to assist with the identification of the causes of problems and the potential solutions for these problems.

Last year, Fisher River Cree Nation worked with the Centre for Indigenous Environmental Resources to develop a watershed vision for the community. "The Fisher River watershed exemplifies healthy land, healthy fish and animals, clean air, and clean water based upon Fisher River Cree Nation's cultural traditions and of working together to be leaders in conservation and preservation of their water" (CIER, 2010, p.22). The hope is that these watershed mapping exercises have made a contribution towards implementing this vision.

Summary of Watershed Mapping Exercises:

Maps 1a and 1b summarize all of the concerns expressed during the Watershed Mapping Exercises. Many of which are inter-related, particularly water quality and flooding, and these affect other priority areas.

The main priorities that came from the exercises are as follows:

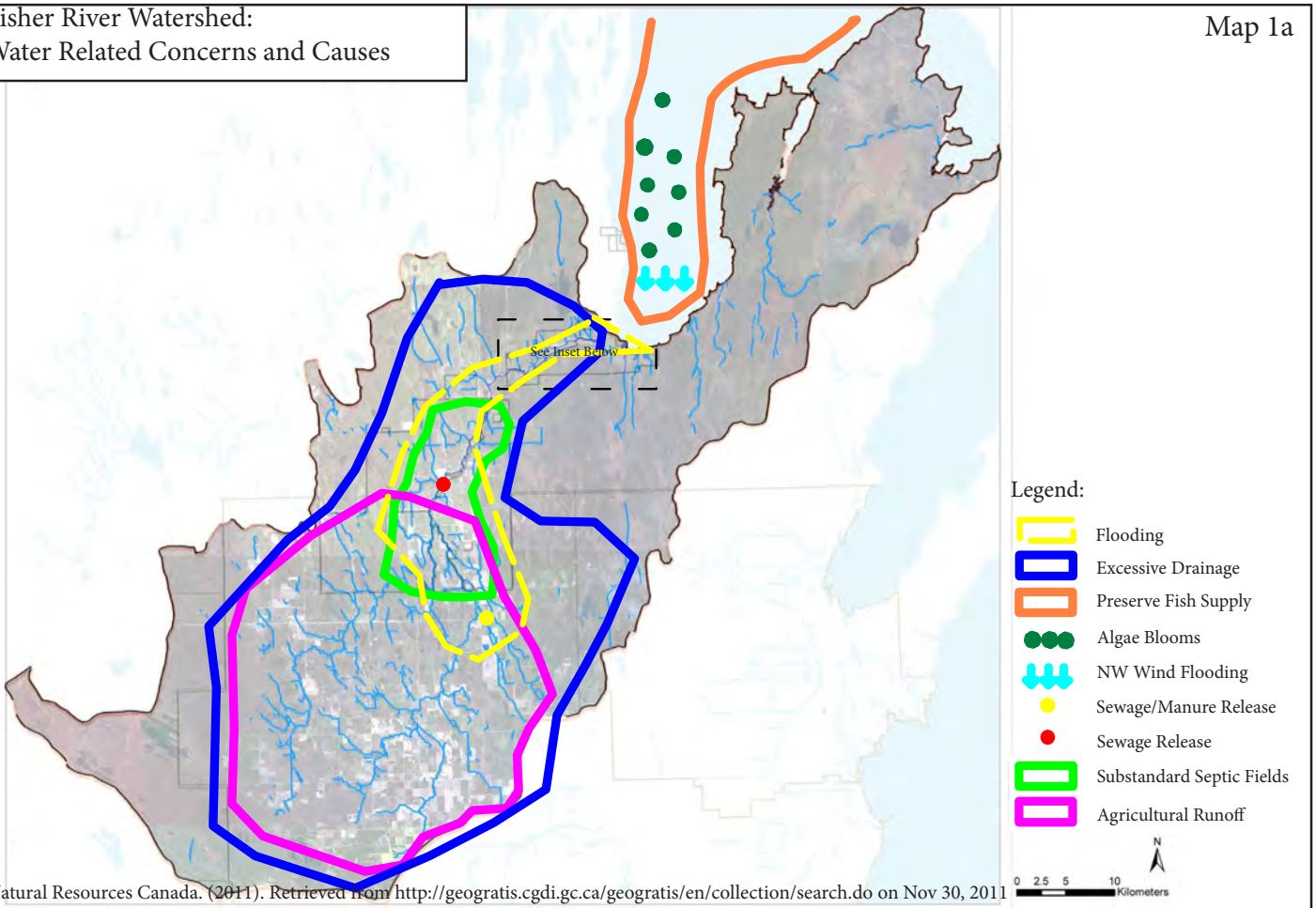
- Drinking water concerns
- Surface water concerns
- Flooding issues
- Fishing

The following maps outline the same information presented in Maps 1a and 1b, however they highlight different details and concerns presented by community members.

Other priorities were also documented but not mapped, these included: water use (quantity), traditional medicines, wildlife, and recreation.

Fisher River Watershed:
Water Related Concerns and Causes

Map 1a



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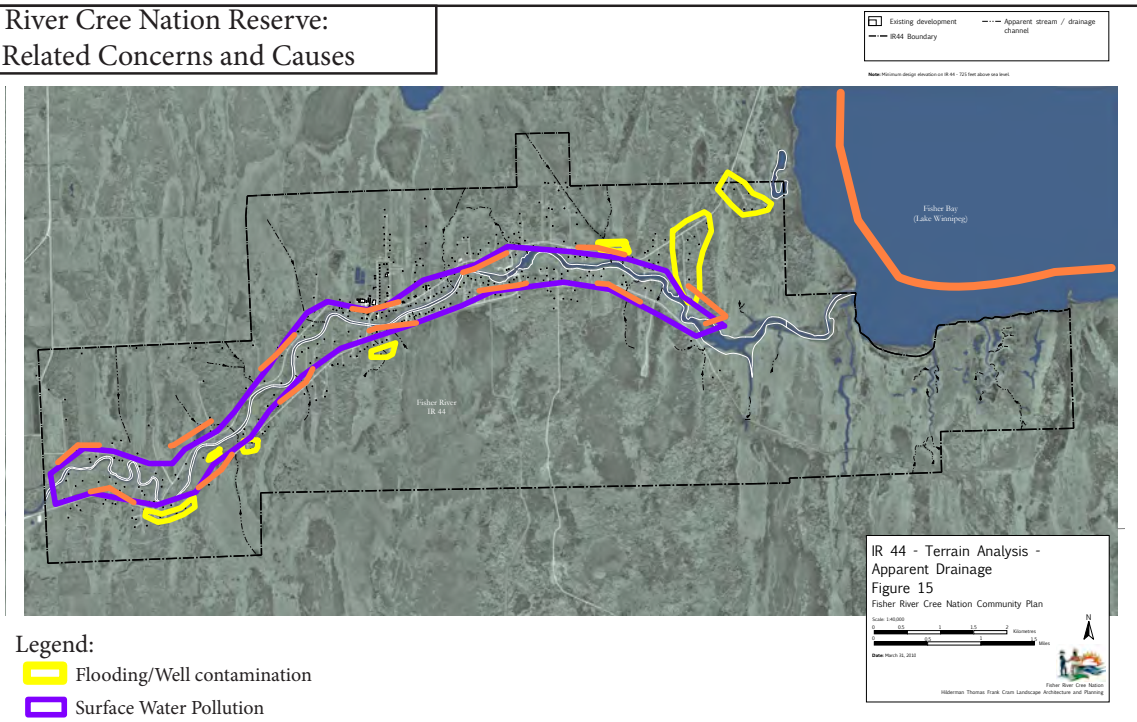
Manitoba Land Initiative. (2011). Retrieved from https://mli2.gov.mb.ca// on Nov 30, 2011

Fisher River Cree Nation Reserve:
Water Related Concerns and Causes

Map 1b



Base map produced by Hilderman Thomas Frank Cram Landscape Architecture and Planning

Drinking Water

Concerns and Causes:

Flooding and high water table:

- Overland flooding in wells is concern
- High water table throughout community
- Water table fluctuates with change in well usage from 6 wells to 2 (i.e. water table increases)

Upstream pollution:

- Agricultural run-off and contamination
- Hog farms, Hodgson pigs farms and Hutterite farms
- Cows sit and stand in the Fisher River – not always fenced off
- Hutterite Marble Ridge polluting river
- Hutterites have a cement dike and crossing; when its high it floods the contaminates into the watershed
- Hutterites' sewage pipes burst
- Cattle farms east of and in Peguis are of concern to community members
- Peguis First Nation occasionally releases sewage into the river
- Peguis's sewage pipes burst – unsure if it was ever fixed
- Hospital in Hodgson is concern – they used to drain waste directly into the river
- Northwest of FRCN are farmers – Red Rose, Sunny Valley – they build roads, drainages, and the cows go in the river

Wells and Water Treatment System:

- Centre area (of community) is protected, other homes on wells are not protected
- People don't drink the well water anymore because there's too much iron in it
- Those who aren't on the drinking water treatment system buy water
- Some have water softener because well water on reserve is hard water
- Some people have brown tap water because it's so hard and full of iron
- Even spring water is brown because of iron
- There are natural springs that are clear though – those natural wells should be protected, they should be enclosed
- Concern for frozen pipes in winter

Practical Solutions:

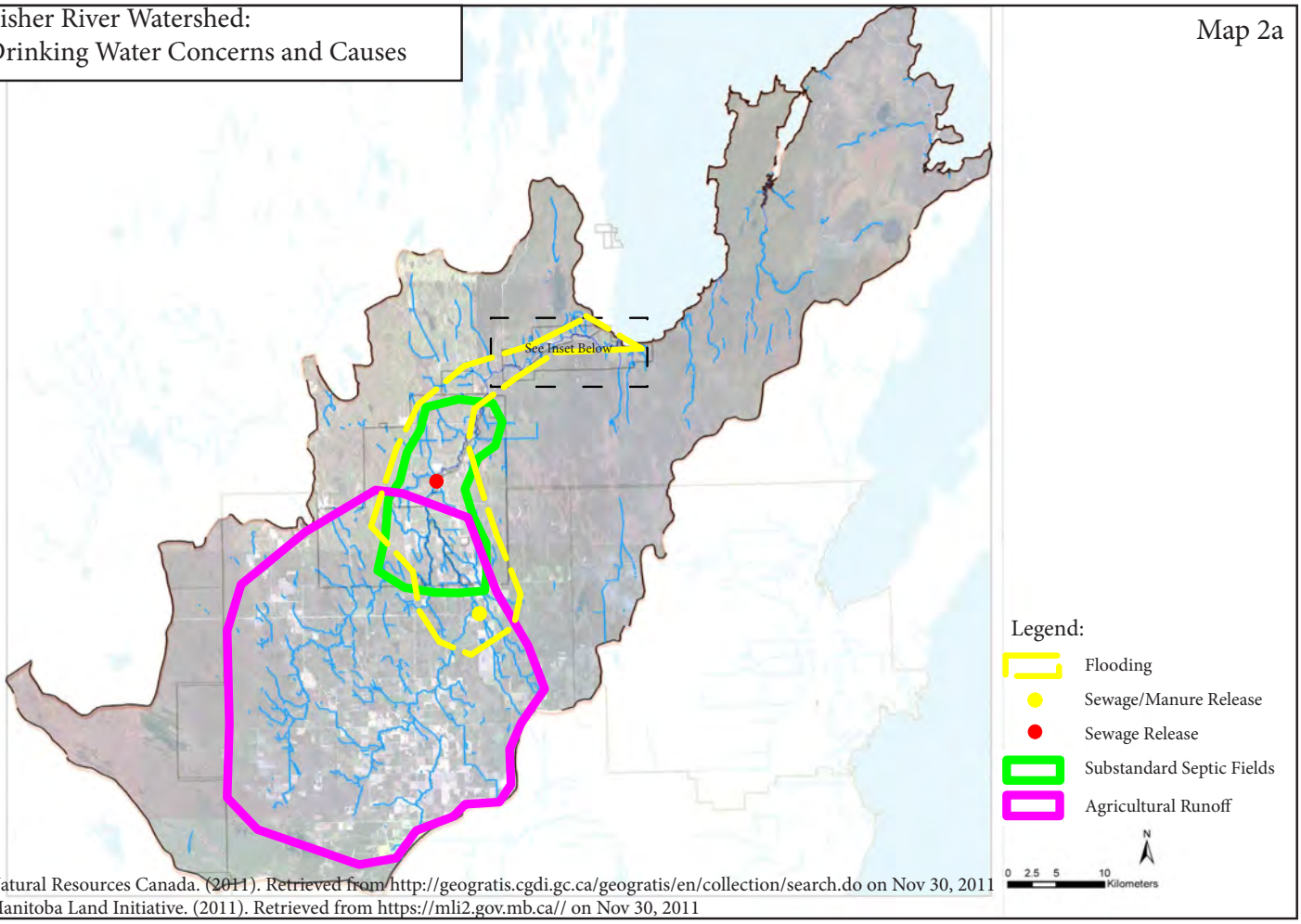
- Dike to keep floodwater out
- Water quality monitoring
- Water treatment plant for (to service) whole community
- Cisterns for higher risk areas
- Clean up run-offs that come downstream from farms
- Regulate farm chemicals that are polluting the river

Future Success:

- Clean drinking water
- Every house connected to treatment system
- Able to drink the water from our own sources
- Clean river and lake

Fisher River Watershed: Drinking Water Concerns and Causes

Map 2a



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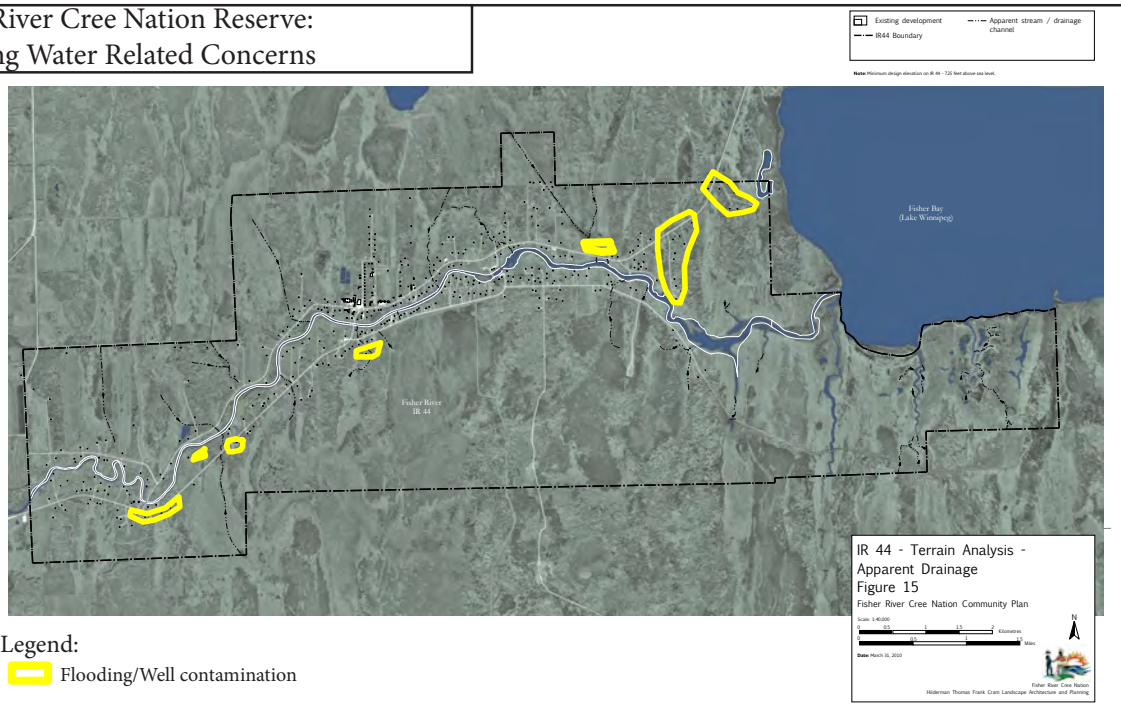
Fisher River Cree Nation Reserve: Drinking Water Related Concerns

Map 2b



Legend:
Flooding/Well contamination

Base map produced by Hilderman Thomas Frank Cram Landscape Architecture and Planning

Surface Water

Concerns and Causes:
Flooding:
- Flooding causes wastes to gather in the river
- NW winds push water from Fisher Bay overland and up the river
- More high water due to drainage from elsewhere (e.g. south)

Upstream pollution:
- Peguis building standards (are sub-par)
- Cattle in well/river/creek in RM
- Hospital waste management practices
- All of our practices in entire watershed
- Run-off upstream causes surface water pollution
- Hutterites' sewage pipes burst
- Peguis's sewage pipes burst – unsure if it was ever fixed
- Hospital in Hodgson is concern – they used to drain waste directly into the river
- Northwest of FRCN are farmers – Red Rose, Sunny Valley – they build roads, drainages and the cows can walk in the river

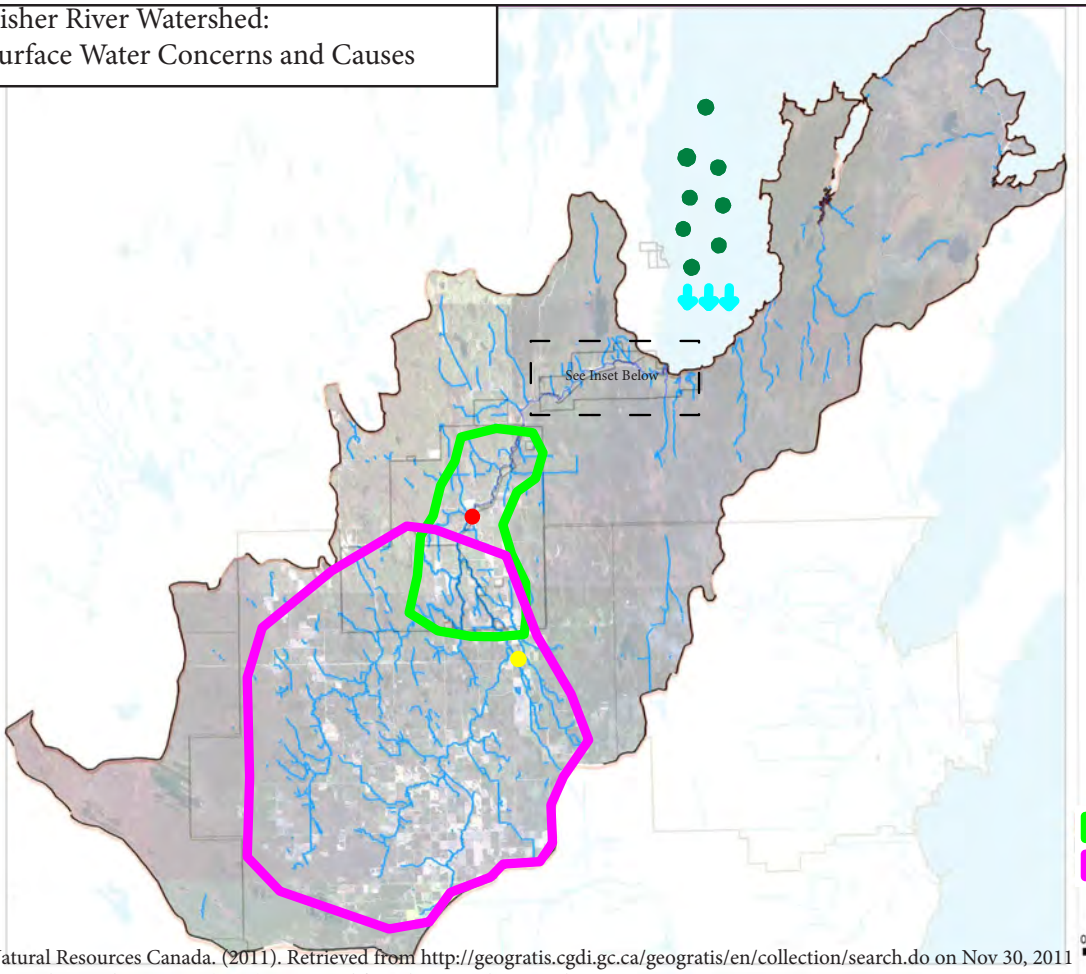
On reserve:
- River quality, lake quality
- Algae growth
- Fisher River is polluted
- Elders used to swim in Fisher River, no more swimming because of E. Coli
- Used to drink the water right from the river, tap water used to be right from river
- Everyone used to have outhouses – not anymore; old outhouse holes are also concerning
- Used to have household landfills, but all are covered up now – the garbage is still there though; used to dump waste slop into the Fisher River
- Old waste, i.e. fridges, cars, stoves are in the river – people used to dump waste in river
- Old waste from landfills/slop is concerning
- Almost everyone used to have cattle and horses… "could contamination have started then?"
- Cattle used to go right into the river
- Oil and gas cans are pollutants because many people do their own mechanical work

Practical Solutions:
- Should have built dike 25 years ago
- Diking to prevent flooding
- Don't allow waste disposal into river
- Educate about local practices to change behaviors to reduce pollution throughout watershed
- Clean up watersheds where water begins (the source)
- When clean-up begins, this will help to take care of other problem areas
- Clean up river, lakes
- Avoid contaminating the waters from pollution stop throwing garbage, waste, etc. in the waters
- There have been recent improvements in waste management for FRCN – recycling, garbage pick-up, or drive waste to landfill

Future Success:
- Return of spawning beds in river once again
- To be able to fish, swim
- Have more fish in rivers, healthier ecosystems
- Clean drinking water
- Clean river and lake
- Able to swim once again in the river

Fisher River Watershed:
Surface Water Concerns and Causes

Map 3a



Legend:

- Algae Blooms
- NW Wind Flooding
- Sewage/Manure Release
- Sewage Release
- Substandard Septic Fields
- Agricultural Runoff

N

0 2.5 5 10 Kilometers

Natural Resources Canada. (2011). Retrieved from http://geogratis.cgdi.gc.ca/geogratis/en/collection/search.do on Nov 30, 2011
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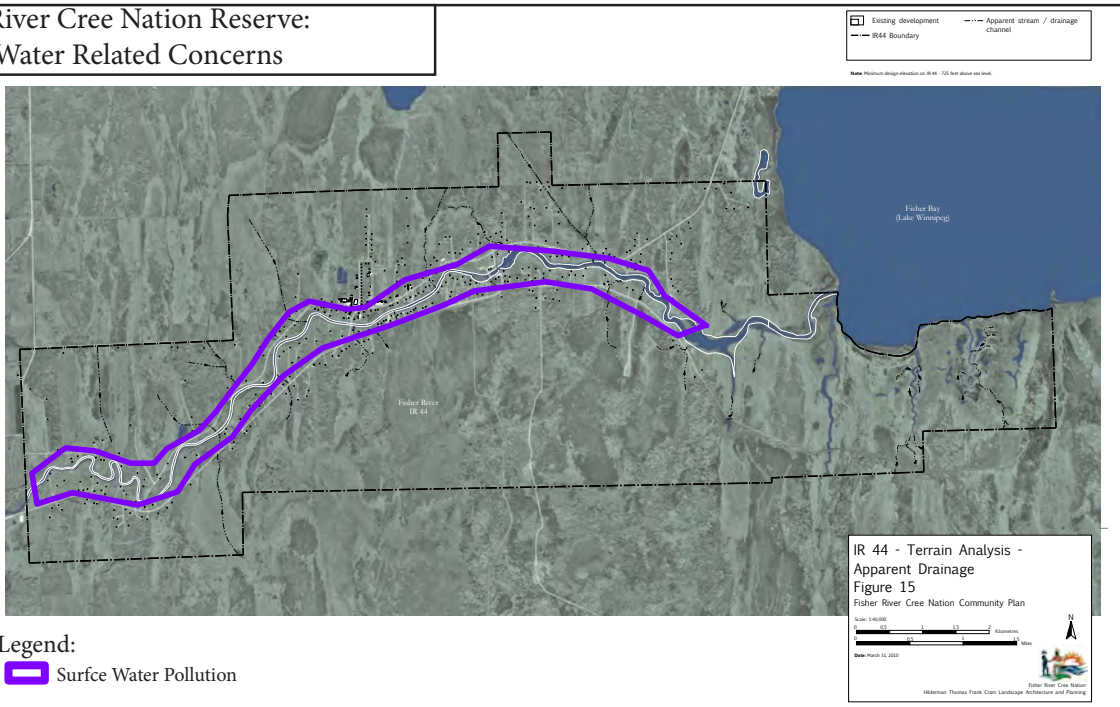
Fisher River Cree Nation Reserve:
SurfaceWater Related Concerns

Map 3b



Legend:

- Surfce Water Pollution

Base map produced by Hilderman Thomas Frank Cram Landscape Architecture and Planning

Flooding

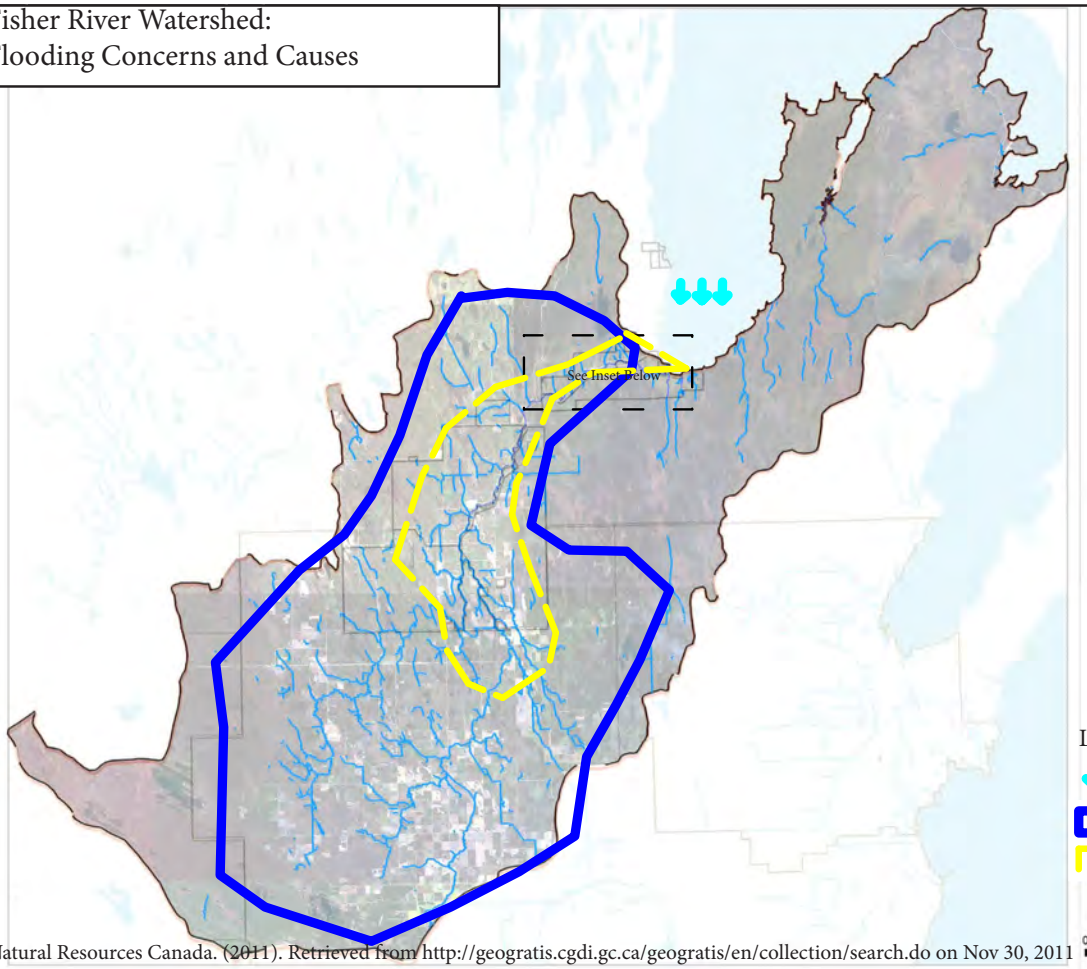
Concerns and Causes:
- Flooding affects water quality
- Flooding in Hutterite colony (discharge of hog and human wastes)
- Northwest winds off lake causes flooding
- Eroded land
- Homes in FRCN flood; approximately 13 homes flood yearly
- Peguis floods worse than FRCN
- Watercourses flood easily
- Low elevation
- High water table, lots of clay
- Peguis floods not necessarily from the Fisher River, but from overland flooding from the west – which travels northeast from Fisher Branch
- No flooding when elders were kids, just high water
- Climate change has a role to play in changing water levels
- River was transportation back then – used to be the 'highway'
- There used to be a road along the lake – it's too wet now to use

Practical Solutions:
- Permanent diking
- Less drainage

Future Success:
- No flooding (for 7 years at least)
- Don't build homes in flood area or below 100 year flood level
- Have a completed and implemented drainage plan

Fisher River Watershed:
Flooding Concerns and Causes

Map 4a



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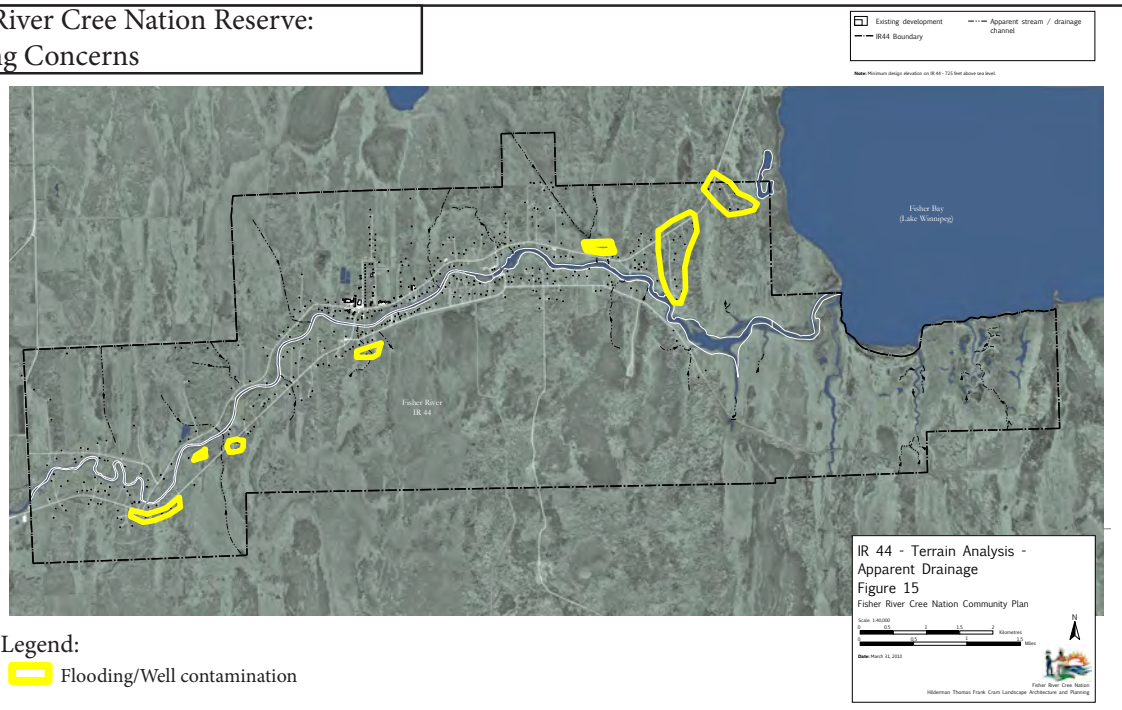
Fisher River Cree Nation Reserve:
Flooding Concerns

Map 4b



Base map produced by Hilderman Thomas Frank Cram Landscape Architecture and Planning

Fishing

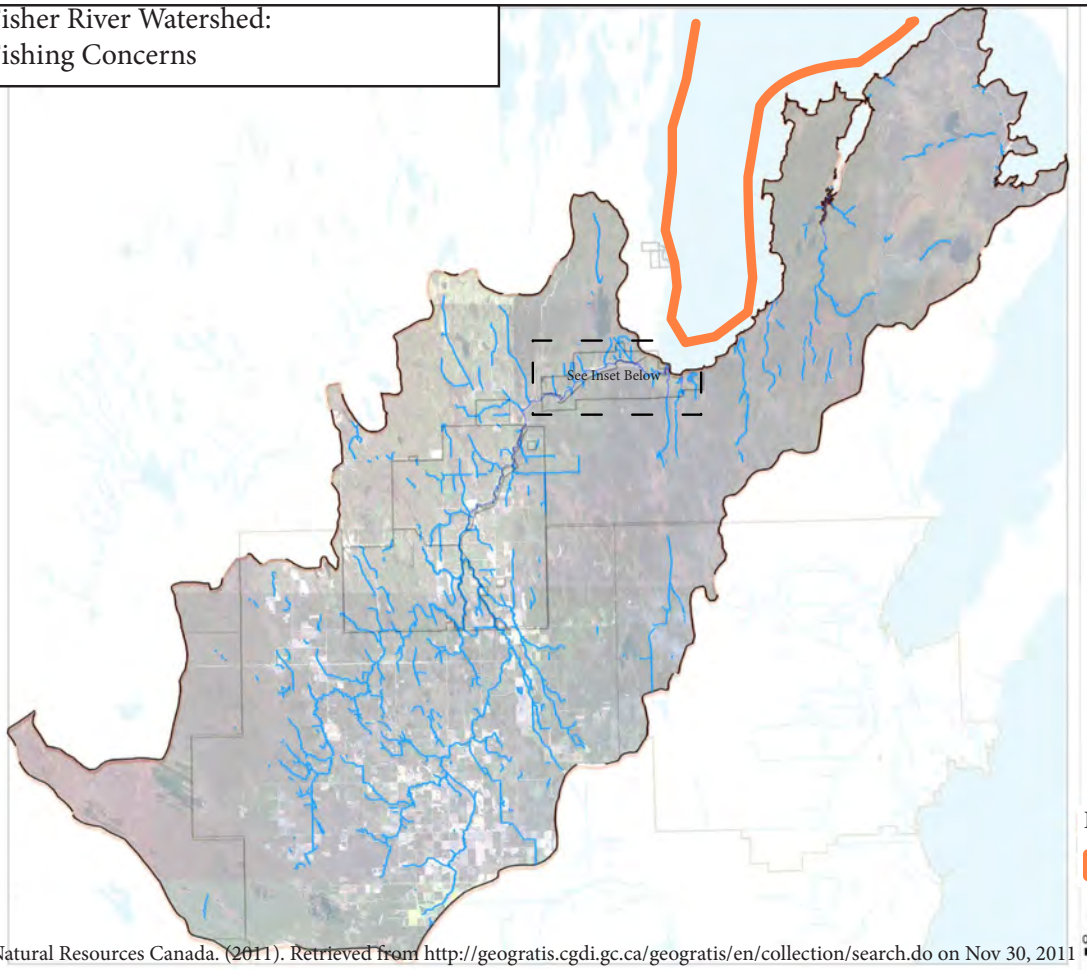
Concerns and Causes:
- Not as many fish in rivers, bay
- Hydro dams effect on fishing
- Run-off from farm areas
- Drainage (pollution)
- Run-off is biggest problem
- Living from fishing is major concern for livelihood
- Algae on the lake is concern
- Some people won't eat the fish anymore because it no longer comes from a clear lake
- Fish have mercury poisoning
- Generations of fishers in FRCN

Practical Solutions:
- Water quality improvement
- Changes to hydro's lake management

Future Success:
- Better fishing

Fisher River Watershed: Fishing Concerns

Map 5a



Legend:

Preserve Fish Supply

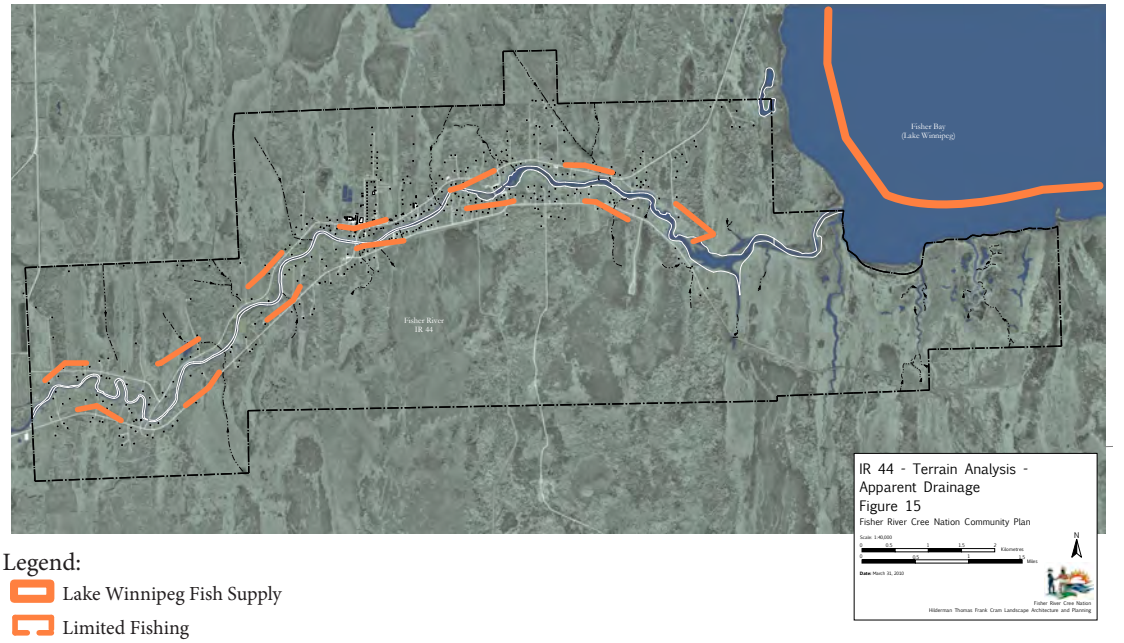
0 2.5 5 10 Kilometers

Natural Resources Canada. (2011). Retrieved from http://geogratis.cgdi.gc.ca/geogratis/en/collection/search.do on Nov 30, 2011

Manitoba Land Initiative. (2011). Retrieved from https://mli2.gov.mb.ca// on Nov 30, 2011

Fisher River Cree Nation Reserve: Fishing Concerns

Map 5b



Legend:

Lake Winnipeg Fish Supply

Limited Fishing

Base map produced by Hilderman Thomas Frank Cram Landscape Architecture and Planning

Other

Concerns and Causes:

Water Use – Quantity:
- Limited because can't use river for anything water-use related anymore
- River is too polluted
- Can't even water animals with Fisher River water
- Wildlife are contaminated by river water
- Agricultural run-off pollutes watershed in domino effect
- Wells - often don't think about water as it is free

Traditional Medicines:
- Medicines are limited because of polluted water

Wildlife:
- Less wildlife
- Used to be more moose and deer
- More bears now

Recreation:
- Youth enjoy skating on the lake and river in the winter months

Practical Solutions:
- Would be good to have more community education
- Children's education can be a good push for parents
- More appreciation for surroundings (education)
- The river must be cleaned up before medicine picking can take place along rivers and creeks
- Remove pollution from Fisher River

Future Success:
- Properly drained land for future development while continuing ethics of water/land protection
- Restore some areas to productivity (hay and farming)
- Clean river – clean medicines
- To be able to swim in the river again, like our parents and grandparents used to

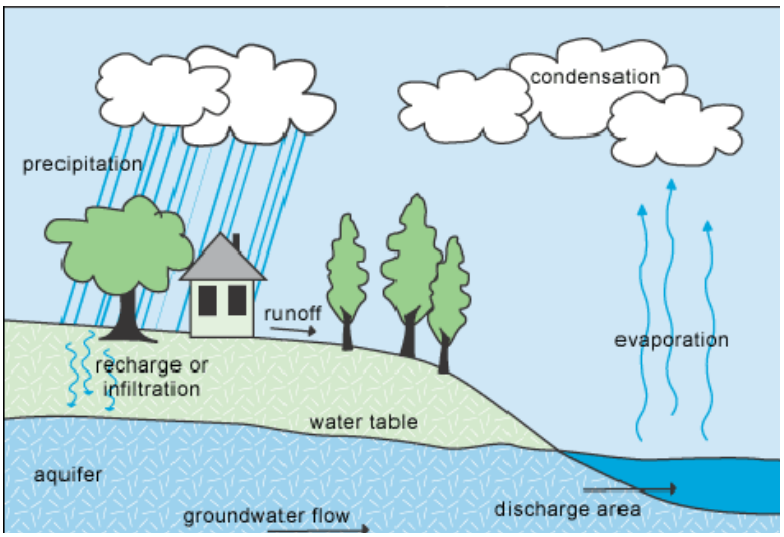
Water Education

FRCN expressed interest in environmental education, especially in regards to water protection. The community is greatly affected by water annually, due to flooding and water pollution in the river, as well as the quality and levels of Lake Winnipeg. This section will provide information on the water cycle, recommendations for environmental education in the school system, as well as environmentally friendly household products and natural substitutes. The water education section also considers FRCN's collective and individual waste management practices.

The Water Cycle

The Earth's water is constantly changing states cyclically: from solid, to liquid, to gas. Precipitation falls to the ground and infiltrates the land as well as enters lakes and rivers from run-off. The groundwater then evaporates, transpires and condenses back into the clouds, only to fall as precipitation once again.

Land-use and activities are interlinked with water (Mitchell, 2005). A very important step in this cycle is the run-off from the land entering lakes, rivers and groundwater. This is the step where water pollution can easily occur. Chemicals from fertilizers, toxins from households waste, and garbage can enter this step in the water cycle causing pollution. If these sources of pollution can be mitigated, water pollution can decrease. Envisioning water as a cycle can help reduce waste going into it. If you consciously think that the chemicals you dump on the land will soon enter the rivers where you fish and swim, you will be less likely to pour hazardous chemicals irresponsibly.



http://proberts10.wikis.birmingham.k12.mi.us/file/view/water_cycle.gif/173784995/water_cycle.gif

Environmental Education in Schools

FRCN expressed interest in environmental education, especially in regards to water protection. This section will provide information on water education that can be adapted into the school classrooms and community centres, as well as information on environmentally friendly household products and natural cleaning substitutes.

The Province of Manitoba is very supportive of environmental education in the school system. Specific to locations directly affected by the levels and quality of Lake Winnipeg, there are resources for teachers regarding localized environmental education. This information and all document links are available from the Province of Manitoba's Education website, http://www.edu.gov.mb.ca/k12/esd/resources.html.

Climate Change studies can be incorporated into the school curriculum in respect to both environmental science as well as social studies. Climate change is as much a social process as it is a scientific phenomenon. What's unique about environmental teachings in First Nations communities is that traditional knowledge and history regarding environmental issues and land can be shared intergenerationally, from elder to youth, within and outside of the school setting.

<u>Resources for Educators</u>

Lake Winnipeg Water Stewardship: A Resource for Grade 8 Science
http://www.edu.gov.mb.ca/k12/esd/water/index.html

Learning Resources for Education for Sustainable Development, Kindergarten to Grade 12: A Reference for Selecting Learning Resources
http://www.edu.gov.mb.ca/k12/esd/water/index.html

Education for Sustainable Development Grade 7 to Grade 9 Learning Resources: A Reference for Selecting Learning Resources
http://www.edu.gov.mb.ca/k12/learnres/sus_dev/sd_gr7to9.html

Education for Sustainable Development: A List of Titles with Suggested Uses for Senior 2 to Senior 4 A Reference for Selecting Learning Resources
http://www.edu.gov.mb.ca/k12/learnres/sus_dev/sd_s2to4.html

Education for a Sustainable Future: A Resource for Curriculum Developers, Teachers, and Administrators
http://www.edu.gov.mb.ca/k12/docs/support/future/index.html

Resources for Rethink
http://r4r.ca/en/

Classroom Lesson Plans and Activities for Climate Change Education

A Teacher's Guide for the Video Sila Alangotok
http://www.edu.gov.mb.ca/k12/docs/support/sila_video/

Green Learning Climate Change Resource Centre
http://www.greenlearning.ca/

Natural Resources Canada
http://adaptation.nrcan.gc.ca/posters/curriculum/science2/index_e.php

Creating a Climate of Change
http://www.greenschools.ca/seeds/climateofchange.html

A Climate Change Webquest - Campaign to Save Our Resources
http://www.pc.gc.ca/apprendre-learn/prof/sub/quete-quest/index_e.asp

Action Websites

Climate Change Connections
http://www.climatechangeconnection.org/

350
http://www.350.org/

Climate Change: Youth Guide to Action
http://tig.phpwebhosting.com/guidetoaction/Climate_Guide_to_Action_en.pdf

No Idling Program
http://www.climatechangeconnection.org/Solutions/TurnYourKey-ThisSchoolisIdle-Free.htm

WWF Earth Hour
http://wwf.ca/earthhour/

Production and Sustainable Consumption Resources

YouthXChange
http://www.youthxchange.net/main/home.asp

UNESCO Teaching and Learning for a Sustainable Future
http://www.unesco.org/education/tlsf/

Resource Racket: A Global Perspective on Resources and Consumption
http://www.media-awareness.ca/english/resources/educational/lessons/secondary/ethics/resource_racket.cfm

CONSUME THIS! Buying That Matters
http://www.c2p2online.com/documents/C2P2_online_reader.pdf

Ecological footprint Calculators
http://www.mec.ca
http://www.redefiningprogress.org http://www.zerofootprintkids.com/kids_home.aspx

I Buy Different – The New American Dream
http://www.newdream.org/

Adbusters
http://www.adbusters.org/

The David Suzuki Foundation
http://www.davidsuzuki.org/#

Videos

The Story of Stuff
http://www.storyofstuff.com/learnmore.php

Affluenza
http://www.pbs.org/kcts/affluenza/map/map.html

Save My Lake
http://www.cbc.ca/documentaries/natureofthings/2011/savemylake/

Web Resources

ESD Toolkit
http://www.esdtoolkit.org/

Project Flow
http://www.lsf-lst.ca/en/projects/youth-taking-action/projecr-flow

The Earth Charter Handbook
http://www.earthcharterinaction.org/content/

Resources for Thinking
http://www.resources4rethinking.ca/

Green Manitoba
http://www.greenmanitoba.ca

Manitoba in motion
http://www.manitobainmotion.ca/

Healthy Schools
http://www.gov.mb.ca/healthyschools/

Resource Conservation Manitoba
http://www.resourceconservation.mb.ca/

Health Canada
http://www.hc-sc.gc.ca/hl-vs/index_e.html

Canadian Association for School Health
http://www.safehealthyschools.org/index.htm

Manitoba Science Council
http://www.scmb.mb.ca/

Manitoba Conservation
http://www.gov.mb.ca/conservation/susresmb/principles-susdev/index.html

Pollution Prevention
http://www.gov.mb.ca/conservation/pollutionprevention/index.html

Waste Reduction
http://www.gov.mb.ca/conservation/pollutionprevention/waste/index.html

Manitoba Envirothon
http://www.thinktrees.org/Envirothon.aspx

Manitoba Forestry Association
www.thinktrees.org

Manitoba Model Forest
http://www.manitobamodelforest.net

Manitoba Conservation-Fisheries
http://www.gov.mb.ca/conservation/fish/

Learning Resources

Manitoba Conservation
http://www.gov.mb.ca/conservation/climate/index/html

Lake Friendly Products

Hazards that enter our water cycle will soon affect our lakes and rivers: the use of lake friendly products in homes and communities is very important to mitigate water pollution. Lake friendly products are environmentally friendly.

Many ingredients in household products such as cleaners, shampoos, soaps and fertilizers enter the water cycle and contaminate lakes, rivers and groundwater. Chemicals in these products can interfere with natural processes in the water cycle and can even harm water treatment practices. Phosphates are chemicals that are very common in cleaning products, soaps and laundry detergents. Though Manitoba has standards for phosphates in products sold in the province, 8,000 tonnes of phosphorous enters Lake Winnipeg every year (lakefriendly.ca).

Protecting our lakes and rivers begins with daily household practices. Take care in monitoring what enters the water cycle by using environmentally friendly products, and properly disposing of toxic wastes in a registered landfill.

See the list of online resources on pages 22-26 for information on water protection and pollution mitigation.

EcoLogo Certified Household Cleaning Products
http://www.ecologo.org/en/

When purchasing household cleaning products, look for the EcoLogo on the product label. The Ecologo trademark is North America's most respected environmental certification mark. To become Ecologo certified, a product is thoroughly tested throughout its life cycle in the environment,

and compared to other products in the same category to assess its environmental impacts.

The use of household Ecologo certified products will help eliminate harmful toxins entering the water cycle.

Natural Cleaning Products

http://www.hgtv.ca/articles/articledetails.aspx?ContentId=660&cat=1&by=3

White Vinegar

White vinegar is slightly acidic, and can be used as a natural (and cheap) household cleaning product. It can remove calcium deposits, as well as grease and stains. Vinegar can be used on hard and soft surfaces.

Vinegar Dusting Spray Recipe:

- 1 teaspoon olive oil
- ½ cup white vinegar
- Combine and store in a squirt bottle.
- Apply a small amount to a soft reusable cloth to use on wooden furniture.

Vinegar Glass Cleaner Recipe:

- ½ cup white vinegar
- 1 gallon (3.8 litres) water
- Soak a soft reusable cloth in the mixture, then ring it out slightly as use on your hard surfaces. Use a dry rag to dry the surface.

Vinegar Fabric Softener Recipe:

- Add ¼ cup of white vinegar to the washing machine's final rinse cycle.

Vinegar Window Cleaner Recipe:

- Use a quarter cup of rubbing alcohol mixed with half a cup of vinegar and two cups of water to clean windows.

Pure Soap

Pure soaps, such as olive-oil-based Castile soap, does not contain any synthetic additives, but is only typically available in health and natural product stores. Look for soaps that contain fewer chemicals and fragrances.

Lemon Juice

Lemon juice is another natural acid that can be used as a household cleaning product. Add some lemon juice and natural soap to hot dishwater.
A mixture of equal amounts of lemon juice and olive oil is great for

polishing unvarnished furniture. For varnished furniture, use half a cup of warm water and a few drops of lemon juice.

Baking Soda

Baking soda is a good cleaning scrub and odour eliminator. Add baking soda to any other all-purpose cleaner for extra scrubbing power.

Baking Soda Cleaning Recipes:

- Combine equal parts of salt and baking soda for a sink scrub.
- Sprinkle baking soda on your stainless steel, iron, or copper pots and scrub to clean. Don't use baking powder on aluminum pots.

What You Can Do To Conserve Water

- Turn off all taps so they do not drip, and repair any leaky pipes
- Take shorter showers
- Reducing showers from 10 minutes to 5 minutes saves 10 litres of water per minute
- Install water saving aerators on all faucets
- Install low-flush toilets
- Insulate water pipes – this will allow hot water to heat more quickly and reduce the amount of water wasted in the heating process
- When waiting for the hot water to flow, use the cold water to water plants, or put a jug of it in the fridge as to not run the tap for colder water
- Only run the dishwasher and washing machine when they are full
- Only use softened water where necessary
- Only water the lawn when necessary
- Compost organic waste to use in your gardens
- Use a bucket and sponge to wash your car rather than letting the hose run

What You Can Do To Protect Water

- Use chemicals, fertilizers and pesticides at a safe distance from wells and water sources
- Any faulty septic systems must be repaired promptly
- Conduct a proper site analysis for any new well construction
- Properly seal any abandoned wells
- Livestock pens should be kept away from wells and water sources
- Promptly clean any oil or petroleum spills and report spills to the nearest Manitoba Conservation office (Hodgson District Office, Box 119 Hodgson MB, R0C IN0 (204)372-6296) http://www.gov.mb.ca/conservation/wildlife/about/central.html
- Avoid purchasing toxic and hazardous products

Jurisdictional Responsibilities and the Environment

Fisher River Cree Nation expressed an interest in learning more about jurisdictional responsibilities. Because the Fisher River Watershed has municipalities and First Nations jutrisdictions, there are different organizations each must report to and express their concerns to.

The municipalities are under the jurisdiction of the province and deal with Manitoba Conservation on environmental issues. First Nations are under federal jurisdiction and deal mostly with Aboriginal and Northern Affairs Canada, sometimes Environment Canada as well for environmental issues.

Who is responsible for organic and hazardous waste spills

Specific questions surrounded what to do if a sewage spill happens in the watershed. For a spill occurring on reserve land it would generally be the responsibility of the First Nation and AANDC. If the spill was of a hydrocarbon fuel (ie. gasoline or diesel), and more than 100 L it would be required under the Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations to be reported to Environment Canada. Through this regulation Environment Canada has jurisdiction over fuel tanks on all Federal lands. If a spill was to enter a water way, such as the Fisher River, it would then have left the boundaries of the Reserve and would be under provincial jurisdiction, but also Federal jurisdiction through the Fisheries Act, enforced by Environment Canada (AANDC, 2011).

Emergency Phone line

There is a 24 hour Manitoba wide spill reporting line operated by Manitoba Conservation (204) 944-4888 that all spills can be reported to. Manitoba Conservation notifies Environment Canada and AANDC of spills that may fall under their jurisdictions (AANDC, 2011).

What to do when a spill happens

If a First Nation is aware of a spill that has occurred upstream in their watershed they can phone the spill line which may trigger Manitoba Conservation and/or Environment Canada to investigate the spill. Manitoba Conservation also responds to spills with clean-up personnel and bills the spiller for the clean-up (AANDC, 2011).

Energy

Fisher River is embarking on a journey towards energy sovereignty. Energy sovereignty means finding ways to tighten up the economies of energy in Fisher River Cree Nation and also finding ways to produce and consume energy that is 100% community owned and operated. Many energy systems rely on the fossil fuels coming from ancient rocks in the earth that contain fossilized remains of dead plants and dinosaurs. Tampering with them can be quite volatile and harmful to our health. The time is now to adapt our habits and living patterns through education and awareness but also through policies, procedures and product knowledge.

Building systems in Manitoba depend on the hydroelectric dams provided and maintained by Manitoba Hydro. They are the cheapest option for energy at this moment in history. Unfortunately, the hydro infrastructure has had a negative impact on Fisher River and Lake Winnipeg. The dams are controlling and blocking the natural flow of water, resulting in raised water levels and stagnant and polluted waters. The health condition of Lake Winnipeg can be addressed through the creation of environmental policy and law and also by transitioning the amount of energy consumption from hydro to renewable energy, such as wind and sun. The health condition of the lake can also be addressed and remediated through a critical public discussion.

In the future, it may be beneficial for Fisher River Cree Nation to gain energy sovereignty from state directed governance, including provincially mandated business monopolies on resources, like Manitoba Hydro. Fisher River is already taking steps towards energy sovereignty by investing in the Power Predictor. After collecting a year's worth of Power Predictor data, Fisher River can gain financing for the investment of solar panels and wind turbines and will be able to make informed decisions about renewable energy.

Energy soveregnty also comes through positive relationship building between communities and cooperative problem solving. It means dissolving past conflicts and coming together for the health of the environment and the freedom of the people.

Energy Conservation

Fisher River Cree Nation already has a trusted and amicable relationship with Manitoba Hydro. The relationship is ongoing and has to date resulted in the

adaptation of 19 homes to be more energy efficient. The participating families have dramatically lowered their energy bills by increasing the thermal resistance of their homes. Manitoba Hydro provided the training and materials for the adaptation at no/low-cost. It is hoped that 19 more will participate in Winter 2012. At this rate of 19 homes per year, it is estimated that 500 homes in FRCN will be energy efficient in the year 2038. This rate seems too slow considering the pace of environmental changes taking place.

The relationship between this planning studio, FRCN and Manitoba Hydro resulted in an agreement on behalf of Manitoba Hydro to dispense and administer 20 water energy saving kits at no cost in 2012. Some of the products in the water energy saving kit include: compact fluorescent light bulbs; insulated pipe wrap; draft proofing; faucet aerators; and low flow shower- heads.

The notion of energy conservation means not only adapting our homes and buildings to be more energy efficient but it also means changing our everyday behaviours to see patterns and habits that result in increased energy bills from Manitoba Hydro. There are simple tricks and tips that will help us to see the connection between energy consumption, energy bills and environmental conditions.

Manitoba Hydro website (www.hydro.mb.ca) provides an abundant amount of information for saving money on hydro bills. We have listed verbatim some of the best ones below.

Bathroom:

- Use Compact Fluorescent Lights, though make sure there is a proper disposal site for the light bulbs as they do contain trace amounts of mercury.
- Turn off exhaust fans after 20 minutes so they don't suck the hot or cool air out of your home.
- Install a faucet aerator on your taps.
- Repair leaking toilets and leaking taps. A leaky faucet can waste up to 11,000 litres or more every year.
- Consider installing a dual flush toilet to save water every time you flush.
- Install a energy saver shower head and reduce your water consumption by 50 to 75 per cent.

Bedroom:

- Because indoor air can escape through electrical outlets, place insulators behind the cover plates of electrical outlets to prevent air loss.
- Caulk and seal gaps to prevent air leakage:

- 30 to 50 per cent of air leakage gets in underneath the baseboards and through the wall outlets.
- 20 per cent of air leakage gets in through holes where plumbing pipes and telephone wires enter the house and other gaps.
- Turn down the heat in rooms you don't use often.
- If your bedroom windows face north, keep your blinds shut when convenient during the cooler winter months.
- Plant a tree or shrub in front of your window on the sunny side of your home to provide shade in summer and act as a windbreak in chilly months.

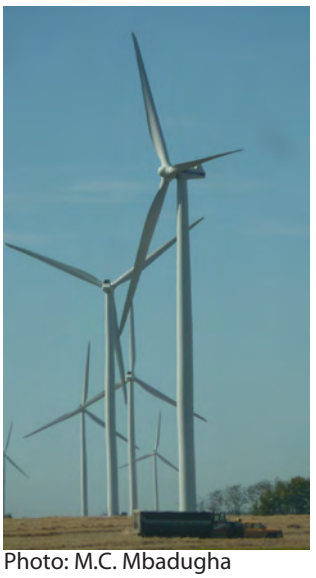


Photo: M.C. Mbadugha

Kitchen:

- An ENERGY STAR refrigerator will use up to 50 per cent less energy than the average 10 year-old refrigerator.
- Avoid preheating your oven before cooking. Preheating is only required for baking.
- Use your toaster oven, frying pan or microwave for small meals. A toaster oven or microwave will heat a meal using less than half the power of the full oven.
- Whenever possible, let the covered container of food cool outside the refrigerator before placing it in the refrigerator. The refrigerator won't have to work as hard to cool the food.
- Run a full load when using a dishwasher.
- Use the energy saver cycle on your dishwasher, or open the door after the final rinse to let the dishes air-dry.
- Keep the refrigerator away from direct sunlight or other heat sources.
- Door seals should be clean and in good condition to prevent warm air from entering and cool air from escaping.
- An electric kettle uses about 40 per cent less energy to boil water than a kettle on an electric range element.

Living Room:

- Heating your home accounts for as much as 50 per cent of your home energy bill. Install a setback thermostat and reduce your home temperature by 3 C for at least eight hours a day to save three to four per cent on heating costs.
- Shrubs and trees around your house will shade your windows in summer and help protect your house from chilly winds in winter.
- Consider using an electric blanket instead of a space heater. They are safe and an electric blanket can consume 90 per cent less power than a space heater.
- Install full blinds or drapes to make your home more comfortable in summer. Open them in winter to use solar energy as an additional heat source.
- Shut down electronic equipment when it's not in use.
- Plug your electronics into a single power bar so you can switch off the

bar when you've finished using them. TVs and DVDs still use energy when they are in standby mode.
- Try dimmer switches on all frequently used lights (only compact fluorescent lights designed for dimmers will work on dimmer switches).

Renewable Energy

Renewable energy is energy obtained from natural resources such as sunlight, wind, water, and geothermal heat, which are naturally replenished or renewed within a human lifespan (Natural Resources Canada, 2009).

The following renewable energy types could be considered as options for Fisher River Cree Nation:

Solar Energy

Solar energy refers to energy that is collected from sunlight. It can be used by transforming sunlight into heat or electricity, therefore, two types of energy can be obtained in this transforming process: Solar thermal energy and Solar photovoltaic (PV).

Solar thermal energy technologies convert sunlight into energy in the form of heat. It uses a solar collector to absorb sunlight and transform it into heat. Water is pumped up into the solar collector and heated before being put back to use. This technology is suited to residential, commercial and institutional water heating, and can reduce costs by 30-50% per year (Weis and Cobb, 2008, p.11). Solar Photovoltaic technology converts sunlight into electricity by using solar panels which are made out of semiconductor materials, such as silicon (Indian and Northern Affairs Canada, 2010). Usually, solar photovoltaic functions as complementary energy for electricity from the grid rather than replacing it.

Solar Energy Resources

Solar Water Heating Systems- A Buyer's Guide (2003), by Natural Resources Canada.
http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/publications.html?ISBN:0-662-28486-0

Photovoltaic Systems- A Buyer's Guide (2003), by Natural Resources Canada.
http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/publications.html?ISBN:%200-662-86306-2

Wind Energy

Wind energy has become one of the fastest growing power sources in Canada and around the world. The kinetic energy from moving air is converted into electricity by wind turbines that are mounted in locations where there are favourable weather patterns (Natural Resources Canada, 2009).

Wind power facilities can be categorized into two types according to generating capacity (The Canadian Wind Energy Association, 2008):

1. Small Wind Turbines: Under1000 Watt (W) to 300 Kilowatt (KW);
2. Large Wind Turbines: 300 Kilowatt (KW) to 1.5 Megawatt (MW).

For Aboriginal communities, small wind system using the small wind turbines is a viable option as its application is flexible ranging from on-grid facilities, such as a cottage, home, farm to off-grid ones, such as remote communities.

Wind Energy Resources

The Canadian Wind Energy Association (CANWEA) Small Wind Energy
http://www.canwea.ca/swe/index.php?id=1

Small Wind Turbine Purchasing Guide: Off-grid, Residential, Farm & Small Business Applications (2008), by the Canadian Wind Energy Association (CANWEA).
http://www.canwea.ca/images/uploads/File/SmallwindturbinesFINAL.pdf

Stand-Alone Wind Energy System: A Buyer's Guide (2003). by Natural Resources Canada.
http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/publications.html?ISBN%200-662-37706-0

Fact Sheet Wind Power Realities (2009). by Pembina Institute.
http://www.pembina.org/pub/1943

Run-of-River Hydro

There are five typical types of waterpower structures (Waterpower Working Group, 2010):

1. Run-of-river: uses only natural flows of the river;
2. Run-of-river with modified peaking: allows producing more

electricity during high demand periods and saving water during low demand periods;
3. Reservoir storage and cascade systems: uses reservoirs to store water during high flow periods to be used to generate electricity during low flow periods;
4. Pumped storage: uses facilities to pump water from a lower reservoir to a higher one during off-peak periods to be released through the plant for generating electricity during peak periods; and
5. Kinetic waterpower: turbines use existing water flow to generate electricity and are used in smaller scale projects such as remote cottages.

Given the environmental impact and economic feasibility, a small-scale hydro, such as run-of-river hydro can be an optional alternative energy source for aboriginal communities. In Canada, small-scale hydro refers to hydroelectric system with a generating capacity ranging from 1 to 50 megawatt (MW) in installed capacity (Natural Resources Canada, 2009). Such capacity is usually used to power small communities. For Fisher River Cree Nation, this kind of energy source may have some limitations due to the flat terrain as "a three to five meter drop is generally the minimum required for the smallest run of river hydro projects" (Indian and Northern Affairs Canada, 2010, p.5).

Run-of-River Hydro Resources
Aboriginal Community Guide to Waterpower Development (2010). by Waterpower Working Group
http://www.owa.ca/waterpower-information/owa-resources/index

Micro-Hydro Systems - A Buyer's Guide (2004). by Natural Resources Canada
http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/publications.html?ISBN%200-662-35880-5

Bioenergy

Bioenergy is the energy generated from various biological processes (Aboriginal Renewable Energy Network, n.d.). This form of renewable energy can be produced by using waste products from agriculture and biochemical processes.

There are two types of bioenergy: biomass power and biofuel (biogas).

The term biomass refers to organic materials such as plant or animal wastes, including agricultural residues, and forest industry residues. Biomass power is the use of such biomass to generate electricity by direct-firing, cofiring, gasfication and other technologies.

Biofuel is the type of fuel derived from biomass conversion. Biomass can be converted to solid, liquid, and gaseous biofuels which are used to provide energy for many sorts of activities, such as heating, generating electricity and transportation (Province of Manitoba, 2011). Liquid form of biofuels-bioethanol and biodiesel are often used in transportation sector to reduce GHGs from engines exhaust emissions as well as air pollution (Province of Manitoba, 2011). Biogas produced from fermenting organic wastes, such as manure and other crop and food processing by-products is another green alternative energy.

The production of bioenergy requires a constant supply of biomass, such as wood, staw, and manure. Fisher River Cree Nation can assess the feasibility of using biomass power to provide energy for the community use through the Community Energy Baseline analysis.

Bioenergy Resources
Province of Manitoba Energy Division- Biomass Energy website
http://www.manitoba.ca/iem/energy/initiatives/biomass.html

Geothermal energy

Geothermal energy is originally from sunlight, and is stored below the earth's surface. The term geothermal comes from the Greek words geo (earth) and therme (heat). For this energy source, steam and hot water from inside the earth is used to heat buildings or generate electricity. Geothermal energy is generated in the earth's core, about 4,000 miles below the surface (Province of Manitoba, n.d).

To move energy from the ground to a building, or vice versa, a heat-transfer fluid is circulated within a network of collecting pipes in the earth. Energy is exchanged between the fluid and the building by means of a geothermal heat pump within the building. In winter, it is converted into warm air and distributed through ducts. In summer, the system is reversed to transfer heat out of the building, where it uses the cooler ground as a heat sink (Natural Resources Canada, 2005). There is already a transit bus garage heated by geothermal energy in Fisher River Cree Nation. It is better to implement a cost-effective analysis of its performance to provide a reference for the future Community Energy Baseline analysis.

Geothermal Energy Resources
Geothermal Energy, the Earth Energy, Ground-Source/Geothermal Heat Pump, GeoExchange (2005), by Natural Resources Canada
http://dsp-psd.pwgsc.gc.ca/Collection/M144-103-2005E.pdf

Province of Manitoba Energy Division- Geothermal
http://www.manitoba.ca/iem/energy/geothermal/index.html

Renewable Energy Products Suppliers Directory

- Rain City Strategies

Company Profile: Rain City Strategies Inc. is located in Vancouver, British Columbia, Canada. It's a consulting firm that are Aboriginal owned and operated, focusing on developing strong economic partnerships with First Nation communities in the areas of clean technology development, green energy generation and social ventures.

Contact:
Mr. David Issac, Founding Director
210 - 128 West Hastings Street
Vancouver, BC V6B 1G8
Tel: 1-877-828-9334 ext. 2
Cell: 1-604-315-5630
Email: david@raincitystrategies.com
Website: http://raincitystrategies.com

- Innovative Air Solutions Inc.

Company Profile: IAS is a Canadian-based company which provides renewable energy solutions for various clients. Our services include the management of initial site analysis, engineering, installation, ongoing maintenance, and funding of Solar PV, Lighting (LED, Induction, Hybrid Epole, Electronic ballast metal halides), Carbon Offset Management, Waste Management, Geothermal, Wind, and Bio-gas.

Contact:
IAS Head Office
230 Merton St.
Toronto,ON
M4S 1A1
Tel: 416-534-9399
Fax: 416-534-8679
E-mail: info@innoair.ca
Website: http://www.innoair.ca/

Regional Offices
1553 West 75th Ave
Vancouver, BC
V6P 6Z7
Tel: 604-874-5325
Fax: 604-874-5326

- Solar Solutions Inc.

Company Profile: Solar solutions AECD Inc. specializes in alternative energy and conservation devices including, manufacturing, supply and installation of solar electric, wind generating, and small hydro systems and environmental products and services including, composting toilets, solar water pumping, energy efficient appliances, special batteries and autonomous sustainable home design and consulting.

Contact:
Mr. Tim Yusishen, President
Unit 6-130 Midland Street
Winnipeg, MB
Canada R3E 3R3
Tel: 204-632-555
Fax: 204-632-5577
E-mail: TimY@solarengineers.com
Website: www.solarsolutions.ca

- GeoSmart Energy

Company Profile: GeoSmart Energy is one of the largest non-manufacturing based distributors of geothermal and solar energy products.

Contact:
290 Pinebush Road
Cambridge, Ontario
Canada N1T 1Z6
Toll Free: 1-866-310-6690
Phone: 519-624-0400
Fax: 1-866-533-3889
E-mail: info@geosmartenergy.com
Website: http://geosmartenergy.com/

- Ice Kube Systems

Company Profile: Energy efficient recreation facilities; integrated geothermal heating; ventilating; air conditioning and refrigeration systems for recreation faculties, commercial, institutional and industrial buildings.

Contact:
Mr. Ed Lohrenz
41 St. Paul Boulevard
West St. Paul, Manitoba
Canada R2P 2W5
E-mail: elohrenz@icekubesystems.com

- CleanField Energy

Company Profile: Cleanfield Energy™is an innovative technology company focused on the research, development and distribution of renewable energy solutions for the urban environment. The company possesses industry leading, proprietary inverter technologies, which it currently sells as a complete sustainable solution with its 3 KW vertical axis wind turbine.

Contact:
Head Office
774 Gordon Baker Road
North York, Ontario
Canada M2H 3B4
Phone: (416) 756-4890
Fax: (416) 756-4837
Website: http://www.cleanfieldenergy.com/index.php

- Bergey Wind Power Products Dealer

Contact:
Al Scharf
Box 4
La Riviere, Manitoba
Canada R0G 1A0
Tel: (204) 242-2912
Fax: (204) 325-5894

- Homewood Solar and Wind

Company Profile: Homewood Solar & Wind is a renewable energy company that provides consultation and system design services, sales of top quality time tested equipment, installation and maintenance of solar

and wind energy generating systems.

Contact:
Mr. Bill Grant
P.O. Box 55
Homewood, Manitoba
Canada R0G 0Y0
Tel: (204) 745-3938
Fax: (204) 745-3938
E-mail: bill@homewoodsolarandwind.ca
Website: http://www.homewoodsolarandwind.ca

- Rocky Mountain Solar Co.

Company Profile: Rocky Mountain Solar Co. is a retailer and installer of solar hot water, photovoltaic, small wind, micro hydro, and smokeless wood hydronic boiler systems and components.

Contact:
Mr. Roy Howard
6005 Brown Rd.
Dunster, BC
Canada V0J 1J0
Tel: (250) 968-4490
Fax: (250) 968-4410
E-mail: roy@rockymountainsolar.ca
Website: www.rockymountainsolar.ca

- Spark! Sustainable Energy Solutions

Company Profile: This company is a supplier of renewable energy knowledge, equipment, labour and specializing in solar electricity (photovoltaic), small-scale wind power, solar hot water heating, micro-hydro generators, batteries, and 'balance of systems' (fuses, controllers, wires, etc), and project management & consulting

Contact:
Box 354 Masset, Haida Gwaii V0T 1M0
Tel: 250.626.7737
Website: http://www.sparkenergy.ca/

- Energy Alternative Ltd.

Company Profile: This company is a renewable energy general contractor, specialized in the design, sale, installation of alternative or complementary power system

Contact:
Glanford Ave,
Victoria, British Columbia
Canada V8Z 4B9
Phone: (250) 727-0522 • 5 – 4217
Website: http://www.energyalternatives.ca/

- First Power

Company Profile: First Power is mission driven company working with a charity, the Centre for Integral Economics to support the education and training components of the renewable energy projects.

Contact:
4525 88th St.
Delta, B.C.
Canada V4K 3N3
Website: http://www.firstpowercanada.ca/index.html

General Inquiries:
Marjorie Byers
E-mail: mbyers@firstpowercanada.ca
Phone: (604) 255-6052

Media Inquiries:
Donna Morton
E-mail: dmorton@firstpowercanada.ca
Phone: (250) 880-1430

FederalandManitobaRenewableEnergyFundingOpportunities

The ecoENERGY for Aboriginal and Northern Communities Program
This program is focused exclusively on providing Aboriginal and northern communities with funding support for clean energy projects. It has two streams: A.Renewable Energy Projects. Up to $250,000 is available, depending on the size of the project and the stage of its development; B. Energy Projects Integrated with Community Building. This stream has funding available up to $100,000, also depending on the size of the project

and the stage of its development.
http://www.aadnc-aandc.gc.ca/eng/1100100034258

Manitoba Geothermal Energy Incentive Program

This program which is funded by the Province of Manitoba provides financial support of geothermal installations through a refundable tax credit and Provincial Grants. For homeowners, up to approximately $5,000 of incentives can be gotten from the Provincial Government including a tax credit worth about $2,400. For commercial building owners, up to 15% of the geothermal systems installing cost can be received. For a district/community geothermal system, eligible participants can receive a maximum of $150,000 and refundable tax credits up to 15%.
http://www.manitoba.ca/iem/energy/geothermal/incentives.html

Solar Thermal Energy Incentives

This program provides a refundable 10% tax credit on solar heating equipment installation in Manitoba. Also, a solar domestic hot water grant may be available if participating in the Natural Resources Canada ecoENERGY Retrofit-Home Program. This Solar Domestic Hot Water Grant can range from $1250 for a single-family home to a maximum of $12,500 for a 20-unit multi-unit residential building or mixed-use building.
http://www.manitoba.ca/iem/energy/initiatives/solar.html

Solar Water Heating Loan

The Solar Water Heating Loan which is offered by Manitoba Hydro aims to provide financial support for residence considering to install a solar water heating system in Manitoba. The loan is ranging from $500 to $7,500 per residence and no down payment is required.
http://www.hydro.mb.ca/your_home/solar_water_heating/loan.shtml

Residential Earth Power Loan

The Residential Earth Power which is offered by Manitoba Hydro assists homeowners with the cost of installing a geothermal heat pump. It finance up to $20,000 with maximum 15 years, and is available for both new installation and retrofits.
http://www.hydro.mb.ca/earthpower/loan.shtml

Clean Energy for First Nations

A program sponsored by Centre for Indigenous Environmental Resources (CIER) designed to assist First Nations in reducing reliance on non-renewable resource utilities that contribute to climate change. They provide funding for renewable resources such as wind, solar, and small hydro in order to offer Aboriginal communities the opportunity to generate clean energy and sell them back to the on grid systems.
http://www.cier.ca/taking-action-on-climate-change/partnership-opportunities.aspx?id=306

Steps to Take for Different Options

Aboriginal and Northern communities that have knowledge and control over their energy needs and options are more effective in creating a sustainable future (Indian and Northern Affairs Canada, 2007, p.8). Before implementing any new energy program, a well established community energy plan should be developed by a Community Energy Planning (CEP) project in order to help the band and community members envision community energy in the future, investigate existing energy consumption, explore alternative energy options, and search for possible funding opportunities to fulfill the vision.

One of the first steps of Community Energy Planning is to conduct the Community Energy Baseline analysis (CEB). CEB helps First Nations communities to identify types and amounts of energy consumed and opportunities for energy savings and new technologies for energy. For Fisher River Cree Nation, the Centre for Indigenous Environmental Resources (CIER) is a possible partner to implement such an initiative, as they have the capacity to carry the analysis work. Another possible partner on FRCN CEB project is Pembina Institute in Calgary. In the past eight years, Pembina Institute has worked with 60 First Nations communities across Canada to complete the CEB projects (Weis & Cobb , 2008, p.1).

The ecoENERGY for Aboriginal and Northern Communities Program which is funded by Government of Canada can provide fund for community energy planning and community energy baselines projects in Aboriginal and northern communities across the country.

Wind and Solar Energy

If the Community Energy Baseline analysis and the Community Energy Planning result in recommendations for initiatives of wind energy or solar energy or both, it's very important to measure the wind speed and solar radiation before investing the money on the wind turbine or solar panel purchases. As an inexpensive and user-friendly device, a power predictor is a sensible choice to carry out a full site assessment and measure the wind speed and solar radiation potentials. When the device is put in the location where a pilot wind or solar energy project is considered, it can collect the data for renewable energy production, and store them in a memory card. These data should be collected for at least one year, and can be transferred to a computer and uploaded to the powerpredictor.com website to get the power report.

Run-of-River Hydro (Small-Scale Hydro)

If the Community Energy Baseline analysis and the Community Energy Planning recommend the development of a run-of-river hydro as an alternative energy source, the next step would be to plan for small-scale hydro. It may include assessing power and energy requirement, measuring potential power and energy of a river or a stream, deciding the appropriate size of the project, carrying out a feasibility study, solving environmental issues and getting required permits (Natural Resources Canada, 2004).

As the planning process includes some work that is technical, e.g. a feasibility study, professional consultants or energy experts may be needed to help with the work.

First Nations Community Energy Plan Precedents

It may be helpful to look at other communities who are embarking on journeys similar to Fisher River Cree Nation. Swan Lake First Nation has completed the wind data collection process in an effort to attain energy sovereignty. They are moving into the next stage of using renewable energy as an enterprise. T'Sou-ke First Nation in British Columbia have also invested in solar energy as a means of achieving energy self-sufficiency.

Swan Lake First Nation Wind Energy Project

The first step to Swan Lake's vision of being completely off the grid by 2018 was to begin wind monitoring and data analysis with a power predictor. The youth-camp served as the centre for renewable energy efforts and became a pilot project for the installation of solar panels and a 1.3 kW wind turbine. The next step for Swan Lake First Nation was to determine how much energy they wanted to generate and to subsequently develop a business plan and negotiate a power purchase agreement with Manitoba Hydro. They determined that a 10 MW wind farm would produce enough energy to fuel the reserve and make profit by selling excess to Manitoba Hydro. They are currently negotiating the price at which Manitoba Hydro will purchase the excess energy. This step will help in understanding the project's feasibility. Swan Lake is also undertaking an economic feasibility study and an environmental impact study.

Further information can be available by calling Swan Lake First Nation (204) 836-2101 or by email: slfnadm@mts.net

T'Sou-ke First Nation Solar Energy Project

T'Sou-ke First Nation is a small First Nation community on Vancouver Island, British Columbia. In 2007, the community began a journey to create a model of a sustainable community by conducting a visioning process which lasted two years. In this process, they found that comprehensive community planning was an effective tool to guide the way to achieve their goal. The comprehensive community planning process engaged every community member in the visioning, which contributed inputs to the community plan. The outcome of the process was a vision of a self-sufficient First Nation living with the outline of many initiatives. One of them was a solar energy project including solar thermal installation on community member's houses, and 75 KM solar photovoltaic (PV) installations on the fisheries building, the band hall and the canoe shed, which was the largest PV project in BC. During the process of promoting solar energy project, the community also paid much attention to energy conservation. They believed that without increasing energy efficiency, renewable energy could lead to the goal of energy self-sufficiency.

In order to reduce the cost of maintenance in the long term and create employment opportunities, the community was committed to capacity building by training community members to install solar equipment and maintenance. In this way, not only were the community members able to do most of the maintenance work, some of the trainees could help with similar projects outside the community.

Consistent with the goal of building a model sustainable community, T'Sou-ke was happy to share their knowledge and experience with other Aboriginal communities. A solar gathering has been held in the community, inviting other First Nations to tour the solar installation and hear about the experience.

More information can be available by phone at (250) 642-3957, or email at tsoukesmartenergygroup@gmail.com.

Lessons from the two renewable energy precedents

1. The community planning coordinator can facilitate the process to develop a community energy plan, which can be part of the comprehensive community plan.
2. Using less energy is much cheaper than developing new energy sources. Find practical ways to increase energy efficiency when planning and implementing renewable energy project.
3. Community capacity building is important. Ensure that community members are being trained to work on the energy project, e.g. energy equipment installation and maintenance.

4. A pilot project is a good demonstration for community members to understand the benefit of renewable energy.

Conclusion: Going Forward

Our work over the last 3.5 months has reaffirmed an already solid partnership between planning students at the University of Manitoba and Fisher River Cree Nation. FRCN is in a leading planning position as they are already undertaking many environmental intiatives and partnerships. This work can enriched and reinforced through the community planning coordinator position and the student research position. The community planning coordinator will work on planning related projects, including environmental education, community health intiatives and maintaining partnerships with Manitoba Hydro. This position and partnership will help ensure that environmental projects and relationships are sustained with momentum and enthusiasm.

Environmental education begins by integrating traditional and innovative environmental knowledge into the education structure as a way to reinforce healthy land stewardship practices in the community. Environmental education can also act as a lingua franca between youth and elders, providing a platform and reason for exchanging stories about traditional land knowledge.

Discussion at the December 6th AMC conference held at the University of Maniotba led to the suggestion that the FRCN community planning coordinator and the student research assistant concentrate on initiatives from the Community Health Work Plan that FRCN recently developed. A particular focus would be on environmental initiatives within this plan, both in implementing these initiatives and building upon what is currently in the plan. Some of these courses of action are listed below.

Watershed mapping

FRCN will be continuing their involvement with the IWMP process. Conducting more targeted group watershed mapping exercises may further help to clarify FRCN's priorities, concerns, potential solutions, and ideas of success. There will also be opportunities for community members to give their input on the IWMP when the public community engagement meeting(s) are held.

Energy

FRCN is taking steps towards managing energy systems. Energy conservation tips and products are available at Manitoba Hydro. The relationship between

Manitoba Hydro and FRCN will continue, with a goal of adapting all homes to be more energy efficient. The investment in the power predictor is also a set towards managing local energy production. A baseline energy survey with CIER or the Pembina Institute will also help FRCN to determine energy outputs and inputs and will be able to provide a clearer picture of energy needs.

Waste Management

There is a strong need to explore alternative methods and sites of waste disposal. Information from the Province of Manitoba was provided to Chief and Council for the establishment of a used oil collection site. This has the potential to be a regional disposal site for surrounding communities. The Manitoba Association for Resource Recovery Corporation (MARRC) has developed EcoCentres for the disposal and recycling of used oil. MARRC exceeds the baseline processing requirements for used oil. The closest EcoCentre depot to Fisher River is Arborg, MB. See MARRC's website for more information. http://www.usedoilrecycling.com/en/mb/ecocentrelocations

Knowledge exchange

The stories, maps and partnerships created through this planning process have created a system of knowledge exchange whereby environmental information is shared, dispersed and created openly and freely. Chief and Council have approved the materials so it can be put on the AMC website and can be uploaded onto FRCN's website for the general public to view. The education material, such as the magnets and pamphlets can be reproduced and adapted as need be. It is hoped that this document is seen as a living, evolving document that can be reshaped as the process grows. It is also hoped that connections between other First Nations communities can be made so that mutual learning and best practices can be shared.

Our Experience with Fisher River Cree Nation

During this process, we as students were able to make some observations and learn more about Indigenous Planning. We realized how important relationships are in Indigenous Planning and had the benefit of entering into an existing relationship between Fisher River Cree Nation and the Department of City Planning at the University of Manitoba. We were told by Fisher River Cree Nation at the beginning of our work that one of their main goals was to have a good relationship with us. One aspect of this relationship involved the exchange of gifts. We as students were welcomed with open arms and received the full support of Chief and Council throughout the process. Community members often shared stories prior to and during community engagement

sessions. These stories were about their culture and themselves; we as students really valued these exchanges.
The importance of relationships was also evident in how community members viewed and interacted with one another. A commonly referenced view of time and relationships in Indigenous Planning is the idea of seven generations, both past and future (Jojola, 2008). Different generations in Fisher River Cree Nation were interconnected, with many adults emphasizing the importance of the youth in the community and the youth being very respectful of community elders. A strong emphasis was placed on education, with many noting that youth education would benefit the entire community. Many of the planning initiatives underway were occurring because of the effect these plans would have on the youth of the community in the future, to ensure that they will have a healthy place to live.

The projects we worked on had a strong environmental focus. A long term view of time and the recognition of the importance of a healthy ecosystem help to facilitate environmental planning and the implementation of environmental initiatives within the community as well as the surrounding region. Jojola (2008) notes how many indigenous communities have strong ties to the land. People were rooted to the community, with many living in Fisher River Cree Nation all their lives, while those who leave for a while often return. These strong community ties may contribute to a desire for ensuring a healthy landscape in which to live. We as students were impressed with this outlook and it provided us with the opportunity to explore areas of planning we may not have been able to in other communities with less of an environmental focus.

It would have been better if there was a stronger connection between the work started last year by students and the work started this year. In the future it will be important to find a delicate way of bridging predecessors' work. The community planning coordinator may help to facilitate this. This will ensure a consistent and focused relationship between Fisher River Cree Nation and the University of Manitoba.

We realize we still have much to learn about Indigenous Planning, but this experience provided us with a unique learning opportunity to develop academically and professionally in this field. It is our hope that our project contributes to the development of Indigenous Planning through the collaborative work that occurred between us as student planners and Fisher River Cree Nation; and that this discipline will continue to evolve to better embody planning practices that reflect the unique and diverse worldviews of Indigenous communities. The relationships that we made are valued and we hope the positive relationship between Fisher River Cree Nation and the Department of City Planning at the University of Manitoba continues.

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Appendix I: Educational Pamphlets

Why & how does Fisher River value its water?

Draft Watershed Vision:

"The Fisher River watershed exemplifies healthy land, healthy fish and animals, clean air, and clean water based upon Fisher River Cree Nation's cultural traditions and of working together to be leaders in conservation and preservation of their water" (CIER, 2010, p.22).

Choose products with the EcoLogo!

http://www.greenyourdecor.com/wp-content/uploads/2009/03/ecologo.gif

You can help reduce water pollution.

- use phosphate-free soaps, detergents and cleaning products
- don't use fertilizers within 30 metres of a water body
- manage your septic system regularly
- keep shoreline in a natural state and protect and conserve aquatic plants and insects
- compost kitchen and garden waste to reduce garbage and use on lawns and gardens

Protecting Water in FISHER RIVER CREE NATION

household solutions for minimizing water pollution

Use 'Green' products when possible.

Try avoiding over-use of the following:

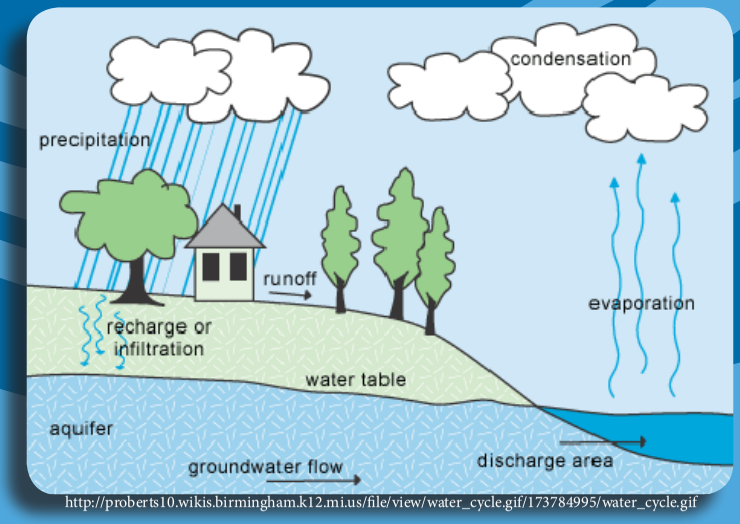
- bleach
- drain cleaners
- oven cleaners
- ammonia
- furniture polishes
- aerosol spray cans
- oil-based paint
- wood stains & preservatives
- turpentine
- paint strippers
- solvents
- pesticides
- gasoline
- diesel fuel
- motor oil
- anitfreeze
- car batteries
- photographic chemicals

Water is a life source
Water is sacred
Water must be protected
Water is valuable resource

Rivers have been called the "report card of communities" because the quality of water in our rivers reflects our land management practices.

- Manitoba's Water Protection Handbook
Everyone's Responsibility, page 4

Keep hazardous wastes out of the water cycle!



http://proberts10.wikis.birmingham.k12.mi.us/file/view/water_cycle.gif/173784995/water_cycle.gif

Never bury or flush hazardous wastes, including oil and chemicals in the land or down the drains, toilets and sewers.

Metals such as cadmium, lead and mercury threaten water quality if they enter the water cycle in large quantities.

Excessive nitrogen and phosphorous from human and animal waste, fertilizers, industrial effluent and cleaning products can pollute rivers and streams.

Products containing lye, phenols, petroleum distillates and trichlorobenzene are toxic.

Properly dispose of waste at the community landfill.

Reduce! Reuse! Recycle!

Source: T'Sou-ke First Naiton

Investing in renewable energy can start today by collecting wind and solar data with a power predictor.

Source: Swan Lake First Naiton

"Start with energy efficiency. It's a lot cheaper to save energy than to produce it."
Andrew Moore, Solar Project Manager, T'Sou-ke First Nation

Energy in FISHER RIVER CREE NATION

Fisher River is embarking on a journey towards energy sovereignty. Energy sovereignty means having the right to control energy production. That means finding ways to produce and consume energy that is 100% community owned and operated.

Renewable ENERGY

Fisher River is surrounded by free energy: the wind, the sun and the river are all free flowing forms of energy that can be harvested and used as a compliment to the services provided by Manitoba Hydro.

Source: www.caradvice.com.au

Wind and solar energy are the most viable renewable energy options for Fisher River.

Wind energy can be produced through wind turbines. The wind flows through the blades of wind turbines causing them to spin. The blades turn a shaft and this movement generates electricity. Wind turbines can produce enough energy to fuel an entire community.

The sun's energy can be collected using solar panels. There are two types of solar panels: solar thermal and solar photovoltaic. Solar thermal panels convert the sun's energy into heat and use pumps or fans to transfer the heat into storage for distribution. Solar photovoltaic technology converts sunlight directly into electrical energy using photovoltaic cells to create an electrical current that can be tapped into for electricity.

SAVE ENERGY

Fisher River can also adapt homes and buildings to be more energy efficient so that less money is spent on hydro bills.

Source: www.seppo.net

Saving energy can be as simple as turning off lights and electrical appliances when not in use. It can also mean having your home upgraded by a Manitoba Hydro energy efficiency specialist. Already, 19 homes in Fisher River have been adapted to be more energy efficient.

Appendix II: Recipe Cards & Fridge Magnets

You can use white vinegar as a natural cleaner on a variety of household surfaces

For Dusting Spray:
Combine 1 teaspoon olive oil and ½ cup white vinegar in a squirt bottle. Apply a small amount to a soft reusable cloth to use on wooden furniture.

For Fabric Softener:
Add ¼ cup of white vinegar to the washing machine's final rinse cycle.

For Glass Cleaner:
Combine ½ cup white vinegar with 1 gallon (3.8 litres) water. Use with a soft cloth on your hard surfaces and dry with a separate clean cloth.

For a Window Cleaner:
Combine a 1/4 cup of rubbing alcohol, 1/2 a cup of vinegar, and 2 cups of water to clean windows with a soft cloth. Dry with a separate clean cloth.

Did you know that lemon juice can be used in more than just cooking?

Lemon juice is another natural acid that can be used as a household cleaning product. Add some lemon juice and natural soap to hot dishwater.

A mixture of equal amounts of lemon juice and olive oil is great for polishing unvarnished furniture. For varnished furniture, use half a cup of warm water and a few drops of lemon juice.

Did you know that baking soda is a natural cleaning product that will not pollute Fisher River or Lake Winnipeg?

Use Baking soda to remove household odours.

Combine equal parts of salt and baking soda for a sink scrub.

Sprinkle baking soda on your stainless steel, iron, or copper pots and scrub to clean. Don't use baking soda on aluminum pots though!

Use pure soap at home!

Pure soaps, such as olive-oil-based Castile soap, doesn't contain any synthetic additives.

Look to purchase and use soaps that contain fewer chemicals and fragrances.

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Look to purchase and use soaps that contain fewer chemicals and fragrances.

Wash clothes in cold water

85 - 90% of the energy used to wash your clothes is used to heat the water.

Image source: www.25greentips.com
Data source: www.saskenergy.com

Replace old light bulbs with CFLs

Compact Fluorescent Light (CFL) bulbs use 66% less electricity than old light bulbs and last 8 times longer.

Image and data source: www.25greentips.com

Use a low-flow shower head to save hot water

A regular showerhead can use up to 190 litres of hot water.
A low flow showerhead can reduce this by half.

Image and data source: www.25greentips.com


Turn down your thermostat by 5°C while you are sleeping
If you program your thermostat to set back the termperature by five degrees for eight hours of every night, you will save approximately 10% on your heating bill.
68
Image and data source: www.25greentips.com


Unplug all appliances and electronics when not in use
Many electronic devices and appliances draw power while they are in off mode. The power drain can add up to a significant amount over time.
Image and data source: www.25greentips.com


Read the product label!
corrosive
toxic
reactive
flammable
chose this!
not these...

Appendix III: Meeting Minutes

Fisher River Meeting – September 20, 2011 1:00 pm

Attendees:
Chief David Crate
Councillor Barry Wilson
Councillor Carl Cochrane
Councillor Dion McKay

University of Manitoba:
Robin Beukens
Shengxu Li
Kyle McStravick
Jennifer Pritchard
Johanna Washchyshyn

Introductions of new students to Chief and Council.

Chief and Council expressed their primary concerns were in the areas of water pollution, flooding and drainage, and energy. They also mentioned that education be a key component of the projects, ranging from what kind of light bulbs to educational materials for the community.

The students will brainstorm and look into potential projects. They will return to Fisher River on Thursday, Sept 29 to present the proposed topics to Chief and Council.

Fisher River Meeting – September 29, 2011 3:00 pm

Attendees:
Councillor Barry
Councillor Carl

Robin Beukens
Jennifer Pritchard
Johanna Washchyshyn
Shengxu Li

Met with council members to update them on the progression of projects.

Water:
Waste Management Education
-council was open to this idea

Mapping of potential pollutant sources
-council felt this would be best left to the IWMP process where everyone will come to the table together and discuss their concerns collectively
-monitoring and pollutant source tracking will be part of the IWMP

Wetland Educational Trail
-council also liked this idea as a potential project
-council mentioned that a trail had been planned for the future
-council also mentioned how they are using natural filtration of wetland plants with cleaning water draining from the landfill

Energy:
Integrated Energy Toolkit
-will provide council with a toolkit on energy conservation and renewable energy
-will be workshops with the community and potentially an open house at the end of the semester
-council also supported this idea, said it sounds like a lot of work

Council said they could arrange meetings and noted that students and elders would be particularly open to moving.

Students will communicate with council members for when the next meetings will be with council and the community groups.

Meeting Minutes Oct 21, 10:00am

Attendees:
Fisher River Cree Nation:
Chief and Council
FRCN Elders

University of Manitoba:
Robin Beukens
Shengxu Li
Johanna Washchyshyn

Meeting Summary:
Introductions.

Water Project:
Engaged group members in the mapping exercise to document problems and solutions in the watershed. Showed maps of land use, elevation, soil capability, as well as plain maps of the watershed area and FRCN. We then documented information through stickers, drawing, and writing on the maps.

Had a short discussion about what information would be useful for the community with regards to water education. Elders noted the importance of education that appeals to the youth.

Chief and Council came for lunch and were updated on the progression of the projects. The suggestion was made that the students look into jurisdictional responsibilities in regards to environmental management, specifically what is the order of contact and who is responsible when a spill happens in the watershed.

Energy Project:
Watched a short video about a First Nations community in BC that has been taking steps towards energy sovereignty.

Had a discussion about the videos, what is happening in Fisher River, and possible steps for the community to become more energy independent. It was noted that community members prefer wood stoves for heating their homes.

Meeting Minutes, November 14, 2011

Fisher River Cree Nation
Chief David Crate.
Councilor Carl Cochrane
Councilor Dion McKay
OSEDC Director George Crate
Housing Manager Stan Murdock

University of Manitoba:
Robin Beukens, Shengxu Li, Jennifer Pritchard, and Johanna Washchyshyn.

A table of contents of a potential final report for Chief and Council was circulated. Chief and Council approved the report, mentioning that we should continue to explore jurisdictional responsibilities and see if we could find a map of aquifers.

A job description of the new community planning position, FRCN continues to look into hiring for the position.

Circulated some prototypes of pamphlets and magnets, some of the "community outreach" type stuff to let people know about water and energy tips. Chief and council seemed to like these and gave some tips on how to make them more personal to the community.

There is also talk of David Suzuki coming to FRCN next summer, as well as the building of an Eco-lodge.

We also met with the grade 11 science class to do some watershed mapping and to show them the power predictor. We generated some good discussion and hopefully got them thinking about the environment. Two teachers were present….they were super keen to participate.

Jennifer is in communication with Crystal at Manitoba Hydro, waiting to hear from Tony, on the water energy saving kits. Jennifer is also in communication with David Isaac @ Raincity strategies on power predictor buisiness. Chief and council seemed interested in the power predictor. They have questions that need to be answered before they will invest further. Specifically, where will it go and will it be safe in a storm? They have a 112ft pole that it can be affixed…but it also needs to be in the place where the wind turbine will go. For an added $1000 the power predictor can be "installed", meaning site analysis, installation and start up of device plus on the spot training. These details need to be negotiated. Our next meeting will be at the AMC conference on December 6.

Chief and council will need to leave early on Dec 6 as they have a meeting in Ottawa. We need to communicate this to AMC for scheduling.

Meeting Minutes Oct 21, 1:00pm with Fisher River Cree Nation Environment Committee

Attendees:
FRCN Community Members: Stan, Shirley
Council: Dion McKay and Carl Cochrane attended briefly near the end of the meeting
Water Treatment Plant: Dave, the operator, attended briefly near the end of the meeting
University of Manitoba: Robin Beukens, Shengxu Li, Jennifer Pritchard, Johanna Washchyshyn

Meeting Summary:
Introductions.

Overview of the projects.

Energy Project:
Watched a short video clip about the environment.

Watched a short video about a First Nations community in BC that has been taking steps towards energy sovereignty.

Had a discussion about the videos, what is happening in Fisher River, and possible steps for the community to become more energy independent. Discussion resulted in suggestions to facilitate education on conserving energy and renewable energy through meeting with school students, fridge magnets, pamphlets, or the internet.

Water Project:
Engaged group members in the mapping exercise to document water problems and solutions in the watershed. Showed maps of land use, elevation, soil capability, as well as plain maps of the watershed area and FRCN. We then documented information through stickers, drawing, and writing on the maps.

Had a short discussion about what information would be useful for the community with regards to water education. It was suggested that education focus on the importance of natural water systems and what people can do.

Appendix IV: Community Engagement Notes

Fisher River Watershed Preliminary Mapping Exercise

This information will be used by the East Interlake Conservation District to develop a watershed management plan for the Fisher River Watershed.

This plan will act as a roadmap for the East Interlake Conservation District and other watershed stakeholders to protect what is important to you over the long term. This is where we need your help today.

Please take a few minutes to fill out the comment boxes below. By prioritizing the issues that matter most to you, we will be better able to target our actions to the needs of the watershed and its residents.

Part 1. What is your interest(s) in the Fisher River Watershed?

Community Member 1

Part 2. Watershed Issues

What are the land and water-related issues in the Fisher River Watershed? Take a minute to think of how you would prioritize these issues. Please provide any additional issues that may have been missed.

Watershed Issues	Importance (High/Medium/Low)	Priority (1, 2, 3…)
Drinking Water Quality	High	1
Surface Water Quality (Lakes and Creeks)	High	5
Fisheries	High	4
Flooding/Drainage	High	2
Natural Areas (forests, wetlands, etc.)	Med	6
Soil Loss/Erosion	Med	7
Water Use/Quantity	High	3
Wildlife	Med	8
Other:		
Other:		

Part 3.

Priority 1:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 2:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 3:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 4:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Part 4. Additional comments?

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Part 1. What is your interest(s) in the Fisher River Watershed?

Community Member 2, band employee, personally experiences flooding (spring).

Part 2. Watershed Issues

What are the land and water-related issues in the Fisher River Watershed? Take a minute to think of how you would prioritize these issues. Please provide any additional issues that may have been missed.

Watershed Issues	Importance (High/Medium/Low)	Priority (1, 2, 3…)
Drinking Water Quality	High	1
Surface Water Quality (Lakes and Creeks)	High	2
Fisheries	Medium	4
Flooding/Drainage	High	3
Natural Areas (forests, wetlands, etc.)	Medium	5
Soil Loss/Erosion	High	8
Water Use/Quantity	High	6
Wildlife	Medium	7
Other:		
Other:		

Part 3.

Priority 1:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 2:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 3:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 4:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Part 4. Additional comments?

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Part 1. What is your interest(s) in the Fisher River Watershed?

Community Elder 1

Part 2. Watershed Issues

What are the land and water-related issues in the Fisher River Watershed? Take a minute to think of how you would prioritize these issues. Please provide any additional issues that may have been missed.

Watershed Issues	Importance (High/Medium/Low)	Priority (1, 2, 3…)
Drinking Water Quality	High	1
Surface Water Quality (Lakes and Creeks)	High	2
Fisheries	High	3
Flooding/Drainage	High	
Natural Areas (forests, wetlands, etc.)	High	
Soil Loss/Erosion	High	
Water Use/Quantity	High	
Wildlife	High	
Other: Medicines	High	4
Other:		

Part 3.

Priority 1: Drinking water quality

What are some practical solutions for each of these priority issues?

Water treatment plant for (to service) whole community.

In 10 years, what would success look like to you?

Clean drinking water.

Clean river and lake.

Priority 2: Water Quality (lakes and rivers)

What are some practical solutions for each of these priority issues?

Clean up watersheds where water begins (the source).

When clean up begins, this will help to take care of other problem areas.

In 10 years, what would success look like to you?

Clean drinking water.

Clean river and lake.

Priority 3: Fisheries

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 4: Medicines

What are some practical solutions for each of these priority issues?

The river must be cleaned up before medicine picking can take place along rivers and creeks.

In 10 years, what would success look like to you?

Clean river – clean medicines.

Part 4. Additional comments?

Fisher River Watershed Preliminary Mapping Exercise

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Part 1. What is your interest(s) in the Fisher River Watershed?

Community Elder 2

Part 2. Watershed Issues

What are the land and water-related issues in the Fisher River Watershed? Take a minute to think of how you would prioritize these issues. Please provide any additional issues that may have been missed.

Watershed Issues	Importance (High/Medium/Low)	Priority (1, 2, 3…)
Drinking Water Quality	Low	10
Surface Water Quality (Lakes and Creeks)	High	1
Fisheries	High	3
Flooding/Drainage	High	4
Natural Areas (forests, wetlands, etc.)	High	7
Soil Loss/Erosion	Low	8
Water Use/Quantity	High	9
Wildlife	High	6
Other:		
Other:		

Part 3.

Priority 1: Surface Water Quality

What are some practical solutions for each of these priority issues?

Water run-off from creeks.

Lake backs up northwest wind into river.

In 10 years, what would success look like to you?

More high water due to drainage from elsewhere (e.g. south).

Priority 2:

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 3: Fisheries

What are some practical solutions for each of these priority issues?

Run-off from farm areas.

Drainage (pollution).

In 10 years, what would success look like to you?

No more fishing.

Priority 4: Flooding/Drainage

What are some practical solutions for each of these priority issues?

Less drainage.

In 10 years, what would success look like to you?

More water (flooding).

Part 4. Additional comments?

Fisher River Watershed Preliminary Mapping Exercise

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Part 1. What is your interest(s) in the Fisher River Watershed?

Community Elder 3

Part 2. Watershed Issues

What are the land and water-related issues in the Fisher River Watershed? Take a minute to think of how you would prioritize these issues. Please provide any additional issues that may have been missed.

Watershed Issues	Importance (High/Medium/Low)	Priority (1, 2, 3…)
Drinking Water Quality	High	2
Surface Water Quality (Lakes and Creeks)	High	3
Fisheries	High	6
Flooding/Drainage	High	8
Natural Areas (forests, wetlands, etc.)	High	7
Soil Loss/Erosion	High	9
Water Use/Quantity	High	1
Wildlife	High	5
Other: plant life	High	4
Other:		

Part 3.

Priority 1: Water Use Quantity

What are some practical solutions for each of these priority issues?

Clean up run-offs that come downstream from farms.

In 10 years, what would success look like to you?

Clean river, lakes, etc.

Priority 2: Drinking Water Quality

What are some practical solutions for each of these priority issues?

Clean up run-offs that come downstream from farms.

In 10 years, what would success look like to you?

Able to drink the water from our own sources.

Priority 3: Water Surface Quality

What are some practical solutions for each of these priority issues?

Clean up river, lakes.

Avoid contaminating the waters from pollution stop throwing garbage, waste, etc. in the waters.

In 10 years, what would success look like to you?

Able to swim once again in the river.

Priority 4: Plant Life

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Part 4. Additional comments?

Fisher River Watershed Preliminary Mapping Exercise

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Part 1. What is your interest(s) in the Fisher River Watershed?

Facilitator Records

Part 2. Watershed Issues

What are the land and water-related issues in the Fisher River Watershed? Take a minute to think of how you would prioritize these issues. Please provide any additional issues that may have been missed.

Watershed Issues	Importance (High/Medium/Low)	Priority (1, 2, 3…)
Drinking Water Quality		1
Surface Water Quality (Lakes and Creeks)		2
Fisheries		
Flooding/Drainage		3
Natural Areas (forests, wetlands, etc.)		
Soil Loss/Erosion		
Water Use/Quantity		
Wildlife		
Other:		
Other:		

Part 3.

Priority 1: Drinking Water Quality

What are some practical solutions for each of these priority issues?

Dike to keep water out.

Monitoring.

Water testing.

Centre area (of community) is protected; other homes on wells are not protected.

Cisterns for higher risk areas.

Hog farm (monitoring)

Peguis occasionally releasing sewage into river.

In 10 years, what would success look like to you?

Properly drained land for future development while continuing ethics of water/land protection.

Restore some areas to productivity (hay and farming).

Every house connected to treatment system.

Major concerns for drinking water quality:

- overland flooding in wells is concern
- wells flood
- high water table throughout community
- concern for frozen pipes in winter
- water table fluctuates with change in well usage from 6 wells to 2 (i.e. water table increases)
- Hutterite Marble Ridge.

Priority 2: Surface Water Quality

What are some practical solutions for each of these priority issues?

Should have built dike 25 years ago north.

Diking to prevent flooding.

Don't allow waste disposal into river.

Educate about local practices to change behaviours to reduce pollution throughout watershed.

In 10 years, what would success look like to you?

Return of spawning beds in river once again.

To be able to fish, swim.

Have more fish in rivers, healthier ecosystems.

Major concerns for surface water quality:

- Peguis building standards (are sub-par)
- Cattle in well/river/creek in RM
- Hospital waste management practices
- Flooding gathers wastes into river
- All of our practices in entire watershed.
- River quality, lake quality.
- Algae growth.

Priority 3: Flooding

What are some practical solutions for each of these priority issues?

Permanent diking.

In 10 years, what would success look like to you?

No flooding (for 7 years at least)

Don't build homes in flood area or below 100-year flood level.

Have a completed and implemented drainage plan.

Major concerns for flooding:

- flooding affects quality
- flooding in Hutterite colony (discharge of hog and human wastes)
- northwest winds off lake causes flooding
- eroded land
- Homes in FRCN flood
- Peguis floods worse than FRCN
- Watercourses flood easily.
- Low elevation
- High water table, lots of clay

Priority 4: Fishing

What are some practical solutions for each of these priority issues?

Water quality improvement.

Changes to hydro's lake management.

In 10 years, what would success look like to you?

Better fishing.

Major concerns for fishing:

- not as many fish in rivers, bay
- hydro dams effect on fishing

Part 4. Additional comments?

Water Use:

- wells - often don't think about water as it is free

Wildlife:

- less wildlife
- used to be more moose and deer
- more bears

Would be good to have more community education.

Children's education can be a good push for parents.

More appreciation for surroundings (education).

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Part 1. What is your interest(s) in the Fisher River Watershed?

Youth – Facilitator notes

Part 2. Watershed Issues

What are the land and water-related issues in the Fisher River Watershed? Take a minute to think of how you would prioritize these issues. Please provide any additional issues that may have been missed.

Watershed Issues	Importance (High/Medium/Low)	Priority (1, 2, 3…)
Drinking Water Quality	High	3
Surface Water Quality (Lakes and Creeks)		
Fisheries	High	1
Flooding/Drainage		
Natural Areas (forests, wetlands, etc.)		
Soil Loss/Erosion		
Water Use/Quantity		
Wildlife		
Other: Swimming	High	2
Other:		

Part 3.

Priority 1: Fishing, especially on treaty grounds

What are some practical solutions for each of these priority issues?

In 10 years, what would success look like to you?

Priority 2: Swimming

What are some practical solutions for each of these priority issues?

Remove pollution from Fisher River.

In 10 years, what would success look like to you?

To be able to swim in the river again, like our parents and grandparents used to.

Priority 3: Drinking Water

What are some practical solutions for each of these priority issues?

Regulate farm chemicals that are polluting the River.

In 10 years, what would success look like to you?

To have clean drinking water.

Part 4. Additional comments?

Sewage, septic fields, and agricultural chemicals are the main pollutants of the Fisher River.

Youth enjoy skating on the Lake and River in the winter months.