

## 7. Conclusions and Next Steps

From the results of this project, the JMRFN is more aware of the far ranging impacts of a changing climate on different aspects of health. In comparison to other Aboriginal communities above the tree line in northern Canada, JMR has not been as severely impacted by climate change (see Berkes and Jolly, 2001; Ford et al., 2010; Huntington et al, 2005; IISD, 2000; Martin et al., 2007; Nuttall et al., 2005; and Pearce et al. 2009). However, from the changes our people are observing and experiencing many of these changes can be directly or indirectly linked with climate change. By conducting this project our community has taken the first step towards a proactive approach to identifying current and potential impacts associated with climate change, as well as thinking about how to respond to these impacts before they become too severe.

Furthermore, by exploring initial ideas for adaptation strategies our community can prioritize where the community is most vulnerable, how severe impacts are (or will be), and the ability for the community to adapt to reduce our vulnerability to climate change. (see Table 7).

Table 7: Climate Change Vulnerabilities, Impacts, and Adaptation Strategies

Vulnerability (low, medium, high)	Climate Change Related Impacts (weak, medium, strong)	Adaptation Strategy (easy, moderate, difficult)
<b>Food Security</b>	<ul style="list-style-type: none"> <li>• More difficult and difficult and dangerous to access harvesting areas in the fall</li> <li>• Less country foods available in the community; increased dependence on store bought foods</li> <li>• Potential for increased consumption of contaminants from country foods</li> <li>• Restricted access to grocery stores and medical facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Store medicines and medical supplies at the nursing station</li> <li>• Community initiatives to raise livestock, develop community &amp; home gardens, build a root cellar, and store more canned and dried food.</li> <li>• Establish formalized intercommunity food sharing networks</li> <li>• Job sharing with other communities</li> <li>• Limiting the amount of country foods consumed from areas with high levels of contaminants</li> <li>• Change fish harvesting areas where fish are healthier (e.g. Horn Plateau)</li> </ul>
<b>Access to Safe Drinking Water</b>	<ul style="list-style-type: none"> <li>• Potential for increase in cases of gastro-intestinal and other water born diseases with a deterioration in water quality</li> <li>• Potential for increased consumption of contaminants through country foods and local water sources</li> </ul>	<ul style="list-style-type: none"> <li>• Increase consumption of bottled water</li> <li>• Improved standards for monitoring the quality of drinking water</li> <li>• More research needed to investigate the impacts and linkages of permafrost, contaminants, and the quality of</li> </ul>

		water and fish species with a warming climate
<b>Cultural Continuity &amp; Community Sustainability</b>	<ul style="list-style-type: none"> <li>• Direct and indirect health and community problems associated with forest fires</li> <li>• Potential for increases in allergies and asthma</li> <li>• Less opportunities to practice and pass on TK</li> <li>• Erosion of TK used to predict weather</li> <li>• Erosion of TK linked to the landscapes that have changed</li> <li>• More money and resources to repair wind damaged buildings</li> <li>• More money and resources needed to repair flood damage and to maintain roads</li> </ul>	<ul style="list-style-type: none"> <li>• Revisit community plan in relation to maintaining TK</li> <li>• Re-focusing of TK to better assess ice conditions</li> <li>• Review JMRFN policy for emergency funding</li> <li>• Community fire education strategy and the construction of a fire break around the community</li> <li>• Increase use of traditional medicines</li> <li>• Store medicines and medical supplies at the nursing station</li> <li>• Find other cultural activities to do</li> <li>• Pass on TK to younger generations about areas that may disappear or change dramatically</li> <li>• Upgrade roads &amp; more drainage systems for roads</li> <li>• Job sharing with other communities</li> <li>• Improve building codes so that structures can withstand high winds</li> <li>• Negotiate policy changes regarding how funding is allocated by the Federal and Territorial Governments</li> <li>• Mapping of permafrost areas within the proximity of the community</li> </ul>

<p><b>Travel Safety</b></p>	<ul style="list-style-type: none"> <li>• Increased chance of becoming lost and disoriented in once familiar landscapes</li> <li>• Higher risk of injuries and accidents when travelling on the land</li> <li>• Potential for increase in boating related accidents and injuries</li> </ul>	<ul style="list-style-type: none"> <li>• Clear trails in the fall and wear waterproof footwear</li> <li>• Travel in pairs and bring first aid/ emergency kits and extra supplies when out on the land</li> <li>• First aid training</li> <li>• Use overland routes more often, clear new trails for ATVs</li> <li>• Re-focusing of TK to better assess ice conditions</li> <li>• Have depth finder on boats</li> <li>• Need for updated maps for the Mackenzie River to account for changes in navigation routes</li> <li>• Pass on TK to younger generations about areas that may disappear or change dramatically</li> <li>• Hunters &amp; Trappers GPS Trails to Identify Dangerous Travel Locations</li> </ul>
<p><b>Exposure to Extreme Weather and UV-B Rays</b></p>	<ul style="list-style-type: none"> <li>• Increase in injuries related to cold exposure</li> <li>• Increase in emotional stress and personal injuries due to increase in number and severity of windstorms in the summer</li> <li>• Increase in personal healthcare to avoid, or to minimize health risks associated with heat/sun exposure and frostbite</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in the use of sunscreen, medical supplies for sunburns and heatstroke, and sunglasses</li> <li>• Education strategy to minimize the health risks of sun and heat exposure, and other extreme weather conditions</li> <li>• Weather warnings through local media (e.g. Fort Simpson)</li> <li>• Satellite weather stations in the community and the 5 Lakes Areas</li> </ul>
<p><b>Negative Impacts to Plants and Animals</b></p>	<ul style="list-style-type: none"> <li>• More trees are dead or dying as a result from permafrost melting, especially tamarack, poplar, and spruce</li> <li>• Decreased quality and abundance of some country foods (e.g. fish, berries, and water fowl)</li> <li>• Northward spread of spruce bud worm infestations</li> </ul>	<ul style="list-style-type: none"> <li>• A study on migratory birds that were once common to the area, and any changes in their habitats where they use to return to in the spring</li> <li>• More research is needed to identify the connections between a changing climate, melting permafrost, increased exposure to contaminants and any associated impacts to the ecosystem</li> <li>• A study to monitor and assess the spread of spruce budworm</li> </ul>

The JMRFN now has a baseline study to use as a platform to address and respond to climate change impacts that provides direction and concrete recommendations for our community. For example the table above provides some possible next steps to address and take action to prevent and/or minimize the negative impacts of climate change. However, when JMR begins to develop and implement climate change adaptation strategies; we do not want to develop and implement these strategies as separate projects or initiatives, nor do we want short term solutions to a long term issue.

The JMRFN needs to go beyond just developing and implementing adaptation strategies; our community needs to move towards adaptive management. According to the Millennium Ecosystem Assessment, adaptive management is:

“A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices. In active adaptive management, management is treated as a deliberate experiment for purposes of learning.” (Millennium Ecosystem Assessment, 2005: 599; quoted from Patino, 2010:1).

Adaptive management allows for adaptation strategies to be integrated into applicable aspects of our community planning, land use planning, health initiatives, culture camps, education, etc. In addition, by managing our adaptive capacity we can monitor and address the efficacy of the strategies we implement and modify them if necessary. Adaptive management elevates the organization of adaptation strategies in an integrated fashion that would allow our community to ‘mainstream’ climate change issues and adaptation strategies with other aspects of our community plan that promote cultural continuity and community sustainability. In this context mainstreaming refers to, “The integration of climate change considerations into a range of policies, programs, and decision-making processes.” (Patino, 2010:1).

However, for all that can be done at the community level, and even at the regional level, major changes still need to happen in how industrialized nations treat the earth. We need to respect and sustain the earth so that it can sustain us.

“(Climate change)... had happened in the past and people had adapted, but this time around there are more people on earth, more people to feed, more condensed buildings in the cities, more destruction to the environment, and I am afraid there will more lives lost as the severity of the weather increases and becomes more and more unpredictable. We are not taking care of Mother Earth, and we should be to ensure the existence of the generations to come.” (*Margaret Ireland, September 2010; parenthesis added*)