

In regard to the impacts to our TK, our community needs to revisit the objective in the community plan (see Appendix 7) about maintaining our TK, in particular, how we can adapt our TK to the changes being caused to seasonal weather patterns, and the subsequent changes to the environment, so we are able to recognize the signs that indicate weather changes like our Elders did in the past. We have already been re-focusing our TK, putting emphasis on learning how to judge ice conditions on lakes and rivers as a reactive and necessary response to climate change. Community members also emphasized teaching youth outdoor survival skills, as well as teaching youth about important places that may disappear due to changes to the landscape with a changing climate and environment (e.g. permafrost heaves).

In terms of maintaining and promoting community sustainability in the face of a changing climate, the adaptation strategies mentioned for food security apply to community sustainability. Additionally, having an inventory of non-traditional medicines and medical supplies on hand at the nursing station that do not require a nurse or a doctor to administer them, would allow our community to be better prepared to deal with increases in accidents, injuries, and other health issues; whether they are related to climate change or not. With hotter and drier summers steps are already being taken to build a fire break around the community to protect it from forest fires. Our community is also concerned if any of the houses and other buildings in our community are located in permafrost zones. The community is also interested in knowing if there are zones of permafrost within the vicinity of JMR so that we can be aware of these areas if the community decides to build more houses or facilities, such as a root cellar. To identify where areas of permafrost are located in the vicinity of JMR, a permafrost specialist would be needed to map out these areas.

Other community members suggested adaptation strategies related to improving the standards for constructing and maintaining buildings and roads that take into account climate change related impacts on infrastructure. Upgrading roads and creating more drainage systems to reduce the chance of roads being washed out in a flood is one adaptation strategy mentioned that could be shared between communities and may lead to potential job sharing between these communities. However, most of the climate change adaptation strategies aimed at maintaining and enhancing community sustainability would need government support, which would require negotiating policy changes regarding how funding for taking action on climate change impacts and related environmental issues is allocated by the Federal and Territorial governments that also includes resources for communities to conduct projects to address these issues at local and regional levels.

## **6.4. Travel Safety**

Our community has been experiencing the negative impacts of climate change on traveling, either out on the land or by vehicle, for a number of years now, and we have already started adapting strategies to minimize hazards while traveling. Now, when out on the land we always travel in pairs for safety and we bring extra supplies and first aid kits in the event we are caught suddenly by inclement weather. Our harvesters are becoming quite adept at assessing ice conditions and identifying potential hazards, and they are passing this knowledge on to younger generations. However, our community needs to review its policy on emergency funding with the potential likelihood of increases in travel accidents.

Inherent in the passing of TK to younger generations is the teaching of outdoor survival skills, but general first aid training could also help prevent and minimize accidents and injuries that happen in the community or out on the land. Another potential adaptation strategy to improve travel safety is for hunters and trappers to GPS trails and mark where travel hazards are, and keep an updated map and database in the community to inform other members of these hazards before they go out on these trails. If

trails become blocked, disappear, or become too dangerous to travel it is recommended that new trails could be cleared where there is less potential to have hazards.

Travel by boat is also riskier due to low water levels, and community members need to be careful not to damage or capsize their boats. One relatively inexpensive strategy suggested to avoid low water levels in the rivers and lakes is to have a depth finder in the boat. In regard to bigger vessels traveling along the Mackenzie River, navigation routes are becoming more restricted each year, and it was suggested that regularly updated navigation maps are needed because of the fast pace that these routes are changing.

## **6.5. Exposure to Extreme Weather & UV-B Rays**

Many of the initial adaptation strategies related to exposure to extreme weather and UV-B rays have been mentioned above, such as community education strategies and taking extra precautions and supplies when traveling. One other recommendation concerning extreme weather events is to have an early weather warning system of some sort in the community. Having small scale satellite weather stations in the community, and out at the 5 Lakes areas, would give our community more time to prepare for extreme weather, or to let our harvesters know the weather conditions before going out to harvest, or while out harvesting. Weather stations would also allow our community to collect weather related data over time for use in future research. A less expensive alternative to weather stations for an early weather warning system, but a less reliable one, is through local media such as the radio (Fort Simpson) or the internet.

## **6.6. Negative Impacts to Plants and Animals**

Although many changes and impacts to plants and animals associated with climate change have been observed, the direct links are at times hard to elucidate, and when they are apparent developing an adaptation strategy that can be implemented at the community level is a difficult and complex undertaking requiring collaborative research efforts between our community and other communities, and with researchers from various fields. In the absence of collaborative efforts our community will continue to monitor and report on the changes in the weather and environment we are observing and experiencing, and adapt as best we can.

As a result of this project our community has identified four such studies that if conducted would help our community greatly in knowing why some environmental changes are happening, and how climate change is connected to these environmental changes, or not. These four studies include:

- Mapping of permafrost areas within the proximity of the community;
- A study on migratory birds that were once common to the area, and any changes in their habitats in the JMR area where they used to return to in the spring;
- More research is needed to identify the connections between a changing climate, melting permafrost, increased exposure to contaminants, deterioration of water quality, and any associated impacts to the ecosystem, and;
- A study to monitor and assess the spread of spruce budworm.

However, for these collaborative efforts to be organized and for these studies to be conducted this would require policy changes regarding how funding for taking action to address climate change impacts and related environmental issues is allocated by the Federal and Territorial governments; including resources for communities to conduct projects to address these issues at the local and regional levels.