Observations

and Advice arising from the first Mackenzie River Basin State of the Aquatic Ecosystem Report 2003

The following summary presents the current priority issues facing the Mackenzie River Basin with recommended actions to address these issues. These issues were identified through the preparation of the first Mackenzie River Basin State of the Aquatic Ecosystem Report 2003.

Improved Knowledge

An overall observation recurring throughout the Mackenzie River Basin State of the Aquatic Ecosystem Report 2003 (SOAER) is the requirement for improved knowledge. Specifically, there is a need for improved environmental monitoring programs, compatible data collection methods, and a comprehensive evaluation of the data in order to transform numbers into knowledge and understanding.

Traditional (Aboriginal) Environmental Knowledge

Traditional aboriginal and local environmental knowledge provides a broad understanding of the inter-relationship of air, land, water, plants and animals and represents an important source of information available for producing state of the aquatic ecosystem reports. Much of the traditional and local knowledge used in this report was gathered prior to 1995.

The next state of the aquatic ecosystem report would benefit from complete and up-to-date reporting on traditional and local knowledge (TEK). Gaps in reporting on TEK should be identified and, where needed, steps taken to fill them. This up-to-date information is critical for presenting the observations of aboriginal people and forming a complete picture of the state of the aquatic ecosystem. MRBB member jurisdictions should support the aboriginal community in collecting up-to-date traditional and local ecological knowledge within their respective jurisdictions. The MRBB will then be able to incorporate this knowledge into its next SOAER.

In addition, the MRBB believes that all environmental studies and assessments undertaken within the Mackenzie River Basin should determine the need for traditional and local ecological knowledge as an information source. This type of knowledge provides additional information and a valuable perspective on a wide range of environmental issues.

External Sources of Pollution

The assessment of the state of the aquatic ecosystem indicates that there are external influences that are impacting the condition of the Mackenzie River Basin. The long range transport of contaminants and their deposition in the basin is contributing to concerns over the quality of water and the health and quality of country foods. Governments should continue research to understand the impacts of these external sources and, where required, work within Canada and the international community to resolve them.

Climate Changes and Variability

In common with many other regions around the world, climatic changes and variability are being observed in the Mackenzie River Basin. A warming trend and changes in precipitation patterns during the last half of the 20th century has affected river flows, snow packs, ice formation and melt timing, permafrost depths and plant, animal and human communities.

Some excellent research projects aimed at better understanding climate change and variability have, and continue to, take place. As this issue is critical to the residents of the Mackenzie River Basin, all levels of government should intensify research efforts and cooperation to increase our understanding of climate changes and variability that the Mackenzie River Basin is likely to experience. Additional research is needed to better understand how expected climatic changes in the basin will affect river flows, lake levels, habitat, pollutant concentrations and other important attributes of the aquatic ecosystem. Governments, industries and individuals should consider this new information when developing strategies to manage water resources and conserve the aquatic ecosystem.

Water Quality

Significant work has taken place in the Mackenzie River Basin since the 1980s to address water quality issues, and there have been some improvements. Water quality in the Basin is generally good. However, the MRBB found it very difficult to provide a uniform evaluation of the state of water quality across the basin. Jurisdictions monitor and report on water quality in different ways. Some of these differences are required because of specific issues of concern. However, there are some changes that would improve the ability to evaluate and compare water quality across the entire basin.

The Technical Sub-Committee of the MRBB should investigate this issue and provide detailed recommendations to the MRBB and its partners. The bilateral agreements should also address water quality monitoring and reporting consistency between jurisdictions and across the basin. However, the control of water quality programs resides with the member jurisdictions and their support is required to fully address this issue and to make the necessary changes.

Industrial Wastes

The findings of the SOAER clearly indicate that there have been significant improvements to water quality in some parts of the Mackenzie River Basin since the 1980s. The quality of effluent discharges from industries and communities, in particular, has improved in most areas. However, some priority issues require further attention.

Contaminated and orphaned sites pose a long-term risk to both the surface and groundwater of the Mackenzie River Basin. The abandoned uranium mines around Lake Athabasca and the arsenic storage sites near Great Slave Lake are examples of these threats. All governments should accelerate the development and implementation of plans for managing or removing these threats.

The quality of effluents from pulp mills continues to improve. However, the low levels of dissolved oxygen due to nutrient loadings from a variety of sources may pose a threat to fish during winter under ice conditions. This issue is a concern on the Athabasca River and needs to be more fully addressed by governments and industry.

An accident related to the failure of one of the oil sands tailing ponds could have a catastrophic impact on the aquatic ecosystem of the Mackenzie River Basin due to the size of these ponds and their proximity to the Athabasca River. The oil sands industry and government should continue to work to ensure the integrity of these structures. They should also continue to investigate strategies for dealing with oil sand tailings.

Groundwater

There is very little groundwater information presented in this SOAER. This does not mean that there are no issues with groundwater. Many residents use groundwater for drinking. The safety and security of this supply is a priority issue to these residents.

All levels of government should work together to improve the knowledge and reporting on groundwater in the Mackenzie River Basin. Industries that undertake sub-surface exploration should make this information available to governments where there is the opportunity to learn more about groundwater from this source.

Source Water Protection

All of the MRBB member jurisdictions have recently adopted policies and are implementing programs that focus on protecting the sources (rivers, lakes and groundwater) of drinking water as part of the multi-barrier approach to drinking water safety. Given the importance of drinking water safety, the MRBB wants to highlight this issue and encourage all levels of government, industries and individuals to implement

and practice source protection when planning and conducting activities within the watersheds of the Mackenzie River Basin.

Country Food Safety

Many residents of the Mackenzie River Basin consume fish, aquatic mammals and waterfowl as part of their daily diet. While undertaking this state of the aquatic ecosystem initiative, the MRBB found that efforts expended on conducting risk assessments and on issuing and updating consumption advisories varied widely across the basin. The availability of this information to those individuals that most need the warnings is also limited.

Member jurisdictions should continue, and where necessary improve, the monitoring and assessment of the safety of fish and country foods for consumption. The nature of cultural dietary practices should be taken into account in these assessments. Consumption advisories should be prepared and delivered in a form most useable by those that consume these foods. The advisories should be updated in a timely fashion based on the results of new assessments. The people that consume these foods want to continue to do so and want to see them available for many generations in the future.

Protection of Aquatic Ecosystem Biodiversity

While the overall condition of aquatic biodiversity appears in general to be good, the MRBB found it difficult to make a specific assessment of its status within the Mackenzie River Basin. Many factors affect biodiversity. For some factors, there is good information, but for others there is little. For water quality, national guidelines for the protection of aquatic life provide a means for assessing whether water is of good enough quality to protect aquatic plants and animals. For river flows, however, there was little applicable information identifying the flow required at various times of the year to support healthy aquatic ecosystems. For commercial and sport fishery harvests, there was mixed information across the basins regarding population numbers, trends and sustainable catch rates. For species at risk, updates on the status of species have not been done at regular intervals nor were assessments available on the efficacy of various measures intended to protect species at risk. No consolidated assessment of all factors exists to indicate the requirements of a diverse, well-functioning aquatic ecosystem.

Decision-makers need to know the base needs of aquatic plants and animals before they can determine how much water can safely be withdrawn from the environment for human and industrial uses or how much effluent can safely be discharged to the environment. This is an issue that will become even more important as the demands for water withdrawals and effluent discharges increase in the Mackenzie River Basin. Should climate change reduce flow rates even further, such impacts may become even more magnified. All partners and industries that use the resource should place a high priority on determining the needs of the aquatic ecosystem and managing the resource to achieve those needs.

The Peace-Athabasca, Slave and Mackenzie Deltas

Three of the world's major freshwater river deltas are located within the Mackenzie River Basin. They are the Peace-Athabasca Delta, the Slave River Delta and the Mackenzie Delta. These deltas sustain a wealth of fish and wildlife and continue to be important areas for many aboriginal people in the basin. Traditional ecological knowledge and science assessments agree that there have been significant changes to the ecology of the Peace-Athabasca Delta. There have been numerous studies to determine the impact of climatic variability and altered flow regimes on the delta and to design mitigation measures. However, all of this information has not been synthesized nor has a consensus emerged regarding the relative importance of different anthropogenic impacts on the delta ecosystem. Efforts in those regards would be beneficial to the development of a cohesive management plan for achieving the long-term health of the delta. The impacts from an altered flow regime, climate change and other factors, may also extend further downstream, affecting both the Slave and Mackenzie deltas as well. Research, understanding and effective management of the Peace-Athabasca Delta will likely benefit all three deltas found in this basin.

Member jurisdictions and other appropriate agencies should complete the determination of the needs of the aquatic ecosystem within the Peace-Athabasca Delta and prepare a comprehensive management plan to ensure these needs are met.

Bilateral Agreements

The partners to the MRBB Transboundary Waters Master Agreement committed to the development of bilateral agreements between neighboring jurisdictions. To date, the NWT and Yukon bilateral agreement is the only agreement completed. These agreements are seen as a cornerstone for addressing water quality and quantity targets and achieving a healthy aquatic ecosystem within the Mackenzie River Basin. The bilateral agreements are a priority of the MRBB and the Board encourages the individual partners to give the development of bilateral agreements an equally high priority. This SOAER and all the analysis that was undertaken to produce it is valuable information that will assist the jurisdictions in preparing the bilateral agreements.

Watershed Approach

The ability to manage and sustain aquatic resources is limited by a scarcity of information linking land use practices to the health of the aquatic ecosystem. The watershed approach is a means of linking land use and aquatic ecosystem health, and it is encouraging to see that all of the partners are moving towards the planning and management of the Mackenzie River Basin using this integrated approach. All literature, locally, nationally and internationally, supports the adoption of a watershed-based management regime. In addition, this concept incorporates many other sound methodologies, such as integrated resource (land and water) management, cumulative impact assessments and involvement of all people, agencies and industries.

The MRBB supports this move to the watershed approach and encourages the partners and all basin residents to work within this approach to achieve a healthy and prosperous Mackenzie River Basin.