

7 WATERSHED MANAGEMENT

7.1 Introduction

The watersheds, rivers, streams and lakes within Fort McKay's traditional territory are essential for the exercise of Fort McKay's Constitutional rights. The Lower Athabasca River and its tributaries including the MacKay, Ells, Tar, Calumet, Clearwater, Steepbank, Muskeg, and Firebag rivers, and smaller creeks are integral to the culture of Fort McKay as are Namur, Gardiner, Legend, McClelland, Creeburn, Kearl, and Ruth lakes and other lakes and ponds. These rivers and lakes provide a focal point for many of Fort McKay's cultural practices and Constitutional rights including hunting, fishing, trapping, gathering for food and medicine, spiritual activities and other activities that are integral to the culture.

To be effective for protecting Fort McKay's Constitutional rights, land use planning must be done at the appropriate scale. Watershed scale planning is important, both because it is ecologically relevant and because it is culturally relevant. In order to preserve the integrity of a river or lake, activities in the supporting watershed need to be addressed. Fort McKay believes that one key approach to protecting surface water, groundwater, fish and aquatic ecosystems is to develop appropriate watershed management plans. Such plans set protection levels up front that provide direction for: appropriate levels and timing of development; land disturbance limits and thresholds; setbacks; groundwater, surface and wastewater management practices; reclamation; and ecological thresholds and limits.

7.2 Background

Fort McKay identified the need for watershed management plans more than a decade ago, starting with the Muskeg River watershed, which continues to be under pressure from oil sands mines, SAGD projects and other industrial developments (e.g. quarries). In 1999, the Regional Sustainable Development Plan (RSD) identified the need to "protect the integrity of the Muskeg River" and this became a priority issue for the Cumulative Environmental Management Association (CEMA) to address. Alberta acknowledged the importance of watershed scale planning in its Water for Life Strategy (GoA 2003), which *"embraces a watershed approach to water management planning that allows for tandem management of water and land issues. It advocates a collaborative multi-stakeholder governance model."*

An Energy Utilities Board (EUB) and Canadian Environmental Assessment Agency (CEAA) Joint Review Panel decision report for the Shell Jackpine Mine (Decision 2004-009) recommended that CEMA develop a management plan for the Muskeg River watershed by the end of 2005 and that Alberta Environment (AENV) should backstop the process by committing to develop and implement a watershed management plan if CEMA did not deliver it. Further decisions, such as the EUB decision reports for Albian Sands Energy for the Muskeg River Mine Decision 2006-128) and the Imperial Oil Kearl Oil Sands Project (Decision 2007-013), noted that CEMA had not delivered the requested watershed management framework by the end 2005 and that the proposed revised date that CEMA had proposed was September 2008. The EUB recommended that should CEMA fail to deliver by the revised timeline that AENV implement a "full backstop by the end of 2008."

In 2004 the Watershed Integrity Task Group (WITG) was formed within CEMA's Surface Water Working Group (SWWG), and was mandated to develop a Watershed Management Plan for the

Muskeg River Watershed and provide a CEMA recommendation to the Government of Alberta. Fort McKay participated actively in this group. While some progress was made, it was hampered by debates over the appropriate level of development within the watershed and the scope of what defined ecological integrity. By 2007, WITG had developed a State of the Environment Report for the watershed and developed a draft Terms of Reference (December 7, 2007) for a Muskeg River Water Management Plan. The ToR was fairly comprehensive and included a conceptual model of ecological integrity, which defined the stressors and effects, a list of defined goals for the plan and associated management objectives. However, in December 2007, CEMA indicated that it would no longer fund development of the Muskeg River Watershed Management Plan and it recommended that Alberta Environment lead the development of the Plan.

Alberta Environment produced the *Muskeg River Interim Management Framework for Water Quantity and Quality (2008)*. However, this framework was meant to be in interim backstop until the comprehensive plan could be developed. The interim plan set thresholds for water quality and quantity for the Muskeg River and water level objectives for Kearl Lake but did not address terrestrial, wetlands or aquatic ecosystems, wildlife, social, cultural and economic aspects.

Fort McKay's view on the *Interim Framework* was that it was narrowly focused and did not fulfill the Joint Panel recommendation for the Kearl Oil Sands Project to provide a full backstop. Fort McKay stated that the spatial extent of the Framework needed to be expanded, as the monitoring and management was focused on the mouth of the Muskeg River, and that other reaches of the Muskeg River and tributaries needed to be addressed. Fort McKay also indicated that ecosystem health and land-based components of the watershed needed to be addressed.

Within the *Interim Framework* document AENV identified some key issues remaining to be addressed in a comprehensive framework:

- management policy for the mainstem of the Muskeg River,
- establishment of water conservation objectives,
- watershed approach to integrate terrestrial and aquatic components, economic, social, and cultural issues and sustainability,
- additional water quality parameters,
- scenario development using an adaptive management approach to develop sustainable management scenarios, and
- development of an adaptive management plan.

In the conclusions of the Interim Framework, AENV stated: "The Interim Management Framework will be in place until the end of 2009. AENV, in collaboration with First Nations and other stakeholders, will immediately initiate the development of a comprehensive management plan for the Muskeg River watershed." To Fort McKay's knowledge, AENV or Environment and Sustainable Resource Development (ESRD) did not initiate development of a comprehensive management plan for the Muskeg River watershed in 2009 or since that time. However, the ability to develop a watershed management plan is affirmed in Government of Alberta policy. In an update to the Water for Life strategy GoA (2008) added the following principle: "Water for Life will be integrated into other policies and plans, such as the Land-use Framework planning, ensuring better resources management integration." Furthermore, LARP allows for the development of sub-regional plans and a watershed based Landscape Management Plan (GoA 2012).

Fort McKay's 2011 submission on the draft LARP plan specifically requested the development of sub-regional plans for the Muskeg River and other watersheds (FMSD 2011). Given the fact that

EUB decision recommendations for three different mining projects approved between 2004 and 2007 have not been fully addressed and the continuing level of intensive on-going and planned development occurring in the Muskeg River watershed, a sub-regional, watershed-based plan is essential for the Muskeg River watershed. Other watersheds are under intensive development pressure as well and need to be prioritized for sub-regional planning. Fort McKay's priority watersheds are discussed below.

7.2.1 Gaps in Water-related Frameworks

Specific gaps and Fort McKay's proposed improvements in the *Groundwater Management Framework* and the *Surface Water Quality Management Framework* are described in their respective sections in this document (Groundwater: Section 6, Surface Water: Section 3). Fort McKay's comments on the *Athabasca River Surface Water Quantity Framework*, are described in Fort McKay's May 20, 2014 letter to ESRD. In addition, Fort McKay's view is that the division of the management frameworks into media-specific guidelines will create a major gap in the management of cumulative effects and the protection of Fort McKay's Constitutional rights. The narrow focus on the Athabasca River leaves gaps for culturally important tributaries and lakes. Furthermore, the groundwater framework does not fully address groundwater-surface water interactions, and there is no framework linking land disturbance to water quality or quantity.

It is essential that watershed management plans be developed that provide appropriate regulations, guidance, thresholds and limits to address cumulative ecological effects and effects of industrial activity on Fort McKay's Constitutional rights of industrial activity within the Athabasca River tributary watersheds and specific water bodies within Fort McKay's traditional territory.

7.2.2 Proposed Watershed Management Planning

Fort McKay's expectation is that river discharge and lake levels will be maintained as close to natural conditions as possible and within the range of natural variability. Maintaining seasonal and year-to-year patterns is important. Fort McKay also expects that runoff from natural areas of a watershed will be used to help sustain the river in the downstream portion of the watershed that is undergoing change, as opposed to being used, for example, to achieve mine reclamation goals. The management plan will provide the framework necessary to ensure these outcomes, and watershed monitoring programs provide feedback on whether environmental effects are within predicted values and provide information necessary for alterations to the management plan.

Fort McKay has defined some key principles regarding watershed management, some of which are based on the principles described in a publication of the U.S. Environmental Protection Agency (US EPA, 1997) titled *Delineation of Source Water Protection Areas – Part 1: A Conjunctive Approach for Ground Water and Surface Water*.

Fort McKay's key ecological watershed management principles include:

- Retaining as much of the natural runoff in the watershed as possible;
- Limiting the amount of surface disturbance in the watershed;
- Understanding the role groundwater plays in maintaining the stream flows;
- Understanding the role groundwater plays in maintaining lake and wetland water balance and in sustaining outlet stream flow;

- Minimizing development of non-saline, sand and gravel aquifers that are in direct hydraulic communication with surface water bodies;
- Creating appropriate setbacks of surface facilities from water bodies (e.g. for maintain wildlife connectivity, maintaining access for Fort McKay, protecting surface water from erosion and spills);
- Creating buffers for specific types of facilities (e.g. for tailings ponds seepage, buffer for groundwater withdrawal to minimize drawdown effects);
- Protecting fish habitat, fish passage/movement, fish health and populations; and
- Protecting overall ecological integrity of the watershed, lakes and rivers.

Fort McKay has identified key goals for watershed management plans, which are outlined below. These are adapted, with enhancements, from the draft Goals that the Watershed Management Integrity Task Group of CEMA developed (draft ToR, December 7, 2007), which had considerable input from Fort McKay, government, industry, and other stakeholders. It is important to acknowledge that considerable work has previously been done on building a common understanding of the goals and management objectives of a plan for the Muskeg River watershed.

Watershed management plans, should address, at a minimum, the following goals:

- Maintain the Constitutional rights of Fort McKay and other Aboriginal groups,
- Maintain and protect the cultural, historical, heritage and traditional values of the watershed,
- Ensure sufficient water quantity to maintain the hydrological and biological integrity of the key rivers and lakes within the watershed,
- Ensure adequate surface water quality to maintain the integrity of the water bodies within the watershed,
- Establish water quality targets and limits for key water bodies to maintain chemical, physical and biological characteristics (e.g. Namur and Gardiner Lakes, Muskeg River)
- Establish riparian corridor/stream buffer criteria to protect water quality,
- Establish management practices and water release targets and limits to protect water quality (e.g., muskeg drainage, sediment ponds, tailings management, drainage ditches, wetland water treatment, stream diversions, end pit lakes),
- Determine aquatic ecosystem requirements to maintain the integrity of the rivers and lakes within the watershed,
- Establish aquatic biodiversity and productivity criteria to maintain the aquatic ecosystem,
- Establish requirements for water body protection, reclamation and compensation to maintain the aquatic ecosystem,
- Determine wildlife habitat and population requirements to maintain the integrity of the watershed,
- Determine wetland and upland vegetation community requirements to maintain the integrity of the watershed,
- Maintain economic benefits from the development of the oil sands resource in the watershed over the long term,
- Develop management objectives, thresholds and limits for all goals identified above,
- Develop monitoring programs and criteria for adaptive management of the watershed.

7.3 Recommendations

Fort McKay's view is that a watershed management framework should be developed that can be applied and adapted to the various watersheds within the LARP planning area. Due to the development pressures it is important to prioritize the timing of specific watershed management plans.

The following criteria were developed by Fort McKay and presented in the Fort McKay Specific Assessment (Fort McKay IRC 2010, R. Bothe pers. comm.) to provide a first order overview of the state of surface water in a watershed and to aid in prioritizing the development of watershed management plans). The criteria are based on observed changes in surface water runoff that occurred in the Spring Creek and Tri Creeks research watersheds in Alberta (DeBoer unpublished data, Jablonski 1978). The degree of predicted change in a watershed forms the basis for this state of the watershed index. The index points to the relative need for water management planning to be undertaken in a watershed. From a regulatory perspective, it identifies the need for a shift from case-by-case approvals to a comprehensive plan for a watershed.

- **Sustainable** – less than 10% change in stream flow predicted in any given season and/or less than 20% of the watershed area potentially affected by development and related land-use changes. No water management plan is needed at this time.
- **Threatened** – more than 10% change but less than 25% change in stream flow predicted in any season, and/or between potentially 20% and 40% of the watershed area affected by development and related land-use changes. A water management plan should be developed to establish impact limits and provide direction to development.
- **Endangered** – more than 25% change in stream flow predicted in any given season and/or more than 40% of the watershed area potentially affected by development and related land-use changes. A water management plan is urgently needed to establish impact limits and provide direction to development.

Due to significant development pressures and high cultural sensitivity, Fort McKay's has identified the following as priority areas for the development of detailed watershed management plans:

- **Muskeg River watershed** – As of the Fort McKay Specific Assessment in 2010 the state of the Muskeg River watershed was rated as “threatened” due to land disturbance and predicted flow changes, and further development has been proposed since that time).
- **MacKay River watershed** – A recent environmental assessment predicted cumulative groundwater withdrawal in the MacKay River (Southern Pacific 2011). Based on the data presented in the Application, Fort McKay in its review of the application (R. Bothe, surface water review, in FMSD 2012), calculated that groundwater withdrawal would adversely affect the MacKay River and could result in March mean monthly flow decline of 14% to 59% (Application Case) and 59% to 100% (Planned Development Case) in low flow years. A CEMA project is ongoing which could help inform a watershed management plan for the MacKay River watershed.
- **Namur and Gardiner lakes watershed and Ells River** – These areas have been identified by Fort McKay as priority areas for protection due to their high cultural significance, Reserves 174A, 174B. In addition, the Ells River is the domestic water source for Fort McKay.

7.4 References

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