



# the water management framework

FIVE YEARS OF IMPLEMENTATION  
2007-2012

## overview

FOR THE INDUSTRIAL HEARTLAND  
AND CAPITAL REGION

The quality and availability of the water in the North Saskatchewan River is fundamentally important to the population and economic activity of the Industrial Heartland and Capital Region. The Government of Alberta is working with citizens, communities and industry to improve our resource management systems, protect the environment, develop Alberta's prosperity and support expanded market access, and support population growth. The *Water Management Framework for the Industrial Heartland and Capital Region* is one of several environmental management frameworks collaboratively developed in recent years. This framework aligns with the goals of the Government of Alberta's Integrated Resource Management System that sets and achieves the environmental, economic and social outcomes Albertans expect from resource development while maintaining the social licence to develop resources.

### WHERE IT ALL STARTED

The vision of the *Water Management Framework for the Industrial Heartland and Capital Region* is to create a world-class integrated water management system within the North Saskatchewan River, from Devon to Pakan, to sustainably support the environment considering social and economic development. It represents collaborative work and shared responsibility for action among the Capital Region stakeholders, including industry, municipalities, environmental non-governmental organizations, and federal and provincial governments. A three-phased implementation plan was developed (short term, intermediate and long-term sustainability) to tackle the development pressures. Phase 1 (Enabling Current Development) is considered complete.

The framework considers two main issues: water quantity and water quality. It proposed that water quantity be managed based on flow expectations. The goal was to manage water quantity to ensure that sufficient water remained in the river to maintain aquatic life and support current and proposed industrial development. Significant advancements have improved the understanding of the current state of the North Saskatchewan River water quality baseline, which are described in the following sections.

## UNDERSTANDING OUR RIVER

To further understand the North Saskatchewan River, effluent and water withdrawal information was collected, monitoring in the North Saskatchewan River was increased, river modelling was conducted, and Maximum Allowable Loads (MALs) were developed for contaminants of concern, such as nutrients, bacteria, suspended solids, ions, some metals and organic constituents.

Significant advancements have improved the understanding of the current state of the North Saskatchewan River, and helped to build associated decision-making support tools such as modelling and other evaluative methods. This work was a huge undertaking, and was considered an incredibly valuable exercise for and by all stakeholders involved.

Findings from this work were that wastewater treatment has improved over time and resulted in an improvement of water quality. Despite these enhancements, nutrient enrichment remains the most apparent human impact on the North Saskatchewan River within the Devon to Pakan reach. There is a need for ongoing research; tool development and maintenance; and coordinated monitoring of effluents and ambient river conditions, including an integrated monitoring, evaluation and reporting system.

## INVESTIGATING DESIGN OPTIONS FOR MANAGING GROWTH PRESSURES

Five possible long-term development scenarios were tested to achieve framework outcomes, including the use of reclaimed municipal wastewater for industrial use. This work included an engineering study to determine if the use of reclaimed municipal wastewater was technically possible, using growth assumptions and various load reduction targets. The engineering study incorporated work on contaminants of concern and maximum allowable loads.

Findings from this work were that a modified version of the current system is capable of achieving the necessary environmental outcomes without the added cost of a regional water reclamation pipeline or additional water reclamation facilities. The engineering study illustrated the importance of clear measurable and definable end results based on science-based environmental outcomes.

## A WORLD-CLASS SYSTEM

To explore shared governance in the region for wastewater treatment, collaboration processes used in other regions, policies, laws and institutions were reviewed, and existing governance models for wastewater treatment were considered worldwide.

Findings were that the Industrial Heartland and Capital Region governance and management of wastewater treatment assets is unique. The existing situation of shared intakes and comingled effluent treatment is a representative model of a world-class system. This current system then, should serve as a model moving forward, as it administers the framework's vision for a world-class integrated water management system within the North Saskatchewan River to sustainably support the environment, and social and economic development.

## PRIORITIES AND NEXT STEPS

Over the past five years, the vision, principles and strategic objectives of the water management framework continue to apply, however some of the context and management strategies have continued to evolve.

Existing and planned development is significant in this area, but is expected to occur at a reduced rate. The opportunity is now to improve monitoring, consolidate knowledge and build models to better understand conditions in the North Saskatchewan River.

Work to build the long-term foundation (Phase 2) and sustainability (Phase 3) have overlapped. Going forward, the implementation of the framework will continue to define water quality objectives and maximum allowable loads, and their application through the regulatory process.

A key component of managing water quality will be integrated monitoring in support of the framework and maximum allowable load approach.

Communicating management actions and how they are consistent with the principles of the framework continues to be key.

Science gaps will continue to be filled and knowledge of the North Saskatchewan River improved. This includes maintaining the tools developed to understand the river.

Emerging issues will continue to be managed by applying the principles of the water management framework.