

# **UPDATE OF COLD LAKE- BEAVER RIVER WATER MANAGEMENT PLAN**



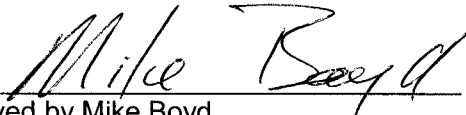
**APPROVED  
TERMS OF REFERENCE**

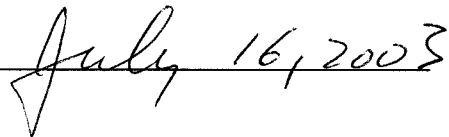
**July 16, 2003**



## APPROVAL STATEMENT

The attached Terms of Reference for the Update Of Cold Lake - Beaver River Water Management Plan outlines the objectives, process, and structure that will be used in updating the Plan. This Approval Statement indicates agreement with and support for the plan update being guided by this document.

  
\_\_\_\_\_  
Approved by Mike Boyd  
Regional Environmental Manager

  
\_\_\_\_\_  
Date



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# **1. INTRODUCTION**

## **1.1 Background**

The Cold Lake-Beaver River Basin is located in the Cold Lake region of Northeast Alberta. The Beaver River Basin, one of seven major river basins in Alberta, is a source of water supply for industrial, municipal, domestic, agricultural, and recreational users.

The Cold Lake – Beaver River Water Management Plan was adopted in 1985 in order to provide direction on the management of water resources in the Cold Lake and lower Beaver River Basin. The Plan's intent was to provide an adequate quantity and quality of water to meet the long-term user requirements of the basin.

Since that time, the basin has experienced increased industrial development, increased population growth, and years of below-normal precipitation resulting in record low water levels in area lakes and stream flows. These factors have created a need to assess the current situation and review the water management direction in order to meet current and future water needs within the basin.

Alberta Environment is updating the 1985 Cold Lake - Beaver River Water Management Plan in partnership with the Lakeland Industry and Community Association (LICA), with other agencies that have an interest or mandate affected by the Plan, and in consultation with Stakeholders and the general public.

The Plan Update is an Alberta Environment regional priority. The Department is committed to the protection and management of water resources in Alberta. The updated Cold Lake Beaver River Plan will strive to balance community, economic, and environmental issues and values with government legislation and policy for the protection and management of water resources in this area.

## **1.2 Terms of Reference**

The Terms of Reference are intended to outline the goals, objectives, process, participants, structure, and timeline that will be used in updating the 1985 Cold Lake – Beaver River Water Management Plan.

## **1.3 The 1985 Plan**

The 1985 Cold Lake Beaver River Water Management Plan made specific recommendations concerning:

- Major oil sands water supply
- Municipal, agricultural, industrial, and minor oil sands water supply
- Surface and groundwater quantity
- Surface and groundwater quality

- Identified lakes to be managed for the purposes of conservation, fisheries, wildlife, or recreation.

Additionally, the Plan projected long-term increase in use of fresh water for industrial activity based on anticipated industrial and population growth in the region. Recommendations were largely based on assumption of continued use of fresh water.

Since 1985, industry has significantly improved the efficiency of water use through water recycling, and has also developed the technical capability to use brackish groundwater in their operations. This has somewhat eased the demand on the surface water resource, but has resulted in the need to assess and develop a better understanding of groundwater quality, availability and use.

#### **1.4 Purpose of the Plan Update**

Water Management Plans provide a framework for the department of Alberta Environment to make water management decisions under the *Alberta Water Act* and, where appropriate, under the *Alberta Environmental Protection and Enhancement Act (EPEA)*.

The purpose of this Plan Update is:

- To update the 1985 Water Management Plan
- To provide a framework for making future water management decisions

## **2. PLAN UPDATE SCOPE AND DIRECTION**

### **2.1 Planning Area**

The Cold Lake – Beaver River planning area is part of the Cold Lake River Basin located in Alberta that drains to the outlet of Cold Lake. It also includes the Lower Beaver River Basin that drains to the Alberta / Saskatchewan boundary (Figure 1). This was the area used in the original 1985 plan. The lower Beaver River Basin includes the following sub-basins:

- Jackfish Creek
- Manatokan Creek
- Marie Creek
- Moose Lake River
- Muriel Creek
- Reita Creek
- Sand River
- Wolf River

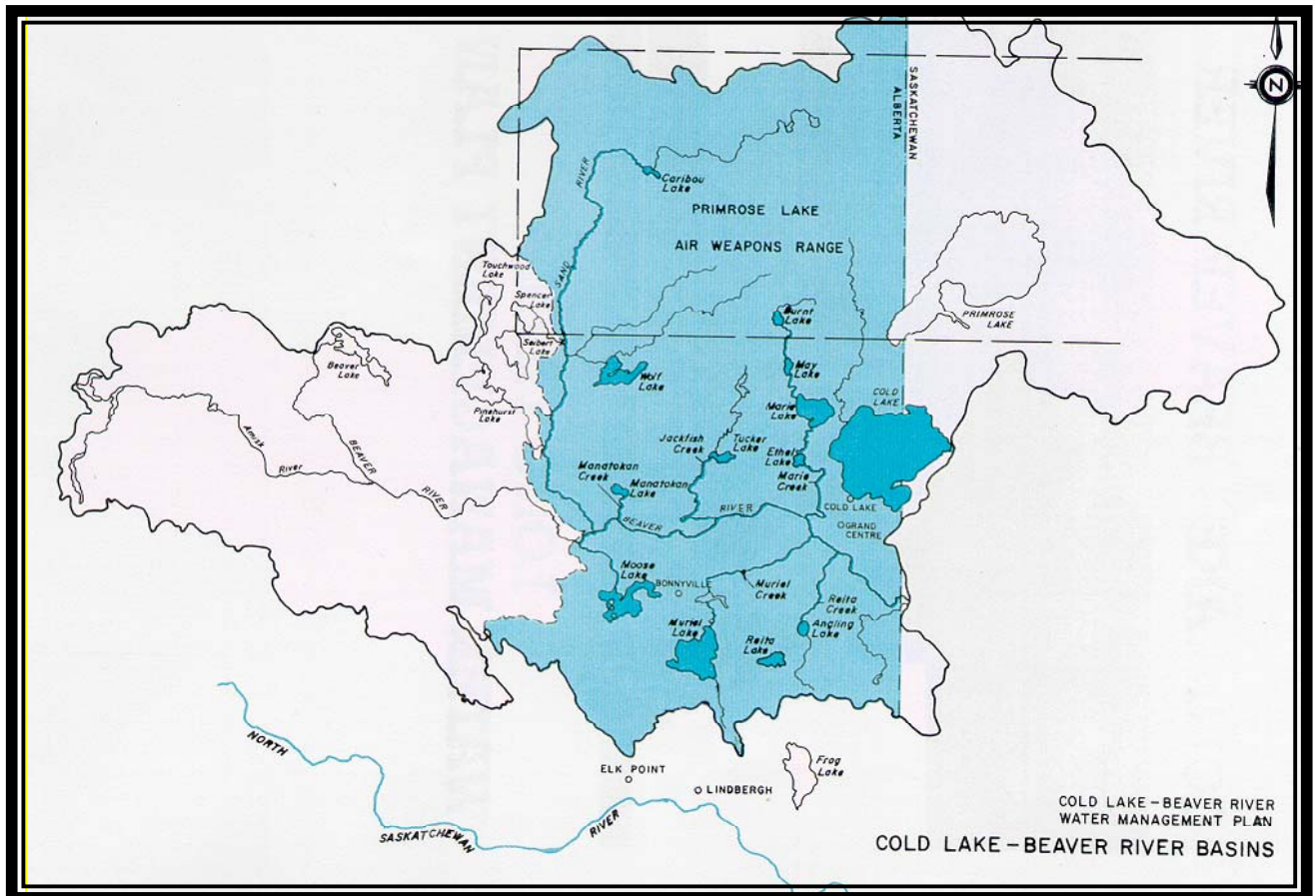
The Management Plan Update study area will focus on those lakes and downstream rivers that are most likely affected by industrial and municipal water withdrawals. Cold Lake, Burnt Lake, Wolf Lake, Moose Lake, Muriel Lake, Reita Lake, Ethel Lake, Marie Lake, Moore Lake, Tucker Lake, May Lake, Manatokan Lake, Angling Lake, and Caribou Lake have been selected for data collection and review.



To gain a better understanding of water resources in the Cold Lake – Beaver River planning area, some of the technical analysis will incorporate data collected beyond the planning area boundary, including areas such as the Elk Point region and part of the province of Saskatchewan.

While the study area is the current priority for Water Management Planning on the basin, the headwaters area of the Beaver River Basin will be addressed as time and resources allow in a later phase.

**FIGURE 1      MAP OF COLD LAKE – BEAVER RIVER BASIN**



## 2.2 Plan Update Goals

The Plan Update goals are:

- To assess the state of regional ground and surface water supply and use and their interactions in the basin, based on the most recent information
- To assess the state of regional ground and surface water quality and supply in the basin based on the most recent information
- To provide a strategy to meet current and future water needs in the region and ensure a sustainable water supply
- To provide a strategy to protect and ensure a healthy aquatic environment

## 2.3 Plan Update Objectives

The objectives of the Plan update include:

- **Water Use** - Review current and historical industrial and municipal water uses in the region and their impact on the local water resources
- **Water Demand** - Identify existing water demands in the region and forecast future short term (2005), medium term (2010), and long-term water (2015) use
- **Water Supply** - Establish quantity and distribution of surface and groundwater supply in the region
- **Water Interactions** - Identify / investigate groundwater and surface water interactions
- **Legal Mandate** - Identify all laws and legal agreements that are used to manage water in the basin and ensure the plan is consistent with them
- **Water Conservation Objectives** - Establish water conservation objectives to protect aquatic environments, regional tourism, and recreation
- **Water Quality** - Review regional surface and groundwater quality and establish procedures to prevent pollution and degradation of water quality
- **Education** – To engage the community, share information, and promote awareness of issues and solutions and understanding about activities that impact the Cold Lake-Beaver River Basin water quantity and quality

## 2.4 Plan Update Principles

The plan update will be guided using the following principles:

- Water must be managed sustainably
- Water is a vital component of the environment; all life depends on it
- Water plays an essential role in a prosperous economy and balanced economic development
- Water must be managed using an integrated approach with other natural resources
- Water must be managed in consultation with the public
- Water must be managed and conserved in a fair and efficient manner

### **3. OVERVIEW OF CURRENT CONDITIONS AND ISSUES**

Water supply in the Cold Lake-Beaver River Basin has been an issue over the past twenty years due to industrial development, population growth, and associated increased water demand in the region. Additionally, the area has been experiencing a prolonged period of below-normal precipitation in the past 15 years, which has resulted in record low water levels in area lakes and record low stream flows, except in 1996/1997.

Regional regulators note that the existing industrial water allocation in the region (22,269.85 dam<sup>3</sup> per year) is nearing the accepted allocation limits of the basin (23,000.00 dam<sup>3</sup> per year) established in the 1985 Plan. Regulators also note an increased knowledge of regional groundwater flows, the availability and technological improvement of water recycling processes, and the use of brackish (non-potable) water for industrial operations. This has resulted in a situation whereby actual water use is far below the allocation limit. Nevertheless, it is appropriate at this time to review the 1985 plan to assess the allocation limit in light of recent water supply trends.

The following issues and challenges linked to human activities have been identified in the planning area and will be addressed in the updated Water Management Plan:

- Regional groundwater and surface water quality
- Greater demands for water due to increasing industrial development and municipal growth
- Protection of the aquatic environment
- Drinking water concerns
- Protection of sources of Municipal drinking water
- Potential impact of low water levels in lakes on recreational opportunities
- Groundwater availability for domestic use (e.g. private wells)
- Groundwater availability for industrial use

### **4. POLICY & PLANNING CONTEXT**

#### **4.1 Linkages with Legal and Policy Context**

Existing legal and policy context for the Update of the Cold Lake-Beaver River Water Management Plan includes:

- *Alberta Water Act*
- *Alberta Environmental Protection and Enhancement Act (EPEA)*
- *Alberta Public Health Act*
- *Alberta Public Lands Act*
- *Alberta Wildlife Act*
- *Canada Fisheries Act*

- *Canada Navigable Waters Protection Act*
- Inter-provincial Apportionment Agreements
- *Framework For Water Management Planning* (Alberta Environment)
- *Cold Lake Subregional Integrated Resource Plan* (Alberta Environment)
- *Draft Water for Life: Alberta's Strategy for Sustainability* (Alberta Environment)
- *Alberta's Commitment to Sustainable Resource and Environmental Management* (Government of Alberta)

Careful consideration will be given to interpretation and application of these laws and policies. Individual agencies responsible for administering specific legislation will be contacted and invited to participate in the Planning process. The Plan will be consistent with the legal and policy direction of the above initiatives.

#### **4.2 Relationship with Provincial Water Strategy**

Alberta Environment is currently developing a province-wide comprehensive strategy, "*Water For Life: Alberta's Strategy For Sustainability*, "...that will identify short- medium - and long-term plans to effectively manage the quantity and quality of the province's water systems and supply." The goal is to have an action-oriented water strategy, one that identifies specific activities and initiatives, by Spring 2003. Any relevant initiatives or direction resulting from that strategy will be incorporated into all phases of this plan.

#### **4.3 Relationship with Regional Initiatives**

Several Environmental Impact Assessment (EIA) studies and water management initiatives are currently underway in the region. The information and data from these studies will be incorporated in the updated Water Management Plan:

- **Imperial Oil Resources Limited (2002)** - Cold Lake Expansion Projects – Nabiye and Mahihkan North EIA Study
- **Orion EOR Project (2001)** - Blackrock – Hilda Lake EIA project.
- **AEC Oil & Gas (2001)** - Foster Creek Commercial Project Phase I & II – Primrose Lake Evaluation Range
- **Canadian Natural Resources Limited (2000)** - Primrose and Wolf Lake (PAW) In-situ Oil Sands Expansion
- **LICA- Water Use by Industry Subcommittee (2001)** - Groundwater use versus Cold Lake water use for industrial purpose
- **LICA (2002)** - Elk Point Region Watershed Baseline Studies (Komex report)
- **LICA – Lakeland Region Watershed Study (2003)** – (Komex Report)
- **Local Government Initiative (2002)** – Water for Life: Moose Lake Watershed Protection Initiative

Ongoing water management decisions within the Cold Lake Beaver River Basin and more detailed levels of Water Management Planning such as individual Lake Management Plans will depend on the Plan Update.

## **5. PROJECT MANAGEMENT**

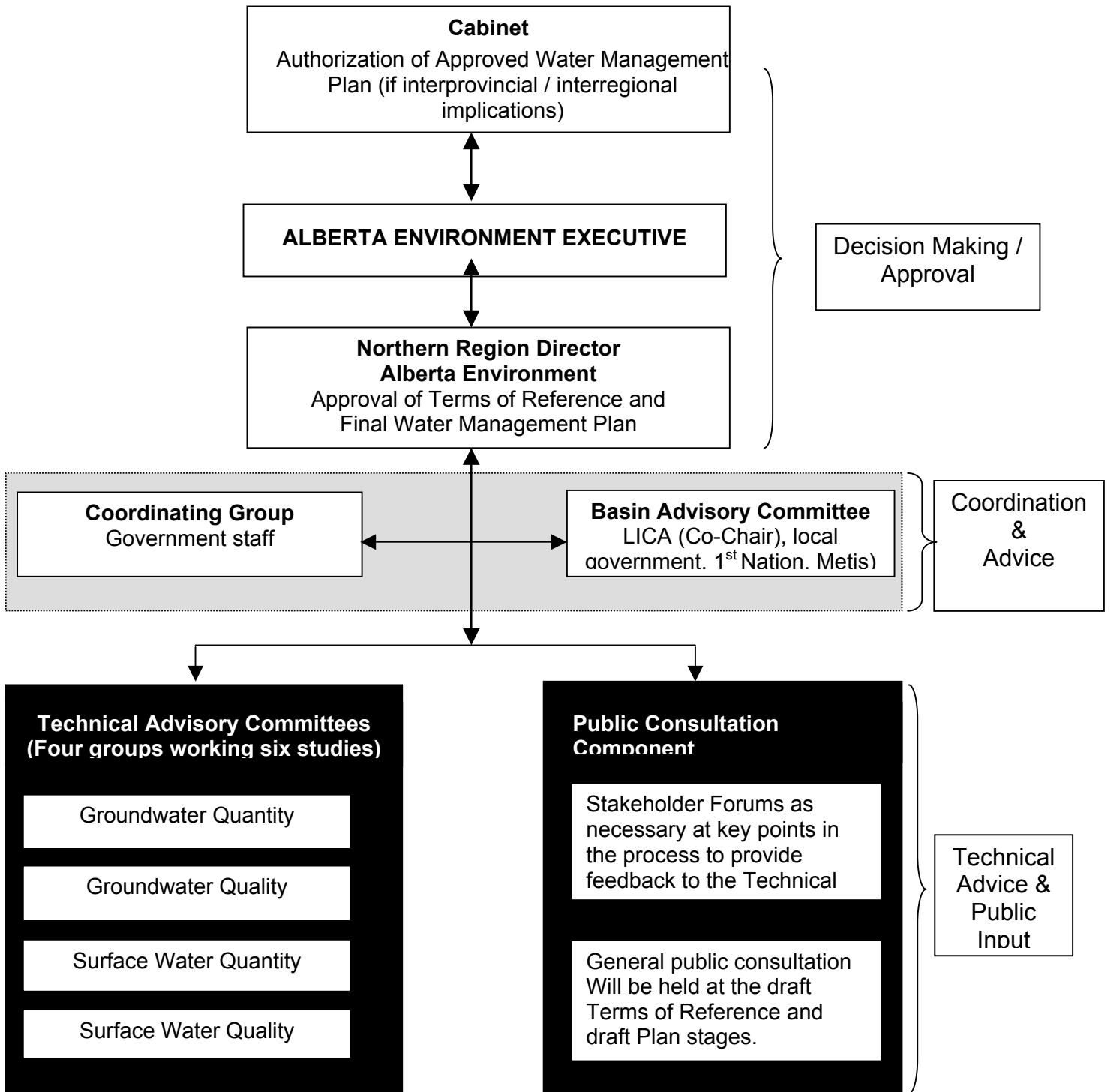
### **5.1 Project Structure**

Alberta Environment will direct the Water Management Plan Update in partnership with Lakeland Industry and Community Association (LICA). Four multidisciplinary Technical Advisory Committees will guide the scientific evaluation of the planning process. A Basin Advisory Committee will provide advice and recommendations on the range of views and community values to be considered when preparing the Water Management Plan Update.

Figure 2 outlines the Plan's general project and organizational decision-making structure.

**FIGURE 2**

**ORGANIZATIONAL STRUCTURE:**



## 5.2 Roles, Responsibilities, and Accountability of Participants

The roles, responsibilities, and decision-making procedure for the development and approval of the Cold Lake –Beaver River Basin Water Management Plan Update are outlined below:

1. **Cabinet** - According to section 11(1) of the *Water Act*, Cabinet’s authorization will be required if the outcome of the proposed Plan is an “Approved Water Management Plan.” An Approved Water Management Plan is required when it involves transfer of applications under sections 82 and 83 of the *Water Act* or when the Plan has implications for interprovincial or interbasin water management.
2. **The Director of the Northern Region of Alberta Environment –** As identified in the *Water Act* and the *Framework for Water Management Planning*, a Director will sign off the Terms of Reference as the Director responsible for water management in the Region. The Director will determine the most appropriate outcome of the planning process: an “approved water management plan”, a “water management plan”, or a “water conservation objective”. Each product has its own specific authority and effect on resource management under the *Water Act*. The Director is responsible for final approval of the water management plan and for ensuring its implementation.

The Terms of Reference are approved by Alberta Environment’s Regional Environmental Manager, Northern Region.

*(Note: For purposes of administration of the Water Act, certain staff in Alberta Environment, such as Approvals Managers, are designated as “Directors,” as the term is used in the Act).*

3. **Government Coordinating Group –** The Government Coordinating Group will be responsible for the overall coordination, leadership, and management of the Water Management Plan update.
4. **Basin Advisory Committee (BAC) –** The main purpose of the Basin Advisory Committee will be to provide advice on the range of views and community values to be considered when preparing the Water Management Plan. The Committee will not be a decision-making or a voting body. Committee members will include representation from LICA, Local Government, Provincial Government, Federal Government, First Nations, and Settlement and Non-Settlement Metis. Provision will also be made for a community member at large to sit on the BAC. Committee participants will represent communities in the planning area or significant constituencies of stakeholders.

5. **Technical Advisory Committees (TAC)** – The Technical Advisory Committees will provide expertise in the relevant technical issues, analyze data, and make recommendations for the Draft Plan. Members will include representatives from participating departments and agencies. The Technical Advisory Committees could also include professional consultants retained to provide services to the study under specific Terms of Reference and provide technical analysis on key technical issues. Alberta Environment will lead the Technical Advisory Committees
6. **Government and Non-Government Agencies** – Several Federal and Provincial government agencies will have an opportunity to provide input relative to their respective mandates. Non-Government Agencies having an interest in the Plan Update will also have an opportunity to provide input.
7. **Public Consultation** - Public consultation will be essential to the success of the Cold Lake – Beaver River Plan Update. Meetings and workshops will be arranged to provide input on important issues at key points in the process and to assist in shaping options resulting from technical team reports. The Planning process will use a two-phased approach to public consultation:  
Stakeholder Forums and General Public Consultation:
  - **Stakeholder Forums:** The Stakeholder Forums will be held as required at key points in the process to review documents or provide advice on issues related to the Plan. The Forums will include a relatively small number of people who represent various known interests, points of view, or fields of expertise.
  - **General Public Consultation:** General public consultation will be conducted through open houses, questionnaires, and media communications at the draft Terms of Reference and Draft Plan stages. The general public will include any individual citizens that have an interest in the planning process.



**FIGURE 3 ROLES AND RESPONSIBILITIES**

<b>ROLES AND RESPONSIBILITIES</b>		
<b>COORDINATING AND ADVICE</b>		
	<b>GOVERNMENT COORDINATING GROUP</b>	<b>BASIN ADVISORY COMMITTEE</b>
<b>PARTICIPANTS</b>	<ul style="list-style-type: none"> <li>• Alberta Environment Department Staff</li> </ul>	<ul style="list-style-type: none"> <li>• Representatives of LICA, Municipal Government, Provincial Government, Federal Government, First Nations, and Settlement and Non-Settlement Metis</li> </ul>
<b>PURPOSE</b>	<ul style="list-style-type: none"> <li>• Project management, direction and guidance</li> <li>• Project accountability</li> </ul>	<ul style="list-style-type: none"> <li>• To represent communities or significant constituencies of stakeholders in the planning area</li> <li>• Support the public consultation process and provide advice to the Director relative to water management issues</li> <li>• To provide a forum for information sharing</li> <li>• To raise awareness and educate the public on water issues</li> </ul>
<b>ROLES</b>	<ul style="list-style-type: none"> <li>• Ensure stakeholder interests are considered</li> <li>• Discuss/resolve issues</li> <li>• Coordinate Technical Teams</li> <li>• Develop draft Terms of Reference</li> <li>• Develop draft Plan Update</li> <li>• Review/approve changes and deliverables</li> <li>• Prepare other Draft Materials as needed</li> </ul>	<ul style="list-style-type: none"> <li>• To review information provided by the Cold Lake-Beaver River Technical Teams</li> <li>• Provide advise and help formulate recommendations to the Government Coordinating Group.</li> <li>• Communicate with, and represent their constituency interests within the Cold Lake-Beaver River basin</li> <li>• Assist the government coordination group in soliciting broader public input at key stages of the process.</li> <li>• Synthesis of public inputReview draft Terms of Reference</li> <li>• Review draft Plan</li> </ul>

<b>ROLES AND RESPONSIBILITIES</b>		
<b>TECHNICAL ADVICE AND PUBLIC INPUT ROLE</b>		
	<b>4 TECHNICAL ADVISORY COMMITTEES</b>	<b>STAKEHOLDER FORUM</b>
<b>PARTICIPANTS</b>	<ul style="list-style-type: none"> <li>• Staff with technical expertise from government and LICA</li> <li>• External Consultants with technical expertise as needed may be retained to provide services to the study under specific Terms of Reference</li> </ul>	<ul style="list-style-type: none"> <li>• A relatively small number of people who represent various known interests, points of view, or fields of expertise</li> </ul>
<b>PURPOSE</b>	<ul style="list-style-type: none"> <li>• Provide expert advice to the Project Manager and the Basin Advisory Committee</li> </ul>	<ul style="list-style-type: none"> <li>• Stakeholder Forums will be held as required at key points in the process to review documents or provide advice on issues related to the Plan</li> </ul>
<b>ROLES</b>	<ul style="list-style-type: none"> <li>• Provide expertise in the relevant technical issues, analyze data, and make recommendations for the Draft Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Provide input into draft Plan</li> </ul>
		<b>GENERAL PUBLIC</b> <ul style="list-style-type: none"> <li>• Interested members of the public</li> <li>• Review draft Terms of Reference</li> <li>• Review draft Plan</li> </ul>

### 5.3 Partnership with LICA

Alberta Environment is updating the 1985 Cold Lake- Beaver River Water Management Plan in partnership with the Lakeland Industry and Community Association (LICA). LICA, through its' membership, represents broad Stakeholder interests and technical expertise in the planning area.

The Lakeland Industry and Community Association (LICA) was formed in 2000 in response to the expansion of oil and gas production in the area, opening its office in October 2000. LICA is a community-based, not-for-profit association whose main goals are providing residents with a timely response to concerns identified in the Lakeland area, and ensuring that development is conducted in a responsible manner. LICA's Vision is: *"An ongoing relationship based on mutual trust, honesty, and respect by way of sharing information and resolving issues to benefit all members of our communities."* LICA members consist of community volunteers and industry members.

#### **LICA:**

- Deals with issues related to oil, gas, forestry, agriculture, and other industries.
- Refers callers to appropriate agency (e.g., EUB, AENV)
- Addresses issues concerned with:
  - Air (flaring, odor, haze)
  - Water (quality, quantity, access)
  - Soil (erosion, reclamation, contamination)
  - Noise (equipment, construction)

LICA will Co-Chair the Basin Advisory Committee with AENV in addition to jointly funding and leading some of the Technical Team work (i.e. review of brackish water availability and current deep well disposal practices).

### 5.4 The Planning Process

The Planning process will be divided into four main steps (Figure 4):

#### **Setting the Stage:**

- Establish the Plan Update scope, goals, objectives, deliverables, organizational structure, and project management aspects
- Outline general information and actions needed to support the technical assessment, Plan development, and implementation strategy

#### **Plan Preparation:**

- Devoted to data and information collection, understanding the watershed ecosystem functions, challenges to water management in the watershed, evaluation of alternatives, and generation of options and recommendations, resulting in a broad understanding of the status and functions of the Cold Lake – Beaver River Basin.

- Work will consist primarily of data collection together with some analysis to evaluate and understand the nature, conditions, extent of regional water issues and problems
- The outcome will be the foundation for science-based decision – making that will be used to evaluate and formulate regional water management goals and objectives
- Findings and conclusions will be presented to and shared with the Basin Advisory Committee, and general public for review and comments.

### **Plan Formulation**

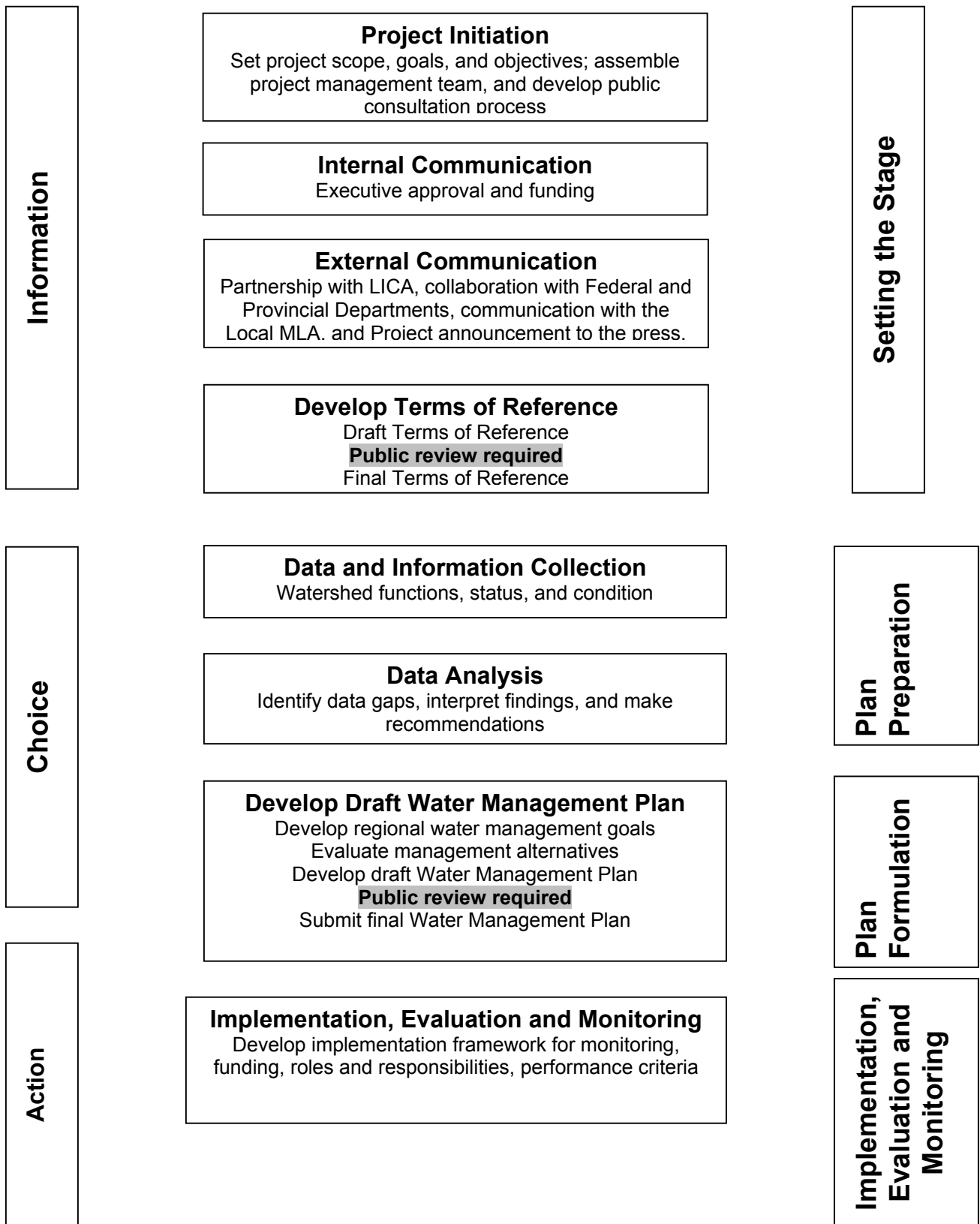
- Aimed at developing regional water management goals and objectives, identifying and evaluating solutions/alternatives, decision – making, drafting an updated Water Management Plan, and Plan completion.
- Will include public review of the draft Water Management Plan and adoption of the final updated Plan by the appropriate authority (as set out in the *Water Act* and the *Framework for Water Management Planning*).
- Plan will be completed by December 2004.

### **Plan Implementation, Evaluation and Monitoring**

- Implementation framework will include identifying roles, responsibilities, budget and funding, long-term monitoring needs and priorities.
- Each component to be evaluated and monitored for its success, performance and compliance with the existing legislation, regulations and standards.
- Completed updated Plan will guide regulatory decision-making by Alberta Environment in the years following adoption of the Plan.

**FIGURE 4. OVERVIEW OF THE PLANNING PROCESS**

Planning Steps



## **6. PUBLIC CONSULTATION PROCESS**

### **6.1 Public Consultation Objectives**

Public consultation is essential to the successful Update of The Water Management Plan. The public will have the opportunity to understand the current state of the resource and provide input. The goal of public consultation will be to create and maintain communication with regional stakeholders and the public to ensure long-term viability of the Water Management Plan Update.

Public consultation objectives include:

- Obtaining advice and input from stakeholders and the general public
- To facilitate public understanding of the Updated Water Management Plan
- Facilitating public understanding for residents and operators within the basin of the water management issues and the natural water system
- Incorporating community values into the evaluation and planning process, together with the technical and scientific analysis of the proposed Water Management Plan
- Promoting effective communication between the water management planners, stakeholders, and the general public in order to maximize the opportunity for mutually acceptable solutions to water management issues

### **6.2 Education and Information Needs**

The Cold Lake-Beaver River basin is a large area with diverse land uses and hydrological and ecological systems. The public has varying levels of understanding about watersheds, their impacts on the watershed, and its management. For the public to be able to participate in meaningful consultation about the watershed and its plan, an effort must be made to create a foundation of understanding about watershed management. Many resources currently exist to facilitate better understanding of water management, including materials produced by the Government of Alberta, by Lakeland Industry and Community Association, and by industry operating within the basin. These materials will be used within the consultation process to facilitate decision-making.

One of the main objectives of Cold Lake-Beaver River Water Management Plan is to share information and promote understanding among stakeholders about activities that impact the Cold Lake-Beaver River Basin and water quantity and quality. The ongoing work to gather data in support of the water management plan's development will provide additional information on water management and use in the basin and help identify data gaps that still need to be filled. This information will be shared with participants as it becomes available.

### 6.3 Description of Previous Consultation Outcomes

The Cold Lake-Beaver River Basin has experienced intensive oil and gas development in recent years. Several public consultation processes have been conducted through environmental impact assessments of developments and other environmental or water related initiatives. Relevant outcomes of previous public consultation within the Cold Lake-Beaver River basin include include:

- Strong consensus to update the existing Water Management Plan of 1985
- Concerns over using fresh water for industrial purpose
- Concerns about declining lake levels and stream flows in the region
- Strong public interest in regional water quality and sustainability
- Education and awareness of regional water monitoring systems, regulations and enforcement and compliance procedures
- Concern over increased industrial development in the Cold Lake region and the associated increased water demand
- Request for all industrial water demand to be met through the construction of a pipeline from the North Saskatchewan River

### 6.4 Planning Process and Public Consultation

Public consultation will occur throughout the planning process to update the Cold Lake-Beaver River Water Management Plan. Formal opportunities for public input are offered at the draft Terms of Reference and draft Plan stages.

To ensure that local community interests and concerns are adequately accounted for in the Planning process, the following strategy will be adopted:

- **Basin Advisory Committee** - Will provide advice and recommendations to the Government Coordinating Group
- **Stakeholders Forum** - As required, small groups of Stakeholders may be invited to participate in workshops at key points in the process to provide advice on a specific issue related to Technical Team work
- **Open House meetings** - will be held at the draft Terms of Reference and draft Plan stages

Throughout the Planning process there will be issue-focused meetings with stakeholders. Stakeholders and the general public will be involved at the following key points in the Planning process:

1. **Issues Identification and Issue-based Planning** - Opportunity for the public to participate and become better informed about the goals, objectives, and scope of the proposed Water Management Plan
2. **Review the Terms of Reference** - Review and comment on the Project Terms of Reference and identify and prioritize all relevant issues that need to be addressed

3. **Review Technical Committee and Technical Reports Findings –**  
Review comment on the findings of data collection initiatives and Scientific Reports

4. **Design the Water Management Plan –**

- Participation in developing regional water management goals, vision and objectives
- Consideration of alternative water management options and identify alternatives for further evaluation
- Review of draft Water Management Plan

Stakeholders and the general public will have access to data and information from the Technical Advisory Committees. The Basin Advisory Committee will provide a detailed brief on progress and on the role of stakeholders for each stage outlined above. The Basin Advisory Committee will also assist and facilitate stakeholder discussions.

5. **Public Consultation Communications Strategy**

Communication and public consultation are important for the creation of a publicly valued Water Management Plan. The communication strategy is designed to convey timely and accurately information to the public and to facilitate cooperative identification of community issues and concerns. This project is committed to the principles of open and transparent communication that foster trust, credibility and integrity.

The following communication methods will be utilized:

- **Stakeholders Forum** – A discussion forum between local stakeholders, the Technical Advisory Committee, and the Basin Advisory Committee. Stakeholders will have the opportunity to provide input and advice in the updated Water Management Plan.
- **Open Houses** - At least two Open Houses (draft Terms of Reference and draft Plan) will be conducted during the Planning process to provide an informal forum for the Basin Advisory Committee and the Technical Advisory Committee to discuss issues with the general public.
- **Informing the media** - In order to reach as wide a public as possible, media releases will be used to inform local and regional media about the project. Project milestones and open house notices will be advertised in local newspapers.
- **LICA's Newsletter** - The newsletter will be used to disseminate project information. The project Basin Advisory Committee will collaborate with the LICA communication subcommittee to achieve timely and informative input to the newsletter regarding the Water Management Plan.
- **LICA web site** - The project Terms of Reference, important documents, educational, and communication materials will be made available on LICA's web site ([www.lica.ca](http://www.lica.ca)).



## 7. PROJECT SCHEDULE

**TABLE 1 WORKPLAN AND SCHEDULE**

<b>Milestone</b>	<b>Target Date</b>
<b>2.4 Project Initiation</b>	January 2003
Public Review of the draft Terms of Reference	April 2003
Draft Terms of Reference Approval	July 2003
Technical Assessment Reports	December 2003
Technical Team Final Reports and Recommendations	March – April 2004
Draft Plan	August 2004
Public Review of Draft Plan	October 2004
Final Draft Plan	December 2004

## 8. TECHNICAL STUDIES

The collection and analysis of data will be an essential part of updating the Water Management Plan. Four Technical Advisory Committees (teams) will be created in order to provide baseline information to assist in the Cold Lake-Beaver River Water Management Plan update. The Technical Teams will review existing information on water resources, identify information gaps, collect new information that will address specific objectives outlined in the plan update, and provide recommendations. The four Teams will include the Groundwater Quality Team, the Groundwater Quantity Team, the Surface Water Quality Team, and the Surface Water Quantity and Aquatic Resources Team. Studies relating to deepwater disposal and brackish water will be the responsibility of the Groundwater Quality and Groundwater Quantity Teams respectively.

### 8.1 Technical Team Products to Assist in Plan Update

#### **Groundwater Quality Team**

- Evaluation of Existing Groundwater Quality Monitoring & Data

- Recommendations on a Program to Monitor and Assess Future Groundwater Quality
- Overview of Existing Data on Deep Well Disposal

#### **Groundwater Quantity Team**

- Numerical Flow Model
- Aquifer Maps
- Assessment of Brackish Water Supply
- Overview of Groundwater flows and interactions with Surface water.

#### **Surface Water Quality Team**

- Assessment of existing Surface Water Quality Monitoring Data, including
- Developing Nutrient budgets for select lakes
- Assessment of sources of drinking water quality
- Assessment of municipal water quality data
- Provide recommendations for long-term monitoring program

#### **Surface Water Quantity Team**

- Assessment of Regional Water Availability (Water Balance)
- Assessment of actual Regional Water Allocations and Uses
- Estimate of Future Water Demands
- Recommendations for Water Conservation Objectives and strategies to protect the aquatic environment