# Wetland Management in the Settled Area of Alberta

## *An Interim Policy*

Alberta

WATER RESOURCES
COMMISSION

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The Alberta Water Resources Commission received approval from Cabinet in June 1990 to prepare a draft policy for management of wetlands in the Settled Area of Alberta. To assist with the development of policy recommendations, the Commission released two documents: *Wetlands: Values and Options: A Draft Policy for the Management of Wetlands in the Settled Area of Alberta* and *Wetland Management in the Settled Area of Alberta: Background for Policy Development.*

Extensive public consultations were held across Alberta in 1990 about the principles and strategies which would form the basis of the wetland management policy. Public input, in the form of workshop comments, written submissions and completed response forms, was used to revise the draft policy. The Alberta Water Resources Commission's policy recommendations for management of slough/marsh wetlands in the Settled Area were developed in response to the loss of these wetlands and the need for consistent direction to guide provincial departments in wetland management. They are contained in this paper as an Interim Policy.

During policy development, a need for policy direction for the management of Alberta's peatlands and wetlands in the Non-settled Area was identified. Work on this aspect of wetland policy started in 1992. The Alberta Water Resources Commission, in cooperation with an interdepartmental steering committee, prepared additional wetland discussion material. Two reports are now available: *Beyond Prairie Potholes: A Draft Policy for Managing Alberta's Peatlands and Non-settled Area Wetlands* and *Alberta's Peatlands and Non-settled Area Wetlands: A Background Report.* Public consultation about provincial peatlands and Non-settled Area slough/marsh wetland management is planned for the fall of 1993. There are several opportunities for public review in development of this policy. Written or verbal comments on the reports are welcome. Public meetings will also be held. All interested groups and individuals are invited to participate.

The results of the public consultation on peatlands and Non-settled Area wetlands will be incorporated with the Interim Policy for wetlands in the Settled Area to develop a comprehensive wetlands policy for Alberta that addresses all wetland types throughout the province.

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Alberta Water Resources Commission
May 1993

ISBN: 0-7732-1227-2

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# Wetland Management in the Settled Area of Alberta

## *An Interim Policy*

## Introduction

This interim policy provides direction for the management of slough/marsh wetlands in the Settled Area of Alberta (see Figure 1). It was prepared in response to the loss of wetlands and the need for consistent direction to guide provincial government departments. The interim policy was developed cooperatively by the Alberta Water Resources Commission and the provincial departments of Agriculture, Food and Rural Development; Environmental Protection; Municipal Affairs; and Transportation and Utilities. The interim policy is consistent with the principles of sustainable development.

Public consultation was an integral part of policy development. A large number of Albertans, including farmers and other landowners, representatives of municipal governments, irrigation districts and educational institutions and members of agricultural, conservation, environmental, recreational and industrial interest groups, provided comments at workshops and in written submissions in late 1990. Public positions were carefully considered and are presented throughout this report. The public comments were summarized in the companion document *Wetland Management in the Settled Area of Alberta: Summary of Public Comments.*

This report provides a policy goal and intents for slough/marsh wetland management as well as strategies to implement the policy. ***Policy statements are presented in italics.***

## Policy Goal

Functioning wetlands in the Settled Area of Alberta are valuable natural resources that provide many benefits (see Appendix 1). The value of slough/marsh wetlands is not widely understood and wetlands can be seen as a nuisance or impediment to development, especially for farmers. Losses of some types of wetlands, particularly slough/marsh wetlands in the central and southern parts of the province, have been significant. Agricultural development, drought, urban expansion and utility and transportation development have contributed to wetland loss or degradation. Public awareness of wetland values and of the need for wetland management has increased recently.

During the public consultation process, Albertans expressed concern about wetland management and widespread support for better understanding and recognition of the value of wetlands. Most participants felt that wetlands should be protected and many asked that wetland loss be stopped. Participants also asked for improved wetland management and immediate implementation of a wetland management policy.

***The goal of the Government of Alberta is to sustain the social, economic and environmental benefits that functioning wetlands provide, now and in the future.***

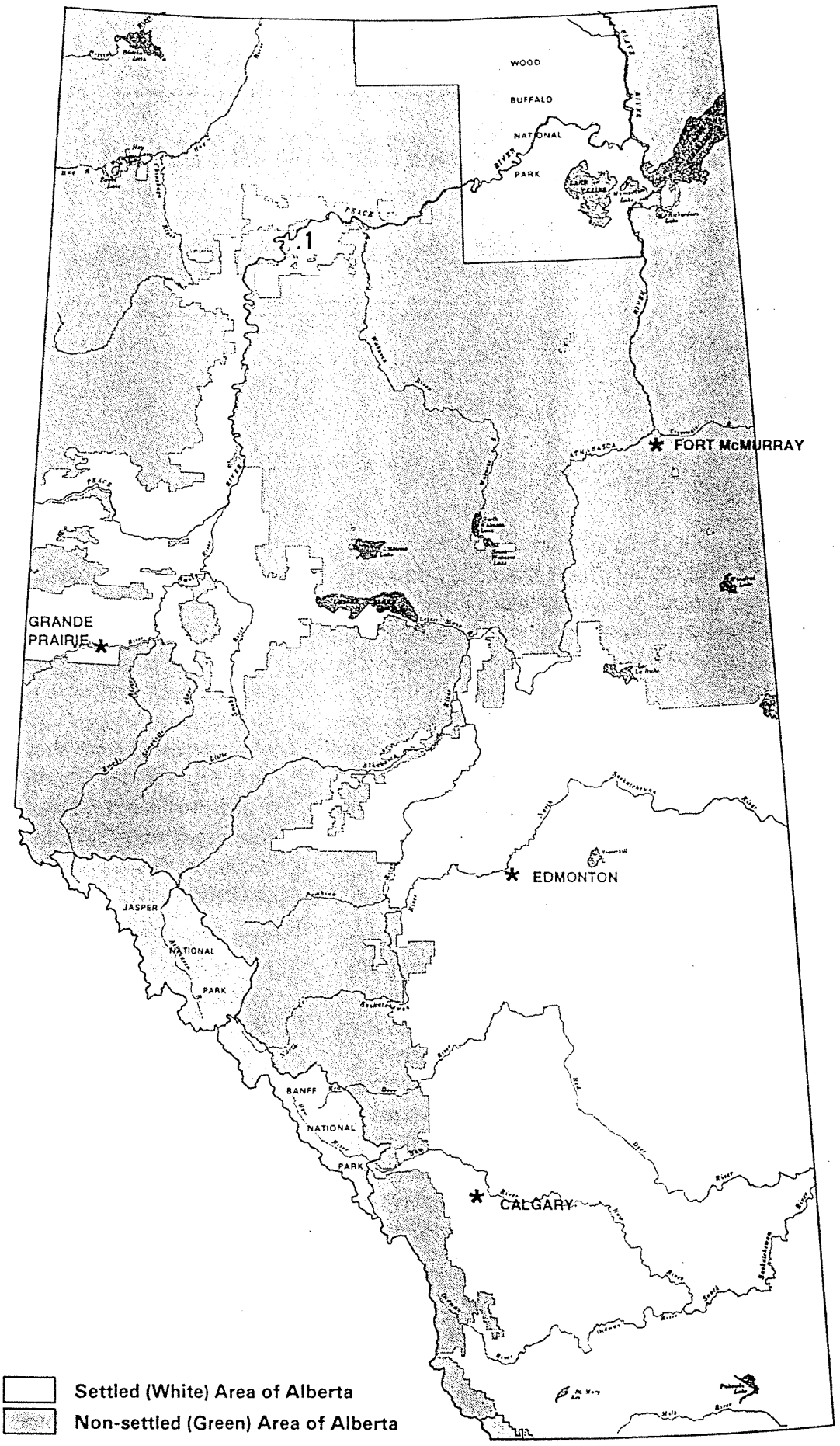


***Figure 1. The Settled and Non-settled Areas of Alberta***
***(Source: Alberta Forestry, Lands and Wildlife)***

# Policy Intent

Wetlands are permanently or intermittently wet land, shallow water and land-water margins. Wetlands are formed when water is present in depressions or low areas for a long enough period to support wetland or aquatic processes. Wetlands are dynamic, complex features that are influenced by a variety of factors including climate, ground and surface water, vegetation and soils, and by human and animal activity. Hydric soils, hydrophytic plants and biological processes that are found in wet conditions are indicators of wetlands. Different wetland types are distributed throughout Alberta.

Many public participants asked for clear, consistent definitions and management objectives for the different types of wetlands. Recognition of local conditions and regional variation in the distribution of wetlands was widely requested. No-net-loss of wetlands was suggested as an objective by many participants.

*Slough/Marsh Wetlands* — Slough/marsh wetlands are shallow, depressional areas that are permanently or periodically covered by standing or slowly moving water. Water levels often fluctuate and open water may or may not be present. Vegetation may range from floating or submerged plants in the centre to cattails, rushes, sedges and grasses to willows and other shrubs along the fringes or margins. Potholes and marshes along water courses fall into this category. Slough/marsh wetlands are most common in central and southern Alberta.

***The intent of the policy with respect to slough/marsh wetlands in the Settled Area is, in descending order of preference:***

*a) to conserve slough/marsh wetlands in a natural state.*

*b) to mitigate degradation or loss of slough/marsh wetland benefits as near to the site of disturbance as possible.*

*c) to enhance, restore or create slough/marsh wetlands in areas where wetlands have been depleted or degraded.*

***Wetland management will be balanced to recognize that objectives for wetlands may conflict with objectives for other natural resources and all management objectives may not be met for every wetland.***

***The following management guidelines apply:***

*a) Mitigation of impacts on wetlands may be required to meet regional wetland management objectives.*

*b) Land use activities that are compatible with wetlands will be permitted.*

*Peatlands* — Peatlands are permanent wetlands containing peat derived from organic materials such as mosses and sedges. Open water may or may not be present. Examples of peatlands are bogs and fens. Peatlands in the Settled Area are found primarily to the north and west of Edmonton including the Peace River region. Alberta Environmental Protection and Alberta Agriculture, Food and Rural Development are examining the issue of peatland management in response to increased interest in peatland development.

***The policy goal for wetlands in the Settled Area applies to peatlands. Information about peatlands is very limited and policy intents for peatlands are not provided in this policy. A cautious approach to the use and development of peat resources will be adopted until a policy for peatlands is developed.***

*Sheetwater* — Sheetwater is a flooded area of shallow, open water on low, relatively flat terrain that periodically forms as a result of snow melt or heavy rains. Sheetwater may or may not be associated with a water course. It is not considered a wetland because there is insufficient time for the vegetation, soils and biological activity characteristic of wetlands to develop. Sheetwater is common in northwestern Alberta.

Although sheetwater is not a wetland and is not covered by this policy, it provides benefits such as waterfowl habitat and groundwater recharge. Sheetwater is a problem to farmers in some areas and will be addressed under other resource management and planning programs.

*Regional Application* — Public participants asked for recognition of the variation in the type and distribution of wetlands and the need for different management approaches in different parts of the province.

***Regional wetland management objectives will be developed. Wetland values, the type and distribution of wetlands and the policy intent will be considered when regional wetland management objectives are developed. Objectives will be reviewed and revised as more information becomes available.***

# Wetland Management Strategies

## Administration

The natural resources found in and around wetlands are managed by several provincial government departments. At least 14 agencies administer more than 40 provincial statutes with a direct or indirect effect on wetlands. No single agency has responsibility for management of all aspects of wetlands in Alberta.

Many public participants felt that a strong, consistent management policy is required to guide provincial departments that are responsible for management of wetland-related resources. Many suggested that responsibility for wetland management and adequate funding be assigned to a single, lead agency. Suggestions for appropriate management agencies included an existing provincial government department or an independent board.

*Primary responsibility for coordination of wetland management will be assigned to Alberta Environmental Protection. Wetland management activities will include inventory, assessment, monitoring, education, planning, research and enforcement. Provincial government departments will cooperate and participate in the implementation of the wetland policy. Alberta Environmental Protection will chair an interdepartmental committee to guide implementation of the policy. A report on the status of these activities and policy implementation will be tabled in the Alberta Legislature every five years.*

## Education

Many Albertans are unaware of either the benefits or the costs of wetlands and few educational or extension programs focus on wetlands. Information about wetland values and management has not been widely incorporated into educational or extension programs.

Public support for education of society about wetland values, benefits and management was strong. Focusing of education on groups such as landowners, municipal and provincial governments, urban residents and school children was recommended frequently. Many participants supported coordination of wetland education with existing educational programs and felt wetland management expertise and assistance should be provided locally to landowners and municipal governments.

*Education about wetland functions, values and management topics including wetland ownership, conservation of wetland margins, surrounding land management, property tax assessment and drainage will be increased and will be focused on groups such as landowners, urban residents, governments and school children. Private stewardship of wetlands will be promoted through education. Technical assistance on wetland management will be provided to landowners and municipalities. Wetland topics will be incorporated into existing provincial government educational programs where appropriate. The wetland education efforts of non-government organizations will be encouraged and supported.*

## Wetland Ownership

Slough/marsh wetlands are found on private and public land throughout the Settled Area of Alberta. Approximately 73 percent of the settled area is private land, 23 percent is public land under provincial government control and the remaining 4 percent is under the control of the federal government, Metis settlements and Indian bands. Ownership and property rights related to wetlands are not widely understood. The bed and shore of wetlands on private land that are "permanent and naturally occurring water bodies" are owned by the Crown under Section 3 of the Public Lands Act unless the title has been granted to a private landowner. A permanent water body is one that exhibits persistent evidence of a bank, bed and shore (see Appendix 2) and a propensity to return to normal levels under ordinary circumstances after periods of drought or flood. All water in wetlands is owned by the Crown under the Water Resources Act.

Many public participants asked for clarification of the legal ownership of wetlands and for protection and maintenance of landowner rights. Recreationists asked for access to public wetlands and landowners identified problems with irresponsible recreational use of private land. Protection of publicly-owned wetlands was widely supported and many participants felt publicly-owned wetlands should be maintained in public ownership.

*Public land with significant wetlands, including land that reverts to Crown ownership, will not be sold. If public land containing small, scattered wetlands that are permanent and naturally occurring water bodies is sold, the wetlands will be clearly excepted from the sale and maintained in Crown ownership. The provincial government will consider purchase or lease of private land with significant wetlands. Landowner stewardship of wetlands on private land will be encouraged. The public will be informed that it does not have the right to cross private land to gain access to public wetlands. Information about wetland ownership and its relationship to management will be incorporated into educational initiatives.*

## Planning

Systematic wetland management planning currently does not occur although wetlands are addressed under some planning processes such as water management planning and planning for projects that affect wetlands. Wetland planning is required to determine regional wetland management objectives and to guide management activities.

Public participants asked for comprehensive long range wetland management planning to be done at the local or regional level. Watersheds were suggested as appropriate planning units. Incorporation of wetland planning into existing land and water planning programs was supported. Public and municipal government involvement in wetland management planning was widely requested.

***Interdepartmental wetland management planning, including development of regional wetland management objectives, will be coordinated by Alberta Environmental Protection and should occur at the watershed level. A complete range of wetland values will be considered and a long term perspective applied. The public and municipal governments will be involved in the development of objectives and wetland management planning. The wetland policy will be incorporated into existing planning programs such as integrated resource, river basin, transportation and utility, municipal, tourism development and local conservation planning. Municipal governments and regional planning commissions will be encouraged to use statutory plans and development controls to implement the wetland policy and regional wetland management objectives.***

## Drainage

Drainage for agriculture has been a major cause of wetland loss in the Settled Area. The benefits of drainage to farmers are increased land for crop production, reduced input costs, improved efficiency and timing of field operations, reduced waterfowl damage to crops and removal of a source of weeds. Social pressure to drain wetlands to maintain clean fields may be significant. In parts of Alberta, soil salinity is a problem and drainage of upslope recharge wetlands may reduce the spread of dryland salinity in low lying areas. Wetlands have also been drained or filled to accommodate urban, transportation and utility development. A decision to drain one small wetland may seem insignificant but the cumulative effect of many such decisions is a significant loss of wetlands. Drainage projects require approval from Alberta Environmental Protection under the Water Resources Act and drainage of wetlands that are permanent and naturally occurring water bodies is generally not permitted.

Many public participants asked for an immediate halt to drainage of all slough/marsh wetlands. Landowners and representatives of the urban, energy, transportation, utility and tourism development sectors felt flexibility was required to allow some drainage of wetlands when it is in the public interest. Landowners in northwestern Alberta asked to be allowed to drain sheetwater in the spring and after heavy rains. Concern about the effect of wetlands on soil salinity in southern Alberta was identified. Support for careful regulation of drainage, increased enforcement and a stop to illegal drainage was strong. Completion of environmental impact assessments for drainage projects was suggested.

***Drainage of wetlands will be guided by the wetland management policy and regional wetland management objectives and may be permitted under licence. Interdepartmental referral of drainage proposals will continue, to ensure consideration of a full range of wetland values. Mitigation of lost wetland benefits may be required to meet regional wetland management objectives. Salinity problems associated with wetlands will be addressed through land management options where possible.***

## Incentives for Wetland Retention

Landowners receive many of the benefits of wetland drainage and pay many of the costs of wetland retention, while many of the costs of wetland drainage and the benefits of wetland retention are societal. Few programs exist to transfer the value of societal benefits from wetlands on private land to landowners and there are few incentives to encourage retention of wetlands. Property taxes are based on agricultural productivity and are low or non-existent for wetlands. Since the tax assessment on both a wetland and the surrounding land would increase if the wetland was drained, property taxes may act as an incentive to retain wetlands. Although provincial and municipal governments may pay the cost of off-farm drainage works, direct financial support to landowners for wetland drainage is very limited. A large part of the Settled Area is private land and incentives may be effective in encouraging landowner retention of wetlands.

Public support for financial and other incentives to landowners to encourage and compensate for wetland retention was strong. Opponents of financial incentives felt that landowners should be encouraged to practice good land stewardship without financial compensation. Use of volunteer stewards and non-financial incentives, such as public recognition, were also suggested. Most participants felt that voluntary incentive programs were preferable to a regulatory approach or land acquisition by the provincial government. Many asked that direct and indirect incentives for wetland drainage be removed or transferred to wetland protection. Many participants suggested that proponents of wetland drainage pay the full costs and suggested property tax reductions as an incentive to encourage wetland retention. Municipal governments asked that the provincial government compensate municipalities for any costs of incentive programs. Agricultural producers asked for equitable compensation for lost agricultural production and efficiency as a result of wetland retention.

***Incentives will be provided to landowners and municipalities to encourage retention of slough/marsh wetlands. Incentives for wetland drainage will not be provided nor will financial incentives be available to landowners for retention of publicly owned wetlands surrounded by private land. Provincial government policies and programs which directly or indirectly encourage wetland destruction or degradation will be amended to remove such incentives. Financial incentives and private conservation agreements will be evaluated for their potential in meeting wetland management objectives. Funding of incentive programs by private sources and the federal government will be encouraged.***

## Surrounding Land and Wetland Margins

The wetland margin or fringe is the area along the edge of a wetland that is characterized by vegetation such as cattails, sedges and willows. The margin is an integral part of a wetland and is important for wetland maintenance and functioning. Many of the benefits of wetlands such as forage, recreational opportunities and wildlife habitat are lost if natural vegetation is cleared to the edge of the water. Surrounding land uses are also important and can have significant effects on wetlands. Wetlands cannot be considered in isolation.

Public support for the protection of wetland margins was high. Many participants asked for maintenance of vegetation buffers around wetlands and recognition of the importance of upland areas particularly for waterfowl nesting and water management. Landowners were concerned about weed control around public wetlands.

***Wetland margins are a valuable part of wetlands and should be conserved. Financial incentives to encourage conservation of wetland margins on private land will be considered and education about wetland margins will be improved. Consideration of the possible effects on wetlands will be encouraged when decisions on surrounding land use are made. A cooperative approach to weed control on public wetlands and adjacent private land will be encouraged.***

## Urban Wetlands

Wetlands are often lost as cities and towns expand onto surrounding areas. Municipalities drain or fill wetlands to provide areas for development, and eliminate breeding places for mosquitoes. Natural wetlands in an urban setting can provide a range of benefits including stormwater retention, water purification and wildlife viewing opportunities.

Protection of urban wetlands was requested by many

participants. Urban municipalities asked that the unique requirements of urban wetland management be recognized and asked that wetland protection not excessively restrict urban development.

*Retention of natural wetlands within urban areas will be encouraged. Mitigation of the impacts of urban development on wetlands may be required to meet regional wetland management objectives.*

## Transportation, Utility and Energy Development

Transportation, utility and energy developments, such as roads, pipelines, well-sites and mines, have contributed to the loss of wetlands directly and through alteration of natural drainage patterns. Construction of roads on road allowances often requires crossing of wetlands.

Public participants asked that transportation and utility corridors be planned to avoid wetlands and that damage to wetlands as a result of road construction be mitigated. The energy industry felt that wetlands could be reclaimed or created during reclamation of disturbed areas.

*Retention of wetlands during transportation, utility and energy development will be encouraged. Mitigation of damage to wetlands and natural drainage patterns may be required to meet regional wetland management objectives.*

## Water Management

Wetlands cannot exist without water and water management practices can have a significant effect on wetlands. Many wetlands in southern Alberta are dependent on water from irrigation districts and may be affected by irrigation rehabilitation projects. Wetlands can function as effective water management tools.

Many public participants felt wetland maintenance should be recognized as a legitimate use of water and some suggested licensing of water for wetlands. Multiple use of the water in wetlands and use of wetlands for water management purposes were supported. Both support for and opposition to consolidation of several wetlands into a single wetland on a parcel of land or within a region were expressed.

*Use of wetlands for water management purposes such as flood control, urban stormwater retention, water purification, flow regulation and groundwater recharge will be encouraged. Provincial flood and erosion control programs will promote the maintenance of wetlands and the feasiblity of regional water consolidation will be evaluated. Multiple use of the water in wetlands and licensing of water allocations for wetlands within irrigation districts will be encouraged.*

## Wildlife Damage

Waterfowl damage to crops can be a problem in parts of the Settled Area and agricultural producers can apply for compensation for crop damage. Beavers may cause flooding damage and provincial beaver management strategies and programs are currently being evaluated.

Support for compensation of agricultural producers for damage by waterfowl was identified. Some agricultural producers felt the existing compensation payments for crop damage were inadequate especially for high value crops and some asked for full compensation. Landowners also asked for better control and management of beavers to limit flooding damage.

*Compensation to agricultural producers for waterfowl crop damage will continue and programs that prevent or reduce crop damage will be supported.*

## Pollution and Degradation of Wetlands

Wetlands are susceptible to damage from a wide range of activities. Water quality is impaired and the biological processes in wetlands may be destroyed if pollution levels are excessive.

Public concern about damage and pollution of wetlands was identified. Public participants asked for monitoring and control of wetland pollution and damage. The effects on wetlands of residential, recreational, agricultural, industrial and transportation land uses were identified as problems.

***Control of regulated activities, including disposal of sewage in wetlands, will continue to ensure wetlands are protected. Education and planning will be used to reduce the negative effects on wetlands of non-regu-***

*lated activities such as land clearing, livestock production and application of pesticides.*

## Legislation

As indicated in the section of this report on wetland administration, no specific legislation addresses wetlands; wetland resources are administered under a variety of laws.

Use of legislation and regulations to protect wetlands was strongly supported by many public participants. Many landowners expressed concern about using legislation to protect wetlands on private land and asked that new legislation only be considered after incentives and education have been tried. Better enforcement of new and existing legislation, such as the Public Lands Act, Water Resources Act and the Environmental Protection and Enhancement Act, was widely requested. Recognition of wetlands under a revised Water Resources Act, modification of existing legislation to facilitate conservation agreements on private land and improved legislative consistency were requested.

***The wetland management policy will be implemented under existing resource management legislation with modifications where necessary. Wetland conservation legislation will not be enacted and the resource management mandates of provincial government agencies will be recognized. The mandate of the Department of Environmental Protection to manage water in wetlands should be confirmed under the revised Water Resources Act. Legislative amendments to enable use of private conservation agreements to protect wetlands on private land will be considered.***

## Inventory

Government agencies have collected wetland information for different areas of the province for various purposes. Significant information about wetlands has also been collected by private sector organizations such as Ducks Unlimited. A consistent, comprehensive inventory of wetlands with periodic updates is required for wetland planning and objective setting.

Public participants supported rapid completion and regular updating of a comprehensive inventory and classification of wetlands. Participants asked that a wide range of wetland variables be inventoried and that existing information be used as much as possible.

***A provincial inventory of wetlands will be completed using new and existing information. Key data that will be collected at the broad level will include wetland extent/size/abundance, location/distribution, type, ownership and surrounding land use. More detailed information will be required to establish regional wetland management objectives and to make day-to-day wetland management decisions. Use of satellite-based information and a geographic information system will be evaluated.***

## Research

Increased recognition and awareness of the value of wetlands has stimulated a need for information about wetland benefits, relationships and management techniques. Research on the role and importance of wetlands in Alberta has been limited.

Public participants asked for initiation of research to assist in wetland management. Some participants asked that research not be used as reason to delay wetland management action and suggested use of existing information where possible. Participants suggested a variety of research topics including wetland ecology, effects of development, land use and global warming on wetlands, wetland hydrology, wetland dynamics and processes, economic costs and benefits of wetlands, wetland restoration and rehabilitation, urban wetlands and peatland management.

***Research on wetland values and functions will be conducted and encouraged. A strategic, coordinated approach to wetland research will be developed. The results of wetland research will be made available to the public.***

## Public Consultation

Public consultation has been a major part of the development of the interim policy for wetland management in the Settled Area of Alberta.

Support for public involvement in wetland management, particularly at the local level, was very strong. Landowners asked to be consulted on wetland management decisions that would affect them. The environmental

impact assessment process was suggested as a method for public consultation. Participants asked for meaningful public consultation and assurances that the government was listening and considering their comments.

*Public consultation will be an integral part of wetland planning and management. Landowners will be consulted and directly involved in wetland management.*

## Municipal Governments

Many of the programs and activities of municipal governments have direct and indirect effects on wetlands. For example, municipal road and ditch construction can significantly affect water movement in wetlands.

Municipal governments asked to be directly involved in provincial wetland management and implementation of the wetland policy and asked that wetlands be managed at the local or regional level under provincial government guidance. Municipalities asked the provincial government to pay for wetland management programs and were concerned about potential effects on property tax revenues. Increased protection of wetlands by municipal governments was requested by many participants.

*Municipal governments will be involved in the planning and management of wetlands and will be encouraged to cooperate regarding wetland management. Municipal governments will be encouraged to implement the wetland policy through their programs and activities.*

## Coordination and Cooperation

A wide range of private as well as federal, provincial and municipal activities and programs directly or indirectly affect wetlands. Drainage or destruction of wetlands is indirectly encouraged by some federal, provincial and municipal government programs. Some activities and programs appear to conflict in purpose.

Public participants felt cooperation and communication among all levels of government, industry, private organizations, landowners and individuals regarding wetlands should be increased and asked for better coordination and integration of wetland management activities. The public felt all provincial government departments should follow the wetland policy.

*Cooperation and communication among all levels of government, non-government organizations, industry, landowners and individuals regarding wetland management will be promoted. Provincial government wetland management activities will be coordinated and integrated to avoid duplication of effort and conflicts. Provincial government policies and programs will be evaluated and modified, if required, to ensure consistency with the wetland management policy. Government and private sector programs that are consistent and complementary with the wetland management policy will be supported and encouraged. Modification of private, federal and municipal programs, laws and policies to remove indirect incentives for wetland destruction will be encouraged.*

## Other Policy Initiatives

The need for policy direction on several related resource management issues was identified during development of the wetland management policy for the Settled Area. Management of slough/marsh wetlands in the Non-settled Area of Alberta, management of peatlands throughout Alberta and the recent introduction of purple loosestrife, an exotic plant which has the potential to choke out native wetland vegetation, were identified as issues requiring policy direction.

Numerous public requests for preparation of a wetland management policy for the Non-settled Area were received. Public participants also asked for management direction for peatlands and suggested that the non-consumptive values of peatlands should be recognized.

*A wetland management policy with interdepartmental and public involvement will be developed for the slough/marsh wetlands in the Non-settled Area of Alberta. Direction for the management of peatlands throughout Alberta and the control of purple loosestrife will be developed.*

## Conclusion

This wetland management policy will be implemented through the actions of provincial government departments and will be consulted whenever decisions are made that affect slough/marsh wetlands in the Settled Area of Alberta. The Government of Alberta believes that with proper management, wetlands in the Settled Area will continue to provide a sustainable stream of social, economic and environmental benefits.

# Appendix 1. *Why are Wetlands Important?*

Wetlands in the Settled Area of Alberta provide a continuous, sustainable stream of environmental, economic and social benefits that contribute greatly to the quality of life. Many wetland uses can be measured in economic terms, while other significant values do not lend themselves to economic evaluation. For example, Albertans may value the existence of wetlands, although they never visit or directly benefit from them. Participants in the public consultation process identified numerous wetland benefits including recreation and tourism opportunities, soil moisture, a source of water for industrial, agricultural, rural and urban uses, water purification, groundwater recharge, flood control, genetic reserves, ecological systems, habitat for wildlife such as furbearers, waterfowl and endangered species, natural heritage and aesthetic value, micro-climate moderation and wild rice and peat production.

Wetlands make a substantial contribution to the Alberta economy and the economic costs of wetland loss are significant. The loss of wetland-related recreational opportunities may have serious economic implications for the hotels, restaurants, sporting goods stores and other businesses involved in the hunting, recreation and tourism industries. The costs of replacing the water purification, flow regulation and erosion control functions of wetlands are high, as are costs for mitigation of lost wildlife habitat.

Classification of wetland benefits is difficult and categories may overlap. Major categories of wetland benefits in alphabetical order are:

*Agricultural benefits* — The agricultural value of wetlands varies with the type of wetland and farm operation. Livestock operations may receive significant benefits from wetlands. The native grasses and sedges found in and around wetlands are high in protein and may be grazed or cut for hay. During dry years, wetland margins may provide the only available forage. Backflooding in the spring, combined with subsequent controlled drawdowns, can increase hay yields. Wetlands may also reduce topsoil erosion and improve soil moisture. Permanent wetlands are often used as an on-farm water supply for livestock and domestic use. In addition, an increasing number of permanent wetlands in the settled area are used for wild rice production. Temporary wetlands may have limited value to producers of annual crops.

*Ecological benefits* — The ecological value of wetlands is significant. They are dynamic, highly productive ecological systems that are an important source of genetic diversity. A wide variety of birds, mammals, amphibians, invertebrates and plants are found in wetlands. Many wetland species are important links in complex food chains. Wetlands also contribute nutrients and energy to surrounding ecological systems. Significant or representative wetlands may have scientific or educational value. Some wetlands support rare or endangered plants or animals such as Alberta's rarest native plant, the bog adder's-mouth orchid, and the rare trumpeter swan.

*Heritage benefits* — The pattern of settlement and fabric of rural life in Alberta have been influenced strongly by wetlands. Wetlands are a unique and important part of the landscape in the Settled Area of Alberta and there is heritage value in maintaining wetlands now and for the future.

*Peat benefits* — Peatlands are a source of peat that is used mainly for horticultural purposes. Most horticultural peat in Alberta is currently produced on public land in the Settled Area. Peat can also be used for fuel and for industrial purposes such as absorbents. The peat industry in Alberta is in its infancy and increased use of peat resources is expected. Some peatlands are suitable for agricultural uses including forage or hay production, and specialty crops such as carrots and grazing. Drainage to lower the water table, removal of some peat soil and deep tilling may be necessary to improve agricultural productivity.

*Recreational and tourism benefits* — Wetland-related recreation and tourism have substantial value to Alberta. A wide range of consumptive and non-consumptive recreational and tourism opportunities are dependent on wetlands. Hunting, cross-country skiing, skating, birdwatching, photography and enjoyment of the aesthetic and scenic values of wetlands are popular activities for Albertans and non-residents, alike. Numerous businesses provide goods and services to people engaged in recreational use of wetland resources.

*Water resource (hydrological) benefits* — Wetlands are important for the control and storage of surface water and the recharge and discharge of groundwater. By storing water and slowing the rate of runoff after the spring melt or major rainstorms, wetlands may reduce the risk of flooding, soil loss and downstream sedimentation. This is particularly important in areas where soils are sensitive to erosion, such as northwestern Alberta. Infiltration of water stored in wetlands contributes to recharge and maintenance of water table levels in some areas. Permanent wetlands are a valuable source of water for domestic, livestock and industrial use.

Wetlands can also improve water quality through the incorporation of nutrients and chemical residues into wetland vegetation. Appropriately managed wetlands have been used successfully for treatment of wastewater.

*Wildlife and fisheries benefits* — Wetlands, wetland margins and surrounding uplands provide important habitat for a large variety of plant and animal species. Roughly 45 species of waterfowl, 81 species of other birds and at least 30 mammals such as beaver, mink, muskrat, moose and deer, use wetlands or wetland margins for all or part of their life cycles. Pike use some types of wetlands for spawning. Wetlands may help maintain the quality of water in adjacent lakes and streams that support fish populations. Many of the animals that depend on wetlands are important for hunting, fishing, trapping and non-consumptive uses.

Alberta slough/marsh wetlands are vital to North American ducks, providing habitat for nearly one-fifth of the continental breeding population. Slough/marsh wetlands in the Settled Area of the province are part of the prairie "duck factory" and are particularly important for maintaining migratory waterfowl populations.

## Appendix 2. *Definition of Bank, Bed and Shore*

The definition of bank, bed and shore in Sections 17 (2) and (3) of the Surveys Act are:

a) the bank is the line where the bed and shore of the body of water ceases and

b) the bed and shore of a body of water are the land covered so long by the water as to wrest it from vegetation or as to mark a distinct character on the vegetation where it extends into the water or on the soil itself.

The definition of "bank" has been further clarified as the distinct line of demarcation caused by the natural, long-continued, ordinary action or presence of surface water at its normal height on either the soil or the vegetation.