

Alberta Wetland Policy



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Alberta Wetland Policy Overview

The Alberta Wetland Policy provides the strategic direction and tools required to make informed management decisions in the long-term interest of Albertans. The policy will minimize the loss and degradation of wetlands, while allowing for continued growth and economic development in the province.

The goal of the Alberta Wetland Policy is to *conserve, restore, protect, and manage* Alberta's wetlands to sustain the benefits they provide to the environment, society, and economy. To achieve this goal, the policy will focus on the following outcomes:



1. Wetlands of the highest value are protected for the long-term benefit of all Albertans.
 2. Wetlands and their benefits are conserved and restored in areas where losses have been high.
 3. Wetlands are managed by avoiding, minimizing, and if necessary, replacing lost wetland value.
 4. Wetland management considers regional context.
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Not all wetlands are of equal value. Alberta's wetlands are highly diverse in form, function, use, and distribution across the province. Under the Alberta Wetland Policy, wetland value will be assessed based on relative abundance on the landscape, supported biodiversity, ability to improve water quality, importance to flood reduction, and human uses. Individual wetlands will be assessed against these key criteria and assigned an overall wetland value. Relative wetland value will be used to inform wetland management.

Where development activities have the potential to impact wetlands, the wetland policy promotes avoidance and minimization, as the preferred courses of action. Where impacts cannot be avoided or minimized, and permanent wetland loss is incurred, wetland replacement is required. The amount of wetland replacement required will reflect differences in relative wetland value.

Wetland stewardship is an important component of effective wetland management in Alberta. A range of initiatives will encourage wetland stewardship activities to help sustain the benefits that wetlands provide.

Acknowledgements

Development of a comprehensive and effective wetland policy is a complex undertaking, which requires a multidisciplinary approach. The Government of Alberta would like to thank the Alberta Water Council, its members, members of the public, and the myriad stakeholder organizations who contributed both their time and technical expertise to this project. The perspectives, experience, and input offered by Albertans have been indispensable in development of the Alberta Wetland Policy.

Wetlands in Alberta



Approximately 20 per cent of Alberta's surface are is covered by wetlands



Wetlands are land saturated with water long enough to promote formation of water altered soils, growth of water tolerant vegetation, and various kinds of biological activity that are adapted to the wet environment. Wetlands are highly diverse, productive ecosystems that provide a host of ecological services and form an integral component of Alberta's diverse landscapes. They play an important role in sustaining healthy watersheds by protecting water quality, providing water storage and infiltration, providing habitat for wildlife, fish and plants, and sustaining biodiversity. Alberta is home to a rich and varied array of wetland ecosystems, including bogs, fens, marshes, swamps, and shallow open water wetlands.

Approximately 20 per cent of Alberta's surface area is covered by wetlands; more than 90 per cent of these are peatlands (primarily bogs and fens). Collectively, these ecosystems help sustain vast populations of migratory waterfowl. They provide flood mitigation by storing and slowly releasing large volumes of surficial runoff. They function as natural filtration systems, cleansing surface waters prior to discharge. In many instances, wetlands are groundwater recharge zones, acting as conduits between surficial water sources and aquifers beneath the ground. They support a diverse array of flora and fauna. In Alberta alone, it is estimated that wetlands are host to some 400 species of plants, some of which are listed as rare, threatened, or endangered in the province.

Alberta's wetlands provide the basis for a wide variety of human activities. They support several recreational pursuits (e.g., bird watching, hunting) and have increasingly become a focal point for the ecotourism industry. They are a highly valued resource to many First Nations and Métis peoples, for whom they provide myriad cultural and traditional uses. Wetlands are also very important to agriculture and forestry in the province and play a significant role in wildlife conservation programs. Peatlands in the province support a specialized mining industry, which supplies peat ("peat moss") to the horticultural market.

The Need for a New Provincial Wetland Policy

Over the past several decades, Alberta has enjoyed considerable economic prosperity. This prosperity has presented a range of challenges and responsibilities, in terms of balancing the environmental, social, and economic needs of Albertans. The cumulative effects of both rapid population and economic growth are placing considerable pressure on Alberta's landscapes.

Since the late 1800s, wetlands in Alberta have been subject to loss and degradation due to human development activities on the landscape. These activities, which include agricultural and urban expansion, forestry, oil and gas exploration and development, and mining, can result in direct wetland loss. They can also lead to alteration of wetland conditions and functions through fragmentation and disruption of natural hydrological pathways. It is estimated that Alberta has lost two thirds of its wetlands in the White Area (settled area) of the province; these losses are ongoing. Wetland losses and impacts in the Green Area (crown lands) are occurring but not yet fully understood.

Wetland management in Alberta is currently governed by *Wetland Management in the Settled Area of Alberta: An Interim Policy* (1993). The interim policy is limited to the White Area (settled region) of the province and does not address wetland management in the Green Area (crown lands); development activities in the Green Area remain subject to other legislation and policies that include aspects of wetland management. Amongst these are the province's *Water Act*, the *Environmental Protection and Enhancement Act*, and the *Public Lands Act*.

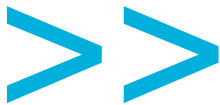
The new Alberta Wetland Policy facilitates an informed and considered approach to wetland management across all areas of the province; it provides the required tools and knowledge systems to support the province's wetland management needs into the future. To support a comprehensive, cumulative effects-based management approach, this new policy will:

- incorporate wetlands of all classes (marsh, bog, fen, swamp, open water wetland) throughout the province (white and green areas);
- acknowledge the importance and role (relative value) of individual wetlands on the landscape within decision making processes;
- provide regulatory certainty, clarity, and predictability to proponents and regulators;
- better reflect provincial priorities and outcomes;
- enable a clear and robust decision-making framework for approval writers; and,
- acknowledge and enable the roles of municipal, regional, and provincial planning in the decision-making process.



Policy Context

The purpose of the Alberta Wetland Policy is to provide a strategic framework for conserving, restoring, and protecting Alberta's wetlands. Wetlands are integral to watershed health in Alberta and to the achievement of all three goals of *Water for Life: Alberta's Strategy for Sustainability*:



- Safe, secure drinking water
 - Healthy aquatic ecosystems
 - Reliable, quality water supplies for a sustainable economy
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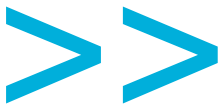
The policy also supports the goals of Alberta's Land-use Framework, which sets out a management approach for public lands, private lands, and natural resources that will help achieve Alberta's long-term economic, environmental, and social goals. Flexibility in the Alberta Wetland Policy will enable a broad range of wetland management initiatives at the Regional Planning level. This could, for example, include the establishment of wetland conservation areas, or the identification of priority areas for wetland restoration.

The Alberta Wetland Policy will provide a comprehensive suite of tools and guidelines to support an effective, efficient, and predictable wetland management system. To further enable its goal of wetland conservation and informed wetland management, the policy will provide clear and consistent provincial direction to land and resource managers, developers, land owners, land users, and stewards.

This policy is provincial in scope, and replaces *Wetland Management in the Settled Areas of Alberta: An Interim Policy* (1993). The primary legislative basis for implementing this policy is the *Water Act*. There are also a number of federal, provincial, and municipal statutes and policies that regulate or guide aspects of wetland management. This policy will not exempt a proponent from other regulatory requirements.

Policy Scope

This Policy covers:



1. Natural wetlands in Alberta, including bogs, fens, swamps, marshes and shallow open water.
 2. All restored natural wetlands, as well as wetlands constructed for the purposes of wetland replacement.
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Ephemeral water bodies are not subject to replacement; however, activities that impact these water bodies remain subject to the *Water Act*.

The Alberta Wetland Policy is a go-forward policy and will be effective from the date of approval. The policy does not apply retroactively to *Water Act* approvals issued prior to the policy approval date.

Policy Goal and Outcomes

The goal of this policy is to conserve, restore, protect, and manage Alberta's wetlands to sustain the benefits they provide to the environment, society, and the economy.

To achieve this goal, the policy will focus on the following outcomes:



1. Wetlands of the highest value are protected for the long-term benefit of all Albertans.
 2. Wetlands and their benefits are conserved and restored in areas where losses have been high.
 3. Wetlands are managed by avoiding and minimizing negative impacts, and, where necessary, replacing lost wetland value.
 4. Wetland management considers regional context.
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The Alberta Wetland Policy focuses on three strategic directions:

Enable flexible wetland management

The Alberta Wetland Policy sets clear, consistent direction for wetland conservation and management at a provincial scale. Flexibility in the policy will enable the Government of Alberta to ensure that place-based environmental, social, and economic values are reflected in wetland management.

Build effective tools, knowledge and capacity

To support the achievement of the Alberta Wetland Policy goal, the Government of Alberta will work with partners to undertake research, fill information gaps, and develop the tools and capacity required to ensure a sustainable wetland resource is available to Albertans, now and in the future.

Encourage conservation of wetlands and voluntary stewardship

All Albertans are encouraged to conserve and protect wetlands through active stewardship.

Wetlands and Water for Life



Aquatic ecosystems are
Alberta's water source



Given the effects of growth pressures on Alberta's aquatic environment, an increased focus will be placed on maintaining the value and function of Alberta's aquatic ecosystems. Aquatic ecosystems are Alberta's water source. These aquatic ecosystem functions are required to maintain our ability to support drinking water and economic needs (*Water for Life: Alberta's Strategy for Sustainability*).

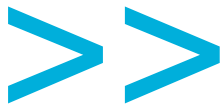
Water for Life: Alberta's Strategy for Sustainability identifies maintenance and protection of Alberta's aquatic ecosystems as one of its three goals. The finalization and implementation of a provincial wetland policy is further acknowledged as one of the key actions toward achievement of this goal. In its pursuit of this key action, the Government of Alberta has worked in ongoing partnership with stakeholders, First Nations and Métis, and technical experts from a wide range of sectors, including agriculture, forestry, environmental non-governmental organizations, oil and gas, land development, and other levels of government (municipal, federal).

The core principles of Alberta’s *Water for Life* strategy have been thoroughly considered in the development and overall design of the Alberta Wetland Policy:

Water for Life Principles	The Alberta Wetland Policy is Designed To:
Citizens, communities, industry, and government must share responsibility for water management in Alberta, and work together to improve conditions in their local watershed.	Ensure affected stakeholders and knowledgeable experts have been consulted and have had an opportunity to contribute their advice.
Knowledge of Alberta’s water supply and quality is the foundation for effective decision-making.	Incorporate the best available knowledge and science, and note gaps or assumptions where improved information is needed. Recognize and build on past efforts.
Healthy aquatic ecosystems are vital to a high quality of life for Albertans and must be preserved.	Consider both short-term and long-term effects on society and the environment, including cumulative effects and environmental net effects. Recognize the critical benefits that wetlands provide for Albertans.
Groundwater and surface water quality must be preserved in pursuing economic and community development.	Minimize risks to wetland health by ensuring that monitoring and contingency response is in place for unpredictable future risks.
Alberta’s water resources must be managed within the capacity of individual watersheds	Ensure the policy allows for regional differences in its application and implementation.
Citizens, communities, industry and government must share responsibility for water management in Alberta and work together to improve conditions within their local watershed.	Ensure that the responsibilities of managing Alberta’s wetlands are shared amongst all Albertans.
Knowledge of Alberta’s water supply and quality is the foundation for effective decision-making.	Enable the continuous development of knowledge tools around the state of wetlands in Alberta and wetland science, in general.

Wetland Management System

Several key concepts and mechanisms are crucial to the successful implementation of a provincial wetland management system under the Alberta Wetland Policy:



1. Relative Wetland Value
 2. Wetland Mitigation
 - a. Avoidance
 - b. Minimization
 - c. Replacement
 3. Knowledge and Information Systems
 4. Performance Measures, Monitoring, and Reporting
 5. Wetland Stewardship in Alberta
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1. Relative Wetland Value

Alberta's wetlands are highly diverse in form, function, use, and distribution across the province; they are not all of equal value. The Alberta Wetland Policy addresses this diversity through the concept of 'relative wetland value', which acknowledges the relative contribution of an individual wetland to water quality improvement, hydrology, biodiversity, and various human uses. The approach is one of cumulative effects management, enabling planners and decision makers to consider the broader importance of an individual wetland on the landscape. In this way, knowledge and understanding of Alberta's vast wetland diversity is incorporated into the execution of informed management decisions.

Individual wetlands perform multiple functions and provide various benefits on the landscape. The relative wetland value approach is based on the understanding that some wetlands provide more functions and benefits than others. Under the relative wetland value approach, wetlands will be compared across a common list of metrics, derived from five key functional groups.

Wetland Value Functional Groups

Biodiversity & Ecological Health

Wetlands are dynamic, complex habitats that contribute to biodiversity and other ecological functions.

Water Quality Improvement

Wetlands improve water quality by facilitating sedimentation and filtering pollutants.

Hydrologic Function

Wetlands help reduce flooding and soil erosion by storing runoff and slowing its downstream release. They are also important as areas of groundwater recharge and discharge.

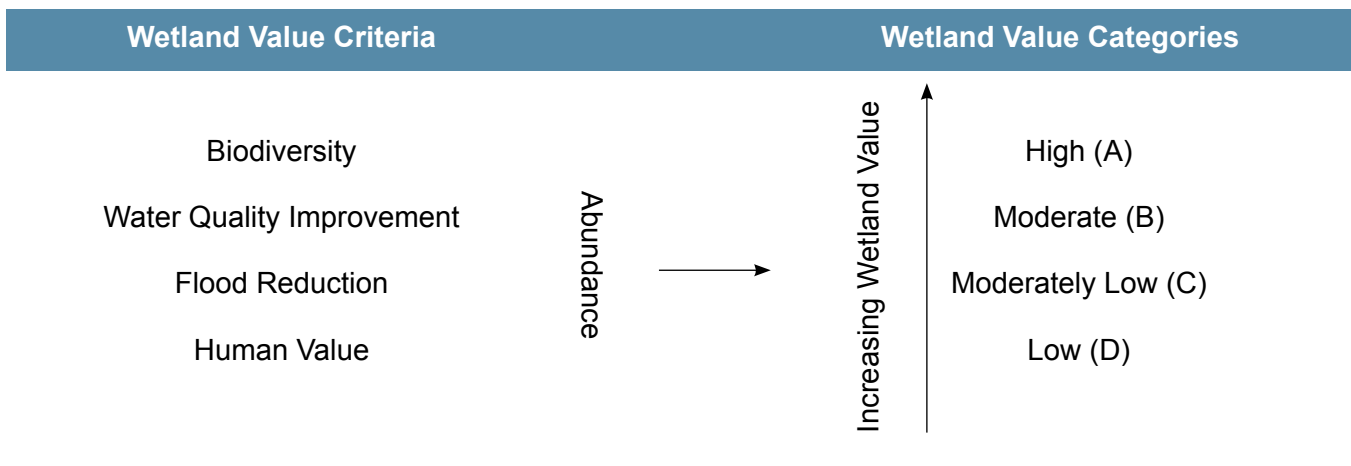
Human Uses

Wetlands support multiple human activities (e.g., recreation, and education) and have varying degrees of cultural significance.

Relative Abundance

The relative abundance of wetlands in an area strongly affects the sensitivity of an area to the effects of further wetland loss.

Based on the sum total of all metrics, wetlands will be assigned to one of four relative wetland value categories (A [highest] through D [lowest]). These categories will reflect the relative importance of a wetland on the landscape, from an ecological and human perspective. In applying this approach, the Alberta Wetland Policy will focus first on the avoidance and minimization of impacts on all wetlands, regardless of their relative wetland value category.



The relative wetland value approach will ensure informed and strategic wetland management by taking into account numerous characteristics of a wetland. It will consider a wetland within a broader context, including the landscape upon which the wetland is found, the environmental functions it performs, and social and non-consumptive economic benefits associated with the wetland. This will allow the importance of individual wetlands to be acknowledged, their contribution to the ecosystem to be better understood, and informed wetland management decisions to be made.

In keeping with a comprehensive and informed approach to wetland management, the ‘relative abundance’ component of the system incorporates aspects of current abundance/density and historical loss into the value assessment. In areas of low current abundance and high historical loss, the approach will place additional value on existing wetlands and promote both conservation and restoration as wetland management priorities. In areas of high abundance and low historical loss, the system will continue to acknowledge and promote the importance of wetlands and wetland values on the landscape. At the same time, it will facilitate a considered approach to wetland management, balancing environmental, social, and economic priorities in the execution of management decisions.

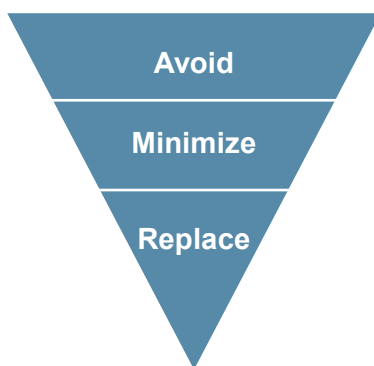
A wetland management system based on relative wetland value will help ensure that land use planners, land managers, and land developers are better informed and able to consider the broader ramifications of their decisions at early stages in the planning process. At the same time, knowledge and understanding of relative wetland value will reinforce the wetland mitigation hierarchy (avoid, minimize, replace), providing sound rationale for decisions that may require avoidance or minimization of negative wetland impacts.

2. Wetland Mitigation

Under the Alberta Wetland Policy, mitigation refers to management activities undertaken to avoid and minimize negative impacts on wetlands, and to replace lost wetlands, where necessary. The term 'Wetland Mitigation Hierarchy' refers to a three stage approach toward achievement of wetland management objectives and/or goals. The three stages, listed in order of descending priority, are: 1) avoidance of negative wetland impacts, 2) minimization of negative wetland impacts, and 3) wetland replacement to account for negative wetland impacts that could not be avoided or minimized.

As part of the regulatory approval process, the mitigation hierarchy is intended to guide management actions for the mitigation of negative impacts on wetlands. Use of the hierarchy will be informed by relative wetland value, which will provide the rationale for wetland management decisions. It will be further supported by a decision-making framework, as well as codes of practice and standard operating procedures for some commonly occurring activities.

Alberta's Wetland Mitigation Hierarchy can best be described as follows:



1. Avoidance – The primary and preferred response is to avoid impacts on wetlands.
 2. Minimization – Where avoidance is not possible, proponents are expected to minimize impacts on wetlands.
 3. Replacement – As a last resort, and where avoidance and minimization efforts are not feasible or prove ineffective, wetland replacement is required.
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Where achievable, wetlands will be replaced type-for-type; where this is not achievable, wetland replacement will seek to replace wetland value. Additionally, it is preferred that replacement take place in the area of original wetland loss.

Alberta's wetland mitigation system will be guided by ten overarching principles.

Guiding Principles of the Wetland Mitigation System

1. The primary focus of the wetland mitigation system is to sustain the full range of wetland functions and benefits.
2. The mitigation hierarchy will encompass consistent and predictable processes. It will begin with (and place the greatest emphasis on) wetland avoidance, proceed through minimization only if avoidance is not practicable, and consider wetland replacement only as a last resort.
3. Mitigation is one component of a broader policy approach to wetland management that includes planning, education and awareness, and voluntary stewardship programs.
4. The wetland mitigation system will support cumulative effects management on a landscape scale through land-use and regional planning. It will guide site specific regulatory decisions by considering place-based economic, social, and environmental priorities.
5. The wetland mitigation process will be considered in all stages of a project; from land or lease purchase, planning, siting, and design, through implementation and monitoring.
6. The wetland mitigation system will be efficient, cost effective, predictable, fair, easily understood, and publicly accessible.
7. No one group will be expected to bear the entire burden of wetland tradeoff decisions. There must be some consideration of what constitutes an equitable sharing of environmental, social, and economic costs between all groups involved, including society at large.
8. Monitoring is an essential component of an adaptive management approach. In cases where a monitoring requirement is identified, proponents will bear the cost of site level monitoring; the Government of Alberta will be responsible for monitoring and evaluation of the broader wetland mitigation system.
9. The wetland mitigation system will be adaptable, acknowledging and incorporating new information, as wetland science and public policy continue to evolve.
10. A comprehensive record-keeping system will be developed and used to maintain an administrative link between a development activity, the management decision, wetland impacts or losses incurred, and any resulting mitigation activities.

2a. Avoidance

Under the wetland mitigation hierarchy, the primary and preferred response is to avoid all impacts on wetlands. Avoidance is the most efficient and effective mitigation strategy, as it eliminates the potential risks and inherent uncertainty of other mitigation practices. Since avoidance prevents direct wetland impacts, it is typically the most desired form of wetland mitigation.

To ensure feasibility and practicality, avoidance must be enabled at an early stage in the planning process. The Alberta Wetland Policy will facilitate this through provision of a relative wetland value map, which establishes the relative value of all wetlands in the province. This map, in conjunction with a ground-level assessment tool and operational guidance manual, will support the execution of informed wetland planning and management decisions. Although the mitigation hierarchy, as presented here, is discussed in the context of the *Water Act* approval process, avoidance will also be informed by a broader regional context for wetland management.

Wetland avoidance under the Alberta Wetland Policy will be achieved on the basis of the following four key criteria.

Guiding Principles of the Wetland Avoidance System

1. Avoidance should always be the primary considerations for any activity that could have adverse effects, regardless of wetland value.
 2. In cases where avoidance is deemed impracticable and a negative wetland impact is likely to occur, wetlands of higher relative value should require stronger evidence of effort to avoid than lower value wetlands.
 3. In cases where avoidance is deemed not practicable, it is the responsibility of the proponent to adequately demonstrate that alternative projects, project designs, and/or project sites have been thoroughly considered and ruled out for justifiable reasons.
 4. The process for evaluating feasible project alternatives must be fair, efficient, and consistent, and should take into account environmental, social, and economic considerations.
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2b. Minimization

Minimization is the second step in the wetland mitigation hierarchy. It is only applied once avoidance has been justifiably ruled out as a feasible alternative for a project.

The intent of minimization is to reduce negative impacts on wetlands to the smallest practicable degree. This is meant to be achievable during any stage of development, including planning, design, construction, and operation, as well as during the execution of activities that could harm wetlands.

Minimization of wetland impacts can be achieved through a number of different mechanisms. The minimization mechanism chosen or required will depend on several different factors, including the type and relative value of wetland, the development activity, and the desired outcome. Much like wetland avoidance, minimization will be informed by the relative wetland value map, a ground-level value assessment tool, and an operation guidance manual.

The minimization of wetland impacts under Alberta's wetland mitigation system will be guided by the following eight overarching criteria.

Guiding Principles of the Wetland Minimization System

1. Minimization of adverse effects to a wetland refers to both direct and indirect effects on the physical area of the wetland, the relative value of the wetland, or a combination of both.
2. Minimization procedures and techniques should be based on sound ecological principles and best available science and technology.
3. Minimization is usually accomplished through the use of proven measures and approaches for specific activities (e.g., best management practices, codes of practice, operating standards).
4. Where minimization is to be accomplished through new and experimental approaches, activities should be carried out on a pilot basis and monitored to assess effectiveness. Proponents should not be penalized if a new or experimental approach does not achieve intended outcomes.
5. Minimization procedures should be based on continuous improvement, using an iterative or adaptive approach to advance the state of knowledge and science over time.
6. Minimization measures should remain functional as long as the project has reasonable potential for adverse effects on the wetland.
7. Monitoring may be required to evaluate the outcome of minimization activities. The cost of monitoring should be factored into any minimization process and is the responsibility of the proponent.
8. Efforts to minimize adverse effects to wetlands do not relieve the proponent of wetland replacement requirements; in the event of permanent wetland loss, despite minimization efforts, wetland replacement will be required.

2c. Replacement

Where avoidance and minimization efforts are not feasible or prove ineffective, wetland replacement is acknowledged as the last resort in the mitigation process. It will only be considered for residual impacts that were impractical to minimize or avoid and will not apply to temporary wetland impacts. If, after all practicable avoidance and minimization measures have been exercised, permanent loss of a wetland, or portion thereof, is incurred, wetland replacement will be required for the portion that is lost. Replacement requirements will be established on the basis of a) wetland area lost and b) the relative value of that area. In cases where development that results in wetland loss is subject to a reclamation plan, replacement requirements will be adjusted accordingly, taking into account the area and value of both wetlands lost and wetlands constructed under the reclamation plan.

Wetland replacement will fall into one of two overarching categories:

- **Restorative Replacement** refers to replacement activities that attempt to make up for the permanent loss of a wetland through the restoration, enhancement, or construction of another wetland.
- **Non-restorative Replacement** refers to a variety of alternatives that must support the maintenance of wetland value, by advancing the state of wetland science and wetland management. Acceptable non-restorative replacement measures include:
 - Specified research into wetland restoration measures
 - Provincial level monitoring of wetlands
 - Specified wetland inventory work and data acquisition
 - Specified landscape level wetland health assessments or modeling
 - Public education and outreach programs
 - Wetland securement for the purposes of long term conservation

Replacement can be further divided into two subcategories. The first of these is in-lieu fee payment, whereby the approval holder may choose to pay financial restitution for a wetland loss. These funds will be allocated toward specified restorative or non-restorative measures, as determined by established guidance documents. The second subcategory is permittee-responsible replacement, whereby the approval holder may choose to actively engage in restorative replacement, in accordance with criteria and guidance put forth by the Government of Alberta.

A comprehensive decision making framework, including a sound wetland research strategy, will guide the application of replacement measures. Additional criteria will direct the inclusion of constructed wetlands as an element of restorative replacement, as well as the proportion of non-restorative replacement measures that are permitted as part of a replacement package.

Replacement requirements will be established on the basis of replacement ratios. A replacement ratio determines how many hectares of replacement wetland are required per hectare of permanently lost wetland. The ratio system has been developed on the basis of relative wetland value, taking into account both the relative value of the impacted wetland and that of the replacement wetland.

The suite of replacement ratios developed by the Government of Alberta is established around a midpoint of 3:1. This ratio, which is the basis for Alberta’s interim wetland policy, is broadly recognized throughout North America. It is based on three key considerations:



1. A restored wetland is unlikely to achieve the same level of function as the natural wetland it replaces.
2. A significant time lag is expected to occur, between the moment a wetland is lost and the point a restored wetland achieves a reasonable level of function.
3. Some proportion of restored wetlands is expected to fail over time.

As the midpoint for the range of core replacement ratios (blue in the following table), the 3:1 ratio will help support the overarching goal of the Alberta Wetland Policy – to *conserve, restore, protect, and manage* Alberta’s wetlands to sustain the benefits they provide to the environment, society, and economy. At the upper end, the 8:1 replacement ratio will help incent avoidance of high value wetlands, thereby supporting Outcome #1 of the Alberta Wetland Policy – wetlands of the highest value are protected for the long-term benefit of all Albertans.

The Wetland Replacement Matrix

		Value of Replacement Wetland			
		D	C	B	A
Value of Lost Wetland	A	8:1	4:1	2:1	1:1
	B	4:1	2:1	1:1	0.5:1
	C	2:1	1:1	0.5:1	0.25:1
	D	1:1	0.5:1	0.25:1	0.125:1

*Ratios are expressed as hectares of wetland

The core replacement scheme established by the Alberta Wetland Policy, as identified in the dark blue column in the preceding table, is expressed in terms of low value, or 'D', wetlands. This core scheme will apply to all cases of *in-lieu* fee payment. For example:

1. If the loss of a one-hectare 'B' value wetland is approved, the approval holder will be expected to pay wetland replacement at a rate of 4:1, or four hectares of 'D' wetland.
2. If an approved development project results in the loss of 8 hectares of 'C' value wetland, the approval holder will be required to replace at a rate of 2:1, or 16 hectares of 'D' wetland.

In the case of permittee-responsible replacement, the Alberta Wetland Policy seeks to encourage innovation and continuous improvement in wetland restoration and construction. It does so by acknowledging efforts to restore a wetland to a higher value. For example:

1. As part of its *Water Act* approval, Company X is permitted to develop one hectare of 'B' value wetland. Normally, this would require four hectares of 'D' value wetland as replacement (4:1). However, Company X has decided to engage in permittee-responsible replacement and, through the investment of additional effort and resources, is able to demonstrably restore a 'C' value wetland. Hence, the replacement requirement will be reduced to 2:1, or two hectares.
2. Company Y has received approval to remove four hectares of 'D' value wetland in the course of developing an industrial park. Normally, this would require four hectares of 'D' value wetland as replacement (1:1). In pursuing permittee-responsible replacement on an adjacent property, Company Y is demonstrably able to restore a 'C' value wetland. The replacement requirement is therefore reduced to two hectares (0.5:1) of 'C' value wetland.

The cost of *in-lieu* fee payment for wetland replacement will be established on the basis of four key factors:



1. The average cost of wetland restoration work [established provincially].
 2. The cost of monitoring restoration success over the long term [established provincially].
 3. An administrative fee [established provincially].
 4. The average value of land within the area of original wetland loss [established locally].
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Payment of wetland replacement under the Alberta Wetland Policy will not exempt the applicant from other requirements that may be enacted under the provincial *Public Lands Act*, as it pertains to the acquisition of beds and shores of water bodies titled to the Crown.

Knowledge and Information Systems

A broad range of integrated data products will be required to support and enable the Alberta Wetland Policy.

Alberta Wetland Policy – System Needs

Provincial Wetland Inventory

An initial version of the Alberta Wetland Inventory has been developed and is available on the Government of Alberta's GeoDiscover website (www.geodiscover.alberta.ca). The inventory, which provides a listing of all wetlands in the province, is foundational to the Alberta Wetland Policy. To help ensure ongoing accuracy and applicability, the inventory will be subject to continuous improvement over time.

Provincial Wetland Value Assessment System

The wetland value assessment system is currently under development. It will provide a GIS-level assessment of value for all wetlands in the province. The resulting data layer will augment the Alberta Wetland Inventory, further enabling wetland policy decisions and providing a common foundation for land use planning activities in the Province.

Wetland Value Assessment Tool

This value assessment tool will augment the provincial wetland value assessment system, incorporating ground-level data (e.g., species composition, water quality information, etc.) into the decision-making process. It is expected that proponents and/or consultants would be the primary users of this tool. Both the provincial and site-level value assessments will be crucial to the regulatory approvals process.

Wetland Database and Reporting Tool

This publicly accessible database will act as a repository for all information pertaining to wetlands in Alberta. This will include data on wetland losses, wetland restoration, enhancement, and construction efforts, as well as wetland assessment and monitoring data. Regulatory approval information, linking wetland approvals to wetland replacement projects will also be incorporated.

Inventory of Wetland Restoration Opportunities

To enable prioritization of wetland restoration activities, the Government of Alberta, in conjunction with its partners, will develop an inventory of drained wetlands and wetland restoration opportunities in the province.

Certification Systems

Implementation of the Alberta Wetland Policy will require the establishment of clearly defined certification systems for both wetland assessment specialists and wetland restoration agencies.

Repository of Research Priorities and Needs

To enable continuous improvement of the wetland management system in Alberta, a list of wetland research needs and priorities will be established.

Education and Outreach Program

Albertans appreciate the value and importance of wetlands to the environment and human health. A comprehensive education and outreach will help ensure a common understanding of these benefits.

3. Performance Measures, Monitoring, and Reporting

The Alberta Wetland Policy, its administration, and its effectiveness will be evaluated and reported on periodically to ensure that the goal and outcomes are being met. Performance measures will be developed and used to evaluate progress toward achieving the policy goal and outcomes. The policy and its implementation will be reviewed regularly to reflect the status of the province's wetlands, and to ensure that advances in wetland science are incorporated. The system will be highly focused on key aspects of policy evaluation and adaptive management.

4. Wetland Stewardship in Alberta

The Government of Alberta encourages all Albertans to enable wetland conservation and protection through voluntary stewardship activities. The Government of Alberta and its partners will continue to work with landowners to advance wetland restoration, construction, and enhancement efforts in the Province. A wide range of initiatives, such as education and awareness, voluntary programs, and/or incentives will encourage wetland conservation, restoration, and protection activities to help sustain the benefits that wetlands provide.

Toward Implementation

The Alberta Wetland Policy seeks to incorporate a broad range of knowledge and science around wetland functions and benefits into the establishment of an informed and considered approach to wetland management. The introduction of this value-based system will necessitate fundamental changes to the province's existing wetland management program. To be fully realized, these changes will require the investment of time, expertise, and resources. A phased approach to implementation, in conjunction with an adaptive management plan, will help ensure seamless introduction of the various policy components over time. Evolving knowledge of Alberta's wetlands, their geographical extent, and the various functions they perform will be incorporated into the policy, as this information becomes available. The policy will be based on continuous improvement, incorporating new knowledge, science, and technology on an ongoing basis. Moreover, it will seek to ensure regular and timely updates of underlying data systems (e.g., inventory information) as a means of supporting up-to-date and informed decision-making.

Key components of policy implementation will include:



- An inventory of tasks that must be completed to meet the requirements of the policy and wetland value-based management approach.
- A need to identify governance structure and accountabilities, which will help establish roles and responsibilities of government (municipal, provincial, and federal), as well as proponents, other stakeholders, and Albertans.
- Ongoing evaluation of policy alignment with other policies, initiatives, and legislation, including regional planning processes.
- A timeline for implementation, including key milestones and target dates for completion.

Glossary of Terms

Avoid

To prevent impacts to a wetland by identifying an alternate project, activity, design, or site, or abandoning the project or activity altogether or by denial of an application by the regulator.

Conservation

The management of wetlands to ensure they are sustained for future generations.

The planning, management, and implementation of an activity with the objective of protecting the essential physical, chemical and biological characteristics of the environment against degradation (*Environmental Protection and Enhancement Act*).

Cumulative Effects

The combined effects on the environment arising from the combined impacts of several individual projects (Water Conservation and Allocation Guideline for the Oilfield Industry, 2006).

Ephemeral Water Body

A shallow water body that temporarily contains water after spring snowmelt or a heavy rainfall and typically dries up within a matter of days to weeks.

Temporary Wetland Impact

A negative effect on wetland function that can be restored to pre-disturbance conditions within a reasonable time frame, as established through regulatory mechanisms.

Minimize

Reducing negative impacts on wetlands to the smallest practicable degree during the planning, design, construction, and operational stages of development, and when conducting activities that may harm wetlands.

Mitigation

Management activities taken to avoid and minimize negative impacts on wetlands, and to replace lost wetlands, where necessary.

Permanent Loss

The permanent elimination of wetland value resulting from a reduction/removal of wetland area.

Relative Value

The importance of a wetland from an ecological and human perspective. Using this approach, wetlands are compared across a common list of meaningful metrics and assigned a relative wetland value category.

Wetland

Land saturated with water long enough to promote wetland or aquatic processes as indicated by the poorly drained soils, hydrophytic vegetation, and various kinds of biological activity that are adapted to a wet environment.

Wetland Replacement

Compensation for wetland value that has been permanently lost, due to human activity on the landscape. Replacement activities under the policy would include both restorative and non-restorative measures. Restorative measures may include wetland restoration, creation or enhancement. Non-restorative measures may include those activities that indirectly advance the goal of conserving wetlands and their value such as research, securement, or education programs.

Wetland Value

The importance of a wetland from an ecological and human perspective. For the purposes of the policy, wetland value would be assessed based on relative abundance on the landscape and other key criteria such as biodiversity, water quality improvement, flood reduction, and human values, such as recreation, education, and cultural significance.