1. **Background Statement**

Alberta classifies wetlands into bogs, fens, swamps, marshes, and open water; 90% of the wetlands in the province are peat. Wetlands occupy about 20% of Alberta’s land area, which translates into about 117,400 km2 (Government of Alberta, 2013). The province has lost about 50-70 percent of its wetland area because the value of wetlands was not widely understood, and the ecosystem was seen mostly as nuisance or wastelands, especially on agricultural lands which accounts for most of the wetland degradation in the province. However, in the start of the 21st century, Alberta is increasing designing policies or regulations to protect these important ecosystems; some of the important wetland related policies are discussed next.

The Wetland Management in the Settled Area of Alberta: An interim Policy was designed in 1991 to protect wetlands, especially sloughs and marshes, in the settled areas (White region) of Alberta (Alberta Water Resources Commission, 1993). Specifically, the policy sought to manage wetlands by focusing on the following priorities (in descending order of importance) (Alberta Water Resources Commission, 1993):

1. to conserve wetlands in a natural state,
2. to mitigate degradation or loss of the wetlands and their benefits as close to the site of disturbance as possible,
3. to restore degraded wetlands.

The policy recognized that wetlands in the province were not the same and sought to apply different wetland management rules in different parts of the province (Alberta Water Resources Commission, 1993).

The Wetland Management in the Settled Area of Alberta: An interim Policy applied to half of Alberta lands. This means wetlands in the other half of Alberta (Green region) had no protection from drainage. Other policies, acts and regulations worked in concert to protect wetlands in the Green areas of Alberta (or Crown lands). The Water Act regulates any activity that disturbs or degrades a wetland through a permit system (Clare and Krogman, 2013). Under this Act, the government of Alberta or the Crown has the right to all water bodies, including wetlands, in Alberta. The primary goal of the Act is to “support and promote the conservation and management of water, including the wise allocation and use of water” (Government of Alberta, 2021). The Public Lands Act provides the legal basis for the governance of public lands in Alberta, which is about 60% of the land area of Alberta (Government of Alberta, 2015). Environmental Protection and Enhancement Act provides the regulatory framework for the management of air, water, land, and biodiversity in Alberta towards the protection, enhancement, and wise use of environmental resources. All projects impacting Alberta’s air, land and water environmental resources are reviewed for their potential environmental impacts and are approved or denied. Specifically, the Act mandates that projects in the following groups: conservation, potable (drinking) water, substance release, waste management and miscellaneous (pesticides, designated materials) must seek approval before their commencements (Government of Alberta, 2022). The overarching goal of all the Acts above is to protect the environment, including wetlands, for sustainable development in Alberta.

The Alberta Wetland Policy provides unifying framework that brings together all the Acts discussed about to specifically protect wetlands in all areas of Alberta (Green and White regions). This is important because the province by this policy has acknowledged and placed wetland ecosystems into a distinct environmental resource category that needs protection. The policy supports the avoidance, minimization, and restoration rule of wetland protection. Avoidance means that, if possible, all activities that may alter wetlands’ ecosystem must be avoided; minimization means that if avoidance is not possible, the potential devastation to the ecosystem must be minimized through activities such as best management practices; restoration means that if avoidance and minimization are not possible, wetland areas or portions thereof that are degraded must be replaced.

Wetland replacement requirements are influenced by the wetland area loss and relative value of that area (Government of Alberta, 2013). Wetland values are classified into A, B, C or D scales; whereby A has the highest ecosystem values and D has the lowest ecosystem values reflecting hydrological health function, water quality function, ecological health function, and human use function of wetlands (Asare et al. 2021). As the names of the characteristic imply, the RWV measures ecosystem functions not ecosystem services that can form the basis for monetary valuation. Lacking more detailed information on ecosystem services, we use the RVW metric as a proxy.An agent who has degraded a wetland area or portions of it can choose to pay an in-lieu payment, which is a financial cost that will act as a restitution for the loss wetland area and its functions; alternatively, the agent may choose the permittee-responsible replacement, which involves the actual replacement of the wetland area and functions according to the requirements of Government of Alberta (Government of Alberta, 2013). Further, with the permittee-responsible replacement option, the agent must follow replacement ratios (Table 1) to know the area of wetland to restore for a given value of loss wetland area. For instance, if an acre of a class A is degraded, an agent will need about 8 acres of class D wetlands to replace it; this mechanism will ensure that Alberta’s highest valued wetlands are protected for sustainable development (Government of Alberta, 2013).

**Table 1. The Wetland Replacement Matrix**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Value of Replacement Wetland** | | | | |
| **Value of Lost Wetland** |  | A | B | C | D |
| 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 |

**Source: Government of Alberta (2013**

By the full implementation of the Alberta Wetland Policy all wetlands in the province will be protected from degradation. This will ensure that Albertans will continue to enjoy the essential services that wetlands provide, but at what cost, especially to agricultural sector in Alberta? In the next section, we will explore methods that can be used to estimate the cost of implementing the wetland policy to the agricultural producer.