



**AN AGRICULTURAL WATER USE POLICY FRAMEWORK
FOR PRINCE EDWARD ISLAND
AS DEVELOPED BY
THE PRINCE EDWARD ISLAND CERTIFIED ORGANIC PRODUCERS COOPERATIVE (PEICOPC)**

DECEMBER 2021

BACKGROUND

For more than eighteen (18) years there had been a moratorium imposed on the construction of high-capacity wells to be used for agricultural irrigation on Prince Edward Island (PEI). The intent of the moratorium was to control potential high-volume extraction and to protect the province's groundwater supply. There has been no clear evidence this policy decision achieved its original goals and in June 2021 a draft amendment to the Province's Water Act was made to allow for the construction of high-capacity wells for agricultural irrigation (subject to an approved irrigation strategy). This amendment has created an opportunity for the agriculture industry on PEI to step into a leadership role, providing guidance and input into how ground and surface water resources can be effectively utilized, managed and protected. This document describes a policy framework for agricultural water users that addresses their responsibility to use, protect and conserve a valuable public resource.

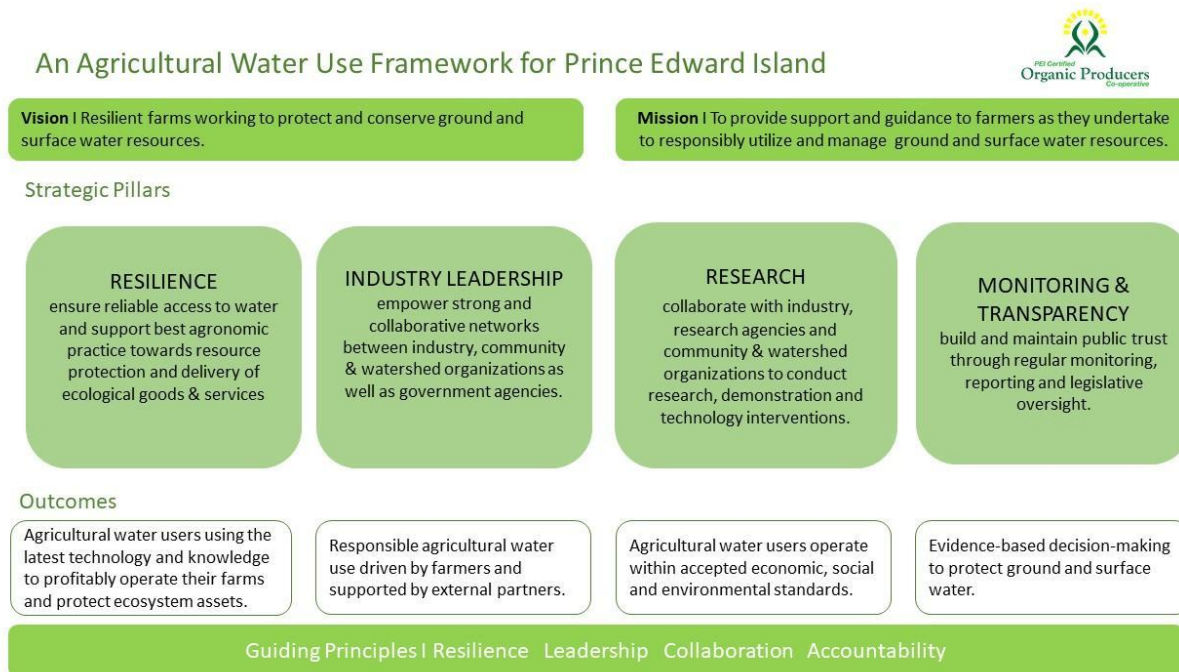
GOALS OF THE FRAMEWORK

Water is an essential input in all food production systems, whether for livestock or field crops.. Without access to water, farms are not functional and our food supply becomes vulnerable. Over the past 30-50 years farms, on PEI, relied almost entirely upon rainfall as their primary source of water for crop production. Not until the last 20 years has the demand for supplemental irrigation increased, and based upon projections from local climate scientists it is expected to continue on this trajectory. However, suggesting supplemental irrigation as a singular solution to water shortages and anticipated drought conditions will only serve to create a dependency on the practice and fail to examine more holistic approaches to ensuring sufficient access and supplies of water to farms across the province.

The benefits of irrigation are well understood. It improves crop productivity, has the potential to stabilize the economic performance of a farm and can improve nutrient use efficiency, thereby protecting groundwater from nutrient leaching. The negative impacts are, somewhat in the converse, with increased potential for soil salinization, salt water intrusion, depletion of ground and surface water resources, negative ecosystem impacts and nutrient leaching due to over-fertilization. The necessary capital investment in currently used irrigation systems often limits use to larger more consolidated farms and perpetuates some of the real and perceived disparities between agricultural sectors. Recognizing and overcoming these potential negative impacts is essential to the development of sound agricultural water use policy for PEI.

This framework proposes to address these challenges and identify policy tools and supports that will ensure the resiliency of Island farms in the face of climate change while working to protect and conserve ground and surface water resources.

This will be achieved through the development of a broad suite of agronomic, empirical and public policy tools focused on resilience, industry leadership, ongoing research and accountability.



KEY ELEMENTS OF THE FRAMEWORK

Resilience

The goal of resilience is to create an environment in which farms can successfully operate while ensuring the sustainability of the ecosystem upon which they rely. Resilient farms not only utilize, but must protect and enhance soil, water and forest resources across the entire farm landscape, all within a changing climate. If the goal, in this instance, is to ensure adequate supply and quality of water for use on farms, multiple agronomic, water conservation and other landscape practices must be considered and put into place. There are several practices that are proven to increase or maintain soil moisture content and reduce the need for irrigation such as: ecosystem protection; maintenance of forest or tree cover; extended crop rotations and crop diversity; year-round soil cover (with high residue cover crops); increased soil organic matter (SOM) levels; high organic matter/ carbon inputs (i.e. compost); alley cropping; use of adapted crops and cultivars with reduced water requirements or improved drought tolerance and shorter growing seasons; and implementation of irrigation technologies which promote water use efficiencies both in application and crop uptake. Careful management of nutrient inputs and irrigation timing are also necessary to protect ground and surface water quality. Given these considerations, an enforceable and manageable regulatory framework (below) must be established and begins with the development of a

rigorous water extraction permitting process and ends with the ability to withdraw permits for non-compliance.

Permit Requirements | Irrigated Fields and Farms

GOVERNMENT

The Water Act informs all water allocations and end-user requirements

- issues water extraction permits
- establishes permitting requirements
- withdraws permits when non-compliance

Water allocations will not exceed what is available for the watershed, and local watershed organizations will be informed of the permitted extraction

FARMERS

Two-tiered permitting process with focus on whole-farm resource management

- Permits will be issued if the farm has in place an up-to-date Environmental Farm Plan (EFP) and Forest Management Plan (FMP).
- A Nutrient Management Plan (NMP), Soil Health Improvement Plan (SHIP) and Irrigation Scheduling Plan (ISP) must be in place for each field proposed to be irrigated.

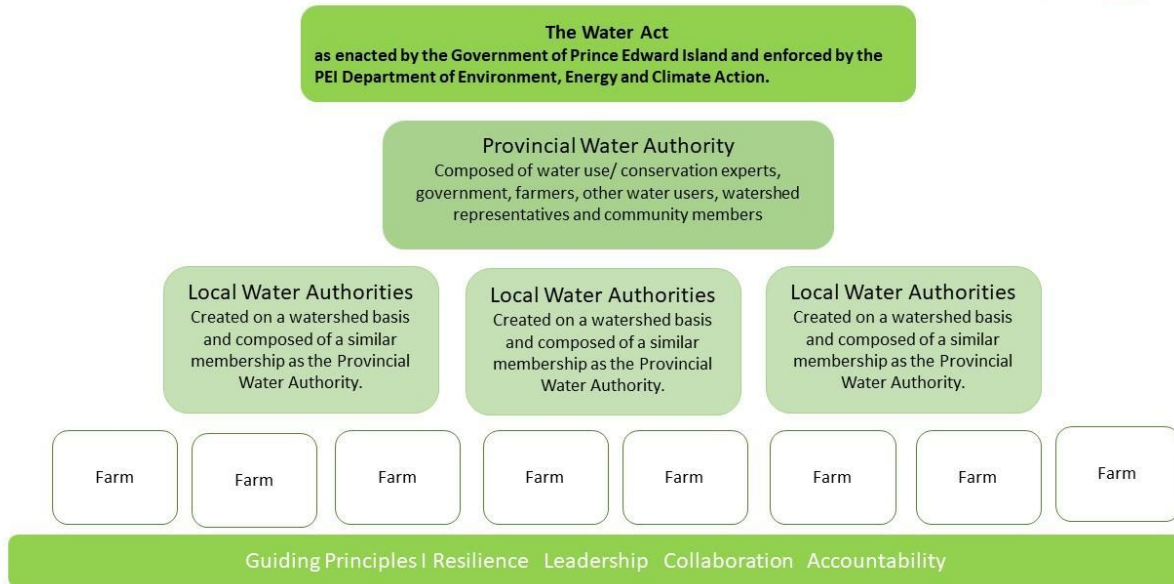
Permits will be issued if the farm has in place five required (those with *) and an additional 3 (total 8/12) of the following agronomic practices in the fields to be irrigated:

1. minimum 4-year crop rotation*
2. expanded buffer zones*
3. hedgerows*
4. grassed waterways*
5. use of water efficient irrigation practices and technology (i.e. timing, nozzles, drop lines)*
6. soil conservation structures
7. year-round soil cover
8. reduced tillage
9. spring ploughing
10. use of soil-building crops
11. use of high organic matter soil amendments (i.e. compost, green manure)
12. use of drought-tolerant and/or shorter season crops/cultivars

Industry Leadership

Given that water is considered a public good and that no matter wherein and by whomever any water extraction takes place, protection of the resource is in some part a public duty. The Water Act provides an overarching legal framework that defines permitting, planning, withdrawal and discharge protocols aimed at protection. The Water Act is, in essence, the first line of defense and general authority for ground and surface water management and protection on PEI. It is within this legal framework that farmers have the opportunity to exercise and demonstrate leadership in resource management. That being said, farmers are not the sole water users in any watershed area, and ground and surface water resources are public goods, therefore, the entire watershed community should share the responsibility for sound management and protection. What follows is a schematic of how government, external experts, farmers, and watershed and community organizations can organize towards achieving those goals.

Resource Protection | Governance Structure



This type of organizational structure can allow farmers in their communities, and through their local water authorities, to work collectively to:

1. develop watershed plans and water budgets for all water users in the geographic area, that consider water availability, agronomic practice and ecosystem outcomes.
2. use available expertise to contribute to water resource decisions (including decisions on permits to ensure equitable access).
3. assist in the development of agroforestry plans to coordinate forest plantings, harvests and other activities to enhance water quality, improve carbon capture, and impact wind patterns to improve water conservation across entire farmscapes within the watershed area.
4. secure public investments in collective irrigation infrastructure that will facilitate more equitable access to water for more farms and improve the efficient collection and transport of water to agricultural fields.
5. develop water-shed based drought contingency plans.
6. lead ground and surface water monitoring activities.

Farmers, within their local water authorities, in practice, would work to ensure adequate supply and quality of water for irrigation and use on farms. Multiple water collection and delivery practices would be considered and put into place, such as: spring groundwater extraction (when supply is high) and storage for later use; application of irrigation water before the crops are under drought stress to reduce overall need; use of more efficient irrigation methods and technologies; and, collection of spring runoff, snow melt and summer rainfall into naturalized holding ponds.

The Provincial water authority would provide broad guidance, higher level oversight and expertise to the local authorities through:



1. creation of a Provincial Irrigation/ Water Use Specialist position
2. development of an expanded weather data collection and reporting system.
3. coordinated water monitoring

Research

To support the water authorities and their decision-making abilities, ongoing participatory research must be conducted and coordinated, specifically as pertains to the following:

1. availability of groundwater resources in multiple watersheds across the province.
2. alternative methods of accessing water for irrigation i.e. desalination.
3. effective water allocation and pricing models for agricultural irrigation.
4. environmental flows.
5. soil health and organic matter.
6. ground and surface water quality – nitrates, salinity.
7. improved water capture, collection/ withdrawal and irrigation technologies.

Research programming should be participatory in nature ensuring both farmers and local watershed organizations are actively involved.

Monitoring & Transparency

According to a recent *Irrigation Strategy* document released by the PEI Department of Environment, Energy and Climate Action (PEIDEECA), *The Water Act strives for improved transparency on water management with Island residents*. To achieve this, the Water Act mandates a water registry which is currently under construction. PEIDEECA proposes it will list the holders of Water Withdrawal Permits, their permitted amounts and the amounts that they use. It will also show the status of watershed health and identify the issues that stress them. Water availability by watershed will eventually be added to the water registry as well as water quality data, relevant scientific reports and annual state of the water reports.

It is further proposed that the registry will include such information as current groundwater levels and stream flow. Tracking this information is critical to both determining what is an appropriate amount of water to use in a watershed but also acts as a double check to confirm that usage and its impacts are staying within acceptable limits.

It is proposed that specific monitoring activities as follows, be also included in the Provincial Water Registry:

1. institution of real-time, on-farm water extraction monitoring and reporting protocols.
2. undertake ongoing water and soil monitoring, feeding into a long-term water use and access research program
3. on-farm groundwater and surface water extraction monitoring and record keeping.
4. watershed-based monitoring to efficiently and appropriately measure, monitor and assess the impacts of all significant human activities on the water shed, including high-volume agricultural water withdrawals.



Given the precious nature of the province's groundwater resource, all possible practices and actions must be explored and undertaken to ensure its conservation and reduce the need for supplemental irrigation. It is incumbent on all water users, as well, to better understand the nature and availability of the resource, undertake to manage it appropriately and recognize its value. It is due time that a comprehensive water use strategy be developed with the goal of ensuring sufficient supply of safe, clean water for future generations of Islanders.