

2011



Stratford Area Watershed Management Plan

Under revision in 2013

This **Watershed Management Plan** is the result of extensive input from community members. Further comment is always appreciated, and is necessary for the continued success of the Stratford Area Watershed Improvement Group.

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Thank you for your support

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EXECUTIVE SUMMARY

The Stratford Area Watershed Improvement Group (SAWIG) Management Plan is being developed to serve as a guide to managing the area's natural resources while maintaining environmental and economic sustainability. This plan will reflect the desires of the Stratford and Alexandra area communities. The development of a Watershed Management plan will be an ongoing project in order to echo the needs of the communities.

With all aspects of life depending on the health of an area's water resources, it is imperative that every effort be made to enhance and improve water quality. All flora and fauna in the region are connected to the watershed, and any activity performed; therefore, has an impact on the entire system. Given this interconnection, it is crucial the plan includes all facets of the environment.

This Watershed Management Plan consists of five key sections. Firstly, the **Introduction** provides a history and geography of the Stratford area, as well as the process that led to the establishment of the Stratford Area watershed group. Secondly, the **Watershed Planning Process** details the method by which the needs and concerns of the community translate into the Watershed Management Plan. Thirdly, **Recent Activities** recounts the accomplishments of the group from October 2008 to present-day. Next, **Goals, Objectives and Strategies** are grouped according to the group's focal points:

- 1 – Parks and Public Places (shade tree planting, buffer zone enhancement, biodiversification)
- 2 – Baseline Ecosystem Information (Community Aquatic Monitoring Program)
- 3 – Large Landscape Issues; Coastal, Aquatic, Agricultural and Forested (Acadian Forest restoration, stormwater management, wetland protection)
- 4 – Public Education and Engagement (environmental awareness and community participation)

This living document outlines specific characteristics and problems raised by the Stratford Area community. Each issue includes detailed strategies that will be implemented to address the concerns of the watershed stakeholders; these strategies range from immediate (1-3 years) to long-term (5+ years).

Watershed planning and **Implementation** is an ongoing process that requires frequent attention and input from community residents, organizations and businesses. The success of the watershed group is based on collaboration between the Stratford area, the Board of Directors, the municipality and all levels of government.

The following Vision Statement was identified by the Stratford area watershed community:

Vision Statement

“As a community working together toward the preservation and enhancement of Stratford's diverse landscape and natural habitat, the Stratford and Area Watershed Improvement Group will foster interest and participation in watershed planning. Stratford and Area Watershed Improvement Group envision that as a community, area residents will work together to sustain the quality and quantity of fresh water available for the benefit of future generations.”

1.0 INTRODUCTION

The town of Stratford has a long and celebrated history, dating back to the 1750's when several Acadian families settled in the Bunbury area. Although predominantly an agricultural region, other early activities relied heavily on Stratford's water resources, included ship building, brick making, a shingle mill and a dairy pasteurizing plant. Eventually, non-farm developments emerged in the vicinity of Ferry Point. The transportation and commercial focus of traffic changed with construction of the Hillsborough Bridge to a new location one kilometer northeast in 1905.

Figure 1 Hillsborough River, 1950's



The Town of Stratford was incorporated in 1995, and Stratford is now the fastest growing municipality on PEI, with a population of more than 9400 persons (as of 2012).

Stratford has become the third largest municipality; however, commercial and residential developments have affected both water supply and quality, with increased siltation and nitrate levels in the town and surrounding areas.

Figure 2 Stratford Area



Stratford Area Watershed Improvement Group (SAWIG) was incorporated in 2009 by a group of community members concerned with the health and sustainability of the Stratford area watershed. The process began with regularly held meetings among interested area residents. These included members of the agricultural sector, landowners, government representatives, as well as various local organizations and businesses. The result of public meetings was a list of concerns and goals to be addressed by the watershed group.

2.0 ACCOMPLISHMENTS

Since the recent incorporation of SAWIG, several events and projects have taken place with the idea of engaging the public and interacting with the communities. Listed according to the watershed group's main goals and objectives, some of the key accomplishments include (but are not limited to):

Public Education

- An initial watershed information meeting was held in October 2008 to introduce the group to the community.

- In 2009, two bus tours were organized; approximately 40 people were educated as they toured Stratford's natural resources and wildlife habitats.
- In July 2009, a Watershed Coordinator was hired to begin researching and writing the Management Plan for SAWIG.
- SAWIG participated in three Stratford Community Expos since 2009
- A meeting of the large landowners in the Stratford area was held on October 6, 2009
- A roundtable discussion was held for the public on October 20, 2009, touching on various issues ranging from buffer zones and wetlands in Stratford, to sedimentation and the effects of extreme weather events on the municipality.
- An information brochure was designed for distribution to the public. This is available at the Stratford Town Centre and at watershed events, and is updated on a regular basis.
- SAWIG officially joined the PEI Watershed Alliance
- SAWIG has hosted three Annual General Meetings since 2009
- Gary Schneider led a guided nature trail tour at Clive Stewart's Acadian Forest stand on October 23, 2010
- A Cotton Park sub-committee was developed, with it's initial meeting held on November 4, 2010
- The Watershed Management Plan was ratified and is available at the Town Hall
- SAWIG has hosted a variety of public information sessions; topics include wildlife, Acadian Forest species, watershed planning, and research opportunities

Figure 3 Bus Tour, Spring, 2009



Figure 4 Students at First Annual "Water School"



the town to introduce water conservation initiatives into Stratford

- Hazelbrook joined the Stratford area watershed group in 2012
- SAWIG and partner Town of Stratford host a week-long "Water School"; hundreds of Grade 5 students were brought to the town centre in spring, 2012 to learn about water conservation and watershed education in an interactive and activity-based environment

- A public meeting took place in Pownal in winter 2011 to introduce the group to residents of Hazelbrook, Pownal, Seal River, Vernon River and Earnscliffe watersheds; 45 people attended this information session

- A well-attended guided beach walk was organized in fall 2011

- The watershed group joined the ever-growing social media community by developing a website, Facebook and Twitter profiles

- SAWIG is partnering with

- The birdhouse, bathhouse and newly added birdfeeder giveaway program has been in place from 2010-2012. The birdhouses and birdfeeders are constructed by Carpentry students at Charlottetown rural High school; the bathhouses by a private homeowner
- The watershed coordinator gave a presentation on the Acadian Forest to the Stratford Army Cadets, fall 2012
- Led by Vice-President and well known photographer Winston Maund, SAWIG hosted a fall photography workshop, with a winter workshop planned for 2013

Parks and Public Places

- The first watershed cleanup was conducted at Pondside Park in November 2008, where residents braved the cooler temperatures to remove litter and debris from the park.
- One side of the avenue has been planted at Tea Hill Park since fall 2009
- 70 native trees and shrubs were planted at Reddin Park in May 2010 by Department of Environment summer students, along with a park cleanup

Figure 5 Tree Planting Day, September, 2012



- 30 trees and shrubs were planted by the field house at the Stratford Soccer Complex in May 2010; an extensive cleanup was simultaneously conducted

- Tree planting and trail design is ongoing within various parks in the Stratford watershed; this is a joint endeavor with MacPhail Woods Ecological Project. Some parks which have benefited from this partnership include Pondside Park, Cotton Park, Reddin Park, Keppoch Park, MacNeill Fields, Camp Gencheff,

and Bellevue Park

- Two successful volunteer days were held at Cotton Park between 2010-2012, where over 25 volunteers planted 75 native trees and installed 30 birdhouses and bathhouses
- Community gardens are being developed for the Town of Stratford
- Bus Gay was the recipient of the first annual SAWIG Environmental Award for his contribution to the Keppoch Park plantings
- Birdhouses and bathhouses were erected in Pondside Park in summer 2012
- SAWIG participated in the Great Canadian Shoreline Cleanup at Tea Hill Park in September, 2012

Large Landscape Issues: Coastal, Aquatic, Agricultural and Forested

- Tree planting in the buffer zone at Jenkins Pond (downhill from Clearview Estates on Trans Canada Highway) took place in May 2009 by over 100 volunteers, many from the Stratford area.
- Carpentry students from Charlottetown Rural High school constructed 28 birdhouses for community distribution
- 2100 seedlings were planted on Jack Reddin's property using the Hedgerows and Buffer Zone Program

- The Stratford Area Watershed Improvement Group joined with three other local watershed groups to form the Hillsborough Area Watershed Cooperative in 2011

Figure 6 Community Outreach



several weeks of tree planting in 2011

- Stream restoration has been taking place in a variety of waterways since summer 2011
- Wetlands have been identified for enhancement and restoration in 2011
- Community Outreach coordinator contacted and discussed environmental concerns with over 90 landowners, farmers and fishermen from January-March 2011
- Canada World Youth participated in thousands of seedlings, trees and shrubs were planted at Jenkins Pond from 2011-2012
- As a 2011 PEI Environmental Award recipient, Clive Stewart was given provincial recognition for his reforestation and biodiversification work
- Jenkins Pond berm was repaired in 2011; this was completed to maintain the water body
- The second annual Free Tree Day was held in May 2012, over 550 trees have been given to residents and interested parties since 2011
- SAWIG is participating in the longitudinal study with UPEI; this study seeks to identify threats from climate change. This is relevant to both coastal and inland regions of the watershed
- Tree planting took place at the newly developed wellfield; over 300 trees and shrubs were planted by volunteers and cadets

Baseline Ecosystem Information

- A nitrate clinic was held in June 2009 in Alexandra. Forty-one samples were submitted for testing from landowners in Hazelbrook, Stratford, Mount Stewart, Village Green, Pownal, and Alexandra
- In August 2009, a crew from Environmental Future's Program assisted in conducting the first buffer zone assessment in the tributary located behind Pondsides Park
- The watershed coordinator participated in a variety of training courses, conferences and symposiums since fall 2009
- The watershed coordinator developed a comprehensive Natural Heritage Study for the Town of Stratford
- Buffer zone assessment was conducted in all tributaries throughout the Stratford Area watershed. This was accomplished by the watershed coordinator, summer crews, and the Environmental Applied Science Technology students from Holland College. Hazelbrook remains the only community that requires assessment
- SAWIG participated in a Master's research project on *Watershed Governance* through the University of Manitoba
- SAWIG is participating in a Cultural Values Mapping Project with the University of Prince Edward Island

Figure 7 Buffer Zone Assessment, 2011



- SAWIG is participating in an honour's thesis project with Conor Leggott, student at University of Prince Edward Island
- An extensive Coastal Zone Assessment was completed in summer 2012
- Dalhousie University Master's Student is assisting the group in garnering baseline data for the Pondsides sub-watershed system. This information will prove invaluable for the multi-phase restoration project developed by the watershed group for this area

3.0 WATERSHED PLANNING PROCESS

Although harm has been done to local environment in the past, the present is an encouraging sign of things to come; Island communities are becoming increasingly interested in preserving their water resources. This interest leads to the collaboration of residents, thereby resulting in goals and ideas found in (this) community-approved Watershed Management Plan.

Figure 8 Annual General Meeting, 2012



Cooperation between all participating members is crucial in the planning process, as well as in the subsequent implementation. This management plan is the result of a number of public meetings, workshops, and community events held from 2008 onward. From the beginning there were strong efforts made by the group to include members of the Stratford area in the process. People like to

feel included; suspicion and resentment develop when decisions regarding one's own community are made without the local input. Efforts to attain the concerns and opinions of the residents, businesses and key stakeholders were increased in the fall of 2009, when a series of public meetings and events were hosted by SAWIG. These sessions included topics ranging from the watershed planning process to buffer zones and stormwater management in a municipality. In addition to the public events, a meeting of the large landowners was held in October 2009. It is anticipated that the level of involvement and participation demonstrated by the community over the last 2 years will continue and expand in the future.

Continuous communication via phone calls, visitation, and emails has enabled the coordinator to effectively incorporate concerns and topics raised by residents, businesses and local organizations into the watershed management plan. This living document will be regularly updated to reflect the needs and visions of the Stratford area. Communication is always encouraged and it is understood the plan is, in essence, written by the watershed community rather than the group. The watershed coordinator's task is to organize the goals and strategies and present it to the community for final approval and ratification.

In addition to the ongoing community ratification and growing support within SAWIG's boundaries, a need has arisen to branch out and include neighbouring communities in the group's planning and implementation. It is the hopes of the province that all island watersheds are covered under a watershed group, and the south shore is no exception. Pownal currently does not have active watersheds; the Stratford watershed has begun the process of community outreach and kitchen table discussions. The results have been encouraging, and with long-term

communication, public meetings, and education sessions, SAWIG will expand its borders to join with/partner with Pownal as it has with Alexandra, Fullerton's Creek South and Hazelbrook.

4.0 STRATFORD AREA WATERSHED

The Stratford Area Watershed is situated on the South Shore Peninsula, across the Hillsborough River from Charlottetown, Prince Edward Island. Stratford is an estimated 22km² (5230 acres), and approximately 40km² including Alexandra, Hazelbrook, and Fullerton's Creek South.

The geographic area is land bounded by Fullerton's Marsh, Hillsborough River, Charlottetown Harbour and Northumberland Strait, extending as far east as the municipality of Hazelbrook. Topography and geographical features are diverse, with approximately 50km of buffer and coastal zones, 0.089km² (22 acres) salt marsh, and 0.14km² (35 acres) wetland.

The landscape of the Stratford area varies greatly. The elevations rise to 88.7 meters along the southern coast of Stratford and Alexandra; there are also areas of high slope adjacent to several tributaries in Fullerton's Creek. Rolling hills, a significant number of watercourses and kilometers of coastline demonstrate the region's broad spectrum of topography.

Land use in the area varies, depending on the sub-watershed. Wetlands constitute a small area of the watershed as a whole, but vary from 1% (Rosebank) to 13% (Alexandra). Urban land use makes up 37% of Rosebank's area, but only 1% in Fullerton's Creek. The watershed is an assortment of agricultural land, forest stands, urban and commercial properties, and private residences. It should be noted; however, that the issues of the watershed varies depending on the concerns and land use of the individual sub-watersheds. Land use of individual sub-watersheds is available in Appendix B.

Figure 9 Aerial View of Stratford Area



Figure 10 Sub-Watersheds of Stratford Area (December, 2012)

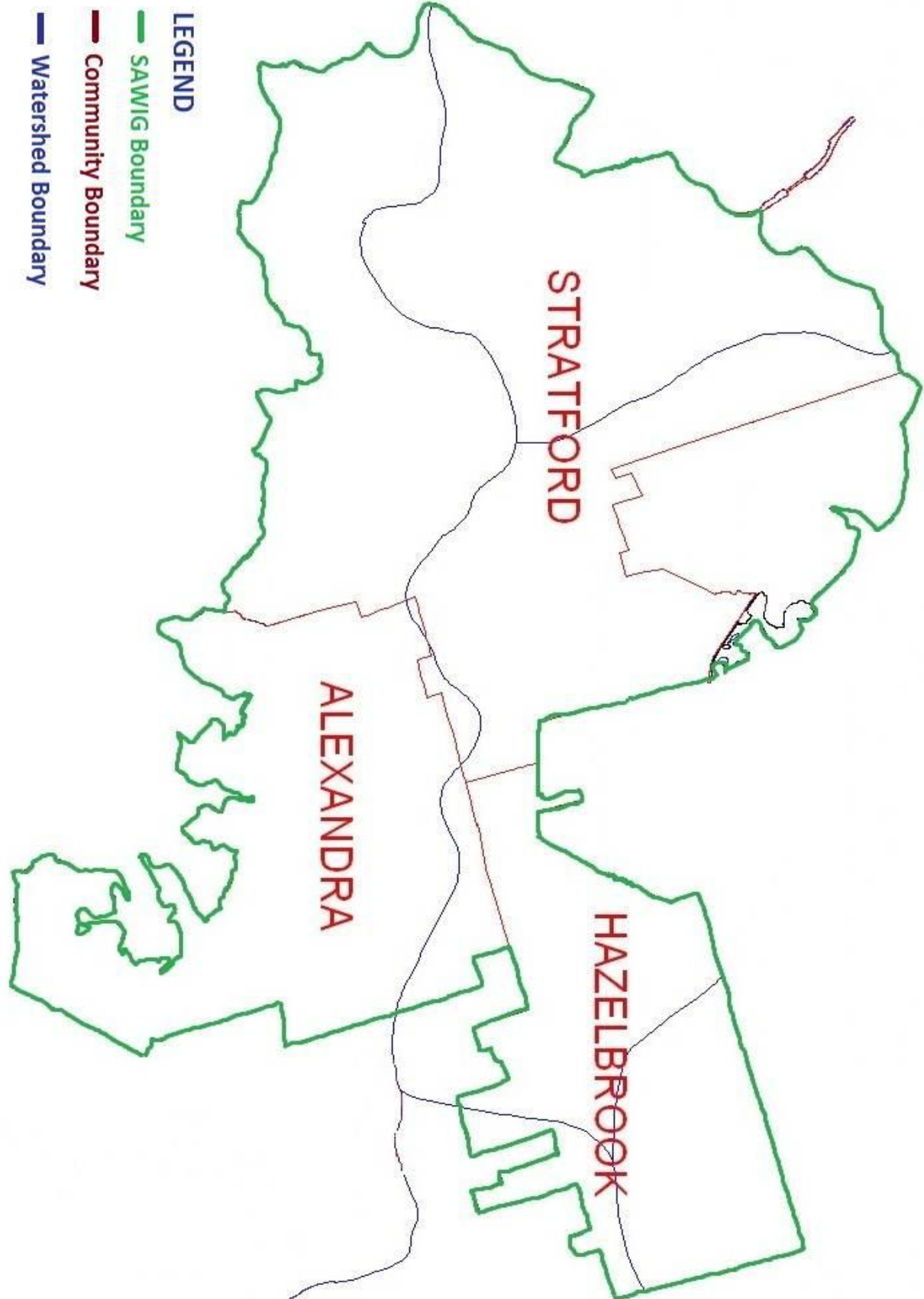


Figure 11 Map of Land Use and Topography in the Stratford Watershed

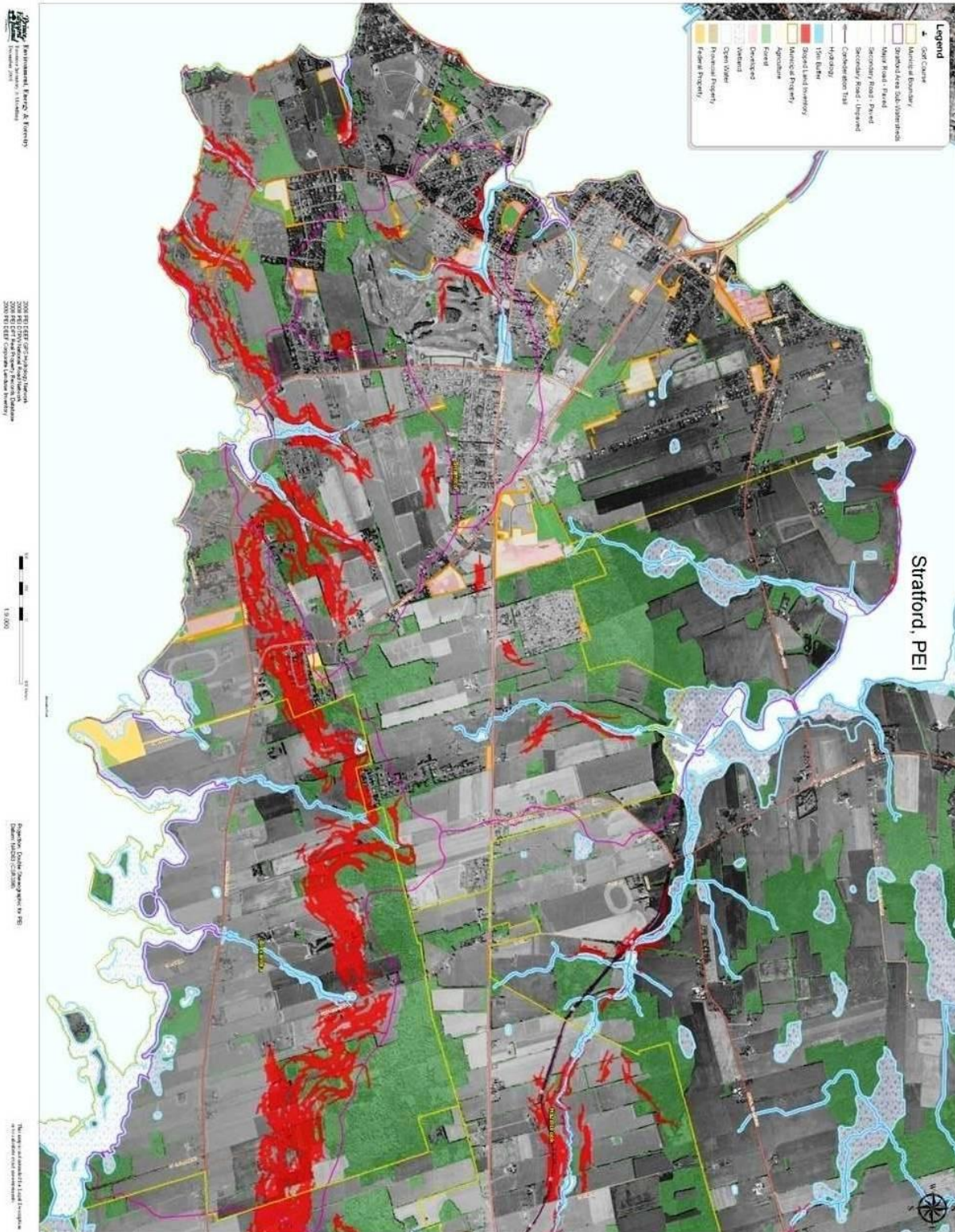
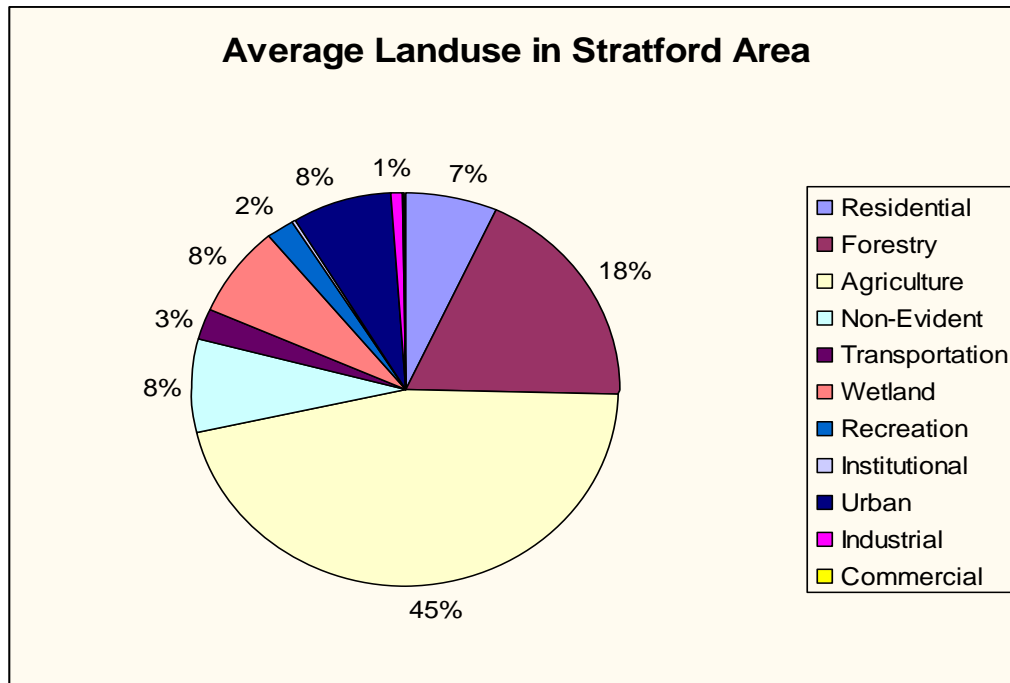


Figure 12 Land use in Stratford Area



Land use within the Stratford area watershed is primarily residential; approximately 3500 residential units have been built in the municipality alone. Commercial land use is also increasing, with a business park adjacent to the existing industrial area of the community. Agricultural land use is present in Alexandra, Hazelbrook and Fullerton's Creek South.

5.0 GOALS, OBJECTIVES AND STRATEGIES

In order to formulate both an effective and realistic plan for the Stratford area watershed, the strategies must be broken down into varying timelines. All strategies were prioritized as immediate action items to be addressed (*within 1-3 years*), mid-term action items (*3-5 years*), and long-term action items (*5+ years*). The long-term goals often involve discussions and cooperation with all levels of government and/or require more extensive funding.

The objectives and strategies identified in the watershed management plan are within the capability of the Stratford Area Watershed Improvement Group Inc. As situations change within the watershed, so too will this plan. It is a stepping stone for the evolution of the shift in environmental awareness of the community as a whole.

GOAL - PARKS

Green spaces and parks are becoming increasingly important as more and more people inhabit urban areas. The Stratford area is home to a large number of parks, ranging from small open spaces within subdivisions, to large multi-use areas utilized throughout the seasons.

5.1 ROBERT L. COTTON MEMORIAL PARK/DUCKS LANDING POND

In 1946, Robert L. Cotton established the Cotton Trust Memorial Nursery due to concern over declining natural beauty on Prince Edward Island. The nursery blossomed, and became a major source of planting material until 1996 when its doors closed. In 1998 the Town of Stratford obtained ownership from the provincial government, and the 17.4 acre property was renamed the Robert L. Cotton Memorial Park. The area was deemed a recreational and natural area. The park presently offers an impressive variety of shrubs, flowers, and both coniferous and deciduous trees. The walking trails are well used by the community, and there are several clubs that host a wide range of activities within the park; these groups include the Mayflower Senior's Club and the Youth Can-Do group. Both of these organizations have added greatly to the use and appreciation of the park.

Figure 13 Cotton Pond



The park is presently attractive to wildlife. During the summer months, blue jays, song sparrows, chickadees, woodpeckers, warblers and gulls can be seen throughout the park. With the presence of shrubs and larger trees, nesting sites are in abundance.

One of the focal points of Cotton Park is the pond situated close to the Bunbury Road. Little wildlife inhabits Cotton pond due to its small size and lack of cover; there have been occurrences of algal blooms due to overheating. This pond has silted in over the years, and the eastern portion dries up throughout the summer months; over half of the pond was absent of water in summer 2012.

Figure 12 Cotton Park



Ducks Landing Pond is situated behind the Stratford Town Hall, just off Ducks Landing Drive. It is under investigation as to whether the watercourse disappears underground to resurface at Cotton Park pond. Although there are designated 15metre buffer zones surrounding both Cotton Park pond and Ducks Landing pond, there is no connecting buffer zone between the two regions.

OBJECTIVE - ROBERT L. COTTON MEMORIAL PARK

There is a need to improve the health and functionality of the park. Leadership and effort from Town of Stratford is needed to create an atmosphere of community ownership of the park by area residents i.e. 'Cotton Park is our park'. The recommendations can be broken down into four categories:

Increase overall usage of the park

Immediate Strategies

- Sponsor an annual event for families at the Cotton Centre
- Sponsor an annual volunteer recognition day

Mid-term Strategies

- Increase the length of the trail system within the park with the cooperation of the friends of Cotton Park and the Town of Stratford

Figure 13 Cotton Park Trail



- Create a “Friends of the Cotton Park” committee, volunteers for gardening, workshops, tours, public events etc.
- Native species tree planting within park
- Remove unused areas within the park for transformation into woodland

Long-term Strategies

- Offer part of the park for a community garden; residents could be ‘caretakers’ for individual plots on the northeastern portion of park
- Plant a formal Victorian garden (based on Halifax’s Public Gardens)
- Create an outdoor amphitheatre-like stage for small plays and productions
- Create a low-maintenance labyrinth to be used for meditation/healing

Improve ecological integrity of park

Figure 14 Lady Slippers



Immediate Strategies

- Maintenance crew should continue to ensure proper planting pruning techniques. Pruning of trees and shrubs is done in order to increase their lifespan and encourage new growth from the roots and crown
 - Enhance buffer zone by ceasing mowing around pond
 - Plant native shrubbery around pond
 - Improve the area adjacent to Cotton Park Pond by decreasing mowing and installing birdhouses
 - Plant cattail around the inflow pipe into Cotton Park Pond; this serves to slow the entry of silt-laden water into the pond
 - Increase diversity of native trees (e.g. Ironwood), native shrubs (e.g. Rhodora), wildflowers (e.g. Lady Slipper), grasses, and ferns
- Erect bird boxes and bat houses throughout park via volunteer day or assistance from forestry professionals. This could also be accomplished by children at the local elementary/junior high/high schools
- Plant the unused grassed areas along northern portion of park with native trees and shrubs

Mid-term Strategies

- Increase forestry stewardship and silviculture through meetings, educational events and brochures etc.
- Transplant trees from overcrowded areas to other public areas within the Stratford area watershed
- Plant meadow grasses for ground-nesting birds
- Continue with biological diversification¹
- Ensure regulations are upheld by developers and contractors
-

Long-term Strategies

¹ Biological Diversification - the variety of species and ecosystems on Earth and the ecological resources of which they are a part (<http://www.cbin.ec.gc.ca/strategie-strategy/3.cfm?lang=eng>)

- Slow the spread of invasive species within the park by manual means. These species include Scots pine, Norway maple, mallow, and white jewelweed. This would be the responsibility of existing horticultural crew, as well as time dedicated by members of the watershed group. Invasive species can slowly be removed, and replaced with large stock of native species
- Research the possibility of settling basins, where the sediment-laden inflow enters the pond. The small basins settle most sediment, keeping it out of the main body of the pond
- Identify and encourage removal of point source(s) of sedimentation into Cotton pond. This must be a joint effort by appropriate government departments, landowners, developers, the municipality and watershed group

5.2 PONDSIDE PARK/KEPPOCH ROAD

Figure 15 Archive Photo, Pondside Park



The park is an irregular shaped property comprising 11 acres of open and wooded areas bounded by residential properties, a small stream, and the Kelly's Pond (formally known as Hatchery Pond). The Park is bounded by single family dwellings, a tributary, and Kelly's Pond (Town of Stratford Parks Development Plan, n.d.). The land was slowly acquired from surrounding properties throughout the early-mid 20th century. The area was also used as a shale pit, as shown in a site survey dated 1965. The property became the site of a government fish hatchery; in 1994, the Community of Southport

purchased the property from the Province. The park is used by residents for a variety of recreational activities including picnics, tennis, basketball, ball hockey and by the Red Cross (park and pond) for summer programs. In 1999, the Town developed the Pondsider Wellhead Area (two deep wells and pump house) at the rear of the property to supply the Central Water System.

The bridge structure under Keppoch Road, located at Kelly's Pond was installed in 1974 and has not been updated since. This pond and stream system is the largest drainage system in the Rosebank Watershed; this includes Fox Meadows Golf Course and surrounding subdivisions, such as Cable Heights, Pondsider One, and Pondsider Two.

In September 2008, Hurricane Hannah hit Prince Edward Island, causing storm waters to back up the pond; the pond spilled its banks and flooded Keppoch Road; it is highly likely this road will be a casualty of extreme weather in the near future without maintenance and upkeep. Keppoch Road is a highly traveled road within Stratford, and it would be prudent to ensure this structure remains in good condition. This concern prompted P.E.I. Department of Transportation and Public Works in 2009 to conduct a review of the box culvert design and subsequent inspection of this highway structure. Although found to be adequate for all but the most extreme conditions, major deterioration and age-related deficiencies were discovered with the steel arch on the westernmost side of the roadway.

Pondside Park is a recreational area that is in need of more attention to allow it to live up to its potential. With the pond, tennis courts, playground, open areas and a wooded ravine, it is a vast resource that could satisfy a variety of needs within the community. Community involvement in the enhancement of the park

would help chart a course that would inevitably see increased usage and appreciation of this valuable urban resource.

There is a great community interest in improving the trail that exists along Pondside Park and Fox Meadows Golf Course. This trail, enhanced in 2000 by

the Town of Stratford in cooperation with Young Environmentalists' Program, has suffered from storms and neglect. This area has high potential for an educational walking trail; the woods are filled with remnants of old growth Acadian Forest, and traces of the fox industry that existed in this region.

Figure 16 Hurricane Hannah, September 2008



Objective – Pondside Park/Kelly's Pond

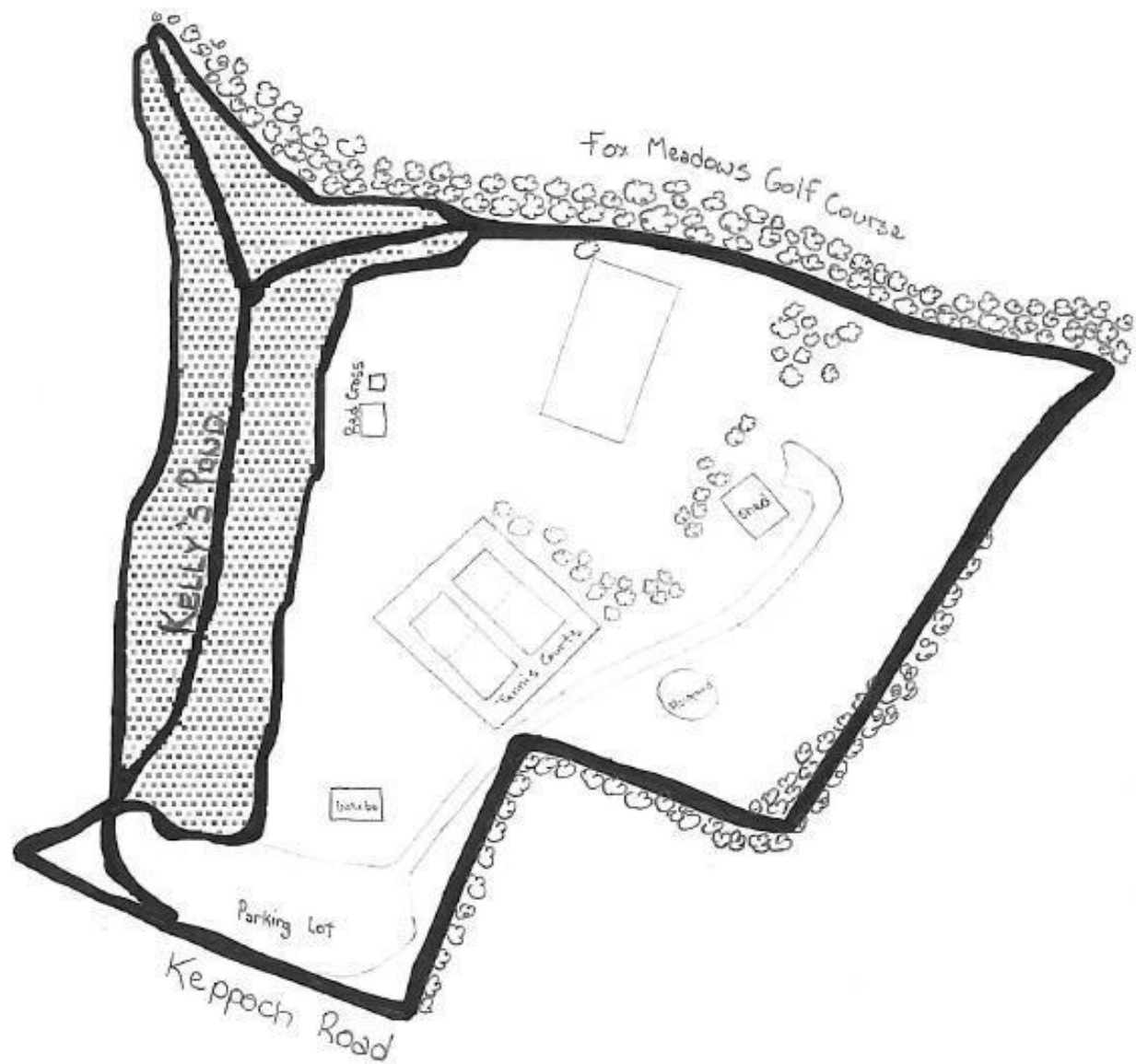
There is need to enhance the park's aesthetic and natural value, while maintaining its recreational and educational significance. The recommendations can be broken down into five categories:

Trail Creation and Restoration

Immediate Strategies

- Research the narrow parcels of land joining the park for use as public access to the park and nature trail
- Develop concept plan for trail restoration; a previously constructed trail exists along the Pondside Park, this will need to be updated and restored
 - a) The trail system will be situated on Fox Meadows Golf Course and the Town of Stratford property
- This undertaking will involve hired crews, summer students, or several volunteer days solely focused on trail re-establishment
- Seek cooperation of landowner(s) for removal of creosote ties

Figure 17 Pondside Park



- Place directional markers along trail
- A series of educational signs would improve the educational value of the trail.
- Place signs to discourage trail alteration by off-road cyclists
- A pamphlet was previously created to inform the public of the history and ecological importance of the nature trail. This pamphlet should be located and updated for future use
- Develop a "Friends of Pondsider Park" sub-committee to act as stewards for Pondsider Park

Mid-term Strategies

- Develop plan for the construction of two bridges in the trail system behind Pondsider Park.
 - a) Submit Buffer Zone Activity Permit with Department of Environment, Energy and Forestry

- Implement bridge plan
 - a) SAWIG can include bridge construction in an annual Pondsides Park day
 - b) SAWIG will collaborate with the Town of Stratford for materials, supplies and/or labour for this capital investment
- Research and implement plan to join restored walking trail with existing Stratford trail

Long-term Strategies

- Preservation and maintenance of the trail. This endeavor will rely on SAWIG and community volunteers via annual public events. Seasonal students hired for stream enhancement and general labour can assist SAWIG in maintaining the Pondsides park trail

Keppoch Road Bridge Structure

Immediate Strategies

- Establish Pondsides Park subcommittee for added community support

Mid-term Strategies

- Coordinate with appropriate governmental departments regarding establishment of fish passage from Stewart's Cove to Kelly's Pond

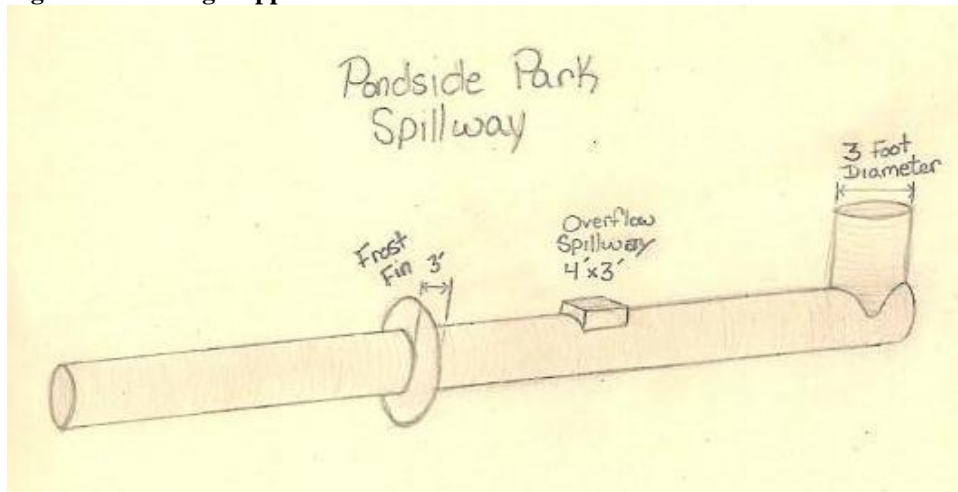
Figure 18 Kelly's Pond Spillway



Long-term Strategies

- Replace existing bridge structure to allow the passage of various species of fish to enter Kelly's Pond. It will require the cooperation of Department of Fisheries and Oceans, Department of Transportation and Public Works, Town of Stratford, and local residents to achieve this goal. This project will require significant funding for planning and implementation
- Monitor existing physical structure for further deterioration and ensure Department of Transportation and Public Works participates in regular inspections and updates

Figure 19 Existing Keppoch Road Box Structure

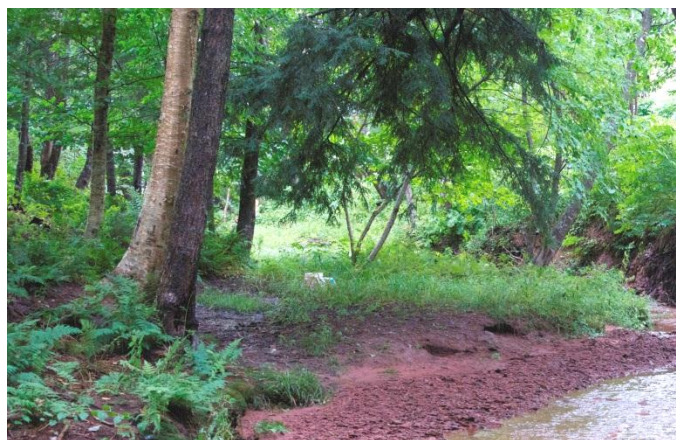


Pondsides Buffer Zones

Immediate Strategies

- Native tree planting in the buffer zone for the purpose of decreasing run-off into Pondsides Park. This would be in conjunction with the ceasing of lawn mowing directly adjacent the pond
- Create a natural entrance into the walking trail.
- Communicate with Canadian Red Cross to ensure access to Kelly's pond is maintained for summer activities.
- Begin a buffer zone assessment to determine the health and significant features within the buffer zone of the watershed located behind Pondsides Park and surrounding developments.
- Locate and GPS high value Acadian Forest trees within buffer zone. These identified trees can be incorporated into the educational aspect of the Pondsides Park trail. Examples of original Acadian species include Red Spruce, Sugar Maple, Yellow Birch and Eastern Hemlock.

Figure 20 Buffer Zone behind Pondsides Park



Long-term Strategies

- Continuously increase environmental awareness and education through volunteer and public participation events
 - a) annual "cleanup days" will help maintain interest in Pondsides Park

- b) inform the landowners with buffer zones adjacent to the watercourse of the environmental benefits of buffer zones. This can be accomplished through regular articles in Stratford's newsletter, as well as meetings with focus on buffer zones protection
- Removal of invasive non-native species within the wooded ravine and buffer zone. This can be accomplished, over time, with cooperation from forestry professionals

Water Quality

Immediate Strategies

- Locate and address point source(s) of sedimentation (agricultural, development, recreational, etc) leading into Pondside Park
 - a) a detailed watercourse survey should be conducted
 - b) communication with surrounding landowners/Pondside park subcommittee will help identify the causes of sedimentation
 - c) cooperation with the adjacent golf course is vital for the cessation of sedimentation into Kelly's Pond

Mid-term Strategies

- Public meetings should be held annually, with at least one meeting specifically aimed at the restoration and enhancement at Pondside park and surrounding area
- Encourage the town to reduce pumping rates to increase streamflow within the Rosebank sub-watershed

Figure 14 Algal bloom on Kelly Pond



Long-term Strategies

- Dredge Kelly's pond to increase depth and remove sediments. When a pond's basin is deepened significantly, nutrients from episodic runoff may be diluted in a greater volume of water
 - a) contact watershed groups who have recently dredged a pond within their watershed for further information, results, planning procedures and issues raised during implementation
 - b) Place a notice for tender if dredging will proceed on a private scale
- Prepare long-term plan for storm water flooding and red-water events
- Work with developers and contractors to ensure proper erosion control measures are in place within the vicinity, with particular focus on areas of high slope and watercourses

Objective - Tree Planting and Park Naturalization

Immediate Strategies

- Sunshade planting around playground will provide shade for children and families, as well as increase the number of large shade trees in the vicinity. This will be accomplished during annual volunteer day(s)
- Designate areas of the park for Acadian Forest species planting.
- Grass cutting in these areas should cease in order to allow the areas to return to a naturalized state
 - a) approximately 8-10m area directly northeast of Red Cross buildings have already begun to return to wild state; trees are seeding themselves

Figure 15 Tree Planting Event at Pondsides, 2009



- Remove trees growing along the fence surrounding the tennis courts (e.g. birch) and replant in areas throughout the park where they are allowed to thrive
- Install protectors around base of existing trees to prevent damage from lawn mowers
- Place bathhouses and birdhouses in park

Mid-term Strategies

- Allow the rocky southeastern portion of the park to grow out in order to extend the buffer zone. Because this is a municipal park, this will be the responsibility of the Town of Stratford to inform the existing maintenance crew of these conditions
- Pruning of trees and shrubs shall be done in order to increase their lifespan and encourage new growth from the roots and crown

Long-term Strategies

- Publish 'good news stories' on the progress of Pondsides Park in order for the surrounding community to see what is being accomplished in the area. Witnessing positive changes in the area encourages community participation
- Continue increasing the biodiversity within the park, planting varied native species during each tree planting activity.

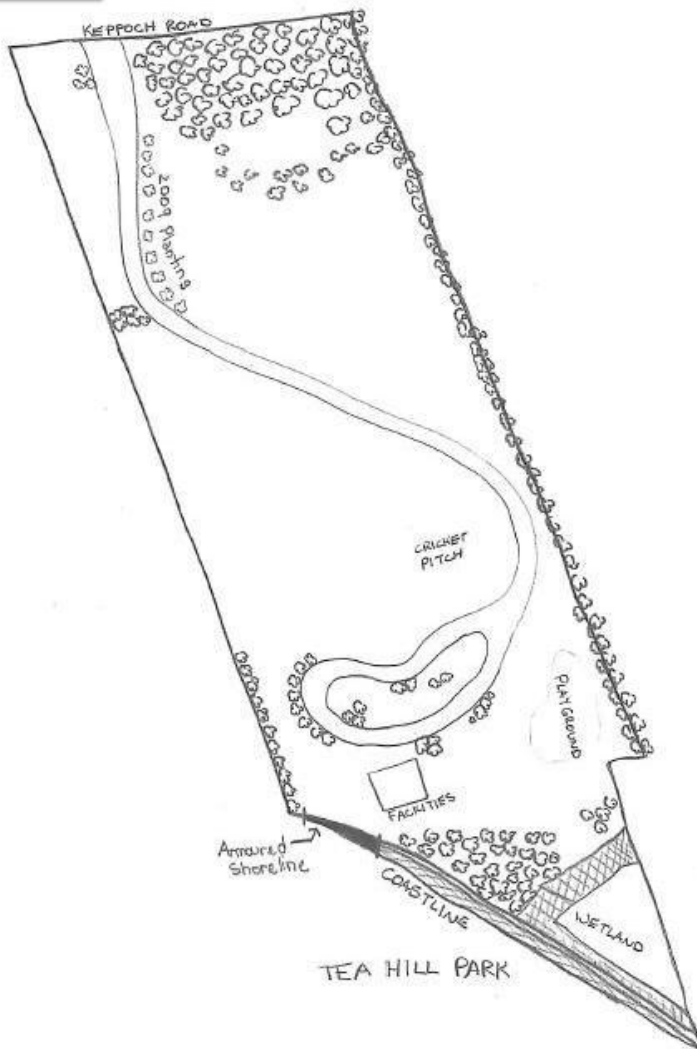
5.3 TEA HILL PARK

Tea Hill Park is a 15 acre property with public beach access on the Keppoch Road with a southern view overlooking Northumberland Strait. Tea Hill Beach is known for wide open expanses of beach at low tide, with shallows pools for children to play in the water; this park has the highest use of any Town of Stratford Park (Town of Stratford Parks Development Plan, n.d.).

The park property is comprised of wooded areas along the Keppoch Road and the shoreline, as well as an open area for passive and active recreational activities. The Town and its residents have utilized the property for a variety of recreational and leisure activities including picnicking, swimming, youth soccer programs, public functions family reunions, and corporate outings.

High erosion rates have become a concern for park goers and nearby residents; as a method of slowing coastline erosion in Tea Hill the park has recently undergone a shoreline protection project in conjunction with the provincial government.

Figure 21 Tea Hill Park



Objective - Tea Hill Park

Tea Hill is a popular and well-used park in Stratford; however, there is a critical need for shade tree planting within the park's vicinity for the safety of future generations.

Immediate Strategies

- Work in partnership with the Canadian Cancer Society and the Town of Stratford to fund a planting plan within the park to

provide shaded areas for members of the community. Enlist the help of volunteers, cadets, or community groups to plant the

Figure 22 Maples Planted in 2009



trees during a Tea Hill Park Volunteer Day to meet the standards of a SunShade Park.

- Construct and erect posts and birdhouses along the western side of the park; this is a prime area for tree swallows
- Develop a “Friends of Tea Hill Park” sub-committee

Mid-Term Strategies

- Plant trees in the buffer zone; this section of the park acts as a windbreak, as well as offers critical habitat for wildlife.
- Complete lining the avenue with significant-sized trees

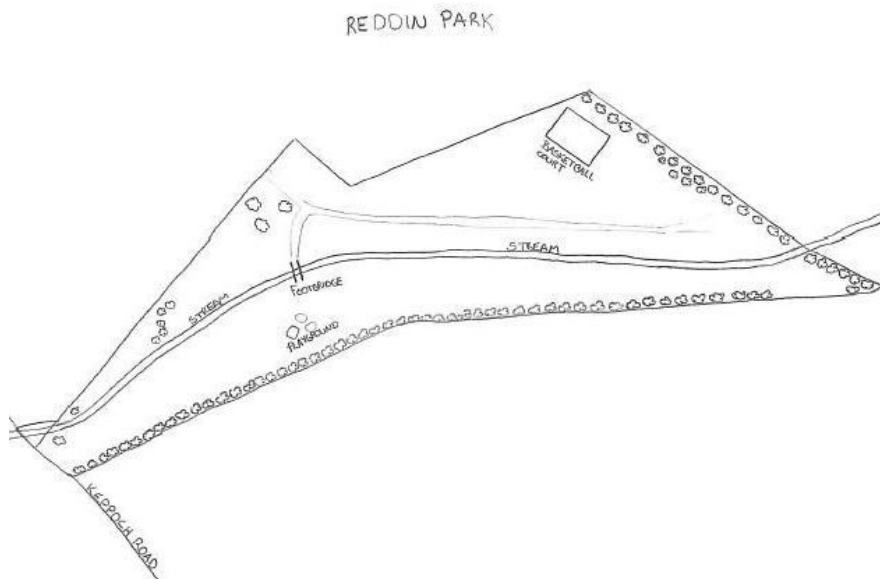
Long-Term Strategies

- Partner with the town to attain a permit from the appropriate governmental departments to enhance the buffer zone adjacent to park’s coastline.
- Thin spruce hedges and allow old apple orchard to be visible to park goers

5.4 REDDIN PARK

Reddin Park is an irregular shaped one hectare public area located off Stratford Road. The park is divided by a small watercourse spanned by a small footbridge connecting a gravel walkway from Barkley Avenue. The spring runs underneath Stratford Road and joins the Pondsides tributary. This is a popular park frequently utilized by residents in the area for a variety of recreational purposes.

Figure 23 Reddin Park



Objective – Reddin Park

Reddin Park is a well-used local park within the Stratford downtown. There is need for shade tree planting within the park’s core for protection of future generations.

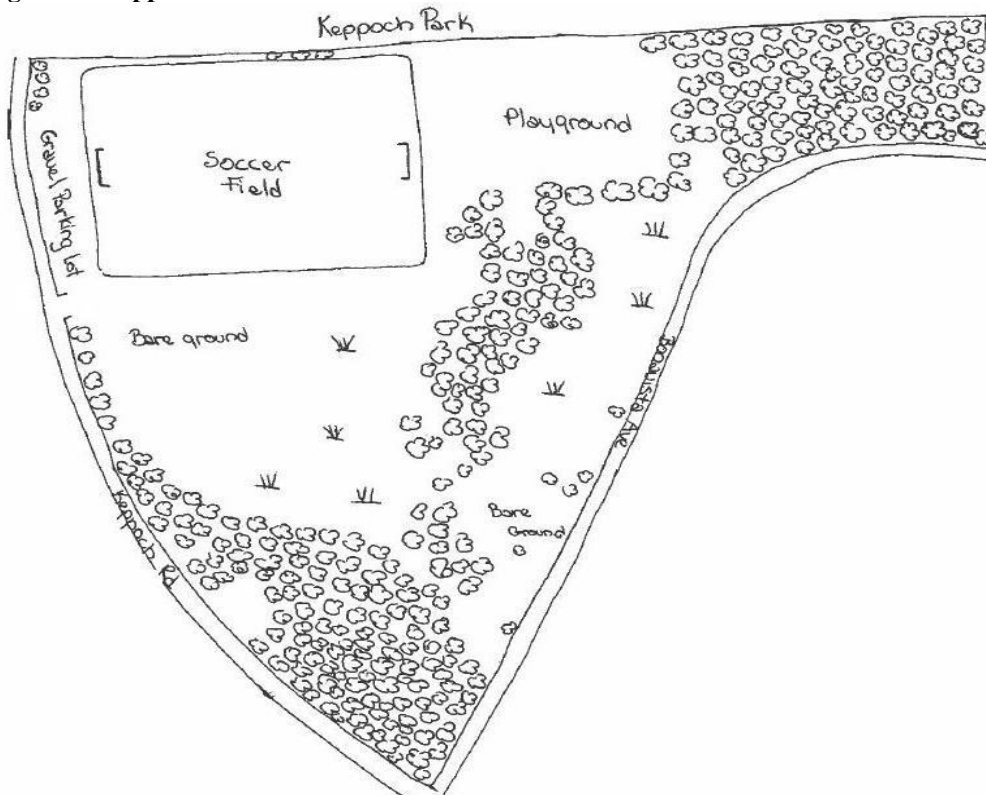
Immediate Strategies

- Work in partnership with the Canadian Cancer Society and the Town of Stratford to fund a planting plan within the park to provide shaded areas for members of the community.
- Plant Acadian Forest trees and shrubs within the core of the park. This can be accomplished by SAWIG volunteers, Town of Stratford employees, and provincial government summer students.
- Communicate with grass maintenance contractors, ensuring the 15m buffer zone along the watercourse is not mowed.
- Perform cleanup of the area

5.5 KEPPPOCH PARK

Keppoch Park is a 4.5 hectare municipal park located on the corner of Keppoch Road and Bonavista Road. This property contains both wooded and cleared areas, with a variety of recreational equipment and a soccer field. This is a park well utilized by the local residents, and is in need of shade tree planting and diversification.

Figure 24 Keppoch Park



Objective – Keppoch Park

Keppoch Park is a well-used

Immediate Strategies

- Plant native trees and shrubs in playground area and bare areas within park
- Create a “Friends of Keppoch Park” subcommittee
- Host a volunteer day for tree planting and litter removal

Mid-Term Strategies

- Increase biodiversity in wooded areas

GOAL – LARGE LANDSCAPE ISSUES; COASTAL, AGRICULTURAL AND FORESTED

Critical zones exist within the Stratford area requiring identification and protection i.e. buffer zones. High exposure areas will be sought to provide an example of watershed improvement to the public. It is here where landowner input and community involvement is critical to SAWIG's success.

5.6 RESTORATION OF REMNANT ACADIAN FOREST

Prince Edward Island belongs to the Acadian Forest Region. Typical species can include Yellow, Red Oak, Sugar Maple, White and Red Pine, American Beech and Eastern Hemlock. In low land areas, Black Spruce, Larch and Red Maple are common.

Being left to its own devices, the trees within the Acadian forest would be an uneven, multi-aged stand in structure with an average age of dominant shade-tolerant trees being approximately 150+ years. There would be plenty of standing dead and dying trees, with a copious amount of fallen, coarse woody debris in varying states of decay on the forest floor. Dead trees provide critical nesting habitat to dozens of species, from birds to amphibians; they also serve as nurse logs for hemlock and yellow birch seedlings. Natural regeneration of trees would occur within gaps of the canopy. This system would be self-sustaining and provide valuable habitat for old-growth dependent wildlife, such as den animals, cavity nesting birds, mammals, lichens, and much more. “Old growth acts as a reservoir of genetic diversity, reproductive fitness, and seed dispersal across the landscape - particularly important functions for rare and declining tree species and forest types in changing environments and across increasingly fragmented landscapes” (Mosseler *et al.*, 2003).

Figure 25 Maple Leaf



Stratford's remaining forested areas are seen as an important natural resource. Although there are still several forest remnants within the municipality, they are at risk from development and encroachment. Small blocks of woodlands have a difficult time maintaining ecological integrity.

Figure 26 Acadian Forest on East Coast



Decades of clear-cutting and harvesting specific

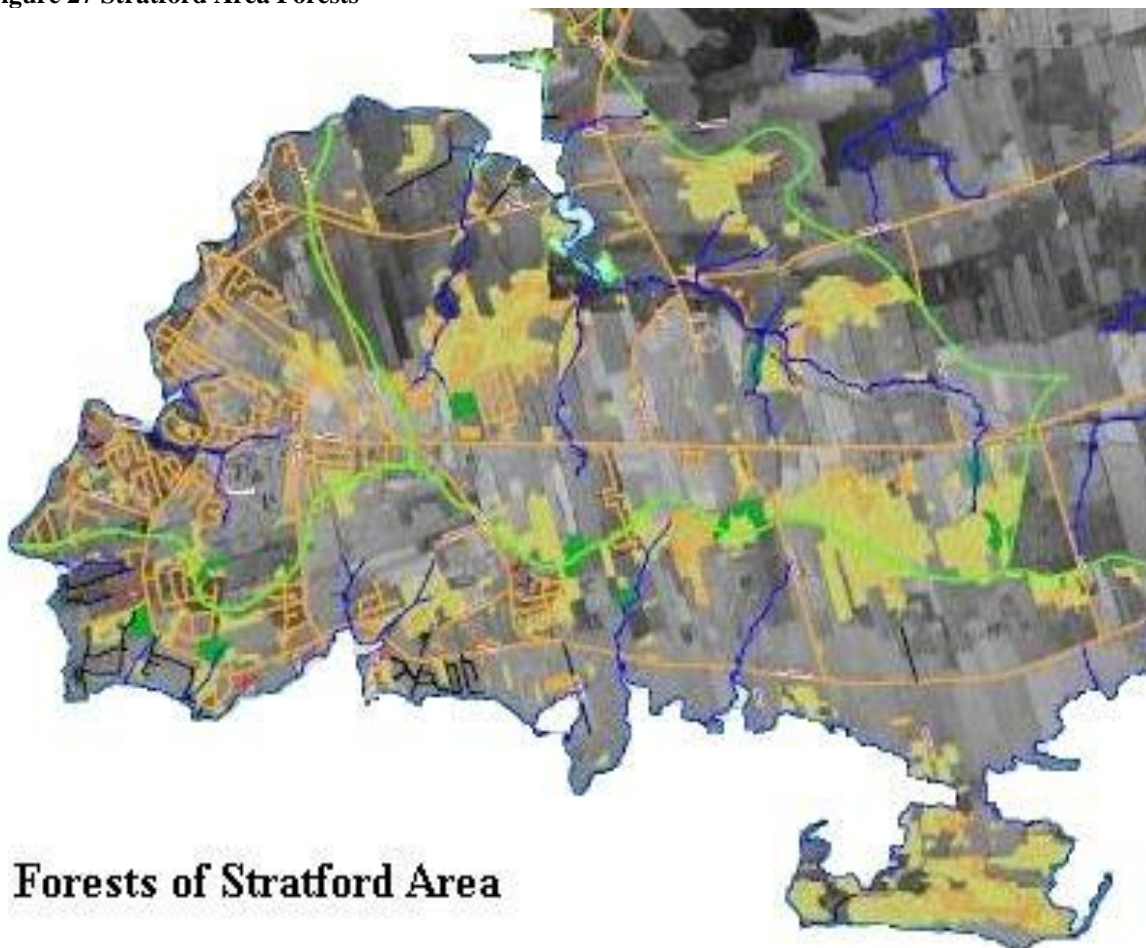
varieties have left much of the Island's forest stands species-impooverished. Additionally, tree diseases have been introduced into the area, which have had a significant impact on the native trees.

Stratford possesses the potential to enhance and maintain its remaining stands. Several landowners have expressed a serious interest in the protection and preservation of the fragments of Acadian forest that linger in Stratford, as well as increasing

the diversity in these remaining woodlands. It is this enhancement planning that will determine the health and long-term success of the Acadian forest in Stratford.

There is potential for a restored Acadian Forest with ample diversity within the municipality; plantings should include high-value, long-life trees, shrubs, and other species of ground flora needed to restore the diversity of the Stratford area. All landowners are encouraged to reexamine their woodlands, regardless of the size, and determine what can be done to improve the biodiversity and species habitat on their own property. “Working with a woodlot is an individual endeavor. No two woodlots are exactly alike, and there are no set-in-stone rules for good woodlot management. There are as many approaches to managing woodlots as there are woodlot owners. Some may wish to promote as many high-value trees as possible, some may wish to focus on wildlife habitat, and some may wish to simply leave the forest alone to enjoy” (Simpson, 2008).

Figure 27 Stratford Area Forests



Objective – Forest Stand Enhancement and Preservation

Several significant stands of remnant Acadian forest exist within Stratford and surrounding area; with the assistance of landowners and forestry experts, these woodlots can be enriched and preserved for future generations to benefit from.

Immediate Strategies

- Work with landowners who have begun the process of increasing the biodiversity and enrichment of existing woods and previously wooded areas:
 - a) Landowner Clive Stewart has expressed a serious interest in adding Acadian forest species to his property. Over the years he has created nature and walking trails within his woods and would like to preserve this natural resource. He has continued to plant trees and shrubs for biodiversification. A management plan has been written for Mr. Stewart; SAWIG will work in conjunction with the Stewart's to increase the diversity of trees within his woods. This can be accomplished by the Stewart family with assistance from volunteers within SAWIG and the community
 - b) Jack Reddin, local businessman and landowner, has volunteered to take a portion of agricultural land surrounding Jenkins Pond out of production in order to return to a forest state. This will be accomplished by the completion of a management planting plan and cooperation with SAWIG volunteers. Tree planting occurred in early 2009 by local Cubs and Scouts, with further plantings in 2010
 - c) Paul McCormack, Superintendent of Fox Meadows Golf Course, has been collaborating with SAWIG and local forestry experts to coordinate the activities designed to double the size of the largest block of woodland in the course, carry out enrichment planting within the existing woods, widen the buffer zone along the stream between the course and Pondsides park, and create several more new wooded areas.
- Engage interested landowners in establishing planting plans for their specific pieces of forest and property. SAWIG can accomplish this by promoting access to forestry management professionals and work with landowners to prepare individual management plans
- Identify and assess original Acadian forest stands located on municipal property with a forestry management plan
- Hold an annual/bi-annual educational event demonstrating the relationship between preserving existing forest stands and the health of our water resources
- Work towards eliminating all white spruce stands
- Host a "Free Tree Day", where community members can pick up a free tree for their property or can donate their tree for planting within the Stratford watershed
- Plant a tree per household or citizen within the municipality, develop an online registry on Town website; watershed residents can register their tree planting

Mid-term Strategies

- Continue to support local residents to examine their woodlots; promote the long-term health and environmental benefits of increasing biodiversity on their land:
 - a) hold educational workshops on the value of the Acadian Forest and tree planting
 - b) local bus tours, with stops at local stands of Acadian Forest. This will give a chance for the community to view Acadian forest species
- Encourage willing local landowners to showcase their enhanced stands of forest during bus tours or education days

Discourage white spruce monoculture planting

Long-Term Strategies

- Build the capacity to connect existing parcels of Acadian Forest within the Stratford area
- Develop a long-term planting plan for Stratford and surrounding areas
- Work with the town to ensure tree planting is part of any building permit granted within the municipality

Objective – Monitor Forest Harvesting Activities

Forest harvesting activities in the vicinity of watercourses alters the physical and chemical properties of soil. Along with erosion, excess nutrients seep through soil into water.

Long-Term Strategies

- In cooperation with the provincial authorities, monitor forestry activities occurring adjacent watercourses.

The Town of Stratford has had a long standing interest in the value of the vegetation in the area along with the protection of the environment. In 2005, the Community Unity Committee devised a tree planting strategy with the purpose of developing a long-term approach

Objective – Tree Planting on Steep Slopes

There is a need to plant and stabilize steep slopes (up to 10%) within the Stratford area watershed. Steep slopes often require special planting techniques; species planted on slopes will dry out faster and must be resistant to drought.

Short-Term Strategies

- Work with the Town of Stratford, the province and private landowners to plant trees on all non-forested steep slopes
- Encourage local developers to leave steep slopes in an unaltered state during development
- Generate a steep slope inventory within the watershed

Long-Term Strategies

- Partner with the Town of Stratford in developing enforceable by-laws, preventing the alteration of steep slopes and bases of steep slopes

Objective – List of Native Tree and Shrub Species

The following are species found on Prince Edward Island; this list will serve as a guide for future plantings and diversification of forest stands within the Stratford area.

Trees and Preferred Conditions

Red Maple - moist, well-drained, sandy loams
Sugar Maple - rich, moist, well-drained soils
Striped Maple - moist but not wet soil
Red Oak - well-drained site
White Birch - wide variety of locations
Grey Birch - wide variety of locations
White Ash - rich, moist, well-drained soils
Eastern Larch - cool, moist areas
Trembling Aspen - wide variety of soils
Balsam Poplar – moist soils
Ironwood - rich, moist soil
Red Spruce - rich moist sites in mixed conditions
White Spruce - moist, sandy loams
Red Pine - sandy, well-drained soils
White Pine - moist, well drained sandy loams
Eastern Hemlock – cool moist conditions

Shrubs and Preferred Conditions

Witch Hazel - rich, well-drained soil
Highbush Cranberry - rich soils and full sunlight
Red Osier Dogwood - grows best in full sun
Wild Raisin - prefers moist, shady sites
Wild Rose - full sun
Serviceberry - most conditions

5.7 EROSIAN/SILTATION

Soil erosion is one of the most significant and widespread issues watersheds are facing on Prince Edward Island. Sediment is originating from a wide variety of sources i.e. agricultural and forestry activities, development, and highway construction and maintenance are negatively impacting watercourses. Ponds, pools and springs are gradually being filled in, and storm water systems installed by the government are often unable to handle the influx of water after a serious weather event. These events have damaging effects on wildlife that inhabit this region, both aquatic and land dwelling. Feeding patterns are affected, and the sediment can result

Figure 28 Siltation



in the suffocation of wildlife in the water. Two prime examples of this phenomenon are Cotton pond and Kelly's pond. Both experience sedimentation, and have been steadily filling in for a number of years; Kelly's pond was dredged in 1995.

Objective – Stream/Pond Enhancement and Restoration

Stream enhancement² is a necessary and vital element in stream restoration³. Although this does not solve the problem of point source siltation, in-stream employees are often capable of identifying the areas in need of investigation and management.

Immediate Strategies

- Hire seasonal employees for stream restoration within tributaries in the Stratford area. Training will include brushmat installation, proper techniques for clearing stream blockages, and identification of areas in need of extensive chain saw maintenance.

Mid-Term Strategies

- Promote the use of sediment traps and check dams prior to and during development. This would ensure a means to contain runoff and siltation during expansion within the Stratford area. This should be encouraged by the Town of Stratford when issuing permits for development.
- Restoration of the public right-of-way on Bethel Road
- Removal of old dam in watercourse on Bethel Road. As this is located on public land, this would be a collaboration with the province
- Dredge Reddin Pond

Objective – Education for Agricultural Producers

As one of the most important industries on Prince Edward Island, it is vital that members of the agricultural community become educated on the various methods of reducing erosion from fields and siltation into the waterways.

Immediate Strategies

- Promote the benefits of keeping plant cover or mulch on fields, increasing soil organic matter, rotation, and other methods that decrease erosion
- Encourage adoption of beneficial management practices (BMPs) that reduce environmental risk and enhance P.E.I. soil, water, and air

Objective – Coastal Erosion Control

Coastal erosion is an increasing problem for shoreline communities around the world. These communities are now seeking methods for controlling the amount of erosion and stabilizing banks to prevent further deterioration.

Figure 29 Coastal Erosion in the Stratford Watershed



Immediate Strategies

² Stream Enhancement involves strengthening and repairing the stream bank, as well as recreating the natural shape of the watercourse.

³ Stream Restoration refers to returning an area to a natural and undisturbed condition. This is becoming more difficult in watershed management (TWLA, n.d.)

- Research commonly used methods of coastal erosion control, taking into account the longevity of these methods and their impact on the surrounding environment
- Consult with local professionals
- Partner with private landowners to develop pilot projects for coastal erosion control

Long-Term Strategies

- Evaluate the long-term effectiveness of erosion control projects within the watershed
- Makes successful methods available to all coastal landowners within the watershed; large-scale funding must be available

Objective – Reduction of Roadside Siltation

Roadside siltation has been a long-standing problem on Prince Edward Island. This is due to a number of factors, including ploughing in winter; it is vital the shoulder of the roads is kept grassed to avoid sedimentation into nearby waterways.

Short-Term Strategies

- Discuss residents concerns with the Department of Transportation. Lifting the snowplough's wing slightly may avoid stripping the grassy layer

Mid-Term Strategies

- Promote grass re-sewing on an annual basis to repair stripped areas and cover bare ground
- Ensure proper grading techniques are applied on PEI

5.8 BUFFER ZONES

Buffer zones are increasingly viewed as an effective and successful method of combating soil erosion and watercourse siltation. With over 32km of buffer zones in Stratford, the value of buffer zones cannot be understated.

“A buffer zone is a protected area alongside watercourses and wetlands. They protect Prince Edward Island's water resources by filtering and assimilating contaminants from surface runoff water. They provide valuable habitat for many species of wildlife and shade for streams” (Department of Environment, Energy and Forestry, n.d.). Buffer zone regulations were introduced on Prince Edward Island in 1999. In 2008, the Department of Environment, Energy and Forestry changed the Watercourse and Wetland Protection Regulations, increasing the buffer zones to 15m from the edge of the sediment bed.

Sedimentation has been an ongoing issue on Prince Edward Island, and sediment is a leading contaminant in local watercourses. Sediments in streams and rivers lead to a reduction in water clarity for organisms, reduce light penetration for water-based flora, and reduce the available habitat for bottom dwellers. In agricultural areas, erosion can introduce sediments into the water. Buffer zones provide a layer of protection against these intrusions into the Island's waterways.

Buffer Zone Assessment for Pondside Park – available in Appendix B

Watercourse and Buffer Zone Assessment Form - available in Appendix C

Figure 16 Buffer Zone Assessment - GPS Points

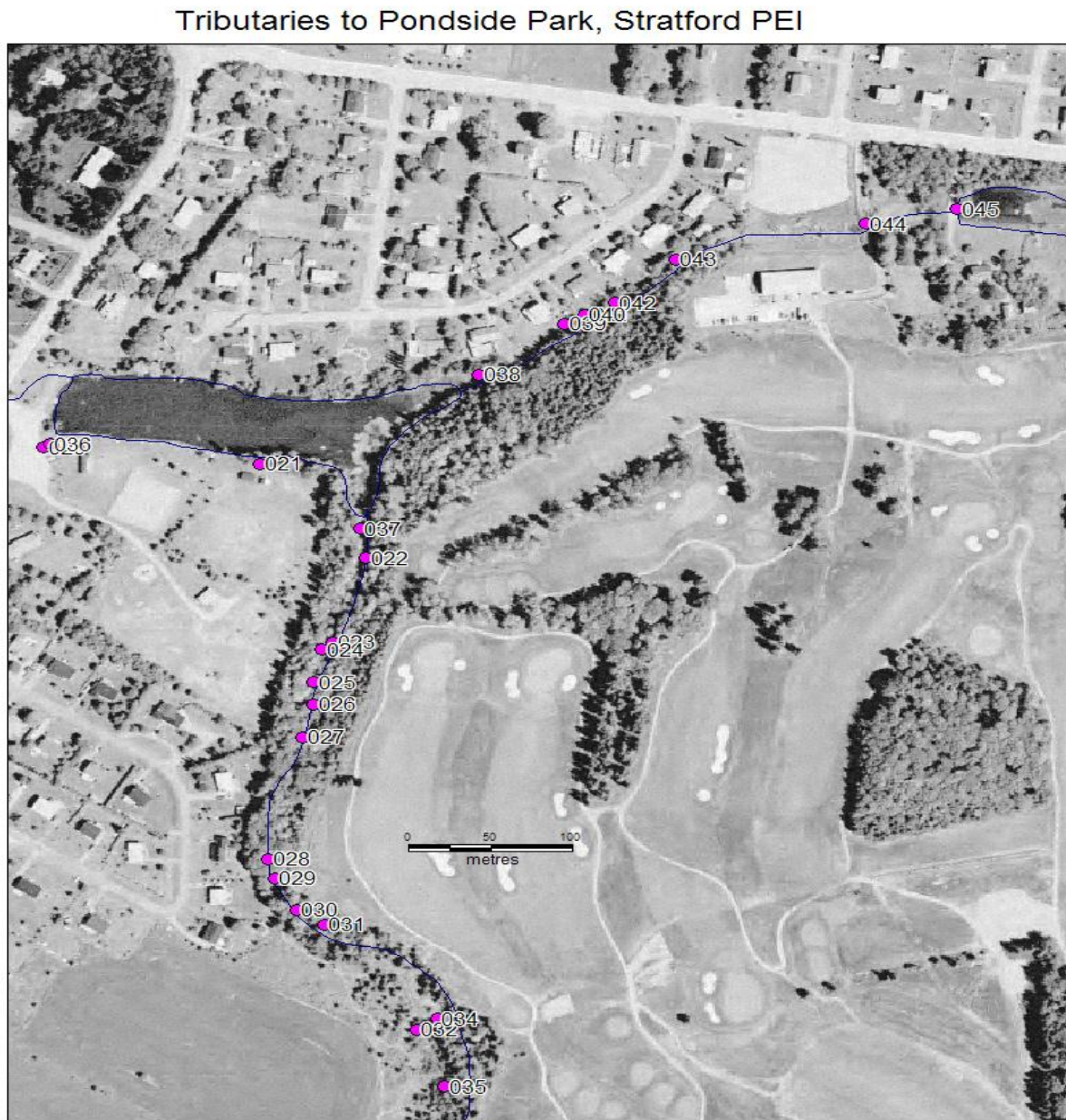


Figure 17 Pondside Points of Interest for Buffer Zone Assessment
08/19/09

Data Point	Latitude	Longitude	Comment
20	46.2152	-63.1009	Transect 1
21	46.2151	-63.0992	
22	46.2144	-63.0984	Transect 2
23	46.2139	-63.0986	Stagnant Water Conditions
24	46.2138	-63.0987	
25	46.2136	-63.0988	Gray' water, possibly anoxic, waterflow ceases
26	46.2135	-63.0988	
27	46.2133	-63.0989	
28	46.2124	-63.0991	Transect 3
29	46.2123	-63.0991	Runoff path from golf course
30	46.2121	-63.0989	Culvert
31	46.212	-63.0987	Path from adjacent household
32	46.2113	-63.098	Large debris pile in buffer zone
34	46.2114	-63.0978	Transect 4
35	46.2109	-63.0977	
36	46.2152	-63.1009	
37	46.2146	-63.0984	Transect 5
38	46.2157	-63.0975	Entered stream from buffer
39	46.216	-63.0968	Large mature Pine tree
40	46.216	-63.0966	Transect 6
41	46.2161	-63.0966	Gravel bottom, tree obstruction
42	46.2162	-63.2162	Large mature tree - possibly beech
43	46.2165	-63.0959	Large gazebo within buffer zone
44	46.2167	-63.0944	Transect 7
45	46.2168	-63.0937	End of assessment

Objective - Assess Buffer Zones in Stratford Area

Buffer zones are an essential part of a watershed. There is a need to establish the health of Stratford's buffer zones to determine the proper course of action to protect them. An important part of the watershed process is therefore, to identify and assess the existing buffer zones.

Immediate Strategies

- Assess the 32km of buffer zones, using the newly devised Riparian Zone Health Assessment Form. This should be a joint effort between volunteers, members from the community, professionals, and seasonal students hired by the watershed group and/or the provincial government.
 - a) Purchase GPS unit for buffer zone assessment
- Compile gathered buffer zone assessment data and enter into a single database file. The information will serve as a baseline for future decisions made with regards to protecting and enhancing Stratford's buffer zones.

Mid-Term Strategies

- Continue stream and buffer zone assessment activities to monitor both minor and significant changes in the area's buffer zones

Objective - Alexandra Buffer Zone

The community of Alexandra, on the eastern boundaries of the watershed area, represents an area of interest for the group. As an intensely farmed region, the significant amount of wetland and buffer zone in the region is in need of enhancement and restoration.

Immediate Strategies

- Obtain funding to plant a large and diverse number of trees and shrubs in the buffer zones.
- Acquire permission from landowners
- bordering on Brehaut's Creek buffer zone
- The first stage of planting is slated to commence spring 2010; this will require contracted employees and numerous volunteers.

Figure 18 Buffer Zone in Alexandra



Ings' Pond/Buffer Zone Restoration

A secluded and scenic region in Hazelbrook, this historic pond was once home to various species of fish and wildlife. Increased siltation has lowered the water level, leading to habitat loss and rising water temperatures.

Immediate Strategies

- Establish underlying causes of siltation. If causes remain, determine options for remediation
- Discuss possible options with experts from Department of Environment, Fisheries and Oceans and Ducks Unlimited

Mid-Term Strategies

- Remove accumulated silt from pond
- Assess fish stock in pond; purchase fish stock if necessary

Objective – Buffer Zone Enhancement

Following the Buffer zone assessment, there will be a vital need for buffer zone enhancement within the Stratford area watershed.

Mid-term Strategies

- Secure long-term funding for buffer zone enhancement
- Attain Buffer Zone Activity Permit from provincial government
- Obtain permission from landowners when buffer zone work is required on private property
- Planting can occur using volunteers, summer students or contracted groups

Long-Term Strategies

- Continue planting Acadian Forest trees and shrubs within the buffer zone via general planting and patch cuts (removal of alders) when necessary
- Partner with private landowners with the hopes of expanding buffer zones further than the legislated 15m. This may be accomplished with the assistance of the ALUS program

- Encourage buffer zone stewardship by private landowners

Objective – Hedgerow and Buffer Zone Program

Hedgerows are an indispensable part of Prince Edward Island's landscape and provide many environmental benefits to land owners and the municipal community. This government program provides assistance to landowners who want to establish hedgerows for soil conservation, stream bank stabilization, and windbreaks for buildings and livestock. The program is open to both farmers and other land owners.

Immediate Strategies

- Publicize program to large stakeholders
- Provide opportunity for landowners to acquire Environmental Plans

Mid-Term Strategies

- Continue to act as a liaison between the province and the private landowners who wish to participate in this program

5.9 WETLANDS

There is no shortage of wetland in the Stratford area with over 35 acres of wetland/salt marsh/meadow. Regardless of whether these areas are high profile in this region, wetlands are a vital element in any watershed. Society is slowly abandoning its view that wetlands are useless and low value parcels of land, and now understand that they perform a variety of tasks that allow the system as a whole to function efficiently.

The wetlands also contribute to the diversity of flora and fauna in the area. There are many species that subsequently depend on the maintenance of these areas for survival. Ducks, fish, frogs, and songbirds are all known to rely on

Figure 19 Bulrushes in Wetland

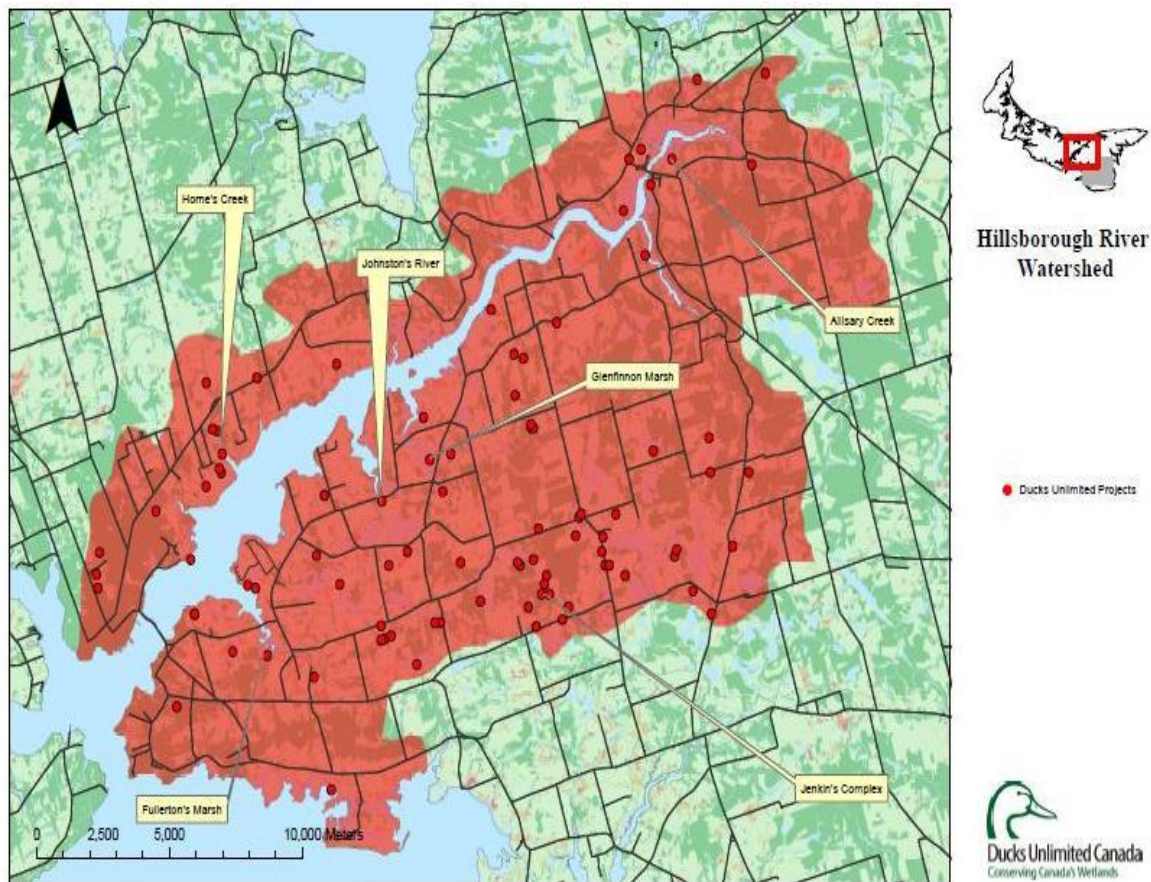


wetlands. Wetlands are beneficial to the environment as they provide water filtration, flood control, shoreline protection, groundwater recharge, ecosystem support and climate stabilization, erosion control and nutrient retention.

It is imperative these areas are preserved in order to contribute to diversity in the region. Ducks Unlimited (DU) has been committed to the maintenance, creation and conservation of wetlands

across Canada for over 65 years. DU has identified Ducks Landing wetland, located behind Stratford Town Centre, as having the highest potential within the municipality for restoration and preservation.

Figure 20 Ducks Unlimited Projects



Note. From Ducks Unlimited, Charlottetown Division. Reprinted with permission.

There are several wetlands, in particular, that provide a glimpse into the significance of wetlands in our environment. Bellevue Cove, along the southern shore of the watershed, is one of the most productive marshes within the watershed area. Additionally, the marsh located across from Reddin Park on Stratford Road, contains a relatively rare saltwater marsh plant; this was identified by a member of the community and employee of Department of Environment, Energy and Forestry. Fullerton's Creek South is a flooded marsh that offers extensive habitat for wetlands flora and fauna.

Objective – Wetland Enhancement and Preservation

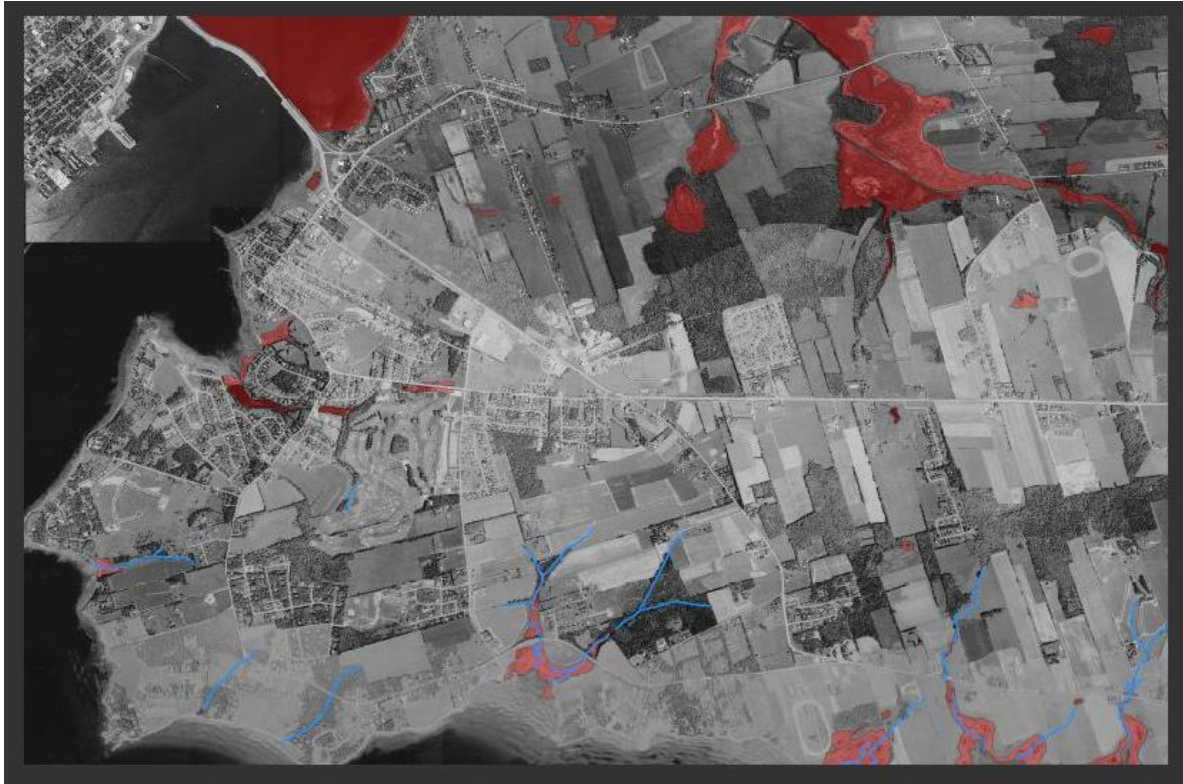
There is a strong need for wetland restoration and protection within the Stratford area watershed. Through partnerships with local landowners and non-profit organizations, this critical habitat can be preserved for use and enjoyment by future generations and wildlife.

Immediate Strategies

- Partner with Ducks Unlimited, private landowners, and the Town of Stratford to restore the wetland on the corner of Stratford and Kinlock Roads.
- Assess various wetlands within the watershed to determine wetland enhancement priorities

- With assistance of local biologists and wildlife experts, identify rare and uncommon species that inhabit wetlands within the watershed
- Maintain health of tidal estuaries to reduce the impact of future severe weather events

Figure 21 Wetlands in Watershed



Long-Term Strategies

- Identify and prioritize all wetlands with potential for restoration
- Secure annual funding for wetland preservation
- Secure funding for wetland acquisition
- Seek assistance from the Town of Stratford to protect the salt and fresh water marshes located within the watershed; this could be best achieved via municipal by-laws

5.10 WATER BUDGET

A groundwater budget was developed by the Department of Environment, Energy and Forestry in support of watershed planning for the watershed. This represents overall inflow/outflow rates for three sub-watersheds of Stratford the area.

Groundwater extraction can often result in stream flow reduction. The amount of water pumped out of the watershed i.e. drinking water in a subdivision, can be correlated to stream levels. Although this budget indicates the level of inflow and outflow occurring in the Stratford and surrounding area, it cannot predict the level of sustainability of groundwater pumping. Evidence

is emerging of the effects of over-pumping in the Pondsides subdivision (Rosebank sub-watershed).

Figure 22 Water Usage in Stratford Area

WATER USAGE IN TOWN OF STRATFORD

Meter	Location	Pumping Station	Watercourse	cubic meter/day	cubic meter/year	Watershed	Inflow (cubic meter/day)	Inflow (cubic meter/year)
75320	50 Nottinghill Dr.	Cable Heights1	Rosebank	243.54	88891	Rosebank	8397	3064905
		Cable Heights2	Rosebank	578.09	211003			
		Pondsides1	Rosebank	34.39	12553			
		Pondsides 2	Rosebank	175.66	64117			
		Langley1	Rosebank	2.57	939			
		Langley2	Rosebank	5.91	2156			
		Park Lane/Sundance	Alexandra	27.27	9955	Alexandra	23828	8697220
		Beacon Hill	Alexandra	27.27	9955			
		Reeves Estates	Alexandra	101.52	37054			
						Fullerton's Creek	26552	9691480
Total				1196.22	436623		37337	21453605
Homes in Stratford			2900 homes					
Town Water Supply			1700 homes					
Average Water Usage per Household per Day				0.70	256.84			

Water is greatly valued by the residents for a variety of economic and environmental reasons. Islanders have entered a critical time where water quality has become the topic foremost on their minds. The area's growth in population and business has led to an increased demand on the water supply.

As the only province that solely relies on groundwater for consumable water, via land based protection must be looked at to preserve a healthy and clean environment. The importance of good water quality and water conservation simply cannot be overemphasized. However, because the Island relies on groundwater, water quality becomes a complex issue affected by several factors. Stratford area is seeing a shift in values towards a greater recognition of the value of water, and subsequent protection of its resources.



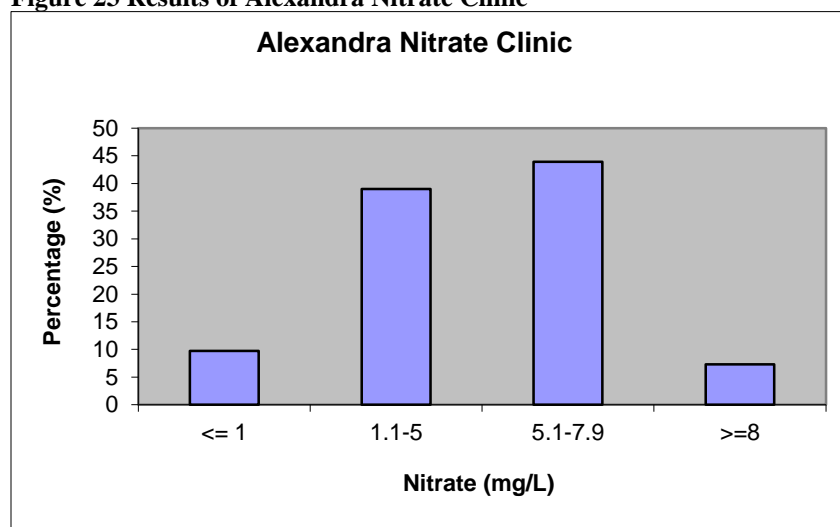
Charlottetown and Stratford are approaching the current limits of their developed water supply. An interconnected water supply would offer the most security and would be most suitable to managing the increasing strain on their resources; a regional water utility would be a viable option (Charlottetown Area Water Supply Study, 2008).

PEI has seen a steady increase in nitrate levels over the last few decades; nitrates are being witnessed not only in the groundwater all Islanders rely on for drinking water, but in rivers, streams, estuaries and ponds. This is a concern for the health and safety of Islanders, but also for the wide variety of wildlife that inhabit Prince Edward Island.

There is now a movement towards identifying the sources of increased nitrate levels, as well as developing strategies for implementation. The Commission on Nitrates in Groundwater was created by the provincial government to address nitrate problems and receive feedback from Islanders. “The key sources of nitrate pollution are agricultural fertilizers, manure storage and spreading operations, septic systems and fertilizers applied to lawn, golf courses and other recreational facilities” (Commission on Nitrates in Groundwater, 2008). Elevated nitrate levels can impact the environment in a variety of ways e.g. abundance of algae leading to decline in water quality and aquatic habitat, as well as possible health concerns such as cancer.

The maximum acceptable level of nitrates in drinking water is 10mg/L, according to the Guidelines for Canadian Drinking Water Quality. The following table demonstrates the nitrate levels found after one nitrate clinic held in Alexandra in 2009.

Figure 23 Results of Alexandra Nitrate Clinic



Objective – Monitor Nitrates within the Stratford Area Watershed

Residents of the Stratford Area watershed are responsible for making choices that will yield the lowest nitrate loading into local rivers, streams and estuaries.

Immediate Strategies

- Increase education to help residents of the watershed to comprehend the value of making responsible personal choices on issues that affect water quality.
- Host nitrate clinics on a regular basis

Mid-term Strategies

- Support local agriculturalists and horticulturalists to abide by the principles of nutrient management planning and best management practices

Long-term Strategies

- Encourage the municipality and developers to include a detailed proposed system for sewage disposal
- Assist the municipality in the introduction of a by-law regarding sewage systems on small lots and large-scale developments

Objective – Water Conservation

It is imperative that the Stratford watershed, in conjunction with the Town of Stratford, develop an effective water conservation awareness program. As an area that relies on few groundwater aquifers for daily water requirements, a watershed-wide program would serve to inform the public of their actual versus perceived water usage.

Immediate Strategies

- In partnership with the Town of Stratford and the Sierra Club: Atlantic Chapter, develop a water conservation program. This can be focused on the local schools and general public.
- Organize and host a “Water Day”

Mid-Term Strategies

- Acquire funding for water metering research; if possible, initiate a pilot project in a designated area of Stratford

5.11 STORMWATER MANAGEMENT

Stormwater management is a topic frequently discussed in urban municipalities. Urban stormwater is precipitation that seeps into the ground or runs off the land into watercourses and storm sewers (Understanding Stormwater Management, 2003). “Stormwater is created when land development alters the natural water balance” (Stormwater Planning, 2002). Areas that were traditionally used for agriculture and forestry are now being converted into residential and commercial developments. Development changes the characteristics of runoff volumes and higher peak flows can create flooding; with a reduced amount of vegetation to take up the excess water, less water infiltrates into the ground and moves across the surface.

Figure 24Runoff



Stratford municipality has taken the initiative and is developing a

Stormwater Management Plan. The objective of this plan is to ensure future sustainable development by managing storm runoff flows and minimizing development impacts on the environment (Ghomoshchi, 2010). The study, conducted by CBCL Ltd., will entail the following:

- Review available Best Management Practices (BMPs) for Low Impact Development (LID)
- Identify which BMPs are most applicable for intended land-uses identified in the Town’s Development Plan.
- Define Reasonable goals for increases in peak flow generation for each land-use using these BMPs in Stratford
- Update the description of the existing major drainage systems for the Town as described in the original study;
- Re-run the assessment of limitations in the major drainage systems for existing development as well as for the flows that are expected from future development using the recommended BMPs.
- Identify the opportunities to address these under-capacity sections.

The end result of the Stratford stormwater study is the creation of a new set of policies and regulations for stormwater management within the Town of Stratford. Stratford is updating the assessment of existing storm water conditions in the Town, and is evaluating recommendations for stormwater upgrades to accommodate the existing runoff patterns. This can then be applied within the neighboring areas.

Objective – Municipal Stormwater Management Plan

The development and implementation of a stormwater management plan will benefit both the Stratford Area watershed as well as the municipality from a developmental standpoint

Immediate Strategies

- Closely follow the progress of the Stormwater Management Plan
- Ensure the interested members of the community and SAWIG are kept up-to-date with the subsequent development of the policies and by-laws created by the Stratford municipality. This process should also allow for residents to provide input into the stormwater management plan.
- Encourage the introduction of new stormwater guidelines in order to limit increases in runoff from future developments within the community

Long-term Strategies

- Provide information to the town regarding policies, guidelines and regulations on Stormwater Management, and ensure they are adhered to by the planning department and enforcers.
- Explore natural structures and alternative methods to pavement and storm sewer systems

Objective – Stormwater Management Plans for Developers

It is advantageous to the developers, the municipality, the watershed, and the environment to have plans prepared by professionals prior to development within the watershed area.

Immediate Strategies

- Encourage developers to have stormwater management plans prepared by consulting engineers
- Ensure wetlands and watercourses are taken into account when developing these plans

Mid-term Strategies

- Assist the municipality with the creation of by-laws or regulations that require developers to prepare stormwater management plans

Figure 25 Overloaded Stormwater System



5.12 A.L.U.S. PROGRAM

Alternative Land Use Services (ALUS) Program is a voluntary program for PEI landowners and farmers. The program protects PEI water, fish and wildlife habitat. The ALUS program aims to reduce soil erosion and siltation of streams, improve water quality, and improve and increase wildlife habitat.

Eligible applicants sign an agreement to receive financial compensation to remove land from agricultural production or to establish and maintain beneficial management practices that protect soil and water quality or improve fish and wildlife habitat. Some activities eligible for payment include:



- establishment of native trees in buffer zones;
- retiring sensitive land by expanding buffer zones, establishing non regulated grassed headlands, or retiring high-sloped land;
- taking land out of production in order to establish soil conservation structures; and maintaining livestock fences adjacent to watercourses and wetlands

Objective – ALUS Program

Encourage and promote agricultural landowners to take advantage of the ALUS program

Immediate Strategies

- Promote ALUS program to all interested members of the Stratford area
 - a) via regular informative articles in the Stratford newsletter
 - b) meet with those producers who demonstrate an interest
- Maintain communication with the ALUS coordinator in the Department of Environment, Energy and Forestry, as well as the Department of Agriculture

Long-term Strategies

- Continued communication and cooperation with members of Stratford area who have participated in the ALUS program
- Encourage payment improvements
- Develop implementation of a similar program to other sectors such as forestry

5.13 PLANNING FOR CLIMATE CHANGE⁴

Scientific evidence is mounting in the case for climate change. Despite the fact that P.E.I. is a low emitter of national greenhouse gases (0.3%), it will be heavily impacted as a small low-lying island. P.E.I. is composed of erodible sandstone bedrock with a consistently submerged coastline. Sea level in the Atlantic Ocean has risen 30cm since 1911; this trend is unsettling for all Island residents. There are more frequent cases of storm events and intensity, storm surges and coastal erosion and sedimentation. Additionally, milder winters and hotter summers put

⁴ Climate Change - "Climate change is the change in the long-term weather patterns experienced in a region. Human activities have resulted in the increased levels of heat-trapping gases which contribute to the warming of the Earth." (Province of Prince Edward Island, 2003)

water resources under pressure and impact a significant number of species of flora and fauna (Department of Environment, Energy and Forestry (d), n.d.).

The Stratford watershed has not gone unaffected; significant erosion has occurred in numerous places throughout the area. Seawalls are being constructed along private properties aimed at preventing shoreline erosion, but this has been viewed to cause a higher rate of erosion in adjacent properties that have not developed protective measures. There is infrastructure located close to the coast, and several precipitation and storm events have caused flooding along several roads within the Stratford municipality.

Prince Edward Island was chosen by Environment Canada as a site to study sea level rise and climate change impacts due to its sensitivity to changes in sea level. “Even without climate change, the present rate of sea-level rise in P.E.I. will bring challenges to human interests and ecological systems in the coastal zone” (Environment Canada, 2002) A storm surge are of major concern in the Stratford Area, and is the difference between the observed water level and the predicted tides. At 3.60m (12 feet) above Tide Chart Datum, Charlottetown waterfront is affected by floodwaters. Although this is an approximately 7 year event, frequency is expected to increase.

Figure 26 Storm Surge Map of Stratford Area – 5 meter storm surge

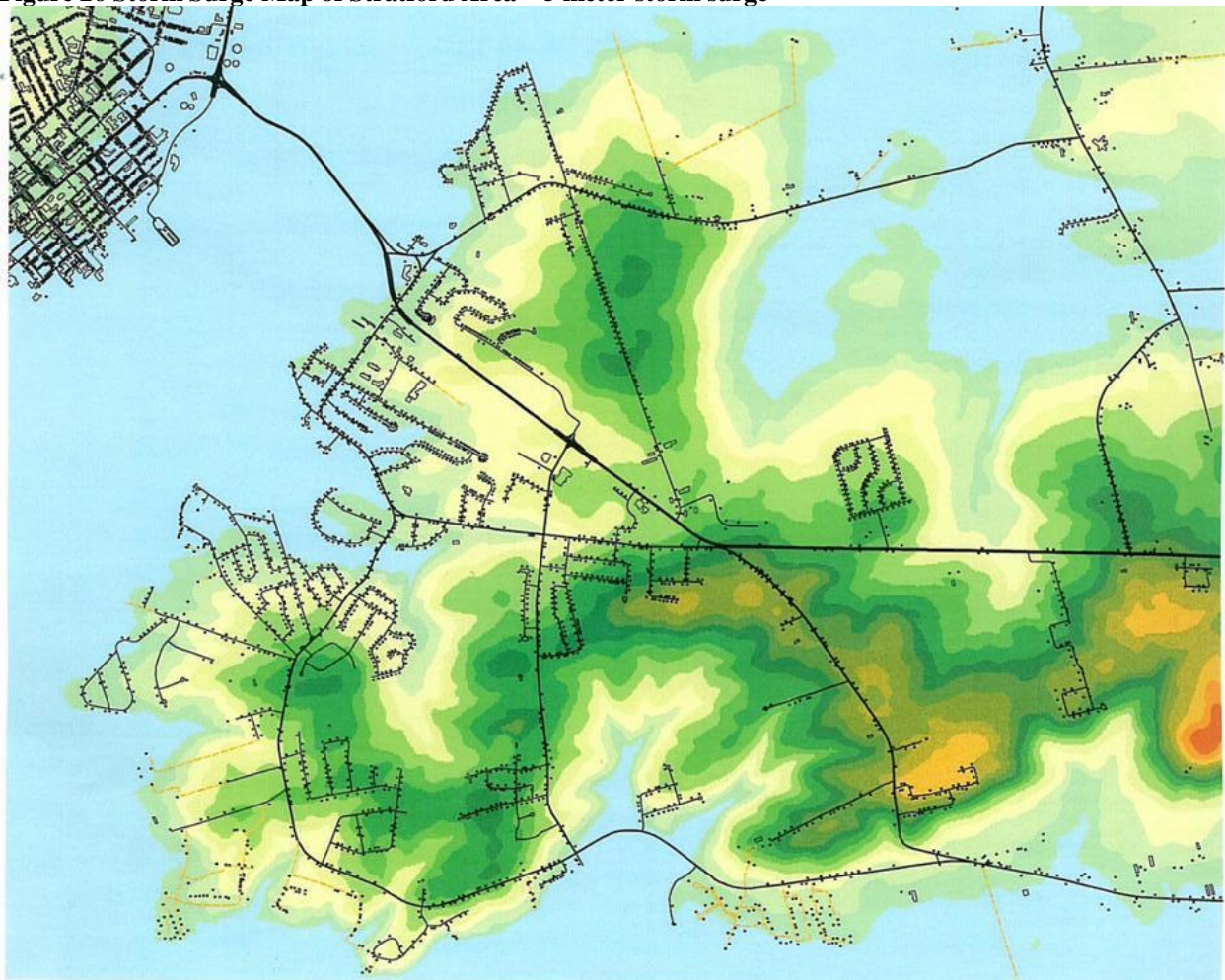
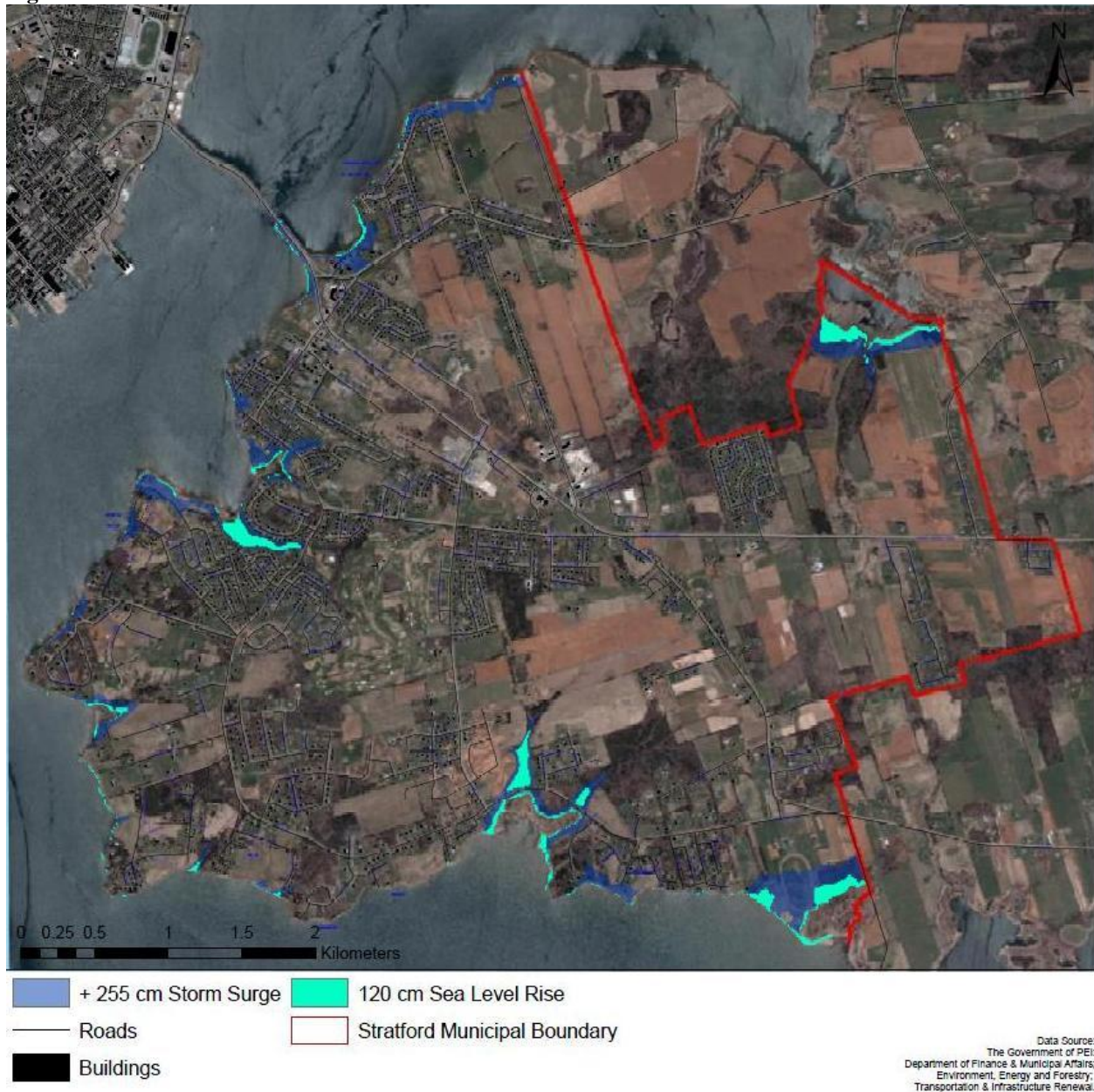


Figure 27 Predicted Affected Areas with Sea Level Rise in Town of Stratford



In the near future, all communities in Canada will be required to seriously re-evaluate their behaviors and lifestyles. The Atlantic Provinces have not gone unaffected; this increase in storm events and surges has affected coastal properties within the region. Research and investigation point in the direction of adaptation and adjustment on P.E.I. With the help of professionals and scientists, it is possible to include new adaptation methods into daily decision-making.

Figure 28 Exposure, Sensitivity and Vulnerability Rating in Atlantic Canada

Sector	Exposure	Sensitivity	Adaptive capacity	Vulnerability	Confidence level
Terrestrial ecosystems	Low to moderate	Low to moderate	Moderate to high	Low to moderate	Moderate to High
Coastal zone	High	High	Moderate	High	High
Marine ecosystems	High to moderate	High to moderate	Low to moderate	High to moderate	Moderate to High
Water resources	Moderate	Moderate	High	Moderate	High
Forestry	Low	Low	Low to moderate	Low to Moderate	Moderate
Agriculture	High	High	Moderate	Moderate	Moderate to High
Transportation	Low	Low to Moderate	Moderate to high	Low to Moderate	Moderate
Energy	Low	Low to Moderate	Moderate to high	Low to Moderate	High
Tourism	Moderate	Modérée	Moderate	Moderate	Low to Moderate
Rural communities	Moderate to high	High	Low to moderate	High	Moderate
Urban communities	Moderate to high	Moderate	High to moderate	Moderate	High

Note: From NRCan 2007

Stratford has been chosen as one of the four communities in Atlantic Canada for a climate change adaptation plan. Identification of vulnerable areas and infrastructure, along with incorporating flooding into policies will hopefully reduce the damage and vulnerability on P.E.I. Natural Resources Canada (NRCan) is presently developing tools designed to “assist communities in adapting to climate change by collaborating with a number of professional organizations across Canada” (Canadian Institute of Planners, 2010).

The Canadian Institute of Planners (CIP), along with NRCan, has been working to make climate change a major factor in planning practices and decision-making. A policy position as well as a module for continued learning is now available for planners across the country. Phase II included continuing to build awareness on climate change and develop the devices needed for planners on a daily basis. Phase III and IV included developing and finalizing an Adaptation strategy for the municipality, with the hopes that these recommendations will be incorporated into the town’s by-laws planning processes (NRCan, 2007).

Objective – Adaptation to Climate Change in the Stratford Area

There is an opportunity for the Stratford Area community to invest time, money and effort into developing tools for adaptation to climate change. Identifying and understanding the potential impacts are crucial to a risk-based approach.

Immediate Strategies

- Continue to work with the Town of Stratford regarding the Climate Change Adaptation Plan for Stratford
- Identify and classify particularly vulnerable areas along the watershed’s coastal zone, including Fullerton’s Creek and Alexandra

- The watershed group should develop a working partnership with all relevant governmental departments to identify short-term and long-term solutions/adaptations to inevitable climate change events
- Assist with the organization of conferences and public meetings, pamphlets and websites regarding climate change and its effect on watershed residents

Mid-term Strategies

- Ensure the watershed group is closely involved with the evaluation of impacts of climate change on groundwater
- Develop relationships with the town planning department and subsequent engineers with regards to the implementation of the stormwater management plan and culvert repair/replacement project
- Continue to work with the town and neighboring communities in delineating potential climate change impacts
- Help the municipality develop sufficient setbacks to allow the shores and wetlands to migrate inland as coastal erosion occurs within the watershed
- Support and assist with the monitoring of coastal erosion, changes in precipitation and other climate change events

Long-term Strategies

- Encourage the municipality to continue to support and provide resources, both financially and in-kind, to SAWIG
- Assist the Town of Stratford in developing a proactive stance in managing residential coastal development in order to mitigate future impacts
- SAWIG should educate and encourage the town to consider how watershed management tools and concepts will play a larger role in land management, municipal planning and engineering

Objective – Mapping of Historical, Social and Cultural Values

Climate change is a threat not only to the physical environment, but to places valued by local communities. This includes views, historical sites, and recreational and spiritual areas. It is imperative these locations are identified by the local communities that value them.

Short-Term Strategies

- Work with the University of Prince Edward Island to identify and locate sites of historical, social and cultural values within the Stratford area watershed. Residents will be invited to participate in this exercise, where they are given a set of developed values and a map to place markers in areas of value
- Publicize results to members of the watershed community

5.14 FISH HABITAT/CULVERTS

“In order for fish to successfully fulfill their life processes they must have access to suitable areas in which to feed, seek refuge and spawn” (Fisheries and Oceans Canada, 2010). The Stratford area watershed is in a state of extensive and ongoing development. Typically used culverts are smooth or corrugated metal tubes, and are used to provide passage in low order streams. It has been necessary, past and present, to install culverts in order to construct roads

systems within the region. Depending on the design and installation of the culvert, the end result can be habitat fragmentation, often leading to isolated pockets of fish communities. This is especially evident when their outfalls are above the water surface (hanging culverts). Even a small drop can block fish movement and spawning in appropriate areas of the tributary.

Culverts should be placed low in the stream bed, in order for the waterflow to flow naturally through. Additionally, the bottom of smooth culverts should be roughed up with cement blocks or cement in order to slow water.

Municipal development and intensive agriculture in the watersheds have led to a decline in fish population and stream flow needed for spawning. Residents in the municipality alone often remark at the insufficient stream flow in the area, compared to as little as ten years ago; community members also recall days of fishing in various areas throughout the region.

Figure 29 Hanging Culvert



Hanging Culverts in the Stratford

Location	Type	Amount	Blockage (Flow (y/n)	Condition
Between Sundance/Spinnaker	Steel		N	Y	Good
MacLennan Road	Steel	5	N	Y	Fair
Across Skye Lane	Concrete		N	N	Good
Burge Lane	Corrugated	8		25 N	Poor
Bayside Drive	Corrugated		N	N	Poor
Hamms Lane	Corrugated		N	Y	Fair

Fish need streams with moderately clear water, shading and cover. Muddy water limits their vision and reduces their food supply. Tree planting along streams not only stabilizes banks, but will supply necessary stream cover to maintain cool water temperature during the summer months. Undercut banks, digger logs and deep pools provide vital cover and protection from predators and sunlight.

Objective – Maintain/Enhance Existing Fish Passage

Tributaries with known fish populations should be protected and enhanced in order to maintain and encourage fish passage and spawning.

Immediate Strategies

- Include the monitoring of fish passage and populations in Buffer Zone Assessment
- Perform necessary stream enhancement techniques to increase shade and cover in streams, and remove woody debris and litter that is impeding passage
- Dredge ponds and waterways known to be inhabited by smelts
- Install silt traps or silt ponds in areas of heavy siltation

Long-Term Strategies

- Maintain silt traps and ponds

Objective – Culvert Replacement

The ability to move easily through stream systems is important for almost all fish species; faulty and hanging culverts are known barriers to fish passage and spawning.

Immediate Strategies

- Identify hanging and inadequate culverts within the Stratford watershed
- Install ‘fish friendly’ culverts

Mid-Term Strategies

- Replace hanging culverts
- Acquire funding for culvert and fish passage replacement if not covered by the province

Long-Term Strategies

- Replace all inadequate culverts within the watershed

Objective – Monitoring

Restoration and protection of fish population is necessary in an area of declining water quantities.

Immediate Strategies

- Assess fish stock in watershed

Mid-Term Strategies

- Monitor water temperatures in streams of known fish populations

5.15 TRAILS

Trails provide a wide variety of environmental benefits; trails and greenways help improve air and water quality. Communities with an easily accessible set of trails provide enjoyable and safe options for transportation, which reduces air

Figure 30 Trail, Clive Stewart



pollution. By protecting land along rivers and streams, trails help minimize erosion and filter pollution caused by development and agricultural and road runoff (National Trails Training Partnership, 2009). A nature trail is an important tool for teaching environmental awareness and appreciation, and provides experiences for observing nature directly.

Objective – Develop, Enhance, and Maintain Nature Trails

Nature Trails have a large number of benefits within a community. Examples include access to nature and exercise and, environmental preservation.

Short-Term Strategies

- Partner with the Town of Stratford's Active Transportation Committee
- Collaborate with Fox Meadows Golf Course to develop a winter skiing and snowshoe trail
- Enhance and reintroduce old nature trails within the Stratford watershed i.e. Pondside Park trail

Mid-Term Strategies

- Encourage developers to create trails within new subdivisions and developments
- Support the use of local nature trails in schools for field trips and educational activities

Long-Term Strategies

- Work in partnership with the federal government, the Town of Stratford, and the Active Transportation committee on the Trans Canada trail extension to Wood Islands

GOAL – BASELINE ECOSYSTEM INFORMATION

The information gathered by the Stratford Area watershed will be used as the basis for the identification of priority lands which exhibit high natural values and which may be candidate areas for future municipal acquisition.

5.16 CANDIDATE PROTECTED AREAS

A protected area, defined by the International Union for Conservation of Nature, is “a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature ...” (Dudley, 2008). In a province with increasing habitat fragmentation, protected areas are a necessary component for safeguarding biodiversity; these areas are also an essential part of healthy communities.

Population in the Stratford area watershed is growing and the demands on the region's natural resources are increasing; areas with high natural value will be threatened unless steps are taken to protect them. These threats include development, invasive species, infrastructure, pollution, high water use, and climate change.

All ecosystems are interconnected, as humans are to the flora and fauna that surround them. The greatest threat to all wildlife is that of habitat destruction.

Within the Stratford watershed, this is due to deforestation, farming, and development. However, landuse practices are gradually changing to incorporate wildlife habitat preservation, and concerned community members are seeking to conserve areas known to be inhabited by year-round and seasonal species.

Figure 31 Snake Hibernacula



The Stratford area is still rich in wildlife, with known populations of eagles, ospreys, blue herons, two species of ducks, boblink, gulls, foxes etc. With the assistance of the community, watershed members, volunteers, and the province, populated areas can be preserved for future generations to enjoy.

Objective – Identify Protected Areas

With so much of Prince Edward Island owned by private landowners, it is imperative that the group partner with landowners within the Stratford Area watershed in order to identify and protect wild spaces and exceptional wildlife habitats.

Immediate Strategies

- With the help of community input and GPS mapping, identify the areas and natural features within the watershed that will benefit from protection and conservation. Some of these areas may include:
 - a) sloped ravine on Keppoch Road;
 - b) snake hibernacula in Alexandra and Clearview;
 - c) salt marshes;
 - d) Fullerton's marsh (those areas not already covered under Ducks Unlimited); and
 - e) buffer zones

Figure 32 Osprey



of tidal areas

- Identify areas inhabited by threatened, endangered, and special species. Some of these may include (but not limited by):

- a) eagles nest on Jack Reddin's property; and

- b) osprey nests;

- Work with private land technicians with the provincial government to identify potential areas

- Work with province to determine the status

Mid-Term Strategies

- Assist the municipality with the creation of conservation zone or special places by-laws
- Utilize provincial legislation, if necessary, to protect natural areas within the watershed area

5.17 COMMUNITY AQUATIC MONITORING PROGRAM

The Community Aquatic Monitoring Program (C.A.M.P.), established in 2003, is available to offer guidance to community and watershed groups who wish to “monitor the health and marine productivity of their local water ecosystem” (Fisheries and Oceans Canada, 2009). Using Department of Fisheries and Oceans monitoring protocols, groups are able to use a scientific approach for determining the health of their watersheds.

From May to September, volunteer members collect data in order to observe the health of their individual estuaries. Standard procedures allow the sampling regime to remain consistent at each location each year. Data is collected using beach seines that capture and release live small fish and crustaceans. Information is then gathered, such as identification and numbers of these species, water chemistry, and sediment and water samples. This is then

Figure 33 C.A.M.P.



used to recognize the cause of water changes and help put an action plan into place.

The Stratford Area Watershed Improvement Group is presently participating in the Hillsborough River Aquatic Monitoring Program with two sites on the tidal river bank, one at Rosebank Beach (Aptose Road) and the second on the river at Mason Road (Horton Park). This effort resulted in volunteers gathering baseline scientific data on the tidal estuary of the watershed.

Figure 34 C.A.M.P. Sites Along Hillsborough River



Objective – C.A.M.P. Program

Participation in the Community Aquatic Monitoring Program is vital in establishing the health and diversity of Stratford Area's estuaries.

Mid-Term Strategies

- Continue in the participation of C.A.M.P. during the summer months.

- Promote volunteer opportunities in gathering scientific data. Volunteers participate once a month throughout the summer.
- Coordinate groups to meet with each other in their geographic region and assist each other with C.A.M.P. field work. This could be accomplished by the Watershed Coordinator.

5.18 LITTER CONTROL

Litter is a major problem on Prince Edward Island; litter degrades water quality by obstructing sunlight to bottom dwelling plants and animals, and can lead to the alteration of water chemistry (Pounds, 2003). Garbage often ends up in stormwater systems, ditches, streams and rivers. Dumps and construction & demolition (C&D) sites are slowly becoming a thing of the past, but nevertheless these areas will have future repercussions if not handled properly.

Objective – Garbage Control

Garbage is often a serious but overlooked issue in an urban area; it is important for residents and developers to be aware of where their refuse goes.

Immediate Strategies

- Locate and document old dumps and C&D sites within the watershed
- Promote and organize annual cleanups in a variety of locations throughout the watershed
- Ensure town maintenance keeps the parks and public areas free of litter

GOAL – PUBLIC EDUCATION

Educational opportunities are an essential component of making informed and community-based watershed management decisions.

Objective - Increase Environmental Awareness

Providing public education opportunities on issues relevant to the Stratford area watershed will ensure participation and support within the community in both short-term and long-term.

Immediate Strategies

- Celebrate the accomplishments of SAWIG
 - a) Publish “good news story” in each Stratford newsletter, website, and local newspaper
 - b) Continue submitting article in each newsletter introducing the

Figure 35 Bus Tour 2009



Stratford watershed, as well as the recent activities achieved by the group

- c) Acknowledge both group and individual accomplishments at each public meeting
- Educate the community on the benefits of individual involvement
 - a) Regularly update the SAWIG brochure, with a section focused on individual activities and how small changes can make a positive difference
- The SAWIG pamphlet should include the activities for the upcoming season.
- Attend local events and activities to introduce the watershed group. This will gain members and support from the community.
- Public displays and demonstrations at community functions.
- Public meeting and guest speakers that focus on watershed issues, educate and engage the public in natural areas and provide information on watershed based management and local issues
- Encourage recreational activities that use opportunities offered by the watershed

Mid-Term Strategies

- Host public workshops to engage the community.
- Workshops should reflect the goals of the watershed group
- Take every opportunity to incorporate schools, colleges and universities into programs and activities within the watershed

Figure 36 Touring Pondside with Holland College Students

community



Long-Term Strategies

- Encourage the watershed
- Convey the conservation to programs and accomplished by partnering with MacPhail Woods Ecological Project and the Town of Stratford
- Host a large-scale annual event (“Watershed Day”) with a focus on watershed awareness and public education

implementation of education in local schools. importance of today’s youth via school workshops. This could be

Objective – Community Participation

The Stratford Area Watershed recognizes the importance of community involvement in the long-term continuation of watershed activities. SAWIG encourages community involvement and participation in issues of watershed health.

Immediate Strategies

- Involve students in watershed enhancement
 - a) carpentry courses to build birdhouses in local schools
 - b) specific classes can be approached for watershed education and participation
 - c) Tours of relevant areas within the watershed
 - d) Tree planting on school property and other public areas with the guidance of local forestry experts

- Host guided bus tours of various wildlife habitats and natural areas within the Stratford vicinity
- Encourage interested landowners, businesspersons, and residents to contribute to the financial security of SAWIG
- Encourage volunteerism within the community. Publish a bi-annual article on the importance of volunteers within the watershed
- Annual “Person of the Year” Award. The board of directors will annually choose someone within the watershed who demonstrates sound environmental practices and watershed participation. The recipient would receive a small plaque and public recognition

Long-Term Strategies

- A permanent watershed coordinator would provide the avenue for community feedback and financial contributions

Objective – Discover Your River Program

Discover Your River is a national interactive program designed to engage and interest schoolchildren, aged 10-15 years, in the benefit of good quality water in their community. Children are given the opportunity to learn how to preserve and protect their environment.

Immediate Strategies

- Partner with the P.E.I. Discover-Your-River coordinator
- Contact teachers at Glen Stewart School and promote the benefit of involving students in water monitoring

6.0 IMPLEMENTATION AND MONITORING

Planning and managing watershed activities is an ongoing process, requiring year-round and long-term funding in order to be successful. It is the hope of SAWIG that implementation will be ongoing indefinitely, with continued support from key stakeholders, the public, and both executive members and members of SAWIG. This Management Plan will need to be updated on a regular basis as situations change and as the needs of Stratford area communities evolve.

There is tremendous potential in the Stratford area watershed for future activities and restorations. There is an ever-increasing outpouring of support by both the commercial and residential districts, and it anticipated that the public will support the Management Plan, as it was written with the wishes, expectations, and collaboration of the community in mind. However, the vision of SAWIG will be short-lived without additional funding. It is predicted that various potential sources of funding by all levels of government, NGO’s, and independent donators, will allow this watershed group to continue to plan, implement and monitor the various watershed activities of this report.

Government involvement is required and appreciated for the success of a watershed group; however, community member participation is at the core of watershed activity and implementation. A watershed is an essential natural resource, shared and utilized by all; it is the responsibility of communities to protect and preserve it. Stratford Area Watershed Improvement

Group always welcomes new members and volunteers to aid in the enhancement of the Stratford area watershed.

The continuing education of the residents of Stratford area is extremely important in the success of the watershed group. It is vital that education is targeted at the youth of this area, as they are the future leaders of the community. People need to be aware of the issues before they can make informed decisions. A key element in SAWIG's mandate is to provide opportunities for residents in the Stratford area to become educated on issues that affect their water resources.

GLOSSARY OF COMMON WATERSHED TERMS AND ACRONYMS

Acadian Forest - presence of [Red Spruce](#) is characteristic but not exclusive to the Acadian Forest region, as well as [Yellow Birch](#), [Red oak](#), [Sugar Maple](#), [White](#) and [Red Pine](#), [American Beech](#) and [Eastern Hemlock](#). In low land areas, [Black Spruce](#), [Larch](#) and [Red Maple](#) are common. Other species of note are [White Spruce](#), [White Elm](#), [White Ash](#), [White](#) and [Grey Birch](#), [Eastern White Cedar](#), as well as poplars

Anoxic – conditions in a body of water where oxygen levels are low or absent. Such conditions are detrimental to most forms of aquatic life.

Buffer Zone – 15 meter strip of land adjacent to watercourses, coastlines and wetlands primarily aimed at maintaining good water quality, controlling erosion, or providing wildlife habitat.

C.A.M.P. Program – Community Aquatic Monitoring Program

CSJ – Canada Summer Jobs, federal funding program for summer staff

DEEF – Department of Environment, Energy and Forestry

EcoAction – federal funding program

Ecosystem – system formed by the interaction of a community of organisms with their environment.

EDA – Employment Development Agency; provides funding for summer staff via Jobs for Youth (JFY) and Special Projects Program (SPP). This is applied for through the Watershed Management Fund.

Eutrophication – having waters rich in mineral and organic nutrients will promote a proliferation of plant life, primarily algae, which reduces the dissolved oxygen content and is detrimental to most forms of aquatic life.

Fish Passage – ability of fish to complete life cycle migration upstream.

Forest Enhancement Program – Provincial program designed to make landowners aware of the potential of their forest land through the development of a forest management plan. Wildlife, recreation, biodiversity are all increased through this program.

Greening Spaces Program – fund granted through the Department of Forestry. A variety of Acadian forest species of trees and shrubs are available through the nursery for buffer zone and windbreak plantings; \$500 for materials and costs is also issued.

In-Kind – a donation of volunteer's time, this may also be travel expenses/time or materials given to the organization. Funding partners almost always wish their funds to be matched with cash and volunteerism. Board members are asked to log their in-kind hours.

Invasive Plants – species that are not native to Prince Edward Island

Nitrates – water soluble form of nitrogen and one of 2 primary nutrients to limit aquatic productivity. Nitrate enters groundwater primarily through percolation. Extreme levels can lead to excessive growths of vegetation and anoxic conditions.

Nutrient Management – An agricultural technique that involves applying manure and/or fertilizer at a rate that will meet crop requirements without leaving unused nutrients behind.

Permits (landowner) – issued by landowners to SAWIG to access streams, buffer zones etc located on their land.

Recharge – total amount of groundwater that recharges a watershed on an annual basis

Restoration – conducted by summer staff and volunteers in the watercourses within the watershed

Sediment – loose clay, sand and silt that settle at the bottom of a body of water. Sediment can come from soil erosion or the decomposition of plants and animals. The primary concern of most watershed groups on PEI.

Water Budget – the total quantity of groundwater available, usually calculated on a watershed basis. A water budget can be used to determine the potential impact of future development on water resources.

Watershed – all land on PEI can be divided into areas call watersheds. Each watershed consists of all the land that surface water and groundwater flows over or through to get to a particular river or stream. Watershed boundaries are high points of land where water flows into distinct waterways at lower elevations.

Watershed Alliance – an affiliation of groups representing common interests of all PEI watershed groups, established in 2008.

Watershed Planning – a community-driven process of managing natural resources, particularly water, to ensure environmental, economic and social sustainability

Wellfield – an area containing more than one pumping well that supplies water to a public water system

Wetland and Watercourse Alteration Permits – issued by the Department of Environment, Energy and Forestry for virtually any restoration activity performed in streams or within 15 meter buffer zone. Applications must be submitted annually, and expire September 30 of each year.

WMF – Watershed Management Fund; responsible for core funding for most groups on PEI. Applied for through the Department of Environment, Energy and Forestry.

APPENDIX A PARTICIPANTS

Community Involvement:

Thanks to the many members of the community who attended the watershed meetings on a regular basis and contributed their valued opinions to the planning process. Without the involvement of the community, SAWIG's Management Plan would not be an accurate representation of the needs of the community.

Prince Edward Island Watershed Management Fund:

The Watershed Management Fund, distributed by the P.E.I. Department of Environment, Energy and Forestry, grants financial support to various watershed groups across the province. This fund provided the financial backbone for the development of the SAWIG Management Plan.

Town of Stratford

The Town of Stratford has been a key participant in the development of the Watershed Management Plan and projects within the municipality.

Management Plan Writers:

This document was written by Kelley Arnold (Watershed Coordinator), with significant assistance from Gary Schneider (MacPhail Woods) and Doug Deacon (Sustainable Economics Development Coordinator, Town of Stratford).

Key Partners:



Stratford Area Watershed Improvement Group Board of Directors:

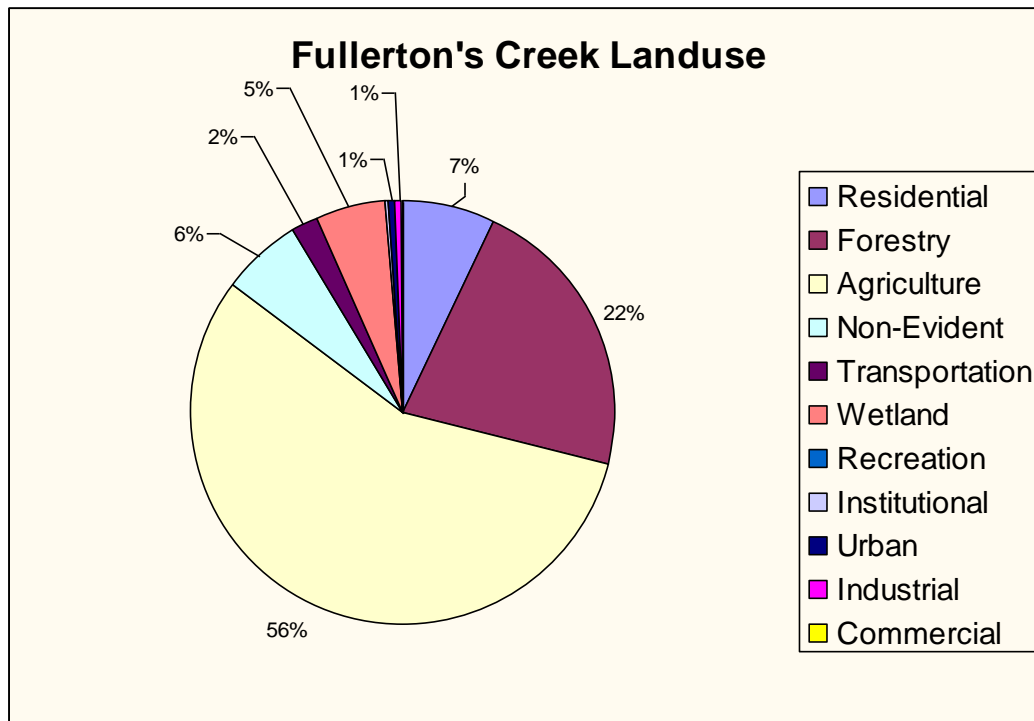
Paul McCormack – President, Executive Member
Dr. David McKenna – Past President, Executive Member
Winston Maund – Vice President, Executive Member
Doug Deacon – Secretary, Executive Member
Mary Hughes – Treasurer, Executive Member
Matt MacEwen - Executive Member
Marie Ewing - Executive Member

Additional Contributors:

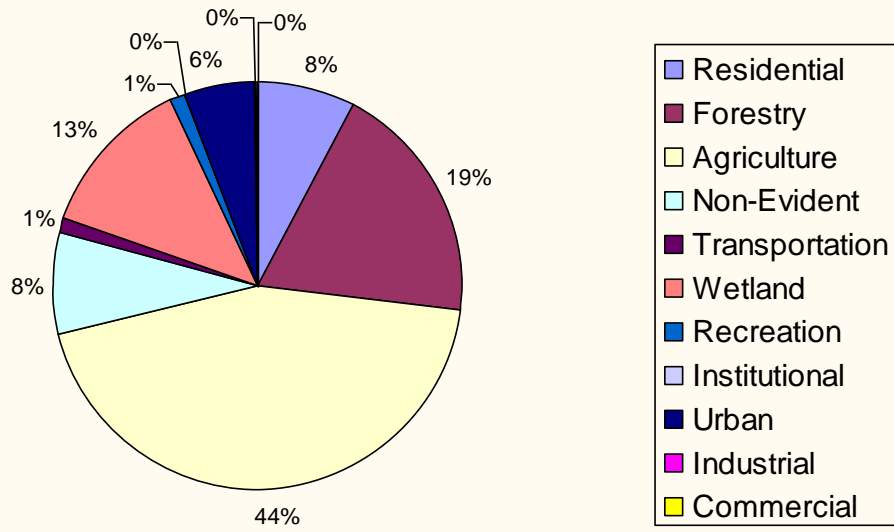
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Ann Wheatley – PEI Watershed Alliance
Armand Robichaud – Canadian Institute of Planners/Natural Resources Canada
Art Smith – Department of Fisheries and Oceans
Bruce Smith – Majesta Trees by the Shore Program
Candy Handrahan - Department of Environment, Energy and Forestry
Darren Chaisson – Transportation and Infrastructure Renewal
Don Jardine - DE Jardine Consulting
Doug Murray – Active Transportation Committee
Eric Edward – MacPhail Woods
Fred Chevarie - Souris River Watershed
Gary Schneider – MacPhail Woods
Glen Kelly - Pisquid River Watershed
Janeen McGuigan – Dalhousie University
Jason Hughes – Town of Stratford
Jay Carr - Department of Environment, Energy and Forestry
Jennifer MacKinnon - Department of Environment, Energy and Forestry
Joanne Weir – Town of Stratford
John Brehaut – Municipality of Alexandra
Jonathan Platt – Ducks Unlimited
Kate Greene – Canadian Institute of Planners/Natural Resources Canada
Kevin Reynolds – Town of Stratford
Kim MacLeod – Rural Jobs Initiative
Mark Arsenault – Department of Environment, Energy and Forestry
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Vahid Ghomoshchi – Town of Stratford
Wade Lewis – Ducks Unlimited
Kim MacLeod – Rural Jobs Initiative

APPENDIX B LAND USE OF STRATFORD AREA SUB-WATERSHEDS

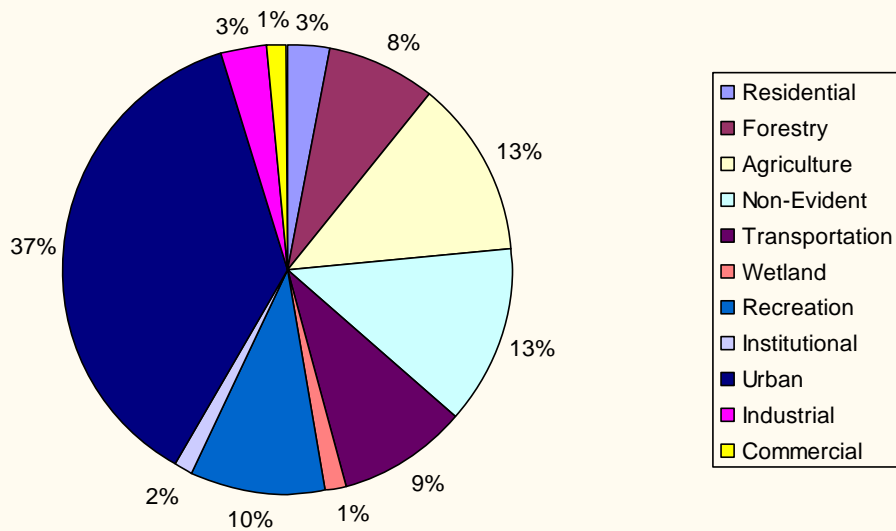
	Residential	Forestry	Agriculture	Non-Evident	Transportation	Wetland	Recreation	Institutional	Urban	Industrial	Commercial
Fullerton's Creek	531.51	1606.13	4179.31	452.21	156.8	389.43	5.83	9.69	43.63	40.76	1.57
Rosebank	62.04	165.07	270.11	272.87	200.18	25.72	203.83	34.10	779.57	69.14	29.42
Alexandra	447.14	1078.1	2520.37	458.18	55.24	734.21	58.27		323.03	8.34	2.21
Total	1040.69	2849.3	6969.79	1183.26	412.22	1149.36	267.93	43.79	1146.2	118.24	33.2
Average	346.90	949.77	2323.26	394.42	137.41	383.12	89.31	21.90	382.08	39.41	11.07



Alexandra Landuse



Rosebank Landuse



APPENDIX C BUFFER ZONE ASSESSMENT FOR PONDSIDE PARK

	Location	Water Body Type	Condition
19-Aug-09			
Transect 1	Hatchery Pond	Pond	Algae Cover, little movement
Transect 2	Directly Behind Hatchery Pond	Stream	Limited Water Flow
Transect 3	S of Hatchery Pond	Streambed	Dry except for small pools fed by s
Transect 4	South of Hatchery Pond	Streambed	Silty, Dry, became meadow-like
Transect 5	North of Hatchery Pond	Streambed, occasional puddles	Silty, Muddy
Transect 6	N of Hatchery Pond, behind s/d	Stream, Not a constant flow, wet	Fair water qual.
Transect 7	Moore's Pond	Pond	Fair water qual.

Material on Surface and Bottom	Surrounding Land Use	Tree Cover of Riparian Zone (%)
Algae and Seaweed (looks like "mini	Park and Residential	0-25%
Gravel, Silt	Little visibility	75-100%
Gravel, cobbles	Golf Course, Residential	25-50%
Silt, grasses	Golf Course, Residential	0-75%
Silt, gravel	Golf Course, Residential	25-50%
Rock and pebble	Golf Course, Residential	0-75%
Lily pads, algae, silt on bottom	Golf Course, Residential, Stratford Rd.	0-25%

Stormwater	Obstructions in Waterway	Visible Wildlife Habitat	Human Alteration
Culvert, West	Garbage, Docks, algae	Ducks, trout, dragonflies	Park, parking lot, lav
No	Garbage, fallen trees, debris	Squirrels, surface water bugs	Railway steps to ba
Culvert	Tree Debris, garbage	No	Golf Course, gravele
No	Garbage, old pipe elbow	Spiders, wasp's hives	Golf Course, gravele
No	Tree debris, pallets (old brid	Insects	Very little
Culvert, Back	4 constructed rock dams (us	Frog, insects, small fish	Pathways and stairw
Culvert, 'fish l	Lily pads encompass ~1/3 of	Dragonflies	Mowed to pond edge

Tree/Plant Identification (if able)
White Spruce, Birch, Alders, Goldenrod, willow
Ferns, Maple, Spruce, Fir, Birch,
Yellow Birch, alders, spruce, maple, ferns, mountain ash, pine, rosebush,
White birch, spruce, alders, maple, goldenrod, grasses, aspen(?),
Goldenrod, Fireweed(?), pine
Maple, spruce pine, alders, unidentified tree with fruit(beech?), dandelions, bullrushes, goldenrod, ferns, birch
Fireweed(?) or purple loosestrife, choke cherries(?), alders

Additional Comments

Old fox pens present in area (not within buffer), old clothesline
Great deal of garbage (e.g. old tires, toys), mowed grass

APPENDIX D WATERCOURSE AND BUFFER ZONE ASSESSMENT FORM

Date: _____

WATERCOURSE AND RIPARIAN ZONE ASSESSMENT - FIELD SHEET

If any particular plants/trees/obstructions present, please GPS

1. GPS Coordinates (50m): _____

2. Location (i.e. Moore's Pond) and water body type and condition: _____

3. Type of material on waterway bottom (i.e. silt, rock etc) _____

4. Surrounding Land Use (if visible): _____

5. Vegetative Cover of Riparian Area (circle one) 0-25% 25-50% 50-75% 75-100%

6. Evidence of Stormwater Discharge? Culverts? Significant bank erosion? If so, describe:

7. Impediments or Obstructions in Waterway (describe): _____

8. Visible Wildlife and Wildlife Habitat: _____

9. Human Alteration of Riparian Area – Vegetation/Physical: _____

10. Bare Ground in Riparian Zone? Y N Location: _____

11. Common/Uncommon Tree/Plant Identification: _____

Additional Comments:

APPENDIX E PROVINCIAL REGULATIONS

Watercourse and Wetland Protection Regulations (December 2008)

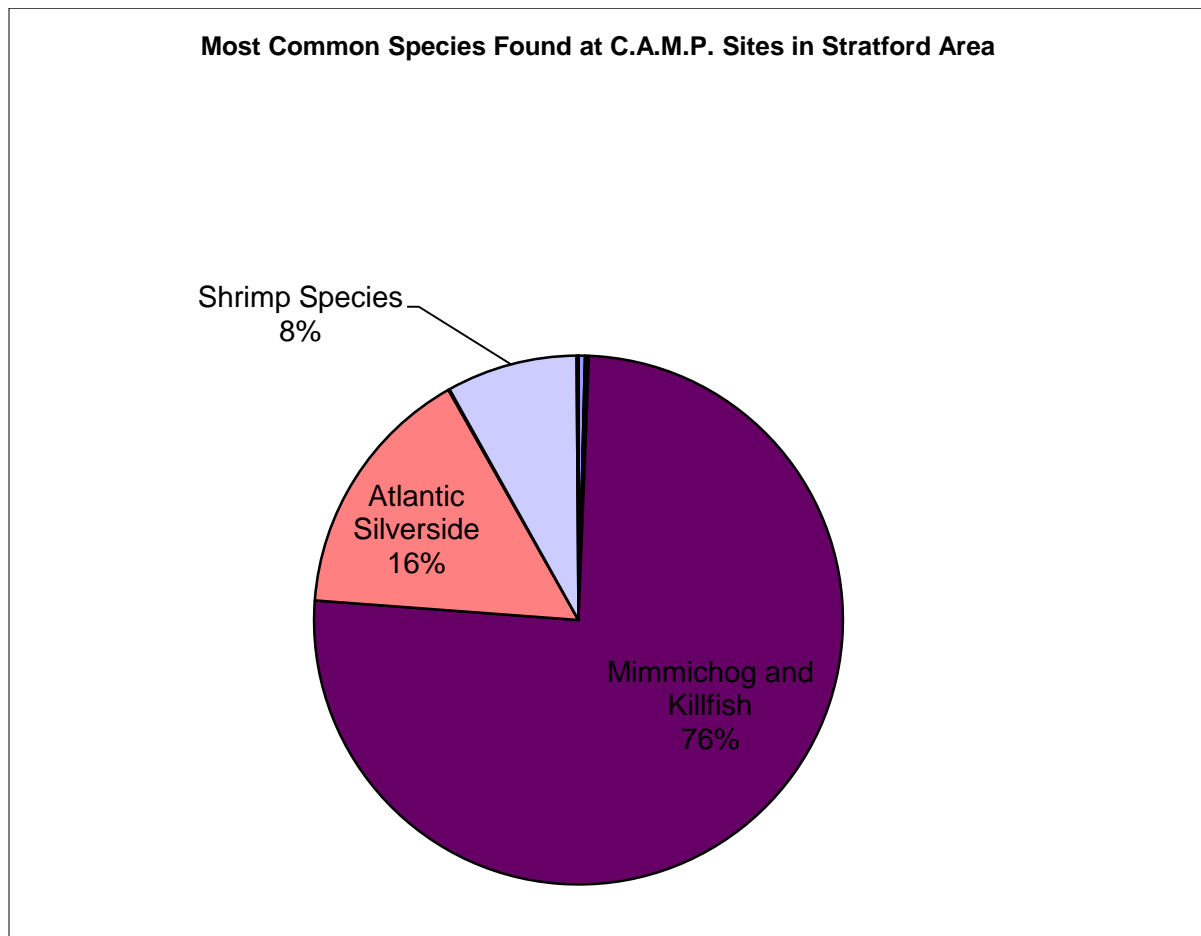
(4) No person shall, without a license or a Buffer Zone Activity Permit, and other than in accordance with the conditions thereof, engage in or cause or permit the engaging in any of the following activities within 15 metres of a watercourse boundary or a wetland boundary:

- (b) dump or infill, or deposit soil, water, mud, sand, gravel, stones, rubbish, litter, rocks, aggregate or material or objects of any kind;*
- (c) construct or place, repair or replace, demolish or remove, buildings or structures or obstructions of any kind, including but not limited to bridges, culverts, breakwaters, dams, wharves, docks, slipways, decks, or flood or erosion protection works;*
- (e) disturb, remove, alter, disrupt or destroy the ground in any manner;*
- (f) cut down live trees or live shrubs;*

(6) For the avoidance of doubt, clause (4)(f) does not prohibit the pruning of trees or shrubs in a buffer zone, provided it is undertaken without engaging in any of the other activities prohibited by subsections (3) and (4).

(7) The planting of grass, trees or shrubs is exempted from the prohibitions in subsection (3) and clause (4)(e), provided it is undertaken without engaging in any of the other activities prohibited by subsections (3) and (4), and provided that only hand tools are used.

APPENDIX F C.A.M.P RESULTS FOR 2009



Pie chart include adult and young of the year for the nine most common species			
Species	Sp. Abbrev	abundance	% calc From May to September
Blackspotted Stickleback / Épinoche tacheté	BSS	159	0.39
Threespine stickleback / Épinoche à trois épines	3SS	15	0.04
Fourspine stickleback / Épinoche à quatre épines	4SS	63	0.16
Ninespine stickleback / Épinoche à neuf épines	9SS	20	0.05
Mummichog and Killifish / Choquemort et Fondule	MM-KL	30693	75.55
Atlantic silverside / Capucette d'Atlantique	SILV	6349	15.63
Flounder species (winter, smooth windowpane) / Plies espèce (rouge, lisse, turbot de sable)	FL	34	0.08
Shrimp species (grass, sand) / Crevette espèce (d'herbe, sable)	SH	3247	7.99
Crab species (rock, green, mud, lady) / Crabe espèce (commun, vert, vase, demoiselle)	CR	47	0.12
Other species / Autres espèce	OT	0	0.00
Sum of common species / sommes des espèces communes		40627	100.00
total		40627	

APPENDIX G EXAMPLES OF FUNDING OPPORTUNITIES

Majesta Trees by the Shore

The existence of trees in shoreline locations plays a critical role in river and stream ecology. In addition to promoting diversity of land and aquatic plants and animals, this type of vegetation also helps improve the quality of waterways. Tree Canada is a not-for-profit charitable organization established to encourage Canadians to plant and care for trees in urban and rural environments. Tree Canada engages Canadian companies, government agencies and individuals to support the planting of trees, the greening of schoolyards, and other efforts to sensitize Canadians to the benefits of planting and maintaining trees. The program will bring school children, Girl Guides, Scouts and local conservation groups together to plant native trees along shorelines in 25 Canadian communities.

Funds granted: Up to \$2,200

Application Deadline: January 15

Application: http://www.majestapromotions.ca/dedicate/application_form.aspx

Wal-Mart Evergreen Green Grants

Wal-Mart Canada and Evergreen partnered to offer funding for community-based restoration in urban regions of Canada. These Green Grants are available to community organizations who are involved in urban naturalization projects, planting of native trees as well as restoring and caring for woodlands and wetlands.

Funds Granted: Up to \$10,000

Application Deadline: February

Application: <http://www.evergreen.ca/en/funding/grants/walmart.sn>

Government of Prince Edward Island Watershed Management Fund

The Watershed Management Fund is an initiative that provides support to community-based watershed organizations that are involved in the watershed management and planning process. The Watershed Management Fund provides direct financial assistance, as well as technical support.

Funds granted: Funds are distributed according to the size of the watershed group and watershed planning and management.

Application Deadline: February

Application: <http://www.gov.pe.ca/forms/pdf/861.pdf>

Shell Environmental Fund

The Shell Environmental Fund provides financial support for grass roots, action-oriented projects that improve and protect the Canadian environment. Funding support can be requested for projects that yield a direct, positive environmental benefit and engage the local community through hands-on involvement. This fund is open to all not-for-profit organizations including environmental/wildlife groups, community groups and associations, Aboriginal organizations, municipalities and educational institutions.

Funding Granted: Up to \$10,000

Application Deadline: February and September

Application: <https://grant.grantstream.ca/frames/Shell/SEF/>

Wildlife Conservation Fund

The Wildlife Conservation Fund (WCF) was created to provide funding for the protection and enhancement of wildlife and wildlife habitats. With funding provided by PEI's anglers, hunters and trappers, this program is aimed at enhancing and/or providing habitat for the Island's wildlife.

Funding Granted: In 2008, funding ranged from \$2,000 to \$30,000 depending on the project and anticipated results from various community groups. Additionally, evaluation is partially based on the presence of matched funds from the applicant, both cash and in-kind are accepted.

Application Deadline: February

Application: <http://www.gov.pe.ca/photos/original/WCFappForm09.pdf>

Home Depot Rebuilding Nature Grant

The Rebuilding Nature Grant Program provides grants and gift cards to support community projects that promote environmentally sustainable and responsible building practices; these activities include environmental initiatives such as conservation projects, naturalization efforts, community cleanups and tree plantings.

Funding Granted: \$1000, \$3000 or \$12000 plus a \$2000 Home Depot Gift Card

Application Deadline: May

Funding Application: <http://www.evergreen.ca/docs/forms/Rebuilding-Nature-App-2010.pdf>

Environment Canada's Science Horizons Youth Internship Program

The program offers promising young scientists and post-secondary graduates hands-on practice working on environmental projects under the mentorship and coaching of experienced scientists and program managers. Youth across Canada obtain practical work experience in environmental projects in areas such as climate and ecosystem research, wildlife research and management, ecological monitoring and assessment and the development of scientific tools such as standards and guidelines of environmental quality.

Funding Granted: A maximum of \$12,000 per placement; employers must provide a minimum of 30% of the eligible cost of the project.

Application Deadline: End of March

Application: http://www.ec.gc.ca/sci_hor/form.cfm?lang=e®ion_ID=1

Cotton Trust Fund

Cotton Trust fund is used primarily for community park purposes. Expenditure from the Trust Fund should be limited to land acquisition and development.

Funding Granted: \$5000, matching funds is encouraged

Application Deadline: End of May-June

Application: <http://www.gov.pe.ca/forms/pdf/728.pdf>

Canadian Wildlife Federation/Foundation (CWF) Grant

The CWF is dedicated to restoring and protecting Canada's natural resources. The funding program is designed to promote wildlife habitat and the sustainable use of wildlife resources in our country. Applicants from registered charitable non-profit organizations will be considered; projects must be consistent with the objectives of the Canadian Wildlife Foundation. For example, the CWF will accept applications for scientific research, conservation programs, and environmental education endeavors.

Application Deadline: March 1 and September 1

Application: <http://www.cwf-fcf.org/assets/pdf/en/guidelines-foundation-jan-2009.pdf>

Environment Canada EcoAction Community Funding Program

Environment Canada's EcoAction program has provided financial support to community-based, non-profit organizations for projects that have measurable, positive impacts on the environment. The Program encourages action focused projects that will protect, rehabilitate or enhance the natural environment, and build the capacity of communities to sustain these activities into the future. The four central themes include clean air, clean water, climate change and nature.

Funding Granted: Maximum of \$100,000. For every dollar you receive, you must obtain at least the same amount from non-federal government partners. This includes cash contributions and in-kind support

Application Deadline: November

Application: <http://www.ec.gc.ca/ecoaction/default.asp?lang=En&n=EF4E94E3-1&offset=15&toc=show>

Government of Prince Edward Island Environmental Futures Program

It is a summer program that trains high school and university students to do environmental protection and enhancement work. Students are assigned to a team to do short-term environmental projects in their region. Organizations or government departments in PEI can apply to have the student work teams provide labour for their proposed environmental projects. Projects that provide environmental benefits to the community and offer a good educational and work experience to youth involved in the program are funded. Examples of projects include stream enhancement, solid waste management and educational activities.

Funds Granted: No funds granted, but labour is paid by the province

Application Deadline: Although there is no specific deadline, applications should be submitted in late spring in order for the projects to be completed.

Application: <http://www.gov.pe.ca/forms/display.php3?formnumber=1334> or a printable copy at <http://www.gov.pe.ca/forms/display.php3?formnumber=1334>

Greening Spaces Program

This program is designed for communities, schools, groups to plant trees in their community on PEI. Diversifying landscapes, increasing the number of trees in buffer zones and schoolyards, and providing soil erosion control and shade for streams are only a few of the benefits of tree planting. The Department of Environment, Energy and Forestry will provide quality native tree and shrub seedlings, educational materials, technical advice and financial support (up to \$500 per project). Communities, schools and volunteer interest groups will select the planting site, prepare a planting plan, and provide the labour.

Funds Granted: Up to \$500 per project

Application Deadline: No deadline

Application: <http://www.gov.pe.ca/photos/original/GSPappform2009.pdf>

TD Bank Financial Group Friends of the Environment Foundation

The TD Friends of the Environment Foundation is a national organization, formed by TD Bank Financial Group, with a grassroots focus that funds local projects dedicated to preserving the environment. TD FEF projects have included wildlife rehabilitation, education, cleanups and urban renewal.

Funding granted: Up to \$5000

Application Deadline: At least three months prior to the start date of project

Application:

https://www.grantrequest.com/SID_371/Default.asp?CT=CT2&SA=SNA&FID=35008

The RBC Blue Water Community Action Fund

The RBC Blue Water Project Grants Project focuses on issues affecting water resources, and has recently narrowed the focus to the protection of watersheds and drinking water. The program support community programs or projects that are grassroots initiatives, have the potential to improve water resources in the community or region, and help educate children, youth or others in the community about the importance of our watersheds. *It should be noted this fund requires a Charitable Registration Number.

Funding Granted: \$1000-\$5000

Application Deadline: There are no application deadlines

Application: <https://www.rbc.com/RBC:SzEJDqwWAA4AJtDW-aQ/cgi-bin/donations/apply.cgi/start>

Hedgerow and Buffer Zone Planting Program

Hedgerows are an essential part of PEI's landscape; they provide several environmental benefits to both landowners and Island residents. The Department of Environment, Energy and Forestry, along with Department of Agriculture, has developed a program where assistance is provided to landowners who wish to establish hedgerows for the purposes of conservation, stream banks stabilization, and windbreaks. There must be a minimum of 2.5 acres owned, landowners must agree to maintain these plants for a minimum of 15 years, and must have environmental farm plans.

Funding Granted: Minimum 300 plants must be planted; landowners are responsible for \$0.25 per seedling

Application Deadline: No deadline

Application: <http://www.gov.pe.ca/photos/original/hdgrowappfrm09.pdf>

APPENDIX H PERMITS

Watercourse and Wetland Alteration and Buffer Zone Activity Permit

A watercourse/wetland alteration is defined as “any temporary or permanent change made at, near or to a watercourse or wetland” (Department of Environment, Energy and Forestry(e), n.d.). An alteration permit is needed when working within 15m of any watercourse or wetland.

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