St. Clair Region Conservation Authority

Lambton Shores Tributaries Management Plan

Duffus and Ipperwash East Drains

Prepared for:
Ontario Ministry of the Environment
Lake Huron Southeast Shores Working Group

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Introduction

The Lambton Shores Tributaries Watersheds

The Lambton Shores Tributaries watersheds area is approximately 127 km^2 and consists of a variety of watercourses and drains flowing towards Lake Huron, including Duffus Creek, Shashawanda Creek, James Creek, and Woods Creek. Located within the St. Clair Region Conservation Authority (SCRCA) jurisdiction, these watersheds are also home to the Kettle and Stony Point First Nation. These watersheds compose the smallest watershed in the St. Clair Region. Agriculture dominates the area, with the remainder consisting of natural environment and settled areas. The natural areas include an Area of Natural and Scientific Interest (ANSI) and an Important Bird Area (IBA). One of the most ecologically significant areas in Lambton Shores is within the territory of the Chippewas of Kettle and Stony Point First Nation.

Although this watershed is the smallest in the region, as a whole, it remains too large to focus on specific management plans. Thus, St. Clair Region Conservation Authority (SCRCA) has narrowed the focus to a specific sub-watershed at the request of funding agencies to achieve demonstrable improvements in the water quality of watercourses in that sub-watershed. The Duffus/Ipperwash drains were selected as priority sub-watersheds within the Lambton Shores Tributaries watershed primarily because these drains have the closest outfall to the most popular beach within the region.

Integrating science-based knowledge, aboriginal traditional knowledge, and local knowledge and perspectives into management and policy can promote conservation of natural and cultural values. SCRCA staff aim to enhance community support and understanding of ecological functions and values of the area, and facilitate cooperation and partnerships among existing beach associations, conservation groups, and concerned landowners. Collaborative and integrated ecosystem management can be used to empower communities and individuals to collectively work towards effective stewardship of their watersheds.

A sub-watershed management plan is developed by collaborations among government agencies and community stakeholders to manage water, land/water interactions, and aquatic resources within a particular watershed to protect and enhance current ecosystem health as land uses change (Ontario Ministry of the Environment and Energy and Ontario Ministry of Natural Resources 1993). By incorporating both the government of Lambton Shores and community stakeholder interests, a community-based watershed plan creates an opportunity to ensure that as many local interests as possible are addressed and that the plan remains locally relevant. Discussions with these stakeholders led to specific management recommendations for partners and individual landowners with vested interest within the sub-watershed to undertake to improve water quality within this region. This management report outlines these recommendations for both nearshore and inland water quality (Table 1).

Table 1. Management options for Partners and Individuals in the Duffus/Ipperwash East Drains, Lambton Shores watershed for Healthy Lake Huron

	Recommended Management Approach	Recommended Actions: Partners (municipal governments, health units, conservation authorities, First Nations, and local environmental organizations)	Recommended Actions: Individuals
Nearshore Water Quality	Initiate action in the coastal area to protect water quality	• Provide education and signage on beach assets and concerns [pets on leash; limit wildlife feeding; clean boats to reduce invasive introductions] • Work cooperatively towards limiting vehicle access to sensitive areas (e.g. Aquafest, Green Flag designation, alternate parking facilities, fenced off swimming areas etc.) • Develop policy for uncontrolled pets/litter • Install public washrooms, portapotties, or provide shuttle to existing facilities • Continue beach surface water quality monitoring • Promote beneficial management practices (including septic maintenance) for all properties and promote funding programs and opportunities	• Organize beach clean-ups; TD Great Shoreline Cleanup • Clean up after pets • Maintain septic systems through regular inspections & clean-outs
Inland Surface Water Quality	Lower amount of nutrients and levels of bacteria	• Provide education on water quality concerns and options for improvements [fragile land retirements, buffers, restricting development] • Promote beneficial management practices for all property types • Promote funding programs and opportunities • Continue water quality monitoring • Promote enhanced level of stormwater management	• Maintain septic systems • Create and implement individual Environmental Property Plans/ Farm Plans • Implement Beneficial Management Practices (incl. erosion control techniques; riparian buffer plantings; proper manure/chemical application & storage; shelterbelts; water well management) • Limit use of recreational vehicles & equipment on stream banks

Nearshore Water Quality

Management Goal: Initiate action in the coastal area to protect water quality

Recommended Actions for Partners (municipal governments, health units, conservation authorities, First Nations, and environmental organizations)

1. Provide education and signage on ecological beach assets and concerns

Sand dunes are a common natural feature along the shoreline of Lake Huron within Lambton Shores. Comprised of light sand that is easily carried by wind or water, dunes are highly susceptible to erosion forces. Human activities on or around the dunes can threaten their structural integrity. Motorized vehicles pose even more of a risk as they can quickly damage dune plants that secure the sand. Similarly, removing dune plants and grasses for aesthetic purposes increases the risk of structural damage of the dune. Unstable slopes along Lake Huron are also easily eroded. In intense or prolonged rain events, water can rush down the bluffs and slopes causing large amounts of erosion, or creating gullies.

It is important to raise awareness surrounding these issues. It is crucial that beach goers understand the long-term effects of their activities on the beach. The responsibility of educating beach users about dune and beach processes and the importance of native plants in maintaining the dune structure and stability rests with the partners. Native dune plants and trees are highly specialized species that can prevent erosion and securing loose sands on eroded beaches.

The health of the beach can be compromised by unleashed pets, feeding wildlife, and possible transfer or introduction of non-native species resulting from not washing personal watercraft after each use. Unleashed pets can increase the risk of harassment and predation of native birds and rodents. Additionally, pets off leash can damage sensitive native plants and increase the chance of water quality degradation. Feeding wildlife may appear to help the wildlife, but in the end it may be detrimental, as it causes wildlife to frequent the beach more often in search of human food and increases fecal contamination of the beach, affecting beach water quality. Finally, failure to clean personal watercraft after each use sharply increases the risk of transferring non-native species from one water body to another. Zebra mussels (*Dreissena polymorpha*) and quagga mussels (*Dreissena rostriformis*) are examples of non-native transfers. Two decades after colonizing the Great Lakes, zebra and quagga mussels have dramatically affected water quality. Native populations of mussels have declined and although water clarity has improved because of the non-native mussels, native algae (*Cladophora* sp.) have expanded their range in the

water column and thereby increased population size (Evans et al 2011). Washing down personal watercraft after every use can reduce the risk of transporting non-native species among watercourses. Increasing signage along beaches within Lambton Shores is one way to raise awareness about the importance of these issues.

SCRCA recommends an increase in the number of signs, specifically at public access points to the beach. News articles detailing ecological beach assets would enhance education and awareness of beachfront landowners as well as visitors to the beach. Stewardship literature can be provided to beachfront landowners to increase their knowledge and guide individuals in making educated decisions concerning their plans for their property and landscaping. All partners should continue to support an annual event, like Aquafest to increase the awareness of landowners and beachgoers to the beach assets that they enjoy.

2. Work cooperatively towards limiting vehicle access to sensitive areas

A unique feature of Ipperwash Beach, often surprising to newcomers, is the presence of cars, motorhomes and other vehicles driving and parking on beach sand. Vehicles access the beach between Centre Sideroad, Kettle Point and West Ipperwash Road.

The continued use of both vehicles and recreational vehicles, such as ATVs on beach sites within Lambton Shores, will result in structural damage to dunes and increased risk of erosion. Periods of low water levels enable dune building and beach expansion, securing sand to the beach and preserving the beach-dune sand balance during changing lake levels (LHCCC 2006). Parking on the beach could interfere with these beach-dune functions, interrupting dune integrity and harming the dune's capacity to retain sand (Stephenson 1999; LHCCC 2006). Vehicle traffic can compress beach sand at depth, but loosen the surface, increasing risks of erosion due to wind and swash activity. While vehicle usage can break down dune structure, vehicles driving on the beach can deposit volatile organic compounds such as benzene, toluene, ethyl-benzene, and xylene along the swash zone, thereby affecting the water quality where beach goers swim. Additionally, the stresses of turning wheels can break underground rhizomes and can crush seedlings of annuals and young perennials. Backshore beach areas subjected to both short and long-term heavy vehicle and pedestrian traffic showed decreased top and root production, percent cover and diversity of vegetation when compared with non-impacted areas (Stephenson 1999). These impacted areas also demonstrated a lack of embryo dunes and of microclimatic changes. Landowners with beach front property and beach users are encouraged to avoid parking on the dunes or on the beach.

The presence of vehicles on beaches and dunes could ultimately undermine any conservation efforts made by a community. The Lake Huron Centre for Coastal Conservation recommends municipalities take a leadership role in dune conservation by prohibiting vehicles on beaches, as long-term environmental, economic and social benefits are achieved from healthy, functional coastal systems. Kettle Stony Point First Nation and the municipality of Lambton Shores are working together to find a solution to this issue. They may consider the feasibility of alternate parking facilities that would allow beach goers a place to park other than on the beach itself. The possibility of a shuttle from the alternate parking facility to the beach on busy summer weekends may also be considered. To reduce the proximity between beachgoers and motor vehicles on both land and water, swimming areas may be cordoned off using floating buoys and markers. Such limitations

will ensure both the safety of beach goers and swimmers and the sustainability of sensitive areas. Events like Aquafest will continue to serve as a public venue to discuss limiting vehicle access and public opinion on beach and water quality issues. Educating landowners and beachgoers about the strict criteria to obtain Blue Flag status for the beach may increase public support for restricting motor vehicles from the beach.

3. Develop policy for uncontrolled pets/litter

In the Aquafest survey, many respondents mentioned uncontrolled pets as an issue at Ipperwash Beach. While many pet owners respect other beach goers and beach space by keeping their pet on a leash and cleaning up after their pet, other pet owners violate the leash laws and allow their pets free reign of the beach. These actions can lead to conflicts and incidents involving confrontations with another person or child, or even another pet.

Litter is also an issue at the beach. Litter can degrade the quality of the soil and water on a beach. As litter breaks down into smaller fragments, beach wildlife and aquatic organisms may ingest them and lead to harm.

It would be fruitful to develop policies for handling uncontrolled pets and providing sufficient waste containers along the beach that will be monitored and changed regularly during the busy summer days. Municipal bylaws may cover leashing pets at all times, cleaning up after pets, and/or restricting pets to certain areas of the beach.

4. Install public washrooms, portapotties, or provide shuttle to existing facilities

Another issue of concern raised in the Aquafest surveys regards public washroom facilities at Ipperwash Beach. Currently, no convenient facilities exist and beach goers are using the dunes or the lake in place of a washroom. These actions can increase the risk of *E. coli* contamination of shoreline waters, rendering the beach unsafe for swimmers. Kettle Stony Point First Nation and the municipality of Lambton Shores are working together to find a solution to this issue. The best solution would be to install public washrooms or portapotties, but the option of providing a shuttle service to existing facilities (on Ontario Ministry of Natural Resources land) should also be investigated.

5. Continued beach surface water quality monitoring

Beach surface water quality monitoring is conducted by a number of organizations and will continue to be monitored. The Lambton Health Unit should continue its regular beach monitoring to ensure swimming conditions are safe for beachgoers.

6. Promote beneficial management practices (BMPs, including septic maintenance) for all properties and promote funding programs and opportunities

There are a number of opportunities to promote BMPs, funding programs and opportunities in Lambton Shores. Attending events like the Lambton County Soil and Crop Improvement Association meetings, agricultural fairs, and farm equipment dealership days will increase awareness of cost-share opportunities landowners may be a part of. In addition, writing articles for local newspapers will also be a valuable tool in promoting the benefits of BMPs and funding programs should be available to contribute to the costs of implementing the BMPs.

Recommended Actions for Individuals

1. Organize beach clean-ups

A terrific way to cultivate community building and clean up Ipperwash beach is to host a shoreline cleanup. Individuals can sign up on the Great Canadian Shoreline Cleanup website to volunteer to pick up garbage along the beach (http://shorelinecleanup.ca/en/take-action/get-involved). By registering a cleanup, volunteers can have bags and gloves subsidized, so the only cost is time. Removing garbage and interacting with citizens provides mutual responsibility of the beach by both landowners and beachgoers, giving them a vested interest in seeing their beach improve and stay healthy.

2. Clean up after pets

Spending the day at the beach with a pet dog can be a great experience. Currently though, a percentage of pet owners are negligent in cleaning up after their pet, which can not only ruin the experience of other beach goers, but can impact the health of the lake and beach. Using beach dunes or lake as a receptacle for a pet's waste can contribute to *E. coli* outbreaks, high ammonia levels in beach water quality, and can lead to beach closings. While pet waste may not be the largest contributor to pollution in the water, it does contribute to the problem. The cumulative impact of waste from pets, livestock, and resident waterfowl within a watershed can have a significant impact on water quality and may also cause human health risks (Edge and Hill 2007).

3. Maintain septic systems through regular inspections and clean-outs

Without regular pumping and maintenance, septic systems can fail and thus allow contaminants to seep out of the tank and weeping bed, and percolate down toward shallow aquifers. Septic tanks should be pumped by a licensed contractor as required (usually every 3-5 years). Additionally, septic tanks should be opened and inspected every two years to ensure the baffles are in place and the septic tank is functioning properly. It is also recommended to regularly examine the tile bed for any saturated or soggy spots. Practice water conservation measures such as using low-flow toilets and showerheads, fixing leaky taps, limiting shower length, and/or running only full loads in the dishwasher or washing machine, to prevent overloading the septic tank. Limiting the use of household drain solvents, cleaners, and bleach and refraining from pouring greases or cooking oils down the sink, can improve the longevity of a septic system. Programs are needed to provide financial assistance for septic upgrades in Lambton Shores.

Inland Surface Water Quality

Management Goal: Lower amount of nutrients and levels of bacteria

Recommended Actions for Partners (municipal governments, health units, conservation authorities, First Nations, and environmental organizations)

1. **Provide education on water quality concerns and options for improvements**
2. **Promote beneficial management practices for all property types**
3. **Promote funding programs and opportunities**

Environmental stewardship is a primary way in which surface water quality can be maintained and improved. The Lambton Shores Watersheds community expressed the need for education about stewardship practices that can be put into place. In accordance with this direction, SCRCA will offer workshops and community events to educate the public about good stewardship practices. Workshops could focus on the Rural Landowner Stewardship Guide and the Stewardship Guide for the Lake Huron Coastline. Additionally, stewardship programs, such as the Ontario Environmental Farm Plan, exist to help finance landowners who undertake various stewardship activities.

The SCRCA recommends providing education on water quality concerns and options for improvement by offering information on Best Management Practices. There are a number of opportunities to promote BMPs, funding programs, and opportunities in Lambton Shores. Attending events like the Lambton County Soil and Crop Improvement Association meetings, agricultural fairs, and dealership days will increase awareness of cost-share opportunities landowners may be a part of. In addition, writing articles for local newspapers will also be a valuable tool in promoting the benefits of BMPs and the current funding programs available to contribute to the costs of implementing the BMPs. Once landowners are made aware of the importance of BMPs, it is possible to discuss funding programs and opportunities where landowners can get contributions to cover the cost of implementing BMPs on their property. Projects like fragile land retirements, natural buffers should be considered in addition to the possibility of restricting development near riparian zones and woodlots. Recognizing water quality issues is one part of the solution, enabling local citizens to be a part of solving those issues is the other. Funding programs will be needed to assist landowners and partners.

4. **Continue water quality monitoring**
5. **Promote enhanced level of stormwater management**

Water quality and benthic invertebrate monitoring will continue in Shashawanda Creek, as a part of the SCRCA enhanced water quality program. Water quality measurements on Duffus Creek will also occur. It is anticipated that the Municipality will

continue to fund private water quality sampling as well. This monitoring enables tracking of changes in water quality over time, which is important to assess land activities.

Urban areas have used stormwater management for decades to manage water runoff, while rural Ontario has had no such model. Over the last number of years, systematic rural land drainage and historical wetland loss have made many tributaries along the Southeast Shore of Lake Huron prone to episodes of intense runoff from the land. Peak flows build quickly and contaminant-laden runoff discharges directly to Lake Huron. It is well known that nearshore water quality is affected by upstream and near shore land uses. A Rural Stormwater Management Model (RSWMM) would be a great tool for managers to assist in determining how to best manage storm runoff from rural areas with low population bases, yet high tourist demand, which is characteristic of the Lambton Shores area. RSWMM would address not only water quality and quantity, but also climate change, groundwater and surface water, and help determine which stewardship practices will work best at different locations within the watershed.

Rural landowners are good stewards of the land and are willing to implement beneficial/best management practices (BMP). The current challenge for managers is to achieve a strong cost effective/benefit ratio from the dollars spent on private land stewardship and nearshore water quality. Implementation of the RSWMM will enable managers to make informed decisions regarding which stewardship practices to implement and where. Collaboration with rural landowners in the Lambton Shores area to implement BMPs is crucial to the success of the RSWMM.

Utilizing this model in the Lambton Shores area is predicted to make improvements in specific water quality parameters including *E. coli*, nitrates, and phosphorous as well as the potential for reduced flows during rain events. St. Clair Region Conservation Authority currently monitors water quality parameters in Lambton Shores and will be installing a weather station, adding stream flow rating, and increasing the number of monitoring locations and recording data for the next five years. Monitoring and analysis of quality and quantity parameters is a key part of the Lambton Shores Management Plan so that outcomes can be measured and reported.

Thus, implementing a RSWMM in the Lambton Shores area will not only fulfill a water management need in a rural community, but would also contribute to the local economy both in terms of implementing stewardship practices on private land and the local tourist economy and would showcase a new innovation that would be transferable to other Great Lake watersheds (many of which are also experiencing similar nuisance algae and beach posting issues.

Recommended Actions for Individuals

As water quality is often due to an accumulation of many small sources of pollution, there are many actions that individuals can undertake to help make improvements to local water quality.

1. Maintain septic systems through regular inspections and clean-outs

Without regular pumping and maintenance, septic systems can fail and thus allow contaminants to seep out of the tank and weeping bed, and percolate down toward shallow aquifers. Septic tanks should be pumped by a licensed contractor as required (usually every 3-5 years). Additionally, septic tanks should be opened and inspected every two years to ensure the baffles are in place and the septic tank is functioning properly. It is also recommended to regularly examine the tile bed for any saturated or soggy spots. Practice water conservation measures such as using low-flow toilets and showerheads, fixing leaky taps, limiting shower length, and/or running only full loads in the dishwasher or washing machine, to prevent overloading the septic tank. Limiting the use of household drain solvents, cleaners, and bleach and refraining from pouring greases or cooking oils down the sink, can improve the longevity of a septic system. Programs are needed to provide financial assistance for septic maintenance projects in Lambton Shores.

2. Create and implement individual Environmental Property Plans/Farm Plans

Environmental Property Plans (EPP) or Farm Plans (EFP) can help a landowner identify ways that they can help the natural environment as well as take action against erosion. Landowners in the Duffus/Ipperwash Watershed may wish to take some environmental actions on their property, but may be uncertain of what can be done to protect and enhance the natural environment around them. Staff from agencies such as SCRCA can visit property owners to help them understand the natural features of their property and point out opportunities to improve the natural environment. Funding opportunities can also be identified to help cover the cost of certain environmental actions.

3. Implement Best Management Practices

Once issues are identified, EPPs or EFPs can be helpful to implement best management practices on landowner property.

A. Proper manure/chemical/fuel application and storage

1. Apply manure/fertilizers at rates and times that optimize nutrient up take and prevent runoff.
2. Monitor tile outlets for contaminants during and following applications, and implement a spill contingency plan, if necessary
3. Ensure manure storage facilities are adequate and properly functioning
4. Keep a record of the number, rates, and times of applications and develop a nutrient management plan.

It is crucial to maintain proper chemical and fuel storage tanks. Older tanks can develop cracks and cause the contents to leak. Properly maintaining these tanks will prevent spills and leaks from occurring.

Ensuring that storage tanks are placed away from any potential pathways into surface water systems is also important.

B. Water well management

Water wells also provide a direct pathway to groundwater systems, both shallow and deep, depending on the situation of the well. If a landowner's well is not properly maintained, contaminants such as fertilizers and/or pesticides, spilled near a well might enter the well through cracks or imperfections, and eventually pollute the groundwater for

surrounding landowners. It is also possible for contaminants to enter the groundwater through a well with an improperly sealed well cap. The seal around the casing of a well can degrade over time and allow pollutants to enter the aquifer. Wells that are no longer in use often fall into disrepair after several years. These wells should be properly decommissioned and sealed to cut off access to the groundwater. Programs are needed to provide financial assistance for well decommissioning projects in Lambton Shores.

C. Protect stream banks from erosion

There are several ways that stream banks can be protected. Creating buffers and vegetated areas along watercourses will prevent the soils directly around them from eroding into the water. The vegetation also helps filter sediment and pollutants from land runoff and slows overland water flow. Another way to improve stream banks is to fence grazing livestock out of watercourses, as high livestock activity can erode soils directly along the bank. Fencing livestock out will also help prevent the livestock from directly contaminating the water through fecal matter. Programs are needed to help finance livestock restrictions.

D. Create areas to hold water

Creating small wet areas in the uplands is another good way of reducing erosion in watercourses. Wetlands will hold back water from running off directly into watercourses, and therefore prevent surface water runoff erosion. They also provide a natural filtration system against pollutants and sedimentation. Additionally, wetlands will hold back water during large rain events and prevent water from rushing into the streams and gullies; the natural erosion that occurs with high waters will not be as damaging to the banks. There is good opportunity to develop wetlands in this area; currently 0.6% of the area is wetland and funding programs are needed.

E. Vegetative Control

Landowners can establish permanent erosion-resistant land cover. Vegetation will hold the soil together, provide absorption, provide protection from the elements, slow the velocity of water, and is relatively inexpensive. It is also aesthetically pleasing. However, good ground cover can take time to properly establish. Vegetative control can also be used in open fields. In cropped agricultural headwaters, consider no till, cross slope tillage, and grassed waterways.

F. Structural Control

To address erosion issues, there are several different types of man-made structures that can help. When the installation of these structures occurs in or around water, it is possible that the structure will need to be engineered and will require a permit from one or more agencies. In areas of residential development more consideration needs to be given to holding water on individual properties. In such cases, techniques including using rainwater barrels, rain gardens, and vegetated swales may be important. Some landowners have also used tiles and culverts to divert water either directly into the gully without eroding the banks or directly into the lake, avoiding the gully altogether. Berms and grassed waterways can be useful in the upland reaches. Regardless of which method used, structural controls are only effective if they are planned correctly, properly constructed,

and well maintained (Ontario Ministry of Natural Resources 1980 as cited by Brock et al 2010). Programs are needed to provide grants for the design and installation of WASCoBs (Water and Sediment Control Basins) to retain soil on the land and reduce sediment delivery to waterways.

Garbage, debris, and yard wastes can also have an effect on the rate of erosion. If left, some debris can cause vegetation to die off, making the soil more prone to erosion. In addition, debris may divert water and cut into stream banks (Ontario Ministry of Natural Resources 1980 as cited by Brock et al 2010).

Allowing erosion control structures to degrade can exacerbate erosion occurrences as well. Building and maintaining these structures can be expensive but if not properly implemented and cared for, they can fail and cause water to cut new paths and gullies by eroding the soil.

Sensitive gully banks may also be influenced by development. Homes built too close to an edge of a gully on unstable slopes are particularly susceptible to soil movement. Development can cause surfaces near the gully to become hardened, increasing the amount and velocity of runoff.

Provincial, municipal, and SCRCA policies are created to direct development or site alteration away from identified, naturally hazardous areas. In the Lambton Shores region, areas which have been identified as hazardous/sensitive are regulated under the Conservation Authorities Act by SCRCA. Formal permission of SCRCA may be required to undertake activities within these areas or in close proximity to them. Please contact SCRCA to discuss proposed activities on unstable slopes or near gullies. SCRCA has extensive experience managing erosion, flooding and other natural hazards and can offer advice for proposed project.

G. Plant riparian buffer strips, plant native trees, and appropriate native plants

In the headwaters of the Lambton Shores watersheds, erosion occurs in a number of ways. Large open fields are susceptible to erosion from wind and water. Wind erosion will disrupt loose soils causing it to settle in other areas or streams. Similarly, in periods of intense or prolonged rain events, water will often take the same path along open fields causing the soil to wash away.

A main cause of erosion is the removal of vegetation off the land and near gullies. Vegetation is typically removed for agricultural purposes or for development of the area. When vegetation is removed, there is a lack of plant roots to hold the soil in place, absorb moisture, or act as a protection against the elements. Exposed soil dries in the sunlight, and then can be more easily moved by wind and runoff. Sparse vegetation will also result in higher water runoff velocities, as there are no barriers to slow it down. In turn, more water will enter the gully at a faster rate, increasing the chance of water cutting into the stream bank. Lawns that are cut too close to a gully or livestock paths near streams can have a similar effect.

It is important for watercourses to be lined with riparian buffer strips on either side. Buffer strips help control soil and water quality by providing a natural method of holding soil in place, absorbing excess water and nutrients before runoff flows into the stream. Buffers can prevent sedimentation and nutrient-overloading. Buffer strips stabilize stream banks. By planting native trees and plants that are adapted to maximize stream bank

stabilization along watercourses, will ensure that the risks of erosion and pesticide and nutrient runoff are low.

Programs are needed to provide financial assistance and/or native plants and trees to improve or create riparian buffer strips on private properties.

4. Limit use of recreational vehicles and equipment on stream banks

The continued use of recreational vehicles, such as ATVs and snowmobiles is causing erosion along stream banks within Lambton Shores. If landowners limit their traffic along stream banks, the risk of erosion will decline. In turn, less erosion will result in less sediment in the water. The same is true of agricultural equipment. Monitoring recreational vehicle and equipment traffic along stream banks is not easily done by authorities. Therefore landowners should monitor vehicle for their own properties.

Proposed St. Clair Region Conservation Authority Role

The SCRCA intends to be involved in the following management actions:

Nearshore Water Quality:

1. **Provide education and signage**

SCRCA intends to raise awareness of beach-related water quality issues. It is crucial that beach goers understand the long-term effects of their activities on the beach and the SCRCA will attempt to provide education to beach users about dune and beach processes and the importance of native plants in maintaining the dune structure and stability.

As in 2011, it is the goal of SCRCA staff to participate in the annual Ipperwash Aquafest, a festival appreciating the importance of water and to heighten awareness of beach assets. Staff will be on hand to answer questions, provide water quality related literature, and promote BMPs and funding opportunities available through SCRCA. Participating in this festival is a great opportunity to partner with Communities in Bloom- Lambton Shores, a well-known and well-respected local community group; as well as the Municipality of Lambton Shores and Kettle and Stony Point First Nation to promote shoreline preservation, water quality awareness, and opportunities for individual effort to improve water quality.

SCRCA also anticipates hosting at least one workshop related to increasing shoreline asset awareness. Workshop topics may focus on maintaining septic systems in sandy soils, dune planting seminars, and dune dynamics.

2. **Work cooperatively towards limiting vehicle access to sensitive areas**

SCRCA would like to encourage the Municipality to work cooperatively with relevant stakeholders to limit vehicle access in sensitive areas. Educating landowners and beachgoers about the strict criteria to obtain Blue Flag status for the beach may increase public support for restricting motor vehicles from the beach.

3. **Continued beach surface water quality monitoring**

SCRCA will consider beach surface water quality monitoring. SCRCA has the opportunity to access this data from other organizations like the Health Unit, for analysis. Analysis of this monitoring will allow the SCRCA to track the impact of beach goers', landowners', and partners' activities on beach surface water quality over time.

4. **Promote beneficial management practices (BMPs, including septic maintenance) for all properties and promote funding programs and opportunities**

SCRCA plans to attend events like the Lambton County Soil and Crop Improvement Association meetings, agricultural fairs, and farm equipment dealership days to increase awareness of cost-share opportunities landowners may be a part of. In addition, writing news releases for local news outlets, such as *Today's Farmer, St. Clair Region Soil & Crop News, and Living and Playing in Lambton Shores*, will also be a valuable tool in promoting the benefits of BMPs and funding programs should be available to contribute to the costs of implementing the BMPs. The Municipality of Lambton Shores has provided their media outlet, *Living in Lambton Shores,* as a means to promote the SCRCA Clean Water Program.

Another method of promoting BMPs and funding programs is directed mailings. For example, staff may direct mailings concerning septic system improvements to residential landowners.

Inshore Water Quality:

1. **Provide education on water quality concerns and options for improvements**
2. **Promote beneficial management practices for all property types**
3. **Promote funding programs and opportunities**

In accordance with this direction, SCRCA plans to offer workshops and community events to educate the public about good stewardship practices. Workshops could focus on the Rural Landowner Stewardship Guide and the Stewardship Guide for the Lake Huron Coastline.

The SCRCA plans to provide education on water quality concerns and options for improvement by offering information on Best Management Practices. There are a number of opportunities to promote BMPs, funding programs, and opportunities in Lambton Shores. Attending events like the agricultural meetings, agricultural fairs, home and garden shows, and farm equipment dealership days will increase awareness of cost-share opportunities landowners may be a part of. In addition, writing articles for local newspapers will also be a great tool in promoting the benefits of BMPs and the current funding programs available to contribute to the costs of implementing the BMPs. As landowners acknowledge the importance of BMPs, it will be possible for SCRCA staff to discuss funding programs and opportunities for contributions to cover the cost of implementing BMPs on watershed properties. Directed mailings are another method of promoting BMPs and funding programs. For example, staff may direct mailings concerning septic system improvements to residential landowners.

The goal of providing education in 2012 includes hosting 2 inshore workshops: One in spring and one in the summer. Due to the seasonal nature of many residents, hosting workshops in the summer is expected to draw more interest. Workshops may focus on topics such as septic system maintenance, dune planting, the value of cover crops in reducing soil erosion, or creating appropriate habitat for waterfowl.

After learning of the success ABCA had hosting a Driveshed Day at a local farm where neighbouring farmers could learn about conservation tillage from an experienced farmer and a representative from OMAFRA, SCRCA staff hopes to host a similar day in Lambton Shores in the future as the majority of fields apparently undergo little to no conservation tillage.

In April 2012, SCRCA staff presented a number of requests to the Municipality of Lambton Shores Town Council. Council approved of the Clean Water Program and provided a letter directed to landowners encouraging their participation in improving water quality and seeking out SCRCA for funding opportunities for projects on their property. This letter should be sent out summer 2012.

Individuals of the Garvey Creek/Glenn Drain Watershed invested time in walking the watershed to acquire an understanding of the BMP needs/projects that, if funding were available, would bring erosion largely under control across the entire watershed. The goal for summer 2012 is to walk the length of the Duffus Creek Watershed to gain a better understanding of the needs in the area to improve water quality.

SCRCA has also established connections with Environmental Farm Plan Workshop Instructors from Ontario Soil and Crop Improvement Association to promote the cost-share program to farm business staff attending the EFP workshop.

SCRCA has started the process of establishing a steering committee with Lambton Shores landowners.

4. Continue water quality monitoring

5. Promote enhanced level of stormwater management

An enhanced water quality monitoring program will be implemented in Shashawandah and Duffus Creeks, including enhanced water quality sampling; developing flow rating curves for both watercourses and installation of a meteorological station and permanent flow station and shelter in Shashawandah (for water quality monitoring locations, see Figure 1). Annual benthic invertebrate monitoring will continue on Shashawandah.

SCRCA has elected to place a permanent flow station on Shashawandah Creek as this watercourse is a COA water quality site and has been sampled for water quality and benthic data for the last five years. Information collected from the flow station will complement the water quality and quantity data that has been and will continue to be collected. Nonetheless, the SCRCA focus watercourse for this nutrient management project is Duffus Creek due to the large public beach at the outflow. Therefore, there is a need for water quality sampling sites and temporary flow stations on Duffus. As such, regional weather measurements collected on Shashawandah Creek needs be extrapolated for the Duffus sub-watershed.

Analysis of this monitoring on Duffus Creek and Shashawandah Creek will allow SCRCA to track the impact of landowners' and partners' activities on stormwater and water quality over time.

Based on windshield surveys conducted in 2011, SCRCA has estimated how many BMP projects are needed across the Duffus/Ipperwash East priority sub-watershed to impact water quality on the condition that funds are available and landowners are willing to implement the projects in Table 2. SCRCA has estimated 674 BMP projects are needed, at a total cost of approximately $1,464,000.

Table 2: Estimated Total projects needed to affect water quality in Duffus/Ipperwash East priority sub-watershed of Lambton Shores and associated grant costs.

Best Management Practices Project Type	Number of proposed projects	Maximum Grant Rates	Total Cost
Septic upgrades:	30 shoreline residents	$4,000	$120,000
Manure Storage	11 farms	$5,000	$55,000
Livestock Restriction	4 farms abutting streams	$5,000	$20,000
Clean water diversion	11 farms	$3,000	$33,000
Fragile land retirement	618 properties	$2,000	$1,236,000
Total cost			$1,464,000

SCRCA considers it advantageous to assess the impact of upgrading septic systems on a small scale before committing thousands of dollars to this particular BMP. In doing so, SCRCA may be able to determine whether a measurable impact can be made to water

quality, prior to tackling the majority of the 618 properties within Duffus/Ipperwash East priority watershed that are of age to be replaced or upgraded. This method would ensure that funding dollars are well spent and have a lasting and measurable impact in Lambton Shores.

Thirty of the 63 properties that front on Lake Huron between Central Ipperwash Road and Army Camp Road would be targeted for replacement/upgrades. The outcome of this test would then determine estimates of costs and the value of septic upgrades for the remaining residential properties in the Duffus/Ipperwash East watershed.

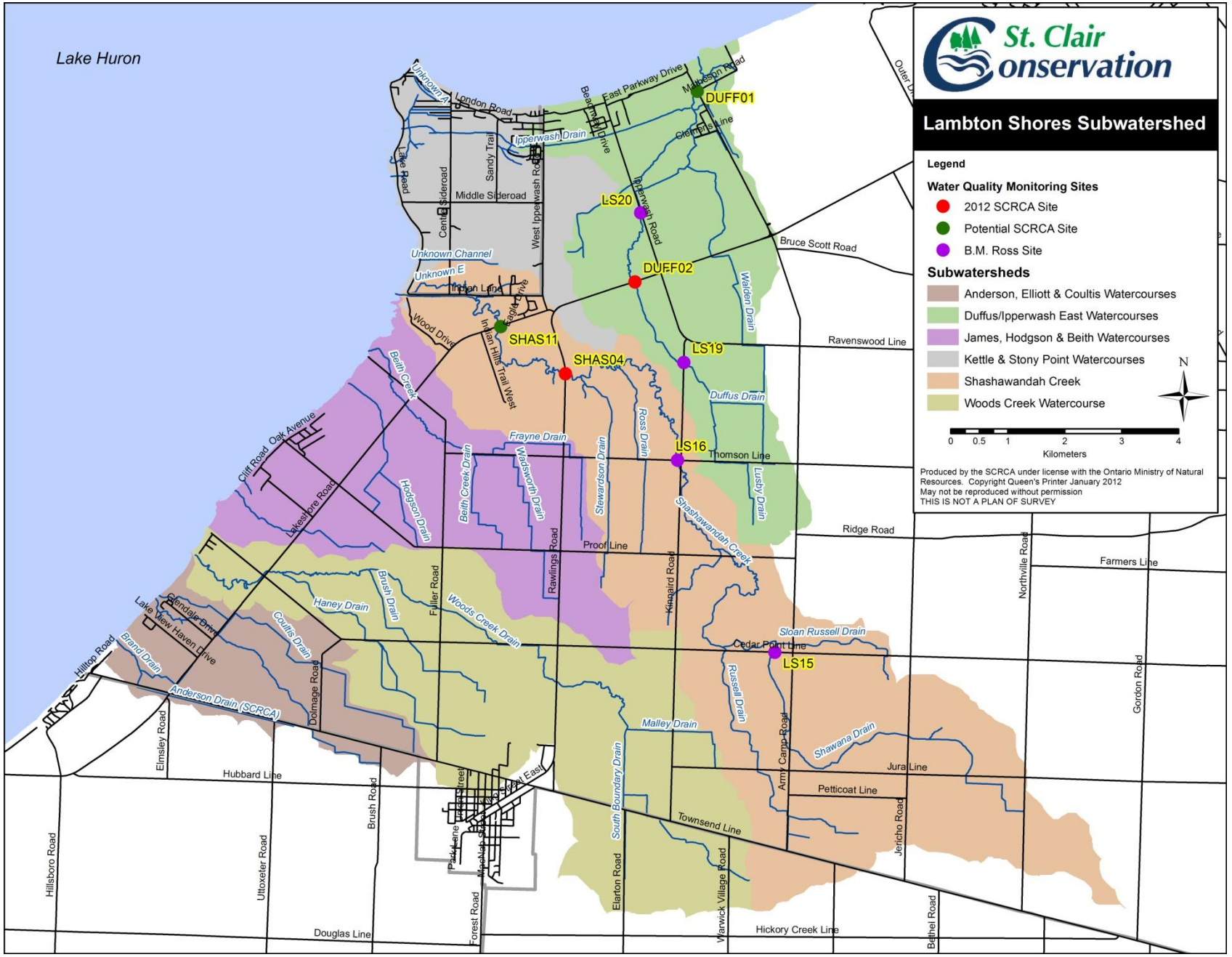

Figure 1: Map of the water quality monitoring sites in the Lambton Shores Sub-watershed

Proposed Monitoring Budget of Lambton Shores Tributaries

Assumptions

- One permanant flow station (with a shelter that could house other equipment) in Shashawandah Creek, the largest watercourse in Lambton Shores Tributaries watershed
- Annual temporary flow station on Duffus to extrapolate impact of landowner practices

					Funding source			
Outreach and Education			Startup or one-time cost	Annual cost	SWI	SCRCA	HLH	Projected Landowner In-Kind Contribution
Walk the Watershed - mileage			$5,000				$5,000	
Workshops, presentations, brochures, mailings, design production				$6,000			$6,000	
Research and Monitoring								
Water Quantity								
Long-term monitoring station - equipment:								
Establish a long-term monitoring flow station and shelter - SHAS04	1 site @	$20,000	$20,000		$20,000			
Install of weather station - SHAS04	1 site @	$2,000	$2,000		$2,000			
Automatic sampling equipment (ISCO)	1 site @	$9,000	$9,000		$9,000			
Level logger - Temporary upstream trib stns (near Duff01)	1 site @	$1,300	$1,300		$1,300			
Rating Curves								
Water Quality								
Testing chemistry monthly at 3 sites with lab analysis				$3,600	$395		$3,205	
3 events using ISCO sampler with lab analysis				$10,800	$4,800		$6,000	
6 spot samples at project sites with lab analysis				$900	$350		$550	
Benthic sampling and analysis at 1 site	1 site @	$500		$500			$500	
Mileage				$2,000			$2,000	
Best Management Practices to Implement (over the entire Lambton Shores priority watershed)								
Erosion Control Structures				$15,000			$15,000	
Clean Water Diversion				$10,000			$10,000	
Fragile Land Retirement				$10,000			$10,000	
Manure Storage and Application Equipment Modifications				$20,000			$20,000	
Septic System Upgrades				$25,000			$25,000	
Wellhead Protection & Decommissioning Wells				$10,000			$10,000	
Livestock Restriction from Watercourses				$10,000			$10,000	
Management and Administration								
Healthy Watershed Staff Salary and office support (includes steering committee development and support)				$53,000			$53,000	
Technical, admin & communications support				$10,900		$10,900		
Total Outreach and Education Costs		$11,000						
Total startup or one time costs		$32,300						
Annual water quality and quantity costs		$17,800						
Annual BMP project implementation costs		$100,000						
Staffing Costs & Benefits		$63,900						
Total Contributions					$37,845	$10,900	$176,255	$200,000
Total Annual Cost				$187,700				
Total Costs for 2012 (includes startup/one time and annual costs)		$225,000						

Annual Targets for Lake Huron Southeast Shore Priority Watersheds Working Group

Note: The Lambton Shores Tributaries watershed became part of the St. Clair Region Conservation Authority in 2005. Prior to 2005, the region was essentially a "no-man's land" with no conservation authority coverage. As such, many landowners are unaware of the role of a conservation authority, what services we can provide, and how the SCRCA can help implement BMPs on individual properties. SCRCA is beginning to make its presence known in the area, which is why our targets are relatively conservative.

Note: All portions of the Lambton Shores Tributaries are targeted for conservation actions, with Duffus and Ipperwash Creek/Drains as the top priority.

1. To approach at least **thirty** Lambton Shores landowners regarding water quality concerns.

2. To complete at least **three** educational events and/or have at least **100** people attend an educational event, regarding water quality concerns in Lambton Shores.

3. To complete at least **two** Best Management Practices projects in Lambton Shores.

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