

## **Halls Creek Watershed : A Description of Natural and Human Influences**

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## ***Introduction***

In the summer of 2001, The Petitcodiac Riverkeeper and the Petitcodiac Watershed Monitoring Group launched the Halls Creek Rehabilitation project whose aim was to produce an assessment of the Halls Creek Watershed's health and a basis for rehabilitation projects to follow.

As a result of this assessment, two reports were produced : "The Halls Creek Rehabilitation Project : Annual Report 2001-2002" (D'astous, 2002) summarizes activities conducted as part of this project during the 2001-2002 season and focuses mostly on the detailed inventory of point-source and non point-source pollution found within the watershed, as well as the state of its different sections. The second report, "Investigating the effects of combined sewage overflows in the Halls Creek Watershed" (D'astous, 2002), examines sewage pollution sources within the watershed.

This report, "Halls Creek Watershed : A Description of Natural and Human Influences" is meant to be a qualitative complement to the work undertaken previously. Its aim is to describe recent natural and human history, as well as present-day anthropogenic impacts on the watershed. The latter, presented as a detailed description of infrastructures found throughout the watershed, results from a survey done by the author during the summer of 2002.

### ***Why protect wetlands?***

Though wetlands represent some of Canada's most extensive natural environments, bordering most of its coastline and covering most of the Canadian shield, they are also subject to important disturbance caused by human use. First diked to create agricultural land by the first European settlers, they have since been subject to intense urban development. Their perception as wastelands has been responsible for their destruction through infilling, pollution, drainage, landfill sites, road and building construction, etc. Today, they are some of the fastest disappearing environments on earth, of which the Halls Creek Marsh is a good example, having lost 70 % of its wetlands between 1953 and 1996 (Lévesques, unpublished; in D'astous 2002).

Wetland protection and rehabilitation is essential considering they are some of earth's most productive ecosystems. They act as purification systems, absorbing contaminants that would otherwise flow freely into adjacent water bodies; they also store water which can later be released during droughts; they act as buffer zones in coastal areas which they protect from storm surges; and they are inhabited by numerous plant and animal species (D'astous, 2002).

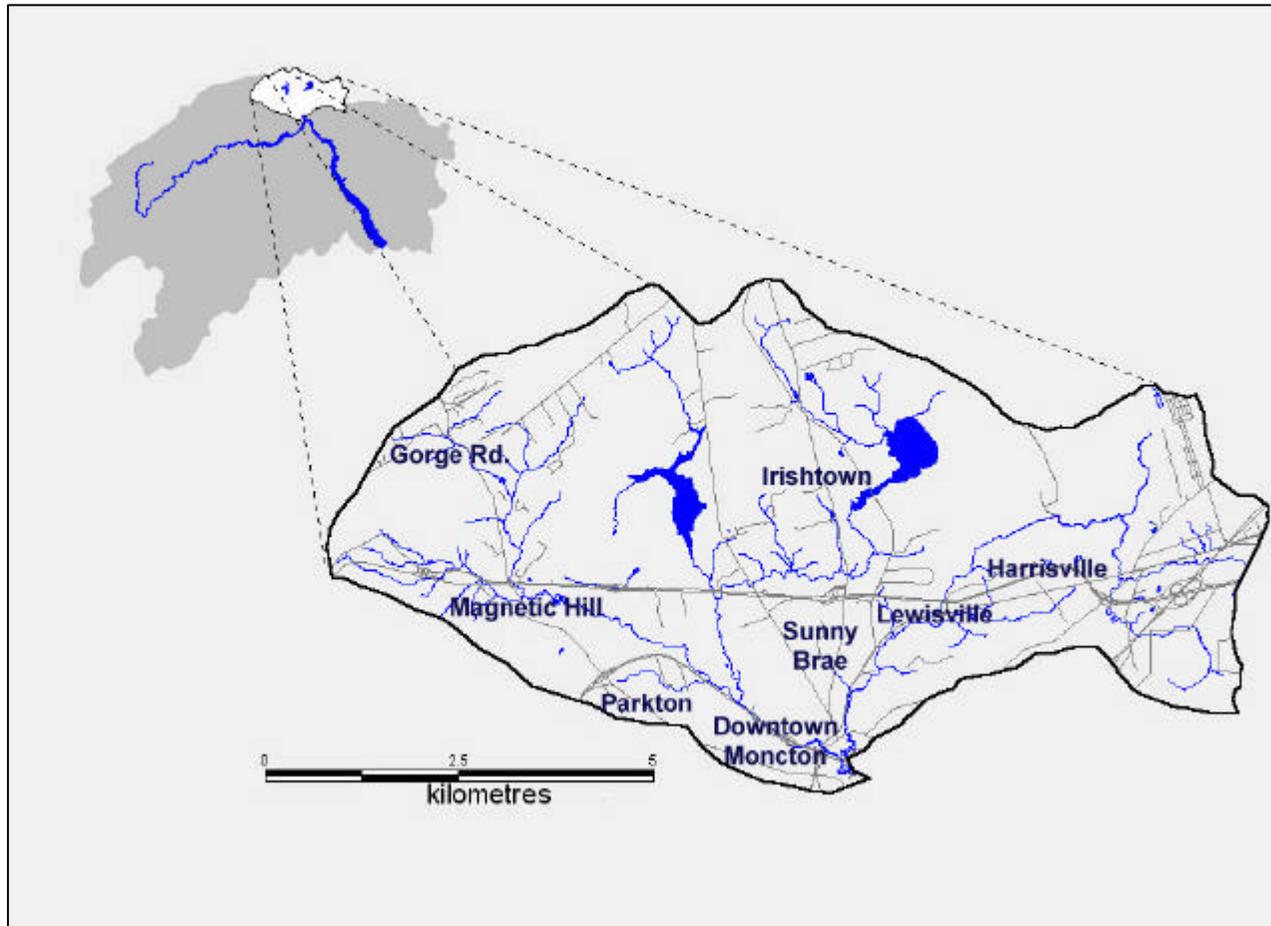


Figure 1: Halls Creek Watershed

### ***A case for rehabilitating Moncton's Halls Creek***

The Halls Creek Watershed is located in the northern part of the Petitcodiac River watershed. Measuring 125 km<sup>2</sup> in total surface area, it comprises all tributaries draining into Halls Creek through six main branches : Humphreys Brook, West Branch, Rabbit Brook, Gorge Brook, North Branch and Ogilvie Brook (Appendix 1)

Although the Halls Creek Watershed has been subject to important disturbances due to the expansion of Moncton City which lies within its boundaries, there is still much potential for the restoration of its wetlands, as illustrated in a report produced in 1990 titled “A Working Paper on the Restoration of Halls Creek” (Chiasson, A.). Rehabilitated and still healthy areas according to this report could be easily promoted for tourism and education, such as interpretive conservation areas, wetland refuges, etc. In order to render this possible, some rehabilitation work would need to be done around some of the watershed’s tributaries, including garbage clean-up, diversion of sewage towards the cities water treatment plant, bank stabilization, etc (D’astous, 2002).

The Halls Creek Rehabilitation Project including this report comes as part of a process which will hopefully lead the way in raising awareness with regards to the importance of Moncton city’s natural environments, and which will eventually lead to their protection and restoration.

## ***A Natural and Human History of Halls Creek Marsh***

Aside from early human influences, the Halls Creek Marsh is a local entity, which evolved into this particular freshwater wetland to an invading estuarine saltmarsh. We could thus define early marsh evolution as natural and normal with little human influences. Following the retreat of the frozen ice cover over much of North America this process gave rise to a normal young V-shaped basin. Over the last 10,000 years of evolution its physical appearance is now much closer to a U shape saucer. Gradually the accumulative process of filling in the low-lying saucer with organic debris or fine sediments played a significant and dynamic role in the daily appearance of the marsh. Sometimes it looks dry and empty, then partially full, then bursting forth with an abundance of water flooding its surroundings and then finally disappearing either below ground or freezing in a glassy mirror over the compressed marsh vegetation like a thermal blanket.

Geographically, Halls Creek Marsh lies between 'La Ville de Dieppe' and the 'City of Moncton' at the mouth of Halls Creek. Within the Halls Creek Watershed its appearance is similar to reindeer antlers. One main stem flows northwesterly and is known as Halls Creek, then there is Humphreys Brook, which drains the northeastern quadrant. Through this low lying saucer and carved valley these deeper larger entities then receive flowage from streams such as: West Branch Halls Creek, the North Branch Halls Creek along with Cooks Brook. These in turn capture the runoff from Rabbit Brook, Gorge Brook, and Ogilvie Brook.

First Nations Peoples blended in magnificently into the landscape, thus symbiotically living with what was at hand. Except for early footpath no harm was brought forth on the land.

This was about to change with the arrival of the Europeans the marsh land stood its ground until fresh new ideas at how to conquer the land to make prosperous such a rich land and to quickly make usage of barren treeless features.

With Europeans experience brought from across the ocean, dikes would enable the marine wetland to become freshwater lands and with the aboiteaux and irrigation ditches drying of this land would be accomplished in order to begin to transform and augment this valuable resource.

Although early settlers would eventually leave much of this appropriation to return to nature eventually new arrivals and returnees would continue to develop the land.

Land grants would entitle landowners to live on theses lands with conditions that a percentage would need to be cleared and worked with the intention that prosperity would give rise to more needed agricultural land in order to feed farm animals and the growing populace.

Transportation routes needed to accommodate movement from both sides of Halls Creek so these were successfully put in place. Thus bridge building was needed to access for safer and shorter distances traveled.

The abundance of wood could be lumbered and eventually commerce to far away lands. Boat building was a needed to transport and communities grew by leaps and bounds. As the town grew thus began the shrinking of the Halls Creek Marsh and its wetland. A glimpse into the past by means of early maps shows us the division of land with the names and boundaries and size of these holdings. At the beginning of this exercise Terre Rouge-Le Coude, eventually The Bend were the traditional historical names for the location.

The main corridor for water flowage was the creek name of Nacadie, later to become Halls Creek after a Sea Captain named John Halls. The Petitcodiac River itself would have numerous spellings and would eventually go by its last name early into the 19<sup>th</sup> century.

With settlement continuing at a rapid pace due to the shipbuilding industry prosperity would impale change well into Halls Creek. Wharves and docks were needed and one of the first areas chosen was near and was referred to as Harpers Lane.

Main Street at that time was known as the Westmorland Highway and was situated where Botsford Street fords Halls Creek. Only later on would a suitable bridge structure be built to cross at its present location.

Changes needed to accommodate the new invention we know of as the railroad and a line was constructed to take the locomotives and railcars to Pointe du Chêne in the Shediac area and also a line to Bouctouche, Halifax. Thus space through the marsh was once again taken up for transportation necessity.

With these changes came prosperity. With more and more settlers arriving and with these the local population increases with their own large families in order to adequately maintain their land agreements of clearing of the land.

Yes! Large families were the common denominator on most of these farms.

After the Expulsion the new settlers needed to maintain levee /dikes system as well the need to once again maintain the aboiteaux which had become clogged and in a state of disrepair. For this reason the settlers hired many Acadians to look after and upkeep these necessary land reclamation devices.

Looking at the Valley of Halls Creek it is bound by a number of highland features. There is: 1.)-The Moncton City proper (along King Street, Church Street, Archibald Street and up to the ahead of Halls Creek Marsh at the NBE Power Hydro Lines or the Edgett Ave, Northview Street). 2.) The Sunny Brae-Humphreys which comprises the former Good Shepherd or now the Universitéde

Moncton land and up to Mill Road-Gurney Ave along the Humphreys Brook and 3.) The East Side of the Mill Road/Saint-Louis de France Church in Lewisville/Shediac Road with the remaining area of the high grounds of Dieppe (Sainte-Thérèse Church).

Early on these lands were tracks of large farms. With a growing populace these would eventually be subdivided to form the housing developments we see today: Dieppe, Lewisville, Sunny Brae, Humphrey and Moncton.

Gradually more streets were built more businesses, schools, commercial ventures all leading us well into the new millennium.

The advent of the motor vehicles brought numerous progressive changes. Associated with these were less than adequate places to throw away or discard objects from the past that no longer needed for a newer way of life.

Progression into more quicker and faster sanitation food containers meant discarded containers needed a place to be discarded. Dumps, which in the early years were situated mostly at the end of a hayfield or wooded areas, could no longer be the quick and easy choice with such an enormous population.

Sites were also filled below the University of Moncton Campus and along Church Street, King Street.

Roadways and bridges would facilitate ways and means of disposal of these items.

Wet garbage would make its way to the Babineau's Hog Farm beyond West Lane to the Crowley Road.

As if all of this was not enough to shrink the vital and important ecological function of the Halls Creek Marsh solutions to traffic and environmental concerns were put in place beginning in the early 70's and completed in the late 80's.

This solution was to build an arterial highway around the City of Moncton from the Causeway on West Main Street to the mouth of Halls Creek near the Landing.

This highway was built with the intention that it would be a Control Access Highway, thus traffic entrances would be minimized in order to reduce the amount of land lost to such and exercise. For the most part this was followed but as any plan development pressures over time brought about changes and more valuable marshland and wetland became prey to the realities of the modern world.

Therefore Wheeler Blvd was altered and this led to further degradation of Halls Creek marsh with ongoing environmental problems.

Such is the ongoing problem with garbage being the main culprit. Engineering problems with building such and endeavor further decreased the Halls Creek Marsh. Overburden from less suitable soils forced thinkers to choose nearby sites in order to economically dispose of these soils and once again the marsh became victim to progress.

Such was the case for the Northeast Section across from the now built Jean Louis Levesque Arena. A ballfield was built with the overburden when traffic configuration removed the West Lane. Bridge then and on and off ramp was built through the marsh. Crowley Road cut through this Northeast section in order to gain access to resources from the quarries and to permit residents a means by which to access the community.

This brings us to the realities of today's world. Although environmental concerns raised during the 70's have increase awareness of the importance of the marsh loss of habitats is an ongoing struggle.

Finally, many noteworthy groups continue to bring pressure on civic, provincial and federal bodies to protect and preserve what little of the Halls Creek Marsh remains.

**Halls Creek Watershed Survey** (see Appendix 1 for maps of main branches)

<b>Location</b>	<b>Major features</b>	<b>Environmental Threats</b>	<b>Historical features/ aspects</b>	<b>Noteworthy Fauna/ flora</b>	<b>Other</b>
<b>Halls Creek Marsh</b>	- Hospital - Confluence Rabbit and West Branch Halls Creek - McLaughlin Road	- Babineau Pit Infilling - Dump - Hog farming	- West Lane (construction of gravel road dates back to at least 1900)		
<b>North Branch Halls Creek</b>	- University - Hospital Area-Development - Water Transmission - Lines (Protective Building)				
<b>West Branch Halls Creek</b>	- Hydro line installation (late 1950) - Quarry Operation - Wheeler Boulevard, Crystal Palace, City Street Base, Causeway - Carson quarry	- Stream altered - Cement pipes left behind in stream - Pit at Mapleton and GMSC alter stream with sediments	- Horses, wagons and sleighs for lumbering	- Along stream First Nation, Pool 10-ft deep, Steep slope - Beaver dam - rabbit breeding grounds	
<b>Beaver Dam 2<sup>nd</sup> Brook</b>	- Steep grade hydro line - Quarry operation Trail system North and East, South East - Wheeler Boulevard	- Quarry operation overburden pushed into stream - Garbage debris problem along new highway - Sedimentation from commercial properties Trinity and Carson Drive from West Side Wheeler Mapleton Road quarry and - Carson topsoil and Home Depot runoff and Wheeler Boulevard off ramp		- Braiding stream - Deep pool water depth 10 feet - Elm trees important (a few still standing) resistant to disease - Blueberries, strawberries, flowers, apples, Muskrats, Beavers, Deer, Fish, Trout, Golden suckers, White suckers, Song birds, Great Blue Herons, Woodcock, Pileated woodpecker, Eels	
<b>Halls Creek from Beaver Dam to Second Brook Diving Tree</b>	- Trail system between hydro and White House hay field and across the other side 3 paths from hydro line, lumber roads to get to swimming holes	- Hydro line brush cutting and spraying		- Hunting area (rabbits) - Mix wood, numerous old white pine, conifers, oaks, elm (one left) and mature poplars - Flooding riparian zone during freshet and spring runoff particularly 60's /70's early 80's and 90'S	

<p><b>West Branch Halls Creek Pit Area- 2nd Brook Beaver Dam North Side</b></p>			<ul style="list-style-type: none"> <li>- Material removed from pit to provide street base (Parkton and Parkside)</li> <li>- Go Cart Track, early 60's</li> </ul>	<ul style="list-style-type: none"> <li>- Deer, Moose, Heron, Amphibian, Woodcock, Bobcats, Lynx, Raccoon, Skunks, Fox, Coyotes (start winter 1968) Porcupines</li> <li>- Apple trees (ripe after October frost)</li> <li>- Find sand along creek and sandstone, shale and clay</li> </ul>	<ul style="list-style-type: none"> <li>- Popular area for swimming and picnics</li> </ul>
<p><b>West Branch Halls Creek from South Side of Swimming Hole to West Lane White House</b></p>	<p>Dam</p>			<p>Mixed Woods Trail System-to swimming –to stream crossing Hay field- cow pasture, private dwelling Picnic area Marsh wetland this side</p>	
<p><b>West Lane bridge area (from White House to swimming hole)</b></p>			<ul style="list-style-type: none"> <li>- Serious flooding 1962-63 (January 1st)</li> <li>- Housing development begins 1960's Edgett, Carney, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Marsh is typical of contact, fresh and marine waters</li> <li>- Tall grass-species, braided drainage system at mouth Rabbit Brook</li> <li>- Wooden Bridge</li> <li>- Flooding on monthly at lunar cycle</li> <li>- Freshet event along with spring snow melts</li> <li>- Vegetation above flood zone shru Wild hazelnuts and chipmunk population</li> <li>- Bank swallows and barn swallows (1000 plus)</li> <li>- Gull populations only at dump site UdeM</li> <li>- Night hawk colony (Water transmission lines)</li> </ul>	<ul style="list-style-type: none"> <li>- Path system used extensively by community</li> </ul>
<p><b>North Side of White House from Go Cart Track to West Lane</b></p>	<ul style="list-style-type: none"> <li>- Second white bridge built 50's then culvert after truck traffic</li> <li>- Quarry for sandstone (Street base- Parkton, Parkside)</li> </ul>	<p>- Snow dump</p>	<p>- Flooding over road around 1963 (Cudmore)</p>	<p>- Beavers Flood zone,</p>	<p>- Skating in wetland pond areas</p>

<b>North Side to Babineau Hog Operation</b>		- Snow dumping		Pool downstream of first wooden bridge 25 feet deep Pond built below in fill (large waterfowl population, red wing black birds, white egret ) Marsh grass thick hummock Muskrat population in check	
<b>South Side Marsh Up to Roadway West Lane</b>	- Gravel, stone, Sewer pipe installation on West Lane - Residence Peres Saint Croix	- Runoff carrying silt,	- City Limits at white bridge in 1966 - Snow dumping 1970 to 80 (impact cooler temperature) - Crowley Farm-fox farm-Barn burned,	- Swallow population extensive (late 1950's early 1960's) - Recent Geese Population - Water lilies (pond before beaver lodge active one abandoned)	
<b>Marsh Proper (Mid to Archibald)</b>	- Jean-Louis Levesque Arena			- Geese by the thousands - Fishing large eels - Paths in Marsh and fording areas - Staging area for waterfowl in spring and fall up to 600	
<b>Halls Creek Marsh from Hog farm to North Branch Halls Creek</b>				- Pine Stand - Blueberry field - Great Blue Heron Feeding Ground (Fish and frogs)	
<b>North Branch Halls Creek –Marsh-Tidal (Above Culvert-Crowley Rd)</b>				Head of tide above Elm tree Hemlock and Pine Stand Snow dumps (Jack Fraser) Wetland stagnant (south of hog farm) Thick vegetation of Alders Path in order to ford stream before Bridge built (along NBHCREEK) 2 beaver lodges and 2 dams (active)	
<b>Downstream of Culvert North Branch Halls Creek to First Big Pond</b>		- Stream altered by culvert 1986-88 (new Crowley Rd) Narrowing of Stream through dyking		- 400 Red-winged Black birds same number of grackle, starlings - Crows, ravens, Eagles, Hawks, muskrats, deer, moose, gulls, Raccoon, foxes, Greater Black Back Gulls and others - Important feeding and foraging for waterfowl March / April	

<p><b>South Side (West Side - Wheeler Blvd)</b></p>		<ul style="list-style-type: none"> <li>- West Branch Halls Creek compressed and narrowed</li> <li>- Use of snow dumps into Halls Marsh from West Lane and preparatory road 70's</li> <li>- Sewer outfall near West Lane, Noel, High Street (extensive flowage)</li> </ul>		<ul style="list-style-type: none"> <li>- Flooding zone (Seasonal variations, lunar and freshet)</li> </ul>	
<p><b>From Big Pond to Intersection Traffic Lights Jean Louis Levesque</b></p>		<ul style="list-style-type: none"> <li>- In filling for ballfield</li> <li>- In filling near Connaught,</li> </ul>		<ul style="list-style-type: none"> <li>- Large Pond-partially cut off by Crowley Road, Culvert, and Ball Field</li> <li>- Animal Life Crows, ravens, Eagles, Hawks, muskrats, deer, moose, gulls,</li> <li>- Raccoon, foxes, Greater Black Back Gulls, Kestrel, Dragonflies, Song Birds, Killdeers</li> <li>- Damselflies, Least Bittern, Great Blue Herons, Nighthawks nesting area traffic lights, Fox, deer, bear, coyotes</li> </ul>	<ul style="list-style-type: none"> <li>- Various clean ups, Bird observation, Moncton Naturalist Club, Club de la Nature, others</li> <li>- Field laboratory for Biology Students UdeM</li> <li>- Site for proposed Green Plan Louis Lapierre</li> </ul>
<p><b>Halls Creek High St. to traffic lights near apartments</b></p>		<ul style="list-style-type: none"> <li>- Major trunk sewer- Area fenced in, cement divider too high and no passage for animals</li> </ul>	<ul style="list-style-type: none"> <li>- Historical before development</li> </ul>	<ul style="list-style-type: none"> <li>- Tidal Influence upstream to North Branch Halls Creek</li> </ul>	

<b>Halls Creek from Connaught Bridge to Archibald (before highway)</b>	<ul style="list-style-type: none"> <li>- Vanier High School built and Soccer Field</li> <li>In filling Hotel Dieu</li> <li>- Hospital, New Dumont (2 foundations)</li> <li>- Wheeler</li> <li>- Old steel bridge</li> <li>- Overpass for Wheeler</li> </ul>	- Stream very altered in this section		- All marsh wetland along western side of Halls Creek	
<b>Arena to Archibald (University Road)</b>	<ul style="list-style-type: none"> <li>- Softball, track and field, soccer field,</li> <li>- University of Moncton Campus</li> </ul>	<ul style="list-style-type: none"> <li>- Late 50's early 60's dump</li> <li>- Road to quarry present</li> <li>- Science building and Chaufferie</li> </ul>			
<b>Below Archibald University Side to Church St</b>	<ul style="list-style-type: none"> <li>- University of Moncton Campus</li> </ul>	<ul style="list-style-type: none"> <li>- Important stream alteration along west side Church Street</li> <li>- Rerouting of stream with pylons in stream</li> </ul>		- Wetland pond	
<b>South Side Archibald-Notre Dame D'Acadie to Church St</b>	<ul style="list-style-type: none"> <li>- Wheeler Boulevard</li> </ul>	<ul style="list-style-type: none"> <li>- Runoff into ditch from streets Archibald and Lutes</li> <li>Snow dumps Archibald and Lutes</li> </ul>			
<b>Church Street to CN Railway (South Side)</b>	<ul style="list-style-type: none"> <li>- Halls Creek Apartments</li> <li>- Garbage dump</li> <li>- Softball Field</li> </ul>				
<b>Church Street To Railroad Bed</b>			Skating Rink Oval (destroyed in a fire, early 1900's)	<ul style="list-style-type: none"> <li>- Marshland with tidal and freshet flooding</li> <li>- Stream and Creek natural meandering with drainage ditch</li> </ul>	
<b>Taylor Ford Parking (RR tracks) to Lewisville Bridge</b>	<ul style="list-style-type: none"> <li>- Car dealerships</li> <li>- Car parking and commercial enterprises on Lewisville Road</li> <li>- Housing development (Frontenac St.)</li> <li>- Levee system and aboiteaux</li> <li>- Storm outlets</li> </ul>		<ul style="list-style-type: none"> <li>- Historical importance of ship building industry in this area.</li> <li>Lewisville Bridge , 1872</li> </ul>		
<b>Lewisville Road to Veterans Highway</b>	<ul style="list-style-type: none"> <li>- Lewisville Ball Field</li> </ul>	- Dowd Street infilling of wetland marsh up to			

<b>Overpass (North Side of Traffic Circle)</b>		highway ramp			
<b>From railroad Bridge Botsford to Main Street</b>	<ul style="list-style-type: none"> <li>- Section contains one bridge over Halls Creek</li> <li>- King Street Marsh</li> </ul>		<ul style="list-style-type: none"> <li>- Former Hospital- Notre Dame du Sacré Cœur</li> <li>- Boat building, wharves, dikes, and ditching</li> <li>- Storm sewer outlets prior to GMSC trunk lines</li> </ul>		
<b>From Shediac Road to Mouth of Halls Creek (Lewisville-Dieppe Side)</b>	<ul style="list-style-type: none"> <li>- Champlain PLace</li> </ul>				
<b>Mouth of Halls Creek- Across Main Street to Hard Time Gallant</b>	<ul style="list-style-type: none"> <li>- Walking Bridge</li> </ul>				
<b>Mouth of Halls Creek-Across Main Street</b>	<ul style="list-style-type: none"> <li>- Cy's Seafood, Château Moncton, Wharves, Railroad tracks, Bore Park Bridges across River (Gunningsville)</li> <li>- Baseball field, old dump site</li> </ul>	<ul style="list-style-type: none"> <li>- Dumps along Petitcodiac River</li> </ul>	<ul style="list-style-type: none"> <li>- First Nation First Settlers and Acadians (Terre Rouge, le Coude)</li> <li>- First Settlers (Pensylvania)</li> <li>- Saxby Gale (lost of life and bridge)</li> </ul>		

## *Appendix 1*

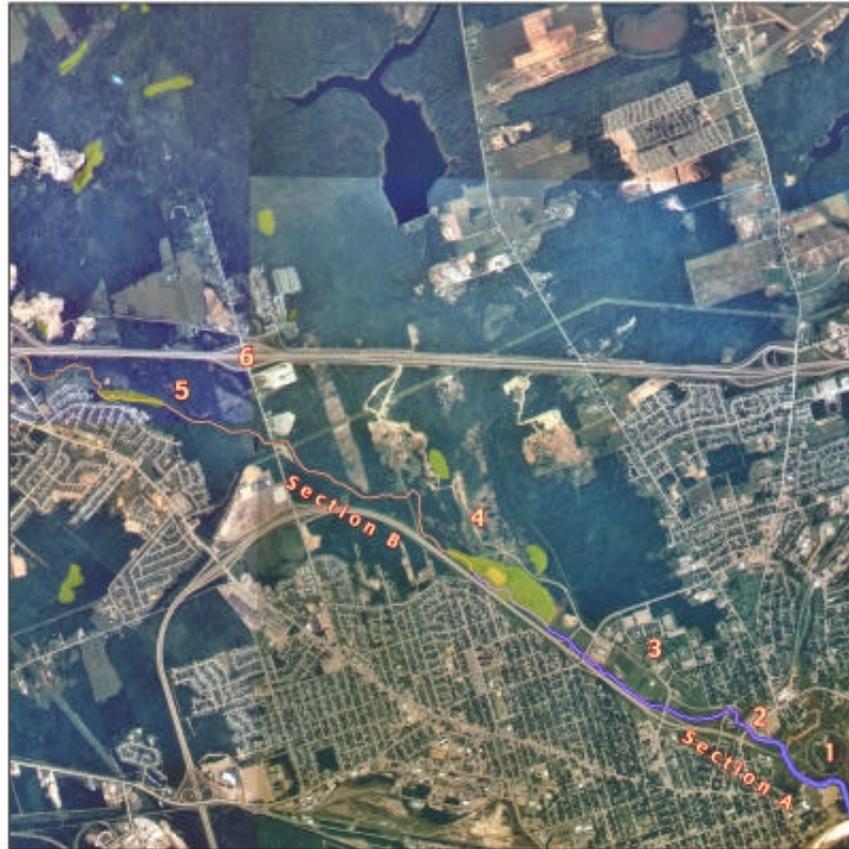
### **Halls Creek Watershed Maps**



### West Branch Halls Creek

- |                         |                  |
|-------------------------|------------------|
| 1. Trans Canada Highway | 5. Gorge Rd.     |
| 2. Front Mtn. Rd.       | 6. Mapleton Park |
| 3. Mountain Rd.         | 7. Route 126     |
| 4. Golf Course          |                  |



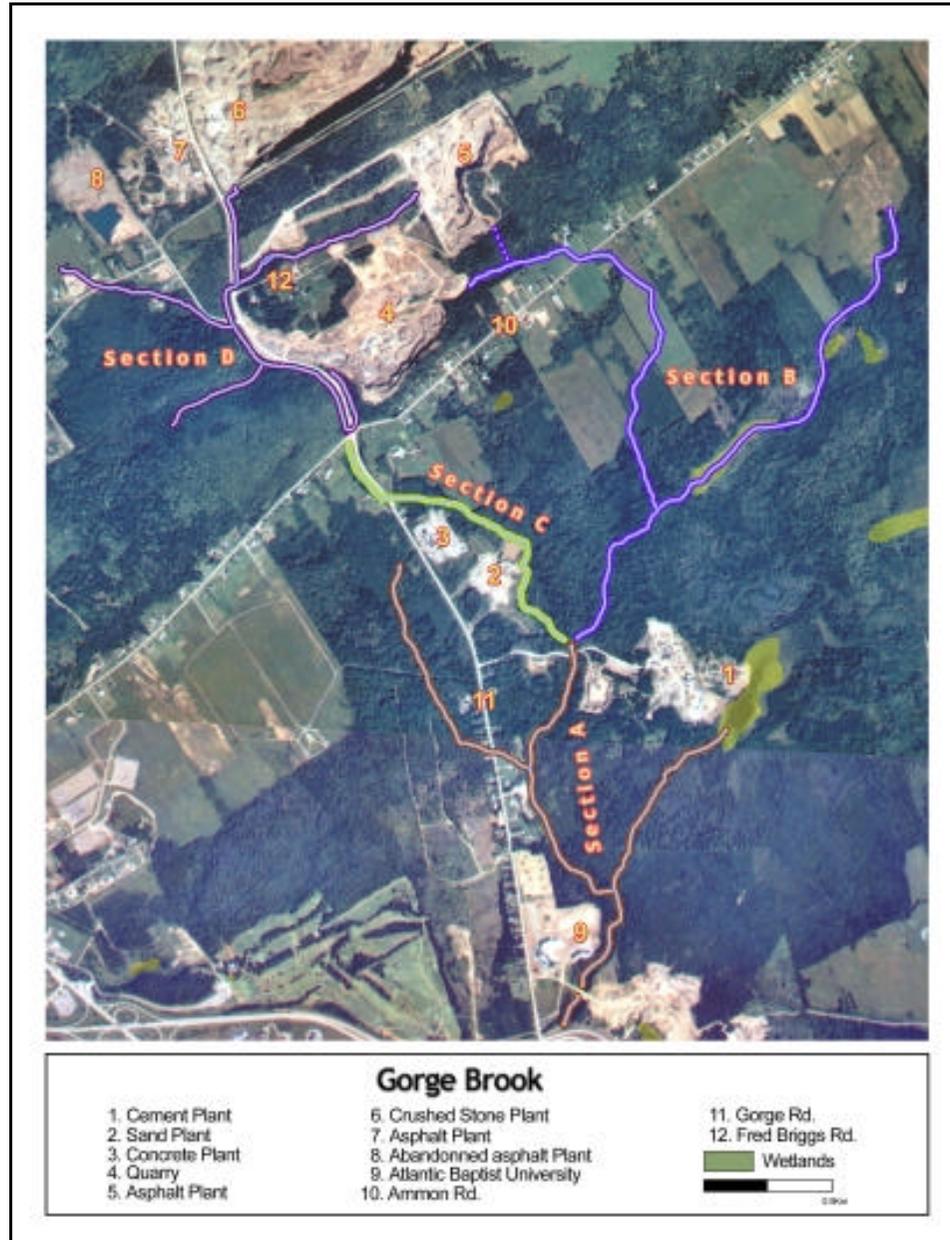


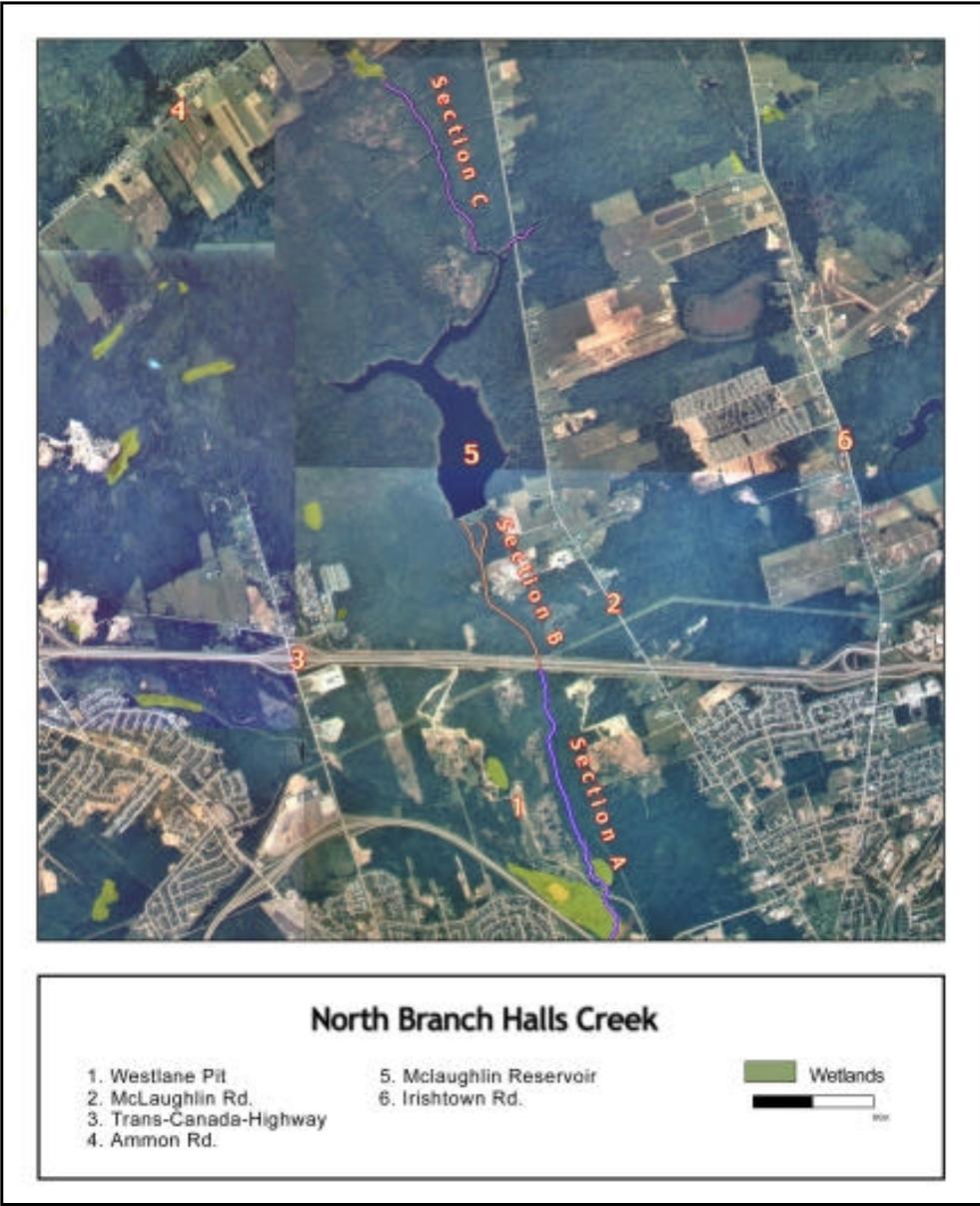
### West Branch Halls Creek

- 1. Traffic Circle
- 2. Lewisville Rd.
- 3. Université de Moncton
- 4. Westlane pit

- 5. Mapleton Park
- 6. Trans-Canada-Highway









### Humphreys Brook

- 1. Caledonia Industrial Park
- 2. Trans-Canada Highway
- 3. Railroad
- 4. Old Shediac Road
- 5. Veterans Highway
- 6. Moncton Airport

- 7. Aero Lake
- Wetlands





**Ogilvie Brook**

- 1. Irishtown Reservoir
- 2. McLaughlin Rd.
- 3. Trans-Canada-Highway
- 4. Ammon Rd.
- 5. McLaughlin Reservoir
- 6. Irishtown Rd.

Wetlands

