Quinte West
Waterfront Regeneration Plan

APPENDIX A

EXISTING CONDITIONS

December, 2000

Prepared by:
Lower Trent Conservation

The Quinte West Waterfront
--clean, green, diverse, healthy--a natural edge for the City!
APPENDIX A

Existing Conditions

Prepared by:

Glenda Rodgers
Mike Peppard

LOWER TRENT CONSERVATION
December, 2000
Existing Conditions

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References/Information Sources
EXISTING CONDITIONS

1. General Description
Virtually all of this shoreline has been altered from its natural state. Much of the existing shoreline configuration is the result of filling and alteration that took place over several decades. Likewise, there have been many land use changes over that same period that affected the existing shoreline. Most of the shore is composed of rock and concrete rubble fill. This fill material is undergoing minor but constant erosion from wave action caused by wind and boats. As a result, shoreline vegetation is sparse with the exception of a few large trees.

A small section of shoreline in Bain Park, near the boundary with 8 Wing Trenton, has had some planting of trees and shrubs several years ago and has been allowed to naturalize. This section of shore is more low lying with sandy soils and is developing a more robust natural vegetation community.

Other prominent features of the shoreline include a small marina at the mouth of the Trent River and a boat launch on the east side of the river near the upstream end of the proposed project area. The Water Pollution Control Plant for the City is located near the centre of the proposed project area. There is also a small bit of shoreline in Bain Park that, in the past, was used as a beach. High bacteria levels during the summer have for the most part kept this beach closed to public swimming.

The mouth of the Trent River is very important as a spawning area for walleye, yellow perch, northern pike and small mouth bass. It is also important as habitat for a variety of forage fish species. Seasonal migration of several species into the mouth of the Trent River add to the importance of this area.

The nearshore substrates along the shoreline are mostly sands, gravel, rubble and boulders. There are also large areas of submergent aquatic vegetation along the shoreline within the study area.

Most of the backshore land use of the project area is large, open space parkland and sports fields. Some trails and walkways have been developed in Centennial Park. The remaining backshore land use is commercial and residential. Along the Trent River portion of the shoreline, the regulatory floodline is close to or at the river bank, with the exception of a small area to the north of the marina. Along the Bay of Quinte, the 100 year static flood elevation is located at the top of bank for most of Centennial Park (with the exception of a lower area just south of the marina.) To the east of Centennial Park and the Water Pollution Control Plant, the flood line extends further inland, with a few exceptions (the trailer park) where it hugs the shoreline. An allowance for wave uprush, extends the flooding hazard further inland along the entire shoreline.

Overall issues:
Shoreline Treatment (broken concrete)
Most of the shoreline is comprised of concrete slabs, with the odd piece of asphalt. Iron bars protrude from the concrete in some areas. This concrete provides shoreline
protection but impedes vegetative growth and detracts from the appearance of the shoreline. Removal of the concrete would be expensive.

**Waterfront Trail**

The Lake Ontario waterfront Trail is to extend from Trenton to Belleville. Ideally the route should follow the water. This can be achieved on the public lands but there are some private lands which extend to the shoreline.

**Flooding/Erosion Hazards**

As with any waterfront area, flooding and erosion hazards need to be taken into consideration for any proposed development along the shoreline.

**General Clean Up**

For several years, old park debris/equipment has been stored in Centennial Park. This has recently been cleaned up. Efforts should be made to continue to clean up the waterfront and annual clean up days would help to keep the parkland and shoreline free of litter.

### 2. SHORELANDS BY REACH

The shoreline has been divided into 8 reaches to assist with organization of the detailed site inventories. Figure 1 shows the locations of each reach. A list of the vegetation species for the riparian lands of each reach, recorded during site inspections by Lower Trent Conservation staff in the fall of 1999, are listed in Table 1.

#### 2.1 Reach 1: Between the Bridges

Reach 1 extends along the east shoreline of the Trent River between the McDonald Bridge & Veteran’s Skyway Bridge (with the exception of the small piece of privately owned land just north of the Veteran’s Skyway Bridge). This long, narrow shoreline property is owned by the City. While it is zoned “Light Manufacturing,” it has been used as parkland (Photo 1). There are some park benches, an unorganized parking area, and a boat launch.

The City has considered the development potential of the south portion of this reach (former Benedict-Proctor site). The property is approximately 200 feet wide at this location. The flood line hugs the shoreline, but a minimum 15 metre (50’) setback should be maintained from the top of bank. Potential soil contamination is also a consideration.

The shoreline itself consists largely of concrete slabs, with the odd piece of asphalt and some mixed fill, overlain by sparse and patchy vegetation (Photo 2). The bank height here varies from approximately 1 to 2 metres, generally slightly higher and steeper at the north end (approximately 1:1). The slope is gradual only within close proximity to the boat launch area. Erosion along this reach appears to be minimal. Three culverts empty into the river along this reach, carrying stormwater runoff from the streets and development areas.
Quinte West Waterfront Regeneration Plan

Figure 1  Shoreline Reaches

LEGEND
Study Limit
Reach

Source: 1999 Airphotos
<table>
<thead>
<tr>
<th>REACH</th>
<th>HERBACEOUS</th>
<th>WOODY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reach 1:</strong></td>
<td>broad -leaf cattail</td>
<td>trembling aspen</td>
</tr>
<tr>
<td><strong>Between the</strong></td>
<td>jewelweed</td>
<td>Manitoba maple</td>
</tr>
<tr>
<td><strong>Bridges</strong></td>
<td>Queen Anne's lace</td>
<td>staghorn sumach</td>
</tr>
<tr>
<td></td>
<td>viper's bugloss</td>
<td>silver maple</td>
</tr>
<tr>
<td></td>
<td>grasses</td>
<td>white maple</td>
</tr>
<tr>
<td></td>
<td>butter and eggs</td>
<td>black locust</td>
</tr>
<tr>
<td></td>
<td>white sweet clover</td>
<td>red osier dogwood</td>
</tr>
<tr>
<td></td>
<td>alfalfa</td>
<td>buckthorn</td>
</tr>
<tr>
<td></td>
<td>purple loosestrife</td>
<td></td>
</tr>
<tr>
<td></td>
<td>purple aster</td>
<td></td>
</tr>
<tr>
<td><strong>Reach 2:</strong></td>
<td>mown grass for most of the reach</td>
<td>none for most of the reach</td>
</tr>
<tr>
<td><strong>Wahoo</strong></td>
<td>south end:</td>
<td>south end:</td>
</tr>
<tr>
<td><strong>Restaurant</strong></td>
<td>jewelweed</td>
<td>dogwood</td>
</tr>
<tr>
<td><strong>to</strong></td>
<td>dandelion</td>
<td>white elm</td>
</tr>
<tr>
<td><strong>City Boat</strong></td>
<td>red clover</td>
<td></td>
</tr>
<tr>
<td><strong>Launch</strong></td>
<td>milkweed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>white aster</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Queen Anne's lace</td>
<td></td>
</tr>
<tr>
<td><strong>Reach 3:</strong></td>
<td>grasses</td>
<td>willow</td>
</tr>
<tr>
<td><strong>Marina</strong></td>
<td>purple loosestrife</td>
<td>Manitoba maple</td>
</tr>
<tr>
<td></td>
<td>smartweed</td>
<td>dogwood</td>
</tr>
<tr>
<td></td>
<td>chickory</td>
<td>trembling aspen</td>
</tr>
<tr>
<td></td>
<td>cattail</td>
<td></td>
</tr>
<tr>
<td><strong>Marina</strong></td>
<td>vetch</td>
<td></td>
</tr>
<tr>
<td><strong>Outer Edge</strong></td>
<td>curldoc</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Queen Anne's lace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>evening primrose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>buttercup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chickory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tickweed</td>
<td></td>
</tr>
<tr>
<td><strong>Reach 4:</strong></td>
<td>Active Area</td>
<td>Sugar maple</td>
</tr>
<tr>
<td><strong>Centennial</strong></td>
<td>goldenrod</td>
<td>willow</td>
</tr>
<tr>
<td><strong>Park</strong></td>
<td>tickweed</td>
<td>dogwood</td>
</tr>
<tr>
<td></td>
<td>jewelweed</td>
<td>Manitoba maple</td>
</tr>
<tr>
<td></td>
<td>grasses</td>
<td>trembling aspen</td>
</tr>
<tr>
<td><strong>East End</strong></td>
<td>chickory</td>
<td>white elm</td>
</tr>
<tr>
<td></td>
<td>tickweed</td>
<td>sugar maple</td>
</tr>
<tr>
<td></td>
<td>aster</td>
<td>Russian olive</td>
</tr>
<tr>
<td><strong>Reach 5:</strong></td>
<td>thistle</td>
<td>trembling aspen</td>
</tr>
<tr>
<td><strong>Sewage</strong></td>
<td>viper's bugloss</td>
<td>sumach</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>jewelweed</td>
<td>dogwood</td>
</tr>
<tr>
<td><strong>Plant</strong></td>
<td>tickseed</td>
<td>Manitoba maple saplings</td>
</tr>
<tr>
<td>Reach 6: Snow Dump to Private Lands east of Canadian Tire</td>
<td>Snow Dump:</td>
<td>Wetland/Old Field: purple loosestrife aster</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Reach 7: Trailer Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reach 8: Bain Park</td>
<td>Western embayment: grasses milkweed, goldenrod red clover butter and eggs thistle</td>
<td>Queen Anne’s lace smartweed tickweed broad-leaf cattail wild grape curldoc</td>
</tr>
<tr>
<td></td>
<td>Eastern Embayment: purple loosestrife cattail white aster grasses tickweed</td>
<td>common evening primrose milkweed jewelweed wild grape</td>
</tr>
</tbody>
</table>
The backshore area is comprised of mown grass, with few large trees. A narrow vegetative buffer occurs along the shoreline, comprised of trees, shrubs and herbaceous plants. In the north end, the “no-mow” zone is very narrow (< 1 metre) from the top of the bank. While this is the area where the buffer is most narrow, it is also the area where the most woody growth occurs. Somewhat south of the boat launch the “no-mow” zone extends up to 3 metres from the top of the bank, and is comprised of herbaceous species and more sparse woody species. The growth along the shoreline appears to have occurred naturally, with no plantings, and is comprised of a mixture of native and non-native species.

Emergent vegetation is almost non-existent along this reach. There is only one small patch of cattails, just south of the McDonald Bridge.

Issues Identified:

Lack of shoreline vegetation:
Shoreline vegetation is very sparse and provides little wildlife habitat.

Little variation in the gravels of the riverbed:
Since most of the waterfront is a filled edge, there is little natural variation in the gravels along the riverbed. The river bed could be enhanced to improve fish habitat.

Stormwater management:
The Pollution Control Study was that completed for the City indicated the need for a stormwater remedial pond on the storm sewer which currently outlets just north of McDonald Bridge. This could add an interesting feature to this park land.

Boat ramp in poor condition:
Wooden docks, which were in poor condition, were removed in the winter 1999/2000. The boat ramp area should be re-vamped to improve appearance.

Unorganized parking area:
The parking area is not well-defined. Cars park and drive on the grass, resulting in damage.

General Aesthetics:
The City lands along the shoreline should be a high profile area. A landscaping and planting plan is needed to improve the appearance, buffer traffic noise and enhance use of the parkland.

Potential soil contamination:
The Benedict-Proctor Site, in the south end of the reach, has been identified as a potential area of soil contamination. This needs to be investigated before land use can be officially changed (in the Zoning By-Law) to accommodate any change in future use.

Development plans for south end:
In the past, the City has considered selling the property in the south end of this reach for development. A decision needs to made as to whether this land has development
potential or will be retained as parkland.

**Waterfront Trail:**
Routing of the waterfront trail is proposed to go through this property. Future land use should be designed to accommodate this use.

### 2.2 Reach 2: Wahoo Restaurant to City Boat Launch

Reach 2 stretches from the Wahoo Restaurant to the City boat launch area (north of the marina). A concrete retaining wall lines the shoreline, with mown grass right up to the wall. The concrete wall gives way to a small area of rock, rubble and cobble with some vegetation at the south end of this reach.

Land use in the area includes commercial uses (Gatekeeper and Price Chopper), a pump house, parking lots and boat launch. The Veteran’s Skyway Bridge crosses the Trent River in this reach. A storm sewer outflow is located 3 metres south of the Veteran’s Skyway Bridge, just north of pump house.

The concrete wall appears to be in good shape from the Gatekeeper to Veteran’s Skyway Bridge. South the bridge, along the Price Chopper property, the wall is in poor condition. The wall is listing and erosion is occurring behind the wall. A portion of the wall, in front of the City’s pump house failed in August of 2000. It was replaced with armour stone and rip-rap (Photos 3 and 4). South of the Price Chopper, the wall shows some signs of slumping and is topped by two layers of railway ties which serve to hold back the lawn/topsoil (Photo 5).

For almost the entire stretch of shoreline, from the Gatekeeper to the south end of Price Choppers, the grass is mown to the edge of the retaining wall. There is no shoreline vegetation buffer. The parking lot on the south side of the Price Chopper property drains directly into the river.

For a 20 metre stretch between the Price Chopper and the boat launch there is a change in the shoreline. The retaining wall ends and there begins an area of gentle to moderate slope to the river, comprised of cobble and rock with sparse vegetation. This shoreline type is interrupted only by the boat launch (Photo 6). In this area, and to the south of the boat launch, a 2 metre “no-mow” zone occurs, with cover including a mixture of trees, shrubs and herbaceous plants.

**Issues Identified:**

**Damaged Retaining Wall:**

The retaining wall south of the bridge is deteriorating and in need of repair or replacement. The wall is in private ownership. The City has an easement through the area in the vicinity of the pumping station. Upgrades to the sewer and pumping station will be needed within the next decade to accommodate development in the City’s west end--work on the riverbank will be needed at that time. When the retaining wall is replaced, a more natural approach should be considered.

**Backwater Area:**

Just east of the Price Chopper, there is a backwater area in the river which collects
garbage and debris. A fish habitat enhancement project could be considered here,

**Large expanses of parking lots and lack of vegetation:**
The close proximity of the parking lots to the water results in undesirable runoff into the bay. Increased naturalization along the shoreline and stormwater management devices would help improve runoff quality.

**Unorganized roadway/parking/boat ramp by arena:**
The alignment of the roadway and the unorganized parking lot in the area of the boat ramp need to be redesigned to better direct traffic and improve aesthetics.

**Waterfront Trail:**
The waterfront trail would ideally follow along the waterfront. Fencing and private property are issues that will need to be addressed.

### 2.3 Reach 3: Marina
Reach 3 is the Robert Patrick Marina. This area is used for recreational boat docking Photo 7.

The outer shore of the marina has a gentle slope, consisting of broken slabs of concrete, sparsely covered with vegetation (Photo 8). This is characteristic of most of Centennial Park, to the east. Near the east side of the marina some stacking of concrete slabs occurred, but portions of the wall are deteriorating. Erosion appears to be occurring between the top of bank and the concrete slabs. Along the top of the breakwater, the grass is mown right to the top of the bank from the inner edge to the outer edge. The sparse vegetation provides little anchoring of the topsoil at the top of the bank. The mowing of the grass to the edge may be aggravating the problem by preventing plant growth from taking hold.

The mouth of the marina, as well as the first few metres along the inside edge is composed of stacked slabs of concrete; parts of this retaining wall are deteriorating with some sections having completely fallen into the boat channel (Photo 9). The entrance to the marina was poorly designed, and was constructed with inferior building materials. With the retaining wall now starting to fail, there is an opportunity to re-construct the mouth of the marina in a manner that is more resistant to the erosive forces of the bay and that adds to the attractiveness of the shorelands.

The stacked concrete slabs give way to a mixture of cobble, rock and some concrete fill overlain by soil throughout the remainder of the marina with the exception of the back wall. The back wall of the marina is solid concrete with a small section of metal retaining wall at the east end. Erosion is occurring behind the stacked concrete, but is relatively minimal for the rest of the marina.

The marina property is mown to the top of the bank. The only exception is limited natural growth occurring on the unarmoured slopes (Photo 10).

**Issues Identified:**

*Circulation of Water through Marina:*
The three culverts which connect the marina with the Bay are too high and do not allow for proper water circulation or passageways for fish (Photos 11 and 12).

_Deteriorating marina walls:_
Active erosion is occurring along the outer edges of the marina arms and the mouth is in a poor state of repair. A more attractive marina entrance should be considered that is resistant to shoreline erosive forces.

_Shoreline vegetation:_
The habitat potential of the marina arms could be improved through planting of shrubs and vines.

_Sheet erosion:_
Sheet erosion is occurring along the marina arms where vegetation is not well established.

_Roadway along bridge:_
An eroding vehicle pathway is located adjacent to the bridge on the south arm. One functional and attractive access route would be preferable (Photo 13).

_Controlled Accessways:_
The controlled access doors to the docks at the Marina are not visually pleasing (Photo 14). Alternative methods of controlling access may be more attractive and suitable for the waterfront.

_Lack of Focus:_
The parking area and canteen could be tied in better with the marina.

### 2.4 Reach 4: Centennial Park
Reach 4 includes the Centennial Park area and stretches from the marina to the Water Pollution Control Plant (Photo 15). The land use in the area is parkland. The reach has been divided into two subsections.

**Active Area**
To the east of the marina is recreational parkland. The shoreline is about 1 - 1.5 metres in height and is comprised of large, broken concrete slabs.

Along this reach, more so than along the river or marina, small plants (woody and herbaceous species) have begun to take hold between the concrete slabs. More significant plant growth is occurring in the space between the concrete and the top of bank, where some erosion has occurred. Additional riparian planting would help to control erosion.

In the buffer, beyond the top of bank, some herbaceous plants are found. The "no mow" zone along this reach is typically 3 - 6 metres in width; wider at the east and west ends of the park (i.e. near the marina and adjacent to the amphitheatre). At the mid-section of the park where the small foot-paths meet the shoreline path, the "no - mow" zone all but disappears as the grass is cut closer and closer to the shoreline.
Near the western end of this reach is a wider (15 metres) "no mow" zone which was previously planted with woody species. Only a few trees and shrubs survived. Herbaceous species are also growing within the buffer.

**Centennial Park East End**
To the east edge of the active area for Centennial Park is a row of trembling aspen trees. A potentially more natural zone occurs in this area, and extends to the Water Pollution Control Plant. The slope is quite steep—1.5 metres in height and approaching 1:1 in places.

The shorebank in this area is comprised of sand, rock, and gravel with erosion occurring adjacent to the steep banks. Riparian vegetation consists of large aspen trees with an undergrowth of herbaceous species.

The backshore area is not mown, but is partially treed with little undergrowth. In the past, the City stored debris in this area. This area has recently been “cleaned up.” Also of interest within this area, is what appears to have been a boat launch area at some point. There is also an informal gravel parking lot at the east end.

**Issues Identified**

**Woodland Rehabilitation:**

The area to the east of the amphitheatre has some trees. It is not used as active parkland. This area is a prime site for tree planting. A small woodland would add increased diversity to the park and add habitat features.

**Naturalization:**

The previously planted area in Centennial Park could be replanted with more suitable species to add a natural shoreline buffer and variety to the shorelands. Other small meadows could be created within the park to provide habitat and improve aesthetics. Consideration must be given to maintaining views of the Bay and to public opinion of naturalized areas.

**Concrete slabs along shoreline:**

The concrete is quite visable in Centennial Park (Photo 16). Planting of vines and shrubs will help to camouflage the concrete and provide some habitat value.

**Low Wet Area:**

A small, low, wet area is located to the east of the marina. It appears that in the past, attempts have been made to fill it with mulch. This area has the potential to be developed into a wet meadow, adding diversity to the parkland.

**Overall Aesthetics and Circulation:**

The park would benefit from some cultural improvements relating to the amphitheatre, parking, pedestrian circulation, drainage of the sports fields and overall appearance (Photos 17 and 18).

**Waterfront Trail:**
The Waterfront Trail can follow the shoreline in Centennial Park, with linkages to parking and other park facilities.

### 2.5 Reach 5: Sewage Treatment Plant

Reach 5 extends from the Water Pollution Control Plant to the snow dump site on the east side of the Plant. Slabs of broken concrete line the shoreline through this stretch. Land use in the backshore area is a large manicured lawn, surrounding the Water Pollution Control Plant. The tip of the point (out from the plant) is higher and has a steeper grade than the rest of the shoreline. A 4 metre "no mow" zone occurs along the shoreline to the east and west of the plant. Right in front of the plant, the grass is mown right to the shoreline. There is some erosion evident in this area. Some herbaceous species are growing within the concrete and a mixture of woody and herbaceous species occur at the top of bank and in the buffer.

**Issues Identified:**

**Concrete lined shoreline:**
Like other reaches of the study area, the shoreline is armoured with large concrete slabs (Photo 19). In this area, re-bar protrudes from many of the slabs, which may pose a safety hazard.

**Lack of Shoreline Vegetation:**
The point on which the Treatment Plant is situated is lacking natural vegetation. Both shoreline vegetation and trees in the backshore are absent.

**Habitat Potential:**
The east-facing stretch of the shoreline, east of the plant is unique to the waterfront because of its sheltered location. A waterfowl/fish habitat enhancement project could be considered for this location.

**Thin Ice:**
The potential danger of thin ice at the outlet of the Water Pollution Control Plant must be recognized.

**Fencing:**
Security fencing is required around the Pollution Control Plant. This fencing could be reconfigured to increase the area for the waterfront trail.

**Unrestricted Vehicular Access:**
An existing dirt road, west of the Plant allows unrestricted vehicular access. Vehicular access should not be permitted.

### 2.6 Reach 6: Snow Dump to Private lands east of Canadian Tire

Reach #6 begins at the City's snow dump site and extends to the west boundary of the trailer park. A mix of private (commercial and residential) and public land occurs in this area. The City owns a 15 metre strip of shoreline behind the Canadian Tire and Independent grocery store. The shoreline is more natural in appearance here than in Centennial Park. The shoreline itself is composed of a mix of cobble, rock and soils, overlain by moderate to heavy vegetation cover.
This reach has been divided into sub-sites: Snow Dump, Wetland/Old Field, Private Lands, and Commercial Area.

Snow Dump:
To the northeast of the Water Pollution Control Plant site is a gravel area used by the City as a snow dump. The shoreline adjacent to the snow dump area is steep (about 3 metres in height at an angle approaching 60°) and is comprised mostly of rock and cobble with a few concrete slabs. Some eroded soil is mixed in with the rubble. Thicker vegetation growth occurs including willow, black locust and Manitoba maple, with an understorey of grasses. The buffer, at the top of the slope, is only 1 - 2 metres wide.

Wetland/Old Field:
To the north and east of the snow dump site is an old field and small wetland. A number of informal trails cross the field. This is an interesting component of the overall Centennial Park reach as it is one of the few areas where the shoreline is not lined with concrete blocks. It has a larger buffer and more natural appearance. The slope to the water is very gradual and covered by a lot of herbaceous and woody species. Vegetation adjacent to the shore is largely woody species. Purple loosestrife and aster are dominant in and around the wetland and field.

Private Lands:
The shoreline property to the east of the wetland area is a private nursing home (Trent Valley Lodge). The property slopes gently to the shoreline, which is predominantly cobble. Partially exposed "mud-flats" occur at the land water interface. A narrow band of thick vegetation occurs along the shore bank– in some places there is no buffer at all. Most of the vegetation is herbaceous with some small trembling aspen saplings.

Commercial Lands:
The easternmost site within this reach is backed by the Canadian Tire and Independent grocery store. The slope is very low with more rock and cobble content than concrete slabs. The City owns a 15 metre strip of land along the shoreline in this area. The 15 metre strip has been left as a natural buffer. A row of large willow and poplar trees dominate the buffer area with an understorey of woody and herbaceous species.

An interesting characteristic of this sub-site is the 4-5 exposed spits of land extending out from the shoreline. All but two of them may simply be a product of low lake levels, but they presently provide excellent waterfowl and shorebird habitat.

Another feature in this area is the small stormwater pond, ringed with wetland vegetation that treats runoff from the Canadian Tire and the Independent grocery store site.

Issues Identified:
Snow dump:
The snow dump is located very close to the water with only a small vegetative buffer between it and the water (Photos 20 and 21). This has implications for high input of contaminants to the Bay during spring melt. It is unlikely that the City will be re-locating the snow dump in the near future because of the difficulties of locating and designating a
new site. An increased buffer, some landscaping, and better definition around the snow
dump would improve aesthetics and reduce the risk of contaminants reaching the Bay.

The gravel area has also, in the past, been used for a carnival site. This use could
potentially be resumed in the future.

Wetland/Old Field Rehabilitation:
The low wet area owned by the City, east of the snow dump, has potential for wetland
rehabilitation. It is not currently connected with the Bay and is heavily vegetated with
purple loosestrife (Photo 22). The old field area also has restoration possibilities.

Stormwater Sewer/Emergency Sanitary Sewer Overflow:
A 30 inch diameter corrugated steel empties stormwater into a ditch to the west of the
wetland area, which in turn empties into the Bay (Photos 23 and 24). The sanitary sewer
is connected to the pipe, to provide for emergency overflow. Treatment of this
wastewater would be beneficial.

Private Lands:
The small island & footbridge at the eastern end of Centennial Park is not owned by the
City. Private lands extend from this point to the Canadian Tire. This is an issue which will
affect long term development of a waterfront trail.

Naturalization behind Canadian Tire/Independent:
A buffer is located along the shoreline in this reach and is owned by the City (Photo 25).
There is an opportunity to further enhance the natural buffer.

Private Lands along shoreline:
An on-street trail is required through this section because of private ownership of the shorelands.
The interim trail will need to run from Centennial Park over to Bain Park.

2.7 Reach 7: Trailer Park
Reach 7 covers a small portion of the shoreline, between the Canadian Tire/Independent
grocery store site and Bain Park. Land use in the area is a residential trailer park—the shoreline is
in private ownership. The trailer park is situated on a small peninsula, which was created from
fill material. Trailers are located in close proximity to the shoreline. Boat access is available at
the end of the point.

The shoreline is fairly steep and armoured with concrete slabs and shot rock. Filter cloth was
installed behind the shot rock. With the exception of a few trembling aspen and Manitoba
maple, there is very little riparian vegetation.

DND Creek outflows along the east side of the trailer park, marking the boundary between the
Trailer Park reach and Bain Park. The creek has been channelized. Heavy emergent and grass
growth occurs in the creek, beginning about 3 metres upstream from its mouth.

Issues Identified:
Waterfront Trail:
Routing of the Waterfront Trail close to the water will be difficult through this stretch as it is under private ownership. An interim trail will be needed along the road.

Lack of Shoreline Vegetation:
Because of the hardened shoreline and density of trailers, shoreline and backshore vegetation is lacking in this area.

2.8 Reach 8: Bain Park
Reach 8 (Bain Park) is the easternmost reach within the study area. It is a City-owned park, with baseball diamonds and soccer fields. The shoreline of Bain Park varies along its length and is divided into three sub-sites for easier reference: western embayment, the islands, and eastern embayment.

On both the east and west boundaries of Bain Park there is a grassed swale, which drains from the parking lots and low wet areas into the Bay. The westernmost swale is the smaller of the two, and ends before it reaches the water, essentially draining onto the mown grass within 30 metres of the shoreline. This allows for the water to be filtered before entering the Bay. The easternmost swale drains into a small cattail marsh at the eastern end of the embayment.

Western embayment:
The westernmost portion of the shoreline has a low slope. It is gravelly near the shoreline, with a mud flat extending 15 metres to a muddy spit of land, parallel to the shoreline. This small bay was once used as a beach (Photo 26).

The mowed parkland extends to about 4 metres from the water. The 4 metre buffer along the shoreline is comprised largely of herbaceous plants. Some trembling aspen seedlings occur. Closer to the water is a wetter area, 1-3 metre wide which extends out to the edge of the water. A combination of emergents and herbaceous plants occur in this area. During a wet year, much of this zone may be under water. About 2 to 5 metres beyond the "no-mow" zone is a long line of large willow trees. These could potentially be incorporated into a broader, naturalized zone.

The Islands:
Two islands are located offshore near the east end of the park, and linked by bridges to give the appearance of a long narrow "peninsula." While there are some broken slabs of concrete on the shoreline of the islands, these are mixed with rock, cobble and boulder, giving a more natural appearance. The slope is moderate, with a height of approximately 1 metre. Two bridges cross over concrete lined channels, connecting the islands to the mainland. The channels connect the east and west bays of Bain Park.

The "peninsula" is vegetated with mown grass, in some places to the top of bank. However, there is a moderate to high growth of vegetation on the slopes and patches of planted and natural vegetation around the periphery. The southern end is dominated by a thicket of willow saplings on the slope down to the water. On the west side herbaceous plants occur on the banks slope, interspersed by willow and trembling aspen. The shore bank on the east side of the peninsula is characterized by patches of natural growth and plantings of woody species.
Eastern Embayment:
The easternmost embayment (Photo 27) is bounded by the "peninsula" on the west side and small islands to the south, forming a small lagoon. The slope along the shoreline is very gentle. Approximately two-thirds of the "no-mow" zone along the eastern bay is only 1 metre wide; this area is composed mostly of emergents and other herbaceous species. In years with higher water, there may essentially be no buffer at all for part of this stretch. However, at each end of the embayment, the buffer is up to 5 metres in width, with heavier growth dominated by woody species. This area was planted in the early 1990's and has grown well.

Two small Islands, located just offshore in the east bay, are composed primarily of cobble, rock, rubble and gravel mixed with soil. They are vegetated with willow, Manitoba maple and herbaceous plants.

Issues Identified:
Swimming Beach:
A beach has historically been located at Bain Park. Water quality and swimming conditions are poor. The beach area has more potential as a natural habitat area

Natural buffer:
Opportunities exist to enhance the shoreline buffer and wildlife habitat in the area (Photo 28).

Runoff to Bay:
A drainage ditch running down the east side of Bain Park collects runoff from the roadway and parking, conducting it and roadway contaminants directly into the Bay.

Concrete slabs:
While portions of Bain Park's shoreline are more natural, chunks of concrete have been placed in layered walls or set as slope paving to create a stable edge at the bridges leading out to the islands. The concrete appears to be protecting the banks of the lagoon from slumping and erosion. Increased vegetation would help to camouflage the slab edges and provide wildlife habitat.

Lack of spatial structure:
The cultural components of the park seem unrelated. A more defined pathway system would help to add cohesiveness to the park.

Waterfront Trail:
The lands to the west of Bain Park are privately owned and CFB is located immediately to the east. The Waterfront Trail will need to follow along the roadway to the east and west of the park.

3. Fish & Wildlife
The Bay of Quinte provides important habitat for fish and wildlife, including waterfowl, shorebirds, mammals, reptiles and amphibians. Backfilling and armouring has occurred along
much of the shoreline and manicured lawns are maintained almost right up to the shoreline edge. This has presumably resulted in the loss of low-lying areas of emergent vegetation, which are almost negligible within the study area.

The shoreline edge is an important element of lake habitats, providing important spawning, nursery and feeding areas for many species of fish, invertebrates and wildlife. The filling and armouring of such areas results in a much simpler shoreline type, without the diversity of substrates, slopes or vegetative communities which are important to the productivity of such areas. The loss of native vegetation along the shoreline also reduces the potential of this area to filter any direct storm runoff to the bay (Gartner Lee, 1994).

Because of the hardened shoreline and lack of natural vegetative buffer, wildlife habitat is limited. Nevertheless, important habitat does occur for fish and waterfowl.

3.1 Nearshore Habitat
The Bay of Quinte supports a diverse and productive fishery. At least 65 species of fish have been documented within the Bay (Michael Michalski Assoc., 1989). Most of these are warm water species, although some cold water species such as lake whitefish, lake herring and several salmonids can be found in the Bay at certain times of year (Michael Michalski Assoc., 1989).

The shallow water in the nearshore area (littoral zone) is important fish habitat and contributes greatly to the primary production of the Bay. These protected environments, which often have abundant vegetation, provide spawning, refuge, and nursery areas for many species of fish, including yellow perch, smallmouth bass, largemouth bass, northern pike and many species of minnows. The productivity of such areas makes them important feeding or forage areas for many types of juvenile and adult fish (Gartner Lee, 1994).

The mouth of the Trent River is a major spawning area for walleye (yellow pickerel), yellow perch, northern pike, and smallmouth bass. It is also important as habitat for a variety of forage fish species. Seasonal migration of several species into the mouth of the Trent River adds to the importance of this area. A fish sanctuary is in effect in the City of Trenton between the CNR bridge and the Veteran’s Skyway Bridge, April 1 to May 1 (exact dates vary from year to year). Sturgeon, whitefish and river redhorse are known to spawn in the turbulent water below Dam No. 1 on the Trent River. The mouth of the Trent is an important migration route for these fish.

A seine net survey was conducted by the Ministry of Natural Resources for several sites in the Bay of Quinte in 1992, including six sites within the study area. The sites are shown in Figure 2 and the results of the surveys displayed in Table 2. Figure 2 also shows the locations of a nursery area for largemouth bass, a spawning area for largemouth bass and pumpkinseeds, and a centrarchid (sunfish/bass) nest.

Substrate Surveys
Various substrate types are of critical importance to the productivity, abundance and diversity of fish species. Substrate is important fish habitat because it provides: incubation areas for eggs (gravel, rubble), invertebrate (food) production (gravel, rubble, boulder), sites for fish nest building (gravel, cobble) and cover (rubble, boulder) (Sawyers and Smith, 1991).
Figure 2 Fish Habitat

LEGEND
- roads
- 83 seine netting
- sampling sites
- spawning area for
  largemouth bass
  and pumpkinseed
- nursery area for
  largemouth bass
- centrarchid nest
- watercourses
- natural vegetation

Source: OMNR, 1992
Table 2 Seine Net Fish Species Survey (for study area)

<table>
<thead>
<tr>
<th>Site (refer to Figure 2 for locations):</th>
<th># 83</th>
<th># 84</th>
<th>#85</th>
<th># 86</th>
<th>#87</th>
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<tr>
<td>Distance offshore:</td>
<td>0 - 10 metres</td>
<td>0 - 10 metres</td>
<td>0 - 15 metres</td>
<td>0 - 6 metres</td>
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<td>Depth of sampling:</td>
<td>0 - 1.2 metres</td>
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<td>0 - 1.2 metres</td>
</tr>
<tr>
<td>Plant Type:</td>
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<tr>
<td>Bottom Type:</td>
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<td>muck and rubble</td>
<td>rubble/sand</td>
<td>muck/rubble/gravel</td>
<td>rubble/sand</td>
</tr>
<tr>
<td>Current:</td>
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<td>slow</td>
</tr>
<tr>
<td>Water Colour:</td>
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<td>yellow - brown</td>
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<td>In-water Cover:</td>
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<td>sparse</td>
<td>moderate</td>
<td>sparse</td>
<td>sparse</td>
</tr>
<tr>
<td>Sampling Method:</td>
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<td>seine netting</td>
<td>seine netting</td>
<td>seine netting</td>
<td>seine netting</td>
</tr>
<tr>
<td>Fish Species Collected:</td>
<td>4 common shiners, 50 golden shiners, 3 juvenile rock bass, 1 YOY white sucker, 1 banded killifish, 1 rock bass, 3 log perch, 2 juvenile yellow perch, 1 YOY yellow perch</td>
<td>6 bluntnose minnows, 5 yellow perch, 1 juvenile rock bass, 2 log perch</td>
<td>1 largemouth bass, 4 log perch, 78 YOY yellow perch, 3 bluntnose minnows, 1 blackchin shiner, 1 pumpkinseed, 5 juvenile yellow perch, 2 juvenile rock bass, 2 adult yellow perch, 1 YOY largemouth bass</td>
<td>29 juvenile yellow perch, 1 adult yellow perch, 9 log perch, 4 adult pumpkinseed, 1 YOY yellow perch, 3 juvenile pumpkinseed, 1 YOY white sucker</td>
<td>49 juvenile yellow perch, 22 YOY yellow perch, 5 adult pumpkinseed, 2 johnny darters, 2 spottail shiners, 15 log perch, 5 adult yellow perch, 4 juvenile pumpkinseed, 1 banded killifish, 1 juvenile rock bass</td>
</tr>
</tbody>
</table>

Source: Ontario Ministry of Natural Resources 1992. Seine Net Fish Species Survey (field data). Glenora. Bay of Quinte (Trenton Shoreline) Sampling Date: 22/07/92
The MNR undertook a survey of the substrates for the area in 1992 (Smith, 1993). During the fall of 1999, a cursory review of the substrates was completed by Lower Trent Conservation staff which confirmed the earlier findings. The results of the MNR study are summarized in tabular form (Table 3). Much of the littoral zone in the study area is boulder and rubble, which provides valuable habitat including cover, invertebrate production and incubation areas.

**Macrophyte Surveys**

Aquatic vegetation is an essential component of the aquatic food chain. It provides fish with feeding, spawning, nursery and cover opportunities. Edges and open water pockets within densely vegetated areas are critical for sight-feeding predators such as the northern pike and largemouth bass. Aquatic plants are important to the restoration of the Bay of Quinte since they are known to improve water clarity by preventing shore erosion, stabilizing sediment, and storing nutrients (Sawyers and Smith, 1991).

An aquatic macrophyte survey was completed for the Bay by the MNR to document changes in plant cover during the period of 1988 to 1994. The Trenton North Site stretches from the mouth of the Trent River to Meyer’s Point, and includes a portion of the study area. The most significant changes in the Bay occurred in the upper bay at the Trenton North Site. Here, plant growth was abundant in 1992 and grew to a depth from 2 to 2.5 metres; this was considerably different from the 1988 survey results which recorded sparse growth to a maximum depth of 1.75 metres (Marshall Macklin Monaghan Limited, 1995.)

Five species accounted for 90% of the species composition by percent cover:

- **Najas guadalupensis** (Naiad) 23.8%
- **Vallisneria americana** (Tapegrass) 9.2%
- **Heterantherea dubia** (Water star grass) 18.4%
- **Myriophyllum picatum** (Eurasian watermilfoil) 15.7%
- **Elodea canadensis** (Canada waterweed) 13.5%

Biomass recorded from the Trenton North Site in 1992 was 415.1 g/m². This was a significant increase over 1988, when recorded Biomass was 19.96 g/m². Parallel to the increase in biomass, stem density increased from 24.2 stems/m² to 121 stems/m² in 1988 (Marshall Macklin Monaghan Limited, 1995). These significant changes (increase in biomass and distribution to greater depths) may be indicative of improved water clarity within and adjacent to the plant beds.

Since the macrophyte survey of 1992, zebra mussels have had a major impact on the Bay of Quinte, improving water clarity. Therefore, Lower Trent Conservation staff undertook a qualitative survey of the macrophyte cover in the fall of 1999, to document any changes. The study indicated that cover was quite heavy for most of the study area. The observations are summarized in Table 3. Based on the 1999 survey, Eurasian watermilfoil has become quite dominant. Pondweed (Potomegeton species) may also be becoming very abundant in some areas of the Bay (Mathers, 2000).

The increased water clarity and increase in aquatic plants in the bay has coincided with a change in fish community structure. There are more bass, pike and yellow perch, and fewer young walleye. It is very likely that these phenomenons are interrelated (Mathers, 2000).
<table>
<thead>
<tr>
<th>SHORELINE REACH</th>
<th>SUBSTRATE</th>
<th>AQUATIC VEGETATION</th>
</tr>
</thead>
</table>
| **Reach 1:** Between the Bridges* | cobble mixed with silt (some concrete is apparent in the south end) *nearshore area is a very narrow strip (2 to 3 metres wide) before dropping off sharply | macrophytes:  
- heavy, almost 100% cover (*the heavy growth only occurs in the narrow, nearshore area)  
- emergents:  
- rubber and concrete slabs | - approx. 90% cover (coontail, milfoil, pondweed, narrow-leaved tapegrass) near the Gatekeeper  
- 80% (elodea, tapegrass and milfoil) at the southwest face of the marina. |
| **Reach 2:** Wahoo Restaurant to City Boat Launch | rubble and concrete slabs | emergents:  
- almost non-existent along this reach  
- one small patch of cattails, just south of the McDonald Bridge. |
| **Reach 3:** Marina | - Rubble + Boulder at the marina entrance and along the shoreline | macrophytes:  
- growth in marina is controlled by cutting and chemical spray  
- limited aquatic growth noted in the fall of 1999, including white water lily and coontail near the southern culvert  
- 1992 MNR data indicated the presence of large patches of submergents within the southern bay of the marina  
- emergence:  
- some cattails near the northwest culvert. |
| **Outer Shoreline of Marina Boulder** | | macrophytes:  
- approx 80% cover (elodea, tapegrass and milfoil) adjacent to north-west arm of the outer marina  
- no macrophyte cover along the southern edge from the entrance to the marina to just west of the south culvert. |
| **Reach 4:** Centennial Park Active Area | - marina to the amphitheatre: Boulder + Rubble to a depth of 1.7 m.  
- Due south of the amphitheatre Boulder > Rubble  
- silt and algae cover much of the rubble beyond 1.2m  
- 8 or more sunken rock and log cribs in this area | macrophytes:  
- approx 80% coverage (milfoil, narrow-leaved pondweed, tapegrass, and wild celery) from the marina to the area due south of amphitheatre  
- cover tapers to 20% - 60% at the eastern edge of the site within 20 metres of shore but is heavy again with 80% coverage beyond 30 metres from shore. |
| **East End** | Gravel near abandoned boat ramp  
- Rubble extends outward to a depth of approx. 1.2 m  
- remainder of the shoreline is Boulder + Rubble. | macrophytes:  
- coverage is patchy, varying from 20% - 60% (milfoil, narrow leaved pondweed, tapegrass, and wild celery) |
| Reach 5: Sewage Treatment Plant | - Boulder + Rubble along the west side of the Plant.  
- Rubble > Boulder on the south and east sides  
- macrophytes:  
  - none present along the south side of the treatment facility (ie. within 10 metres either side of the warm water outflow)  
  - on the west side of the plant, patchy cover occurs (20 % - 60%) close to shore with 80% coverage closer to the southwest corner. A heavy band of macrophytes occurs 30-40 metres out from the shoreline (milfoil, narrow leaved pondweed, tapegrass, wild celery)  
  - on the east side of the plant, 70% macrophyte cover occurs (milfoil, tapegrass, pondweed). Again the coverage is thinner close to shore, only about 20% -30% and increasing out from the shoreline and towards the northeast (near the snow dump) |
| Reach 6: Snow Dump to Private lands east of Canadian Tire | - near snow dump site a combination of:  
  Boulder Sandy and Boulder Detritus abutting the shoreline, with Muck and then Sand further out  
  - wetland site: Rubble + Sand, followed by Rubble + Gravel proceeding north-west up the shoreline, with Clay further out  
  - near the private land and commercial sites, mixture of Rubble, Gravel, Sand, Muck  
- macrophytes:  
  - coverage along the snow dump is fairly thin (about 20%) (milfoil and tapegrass)  
  - coverage along the private land and commercial site is fairly heavy (50%-60%) (milfoil, tapegrass, pondweed) |
| Reach 7: Trailer Park | - Boulder + Rubble at the end of the point.  
- Rubble + Gravel along each side of point  
- macrophytes:  
  - coverage is in the range of 50 - 60% (milfoil, tapegrass, and pondweed) |
| Reach 8: Bain Park | - Primarily Sand, with some Rubble occurring near the west end of the shoreline  
- Rubble, followed by Muck occurs near the outlet of DND Creek (at the western boundary of the park)  
- mudflats occur in the lagoon area  
- algae:  
  - algae growth is heavy in the lagoon (of the eastern embayment). Approximately 2/3 of the lagoon was open water with the remainder covered with algae in the fall of 1999  
- emergents:  
  - small patches of cattail occur along the northern edge of the lagoon (mainland)  
  - macrophytes:  
  - patchy coverage are patchy (ranging from 40 to 60% coverage) within 20 metres of the shore.  
  - heavier coverage (approximately 60%) occurs in a long band, further out, approximately 30 - 40 metres from shore (milfoil, pondweed, tapegrass) |

| Boulder | rock over 256mm in diameter |
| Rubble/Cobble | rock 80mm to 256mm in diameter |
| Gravel/Pebble | rock 2mm to 80 mm in diameter |
| Sand | crystalline rock 0.0625 - 2mm in diameter |
| Silt | inorganic material finer than sand (.0039 - .0625mm in diameter |
| Clay | inorganic material with a greasy feel, no apparent structure (less than .0039 mm) |
| Muck | composed of silt and clay mixture with considerable amounts of organic material |
| Detritus | organic material composed of sticks, leaves and decaying plants |

Where two types of substrates occupy the same area the symbol "/" indicates a 50/50 mix  
"+" indicates an approx. 70+30 mix of the two substrate types
3.2 Wildlife

The sheltered embayments along the shoreline provides a feeding and staging area for waterfowl. Green-winged teal, black duck, mallard, wood duck, cormorants, common merganser, and grebe were all sited in the area during site inspections in the fall of 1999. The rocky spits, which extend out behind the Canadian Tire and Independent grocery store provide excellent waterfowl and shorebird habitat. Gulls, least bittern, great blue heron and killdeer were all observed in this area. Caspian tern and osprey, significant bird species, have been observed in the upper Bay of Quinte and would be expected to occur within the study area. In a recent study for the CFB Trenton shoreline (Gartner Lee, 1994), which is immediately adjacent to the study area, osprey, great blue heron and belted kingfisher were observed. Osprey nest just to the north of the McDonald Bridge and caspian tern have been noted feeding in the area. Research has indicated decreasing numbers of breeding and staging ducks in the bay, a change in the community of ducks from blue-winged teals and American black duck to mallard, a reduction in offshore fish-eating birds and an increase in visiting double-crested commorants and ring-billed gulls (Michael Michalski Assoc., 1989).

Beaver activity has been noted within the study area. Other common mammals such as muskrats, mice, rats, raccoons, woodchuck, skunk, squirrels and chipmunks are likely to occur in this urbanized landscape.

No information on reptiles and amphibians is available for the reach. A painted turtle was observed during a site inspection. Locally common species of snakes, frogs and toads also are likely to occur.

With manicured lawn as the dominant vegetation type, basically right to the shoreline, opportunities for wildlife within the area are limited. Increased diversity of vegetation types and buffer widths would increase habitat for small mammals, amphibians, reptiles, and birds.
Photo 1: Reach 1--Between the Bridges
Public Greenspace along east side of Trent River, between the bridges.

Photo 2: Reach 1--Between the Bridges
Concrete lined shoreline.
Deteriorating concrete retaining wall, near City pump house, failed August, 2000.

Concrete wall was replaced with armour stone and rip-rap in front of pump house.
Photo 5: Reach 2--Wahoo Restaurant to City Boat Launch
Concrete retaining wall deteriorating along Price Chopper shore frontage.

Photo 6: Reach 2--Wahoo Restaurant to City Boat Launch
City boat launch, south of marina.
Photo 7: Reach 3--Marina
Robert Patrick Marina. This area is used for recreational boat docking.

Photo 8: Reach 3--Marina
Outer shore of the marina. Banks are comprised of broken slabs of concrete, sparsely covered with vegetation.
Photo 9: Reach 3--Marina
Mouth of the marina, composed of stacked slabs of concrete; parts of this retaining wall are deteriorating.

Photo 10: Reach 3--Marina
The marina property is mown to the top of the bank. The only exception is limited natural growth occurring on the unarmoured slopes.
Photo 11: Reach 3--Marina
The culverts which connect the marina with the Bay are too high and do not allow for proper water circulation or passageways for fish. (Culvert on north end).

Photo 12: Reach 3--Marina
Culvert located on southern arm of marina. It does not allow for good water circulation in the marina.
An eroding vehicle pathway is located adjacent to the bridge on the south arm.

The controlled access doors to the docks at the Marina are not visually pleasing.
Photo 15: Reach 4--Centennial Park
Centennial Park stretches from the marina to the Water Pollution Control Plant.

Photo 16: Reach 4--Centennial Park
Concrete slabs lining Centennial Park’s shoreline are quite visible and typical of most of the shoreline.
In the past, portions of Centennial Park have been used to store old construction materials and parkland debris. The City has taken measures to clean up these areas.

Piles of concrete dumped in a visible location along the Centennial Park shore.
Photo 19: Reach 5--Sewage Treatment Plant
The shoreline in front of the Water Pollution Control Plant is armoured with large concrete slabs. Re-bar protrudes from many of the slabs in this area.

Photo 20: Reach 6--Snow Dump to Private lands east of Canadian Tire
The City’s snow dump is located very close to the Bay with only a small vegetative buffer between it and the water.
A view of the snow dump, from the north.

To the north and east of the snow dump site is an old field and small wetland. The wetland is not currently connected with the Bay and is heavily vegetated with purple loosestrife.
Photo 23: Reach 6--Snow Dump to Private lands east of Canadian Tire
A 30 inch diameter corrugated steel culvert empties stormwater into a ditch to the west of the wetland area.

Photo 24: Reach 6--Snow Dump to Private lands east of Canadian Tire
Stormwater effluent is emptied into the Bay via a drainage ditch. There is some potential for stormwater treatment in this area.
Photo 25:  Reach 6--Snow Dump to Private lands east of Canadian Tire
A natural buffer occurs along the shoreline behind Canadian Tire and the Independent Grocery Store. A 15 metre strip along the shore is owned by the City.

Photo 26:  Reach 8--Bain Park
The small embayment in the west end of Bain Park was once used as a beach. It has become more natural in recent years and conducive to wildlife.
A small lagoon occurs in the east end of the park, bounded by islands and a peninsula. The vegetative buffer varies from 1-5 m along the eastern embayment.

A natural buffer occurs along the Bain shoreline, due to past regeneration efforts. Efforts should be made to continue to enhance the shoreline buffer and wildlife habitat.
REFERENCES/INFORMATION SOURCES


