# Chapter 6

# Managing the Heritage Values of the Ottawa River

The Ottawa River Heritage Designation Committee members (ORHDC), representing individuals and organizations along the river, have great hopes for the Ottawa River, and believe that their visions could be achieved through Canadian Heritage River (CHR) designation. The advantages and opportunities of CHR designation of the Ottawa River are many and wide ranging, from setting the stage for greater conservation of natural resources to strengthening communities and building bridges between them.

**Figure 6.1 Aerial View of the Ottawa River, Outaouais Region**

Source : Alexandre Baker

The two provinces and numerous communities, organizations, agencies, and industries with a stake in the future of the Ottawa River will need excellent coordination and a common vision to sustainably manage the Ottawa River as a CHR. Multiple uses of the river and complex jurisdictions over its waters are the two greatest challenges to the management of the Ottawa as a CHR.

This section outlines the existing land and water use of the Ottawa River, identifying key resource uses to set the stage for the future development of an integrated management plan for the river. It then explores the opportunities available through CHR designation as well as challenges to managing the Ottawa River as a CHR, through which key conservation issues are highlighted. Each of these challenges also represents an opportunity for stakeholders to work together to develop a shared vision for the Ottawa River's natural, cultural, and recreational opportunities.

## 6.1 Existing Land and Water Use

As the Ottawa River heritage designation initiative proceeds, ORHDC will develop an approach to managing the river's heritage values, based on an understanding of the natural resource uses associated with the river and its watershed. The following section aims to contribute to this effort by highlighting some of the land and water uses along the Ottawa. It presents an overview of water extraction, forestry, agriculture, and urban development along the river.

### 6.1.1 Water Extraction

**Small Scale Domestic Use**

Before water supply support systems were introduced in Canada, residents relied upon local wells or nearby ponds, creeks, or rivers as sources of water. Early European settlers relied upon water from the Ottawa River and its tributaries for domestic use. For many decades, such easy access to fresh drinking water (and for much of the year, to ice cut in winter) contributed to the valley's development.

Today, some residents still rely on private wells. The exact number for the entire river is unknown, though Haxton and Chubbuck indicate that between La Passe and Rapides-des-Joachims, over 1000 homes and cottages are outside areas served by a piped water supply (Haxton and Chubbuck 46).

**Groundwater**

Groundwater provides much of the water used for residential and agricultural purposes along the Ottawa River. It also moves nutrients to vegetation and provides flow to streams. Groundwater is stored in and moves through porous sand and gravel and porous or fractured bedrock (aquifers). Aquifers are recharged by rainwater or snowmelt from the ground surface. However, throughout much of the Ottawa Valley, an impervious blanket (aquitard) of Champlain Sea silt and clay limits aquifer recharge. Excessive pumping of groundwater can therefore deplete aquifers.

Slow flow rates and long residence times in aquifers cause groundwater quality to be controlled by the chemical composition of the aquifer. Pyrite-bearing rocks yield water with a rotten-egg odour. Water from salt-rich Champlain Sea sediments can be saline. When calcium and magnesium dissolve from limestone and dolostone, they produce what is known as hard water (Geoscape Canada: "Ottawa – Land Use").

**Municipal Water Extraction**

As Canadian communities grew, houses were constructed farther from rivers, so settlers no longer had convenient access to river water. In addition, as the population along the Ottawa River rose, so too did river pollution, particularly as a result of debris from the lumber industry. A need for municipal storage reservoirs developed.

There are a large number of municipal drinking water systems serving the communities along the Ottawa River. These include ones at Fort Coulonge, Deep River, Petawawa's Canadian Forces Base, Pembroke, Bryson, and Campbell's Bay (Haxton and Chubbuck 43 and 46). Of course, they also include facilities such as the purification plants at Britannia and Lemieux Island that service the city of Ottawa.

**Industrial Water Extraction**

Water is also extracted from the Ottawa River for industrial purposes. For example, between La Passe and Rapides-des-Joachims, industrial water intakes include the Petawawa Golf Club, County of Renfrew Roads Department, Commonwealth Paper Mill, Deep River Golf Course, Chalk River Laboratories, and the Nuclear Power Demonstrator at Chalk River (Haxton and Chubbuck 46). There were no municipal or

industrial water intakes identified in the stretch between the Des Joachims and Otto Holden Generating Stations (Haxton and Chubbuck 53).

### 6.1.2 Urbanisation and Shoreline Development

In the 20th century, urban areas around the world expanded greatly at the expense of natural areas and agricultural land. This is true of many communities along the shores of the Ottawa River, where, in many cases, towns and cities continue to occupy an increasing portion of the land. Managing this development has become a priority for municipalities.

The City of Ottawa's growth, for example, has been managed by the National Capital Commission (NCC), and greatly affected by the NCC's Greenbelt, almost 20 000 hectares of publicly owned lands in a rural setting. The founding purpose of the NCC was to keep in check the urban sprawl occurring in other cities of North America.

**Figure 6.2 Urban Development Along the Ottawa River**

Source : Alexandre Baker

Shoreline development refers here to built structures near the river's shore and to other significant alterations of the shoreline for residential, commercial, industrial, or recreational purposes. Shoreline development along the Ottawa River must be carefully managed if communities wish to ensure the health of the river's natural systems.

The following section highlights some of the key developments along the Ottawa River, with particular attention to shoreline development, beginning with the river's source at Lake Capimitchigama and following it to its confluence with the Saint Lawrence. Table 6.1 gives an overview of the differing land uses per section of river.

**Table 6.1 Mean Percentage of Land Use Class Per Tributary Sub-basin of the Ottawa River**

| Section of the River | Tributary | Area of Sub-Basin ($km^2$) | % Forest | % Agriculture | % Built-up Area | % Open Water |
|---|---|---|---|---|---|---|
| **Lac Dollard des Ormeaux** | Rideau | 4232 | 34.6 | 59.3 | 2.4 | 3.7 |
| | Gatineau | 24581 | 92.2 | 2.1 | 0.2 | 5.6 |
| | Lièvre | 10650 | 94.2 | 3.6 | 0.1 | 2.1 |
| | Petite Nation | 2717 | 91.5 | 5.8 | 0.0 | 2.8 |
| | South Nation | 5697 | 22.7 | 77.0 | 0.0 | 0.3 |
| | Rouge | 7977 | 95.6 | 3.6 | 0.3 | 0.2 |
| Subtotal | | 55854 | | | | |
| **Lac des Chats** | Bonnechere | 4662 | 79.1 | 18.8 | 0.0 | 2.1 |
| | Madawaska | 9094 | 96.5 | 0.9 | 0.0 | 2.6 |
| | Mississippi | 4632 | 71.0 | 27.1 | 0.1 | 1.8 |
| Subtotal | | 18388 | | | | |
| **Allumette Lake/Lac Coulonge** | Petawawa | 4402 | 97.3 | 0.2 | 0.0 | 2.5 |
| | Noire | 2744 | 96.4 | 1.5 | 0.0 | 2.1 |
| | Coulonge | 5406 | 98.5 | 0.6 | 0.0 | 0.9 |
| Subtotal | | 12552 | | | | |
| **Holden Lake** | Mattawa | 5827 | 97.6 | 0.0 | 0.6 | 1.8 |
| | Dumoine | 4483 | 96.3 | 0.0 | 0.0 | 3.7 |
| Subtotal | | 10310 | | | | |

Source: Haxton and Chubbuck 23

Shoreline development is linked to population density. Table 6.2 provides the populations of the main communities along the Ottawa River.

**Table 6.2 The Main Communities Along the Ottawa River: 1961 and 1996 Populations by River Reach**

| City | 1961 | 1996 | % Change |
|---|---|---|---|
| Carillon | 427 | 258 | -40 |
| Hawkesbury | 8661 | 10,162 | 17 |
| Rockland | 3037 | 8070 | 165 |
| Hull | 56,929 | 62,339 | 10 |
| Ottawa | 303,395 | 542,462 | 79 |
| Arnprior | 5474 | 7113 | 30 |
| Campbell's Bay | 1024 | 874 | -15 |
| Bryson | 537 | 753 | 40 |
| Fort Coulonge | 1823 | 1716 | -6 |
| Pembroke | 16,791 | 14,177 | -16 |
| Petawawa | 4509 | 6540 | 45 |
| Deep River | 5377 | 4491 | -35 |
| Mattawa | 3314 | 2281 | -31 |

Source: Haxton and Chubbuck 23

Between the river's source at Lake Capimitchigama and Lake Temiskaming, there is very little development. This section of the river, exclusively within Quebec, is significantly altered by three large reservoirs: Cabonga, Dozois, and Decelles.

Along the shores of Lake Temiskaming, there is some limited development. Notre Dame du Nord, Quebec, at the tip of Lake Temiskaming, has a population of roughly 1, 250, and Ville Marie, on the eastern shore of the lake, of roughly 2 855 (Société de développement du Témiscamingue). Specific information on shoreline development in these communities is not available. Developed areas in this stretch of the river include the town of Cobalt, Ontario with a population of roughly 10,200 (Statistics Canada), and the city of Temiskaming Shores, Ontario. Temiskaming Shores is the result of a recent amalgamation of the communities of New Liskeard, Haileybury, and Dymond. Its population is slightly over 10,000.

Further downriver, between Lake Temiskaming and the municipality of Rapides-des-Joachims, there is still relatively little shoreline development (Haxton and Chubbuck 58). Mattawa, a post founded by the Hudson's Bay Company in 1837, is the largest town in this region, and the 10th largest in population along the river. This community's population has been declining since 1961. In this stretch, there is little to no development along the Quebec shoreline, whereas the Highway 17 corridor extends along the Ontario side of the river as far north as Mattawa. Several small communities, such as Deux-Rivières and Bissett Creek, are located in this stretch. The built-up area of the Mattawa sub-basin is somewhat higher than most other reaches of the river, and represents 0.6% of the Mattawa River sub-basin (Haxton and Chubbuck 53).

Between Rapides-des-Joachims and La Passe, the cities of Pembroke and Petawawa represent significant development along the Ontario shore of the Ottawa River. Other towns in this stretch of the river include Fort Coulonge, Waltham Station, Chapeau, and Deep River. Since 1961, some communities have experienced a population decline, such as Fort Coulonge, Deep River, and Pembroke, while others have experienced an increase, such as Petawawa (Haxton and Chubbuck 46).

In conjunction with the recently completed marine bypass system around Des Joachims Generating Station, the Corporation Passe des Rapides has proposed a tourist development plan for the island adjacent to Rapides-des-Joachims (Haxton and Chubbuck 46). On the Quebec side, development is quite heavy on the shoreline of Upper Allumette Lake between Petawawa and Pembroke. On the Ontario side, it is equally heavy between Petawawa and Moore's Beach downstream of Pembroke. The region's sandy beaches have resulted in numerous recreational buildings and heavy boating activities.

Further downriver, between La Passe Dam and Chenaux, population in some of the communities has declined since 1961, such as Campbell's Bay. Other communities in this stretch, however, have experienced an increase in population. At least three commercial white water rafting outfitters run expeditions on this section of the river. Two of these have lodges at Byces Point (Haxton and Chubbuck 43).

Most of the Ontario shoreline between Chenaux Dam and Chats Falls is privately owned and occupied by over 450 cottages and homes. Year round cottage habitation is increasing in this region. Since 1961, Arnprior, another major user of the river, has experienced a 30% population increase. There is little shoreline development in this reach of the river. However, there are ongoing proposals for large-scale works, including marinas, beaches, utilities, and waste treatment plants. There is a proposed boat bypass at the northernmost dam at Chats Falls on the Quebec side, with another proposed bypass through Fitzroy Harbour and Vagerge Point (Haxton and Chubbuck 36).

The National Capital Region, including the cities of Ottawa and Hull, is by far the area of the most concentrated development in the Ottawa River watershed. Both of these cities have a long history of settlement, and in addition, have experienced population increases since 1961. The former municipalities of Nepean and Aylmer also represent areas of concentrated population (Haxton and Chubbuck 27).

The stretch of the river between Chaudiere Falls and Carillon is bordered by several large towns, including Cumberland, Rockland, Gatineau, Hawkesbury, and Grenville. Since 1961, some of these communities have experienced a decline in population, such as Carillon, while others have increased in size, such as Hawkesbury and Rockland. Overall, in comparison to the entire river, this section has a high percentage of built-up areas. For example, 2.4% of the Rideau River sub-basin is developed land (Haxton and Chubbuck 17).

### 6.1.3 Industry

Some land is used for industrial purposes along the Ottawa River, and many of industries rely on the river's water for their operations. Atomic Energy Canada Limited (AECL) has its major research facility, Chalk River Laboratories, on the Ontario shore of the river. A Canadian forces base lies between AECL and Petawawa. Bryson and Portage-du-Fort have pulp and paper mills (Haxton and Chubbuck 43). The town of Braeside, with its Tembec mill, is a major water user (Haxton and Chubbuck 36). Industries between Chaudiere Falls and Chats Falls include Goldie Mohr Construction and M.G. MacDonald (Haxton and Chubbuck 27). Four pulp and paper mills, including J. MacLaren in Thurso and Masson, Canadian International Paper in Gatineau, and E.B. Eddy Paper in Hull, currently operate along the north shoreline between Carillon and Chaudiere Falls. Others are no longer in operation: Canadian International Paper shut down its Hawkesbury mill in 1982, Eddy discontinued its pulping operations in 1972, and log drives ceased in the Ottawa River in 1990 (Haxton and Chubbuck 17).

### 6.1.4 Agriculture

The underlying geological material along the Ottawa River determines how suitable the valley's land is for agriculture. Nutrient-rich silt and clay soils along the lower stretches of the Ottawa River Valley are highly productive as long as surface drainage is adequate. Networks of long drainage ditches are therefore common in these areas. Till that has a fine-grained matrix is also nutrient-rich, and retains moisture well. Farms on till often have rock fences or piles built from boulders pulled from the fields.

In contrast, sandy soils may be low in nutrients and retain moisture poorly, making them poor agricultural soils. For example, in the Bourget-Plantagenet area, abandoned farms on the dry sand plain of the early Ottawa River have been turned into pine plantations, and are now a public recreation forest (Geoscape Canada: "Ottawa – Land Use").

**Upper and Middle Ottawa River**

In the upper and middle stretches of the Ottawa River, agricultural land use is limited. For example, between Allumette Lake and Lac Coulonge, agricultural land use accounts for only 0.2 to 1.5% of the land use for each of the three principal tributary sub-basins (the Petawawa, Coulonge, and Noire rivers) (Haxton and Chubbuck 46).

The poorly drained soils of the upper stretches of the Ottawa River are not conducive to grain cultivation. For instance, the most important agricultural use of the land in the Abitibi-Témiscamingue Administrative Regions is the farming of fodder to support cattle, dairy, poultry, sheep, and pork farms. Horticulture also occurs in this region. In the MRC of Abitibi, Quebec, there are 23,630 ha of agriculturally productive land (Hydro Québec: Bassin supérieur 5-3).

**Lower Ottawa River**

Further downriver, an increasing percentage of the land is used for agricultural purposes. For example, the stretch of river between Chats Falls and Chenaux Dam is quite high in agricultural land use, with farmland comprising up to 27% of the Mississippi River sub-basin (Haxton and Chubbuck 36) and 77% of the land in the South Nation River sub-basin (Haxton and Chubbuck 17).

This lower section of the river has a large number of dairy and beef farms, and also contains pork and poultry farms. For example, much of the cultivated land in the Outaouais Administrative Region supports the cattle and dairy industry. These lands are used to cultivate grain (8%), alfalfa (13%), and fodder (39%), with the remaining agricultural lands used as pastureland (24%). Most of the agricultural land in use in the Outaouais region is along the Ottawa's tributaries, the Gatineau, Petite-Nation, and Coulonge Rivers. Overall, there has been a decline in the area of cultivated agricultural land (Hydro Québec: Bassin inférieur 5-3).

### 6.1.5 Forestry

In the Ottawa River Valley, exploitation of the river valley's forests has played an important role in shaping the development of the valley's economic, social, and cultural character. The region's forests continue to support pulp and paper as well as newsprint production plants in Ottawa River communities such as Masson, Buckingham, Thurso, Hull, and Temiskaming (Rivers, Inc.: "Ottawa River").

**Upper and Middle Ottawa River**

In the upper stretches of the river, forestry represents a major economic activity. For example, the Abitibi-Témiscamingue and Nord-du-Quebec regions contribute 8.9% of Quebec's total pulp, paper, and paperboard production (Rivers, Inc.: "Ottawa River"). In Abitibi-Témiscamingue, between 60% and 70% of the tree cover is comprised of coniferous trees. In the MRC of Abitibi, the main tree species are Balsam Fir (5%), Spruce (39%), Jack-Pine (18%), Birch (7%), and Trembling Aspen (30%). Cedar and Hemlock are also exploited.

**Figure 6.3 Historic Logging**

Source : Jim Fraser

In the MRC of Abitibi, there are two tree nurseries, 20 sawmills, and one pulp and paper factory (in Amos). In the Vallée d'Or, there are 11 factories for transforming wood and 30 forestry companies. In Rouyn-Noranda, there are 10 small factories for transformation and 14 forestry companies. In the Abitibi-Témiscamingue region, there were 10 primary transformation factories and 17 secondary transformation factories (Hydro Québec: Bassin supérieur 5-3).

In Ontario, the Ottawa Valley Forest, representing the forests of Renfrew County, contains ten primary wood industries and over 100 forest products companies (OMNR *Healthy Forests* 7 and 24).

Most of the infrastructure in the county was originally designed to meet the needs of the forest industry. The forest of Algonquin Provincial Park, called the Algonquin Forest, is managed by the Algonquin Forest Authority, and is the most important source of wood supply in eastern and central Ontario.

**Lower Ottawa River**

The Outaouais region, including plants in Hull, Masson and Thurso, contributes 12.5% of the total Quebec pulp, paper and paperboard production.

Trees grown in the Outaouais region include Maple, Birch, Beech, and Poplar. In the north, there is a higher proportion of coniferous trees. In Pontiac, for example, 40% of the harvested forest is mixed, and another 20% is coniferous. Species harvested further north include Fir, Spruce, Cedar and Hemlock (Hydro Québec: Bassin inférieur 5-2).

On the Ontario side, in Lanark County, south of the Ottawa Valley Forest and the Ottawa River, the Mazinaw-Lanark Forest contains four primary wood industries (OMNR *Healthy Forests* 7). While the economy here has diversified considerably in recent years, the forest industry remains very active, particularly in its northern portion. Approximately 90% of lumber production in Lanark County is in the high-value sector, particularly maple.

In both Quebec and Ontario, sustainable forestry is practiced. An objective of the Ontario Ministry of Natural Resources (OMNR) is to ensure the long-term health of the forest so that its benefits are available to future generations. To uphold these values, OMNR has implemented significant improvements in its forest management legislative and policy framework. For example, it has created opportunities to become involved in forest management planning. Also, the system for licensing forestry companies has undergone significant improvements. The CFSA (Crown Forest Sustainability Act), introduced in 1995, requires that an approved Forest Management Plan be in place before any forestry operations begin. Ontario's Living Legacy, announced in 1999, provides a land-use strategy for Ontario's forests including the creation of new parks and protected areas (OMNR *Annual Report* vii).

### 6.1.6 Mineral Resource Extraction

**Mineral Extraction in the Upper Section of the Ottawa River Watershed**

The Canadian Shield offers rich deposits of minerals, including iron, nickel, silver, gold, copper, and zinc. The discovery of the Larder-Cadillac Lake Fault at the beginning of the last century spurred the development of several communities along it, including Cadillac on the Ottawa River and also Rouyn-Noranda, Evain, Arntfield, and McWatters.

There are at least 276 mineral extraction sites in the general region of the Upper Ottawa Valley, with 65 mines (only four of which are active) in the Rouyn-Noranda MRC and 211 (mainly sand quarries) in the Abitibi MRC. There are four mines active in the Rouyn-Noranda MRC: Bouchard-Hébèrt, Francoeur, Gallan, and Mouska. In the MRC of Vallée D'Or, there are four: Sigma, Croinor, Beaufor, and Louvicourt. All but the last of these are gold mines.

In addition, there are 97 mineral exploration projects underway in the upper stretches of the river. These are aimed at the extraction of polymetallic minerals and diamonds. Of additional interest in the upper

portion of the Ottawa River watershed are a laboratory-mine in Rouyn-Noranda (CANMET), the regional centre for Mine Rescue and the Horne copper foundry.

**Mineral Extraction in the Lower Section of the Ottawa River Watershed**

The major mineral resources of the Ottawa-Gatineau region are crushed stone, sand and gravel. As an aggregate, these are used by the construction industry to make concrete and build roads. Finely crushed aggregate is also used in plastics, glass, paint, wallboard, and roofing tiles.

Although no longer active, stone quarrying played an important role in the history of local construction. The stones of many buildings in Ottawa are from local quarries. For example, quarries east of Kanata provided the sandstone to face the Parliament Buildings and the Museum of Nature. Crushed limestone from quarries such as those near Carlington Hill in Ottawa and the casino in Gatineau supplied lime for the production of cement.

Metals such as iron, lead, molybdenum, zinc, and silver were mined from the mid 1800s to the mid 1900s in the Ottawa-Gatineau region. Industrial minerals such as feldspar, apatite, mica, graphite, and brucite were a source of even greater wealth.

### 6.1.7 Peat Moss Extraction

Peat moss, an important resource for the horticultural industry, is extracted at several sites in the Ottawa-Gatineau region, including Alfred Bog. Peat is plant material that slowly accumulates and decomposes in bogs. Because of the important role that wetlands play in the survival of wildlife and in the purification of water, peat mining is a controversial resource-extraction practice (Geoscape Canada: “Ottawa – Wealth”).