

Regulations and other acts

Gouvernement du Québec

O.C. 1114-2006, 6 December 2006

Natural Heritage Conservation Act
(R.S.Q., c. C-61.01)

Establishment of the “Réserve de biodiversité des Lacs-Vaudray-et Joannès”

WHEREAS, under section 43 of the Natural Heritage Conservation Act (R.S.Q., c. C-61.01), the Minister of Sustainable Development, Environment and Parks may recommend to the Government that permanent biodiversity reserve status be assigned to all or part of land set aside as a biodiversity reserve and that the applicable conservation plan be approved;

WHEREAS, in accordance with section 39 of the Act, following the setting aside of the proposed Vaudray and Joannès lakes biodiversity reserve, the Bureau d’audiences publiques sur l’environnement held a public consultation and made its report public on 18 March 2005;

WHEREAS the report recommends the assigning of permanent biodiversity reserve status, considering in particular public support for the project, and proposes among other things the boundaries of the proposed reserve be reviewed, mainly to increase the area of protection;

WHEREAS, taking into consideration the recommendations in the report, the Minister has prepared a new conservation plan and has revised and extended the total protected area and revised the proposed conservation plan for the biodiversity reserve and the plan and land description attached to this Order in Council;

WHEREAS the land included in the protected area is part of the domain of the State and is not part of a reserved area or an agricultural zone established under the Act respecting the preservation of agricultural land and agricultural activities (R.S.Q., c. P-41.1);

WHEREAS the Commission de toponymie has approved the use of the name “Réserve de biodiversité des Lacs-Vaudray-et-Joannès”;

WHEREAS Ville de Rouyn-Noranda, within the scope of its regional county municipality powers, has certified that the proposed biodiversity reserve is consistent with the objectives of its land use planning and development plan;

WHEREAS, to facilitate the preservation of biodiversity, it is expedient to assign permanent biodiversity reserve status to the land described in the plan and the land description attached to this Order in Council, under the name “Réserve de biodiversité des Lacs-Vaudray-et-Joannès”, and to approve the proposed conservation plan for the biodiversity reserve;

WHEREAS section 45 of the Natural Heritage Conservation Act provides that permanent protection status for land and the applicable conservation plan take effect on the date of publication of the order in the *Gazette officielle du Québec* or on any later date specified in the order;

IT IS ORDERED, therefore, on the recommendation of the Minister of Sustainable Development, Environment and Parks:

THAT permanent biodiversity reserve status be assigned to the land, the boundaries of which appear on the plan and in the land description attached to this Order in Council, under the name “Réserve de biodiversité des Lacs-Vaudray-et Joannès”;

THAT the proposed conservation plan for the area, the text of which is attached to this Order in Council, be approved;

THAT the biodiversity reserve status and the conservation plan of the reserve take effect on the date of the publication of this Order in Council in the *Gazette officielle du Québec*.

GÉRARD BIBEAU,
Clerk of the Conseil exécutif

PROVINCE OF QUÉBEC
REGISTRATION DIVISION OF ROUYN-NORANDA

LAND DESCRIPTION

VAUDRAY AND JOANNÈS LAKES
BIODIVERSITY RESERVE

A territory of irregular shape in the territory of Ville de Rouyn-Noranda, a town with regional county municipality powers, in the Abitibi-Témiscamingue administrative region, that includes the following lots and parts of lots with reference to the original survey:

in the **township of Joannès:**

lots 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 58, 59, 60, 61, part of lots 29, 30, 31 and two parts of lots 56 and 57 of Range I;

lots 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 60, 61, part of lots 28, 29, 59, 62, two parts of lot 57 and three parts of lots 27 and 58 of Range II;

lots 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 59, 60, 61, part of lots 24, 25, 26, 27, 28, 55, 62, two parts of lots 23, 56, three parts of lot 58 and four parts of lot 57 of Range III;

lots 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 59, 60, 61, part of lots 22, 23, 25, 57, 58, 62 and two parts of lots 24 and 56 of Range IV;

lots 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, part of lots 21, 22, 23, 24, 25, 26, 52, 54, 55, 57, 60, 61, 62, two parts of lots 56, 58, 59 and three parts of lot 53 of Range V;

in the **township of Bousquet:**

two undivided parts of the township of Bousquet;

in the **township of Montanier:**

one undivided part of the township of Montanier;

in the **township of Vaudray:**

one undivided part of the township of Vaudray;

The cadastral designation is identical to that of the original survey, except for the townships of Bousquet, Montanier and Vaudray in which there is no cadastral designation.

Joannès and Vaudray lakes are included in the territory of the proposed biodiversity reserve.

The perimeter of the territory may be described as follows, to wit:

Commencing at point 1 (5 342 025 m North, 366 239 m East) situated on the range line separating Ranges V and VI of the township of Joannès, at a distance of 15.0876 metres south of the centre of the railway;

Thence, easterly, along the southern right of way, a width of 15.0876 metres from the centre of the railway, to its meeting point with the west side of the right of way of chemin Norbord, which is 40 metres in width, namely point 2 (5 341 983 m North, 367 530 m East);

Thence, in an average southerly direction, along the west side of the right of way of chemin Norbord, which is 40 metres in width, to a point situated 20 metres to the west of the meeting point of Norbord and Joannès-Vaudray roads, namely point 3 (5 324 829 m North, 366 655 m East);

Thence, southerly, along the west side of the right of way of chemin Norbord, which is 40 metres in width, to its meeting point with the left bank of an unnamed intermittent stream, namely point 4 (5 321 999 m North, 366 449 m East);

Thence, successively westerly then southerly along the intermittent stream, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of the left bank of rivière Kinojévis, namely point 5 (5 321 241 m North, 364 940 m East);

Thence, northwesterly, along the high-water mark of the left bank of rivière Kinojévis, whose bed is excluded from the biodiversity reserve, to its meeting point with the high-water mark of the right bank of ruisseau Picard, namely point 6 (5 326 206 m North, 358 459 m East);

Thence, in an average northerly direction, along the high-water mark of the right bank of ruisseau Picard, whose bed is within the biodiversity reserve, to its meeting point with the eastern limit of a trail, namely point 7 (5 331 523 m North, 360 363 m East);

Thence, in an average northwesterly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the southern limit of another trail, namely point 8 (5 331 811 m North, 359 909 m East);

Thence, in an average northerly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the left bank of an unnamed intermittent stream, namely point 9 (5 333 490 m North, 360 085 m East);

Thence, northwesterly, along a straight line to point 10 situated on the eastern limit of a trail whose coordinates are: 5 333 826 m North, (359 866 m East);

Thence, in an average northerly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the high-water mark of the left bank of an unnamed stream, namely point 11 (5 335 831 m North, 359 153 m East);

Thence, in an average westerly direction, along the high-water mark of the left bank of the unnamed stream, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of the left bank of an unnamed stream, namely point 12 (5 335 832 m North, 359 068 m East);

Thence, in an average northerly direction, along the high-water mark of the left bank of the unnamed stream, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of the left bank of an unnamed stream, namely point 13 (5 336 504 m North, 358 943 m East);

Thence, in an average westerly direction, along the high-water mark of the left bank of the unnamed stream, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of the left bank of an unnamed stream, namely point 14 (5 336 517 m North, 358 897 m East);

Thence, in an average northerly direction, along the high-water mark of the left bank of the unnamed stream, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of an unnamed lake, namely point 15 (5 337 119 m North, 358 910 m East);

Thence, in an average northwesterly direction, along the high-water mark of the western shore of the unnamed lake, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of the left bank of an unnamed stream, namely point 16 (5 337 321 m North, 358 645 m East);

Thence, in an average northwesterly direction, along the high-water mark of the left bank of the unnamed stream, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of an unnamed lake, namely point 17 (5 337 615 m North, 358 460 m East);

Thence, in an average northwesterly direction, along the high-water mark of the western shore of the unnamed lake, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of the left bank of an unnamed stream, namely point 18 (5 337 709 m North, 358 347 m East);

Thence, in an average northerly direction, along the high-water mark of the left bank of the unnamed stream, whose bed is within the biodiversity reserve, to its meeting point with the high-water mark of the left bank of an unnamed stream, namely point 19 (5 338 105 m North, 358 320 m East);

Thence, in an average northwesterly direction, along the high-water mark of the left bank of the unnamed stream, whose bed is within the biodiversity reserve, to its meeting point with the line separating lots 23 and 24 of Range III of the township of Joannès, namely point 20 (5 338 418 m North, 357 877 m East);

Thence, northerly, along the line separating lots 23 and 24 of Range III of the township of Joannès to point 21 whose coordinates are: 5 338 435 m North, 357 876 m East;

Thence, northwesterly, along a straight line to point 22 whose coordinates are: 5 338 439 m North, 357 874 m East;

Thence, northwesterly, along a straight line to the meeting point with the high-water mark of the left bank of an unnamed stream, namely point 23 (5 338 491 m North, 357 864 m East);

Thence, in an average northerly direction, along the high-water mark of the left bank of the unnamed stream, whose bed is within the biodiversity reserve, to point 24 whose coordinates are: 5 338 498 m North, 357 862 m East;

Thence, northwesterly, along a straight line to the meeting point with the high-water mark of the right bank of an unnamed stream, namely point 25 (5 338 501 m North, 357 862 m East);

Thence, in an average northerly direction, along the high-water mark of the right bank of the unnamed stream, whose bed is within the biodiversity reserve, to point 26 whose coordinates are: 5 338 559 m North, 357 850 m East;

Thence, northwesterly, along a straight line to the meeting point with the high-water mark of the right bank of an unnamed stream, namely point 27 (5 338 576 m North, 357 846 m East);

Thence, in an average northeasterly direction, along the high-water mark of the right bank of the unnamed stream, whose bed is within the biodiversity reserve, to point 28 situated on the high-water mark of the right bank of the unnamed stream whose coordinates are: (5 338 851 m North, 358 023 m East);

Thence, northeasterly, along a straight line to point 29 situated on the eastern limit of a trail whose coordinates are: 5 339 041 m North, 357 943 m East;

Thence, in an average northeasterly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the northern limit of another trail, namely point 30 (5 339 466 m North, 358 253 m East);

Thence, in an average northwesterly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the high-water mark of the right bank of an intermittent stream, namely point 31 (5 339 838 m North, 357 563 m East);

Thence, in an average northeasterly direction, along the high-water mark of the right bank of the intermittent stream, which is within the biodiversity reserve, to point 32 situated on the high-water mark of the right bank of the intermittent stream whose coordinates are: 5 340 112 m North, 357 758 m East;

Thence, northwesterly, along a straight line to point 33 situated on the eastern limit of a trail whose coordinates are: 5 340 699 m North, 357 464 m East;

Thence, in an average northerly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the southern limit of another trail, namely point 34 (5 341 451 m North, 357 340 m East);

Thence, in an average northeasterly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the southern limit of another trail, namely point 35 (5 341 506 m North, 357 423 m East);

Thence, in an average easterly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the southern limit of another trail, namely point 36 (5 341 522 m North, 357 474 m East);

Thence, in an average northeasterly direction, along the trail, which is excluded from the biodiversity reserve, to its meeting point with the south side of the right of way of highway 117, which is 27.44 metres in width, namely point 37 (5 341 662 m North, 357 583 m East);

Thence, easterly, along the south side of the right of way of highway 117, which is 27.44 metres in width, to its meeting point with the line separating Ranges V and VI of the township of Joannès, namely point 38 (5 341 948 m North, 358 407 m East);

Thence, easterly, along the line separating Ranges V and VI of the township of Joannès to point of commencement 1.

An irregular polygon is excluded from the territory described above. For the purposes of the description, the polygon is divided into three parts: part 1 made up of all the regulated roads described below; part 2 made up of the resort area of lac Joannès; and part 3 made up of the resort area of lac Vaudray;

Part 1:

All the regulated roads, namely Joannès-Vaudray, des Bouleaux, des Sapins, des Cèdres and des Vallons roads, are excluded from the biodiversity reserve. The right of way of the roads is 21 metres, 10.5 metres on either side of the centreline of the current roadway;

Chemin Joannès-Vaudray ends at the south at its meeting point with an unnamed road and the meeting point of those two roads is situated at the following coordinates: 5 325 364 m North, 366 680 m East;

To that exclusion is added a parcel of private land bordering chemin Joannès-Vaudray in the northern part of the biodiversity reserve, that land being known and designated as lot 56-9 of Range V of the township of Joannès;

Part 2:

Exclusion of the resort area of lac Joannès to the right of way of des Bouleaux and Joannès-Vaudray roads excluded in Part 1;

That exclusion ends in the western part of lac Joannès with the last parcel of resort land known and designated as lot 53-5 of Range V of the township of Joannès, where chemin des Bouleaux ends;

That exclusion ends in the southeastern part of lac Joannès with the last parcel of resort land known and designated as lot 56-3 of Range III of the township of Joannès, south of chemin des Sapins;

That exclusion is limited by the high-water mark of lac Joannès whose bed and shores are included in the perimeter of the biodiversity reserve;

To that exclusion is added, in the portion situated along chemin des Bouleaux, a parcel of private land situated north of chemin des Bouleaux known and designated as a remainder of lot 15 of the original survey (township of Joannès), and a parcel of private land situated north of chemin des Bouleaux known and designated as lot 54-2 of Range V of the township of Joannès;

Part 3:

Exclusion of the resort area of lac Vaudray to the right of way of des Vallons and Joannès-Vaudray roads excluded in Part 1;

That exclusion ends in the northwestern part of lac Vaudray with the last parcel of resort land known and designated as lot 1 of Range A of the undivided township of Vaudray, where chemin des Vallons ends;

That exclusion ends in the southeastern part of lac Vaudray at an unnamed road, which is excluded from the biodiversity reserve, and at the southern limit of the resort land known and designated as lot 127 of Range A of the undivided township of Vaudray;

To that exclusion is added a parcel of private resort land situated east of chemin Joannès-Vaudray known and designated as lot 128 of Range A of the undivided township of Vaudray;

The exclusion in Part 3 is limited to the high-water mark of lac Vaudray whose bed and shores are included in the perimeter de la biodiversité reserve.

The territory of the biodiversity reserve within the perimeter described above contains approximately 19,307 hectares (193.07 square kilometres).

The territory is shown on two plans drawn to a scale of 1:20 000 from an extract of the cadastral compilation and plotting chart, sheets 32D 02-200-0101, 32D 02-200-0102, 32D 02-200-0201 and 32D 02-200-0202 and maps of the townships of Bousquet, Joannès, Montanier and Vaudray, produced by the Ministère des Ressources naturelles et de la Faune of Québec. Not having done land surveys, the dimensions of the territory described and their precision are those existing when the plans were prepared. The following documents were also consulted:

— Subdivision plan of a part of lot 56 of Range IV of the township du Joannès;

— Plan of parcels 2 and 3 of lot 52, parcel 12 of lot 53, parcel 7 of lot 54 and parcel 18 of lot 55 of Range V, township of Joannès, filed on 25 September 1989; file: 21375/38-A, sec.2 and 11756 / 35-A, sec.2;

— Plan of parcels 2 to 8 of lot 56 of Range III and parcels 24 to 50 of lot 56 of Range IV, township of Joannès, filed on 12 March 1976; file: 11756 / 35-A;

— Plan of parcels 1 to 16 of lot 57 of Range V, township of Joannès, filed on 12 March 1976; file: 11756 / 35-A;

— Plan of parcel 1 of lot 55 of Range III and parcel 1 of lot 56 of Range III, township of Joannès, filed on 12 March 1976; file: 11756 / 35-A and 87902-T;

— Plan of parcels 2 to 7 of lot 22 of Range A and parcels 2 to 7 of lot 25 of Range A, township of Vaudray; filed on 8 November 1983; File: 11756 / 35-A sec.2;

— Plan of parcels 1 and 2 of lot 1 of Range A, township of Vaudray, filed on 21 October 1981; file: 21375 / 38-A, sec.2;

— Plan showing the subdivision of Range A, township of Vaudray, dated 25 October 1955; file: L21375,38.

NOTES:

— The coordinates in this land description are expressed in metres in relation to the Québec plane coordinate system (SCOPQ), modified transverse Mercator map projection system (MTM), Zone 10 (central meridian at 79°30'00" west), North American Datum 1983 (NAD 83).

— Measures expressed in the International System of Units (SI).

— The perimeter of the biodiversity reserve is based on the actual boundaries of the elements described in this document and must be legally interpreted accordingly. The cartographic boundary of the biodiversity reserve was prepared by the Direction du patrimoine écologique et des parcs, Ministère du Développement durable, de l'Environnement et des Parcs, using the Québec topographical database to the scale of 1:20 000 produced by the Ministère des Ressources naturelles et de la Faune. This land description was prepared in reference to that perimeter.

— The territory of the biodiversity reserve as described in this land description contains only lands in the domain of the State. Any land that is not in the domain of the State is excluded from the biodiversity reserve.

— Sheets 1 and 2 make up the plan that accompanies and is an integral part of this land description. They bear the same minute number.

— In accordance with the instructions of the representative of the Direction du patrimoine écologique et des parcs, the information in the base documents supplied by the mandator, from which this land description was prepared, was taken to be true.

— Land survey of the boundaries of the territory will if needed more precisely define the perimeter of the biodiversity reserve.

Prepared at Québec, this ninth day of June 2006, under number 9381 of my minutes.

DENIS VAILLANCOURT,
Land Surveyor

Place of signing: Québec
File: 71-00
Minute: 9381

Ministère du Développement durable, de
l'Environnement et des Parcs du Québec

File No. at the Direction du patrimoine écologique et
des parcs: 5148-06-08-3

TRUE COPY OF THE ORIGINAL
Québec, this 12th day of June 2006

.....(signed)....., l.s.

STRATÉGIE QUÉBÉCOISE SUR LES AIRES PROTÉGÉES



Vaudray & Joannès Lakes Biodiversity Reserve

Plan de conservation



December 2006

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Introduction

By granting the Vaudray and Joannès Lakes Biodiversity Reserve permanent status as a conservation area, the Government of Quebec is taking definitive action to protect representative samples of the biological diversity of the natural province of the Abitibi and James

Bay lowlands, and more specifically the representative ecosystems of the natural region of Lake Témiscamingue's lowlands. This biodiversity reserve joins a vast network of representative and exceptional conservation areas covering various Quebec ecosystems.

The Vaudray and Joannès Lakes Biodiversity Reserve was chosen principally for its range of vegetation, particularly its forests of black spruce, mixed stands and birch, but also for its pine forests and barrens, which are relatively uncommon in the region. Several old-growth forests and larch stands are present as well as sand dunes. The biodiversity reserve protects part of an esker, which hosts six kettles including four small kettle lakes. It also protects aquatic and shoreline ecosystems, particularly those of Vaudray and Joannès Lakes, which are relatively significant in size and whose eastern shores are densely populated and used.

The biodiversity reserve is unique for its location within a populated area. Its proximity to the urban centre of Rouyn-Noranda requires management that balances biodiversity conservation with recreational land use and occupation.

1. Official toponym

The biodiversity reserve's official name is "Réserve de biodiversité des Lacs-Vaudray-et-Joannès", referring to the two main lakes within its territory.

2. Plan and description**2.1 Location, boundary and dimensions**

The boundaries and location of the Vaudray and Joannès Lakes Biodiversity Reserve appear on the map in Appendix 1.

The reserve is located within the municipal jurisdiction of the City of Rouyn-Noranda, in the Abitibi-Témiscamingue administrative region, between 48°01'30" and 48°13'00" latitude north, and 78°35'30" and 78°47'30" longitude west. Downtown Rouyn-Noranda is less than 20 kilometres west of the reserve, which can be accessed via Route 117. The reserve covers an area of 193.07 km².

The Vaudray and Joannès Lakes Biodiversity Reserve is bounded to the east by Norbord Road, to the northeast by the Canadian National railway, to the north by a primitive survey line separating two ranges, to the northwest by Route 117, to the west by a combination of impassable roads and streams, to the southwest by Picard Brook and the Kinojévis River, and to the south by a nameless stream.

2.2 Ecological profile

The Vaudray and Joannès Lakes Biodiversity Reserve is part of the natural province of the Abitibi and James Bay lowlands. According to Li and Ducruc (1999), this natural province consists of a plain slightly inclined toward James Bay. The reserve protects representative ecosystems of the natural region of the Lake Témiscamingue lowlands and is part of the physiography of Lake Vaudray's hummocky plain.

2.2.1. Representative elements

Geology: The bedrock within the Vaudray and Joannès Lakes Biodiversity Reserve is largely sedimentary and more specifically detrital rock such as sandstone, arkose and graywacke. There are also areas of granite (granite, granodiorite, monzonite, syenite) to the east of Vaudray and Joannès Lakes, and an area of ultramafic volcanic rock (komatiite, magnesian basalt) to the west of Joannès Lake. This rock system belongs to the geological sub-province of the Pontiac. The sub-province is bounded to the north by the Cadillac fault, north of which is the sub-province of the Abitibi. The Pontiac and Abitibi sub-provinces belong to the Superior geological province, which forms the central part of the Canadian Shield and whose basement is Archean (more than 2.5 billion years old). The Canadian Shield contains rock systems among the oldest on earth.

Geomorphology: When the former Ojibway-Barlow glacial lake melted about 8500 years ago, the rock basement was covered with a thick layer of poorly drained glaciolacustrine (silt and clay) and glaciofluvial (sand and gravel) sediments. A subglacial river left a long and sinuous trail of sand and gravel to form the esker, and glacial deposits formed a moraine of no particular morphology. A series of thin, moderately drained hummocks of till surround the depression holding Vaudray and Joannès Lakes. Erosion from the waves of Barlow-Ojibway Lake created the highest buttes of silt (Veillette, 2000). Only the finest sediments were carried where the current was strongest, and sand is all that remains. When the glacial lake dropped, stretches of sand were revealed. West winds then carried the sand into dunes. Once active but now fixed, the sand dunes are an uncommon deposit across the reserve's natural region. They are located to the east of Vaudray and Joannès Lakes.

Today, the region features a rolling plain of impervious silty clay soil, punctuated by low, rocky hills. This series of till buttes hems in the depression holding Vaudray and Joannès Lakes. Ombrotrophic peat bogs have developed in the poorly drained hollows, with the peat covering fine deposits. The relief varies from 267 to 412 metres, and the average altitude is 316 metres.

Six kettles are found within the reserve, consisting of cauldron-shaped depressions in glaciofluvial deposits such as eskers. Some of the depressions are deeper than the esker's body of groundwater. Such kettles are therefore filled with water, forming kettle lakes. Other kettles are also full of water even though no stream feeds them and their bottom is much higher than the level at which the esker's waters circulate. These are perched lakes, since their water level is higher than the esker's. Among the reserve's four kettle lakes one is a perched lake.

Hydrography: The biodiversity reserve is part of the Outaouais River watershed; Vaudray and Joannès Lakes are among the river's headwaters. The reserve includes about 140 lakes covering an area of 14 km², which represents 7.3 % of the reserve's total area. The lakes have not significantly been affected by acid rain. Many of the bodies of water were created by beaver dams.

Formed in a fracture of the earth's crust, Vaudray and Joannès Lakes both run north-south. The two sandy bottomed lakes differ from other Abitibi region lakes, whose bottoms are often of clay, by their significant depth and greater transparency (1.5 to 2.5 m).

The well-developed drainage system consists mainly of intermittent bodies of water. The Vaudray River, which winds through the territory over roughly 6 kilometres, is the largest watercourse. The imperviousness of the water-laid clay and the low relief foster wetlands in the low-lying areas: such wetlands cover 12.6 km², or 7.1% of the reserve's terrestrial surface.

Climate: The Vaudray and Joannès Lakes watershed are found at the junction of two continental climates: the southwest sector (2/3 of the territory) is under the influence of a mild, subhumid subpolar climate with a long growing season, while the northeastern part (1/3) is subhumid subpolar with an average growing season. The territory belongs to the balsam fir-white birch bioclimatic domain. Overall, the reserve's climate features relatively hard winters, fairly hot summers, heavier precipitation during the summer and no dry season.

Vegetation: Belonging to the balsam fir-white birch bioclimatic domain, the forest occupies 75% of the biodiversity reserve, and consists mainly of softwood stands (47%) in the higher elevations and mixed stands on the slopes (23%). Black spruce (*Picea mariana*) is the dominant species. It is most often accompanied by white spruce (*Picea glauca*), balsam fir (*Abies balsamea*), white birch (*Betula papyrifera*), and aspen poplar (*Populus tremuloides*). American black ash (*Fraxinus nigrus*) and cedar (*Thuja occidentalis*) grow along certain shorelines. Black spruce groves (about 62% of

the forest), mixed stands (about 23%) and white birch stands (about 16%) are the most abundant. Rarer are those of the jack pine (*Pinus banksiana*) and tamarack (*Larix laricina*). Only 1% of the reserve is covered with pure jack pine forests, and another 1% have a certain proportion of the species. Less than 1% of the reserve has forests with tamarack. Mature and old-growth forests – having stands of 90 years or older – represent 17% of the forest cover; they are most common in the western sector. Such old forests provide habitat for species not found elsewhere in the protected area since the quantity of coarse woody debris increases as a function of a forest's maturity. Insects and mushrooms associated with dead wood are more abundant and diversified than those associated with live trees.

The imperviousness of the water-laid clay and the low-lying relief foster the development of numerous wetlands and alder groves in the troughs. The depressions covered in poorly drained organic matter are occupied by peat bogs. An acidic ecosystem, peat bogs feature deposits between two and five metres thick consisting entirely of preserved organic debris, including black spruce and tamarack, from underwater decomposition. Roughly 120 wetlands in the reserve cover a total area of about 20 km². Barrens and forest barrens occupy less than half a percent of the reserve's surface area (0.8 km²), with the heaths growing on rocky areas and thin tills on the buttes. These sparsely wooded habitats are dominated by ericaceous plants and lichens.

Wildlife: Joannès Lake holds at least 14 species of fish: yellow walleye, sauger, perch, monk fish, rock bass, northern pike, slimy sculpin, lake herring, log perch, whitefish, white sucker, trout-perch, spottail shiner and shorthead redhorse. Vaudray Lake holds only eight species, two of which are not found in Joannès Lake: mottled sculpin and black johnny darter.

The reserve's mammals include black bear, American porcupine, long-tailed weasel, Canadian beaver, coyote, red squirrel, snowshoe hare, grey wolf, river otter, Canadian lynx, American marten, fisher, striped skunk, muskrat, red fox, ermine, American mink, moose, and northern flying squirrel.

Among 118 species of birds identified, 98 nest in the reserve (SLOA, 2004a). The rare sandhill crane (*Grus canadensis*) is occasionally seen. Thanks to its many wetlands, the reserve provides good habitat for nesting waterfowl. Beaver ponds, which tend to breed cattails, are considered highly productive, with as many as 2.4 broods of duck per hectare. The following species nest in the reserve: American black duck, green-winged teal, common merganser, ring-necked duck and common

goldeneye. Other species of waterfowl are observed in the reserve, but are considered potential nesters only: blue-winged teal, hooded merganser, bufflehead and American wigeon (S. Gagnon, CIC, comm. pers.).

Many species associated with mature and overmature forests are present, among them the northern goshawk and pileated woodpecker in hardwood stands, and the brown creeper in the softwood forests.

2.3 Occupation and land use

The various forms of occupation and land use within the Vaudray and Joannès Lakes Biodiversity Reserve appear on the map in Appendix 2.

The territory includes 45 land rights, distributed as follows:

- 1 cottage lease;
- 41 rough shelter leases;
- 1 telecommunications tower;
- 1 lease for a community vacation camp (Centre éducatif forestier du lac Joannès);
- 1 right of way for a network of hiking trails (Centre éducatif forestier du lac Joannès).

The site of the Centre éducatif forestier (CEF) du lac Joannès is governed by the charter of a private organization, the Association forestière de l'Abitibi-Témiscamingue, and is recognized as a protected area.

The entire reserve land is part of the fur-animal management unit 04 (unité de gestion des animaux à fourrure – UGAF 04). It covers 12 trapping lands.

A canoe-kayak route begins at Le Jeune Lake, traveling via Joannès Lake to its end at Bousquet Lake, which is outside the reserve.

There is also a small network of bicycle trails within the reserve, which use existing logging roads.

There is a major network of trails that run through the reserve, mainly for all-terrain vehicles, which are used to access hunting camps.

A historic portage route is located at the reserve's southern limit, linking Gendron Lake to the Kinojévis River.

3. Conservation and development of the Vaudray and Joannès Lakes Biodiversity Reserve

This section describes the specific conservation and development priorities and goals which are unique to the Vaudray and Joannès Lakes Biodiversity Reserve.

Protecting the biodiversity

The goal of the biodiversity reserve's management shall be to protect the ecosystems and species which depend on the reserve, in other words, the processes governing their lives shall be maintained. This also means that currently disrupted ecosystems shall be allowed to return to their natural characteristics and balance.

Biodiversity protection also seeks to safeguard the landscape and current occupation and land use which are compatible with the conservation goals of the biodiversity reserve and protected areas. The goal of managing current occupation and activities shall be to ensure minimal negative impact on the biodiversity.

Specific goals:

1. To re-establish natural balance in disrupted forest ecosystems:

Forest ecosystems in the Vaudray and Joannès Lakes Biodiversity Reserve were subject to diverse logging activities in the 1990s. Such sectors cover 8% (15 km²) of the reserve's land area, located mainly in the eastern sector near Norbord Road and to the south near Gendron Lake. Establishment of the biodiversity reserve will foster a return to these forests' natural balance. However, other anthropogenic impacts from recreational activities should be subject to controls.

2. To rationalize the trail network:

There are many trails in the reserve, totalling approximately 370 linear kilometres, most of which are located in the eastern sector. This represents about 1.9 linear kilometres of trail per square kilometre. However, not all routes are necessarily used and some have already grown over. The highly developed trails and their use by all-terrain vehicles affect the natural environment by fragmenting it, facilitating erosion, leaving traces on sensitive environments, and potentially disrupting wildlife. The trail network should be streamlined to minimize disruption of the natural environment. Rationalization would also be an opportunity to give certain trails a specific vocation to avoid conflicts in their use. A rationalization exercise (inventory, vocation, prioritization) shall be implemented by the reserve manager and regional partners within the first year the reserve is granted permanent status.

3. To protect lake ecosystems and shorelines and preserve water quality in Vaudray and Joannès Lakes:

There are more than 200 vacation cottages on Vaudray and Joannès Lakes, almost entirely located on their eastern shores. About 250 motorized boats and 100 anglers have been estimated. Cottages affect the aquatic and littoral environments when their sanitary facilities function improperly, when shorelines are deforested beyond legal limits, and when chemical products (fertilizers, pesticides) are used to maintain properties. The Ministère du Développement durable, de l'Environnement et des Parcs seeks to protect the lacustrine and riparian ecosystems, improve water quality in Vaudray and Joannès Lakes, and prevent acceleration of the lakes' eutrophication. The goals shall be accomplished by promoting good practices (in terms of motorboat and personal watercraft use, ecological property maintenance, shoreline landscaping and deforestation, and maintenance of sanitary facilities) and by applying current regulations. Cottagers and all other users of the shorelines, lakes and rivers should have adequate information and conduct themselves in accordance with existing regulations.

Research and monitoring of the natural environment

Acquiring new knowledge and information about the reserve allows the monitoring of and reporting on its biodiversity, and contributes significantly to its specific natural heritage conservation goals. New knowledge also fosters discovery, education and awareness activities. Knowledge helps managers analyze development projects and encourages a common understanding with other stakeholders of the issues at hand.

Ecological knowledge, particularly regarding the environment's support capacity, and information on the impact of recreational and tourism activities on the natural environment should be developed to better appreciate the reserve's wealth and to provide the data and resources required for sound management, which fosters conservation of the reserve's biodiversity.

In addition, the territory is now a control site for the natural evolution of ecosystems in the natural province of the Abitibi and James Bay lowlands. Its scientific value is therefore significant. Given the intense industrial use of the Abitibi region, scientific research, knowledge and monitoring in the biodiversity reserve offers comparisons with similar ecosystems subject to intense anthropogenic impacts outside the protected areas.

Specific goal:***1. To monitor the natural environment:***

The natural environment shall be monitored to determine if the biodiversity reserve and its management model achieve the biodiversity protection goal. The Ministère du Développement durable, de l'Environnement et des Parcs shall make periodic reports, the first being seven years after creation of the reserve and the following ones every 10 years. Monitoring will begin with a description of the state of the natural environment and identification of biodiversity protection indicators. Evolution of the biodiversity can then be measured using the indicators. Protection and management methods and goals shall be reviewed following the reports.

Sustainable development through educational activities

Since the biodiversity reserve's level of occupation and use is relatively high, sustainable development is possible only if limited and supervised. New activities and facilities must therefore not conflict with existing ones nor must their impact surpass the natural environment's support capacity. Development of the reserve must also be such that increased visits do not modify the environment's natural balance – to prevent damage to the ecological and cultural integrity and to maintain the quality of the wilderness experience sought by visitors and users. Activities must therefore be designed to maintain or improve the quality of the natural structure and harmonious interaction between humans and nature.

Given the current high level of use and occupation of the territory, the Ministère du Développement durable, de l'Environnement et des Parcs shall not encourage new activities. However, if projects are presented, the Ministry shall favour educational activities and shall strictly control projects that may affect the natural environment.

Specific goal:***1. To offer educational activities:***

The Centre éducatif forestier du lac Joannès already provides educational, discovery and recreational activities in part of the biodiversity reserve. The educational centre could fulfill the role of reception and information centre and be the ideal source of knowledge, interpretation and education on the reserve's biodiversity and for general discovery of the natural environment. The Centre éducatif forestier du lac Joannès could provide the public and school groups with discovery, interpretation and education activities regarding the natural elements of this territory as well as the role of the biodiversity reserve.

Integrated management and stakeholder participation

The high level of occupation and use in and around the biodiversity reserve requires integrated management of activities. This is best accomplished by involving stakeholders in management choices and decisions focusing on conservation of the biodiversity reserve and in accordance with the Natural Heritage Conservation Act.

Specific goal:***1. To implement a cooperative and participatory management approach:***

The inhabited nature of the biodiversity reserve and adjacent territories requires government management supported by the participation of local and regional stakeholders. The common goal is natural heritage conservation and the harmonious management of recreational activities. The Ministère du Développement durable, de l'Environnement et des Parcs shall identify stakeholders in the reserve's conservation and development, who will be invited to participate in management planning. Problems and conflicts regarding use and development projects shall be discussed. An action plan shall be developed by the regional offices of the Ministère du Développement durable, de l'Environnement et des Parcs in cooperation with the stakeholders identified. The plan will determine actions to be undertaken, preferred methods, those who are to carry out the actions, timeframes and results assessments.

4. Zoning

The Vaudray and Joannès Lakes Biodiversity Reserve is located in an area that includes heavily populated and developed resort enclaves. The vacation sectors are excluded from the reserve. Since the reserve is also close to the urban centre of Rouyn-Noranda, and since a high proportion of natural environments within the reserve are at risk, the management of activities and development of new activities and projects shall be tightly controlled. The biodiversity reserve has been subdivided into four zones based on the current state of the natural environment and protection and management goals. Each zone has similar protection levels and activities, but conservation and development measures are adapted where necessary. Zone boundaries are illustrated on the map in Appendix 3. The Minister's management of the reserve and authorizations regarding activities and developments shall take into consideration the characteristics of each zone.

Zone I

Covering 127.44 km² west of the esker and excluding Vaudray and Joannès Lakes, Zone I represents 66% of the biodiversity reserve. It is characterized by a soil cover largely susceptible to erosion, a fairly low level of occupation and use, and relatively undisturbed old forests. The objective for the zone is to maintain the natural balance of existing ecosystems, ensuring that anthropogenic disruption remains the lowest. Current occupations and local recreational use which existed prior to establishment of the reserve shall be maintained. Among such activities, those using motorized vehicles will be controlled through the rationalization of the trail network. Preferred development activities shall be those based on nature interpretation, eco-tourism and any other activity whose goal is to appreciate nature without taking away from it and without using motorized vehicles.

Zone II

Covering 38.63 km², which is close to 20% of the biodiversity reserve, this zone represents the area to the east of the esker. It is characterized by significant use (hunting and trails) and occupation (rough shelters) by local populations prior to creation of the reserve. The zone has also been subject to significant recent forest modifications through many forestry cuts. While existing activities and occupations will be maintained, the objective for this zone shall be to manage activities in such a way as to restore the natural balance in ecosystems highly disrupted by previous logging and to limit human recreational activities to a less intensive level.

Zone III

Covering 25.90 km², or about 13% of the reserve, Zone III is the most used and disturbed part of the biodiversity reserve, bordering on the vacation areas. It includes the esker (13.78 km²) as well as Vaudray and Joannès Lakes (12.12 km²). The lakes are used by vacationers for various recreational activities, including fishing and water sports. The esker supports a series of public roads, trails and vacation resort infrastructure. The high level of development and use of the lakes by water-sport activities and equipment is such that management of this zone shall seek to minimize the impact of anthropogenic activities, on land and water. The presence of kettles in this zone gives it special interest in terms of nature conservation and interpretation.

Zone IV

This reception and service area of the biodiversity reserve covers 1.10 km² or 0.6% and includes the Centre éducatif forestier du lac Joannès as well as its trails for

education and recreation purposes. It has the dual vocation of serving visitors and providing natural discovery activities. The Centre éducatif forestier shall serve as a reception centre and information resource for the biodiversity reserve. Nature interpretation, education and recreation activities offered by the Centre éducatif forestier in the surrounding area will allow visitors to discover the biodiversity reserve's natural elements.

5. Activities within the reserve

Activities within the Vaudray and Joannès Lakes Biodiversity Reserve are governed by the Natural Heritage Conservation Act (R.S.Q., c. C-61.01).

The current conservation plan does not prohibit additional activities beyond those already prohibited for biodiversity reserves under the act. Neither does it authorize additional activities or add limits to activities permitted by the act.

Prohibited activities

The Natural Heritage Conservation Act prohibits the following main activities, among others, in a biodiversity reserve:

- a) Forest management as described in article 3 of the Forest Act (R.S.Q., c. F-4.1);
- b) Mining, gas or oil development;
- c) Mining, gas, oil, brine and underground reservoir exploration activities, prospecting, digging or drilling;
- d) Exploitation of hydraulic forces or any commercial or industrial production of energy.

Activities governed by other statutes

Certain activities likely to be carried on within the Vaudray and Joannès Lakes Biodiversity Reserve are also governed by other applicable legislative and regulatory provisions, including those that require the issue of a permit or authorization or the payment of fees. The carrying on of certain activities may also be prohibited or limited by other acts or regulations applicable within the boundaries of the biodiversity reserve.

A special legal framework may govern permitted and prohibited activities within the reserve in connection with the following matters:

— **Environmental protection:** measures set out in particular in the Environment Quality Act (R.S.Q., c. Q-2);

— *Archaeological research*: measures set out in particular in the Cultural Property Act (R.S.Q., c. B-4);

— *Development of wildlife resources*: measures set out in particular in the Act respecting the conservation and development of wildlife (R.S.Q., c. C-61.1), including the provisions pertaining to outfitting operations and beaver reserves and the measures contained in applicable federal legislation, including the fishery regulations;

— *Removal of species of fauna or flora that are threatened or vulnerable or are likely to be designated as such*: measures prohibiting the removal of the species under the Act respecting threatened or vulnerable species (R.S.Q., c. E-12.01);

— *Access and land rights*: measures set out in particular in the Act respecting the lands in the domain of the State (R.S.Q., c. T-8.1) and in leases by the Ministre des Ressources naturelles et de la Faune;

— *Operation of vehicles*: measures set out in particular in the Act respecting the lands in the domain of the State (R.S.Q., c. T-8.1) and in the regulation on motor vehicle traffic in certain fragile environments made under the Environment Quality Act (R.S.Q., c. Q-2).

6. Management

6.1 Responsibilities of the Ministre du Développement durable, de l'Environnement et des Parcs

Management of the Vaudray and Joannès Lakes Biodiversity Reserve is a responsibility of the Ministre du Développement durable, de l'Environnement et des Parcs. The Minister monitors and controls activities in the reserve and applies the law. The Minister's management responsibilities are delegated to the Abitibi-Témiscamingue and Nord-du-Québec regional expertise and analysis office of the Ministère du Développement durable, de l'Environnement et des Parcs (DRAE-08). In managing the reserve, the Minister enjoys the cooperation and participation of other government agents that have specific responsibilities in or close to the reserve.

6.2 Monitoring

As described in the section entitled "Conservation and development of the Vaudray and Joannès Lakes Biodiversity Reserve," the state of the natural environment shall be monitored in cooperation with relevant local and regional partners, such as municipal, environmental, recreational, and educational stakeholders as well as cottagers, hunters, fishers and trappers.

6.3 Stakeholder participation

As described in the section entitled "Conservation and development of the Vaudray and Joannès Lakes Biodiversity Reserve", in managing the reserve, the Ministre du Développement durable, de l'Environnement et des Parcs shall benefit from the cooperation and participation of stakeholders, as outlined in section 6.2. The Minister shall prepare an action plan guiding management of the biodiversity reserve and respecting its mission to protect the territory and its resources. The Ministère du Développement durable, de l'Environnement et des Parcs shall see to the preparation of the action plan in cooperation with the concerned regional stakeholders. The method for participation and cooperation of community stakeholders shall be determined by the regional office of the Ministre du Développement durable, de l'Environnement et des Parcs, according to local and regional realities.

Bibliography

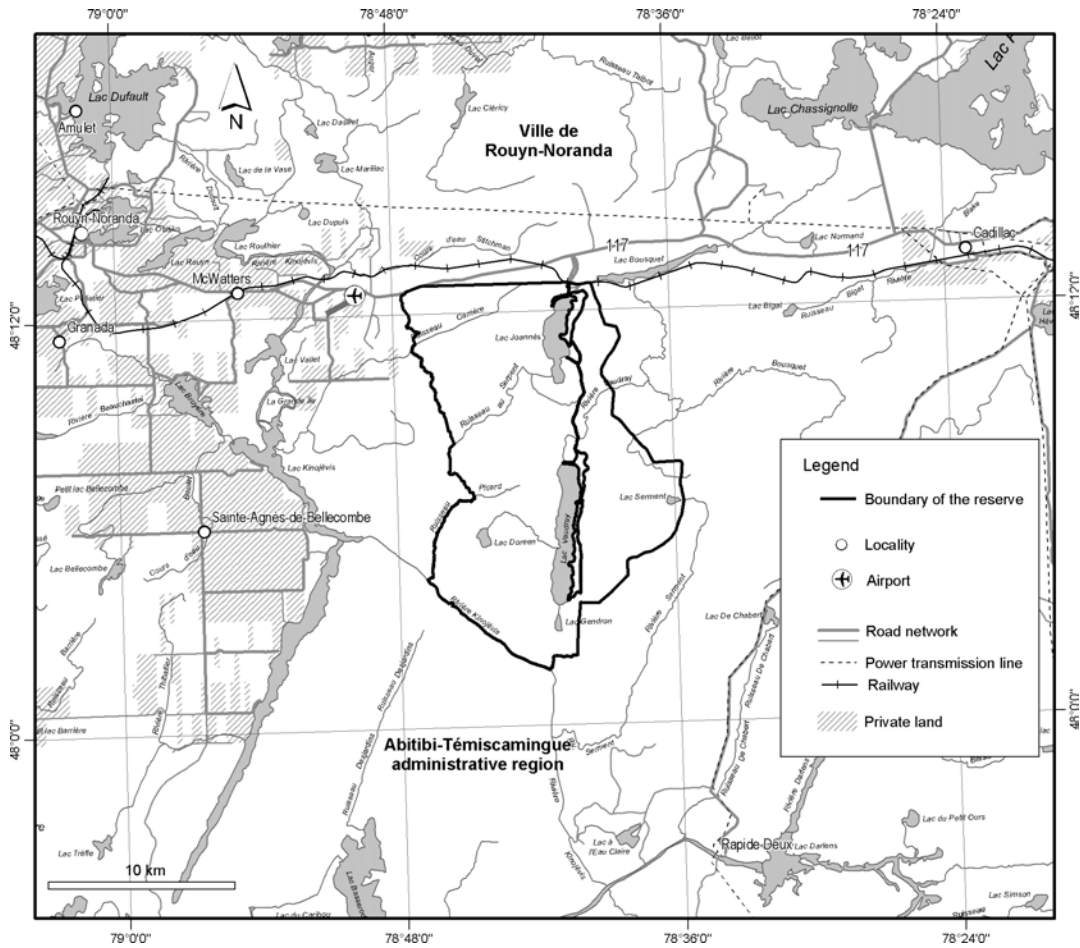
Li, T and J.-P. Ducruc, 1999. Les provinces naturelles. Niveau I du cadre écologique de référence du Québec. Ministère de l'Environnement. 90 pages.

MDDEP, 2004. Les réserves de biodiversité projetées des lacs Vaudray et Joannès et du lac Sabourin: Cadres de protection et de gestion. 227 pages.

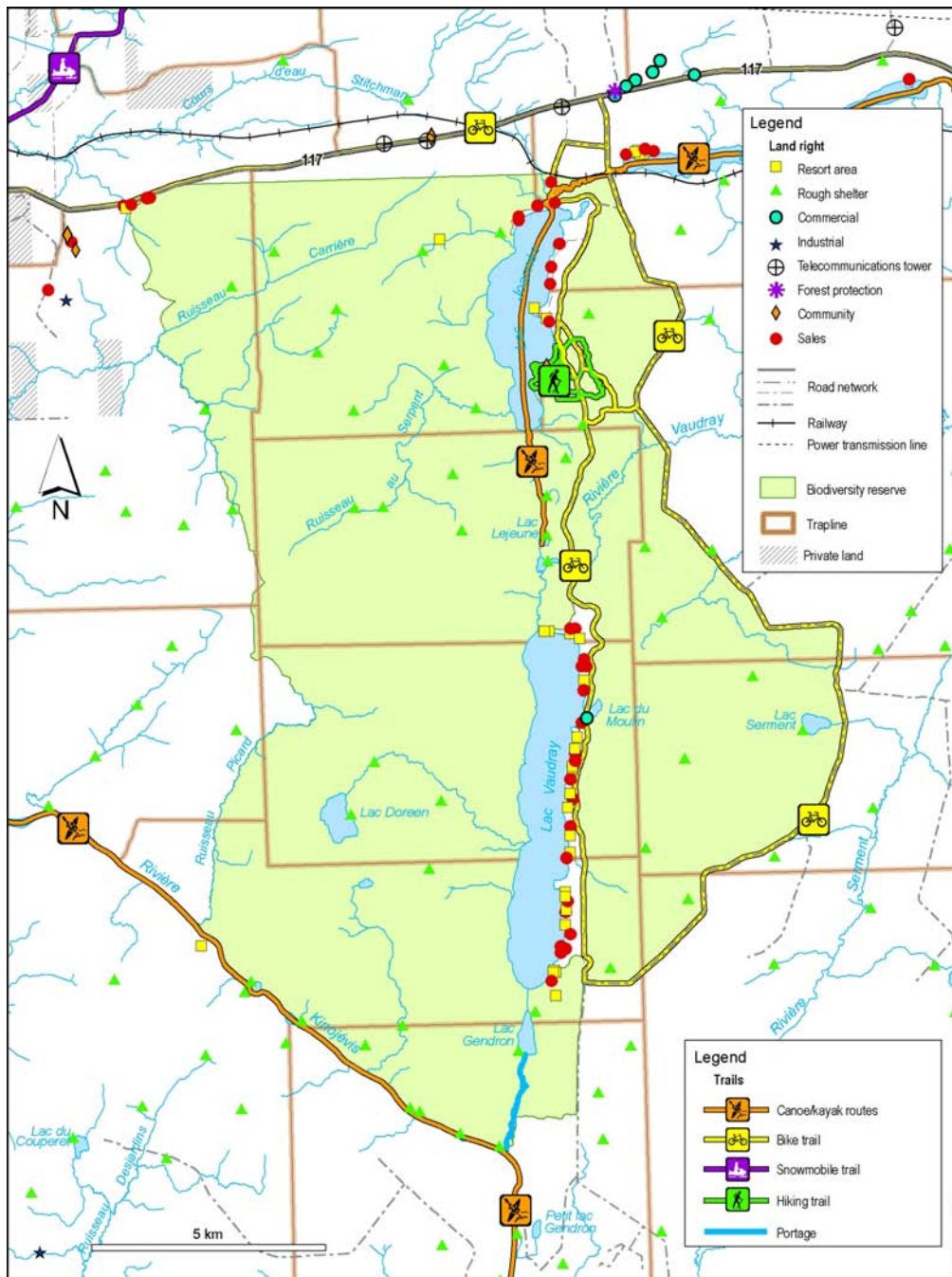
SLOA, 2004a. Observations réalisées dans le secteur de la réserve de biodiversité des lacs Vaudray et Joannès. Étude des populations d'Oiseaux du Québec (ÉPOQ). Rapport préparé par Louis Imbeau. 22 pages.

Veillette, J., 2000. « Un roc ancien rajeuni par les glaciers », pages 1-38 in Abitibi-Témiscamingue, de l'emprise des glaces à un foisonnement de vie. Éditions Multimondes.

APPENDIX 1 – Vaudray & Joannès Lakes Biodiversity Reserve: Boundaries and location



APPENDIX 2 – Vaudray & Joannès Lakes Biodiversity Reserve: Occupation and use



APPENDIX 3 – Vaudray & Joannès Lakes Biodiversity Reserve: Zoning

