



Manitoba Peatlands

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Manitoba's Business Advantage



- Strategic Central Location
- Mid-Continent Trade Corridor
- Maritime Province
- Near-Surface Geology ranging from Archean to Recent
- Diverse and Stable Economy
- Highly Competitive Business Costs
- Skilled Multicultural Workforce
- Well-developed Modern Infrastructure
- Abundant, Inexpensive Hydro-electric Power



Manitoba Peatlands

- Overview
- Distribution
- Harvesting
- Protection
- Destruction
- Restoration/Reclamation



Overview of Manitoba Peatlands

- Definition
- The Mines and Minerals Act
- Environment Act Licence
- Mine closure and restoration plan
- Peatlands and wetlands strategies

Definition

- Tarnocai (1984) classified **wetlands** in Canada (based upon the work of previous authors) to include peatlands (peat depths >40 cm) and mineral wetlands (peat depths 40 cm or less).
- Further, Tarnocai and the National Wetlands Working Group (1988) also subdivided **peatlands** into four classes – bogs, fens, swamps and marshes.

Definition

- Halsey et al. (1997) stated that peatlands comprise 90% of all wetlands, which cover 42.7% of Manitoba's terrestrial landscape.
- Tarnocai et al. (2000) revised the area of Manitoba peatlands to 19 197 300 ha on a peatland distribution map released as GSC Open File 3834.
- The database used to generate the map was described in GSC Open File 4002 by Tarnocai et al. (2002).

The Mines and Minerals Act

- Peat and peat moss is considered to be a mineral under The Mines and Minerals Act of Manitoba (C.C.S.M. c. M162).
- Within the Act, a mineral is defined as “a non-living substance that is formed by natural processes and is found on or under the surface of the ground, irrespective of chemical or physical state and before or after extraction”.
- Historically, on December 9, 1941, peat moss was declared to be a mineral within the meaning of The Mines Act (R.S.M. 1940 c. 136).



Environment Act Licence

- Peat operations are licenced under the Environment Act, which is administered by Manitoba Conservation.

<http://www.gov.mb.ca/conservation/eal/index.html>



Mine closure and restoration plan

- Peat operators are required to file a closure plan under The Mines and Minerals Act, which is administered by Manitoba Innovation, Energy and Mines.

MR 67/99 - [Mine Closure Regulation](#)

<http://web2.gov.mb.ca/laws/regs/pdf/m162-067.99.pdf>



Peatlands and wetlands strategies

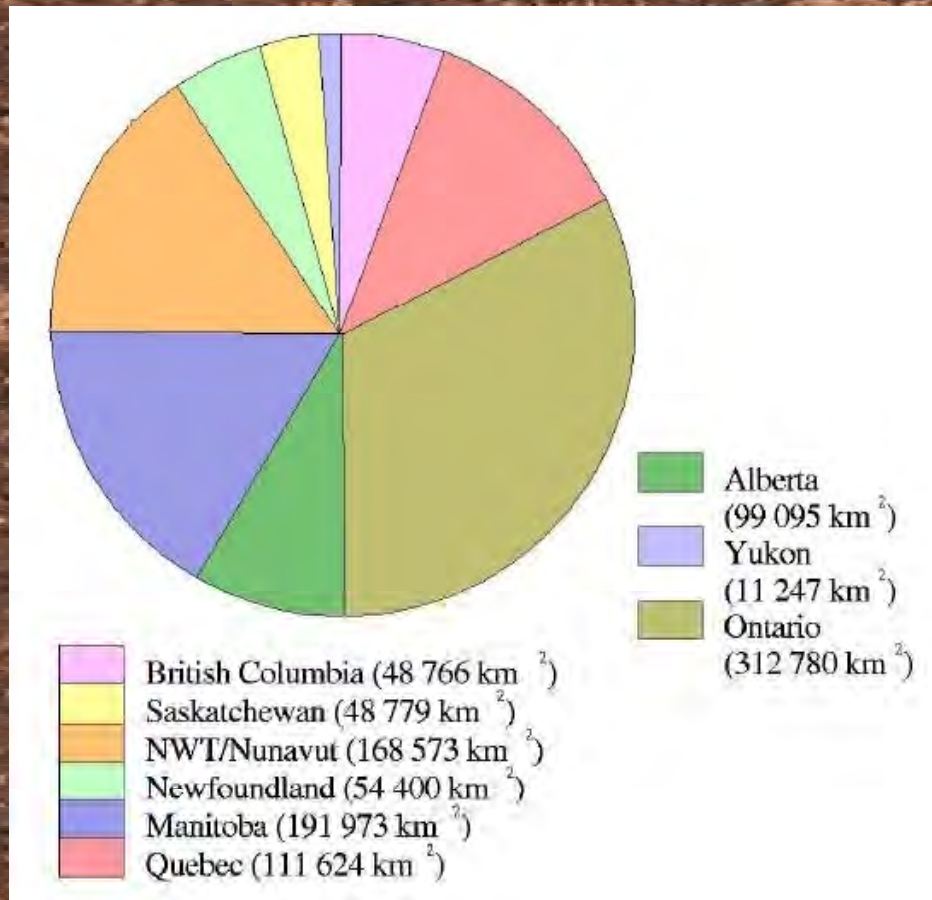
- Manitoba Conservation is moving forward with a boreal forest peatlands stewardship strategy (as part of an overall strategy dealing with wetlands in the Province) at the request of Premier of Manitoba Greg Selinger on December 9, 2009.
- The Manitoba Water Council, chaired by Jean Friesen, was requested by the Minister of Water Stewardship to conduct public consultation to determine Manitobans' perspectives on wetlands, and this work began in the summer of 2010.



Distribution of Manitoba Peatlands

- Relative to Canada
- Aerial extent

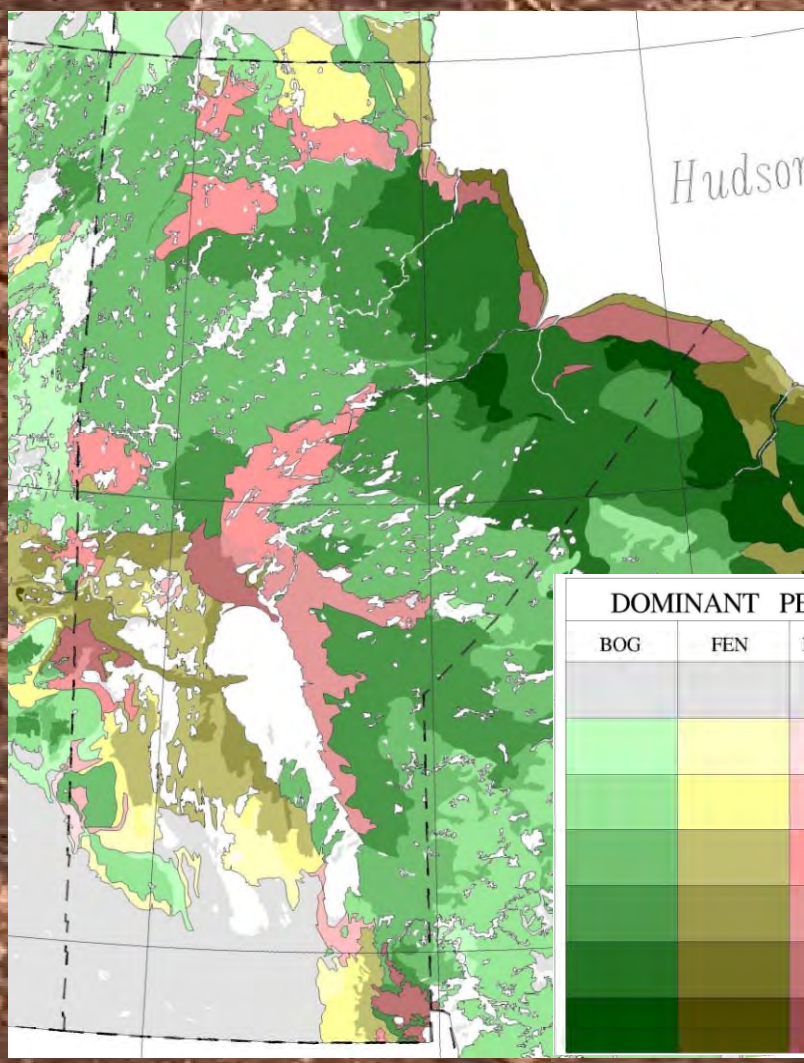
Distribution of Manitoba Peatlands



- Area occupied by peatlands in Manitoba is: 19 197 300 ha, the second largest in Canada (Tarnocai et al., 2000)

Distribution of peatlands in Canada by province and territory, and area of peatlands in brackets (Tarnocai et al., 2000)

Distribution of Manitoba Peatlands



DOMINANT PEATLAND CLASSES					EXTENT OF COVERAGE
BOG	FEN	BOG/FEN	SWAMP	MARSH	
					0% -<1%
					1% -5%
					>5% -20%
					>20% -35%
					>35% -55%
					>55% -75%
					>75% -100%

Aerial extent and classification of peatlands in Manitoba (Tarnocai et al., 2000)



Harvesting of Manitoba Peatlands

- Historical Production
- Current Producers

Historical Peat Production

- First reported in 1881
- Fuel peat
- Insulation peat
- WW II



Current Peat Producers

- Nine producers operate in 15 peat bogs (or, peat lease extraction sites) in southern Manitoba.
- In 2009, 174 000 tonnes of peat worth \$32,660,000 (f.o.b., exclusive of containers) was produced.
- This production also generated a royalty to the Province of \$49,308.91 in 2009.
- As of May 1, 2011, there are 12 companies currently holding 184 peat leases over 30 230.484 ha of peatland, and which pay a total annual rental to the Province of \$196,498.15.



Current Peat Producers

- In 2009, only 4117 ha of leased peatland was in production and of that only 50% was under cultivation.
- These 2200 ha represent roughly 8% of the total area (27 265.994 ha) held under peat leases in the Province.
- Since 1974, five peat processing facilities have been constructed in the Province at a cost of about \$30 million and almost 300 permanent and seasonal workers with an annual payroll of approximately of over \$6 million have been employed by the five largest peat producers.
- Operating expenses are likely over \$25,000,000; including initial costs of developing the bogs of about \$2000/ha.

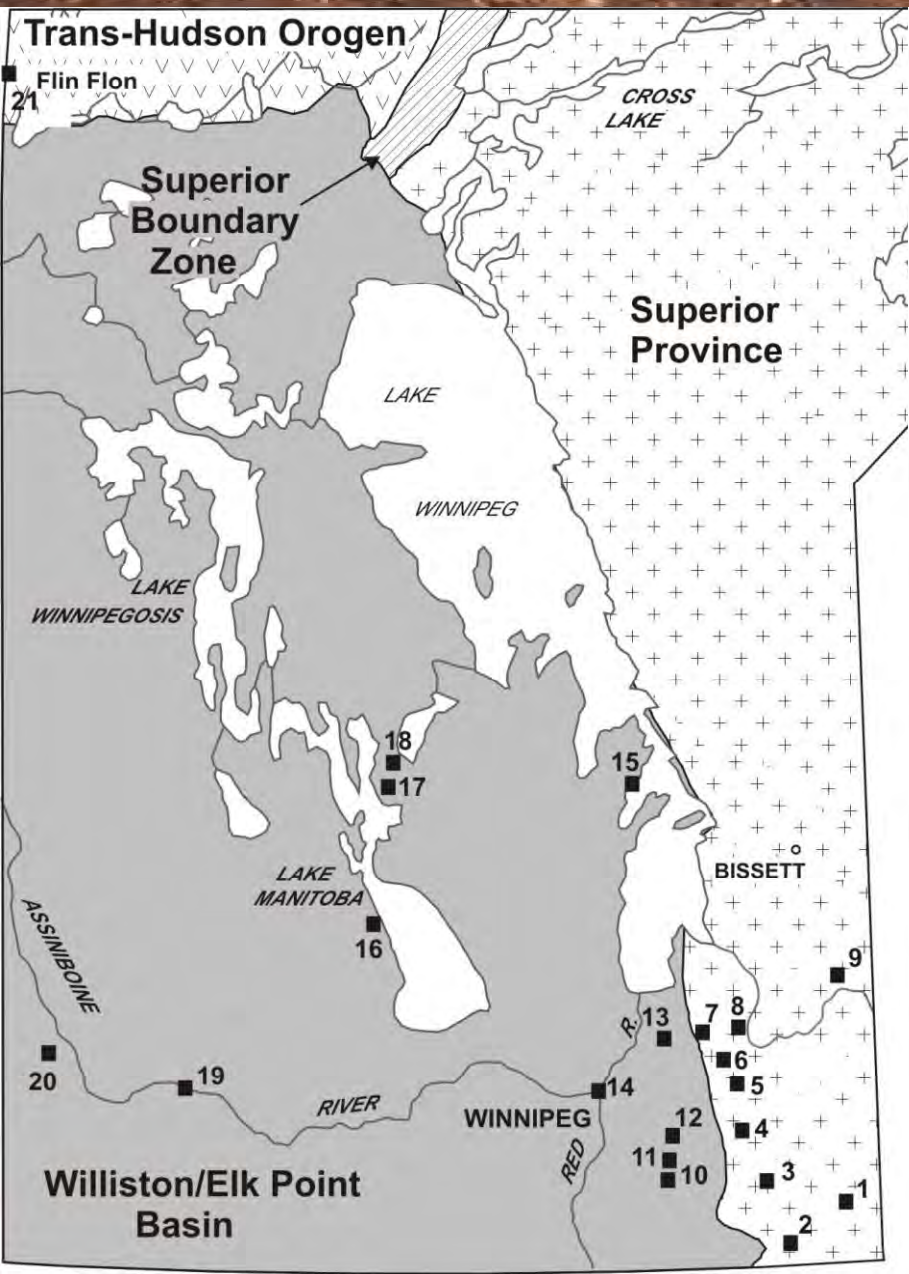


Current Peat Producers

- Sunterra Horticulture (Canada) Inc.
- Premier Horticulture Ltd.
- Sun Gro Horticulture Canada Ltd.
- FPM Peat Moss Company
- Berger Peat Moss Ltd.
- Gauthier Soils Ltd.
- Soils Are Us
- Norman Tetreault
- Manitoba Hydro



Manitoba Industrial & Specialty Mineral Processing Plants and Quarries, 2011*



No.	Location	Company	Product
1	Sprague Lake (Q)	FPM Peat Moss Company Ltd.	Peat moss
	Northwest Angle (Q)	FPM Peat Moss Company Ltd.	Peat moss
	Caribou Cluster (Q)	Premier Horticulture Ltd.	Peat moss
2	Vassar (P)	FPM Peat Moss Company Ltd.	Peat moss
	St. Labre (P&Q)	Berger Peat Moss Ltd.	Peat moss
4	Medika/Elma (P&Q)	Sun Gro Horticulture Canada Ltd.	Peat moss
	Julius Lake South (Q)	Sun Gro Horticulture Canada Ltd.	Peat moss
5	Whitemouth (Q)	Carrieres Polycor Inc.	Granite dimension stone
6	Moss Spur (Q)	Sun Gro Horticulture Canada Ltd.	Peat moss
	Southwest Julius (Q)	Sun Gro Horticulture Canada Ltd.	Peat moss
7	North Julius (P&Q)	Sun Gro Horticulture Canada Ltd.	Peat moss
	Evergreen (Q)	Sun Gro Horticulture Canada Ltd.	Peat moss
8	Lac du Bonnet (P&Q)	Cold Spring Granite (Canada) Ltd.	Granite dimension stone
	Bernic Lake (P&UM)	Tanco	Tantalum oxide, spodumene and amblygonite concentrates, cesium formate
10	Giroux (Q)	Premier Horticulture Ltd.	Peat moss
	Richer (Q)	6195238 Manitoba Ltd.	Peat moss
11	Ste. Anne/Richer (P)	Premier Horticulture Ltd.	Peat moss
12	St. Genevieve (Q)	Gauthier Soils Ltd./Norman Tetreault	Peat moss
13	Garson (P&Q)	Gillis Quarries Limited	Tyndall stone
14	Winnipeg (P)	Certainteed Gypsum Canada Inc.	Gypsum wallboard
15	Beaver Point (P&Q)	Sunterra Horticulture (Canada) Inc.	Peat moss
	Harcus (Q)	Certainteed Gypsum Canada Inc.	Gypsum
17	Faulkner (P&Q)	Lehigh Cement Limited	Gypsum
	Hilbre (Q)	Graymont Western Canada Inc.	Lime, dolime, limestone
18	Hilbre (Q)	Graymont Western Canada Inc.	Dolomite
19	Brandon (P)	Canexus Chemicals Canada Ltd.	Sodium chlorate
20	Hargrave (P&SM)	Erco Worldwide	Salt, sodium chlorate
21	Flin Flon (P)	Hudbay Minerals Inc.	Sulphur

* excludes aggregate producers
(P) Plant (Q) Quarry (SM) Solution Mine (UM) Underground Mine

Total value of production over \$100 million*



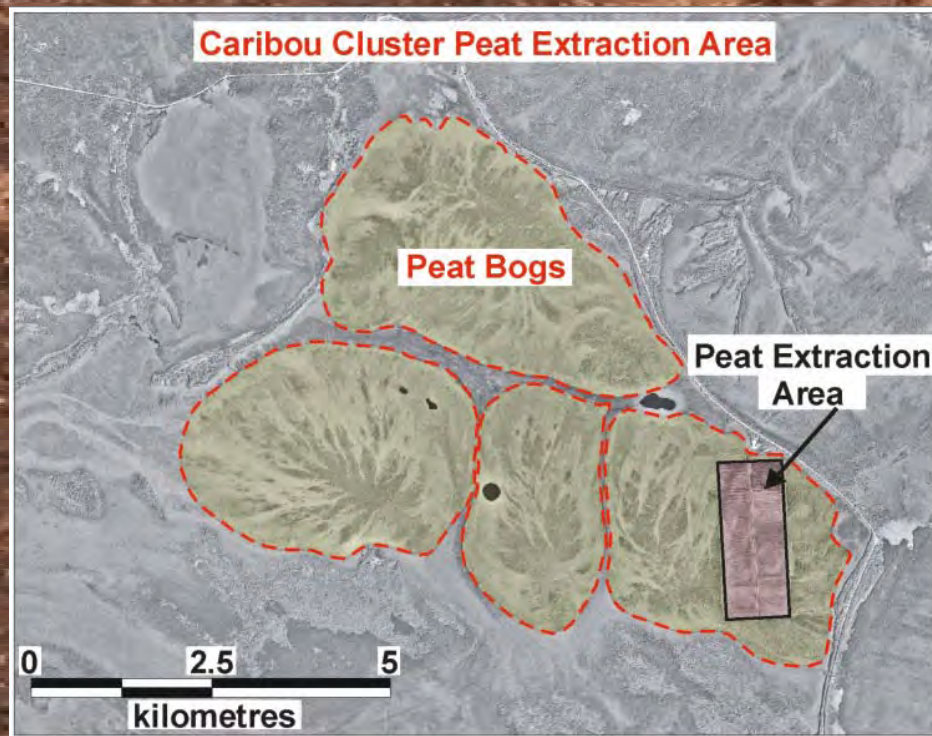
Sunterra Horticulture (Canada) Inc.



- Eighth year of sphagnum peat production from its Beaver Point Bog and processing plant, near Washow Bay, on the west shore of Lake Winnipeg, 50 km north of Riverton.
- The Beaver Point Bog is covered by seven quarry leases totalling 2500 acres, but only 500 acres are presently being harvested.
- In 2010, 30 permanent and seasonal employees.

http://www.sunterrahorticulture.com/Sunterra_Horticulture_%28Canada%29_Inc./Sunterra_Home_Page.html (2011-06-09).

Premier Horticulture Ltd.



- Has harvested peat moss from the Giroux and Caribou Cluster bogs since 1987.
- A new C\$14.5 million peat moss packaging plant, located at Richer, was officially opened on November 13, 2006. Province provided a C\$3 million loan to rebuild and relocate the plant, formerly at Giroux, which was destroyed in a fire in September 2005.
- Staffing levels comprise 12 permanent office employees; 36 permanent and 7 temporary factory employees; and 24 seasonal permanent employees in the bog.



Sun Gro Horticulture Canada Ltd.



Elma Bog 1990

- In 1994, 85 permanent staff, with 50 to 55 jobs added during the summer. Payroll was about C\$3.2 million, with a direct contribution to the provincial economy of almost C\$9 million.
- In 1996, 86 000 tonnes of sphagnum peat worth C\$17.7 million were harvested from the Elma, Moss Spur and Julius North bogs.
- Approximately, 95% of Sun Gro's annual production (approximately two million bales, 10 cubic feet each) is sold in the southern United States.
- In 2007, Sun Gro began production from the Julius Lake South Bog, in southeastern Manitoba.

FPM Peat Moss Company



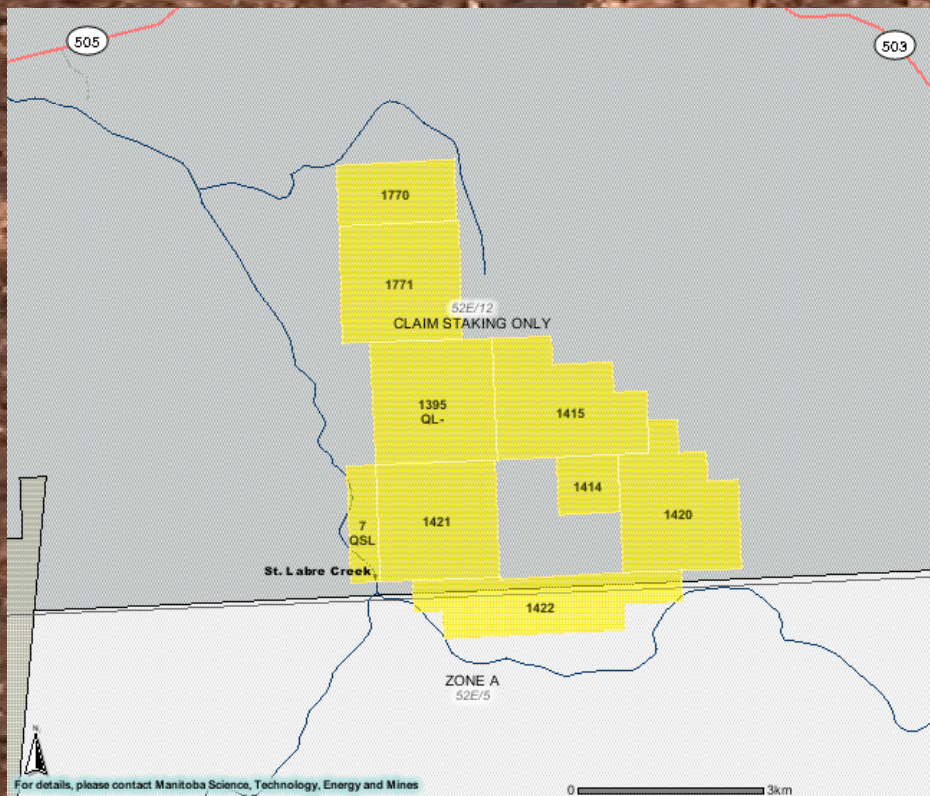
February 2009

<http://www.mysteinbach.ca/newsblog/community/961.html> (2009-09-10)

- Wholly-owned Canadian subsidiary of Conrad Fafard Inc. of New Brunswick, held a sod-turning ceremony in May 2008 for a new 3000 m² peat processing and mix facility, 2 km south of Vassar.
- Construction of the (estimated C\$6 million) plant was completed and in 2009 and 2010, the operation was in production from the Sprague Lake and Northwest Angle bogs, employing approximately 20 workers.
- Plant is designed to produce packaged peat moss and peat-based professional mixes and potting soils for markets in central and western United States.

Berger Peat Moss Ltd.

- Officially opened its first peat production plant in Manitoba at Hadashville in September 2008.
- C\$6 million plant, located next to its St. Labre Bog, currently employs about 20 staff.
- Production reported in 2008 and 2010; expected to have a 25-40 year life span.
- Most of the production is transported to the southern U.S. markets; with export potential to Mexico and South America.
- Federal Government contributed C\$1,072,763 in (repayable) matching funds through the Community Adjustment Fund to enhance operations and to create jobs.



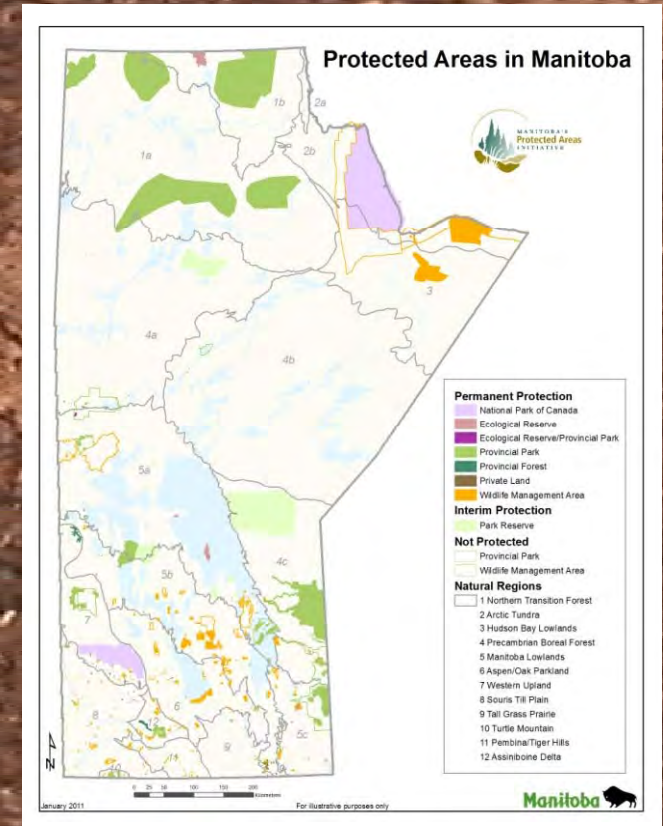
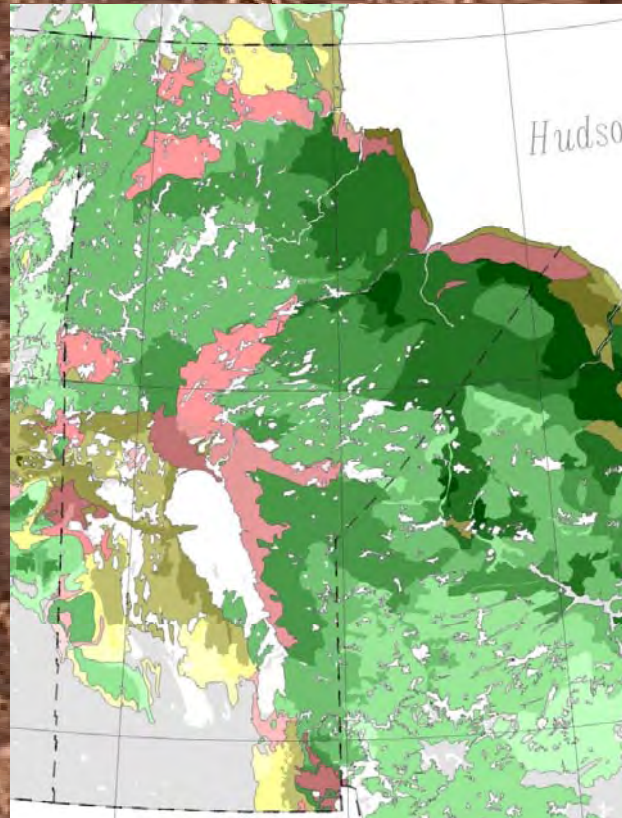
St. Labre bog – Berger leases
(QL-1394, 1395, 1414, 1415, 1420-22;
1583 ha)

Minor Peat Producers

- Four producing companies have 3 peat leases or less covering <200 ha each, which are used mainly in landscaping applications
 - Gauthier Soils Ltd.
 - Soils Are Us
 - Norman Tetreault
 - Manitoba Hydro

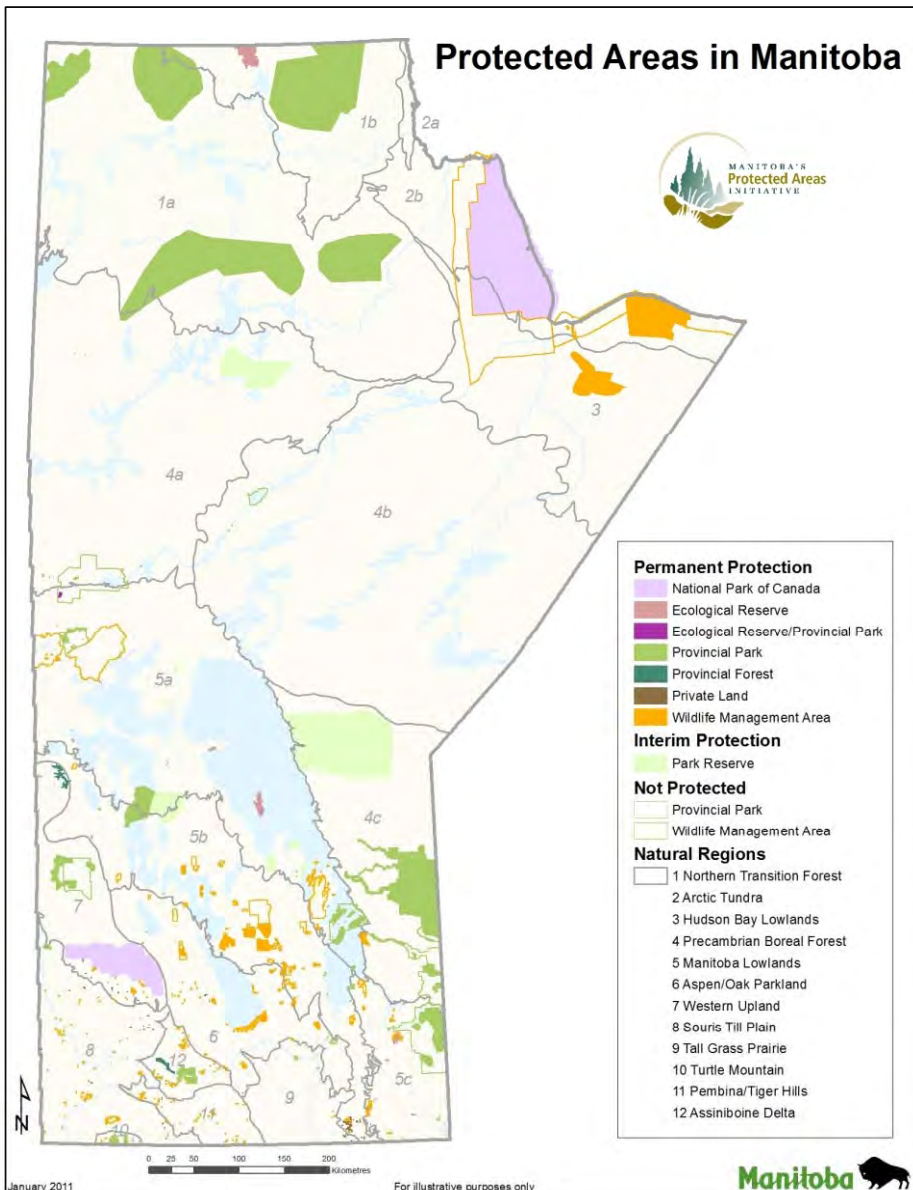
Protection of Manitoba Peatlands

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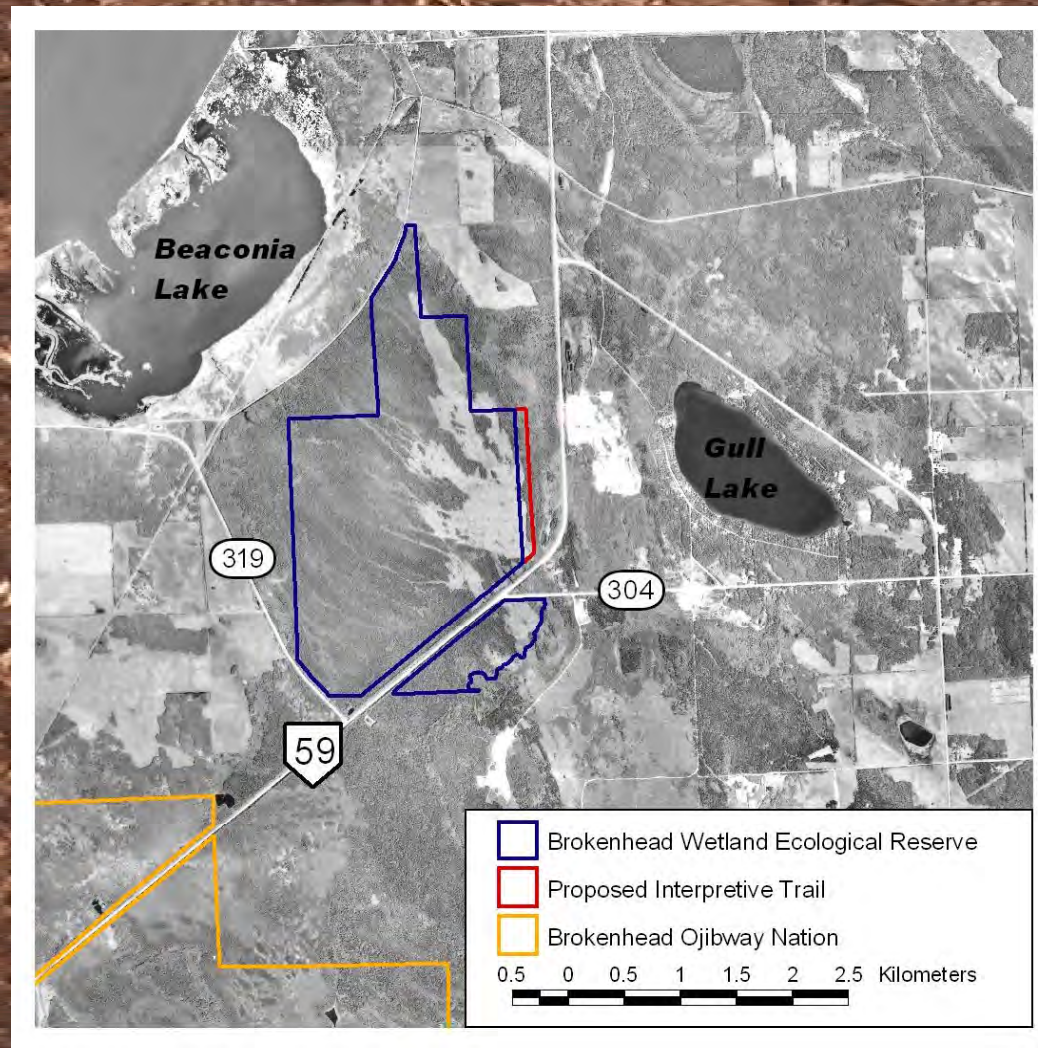
- Over 1 million hectares of peatland has been protected by the provincial and federal governments in Manitoba

Protection of Manitoba Peatlands



- Manitoba Conservation has protected 377 943 ha of boreal peatlands from logging, mining, hydroelectric power development, oil and gas exploration or development through the designation of 11 ecological reserves, wildlife management areas and provincial parks.
- In addition, the government of Canada has protected another 703 340 ha of peatlands with the creation of two national parks.

Protection of Manitoba Peatlands



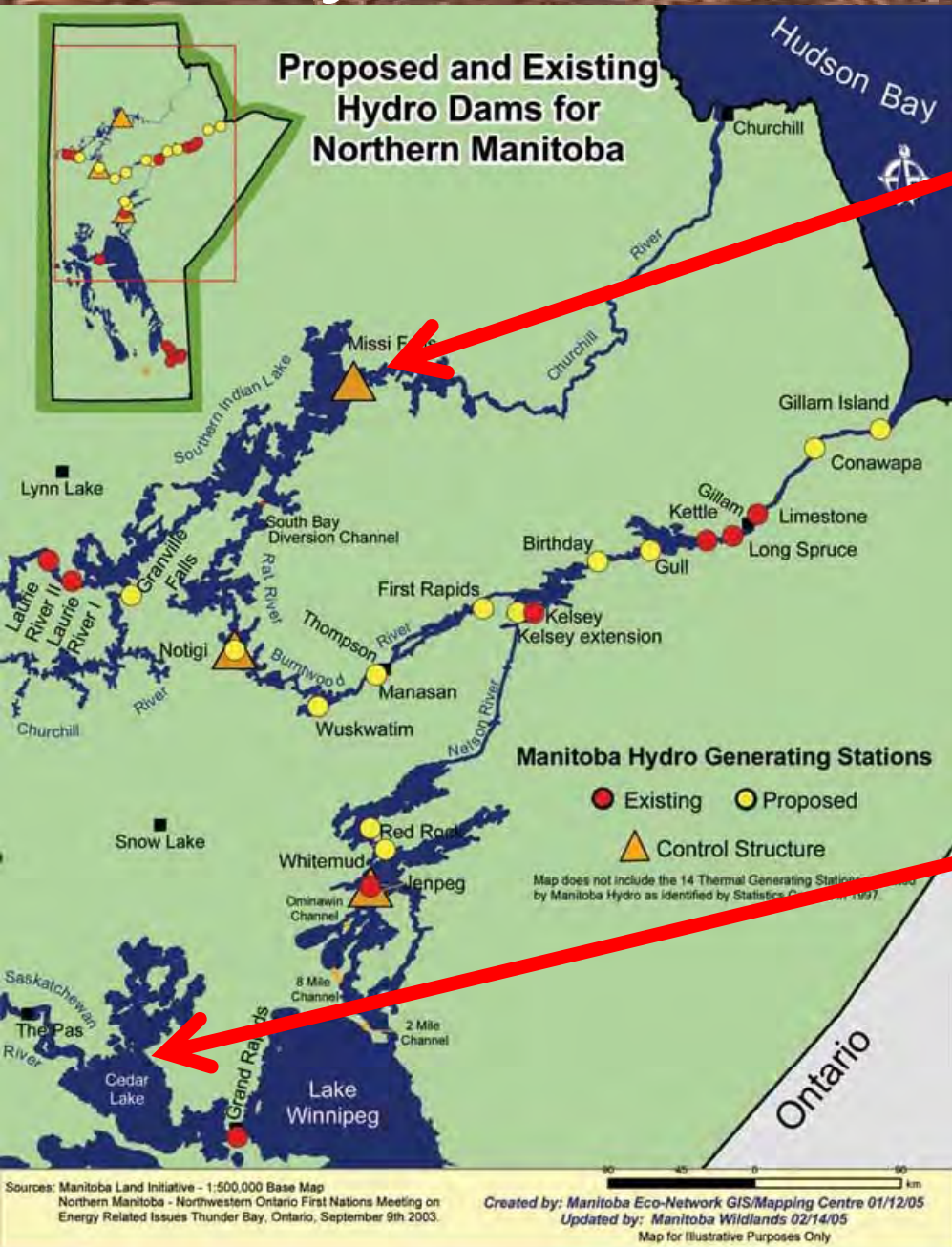
Typical existing protected area



Destruction of Manitoba Peatlands

- Hydro-electric developments
 - Reservoirs
 - Transmission lines
- Hudson Bay railroad
- East side Lake Winnipeg all-weather road
- Mining
 - Metallic mining operations
 - Peat Harvesting

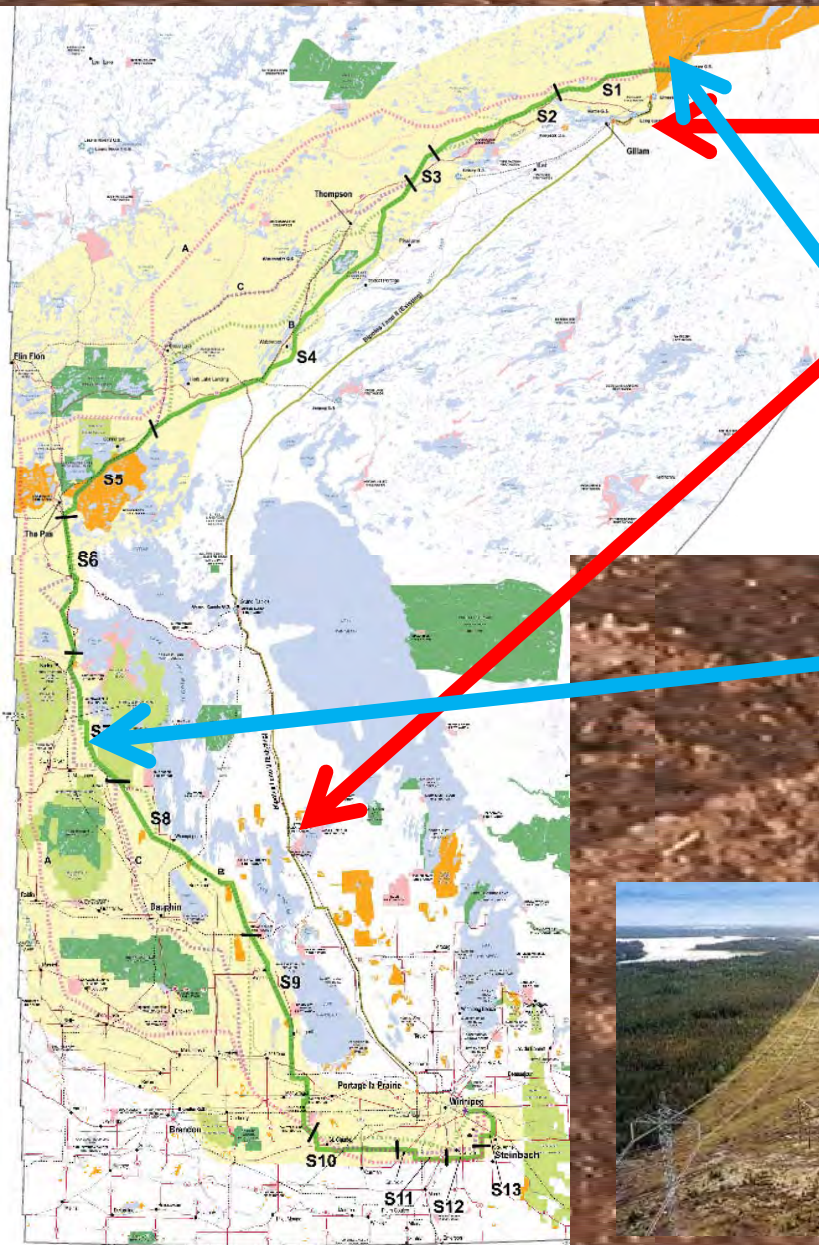
Hydro-electric developments



- Churchill-Nelson River Diversion
 - Enlargement of reservoirs resulted in loss of 17 530 ha of peatland

- Grand Rapids Generating Station Reservoir
 - Enlargement of Cedar Lake reservoir resulted in loss of 55 102 ha of peatland

Hydro-electric developments

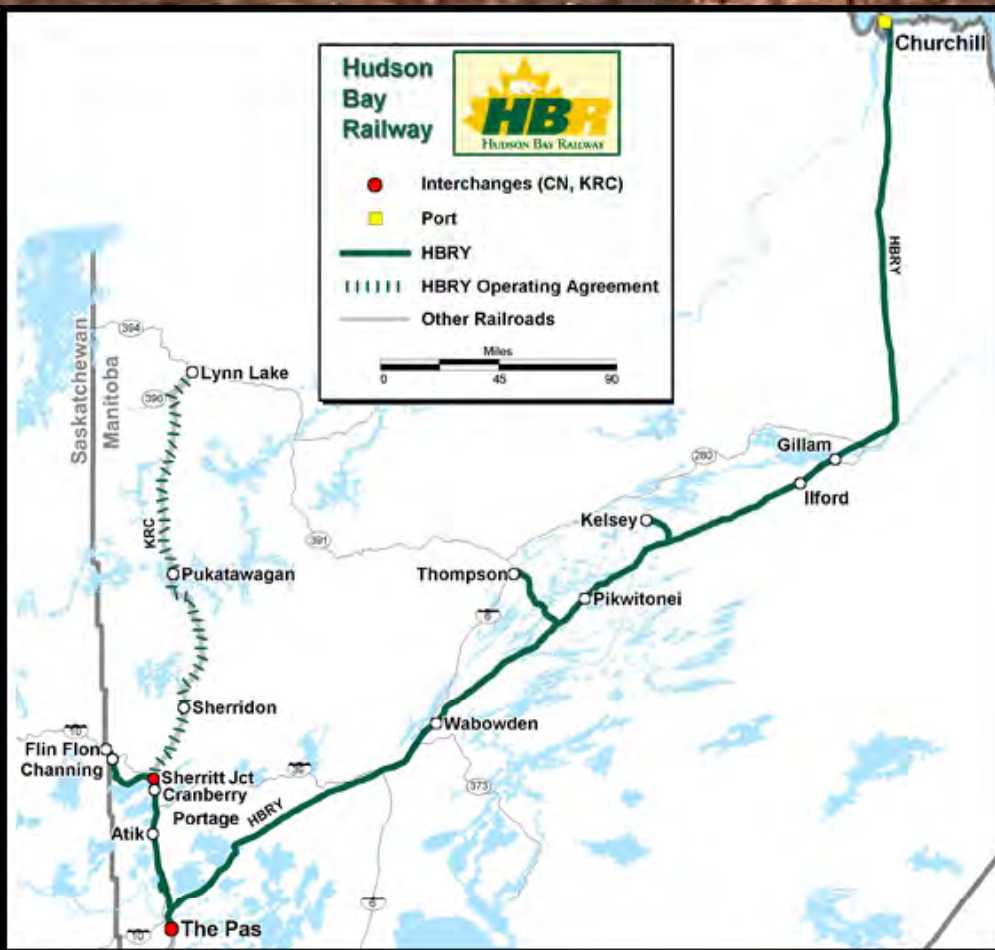


- Bipole I & II impacted 2940 ha of peatlands from Gillam and Sundance to Lake St. Martin
- Bipole III will impact 1513 ha of peatlands from Keewatinoow to Swan Lake



Hudson Bay Railroad

- Laying of track from The Pas to Churchill disturbed a maximum of 1590 ha of peatland

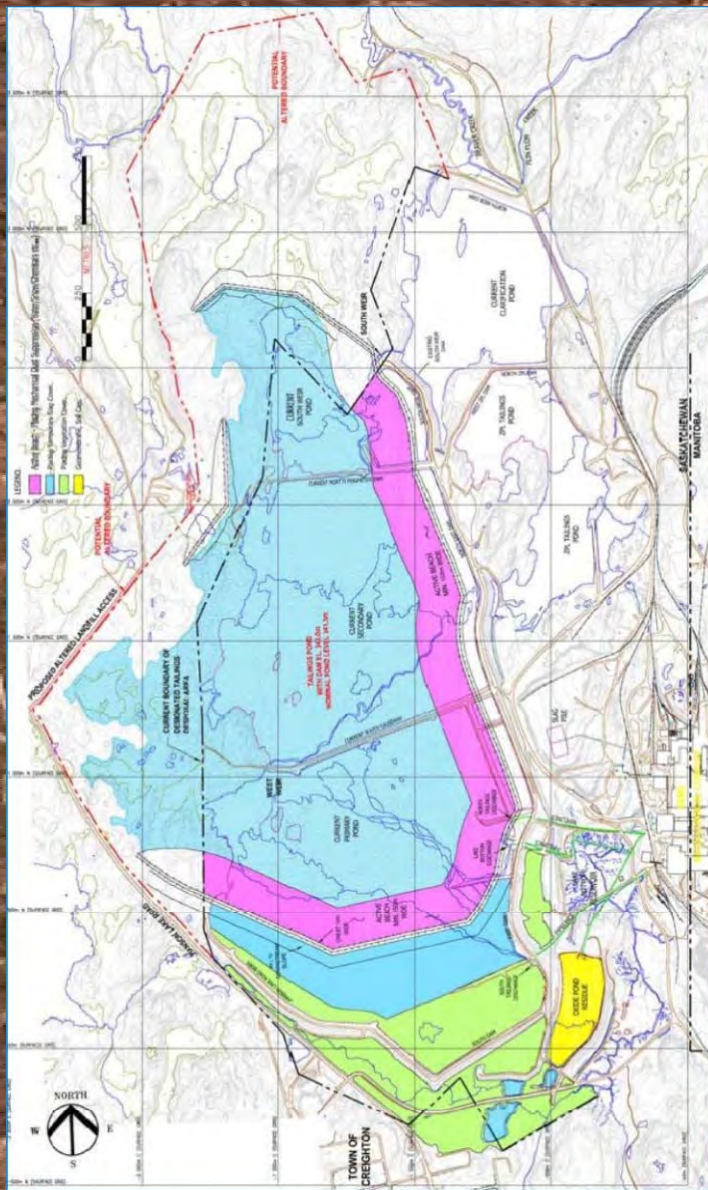


East side Lake Winnipeg Road



- Construction of all-season road from Provincial Road 304 to the community of Berens River will disturb approximately 2000 ha of peatland

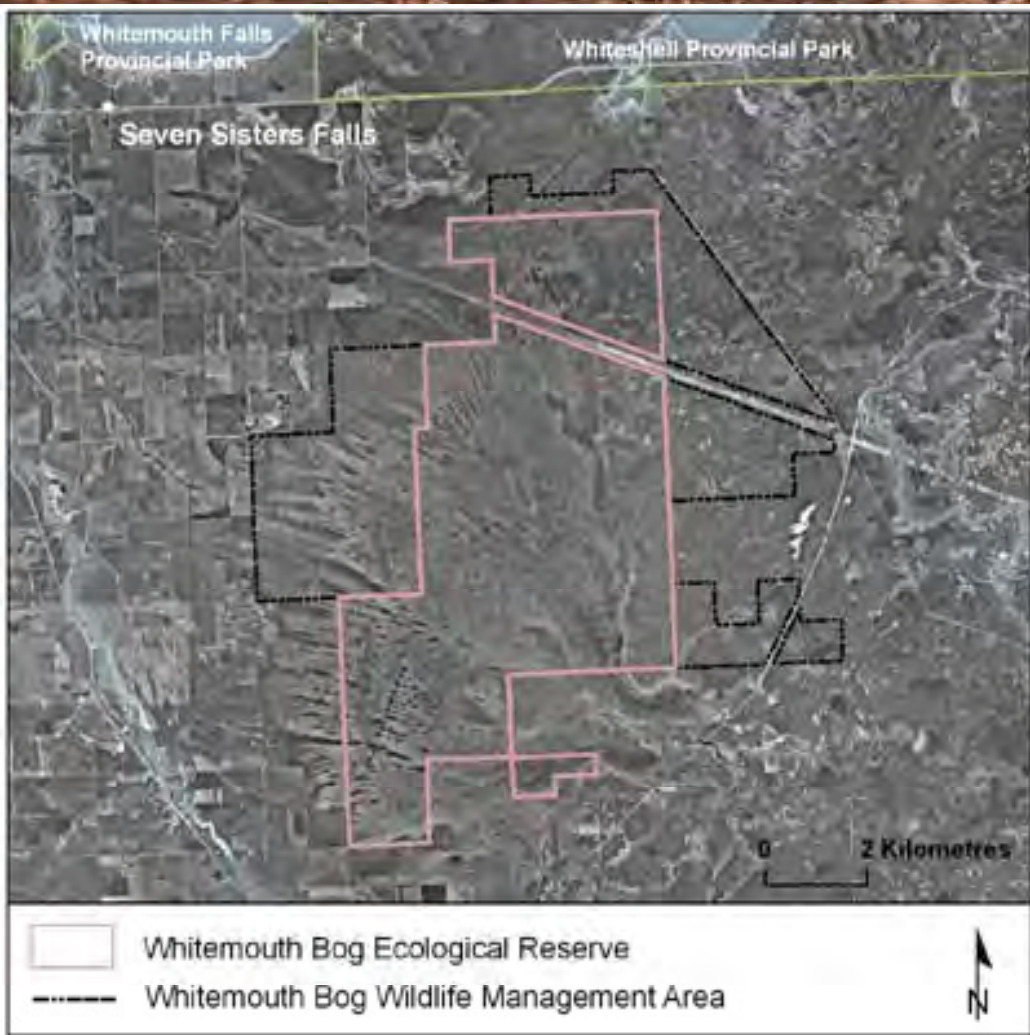
Metallic Mining Operations



- Mine tailings are produced as a consequence of metallic mining operations, located mainly in northern Manitoba.
- The total area of peatlands disturbed by mine tailings in Manitoba (including Hudbay's Saskatchewan tailings area) is estimated at 500 ha.
- The total area of peatlands disturbed by all metallic mining operations in Manitoba is estimated at < 1000 ha.

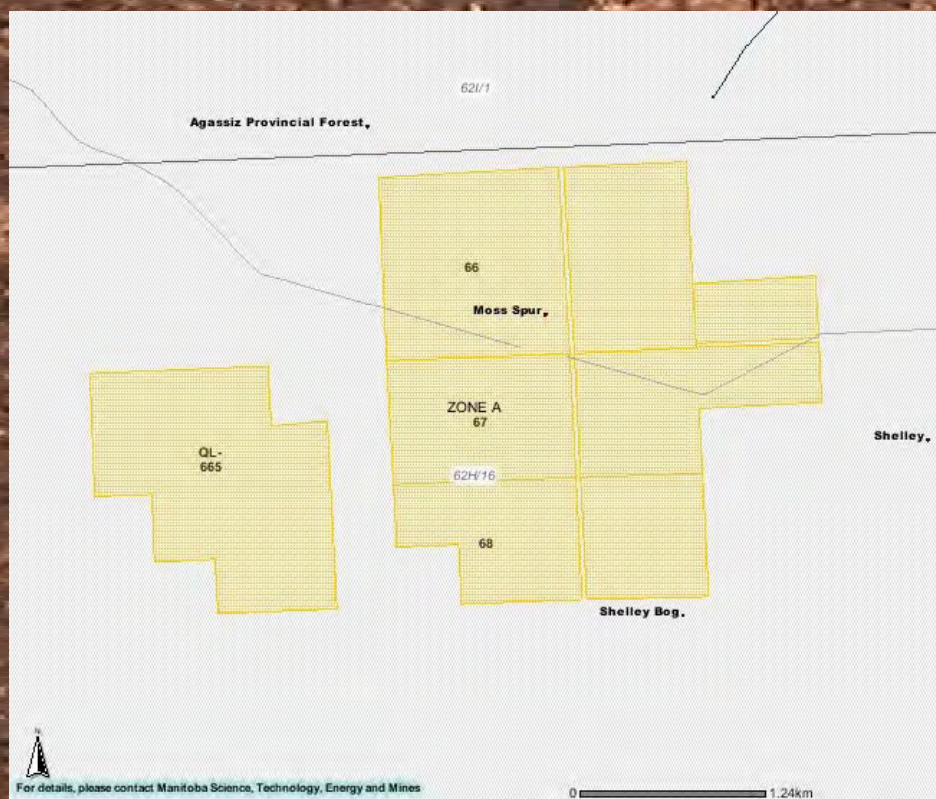
Hudbay tailings area in Saskatchewan

Peat Harvesting



- In 2009, only 30 peat leases, occupying an area of 4117 ha, were in production.
- Of that area, only 50% was under cultivation. Therefore, it is estimated that the total area of peatland disturbed by sphagnum peat mining in 2009 was approximately 2200 ha, or about 8% of the total area held under peat lease.
- This area would quite comfortably fit within one protected peat bog (**Whitemouth Bog Ecological Reserve, 5020 ha**).
- This combined disturbed area represents only 0.011% of the total peatland area of Manitoba.

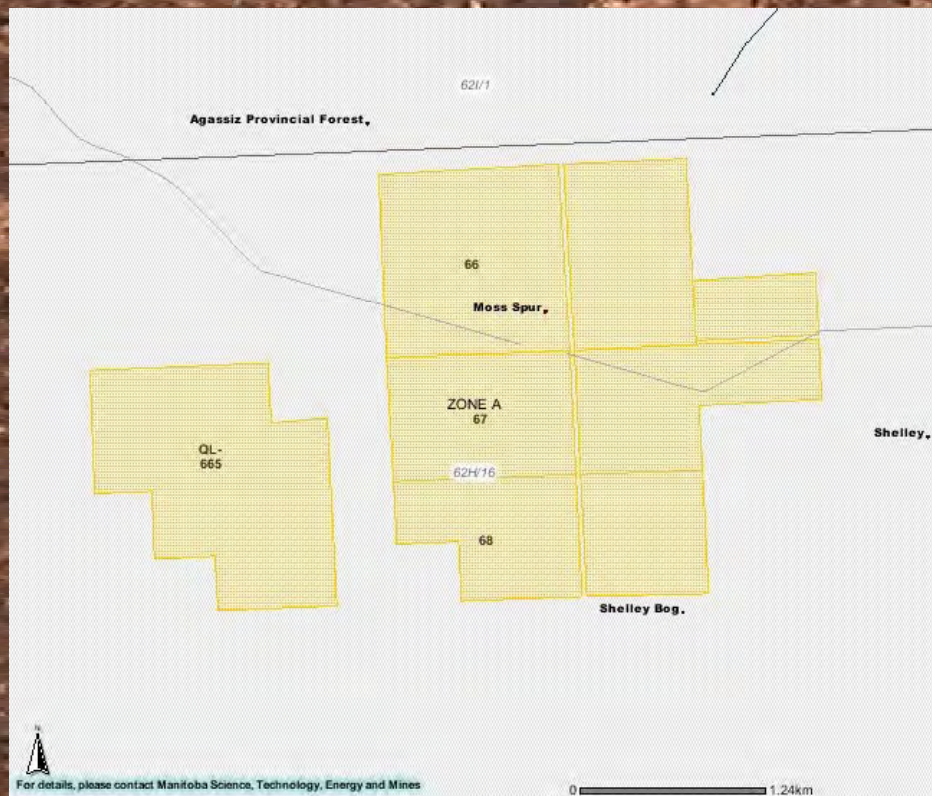
Peat Harvesting



Julius (Shelly) Bog

- All of Manitoba's peat production from 1941 to 1968 originated from the Julius or "Moss Spur" bog and this production totalled 231 330 tonnes valued at \$9,727,323; or \$42.05/t (Bannatyne, 1964, 1980).
- All peat production ceased from QL-66 to 68 (623.007 ha) at the end of the 1997 harvest season.
- If the total area of these leases is added to the total area of previously producing leases (4922.986 ha), then the total area of leases that have been harvested for peat in Manitoba from 1941 to 2009 is 5545.993 ha.

Restoration/Reclamation of Manitoba Peatlands



Julius (Shelly) Bog

- In 1995, Sun Gro began partial restoration of the Julius or “Moss Spur” bog, when 29 m² of mixed *Sphagnum* species were transplanted at the site.
- By the summer of 1999, a complete vegetative cover had been established in the wetter areas of the restoration site; transplanted *Sphagnum* moss plugs were spreading; and natural growth of orchids was occurring (Sun Gro Horticulture Canada Ltd., Ramsay Point Bog, Closure Plan, July 2010).