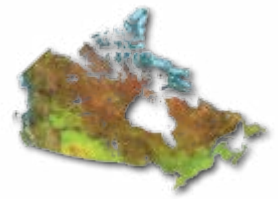




Natural Resources
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Surveyor General Branch

Beyond Boundaries

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ANNUAL REVIEW 2011–2012



Canada

Surveyor General Branch

Natural Resources Canada

ANNUAL REVIEW
2011–2012

Table of Contents

1	Purpose	1
2	SGB's role within NRCan strategic outcomes	1
3	SGB delivers Canada's legal boundaries	1
	i. Canada's survey registry	1
	ii. Canada's survey program	1
	iii. Canada – United States International Boundary Commission	1
4	Boundary Commissions	2
	i. The International Boundary Commission (IBC)	2
	ii. The Alberta – British Columbia Boundary Commission	2
5	Nine key SGB initiatives in 2011–2012	3
	i. Presenting to the Standing Senate Committee on Aboriginal Peoples	3
	ii. Preserving remote Reserve locations - British Columbia	3
	iii. Resolving uncertainty on the Sucker Creek Reserve – Alberta	4
	iv. Reconciling conflicting interpretations on the Buffalo Point Reserve – Manitoba	4
	v. Agreeing to the lost boundary of the Kettle Point Reserve – Ontario	5
	vi. Responding to the demand for land descriptions – FNLMA	5
	vii. Analyzing land tenure on the Kahnawake Reserve – Quebec	6
	viii. Bounding lands of the Carcross/Tagish First Nation – Yukon	6
	ix. Reforming land tenure – First Nations Property Ownership (FNPO)	7
6	Five upcoming SGB priorities	8
	i. Re-engineering and modernizing SGB	8
	ii. Devolving survey funding to the National Aboriginal Lands Managers Association (NALMA)	8
	iii. Modernizing survey standards	8
	iv. Determining optimum candidates for parcel fabric renewal	8
	v. Writing the riparian boundaries monograph	9
7	Results and performance measures 2011–2012	10

Appendixes

1.	Canada Lands	11
2.	SGB web of relationships	12

1 Purpose

This is the second Annual Review of the Surveyor General Branch (SGB), one of six branches within the Earth Sciences Sector of Natural Resources Canada. The work emanating from SGB's four regional operations centres and eight client liaison units is described in

more detail this year; less emphasis will be placed on SGB's mandate. That is, this Review focuses on what was done and on how effectively it was done between April 1, 2011, and March 31, 2012, and on what will be done in the upcoming year.¹

2 SGB's role within NRCan strategic outcomes

A key NRCan strategic outcome in the 2011–2012 Program Activity Architecture is safety, security and stewardship. This means having natural resource knowledge, landmass and management systems that strengthen the safety and security of Canadians and

the stewardship of Canada's natural resources and lands. Such knowledge and systems are supported by essential geographic information, which includes Canada's legal boundaries as one of its fundamental components.

3 SGB delivers Canada's legal boundaries

i. Canada's survey registry

SGB issues instructions for surveys, reviews plans of survey and registers these surveys to allow parcels to be created on Canada Lands² and on fee simple parcels of land in Yukon, Northwest Territories and Nunavut. In 2011–2012, over 1,000 survey instructions were issued and some 1,800 plans were registered in the Canada Lands Survey Records (CLSR). This legal and public repository contains over 100,000 records dating to pre-Confederation Canada.

ii. Canada's survey program

SGB manages boundary surveys on Aboriginal settlement lands to meet Canada's obligations in land claim settlement agreements and legislation and administers other boundary surveys as required by the Government of Canada.

iii. Canada – United States International Boundary Commission

Embedded within SGB is the Canadian section of the International Boundary Commission, which maintains the international boundary between Canada and the United States for certainty in policing, customs, immigration and jurisdictional extent.

¹ See Appendix 2 for a description of the web of relationships within which SGB manages boundaries, surveys and parcels, including relationships with Aboriginal Affairs and Northern Development Canada (AANDC), Parks Canada and the Association of Canada Lands Surveyors (ACLS).

² See Appendix 1 for the definition of Canada Lands.

4 Boundary Commissions

i. The International Boundary Commission (IBC)

The Surveyor General is appointed by Order in Council as the Canadian Commissioner to the International Boundary Commission. The boundary between Canada and United States – some 9,000 km in length – came into being through 20 treaties, conventions, protocols, decisions and awards between 1783 and 1925. The IBC, consisting of one Commissioner from each of Canada and the United States, was established by treaty in 1925 and has the mandate to maintain the boundary.

In the 2011–2012 year, the Canadian section of the IBC established and refurbished 74 monuments, surveyed 131 monuments, cleared 212 km of vista (the 6 m/20 ft swath of land bereft of trees and structures) along the boundary between Québec and the United States (New York, Vermont and Maine), and produced a new series of official maps.³



Figure 1 – Monument on the Quebec/Vermont boundary found in disrepair (left) and restored (right).

ii. The Alberta – British Columbia Boundary Commission

The Surveyor General is also appointed by Order in Council to the Alberta-British Columbia Boundary Commission. The Commission was established by legislation in 1974 and consists of a commissioner from each of the three jurisdictions - the two provinces and Canada.

In 2011–2012, the Commission published a policy manual that serves as a reference guide for general

operations of the Commission, which include managing surveys, restoring monuments, sharing costs, resolving disputes and consulting with the public. Additionally, the Commission met twice to address two issues: converting a watershed boundary to a rectilinear boundary and developing long-term plans for the maintenance of the monuments on the boundary.

³ Full details of the IBC 2011–2012 season are described in the Canada – United States Joint Annual Report of the Commission.

5 Nine key SGB initiatives in 2011–2012

i. Presenting to the Standing Senate Committee on Aboriginal Peoples

Since 1989, the Committee has had “a mandate to examine legislation and matters relating to the Aboriginal Peoples of Canada”. On February 7, 2012, SGB presented its role in the Additions-to-Reserve (ATR) process, namely ensuring that parcels of land that are being added to First Nations Reserves are clearly defined. Such definition takes the form of describing parcels in one of three ways: new surveys, existing surveys (e.g., of existing ¼ section parcels in Saskatchewan), or resurveys of existing parcels (e.g., of existing ¼ section parcels in Manitoba). Such certainty in the character and location of the boundaries of ATR parcels provides assurance for issuing rights in land, managing the use of the land and valuing land.

ii. Preserving remote Reserve locations - British Columbia

Economic development tends to drive the demand for surveys (80% of recent surveys registered in the CLSR are confined to 4% of First Nation Reserves).⁴ Land, however, often has a strong cultural and symbolic value, as illustrated by an ongoing monument restoration project on remote Reserves in British Columbia. In 2011–2012, six Reserves of the Masset First Nation on Haida Gwaii were investigated. All were originally surveyed in 1928 with boundaries being marked by hand hewn wooden posts. The wooden posts were replaced this year with metal posts and GPS observations. Had this work not been done, the deteriorating posts would likely be lost in a few years, resulting in uncertainty and conflict over land uses.



Figure 2 – Old wooden post (left) and newly established post (right).

⁴ Based on queries of the CLSR constrained to: Index='CLSR'; Type='Plan' or 'Plan and Field Notes'; Purpose = 'Boundary Surveys' or 'Condominium Surveys' or 'Oil and Gas Wells and Facilities' or 'Oil and Gas right of ways' or 'Parcels' or 'Right of Ways' or 'Roads and Railways' or 'Township Plans'; Date surveyed 'between January 1, 2005 and May 1, 2011'.

iii. Resolving uncertainty on the Sucker Creek Reserve – Alberta

Since the early 1900s the northern boundary of the Sucker Creek Indian Reserve on Lesser Slave Lake has been a source of uncertainty for the First Nation, the Province of Alberta and AANDC. The issue centers on the status of a large marshland. A recent proposal by Alberta to realign a major road through the

marshland meant that an accurate area had to be determined of the land involved. After an exhaustive search of historical aerial photos, survey plans and field notes, water level data and AANDC files, SGB formed an opinion of the boundary location. Alberta has concurred with the opinion and a survey plan of the boundary is being drafted to assist in negotiations among the affected parties.

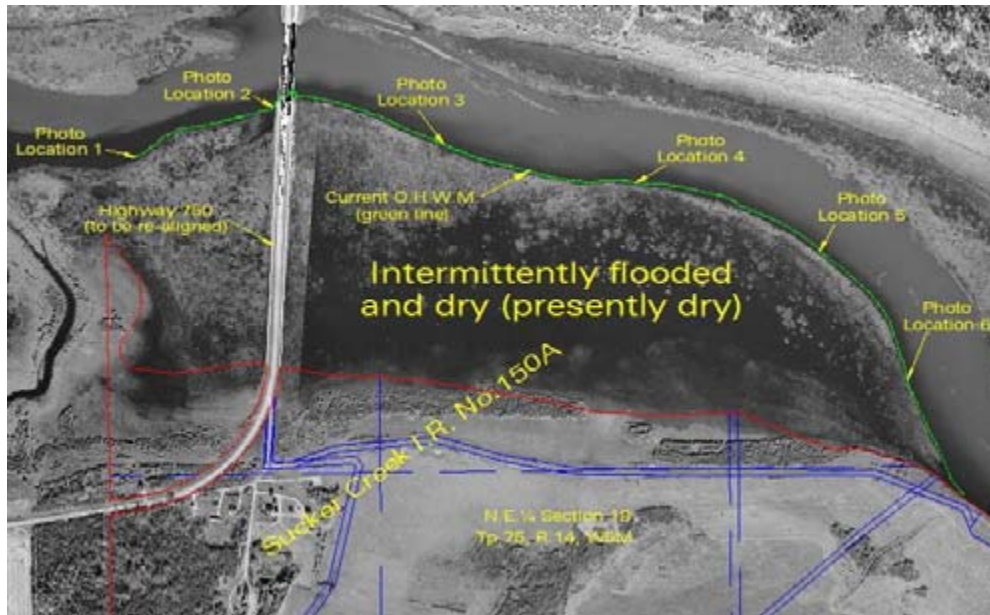


Figure 3 – Area of marshland on Sucker Creek Reserve.

iv. Reconciling conflicting interpretations on the Buffalo Point Reserve – Manitoba

The Buffalo Point Reserve on Lake of the Woods was surveyed in 1881, defined in a 1930 Order in Council and then resurveyed in 1935. Due to vagueness in the 1930 metes and bounds description, however, (akin to: "Starting at the sycamore tree, thence southerly ...") the boundary was resurveyed at different locations in 1974 and 1997. The three surveys suggested three

different boundary locations. The issue became critical in 2011 in the process of writing a legal description under the *First Nation Land Management Act*. As such, the differing surveyors' interpretations of the boundary had to be resolved. After an extensive investigation, the result was that the 1935 boundary was determined to be correct; it was resurveyed and confirmed.

v. Agreeing to the lost boundary of the Kettle Point Reserve – Ontario

Boundaries are occasionally lost. Water is perhaps the biggest culprit, so that riparian boundaries are often the victim. The Kettle Point Reserve is particularly susceptible in that small and gradual changes in the water levels of Lake Huron can result in substantial horizontal movement of the water (due to the flat terrain). For the last few years, the water levels on

Lake Huron have been low, which has resulted in over 700 m of dry land adjoining the Reserve at some locations.acerbating the boundary problem was a substantial amount of dredging and filling work which clouded the natural location of the boundary. Boundary negotiations over many years between the First Nation, Ontario and Canada concluded successfully in 2011–2012.



Figure 4 – Approximate location of new boundary of Kettle Point Reserve (outer extent of orange).

vi. Responding to the demand for land descriptions - FNLMA

The *First Nation Land Management Act* allows First Nations to opt out of 34 land-related sections of the *Indian Act* and assume such responsibility themselves. Critical to First Nations assuming this responsibility is an accurate description of the extent of the lands they are going to manage. Since 1999, SGB has provided 192 legal descriptions (with an accompanying graphic illustration) of the lands a First Nation will manage. Some 40% of the descriptions have required a survey.

The demand for entry into the FNLMA (and thus for legal descriptions) has grown. The 2012 federal government Budget reallocated “\$20 million over two years to respond to the growing interest from First Nations leaders to participate,” and on January 23, 2012, it was announced that another 18 First Nations will enter the process.⁵ The 70 Reserves across the 18 First Nations must now be described.

⁵*Economic Action Plan 2012*, pg. 171. March 29, 2012.

vii. Analyzing land tenure on the Kahnawake Reserve – Quebec

Kahnawake is one of the oldest and most populous Reserves in Canada, meaning that there is an extraordinary level of complexity surrounding land transactions. In 2011, more than 4,500 land parcels on Kahnawake were analyzed to identify a variety of issues

such as encroachments, lack of access (parcels being land-locked), multiple ownership (owing to undivided interests and unresolved estates), and environmental contamination. Identifying and locating such issues is the first step in discussions on land management between Canada and the Mohawk Council of Kahnawake.



Figure 5 – Map of land parcel issues on Kahnawake Indian Reserve.

viii. Bounding lands of the Carcross/Tagish First Nation – Yukon

On Canada Lands, the location of a riparian boundary is defined as the ordinary high water mark (OHWM). In general, this is the point where terrestrial becomes aquatic and there is a mark of “distinct character upon the vegetation...or upon the soil itself”.⁶ Although the concept is simple, things are a lot muddier on the

ground. In a marsh, for instance, the mark upon the soil or vegetation is not distinct. Some of the settlement lands of the Carcross/Tagish First Nation bound such a marsh on Marsh Lake.⁷ In 2011, a survey of the parcels used high resolution satellite imagery and terrestrial photos (from ground, boat and helicopter) to identify the boundary for approval by the First Nation.

⁶SGB. 2012. *General Instructions for Surveys, e-Edition*. Appendix E1 – Glossary.

⁷It is unclear as to how the lake acquired its name. Research continues.



Figure 6 – The riparian boundary on a settlement land parcel for the Carcross/Tagish First Nation.

ix. Reforming land tenure – First Nations Property Ownership (FNPO)

The First Nations Property Ownership initiative proposes opt-in and First Nation driven legislation that would transfer ownership of a Reserve from Canada to the First Nation. This mechanism would enable the First Nation to grant any part of their lands in fee-simple ownership to individuals. The conceptual legislation, like FNLMA, is optional for First Nations. FNPO was expressly mentioned in the 2012 Budget as a priority because of its potential to “address barriers to economic development on Reserve”.⁸

In 2011–2012, SGB served on a Joint Working Group composed of three federal government departments and the First Nations Tax Commission to determine, among other things, the boundary certainty that First Nations would require for FNPO. The consensus was that SGB could produce two things: a legal description of the external boundaries of the surface and subsurface of the Reserve (akin to what is now done under FNLMA); and a renewal of the internal parcels of the Reserve to reflect occupation and land use planning principles.

⁸ *Economic Action Plan 2012*. pg. 171. March 29, 2012.

6 Five upcoming SGB priorities

i. Re-engineering and modernizing SGB

In 2011–2012, SGB undertook a comprehensive review with the goal of sustaining high priority functions in the face of potential budget reductions. When the 2012 Budget was announced, SGB was well prepared to re-engineer in 2012–2013, as follows:

- Survey plan review and data management functions in Yukon, NWT and Nunavut will be transferred to Edmonton and Ottawa. Centralizing of functions will allow the Branch to create economies of scale for registry, data management and administrative support activities;
- Resource allocation will reflect diminishing workload in northern land claims and accommodate an increasing workload in southern Canada flowing from First Nations Self-Government activity and additions to Reserves.

ii. Devolving survey funding to the National Aboriginal Lands Managers Association (NALMA)

Land surveys cost money and depending on the scale of the survey, sometimes a substantial amount of money. Scale is itself a function of many things, including boundary length, location, terrain, urgency, weather, encroachment issues and First Nation capacity. Currently, most funds for surveys on-Reserve are administered by AANDC, which routes the money through its regional offices to SGB; SGB contracts surveys to private sector surveyors (ACLS members) and provides advice. Under the proposed model, some funding would switch to grants and contributions and be administered by the National Aboriginal Lands Managers Association (NALMA) to contract surveys.

This proposed model is expected to have at least two key benefits. First, it will enhance the capacity of NALMA and First Nations, as they work more closely with surveys, Canada Lands Surveyors, boundaries and parcels; and second, it supports the devolution of land management functions to First Nations. In 2012–2013, the model will be tested in Ontario and British Columbia.

iii. Modernizing survey standards

SGB's last comprehensive revision of its survey standards, as captured in the two-volume *Manual of Instructions for the Survey of Canada Lands*, took place in the mid-1990s. Since that time, various technical and legal innovations have been incorporated in an ad hoc fashion into the standards, including e-Instructions, the MyCLSS portal⁹ and mineral claim surveys in NWT and Nunavut.

By March 2014 the standards will be overhauled to deal with a number of issues: parcel fabric renewal, electronic submission and approvals pursuant to the *Personal Information Protection and Electronic Documents Act* (PIPEDA), mining regulation amendments applicable to First Nations Reserves and to the three northern territories, a demand for consistent condominium and strata title surveying processes on Reserves, enhancing the link between the CLSR and existing registries of rights (i.e., the Indian Land Registry and the land titles registries in the north), and building the link between the CLSR and First Nations title registries (such as is contemplated in the FNPO initiative). Modernizing the survey standards will allow SGB to accommodate these diverse forces and will enable economic development through reduced transaction costs.

iv. Determining optimum candidates for parcel fabric renewal

SGB has been analyzing for some time the phenomenon that some 70% of occupation on Reserves (dwellings, roads, agriculture) accords with parcel fabric (the mosaic of all surveyed parcels).¹⁰ Parcel fabric renewal is the process by which parcels are created (or adjusted) to encompass existing occupation. Given the variance among population, location and development on Reserves, it is clear that some Reserves can benefit more than others from parcel fabric renewal.

To this end, a methodology is being developed by which Reserves are assessed against four criteria: remoteness – the distance from the Reserve to the nearest “service centre”; Parcel Fabric Index (PFI) score – a statistic developed by SGB that measures how well

⁹MyCLSS is well described in the *2010–2011 Annual Review*.

¹⁰This compares to some 95% of occupation according with parcel fabric in off-Reserve subdivisions.

parcels accord with development; community well being – a statistic that measures socio-economic well being on Reserve; population – the number of permanent on-Reserve residents. The initial results on assessing optimal candidates for parcel fabric renewal were presented by SGB at a World Bank conference in April 2012 that focussed on poverty reduction through land tenure reform.

v. Writing the riparian boundaries monograph

Considering the number of watercourses and lakes and the length of ocean frontage, riparian boundaries are pervasive across all jurisdictions in Canada. To further hammer the point home, it has been estimated that 75% of Reserves in Canada have a riparian boundary.¹¹ Given this pervasiveness, understanding the principles for locating such boundaries becomes critical. Questions abound, such as:

- How are riparian boundaries defined (both in law and on the ground)?
- How do riparian boundaries move?
- How can a riparian boundary become fixed in place?
- How is new land allocated between owners when a riparian boundary moves out?

A monograph is now being drafted that sets out the legal principles, the surveying practices and the factual situations that are common to riparian boundaries of Canada Lands. Such principles, practices and facts, however, are universal across jurisdictions and thus across surveying professions. The draft has now been extensively critiqued by 34 experts, who hailed from government, academia and the private sector. It is expected that the monograph will be published in late 2012. It will be available in pdf form at no cost, similar to *Surveys, Parcels and Tenure on Canada Lands*, published in 2011.



Figure 7 – A series of riparian boundaries.

¹¹ Using the Galton Technique, first described in *Nature* - March 7, 1907.

7 Results and performance measures 2011–2012

Output	2009–2010	2010–2011	2011–2012
Parcels created in cadastral dataset	4,773	5,480	6,339
Documents registered	1,943	2,206	2,480
Instructions issued	857	958	1,033
Plans deposited/registered	1,277	1,297	1,780
Saskatchewan treaty land entitlement			
Area of parcels described	5,365 ha	8,803 ha	10,657 ha
Progress ¹²	52%	53%	55%
Manitoba treaty land entitlement			
Area surveyed	21,823 ha	10,313 ha	4,009 ha
Progress ¹³	44%	46%	47%
Tlicho land claim agreement			
Boundary surveyed	95 km	300 km	96 km
Progress	60%	90%	99% ¹⁴
Yukon land claims agreements			
Boundaries surveyed	426 km	400 km	427 km
Parcels created	74	29	14
Progress	90%	97%	99% ¹⁵
FNLMA			
Legal descriptions	21	40	10 ¹⁶
Inter-departmental letters of agreement			
Number	36	40	40
Value	\$6.3M	\$8.7M	\$7.4M
Survey contracts to the private sector			
Number	245	306	249
Value	\$12.2M	\$13.8 M	\$9.5M

¹²Progress refers to the proportion of the total shortfall of 859,000 ha that has been described by SGB.

¹³Progress refers to the proportion of the total obligation of 577,000 ha that has been surveyed.

¹⁴There are 7 km of boundary still to be surveyed.

¹⁵There are 112 km of boundary still to be surveyed.

¹⁶The lower number reflects more complex descriptions, involving a plethora of boundary issues.

Appendix 1 – Canada Lands

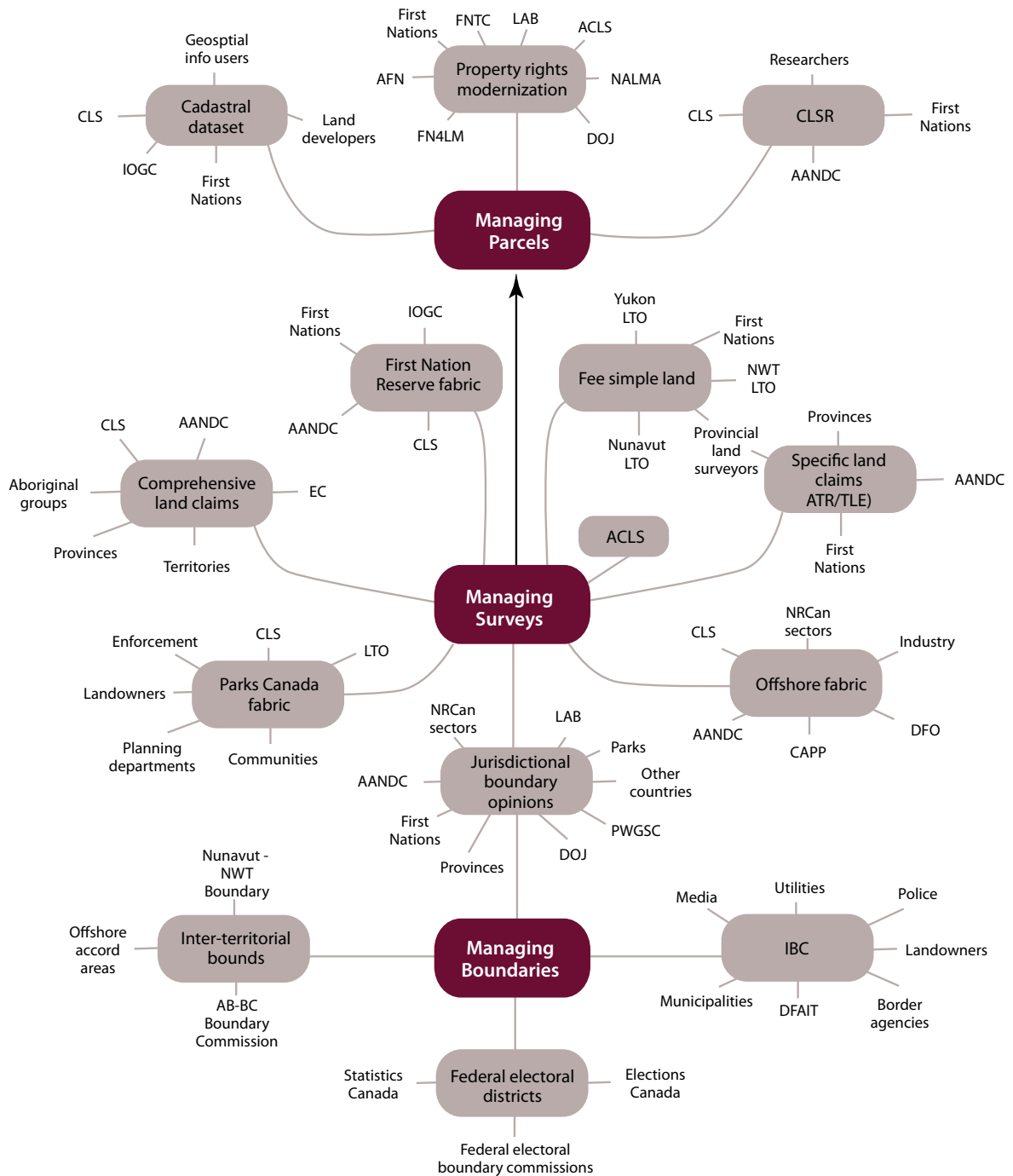
Canada Lands are defined in the *Canada Lands Surveys Act* (CLS Act) as:

- a) any lands belonging to Her Majesty in right of Canada or of which the Government of Canada has power to dispose that are situated in Yukon, the Northwest Territories, Nunavut or in any National Park of Canada and any lands that are
 - (i) surrendered lands or a reserve, as defined in the *Indian Act*, other than reserve lands described in regulations made under section 4.1 of the *First Nations Commercial and Industrial Development Act*,¹⁷
 - (ii) Category IA land or Category IA-N land, as defined in the *Cree-Naskapi (of Quebec) Act*, chapter 18 of the Statutes of Canada, 1984,
 - (iii) Sechelt lands, as defined in the *Sechelt Indian Band Self-Government Act*, chapter 27 of the Statutes of Canada, 1986,
 - (iv) settlement land, as defined in the *Yukon First Nations Self-Government Act*, and lands in which an interest is transferred or recognized under section 21 of that Act,
 - (v) lands in the Kanesatake Mohawk interim land base, as defined in the *Kanesatake Interim Land Base Governance Act*, other than the lands known as Doncaster Reserve No. 17, or
 - (vi) Tlicho lands, as defined in section 2 of the *Mackenzie Valley Resource Management Act*; and
- b) any lands under water belonging to Her Majesty in right of Canada or in respect of any rights in which the Government of Canada has power to dispose.¹⁸

¹⁷ Amended in February 2011.

¹⁸ *Canada Lands Surveys Act* (RSC 1985, c. L-6) s.24.

Appendix 2 – SGB web of relationships



Acronyms:

AANDC	Department of Aboriginal Affairs and Northern Development Canada ¹⁹
ACLS	Association of Canada Lands Surveyors
AFN	Assembly of First Nations
ATR	Additions to Reserves
CAPP	Canadian Association of Petroleum Producers
CLS	Canada Lands Surveyor
CLSR	Canada Lands Surveys Records
DFAIT	Department of Foreign Affairs and International Trade Canada
DFO	Department of Fisheries and Oceans Canada
DOJ	Department of Justice Canada
EC	Department of Environment Canada
FN	First Nations
FN4LM	First Nations for Land Management
FNCIDA	First Nations Commercial and Industrial Development Act
FNLMA	First Nations Land Management Act
FNTC	First Nation Tax Commission
IBC	International Boundary Commission
INAC	Department of Indian and Northern Affairs Canada
IOGC	Indian Oil and Gas Canada
LAB	Lands Advisory Board (to implement FNLMA)
LDR	Legal description reports (pursuant to FNLMA)
LTO	Land Titles Office (Nunavut, NWT and Yukon)
NALMA	National Aboriginal Lands Managers Association
PAA	Program Activity Architecture (Government of Canada)
PWGSC	Department of Public Works and Government Services Canada
SG	Surveyor General
SGB	Surveyor General Branch, Earth Sciences Sector, NRCan
TC	Department of Transport Canada
TLE	Treaty Land Entitlement

¹⁹ As used since since June 9, 2011.

