



Natural Resources
Canada

Ressources naturelles
Canada



Surveyor General Branch



Expertise for Developing Countries

Canada



What is the Surveyor General Branch?

5,000

Km of boundary
surveyed per year

275,000

Parcels in the
cadastral database

The Surveyor General Branch (SGB) is part of the Earth Science Sector of Natural Resources Canada, and is home to the Surveyor General of Canada Lands and International Boundary Commissioner.

SGB has a mandate of managing surveys on Canada Lands. To meet this mandate, SGB focuses on: setting standards, developing policies, issuing instructions for and examining plans of survey, recording plans in and providing information from the Canada Lands Surveys Records (CLSR); proffering boundary opinions, advising other government departments, and liaising with First Nations.

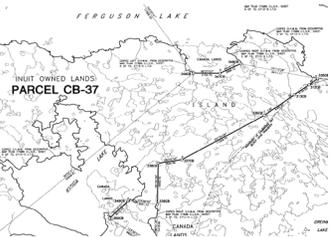
International Expertise

SGB staff have decades of experience in the surveying and mapping fields. As such, we can offer expertise across a wide range of topics in the context of developing countries. Five topics are worth highlighting in detail:

- Aboriginal Peoples
- Cadastral Data Modelling
- Natural Resource Development
- Land Tenure Reform
- Cadastral Mapping



Aboriginal Peoples



Since as early as 1873, SGB has been administering surveys on a large proportion of Aboriginal Lands in Canada. These lands include some 3000 Reserves held in trust for over 600 different First Nations with a total area of over 35,000 square kilometers.

Survey projects have ranged from exterior boundary surveys to provide clarity to Aboriginal people and government on the extent of Aboriginal lands, to interior surveys in support of investment and economic development, to surveys in support of land claims, treaty promises, self-government initiatives and litigation.

Land Tenure Reform

Land tenure reform can happen in a variety of ways. Whether it is modernizing existing systems, transferring responsibility for land management, or transitioning to self-government - clear boundaries are a necessity.

Boundary certainty about what a community can possess, manage and use leads to lower transaction costs and thus enables economic and social development.



SGB provides surveys, descriptions and opinions on boundaries in support of land tenure reform. Such reform efforts are embodied in the *First Nation Land Management Act*, the *First Nation Commercial and Industrial Development Act*, the proposed *First Nation Property Ownership initiative* and various self-government agreements.

Cadastral Data Modelling

SGB's cadastral data is stored in the "integrated cadastral management" data model, structured in various feature classes.

The model supports management of parcel data to integrate with land registries, and the model's uniformity allows SGB to respond to client needs equally across the country.



Cadastral Mapping

The mapping SGB publishes are compendiums of all cadastral data on Canada Lands. They are disseminated in three formats: a shapefile file (SHP) containing polygon, line, and point data derived from all the survey plans; a drawing file (DWG) which contains the line information from all the survey plans as well as annotation; and a keyhole markup language file (KML) suitable for overlaying in earth browsers such as Google Earth.



Natural Resource Development

SGB manages surveys and boundaries in support of natural resource development on most First Nation land and the Northern Territories. Surveys have included parcels for hydrocarbon leases and mineral claims under gold and diamond mines. Additionally, SGB has surveyed large expanses of jurisdictional boundaries, such as the recent work on the Northwest Territories-Nunavut boundary, to make mining districts clearer.



The value of SGB expertise

Surveying and mapping are indispensable for defining locations and for using this location data for other analytical purposes, such as routing emergency vehicles, planning land uses, avoiding natural hazards and environmentally sensitive areas, and giving certainty to owners and leaseholders on the extent of their property.

Boundaries and the developing world

Boundaries are critical. Among other uses, boundaries set out where a family's rights in land start and end, they separate incompatible behaviour on that land, and they limit undesirable influences over that land through regulation (instruments, legislation and constitutions). All boundaries give the poor a voice, allow economies to blossom, and encourage the stewardship of environmental resources.

Typically, boundaries are defined through a process of surveying the parcel by demarcating boundaries, drafting plans and preparing transfer documents based on the descriptions (e.g. Lot 4, Plan 23). However, in keeping with the UN Habitat commitment, unorthodox approaches must be con-

sidered.¹ These include non-surveyed sketches, reduced or deferred demarcation, picture evidence (still and video imagery) and community mechanisms for defining bounds, allocating interests, choosing uses and resolving disputes. However, two sacrosanct principles remain - that land information be geo-referenced (where is it?) and that parcel descriptions be unambiguous (is this it?).

Thus, boundary and cadastral systems must be sensitive to context (the social, political and economic environment), be technology-appropriate and be flexible in meeting the needs of the community. These principles characterize the work of SGB with communities of Aboriginal peoples in Canada. There are over 600 such communities that range significantly in location, population, area, economy, urbanization, capacity and sophistication. SGB recognizes that establishing boundaries in these communities is mostly a community calculus; it is not merely a technical, measuring exercise.

¹ Can-Du Working Paper 2. Do windmills affect parcel fabric? May 2012

