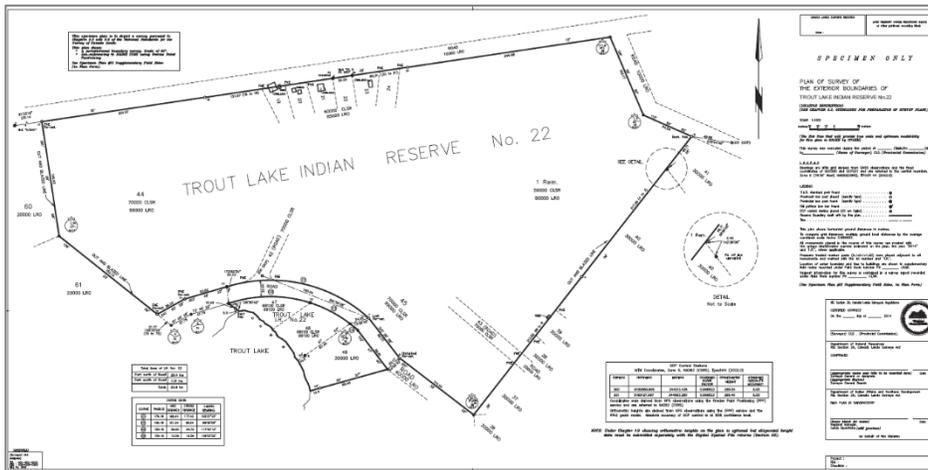


PLAN PREPARATION AND OFFICE WORK

The most labour-intensive cost driver for surveys occurs “behind the scenes”, not visible to the client.



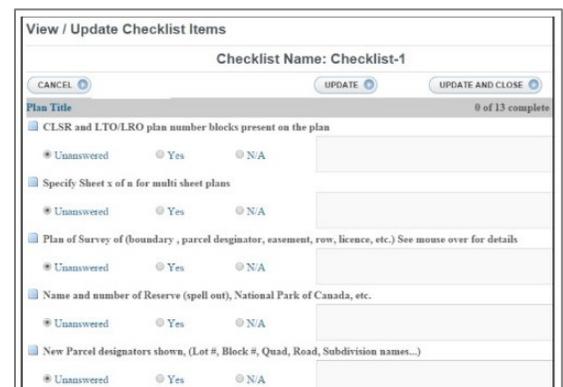
The research, calculations, drafting and quality control of the plan accounts for the most time involved when compared to all other aspects of a survey. This may be surprising to some, as one would think that the field work component (with field personnel, equipment, travel, etc.) would be the most labour intensive.

However, the results of the survey cost study indicated that *surveyors and their staff spend more time (1) doing calculations, (2) drafting plans and (3) performing quality control checks; than in any other activity in the process.*

1. CALCULATIONS

After the field crew submits their data/results, the information is reviewed and assessed by the surveyor. According to the **survey cost study**, this accounts for approximately 5.7 labour hours¹ per project (on average). The type of work and issues encountered in the field can add to the difficulty of the analysis and calculations:

- In addition to being hard to find, old evidence (for example: wooden posts set in the 1900’s) was not set or measured with the same instruments or accuracy, so it can be challenging to reconcile with modern-day equipment and accuracies.
- Sometimes modern survey evidence has been destroyed over large areas due to new development (roads, pipelines, large buildings). Computing the original positions of the monuments from very limited existing evidence can be difficult and time consuming.



¹ Note that the hours referenced for each task will differ with each survey project. This number referenced is an average amount based on the projects reviewed for the Survey Cost Study only.

PLAN PREPARATION AND OFFICE WORK

- Natural boundaries can be defined in various ways, such as the ordinary high water mark (OHWM), middle-thread or water's edge of lakes, creeks or rivers. Re-measuring previous natural boundaries or making survey ties to current ones, can often require extra care and time during evaluation of the field work.



When the calculations are complete, and the survey monuments are placed, the drafting of the final survey plan proceeds. This is usually completed by an experienced draftsman who is familiar with the Canada Lands survey system and plan requirements.

2. DRAFTING PLANS

The drafting of a survey plan and report (where required) must be done in accordance with the National Standards for the Survey of Canada Lands² (Standards). The experience of a company's employees with surveys on Canada Lands and the complexity and availability of reliable survey information/evidence in the area can directly affect and extend the time needed to complete a plan.



*On average, the **survey cost study** found that the number of labour hours spent on drafting the plan was 23.3 hours³.* This is the most labour-intensive part of the overall survey. The drafting of the plan is also one of the more important parts of the survey process, as it visually depicts what was done by the field work and graphically defines the extents of the parcel or boundary being dealt with.

² Technical standards that apply to surveys on Canada Lands:
<http://clss.nrcan.gc.ca/clss/surveystandards-normesdarcentage/>

³ Note that the hours referenced for each task will differ with each survey project. This number referenced is an average amount based on the projects reviewed for the Survey Cost Study only.

PLAN PREPARATION AND OFFICE WORK

3. QUALITY CONTROL CHECKS

Once the draftsman has completed the preliminary plan, the surveyor performs a review and then conducts a quality control check on the plan. This ensures that it properly depicts all the field work, conforms to the requirements of the Standards and reflects the requirements in the Survey Instructions.

*According to the **survey cost study**, approximately 6.4 labour hours² per project (on average), is spent on the quality control of the plan by the surveyor (who will be signing the plan).*

Any changes to the Standards, the scope of the project or Survey Instructions directly impact the amount of labour required.

In October 2016, the Standards were amended to enable the survey plan to be digitally signed and submitted.

“While digitally submitted plans have clear benefits and potential for future cost savings and efficiencies, there is a cost to implementing this change”.

Other changes to the Standards included the types of plans allowed, submission of CAD (Computer Aided Drafting) files and other plan requirements. These changes can cause a previously experienced draftsman and surveyor to have to become re-accustomed with the plan requirements. While the surveyor does not charge his/her client for the additional training to become re-familiar with the Standards, the efficiency that the surveyor and draftsman once had, must be re-attained.



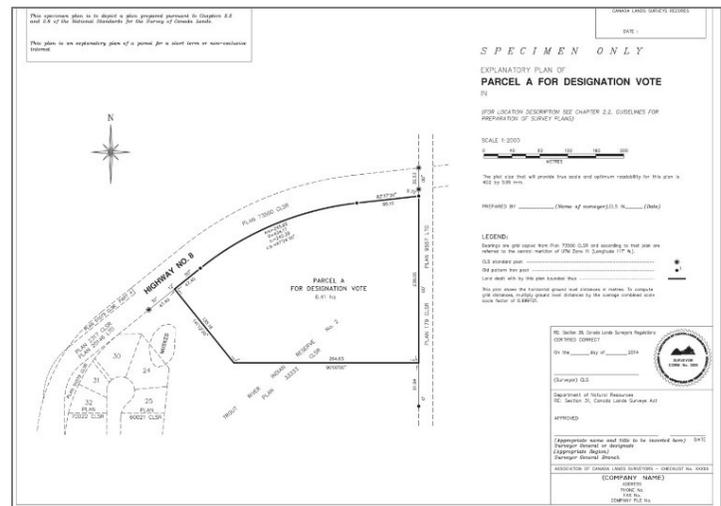
Where changes to the scope of work are necessary, it is important to identify these as soon as possible throughout the process.

If changes, such as lot configurations or sizes, are identified once the plan has been prepared there will be additional costs if extra field work is required. Regardless, there are additional costs to the drafting of the plan and the quality control of the additional work by the surveyor. Even though it may seem to be as easy as “moving some lines and text around”, there is a lot more involved in the re-drafting of a plan. There is a lot of data associated/tagged with each point, line and text in a CAD file, moving one line can cause a lot of additional work to address other parts of the digital file.

PLAN PREPARATION AND OFFICE WORK

Upon the surveyor completing the quality control checks on the plan, survey report (if required) and CAD file, any necessary amendments are completed. Errors or issues identified by the MyCLSS⁴ checklist are to be addressed by the surveyor before the plan can be accepted by the Surveyor General Branch (SGB)⁵ for their final review. The plan is then certified by the surveyor and submitted to the SGB through the plan submission website MyCLSS.

Depending on the type of plan being prepared, the First Nation's approval may be required prior to the plan submission to the SGB.



There may be ways to mitigate the costs of Plan Preparation and Office Work:

- The Cost Study notes the value of good relationships, particularly between the Land Manager and the surveyor. The Land Manager may choose a surveyor that has demonstrated experience working in the Canada Lands Survey system, in-turn reducing costs associated with the challenges identified above.
- Land Managers should aim to prepare a thorough, accurate Scope of Work, avoiding changes after the survey has commenced. Understanding the Standards will be very helpful in this regard and can be discussed with a surveyor and/or staff at the SGB.
- Land Managers can improve awareness within the community regarding the impact of survey monument destruction and the many increases in costs that can result in future surveys, including complications in Plan Preparation and Office Work.

⁴ My Canada Lands Survey System (MyCLSS) is a collaborative site between the Association of Canada Lands Surveyors (ACLS), the Surveyor General Branch (SGB) and the Land Administering Agencies to initiate, request, monitor, submit and approve survey plans and related information and processes

⁵ Surveyor General Branch (SGB) of Natural Resources Canada (NRCan)