



Many sections are available from maps and papers that are already in the public domain; many of these are quite short which makes them of limited value for our purposes. The main limitation of the longer sections produced in the 1960's and 1970's (and later). is the cautious approach to how structures link or terminate in the subsurface (Fig. 2.).

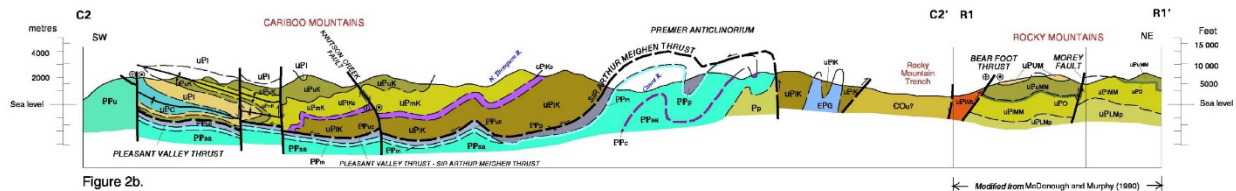


Fig. 2. Section example from Murphy, (2007); GSC Map 2110A, Canoe River Map section C2 which will be a contributing portion of section AB01.

There are also some published sections which provide the option to extend structural sections further to the west to link with the deformed terranes in BC (Fig. 3.).

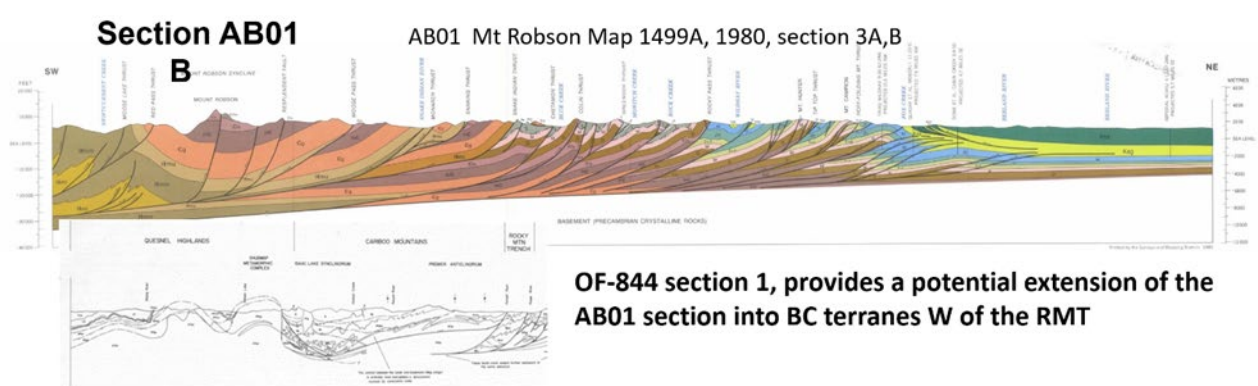


Fig. 3. Upper section, a cross-section from northern Alberta with a more detailed subsurface interpretation on the Mt Robson Map section 3A-B (Mountjoy, 1980. Lower section a possible westward extension of the section from Campbell et al. (1982).

We have created a master map showing sections from various authors, and all located sections are being considered as potential inputs for the cross-sections many of which are now confirmed.

Regarding well data we have access to well logs through Petro Ninja, coverage is good in Alberta, but only more recent wells are available in BC. We have also obtained access to a selection of well logs in SEBC from CNRL and MJ Systems have a comprehensive set of well log data for BC that we have access to. We also have MJ Systems well log data for north of 60 available on the Atlas Google drive. We can also access dip meter data from Divestco and summary composite logs from Canstrat. Well tops are available in the tops database built from various data sources for Atlas authors to use and we have also built a database of deviation surveys for wells in Alberta and BC.

A key element of constructing the sections is to combine the large number of datasets that contain well data into loadable files for the section construction software. Corey Hooge has created software that can take a supplied list of well UWI's and extract all the data for those wells and

produce a set of multiwell files that substantially streamlines and automates the data loading (Fig.4).

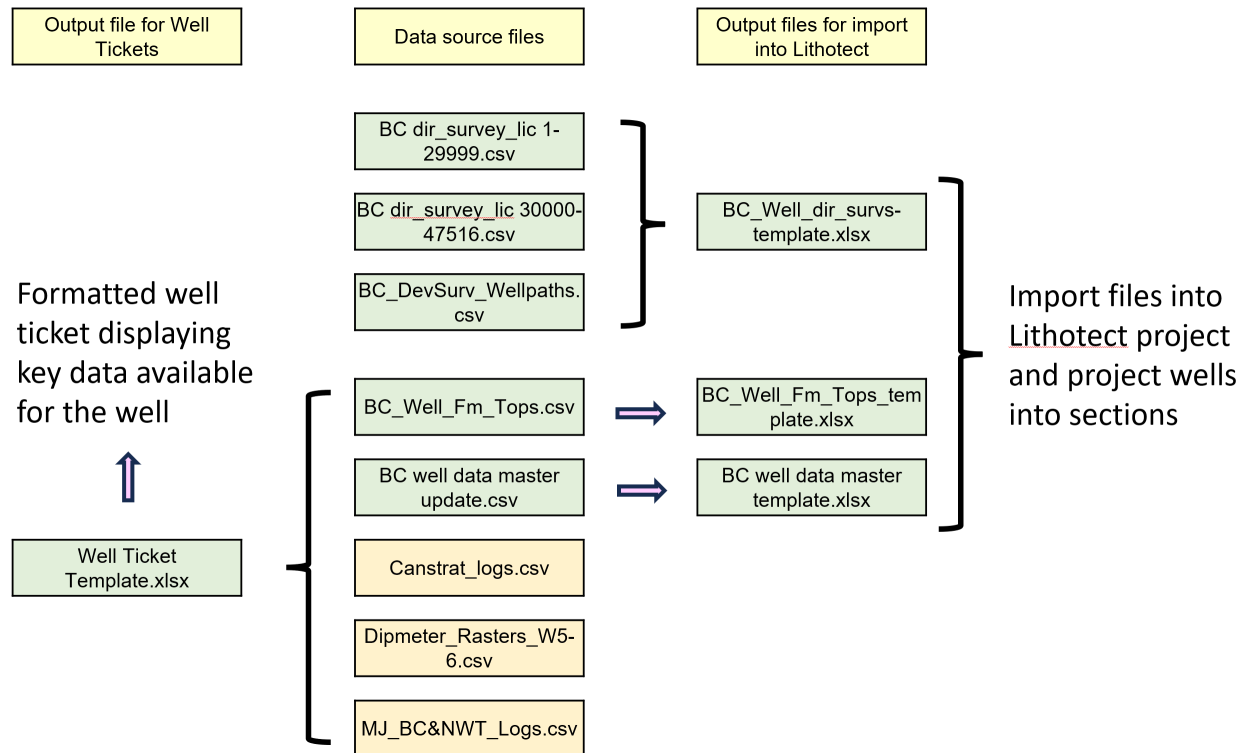


Fig. 4. Coding workflow for combining well data for BC wells. The software also creates well tickets for each well summarizing the key data.

Obtaining access to seismic data for Atlas authors from Pulse Seismic and Explor Data is now covered by an agreement. This is particularly important for the Foothills and Rockies and Mackenzie Mountains groups to help select which structural cross sections to focus on. A basic process is now in place for QCing and transferring the seismic data as images or SEG Y data but we need to minimize staff time commitments for Pulse and Explor with the assistance of Corey Hooze. There is also the opportunity for other Atlas chapters to access seismic data.

## Current Status of Section Selections

Seismic and well coverage north of 60 is quite sparse with few published structural sections in the NWT the majority of which come from first-generation sections published with GSC A-series maps. There are only two palinspastic restorations of sections that have been published for the Mackenzie Mountains both of which have some challenges. Areas outlined in green show areas targeted for possible cross-sections (Fig. 5.). These would cover the northern Liard Basin east to the Bovie Fault (1), Mackenzie and Franklin mountains (2, 3, and 4), the Colville Hills (5, could connect to 4), and Eagle Plain + Richardson Mountains (6).

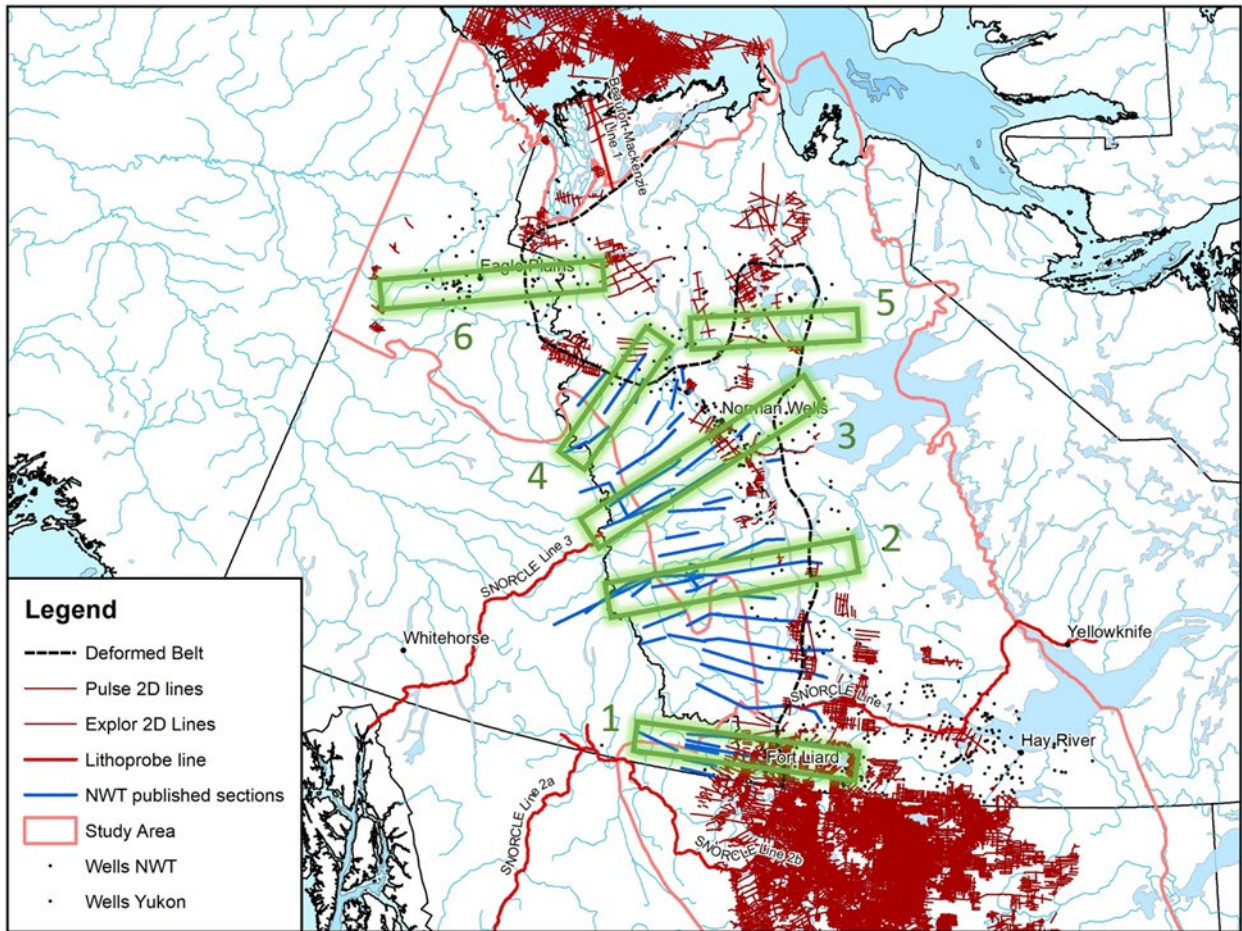


Fig.5. Map for north of 60 showing published sections, wells and seismic lines owned by Pulse and Explor.

In BC there are some published cross-sections with good coverage except in the northern area. The example section shown in Fig.6 is part of a series of 7 cross-sections of the BC Foothills created using extensive well data and some seismic data as part of a project to assess water disposal well potential for the Montney Play (Hayes et al, 2021). These sections need minimal modification but require some extension to the SW (Fig. 6.).

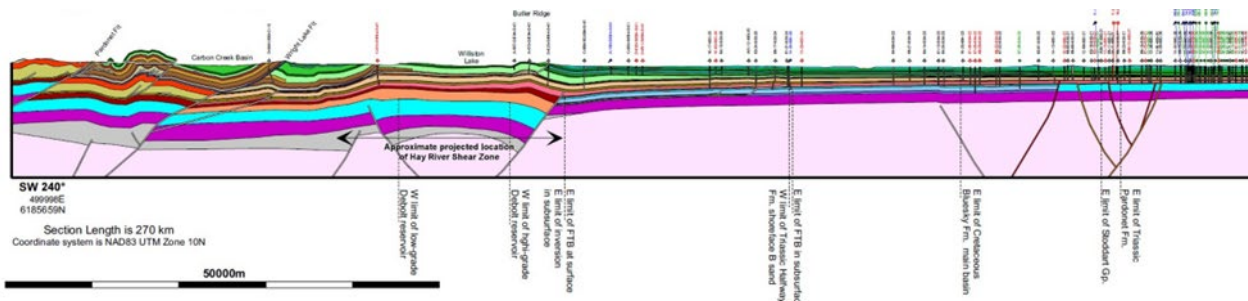


Fig. 6. Portion of the Carbon Cross-section from Hayes et al. (2021).

In Alberta there are many structural cross-sections to choose from that come from the GSC, AGS publications, PhD and MSc theses and published papers (Fig.7.). Finalizing the sections to form the basis for the cross-sections to be used for the Atlas is close to completion.

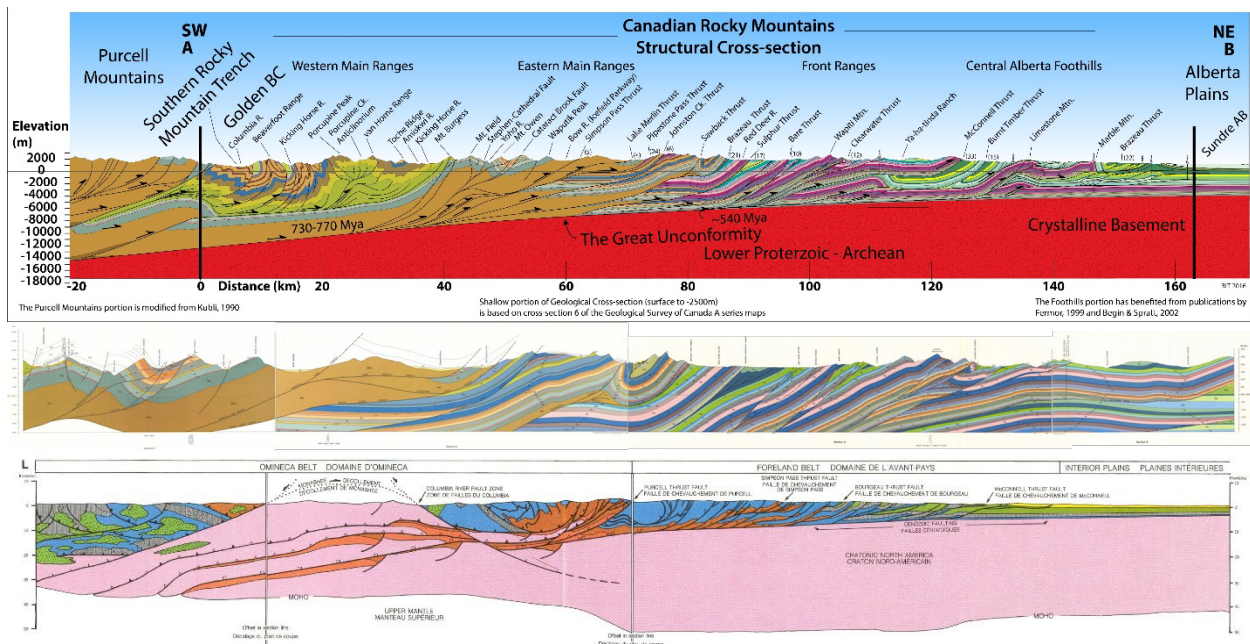


Fig. 7. The Taerum section requires seismic data control and any newer wells to be incorporated. The Bow-Athabasca Project section 6 may provide more stratigraphic detail and extension to the SW across RMT can be done by using the Gabrielse and Yorath (1991) section.

### Plans for 2024

The Atlas section line locations and authors will be finalised in Q1 2024.

Planned section spacing is about 50km but based on author assignments we can infill to achieve this as time/resources permit. Authors working on multiple sections will have to prioritize the order in which they work on the sections.

Workflows for how to compile data into the sections have been developed to provide the section authors with a complete template that contains all available data so that author effort is focused on section interpretation and construction.

We are still negotiating access to licences for structural cross-section construction software and anticipate that section interpretation will be well underway by Q2 2024.

If this proves impractical, we have an alternative workflow in which the sections will be constructed using graphics software e.g. CorelDraw, Illustrator and Canvas.

There are areas where alternative models are possible, e.g. detachment depths, thin vs thick skinned deformation. Subsurface control is equivocal so alternative models should be considered.

Some selected sections will be extended into the foreland basin to illustrate the linkage between deformation in the deformed belt to deformation in the foreland basin. We will also extend some sections to W across the RMT to link deformation back into the Cordillera in BC. The goal is to provide a holistic view of deformation of the North American Margin

Once the work on the cross-sections is completed the team will then be able to create a synthesis of the deformation history of the FTB through the Mesozoic and Cenozoic and to consider the relationship between deformation and the stratigraphic history of the basin including palinspastic restorations of selected units.

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