

The Making of a Geological Map of the University of Saskatchewan Campus

Adam Larsen*

Department of Geological Sciences, University of Saskatchewan, 114 Science Place, Saskatoon, SK, S7N 5E2, Canada
adl438@mail.usask.ca

Kevin Ansdell

Department of Geological Sciences, University of Saskatchewan, 114 Science Place, Saskatoon, SK, S7N 5E2, Canada

and

Tim Prokopiuk

Department of Geological Sciences, University of Saskatchewan, 114 Science Place, Saskatoon, SK, S7N 5E2, Canada

Summary

The University of Saskatchewan campus contains a large number of boulders, either isolated or in groups, which have been placed during construction over many years. These are examples of rocks which were originally transported to the Saskatoon area by ice sheets during the last Ice Age. As the location of Saskatoon is such that access to outcrops of rocks is limited, it was decided to document the location and characteristics of each boulder to generate an inexpensive Boulder Map of the campus. Three “Geo-Walks” were developed that link good examples of igneous, metamorphic, and other unique boulders. The new map can be used for public outreach and by students in junior and senior Geology courses, and includes photos and descriptions of selected boulders, and a glossary of geological terms. A similar approach could be used on many university campuses to allow easy access to rock “outcrops” and provide geoscience information to the public.

Introduction

The objective of this project was to generate a Boulder Map of the University of Saskatchewan campus, which will be used for public outreach and by students in junior and senior Earth Science courses. Examination of rocks in the field, rather than just in the laboratory, is an important component in geoscience education. The location of Saskatoon is such that access to outcrops of rock is very limited, and so it is logistically difficult to organize geology field trips for students or the general public. However, the university campus is decorated with large numbers of boulders, either isolated or in groups, which have been placed over the years during the construction of the campus. These tend to be overlooked, but represent a superb resource as they comprise a variety of igneous, metamorphic and sedimentary rocks. These rocks were collected locally, and represent some of the material that was originally transported to the Saskatoon vicinity by ice sheets during the last Ice Age.

The concept of this project was generated by Kevin Ansdell, in discussion with Mel Stauffer, the Chair of the annual conference of the Geological Association of Canada and Mineralogical Association of Canada, which was hosted by the Department of Geological Sciences in 2002.

Approach

During the summer of 2009 the campus was systematically mapped to locate and examine every boulder. Each of the boulders was marked on a digital base map of the campus (Figure 1) and GPS coordinates recorded. Individual boulders (Figure 2) were described in detail, including rock type, grain size, mineralogy, structural elements and other notable features. If a location featured multiple boulders in a small area (Figure 2) it was scanned for exceptional

examples which demonstrated specific geological concepts. If no exemplary boulders were found in the area, it was identified as a location with a “group” of boulders. After recording the location and geological data, digital photographs were taken of all the boulders and areas to assist with later identification and interpretation, and ultimately for use on the final product. All the information on every boulder on campus is preserved in a simple Excel spreadsheet.

The overall goal was to design a format using this collected information that would illustrate concepts to people with little or no geologic background. The original idea was to show the location and geological information of all boulders on campus. However, as 295 individual boulders, and hundreds more as part of the groups, were examined and many were small and in locations with difficult access, it was decided to take the locations of specific boulders and develop “Geo-walks”. These were separated into three categories: Igneous, Metamorphic and Unique. A Sedimentary Geo-walk was not developed as there are only a small number of, and little variety in, boulders of sedimentary origin on campus. Each highlighted boulder was selected to illustrate a wide variety of general geological concepts.

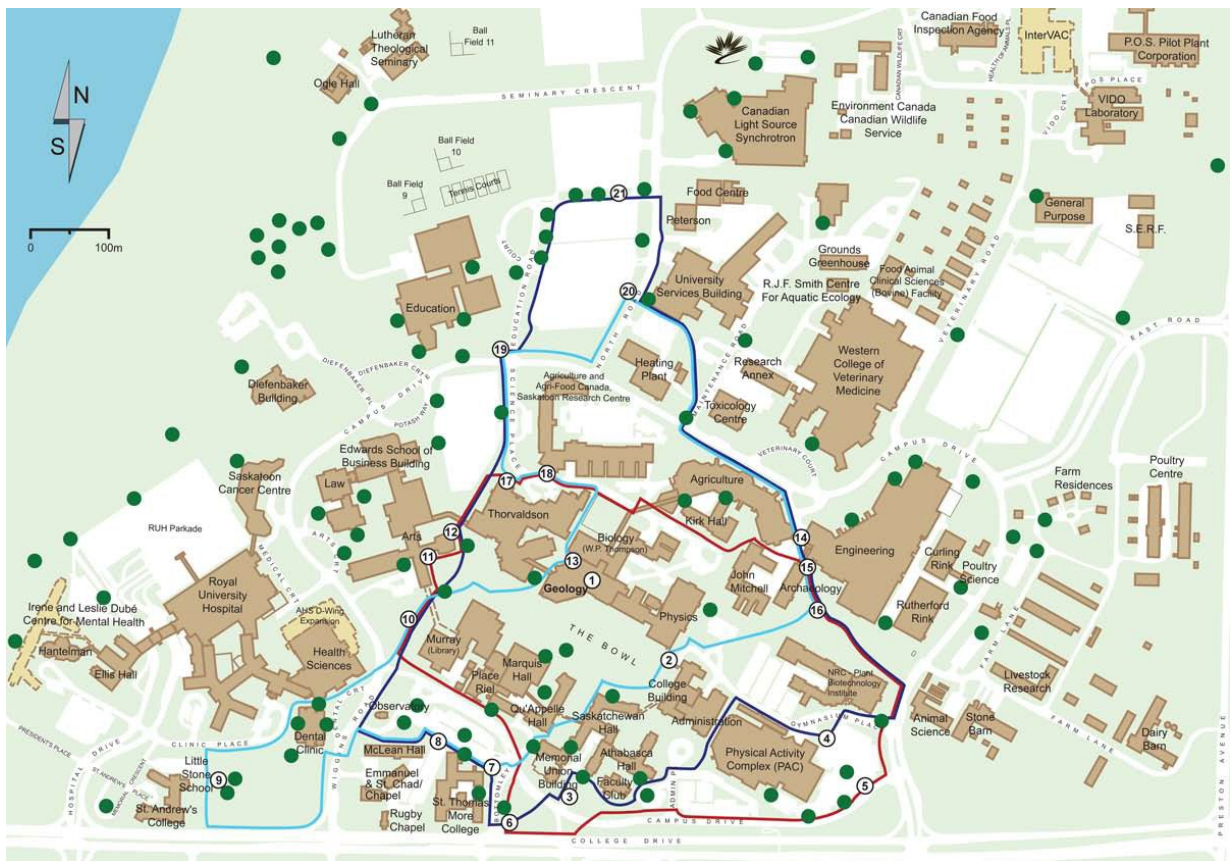


Figure 1: Digital base map of the University of Saskatchewan campus with all boulders. Numbered dots represent boulders highlighted in the brochure. Solid lines represent Geo-Walks: Red – Igneous, Blue – Metamorphic, Black – Unique.

It was decided that a foldable map would be a suitable end product, and would be available for purchase at a nominal cost. Inspiration for the layout was provided by examining numerous road and geological maps, and particularly the Geological Highway Map of Saskatchewan (Maxeiner et al., 2002). Nevertheless, the map is also available for free download in pdf format from the website of the Department of Geological Sciences (<http://artsandscience.usask.ca/geology/>).

One side of the brochure includes the campus map itself, with the boulders to be used for each of the “Geo-walks” identified by number. The “Geo-walks” are shown by different coloured lines on the map, and are designed to start and finish at the Natural Sciences Museum in the Geology Building. A photograph and simple description of the geological features of each of the numbered boulders are provided. The other side of the brochure was used to provide information about Geology and the Department of Geological Sciences, partly as a promotional tool. In addition, information is provided on how to use the map, a summary of the “Geo-walks” and building stones on campus, and a glossary of geological terms. With such a large amount of information to be displayed it was important to develop an appealing layout that efficiently used the available space.



Figure 2 - A typical individual boulder (left) and a typical group of boulders (right) found on campus.

Conclusions

This project was created as an inexpensive option to showcase geological concepts to the public by explaining the characteristics of a variety of different rock types, as well as a promotional tool for the Department of Geological Sciences. The map, as displayed on the poster, was first printed in the first quarter of 2010 and is available from the Department of Geological Sciences, and from the Department of Geological Sciences website as a downloadable pdf. Future additions to the website may include a searchable database of boulders with documented information and pictures, including ones not highlighted on the map. In addition, the map will be incorporated into first and second year geology labs to supplement classroom learning with field techniques. A similar approach could be used on many university and college campuses, with a suitable selection of boulders, to allow easy access to rock “outcrops” and provide geoscience information to the general public.

Acknowledgements

Thanks to Kyle Larson, Yuanming Pan and Mel Stauffer for advice on rock identification, Sharla Larsen and the College of Arts & Science Communications, Development & Alumni Relations office for proofing, Jason Belhumeur for his work on the website and providing photos, and the U of S Facilities Management Division for the base map.

The development of this map was funded by the proceeds from the Geological Association of Canada and Mineralogical Association of Canada Annual conference held at the U of S in 2002, and by the University of Saskatchewan Summer Student Employment Program (USTEP).

References

R.O. Maxeiner et al. (eds.), 2002, Geological Highway Map of Saskatchewan, Saskatchewan Geological Society Special Publication, 15.