



# Rock-Eval, lithochem, gamma ray spectrometry, vitrine reflectance, and X-ray diffraction analysis of the Besa River Formation in the Rocky Mountains of northeastern British Columbia

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**Front cover:** Carbonaceous, finely laminated, fissile shale 50 to 52 m above the base of the Besa River Formation section measured west of Stone Mountain. Gradations on staff are 10 cm. **Photo by Filippo Ferri.**

Appendices, including datafiles, for this GeoFile can be downloaded from  
[http://cmscontent.nrs.gov.bc.ca/geoscience/PublicationCatalogue/GeoFile/BCGS\\_GF2019-10.zip](http://cmscontent.nrs.gov.bc.ca/geoscience/PublicationCatalogue/GeoFile/BCGS_GF2019-10.zip)



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Filippo Ferri<sup>1a</sup> and Julito Reyes<sup>2</sup>

<sup>1</sup>British Columbia Geological Survey, Ministry of Energy, Mines and Petroleum Resources, Victoria, BC, V8W 9N3

<sup>2</sup>Geological Survey of Canada, Calgary, AB, T2L 2A7

\*corresponding author: Fil.Ferri@gov.bc.ca

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**Keywords:** Besa River Formation, oil shale, Liard basin, Horn River Formation, Stone Mountain

## Summary

Middle Devonian to Lower Carboniferous shales and siltstones of the Besa River Formation exposed in the Rocky Mountains (Fig. 1) are equivalent to shale gas-bearing rocks in the subsurface of the Liard Basin and, farther east, in the Horn River Formation of the Horn River Basin (Fig. 2). To better understand these shale gas-bearing horizons, Ferri et al. (2012, 2013) investigated the Besa River Formation in outcrops near the southwestern margin of Liard Basin (Fig. 2). Complementing data and interpretations in Ferri et al. (2012, 2013), herein we present the full data set from two sections that were measured and systematically sampled in the Stone Mountain area (Fig. 2). These sections and data sets will provide a reference for shale gas-bearing rocks of the Besa River Formation in the subsurface of southern Liard Basin.

We measured a nearly complete section of the Besa River Formation west of Stone Mountain and a smaller segment of basal Besa River Formation strata south of Stone Mountain, along the northern border of Stone Mountain Provincial Park. The section west of Stone Mountain is a composite. The base of the lower part of the section is at 387019E 6523897N (all UTM coordinates are NAD 83, Zone 10); the 40 m stratigraphic level is at 386925E 6523918N; the 116 m stratigraphic level is at 386818E 6523945N; and the 181 m stratigraphic level is at 386733E 6523956N. For the upper part of the composite section, the base is at 386740E 6523900N, and the top is at 386598E 6523870N. The UTM coordinates for the base of the section south of Stone Mountain are 395145E 6505895N.

In the accompanying files ([BCGS\\_GF2019-10.zip](#)), we summarize analytical methods (Appendix 1) and, for both the

section west of Stone Mountain (Appendix 2) and south of Stone Mountain (Appendix 3) present location maps, graphic logs, lithologic descriptions, and images of representative rock types. Results of whole rock and Rock-Eval geochemistry, bulk mineral composition, vitrine reflectance, and gamma ray data are presented as Microsoft Excel spread sheets.

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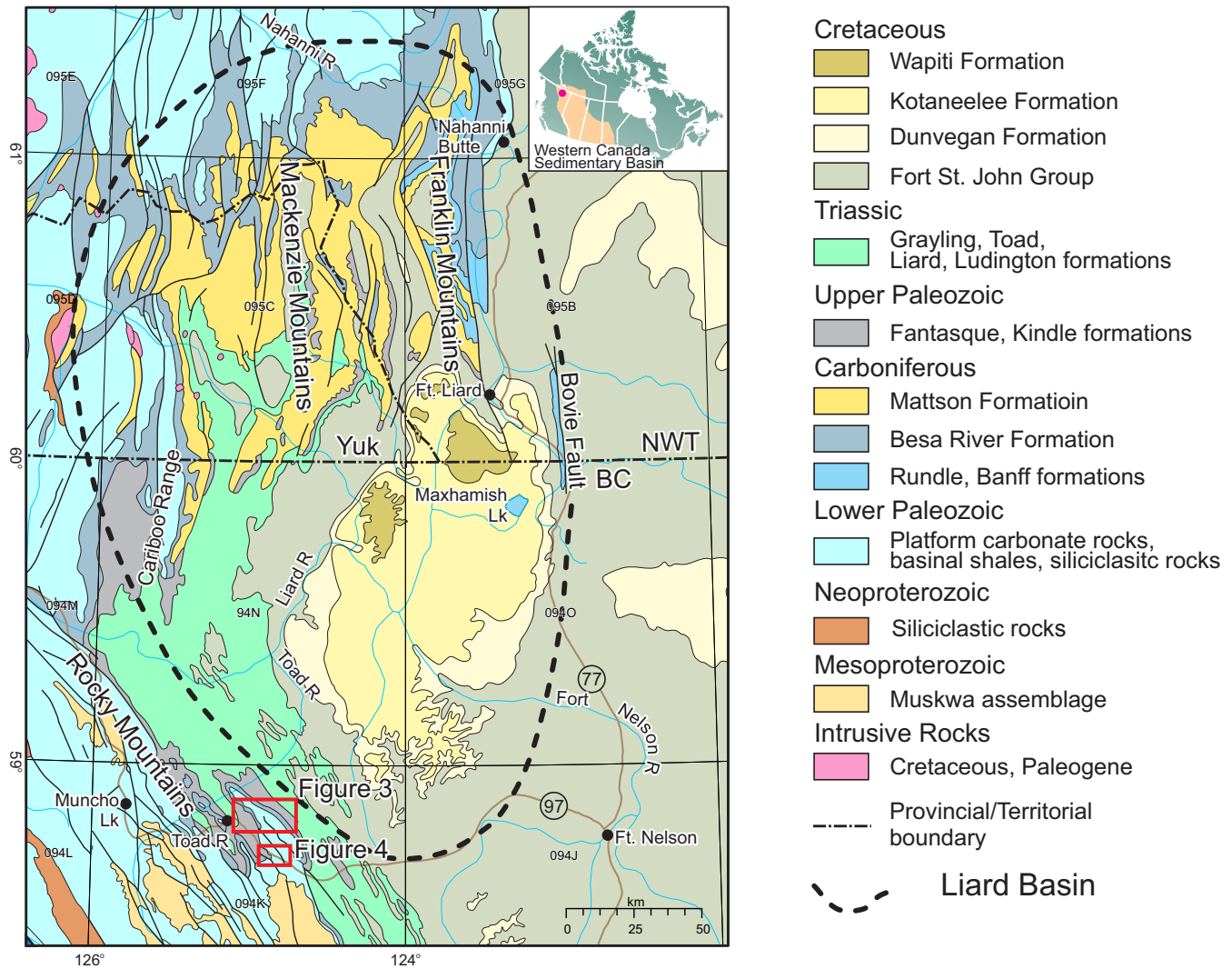
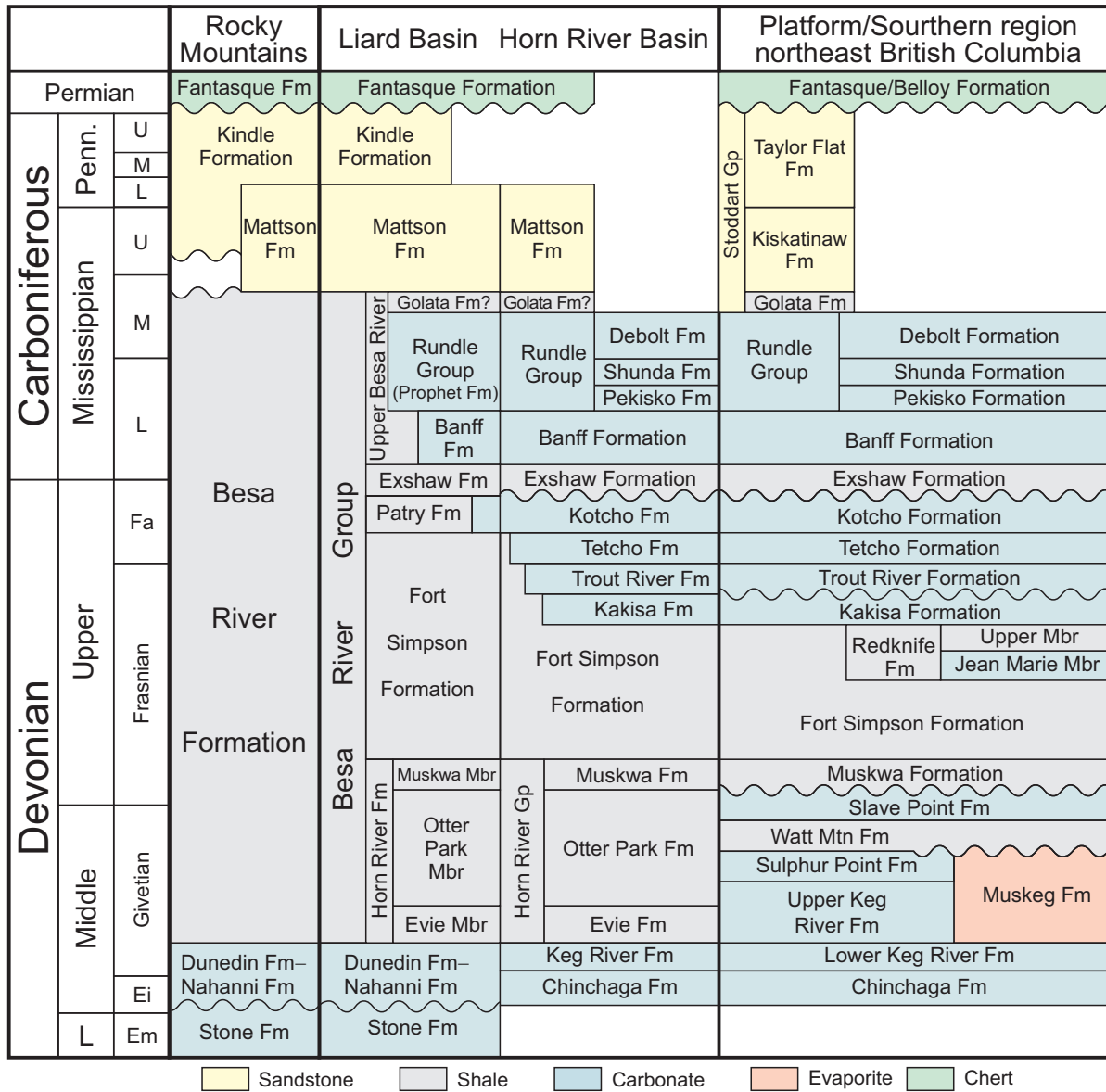


Fig. 1. Geologic map showing the general outline of the Liard Basin. Base map is from Wheeler and McFeely (1991).



Sandstone   
  Shale   
  Carbonate   
  Evaporite   
  Chert

Fig. 2. Stratigraphic units in the Liard Basin the Horn River Basin and the platform succession to the east, illustrating correlations from exposures in the Rocky Mountains to the subsurface of the Western Canada Sedimentary Basin.

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