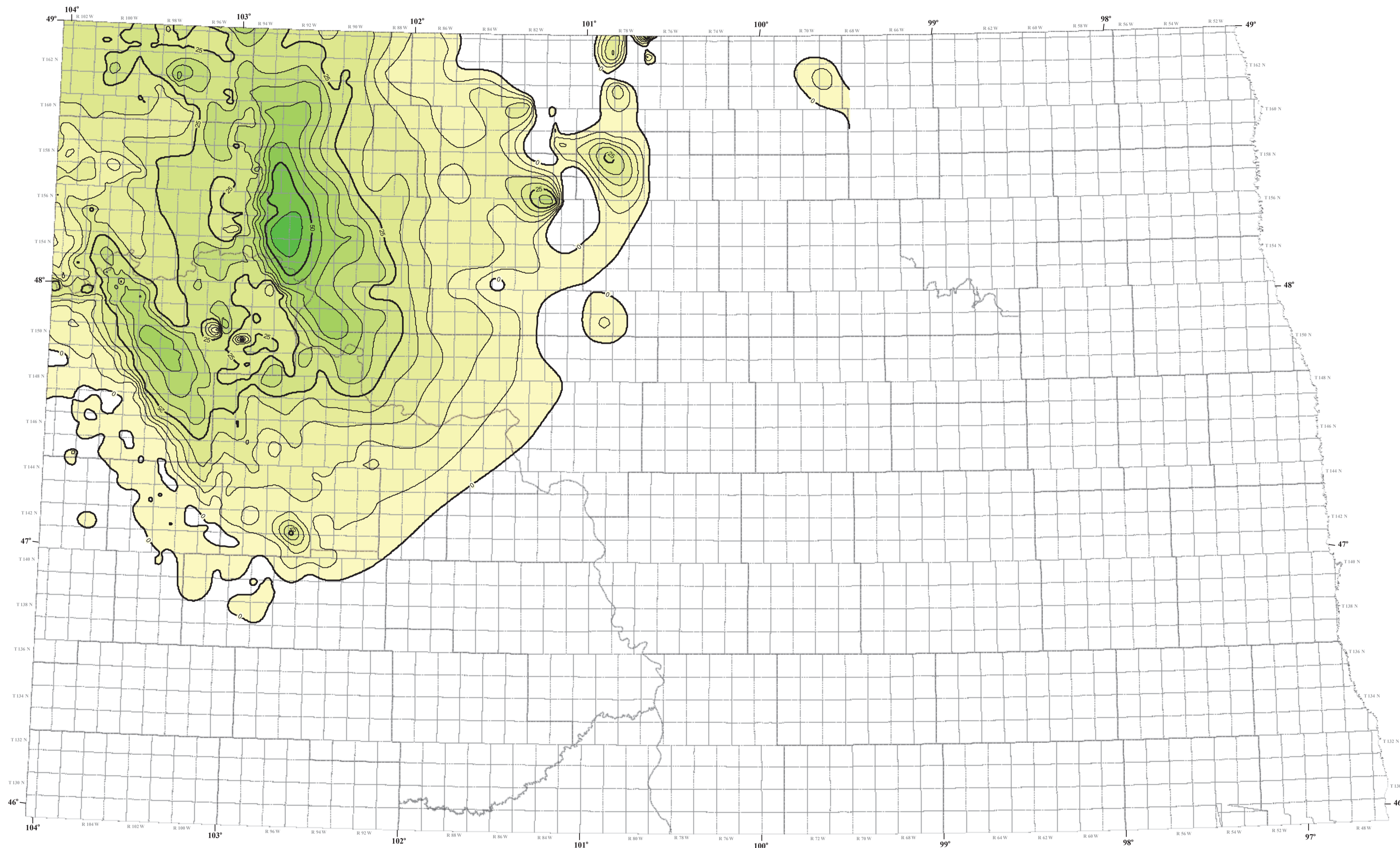


Isopach of the Lower Bakken Shale

Julie A. LeFever

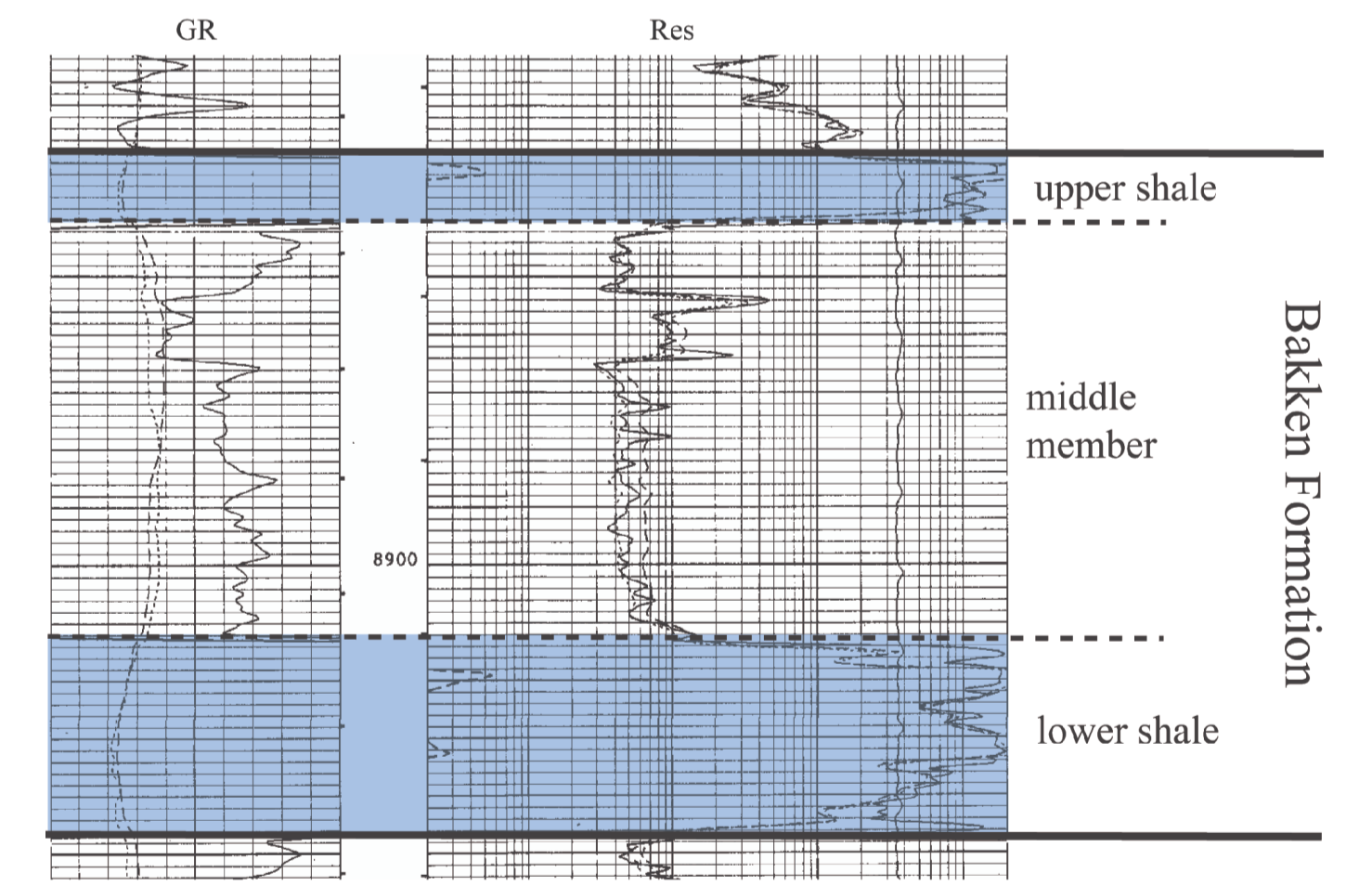


ISOPACH OF THE LOWER BAKKEN SHALE

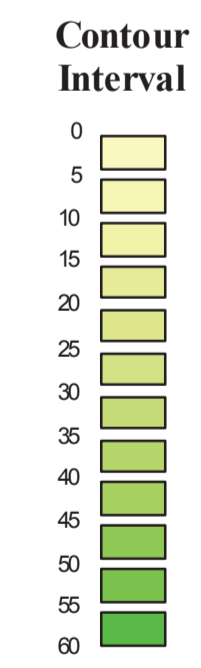
The lower shale member reaches a maximum thickness of 56 ft (17 m) with a well defined depocenter along the east flank of the Nesson anticline (see Map). A major thickness trend extends in a northwesterly direction across McKenzie County and appears correspond to the Heart River fault. The thickness change may be the response of the shale to Prairie salt tectonics. The sub-basin present in Bottineau and McHenry counties is not as significant in the isopach of the lower shale as it is in the upper members.

The shale is a dark brown to black, fissile, non-calcareous, organic-rich shale. Small amounts of finely laminated to massive siltstone, limestone, and sandstone are present towards the base of the shale. Where present, fractures are smooth and conchoidal, but can be irregular or blocky. Fractures are subparallel to bedding and are heavily oil stained. It is generally less organic than the upper shale. The organic matter appears to be distributed evenly throughout the member. Quartz is the dominant mineral with minor amounts of muscovite, illite and other clays. Pyrite is present in lenses, laminations, or is finely disseminated throughout. Fossils within the shale member include conodonts, algal spores, brachiopods, fish teeth, bones and scales. Localized changes in lithology include the development of siltstone or limestone beds near the base of the formation. Well developed lag deposits are also locally present along the base of the member.

SENW Sec. 11, T.160N., R.95W
 Conoco, Inc.
 #17 Watterud "A"



Typical Log



Explanation

- Thickness of the Lower Bakken Shale (in feet)
- Township Boundaries
- County Boundaries

