
Geochemical and Mineralogical Characterization of the Eagle Ford Shale: Results from the USGS Gulf Coast #1 West Woodway Core

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EXTENDED ABSTRACT

The Eagle Ford shale is a major continuous oil and gas resource play in south-central Texas and a source for other oil accumulations in the East Texas Basin. As part of the U.S. Geological Survey's (USGS) petroleum system assessment and research efforts, a coring program to obtain several immature, shallow cores from near the outcrop belt in central Texas has been undertaken. The first of these cores, USGS Gulf Coast #1 West Woodway, was collected near Waco, Texas, in September 2015 and has undergone extensive geochemical and mineralogical characterization using routine methods to ascertain variations in the lithologies and chemofacies present in the Eagle Ford at this locale. Approximately 270 ft of core was examined for this study, focusing on the Eagle Ford Group interval between the overlying Austin Chalk and underlying Buda Limestone (~20 ft of each). Based on previous work to identify the stratigraphy of the Eagle Ford Group in the Waco area and elsewhere (Liro et al., 1994; Robison, 1997; Ratcliffe et al., 2012; Boling and Dworkin, 2015; Fairbanks et al., 2016, and references therein), several lithological units were expected to be present, including the Pepper Shale (or Woodbine), the Lake Waco Formation (or Lower Eagle Ford, including the Bluebonnet, Cloice, and Bouldin or Flaggy Cloice members), and the South Bosque Member (Upper Eagle Ford). The results presented here indicate that there are three major chemofacies present in the cored interval, which are generally consistent with previous descriptions of the Eagle Ford Group in this area. The relatively high-resolution sampling (every two ft above the Buda, 432.8 ft depth, and below the Austin Chalk, 163.5 ft depth) provides great detail in terms of geochemical and mineralogical properties supplementing previous work on immature Eagle Ford Shale near the outcrop belt.

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