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MIDDLE MIOCENE TO RECENT STRATIGRAPHY AND PALEOGEOGRAPHY OF WESTERN NEBRASKA

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Two generally distinctive suites of sediments occur in western Nebraska, one dominantly volcaniclastic in origin deposited from the Oligocene through Early Miocene, and the other mainly epiclastic in origin deposited from the Middle Miocene through the Holocene. We have combined the epiclastic deposits usually placed in the Hemingford and Ogallala groups into an expanded Ogallala Group and have abandoned the member subdivisions of the Broadwater Formation.

About 19 million years ago, at the end of Arikaree deposition in western Nebraska, a major pulse of erosion (pre-Runningwater Formation, Ogallala Group), was followed by a fundamental change in depositional style and landscape evolution, characterized by a heterogeneous mixture of epiclastic valley fills. Sands and gravels from Rocky Mountain sources were first deposited in a major valley in the northern half of the area and later in valleys to the south. Episodic regional and local structural movements influenced the size and position of many Ogallala valleys. For the past 5 m.y. degradation, in response to major regional uplift, has greatly exceeded aggradation as the dominant factor affecting landscape evolution in western Nebraska. We believe that the modern Platte River system in its broad pattern began to form no earlier than late in the history of the Ash Hollow Formation of the Ogallala Group. The principal development of the North and South Platte valleys is Pliocene and younger, while other stream valleys in the region appear to have started to be formed more recently.