

Sedimentology and Depositional Environments of the Upper Cretaceous Prince Creek Formation, North Slope, Alaska

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A preliminary facies analysis of the Upper Cretaceous Prince Creek Formation along the Colville River between the Kikak-Tegoseak dinosaur quarry and the Liscomb bonebed, North Slope, Alaska, indicates that overall, the depositional environment was a swampy wetland alluvial/coastal plain. Typical facies include sandy, trough cross-laminated and rippled channel deposits, unconsolidated silt deposits and organic-rich siltstones and shales. Small, shallow, ribbon-like channels with sharp margins are surrounded by overbank mudstones. Channel facies are dominated by small, non-migrating (probably anastomosed) predominantly fine-grained sandstone channel fills, although larger, coarser-grained sandstone channel fills with well-developed lateral accretions surfaces (meandering channels) are less commonly observed. Non-channelized facies represent lake, lake margin, levee and crevasse splay environments and primarily poorly drained and weakly developed paleosols. Organic-rich siltstones and coaly shales indicate abundant plant material and hydromorphic environments. Root traces, organic debris and siderite are ubiquitous elements of overbank facies. Bentonites are locally present, becoming thicker and more numerous upwards within the section. Overall, these observations suggest that the Prince Creek Formation was deposited by relatively sluggish, fluvial systems that aggraded fairly rapidly and were subjected to frequent flooding.