

SYSTEM	SERIES	GROUP	FORMATION	MEMBER	BED	SECTION	THICKNESS (feet)	CHARACTER OF ROCKS		
CRETACEOUS	Upper Cretaceous	MONTANA	Fox Hills sandstone				150-250	Brown, sandy shale, sandstone and siltstone; contains marine fossils; forms low, grass-covered ridges north of area mapped. (Shown only on fig. 92)		
				Unnamed			200	Shale, soft, fissile, dark-gray, with ferruginous and limestone concretions. Locally contains sandy shale in upper part		
				Monument Hill Bentonitic			150	Dark-gray shale, bentonitic shale, and thin bentonite beds. Upper half of member weathers light gray and contains several zones of large, light-gray limestone concretions. Marine fossils abundant		
				Unnamed			450	Dark shale with abundant calcareous concretions. Sandy strata present locally in upper part of member		
				Pierre shale	Mitten Black shale			150-200	Shale, blackish, fissile, with a few iron-stained concretions; bentonite bed I at base. Forms prominent ridges	
						H		150-200	Gray shale with ferruginous and calcareous concretions; bentonite bed H in upper half	
					Groat sandstone			50-150	Sandstone, buff, massive, medium- to fine-grained, locally containing much glauconite and many marine fossils. Grades into overlying and underlying shale through zones of argillaceous sandstone	
					Gammon ferruginous			500-600	Gray shale containing many ferruginous concretions and thin lenses of silty sandstone. Outcrops characterized by barren slopes and long narrow ridges	
					Niobrara			120-200	Marl, brownish-gray, weathering light yellowish-gray; contains some thin noncalcareous beds and many thin bentonite beds. Formation as a whole very soft, and outcrops are largely covered by alluvium	
						Sage Breaks shale			195-300	Gray shale with several resistant zones, commonly supporting small scarps and buttes. Contains large, calcareous, septarian concretions, which weather light-gray
			Carlile shale	Turner sandy			150-260	Shale, sandy and silty, with many claystone and calcareous concretions, which weather yellow, and with persistent zones of thin sandstone beds near base and top		
				Pool Creek shale			70-150	Shale, dark-gray, fissile, with a prominent zone of ironstone concretions in upper part. Locally contains thin bentonite beds and limestone concretions showing cone-in-cone structure		
			Greenhorn				70-370	Shale, brownish-gray, calcareous, and marl, weathering light-gray to brownish-gray; upper part contains many calcareous concretions, a few small limestone lenses, and thin bentonite beds; middle part generally less calcareous and darker colored. East of Little Missouri River, lower two-thirds contains several thin, scarp-forming limestone beds which grade laterally westward into zones of concretions in upper part of Belle Fourche shale		
			Belle Fourche shale				425-825	Shale, dark-gray, fissile, with abundant manganiferous siderite concretions in lower 40 feet and very sandy shale with small sandstone lenses in middle part. Contains numerous bentonite beds including beds D and E in lower 30 feet and bed F in upper part. Stratigraphic position of top of formation rises westward, so that bentonite bed G is in Belle Fourche shale west of Little Missouri River, but in Greenhorn formation farther east		
		Lower Cretaceous	INYAN KARA			Clay Spur bentonite B		195-250	Shale, dark-brownish-gray, siliceous, much of it hard and brittle; weathers light-gray. Contains abundant fish remains and many bentonite beds, most persistent of which are bed B and Clay Spur bentonite bed in upper part. Included at base is 10-20 feet of soft, dark shale (Nefsy shale of former usage) that grades upward into siliceous shale	
						A		0-70	Sandstone, siltstone, sandy shale, impure lignite, and bentonite; beds of the different materials are discontinuous and their proportions vary from place to place	
					Skull Creek shale				250	Shale, dark-gray, fissile, with a few ferruginous and calcareous concretions. Lower part locally contains thin sandy strata and impure lignite beds. Many sandstone dikes in upper part
					Fall River				120-140	Sandstone, massive, crossbedded, ripple-marked, interbedded with thin beds of sandy shale and siltstone, the whole largely iron-stained; locally contains thin, impure lignite beds. Small ironstone concretions common in upper part
					Lakota	Fuson			60-110	Red, purple, and light-gray variegated shale and siltstone. Locally grades into superjacent Fall River formation

COLUMNAR SECTION OF ROCKS EXPOSED IN NORTHERN BLACK HILLS DISTRICT, WYOMING, MONTANA, AND SOUTH DAKOTA, SHOWING STRATIGRAPHIC POSITIONS OF BENTONITE BEDS