

Figure 11. Stratigraphic chart of the North Dakota Study Area and hydrocarbon bearing zones.

Era	Period		Group	Formation	¹ Hydrocarbons	
Mesozoic	Tertiary		Fort Union	Fort Union	Gas	
	Cretaceous	Upper	Montana	Hell Creek		
				Fox Hills		
				Pierre Shale	Gas	
				Eagle	Gas	
		Lower	² Inyan Kara	Niobrara	Oil	
				Belle Fourche		
				Mowry		
				Newcastle		
	Jurassic			Skull Creek		
				Dakota	Gas	
				Morrison		
				Swift		
				Rierdon		
Triassic			Piper			
			Nesson	Oil		
Paleozoic	Permian		Spearfish	Gas, Oil		
			Minnekahta			
			Opeche			
	Pennsylvanian	Minnelusa		Broom Creek	Nitrogen production	
				Amsden	Oil	
				Tyler	Gas, Oil; Source Rock	
	Mississippian	Big Snowy		Heath	Gas, Oil	
				Otter	Oil	
				Kibbey	Oil	
		Madison			Charles	Oil; Source Rock
					Mission Canyon	Gas, Oil; Source Rock
					Lodgepole	Gas, Oil; Source Rock
					³ Midale	Oil
					³ Ratcliff	Gas, Oil
	Devonian			Bakken	Gas, Oil; Source Rock	
				Three Forks Fm/ ⁴ Sanish sand	Gas, Oil	
				Jefferson		
				⁵ Birdbear	Duperow	Gas, Oil; Source Rock
					Souris River	Oil
				Manitoba		Dawson Bay
Prairie						
Elk Point					Winnipegosis	Gas, Oil
					Ashern	
Silurian						Interlake
	Stonewall	Gas, Oil				
Ordovician	Big Horn		Stony Mountain	Gas, Oil; Source Rock		
			Red River	Gas, Oil; Source Rock		
			Winnipeg	Gas, Oil; Source Rock		
Cambrian			Winnipeg	Gas, Oil; Source Rock		
			Deadwood	Gas, Oil; Source Rock		
Precambrian			Pre-Beltian			

Notes: ¹ Hydrocarbon production and/or generation noted where present; significant nitrogen production also noted.

² Inyan Kara Group has replaced Dakota Group in the United States Geological Survey lexicon for usage in North Dakota.

³ Midale and Ratcliffe are informal terms used locally to describe basal beds of the Madison Group.

⁴ Sanish sand is an informal term used for a member of the Three Forks Formation.

⁵ The Birdbear Formation is also informally referred to as the Nisku Formation.

Sources: Bluemle, et al., 1986; Carlson, 1985; Heck et al., 2008; IHS Energy, 2008; Peterson, 1995.