

**Table 1.** Ash content, sulfur content and forms, and sulfur isotopic composition of coaly samples and shales of the lower Laramie Formation, Kiowa core.

Depth (ft)	Description	Ash (wt.%)	S total (wt.%)	SO <sub>4</sub> S	Pyrite S	Organic S	δ <sup>34</sup> S per mil
1688.5	Shale w. organics	51.3	0.43	-	-	-	+3.0
1689.5	Gray shale	77.0	0.09	-	-	-	+3.5
1729.5	Gray shale	75.9	0.08	-	-	-	-3.3
1816.5	Shale w. organics	70.8	0.09	0.01	0.02	0.02	-0.6
1817.5	Coaly layer	4.9	0.60	0.02	0.01	0.01	-0.9
1818.0	Coaly layer	8.4	0.45	0.02	0.02	0.02	+1.4
1820.0	Coaly layer	14.4	0.50	0.02	0.02	0.02	+0.3
1821.0	Coaly layer	27.1	0.51	0.02	0.02	0.02	0.0
1836.5	Gray shale	85.4	0.02	-	-	-	-0.2
1839.0	Shale w. organics	65.3	0.26	0.03	0.13	0.10	-2.2
1840.0	Coaly layer	20.3	0.61	0.01	0.04	0.56	+0.3
1841.0	Coaly layer	7.38	0.46	0.05	0.02	0.39	+1.3
1848.0	Gray shale	79.2	0.12	0.01	0.05	0.06	-3.9
1849.0	Coaly layer	31.0	0.20	0.02	0.07	0.11	+3.6
1850.0	Coaly layer	8.0	0.23	0.03	0.05	0.15	+5.1