9.2 **A Study of the Axial Arch in Northwest Colorado-A Barrier between Eocene Lake Uinta and Eocene Lake Gosiute**

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Two large Eocene lakes, Lake Gosiute to the north and Lake Uinta to the south were separated by the Axial arch in northwest Colorado. The Green River Formation, deposited in these lakes, is studied on both flanks of the arch. Lake Uinta extended to near the south flank of the arch throughout most of its history depositing 1,250 ft of marginal lacustrine rocks with quartz-and chert-rich sandstones. This interval is overlain by alluvial rocks with quartz-and chert-rich sandstones sourced from the north. These alluvial rocks, which appear to represent outflow from Lake Gosiute, grade southward into the richest oil shale interval in the Parachute Creek Member.

Lake Gosiute extended to the arch both early in its history (Tipton Member) and late in its history (Laney Member). A thick alluvial interval (Wasatch Formation) separates these two lake phases. The Laney Member is 875 ft thick and consists of fossiliferous lacustrine rocks, including low-grade oil shale and thin volcanic-rich sandstones sourced by the Absaroka volcanic field in northwestern Wyoming. It is overlain by volcanic-rich alluvial rocks.

Lake Gosiute may have started draining southward into Lake Uinta shortly after reaching the Axial arch during Laney time and about the beginning of deposition of the richest oil shale section in the Piceance Basin. Volcaniclastic sediments ultimately filled in Lake Gosiute at the end of Laney time and spilled over into Lake Uinta, but only late in the history of the lake and after deposition of the richest oil shale interval.