

## **The Ohio Creek Conglomerate In The Piceance Basin Near Rifle, Colorado: Results Of An Integrated Surface-Subsurface And Laboratory Undergraduate Research Project**

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### **ABSTRACT**

The Paleocene Ohio Creek Conglomerate in the area of Rifle Gap, Colorado, is a conglomeratic sandstone that was deposited in the Piceance Basin and subsequently deformed during the Laramide Orogeny. The age and tectonic significance of the Ohio Creek Conglomerate have long been debated. This report is based upon nine independent undergraduate research projects that examined the physical stratigraphy, subsurface distribution, provenance, diagenetic and subsidence history of the formation, from field exposures on Grand Hogback and using well log data from the Rifle area and the Piceance basin regionally. Burial history modeling shows that the Ohio Creek Conglomerate was deposited during a period of markedly slow subsidence, compared to the underlying Williams Fork Formation. Provenance reflects a lithic recycled orogenic source and points to an unidentified volcanic arc component. The characteristic white clay matrix of the unit was identified by X-ray Diffraction studies as kaolinite, dickite, and nacrite. Thin-section petrography shows that these clays formed by in-situ weathering and diagenesis of a detrital arkosic component. The subsurface distribution of the unit reflects thickening along a southwest-northeast basin axis, which is consistent with slightly higher subsidence rates shown by subsidence modeling. Our studies show that in the Rifle Gap area, the Ohio Creek Conglomerate is a thin, coarse clastic unit derived from a relatively distant source area, which was deposited during a period of subdued subsidence.