HYDROCARBON SEALING CAPACITY OF PALEOSOLS AND SHALES IN THE WASATCH FORMATION, HUBBARD GULCH, RIFLE, COLORADO

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Hydrocarbon reservoirs require a seal to keep the hydrocarbons from migrating out of the reservoir. Most of the previous work on reservoirs has been limited to studying the reservoir rock, not the seal. The goals of this project are to evaluate the sealing capacity of paleosols by comparing various compositional and textural characteristics of the samples collected and to construct a model to allow for seal quality prediction of paleosols found in other locations globally

Paleosols and shales of the Eocene Wasatch Formation in Hubbard Gulch north of Rifle, Colorado will be studied because of the large exposed outcrops that contains numerous, composite paleosols in the Wasatch Formation.

Paleosol horizons and associated shales will be sampled both vertically and horizontally to establish if the sealing capacity varies among rock types and vertically and laterally with paleosols. Approximately 125 samples will be obtained within the area outlined on the map. Three or four fist-size samples will be taken at each location from rock material just below the surface. Six different laboratory analyses will be preformed on each sample. Analyses will include: Mercury Injection Capillary Pressure, porosity, permeability, point counting of thin sections, X-Ray Fluorescence, and Total Organic Carbon.

Once all of the data is collected from these analyses, statistics will be used to determine the existence of relationships among sealing capacity and physical and chemical variables and geographic and stratigraphic position. Results from these analyses will be used to develop a model for accessing the variability in sealing capacity of paleosols.