

8.4 **General Perspectives on Methods of Oil Shale Extraction and R&D Needs, Piceance Basin, Colorado**

Glen Miller

Consultant, Grand Junction, CO, United States

Prudent utilization of this $1.5 \pm$ trillion barrel oil shale resource, which is about equivalent to 100 "Prudhoe Bays", is critically important to our nation's future generations. Development will require an intensive, wide-ranging research and development effort on several issues, including: extraction techniques that achieve or approach 100% resource recovery, reducing energy requirements for retorting, minimizing unwanted effects on the basin-wide hydrologic system, and methods to leave post-extraction soil, landscape, biota, and water resources in a long-term productive condition. Timely and properly directed R&D on the resource can be linked, in a crude way, with exploratory drilling to define a resource. Basin-wide, each 1% advance in resource recovery "discovers" more than 10 billion barrels of shale oil. Most of the basin is usable for many purposes and is potentially subject to significant degradation by leaching of retorted shale. Widespread land-subsidence (10's of feet or more) is likely to follow most proposed methods of extraction. To minimize these problems, within present technologies, appropriate surface mining methods appear to be clearly superior to room and pillar (and other variations on underground mining), and various current and past In-Situ and Modified In-Situ proposals.