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MINERAL ACTIVITIES WITHIN RICH COUNTY, UTAH

The mineral resources of the area include deposits of phosphate, sand, gravel, limestone, quartzite, and oil. Large deposits of phosphate are in the northern and eastern parts of Rich County. U.S. Geological survey showed extensive deposits of rock-phosphate, stretching from the Crawford Mountains in Bear River Valley to Laketown and on through to Paris and Montpelier, and over the pass into Soda Springs (Parson, 1996). These deposits have been partially mined but continuing mining efforts remain highly dependent on the current market price.

The Arickaree Mine, located northeast of Randolph, was the first phosphate mine in Rich County. It began operation under the direction of Peter and Robert Bradley in 1906. The rock was shipped west to the American Agricultural Chemical Company in Los Angeles, California. The profits were insufficient and the mine was closed down a few years later. The San Francisco Chemical Company reopened the mine in 1954 but this too experienced economic setbacks and shut down in the 1960's (Parson, 1996).

A second mine found in the Crawford Mountains, located 5 miles east of the town of Randolph, was mined extensively for phosphate from 1909 through 1972. To date 8.5 to 9 million tons of ore have been mined utilizing both underground and surface mining techniques to extract the ore. The Stauffer Chemical Company purchased

both mines in the mid-1960's (Parson, 1996). Currently the landowners are listed as the Arickaree Development Company, Astaris, BLM, Crawford Mountain Properties, Inc., FMC Corporation, and Phosphate Industries, Inc. with Rich County holding the right-of-way to all sites. Early in 1998 the USDI Office of Surface Mining discovered a 7-mile long area left behind by underground mining to be in the process of collapsing. The Utah Abandoned Mine Reclamation Program began recovery of the area in 2000 and has restored the landscape to the pre-mining conditions (Amodt, 2003).

Continued mining activities in the area are unlikely due to active mining in the neighboring states of Idaho and Wyoming. Idaho production of phosphates constitutes over 12% of the national production. Currently there are 4 open-pit operations that produce almost 6 million tons of ore per year. It's industrial uses are largely for fertilizer and pure phosphate for phosphoric acid (Blanchard, 2002).



Minnetonka Cave

*Photo from: www.seidaho.org/images/bearlake/bloomington.jpg.
Minnetonka Cave is the largest commercially developed limestone rock cave in the state of Idaho. The cave is located 10 miles west of Bear Lake.*

Environmental concerns have risen over the use of phosphate products and, along with developing open-pit mining technology; underground phosphate mining is currently at a stand still in Utah. Permian age phosphates mined on these sites

have been the most important mineral commodity to date but these deposits are also a potential by-product source of fluorine, uranium, vanadium, selenium, chromium, nickel, zinc and molybdenum (Kaliser, 1972). No developed plans are currently in place to extract these minerals.

Limestone and quartzite are carbonate rocks with wide applications in industry and engineering. They occur in relative abundance in Rich County, Utah and Bear Lake County, Idaho areas. During the early part of the twentieth century, the citizens of Laketown constructed several stone buildings quarried out of the hills above the eastern shore of Bear Lake (Parson, 1996). There is no published evidence that stones from the area has been extracted since that time.

Future oil and gas production from Jurassic and older sandstone and limestone may surpass phosphate as the most important mineral commodity in the county (Soil Conservation Survey, 1982). The drilling has been exploratory up to this point. The first test well was drilled in Rich County fourteen miles east of Laketown in the late 1970's and continued along the overthrust belt north. The most significant early well tapped was found 12 miles north of Randolph on Hogback Ridge (Parson, 1996). American Quasar Petroleum Company drilled the well which flowed an estimated 22.4 million cubic feet of natural gas. In 1980 Mountain Fuel Supply Company began construction of a pipeline from Hogback Ridge past Randolph and Woodruff to connect with the main supply line near Coalville, Utah (Parson, 1996). Rich County has seen cycles of petroleum exploration for the past 50 years. Early efforts tested anticlines identified from surface mapping and seismic reflection data. During the late 1970's to early 1980's companies drilled thrust belt-style structures in northern Utah. Although these efforts failed, "companies confirmed the area was similar in structural style, reservoir types, and timing to the productive thrust belts" found in other areas (Blanchard, 2002). The increasing demand for oil could rekindle thoughts of exploration in the Bear Lake area. See figure 7 for detailed map of the oil field.

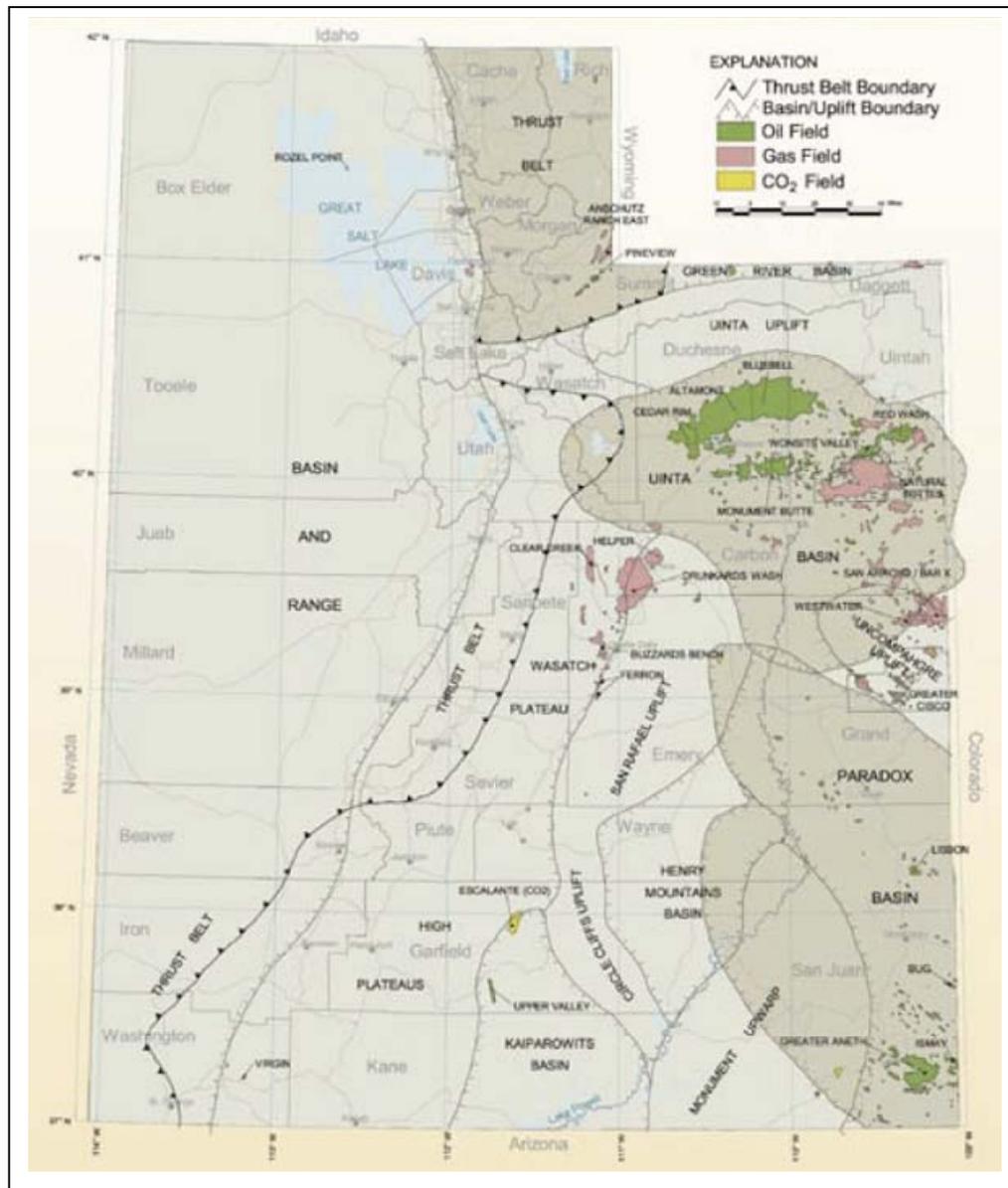


Figure 7. Oil and Gas Fields in Utah Showing Geologic Provinces, Sedimentary Basins, and Principal structural boundaries (modified from Chidsey et al., 2005).