

## Hanna-Carbon Basin

This sedimentary basin consists of the larger Hanna Basin and the smaller, subsidiary Carbon Basin to the southeast, separated by the Saddleback Hills (old name) or Simpson Ridge anticline. This basin is sandwiched between the Seminoe and **Shirley Mountains** to the north, the **Medicine Bow Mountains** to the south, and the **Rawlins uplift** to the west. It is separated from the **Laramie Basin** to the southeast by several folds in Cretaceous rocks. The Hanna Basin is quite small as intermontane basins go—only about 35 miles long by 20 miles wide—but it is unique because of the great depth to which the sedimentary rocks are depressed. The Precambrian floor beneath the sedimentary rocks in the deepest part of the basin north of Hanna lies approximately 30,000 feet below sea level. Structural relief ranges from 38,000 feet, measured from the highest point on the **Shirley Mountains**, to more than 41,000 feet, measured from the top of Elk Mountain (a horizontal distance of only 15 or 20 miles to the deepest part). The basins contain a thick sequence (up to 23,000 feet) of Upper Cretaceous and Tertiary clastic sedimentary rocks derived in part from adjacent uplands. Tertiary rocks in the northern part of the basin adjacent to the **Shirley Mountains** include a 10,000- to 15,000-foot-thick succession of vertically dipping conglomerates containing clasts eroded from nearly every sedimentary and Precambrian rock exposed in the surrounding uplifts.

The structure of the Hanna-Carbon Basin is complex. Even the Tertiary rocks that are relatively flat lying in most other Wyoming basins are complexly folded and faulted, especially on the edges of the basin. Only the western part of the basin is relatively simple, with the rocks dipping eastward off the Rawlins uplift. Near Hanna, where the basin is deepest, even the youngest (Eocene) part of the Hanna Formation is folded into a small syncline. In the northern part of the basin, Upper Cretaceous rocks are highly overturned and overlain unconformably by lower Tertiary rocks that may also have steep dips.

The Tertiary Hanna and Ferris formations contain thick coal beds in both the Hanna and Carbon basins. Coal was originally mined underground at old Carbon (now a ghost town) and later at Hanna, and was used to fuel steam locomotives on the Union Pacific Railroad. After the railroads switched from coal-fired to diesel-electric locomotives, coal mining practically ceased in the basin. Coal mining by both underground and surface methods resumed in the 1970s due to increased demand for coal to fuel electric power plants (brought about by passage of the Federal Clean Air Act). Today, most coal mining activity in the basin has once again nearly ceased because this coal must compete with the easily mined and much cheaper coal from the **Powder River Basin**.

### Choose Geological Time Period:

-  **Paleozoic**
-  **Mesozoic**
-  **Cenozoic**
-  **View All**