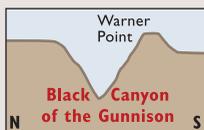
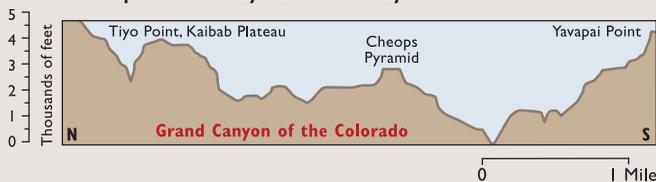


As the river cuts deeper into the plateau, more of the volcanic geology is exposed, including buried volcanoes and their lava flows. The stretch of river from Lee Trail to the confluence of the Red River is the high-gradient transitional zone between the older ancestral Rio Grande gorge and the younger San Luis valley portion of the Rio Grande gorge. The Wild Rivers Recreation Area provides splendid views of the abundant volcanoes in this area and the geomorphology of the Rio Grande and Red River canyons.



The deepest section of the Rio Grande gorge compared to nearby whitewater canyons.



## RIVER KNICKPOINT

Cerro Chiflo forms a major knickpoint (a sharp change in channel slope) on the Rio Grande. Upstream, the river gradient is low. Downstream, the gradient is high, and the river has cut deeply into the plateau. This dramatic change is due to an intriguing sequence of relatively recent geologic events.

After the Servilleta Basalt had finished erupting 2.8 million years ago, the San Luis Basin was divided into

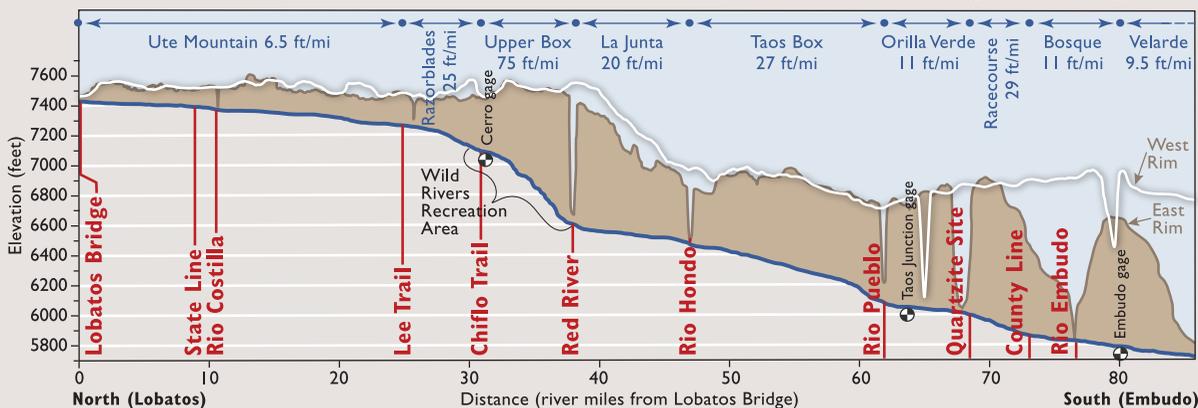
three surface water basins. The northern basin contained a large lake, Lake Alamosa, dammed to the south by the San Luis Hills. The central basin contained a smaller lake, Sunshine Lake, that was dammed by the cluster of volcanic cones west of Questa. The southern basin contained a small ancestral Rio Grande, the headwaters of which were the modern Red River. It flowed southward on top of the basalt plateau, which at the time was a wide, meandering floodplain. With a headwaters drainage area of only about 200 square miles, the river system was small and barely incised into the basalt plateau.

Sunshine Lake appears to have dried up by about 640,000 years ago. Things changed dramatically about 440,000 years ago, when Lake Alamosa overflowed its dam and poured into the Sunshine Valley. Powerful and highly erosive outflow from both lakes further eroded their dams and began carving the Rio Grande gorge, thus integrating the San Juan Mountains drainages with the lower Rio Grande, relegating the Red River to tributary status.

This fluvial drama continues today, as the river through the Razorblades and Upper Box strives to match the gentler gradient of the lower canyon. Over time, rivers tend to work knick-points out of their systems by vigorous erosion. During the next few hundreds of thousands of years, as the basalts of the gorge are eroded, the Cerro Chiflo knickpoint will slowly migrate upstream toward Colorado as the river system works to regain its smoothly concave profile.

This longitudinal profile of the Rio Grande from Lobatos to Embudo shows how the Razorblades represents the knickpoint between the 6.5-foot/mile gradient of the Ute Mountain section and the 75-foot/mile gradient of the Upper Box.

## Profile of upper Rio Grande and Canyon Rims



**GEOLOGY** The river gradient through the Razorblades rapids is high, nearly 25 feet/mile. This stretch of the river represents a knickpoint along which the river is aggressively downcutting in an attempt to bring the upper and lower gorges into dynamic equilibrium. In half a million years, the Class IV rapids may be well upstream of here.

**LAUNCH LATIR CREEK** an optional launch at Lone Tree Trail

**WARNING**  
This class IV to IV+ run contains challenging whitewater with potentially difficult portages, and a long, steep hike out of the canyon.

**LAUNCH LEE TRAIL** is a primitive, 1/4-mile trail that switchbacks 215 feet down from the parking area to the river.



Paul Bauer

Inflatable kayak packed for descent down Lee Trail to run the Razorblades.

View ahead of Cerro Chiflo volcano on skyline.

**RAPID (III)**

**TRAIL** and river crossing.

**RAPID (II)** Small

