



Thistle landslide, Utah

The Spanish Fork River cuts through the Wasatch Mountains southeast of Salt Lake City, with its valley carrying both a major railway and a major road. An unusually heavy winter snow pack was lost into the spring melt of 1983. Within a small valley tributary to the Spanish Fork, a deep colluvium fill became saturated, and on April 14 started to move in its entirety. Perhaps 50 metres deep, some 12M m³ of soil and rock were creeping down the valley, moving up to seven metres per day, mainly at night when groundwater from the afternoon's melt had reached down to the slip zone. Movement only ceased with the onset of the dry summer. A huge tongue of debris moved into the Spanish Fork valley, dammed the river, and impounded a lake that soon drowned the small town of Thistle, which had been hastily evacuated. It also blocked the railway and road. The railway company was first into action, building 10 km of new track to stand above lake level and blasting new tunnels through the spur opposite the landslide. They also re-profiled the slide debris to form a stable dam, and built a spillway to control the lake level and carry its outflow clear to prevent erosion of the landslide dam. However, the un-engineered dam, nearly 60 metres tall, was deemed unsafe, and the lake was drained in 1984, via a tunnel cut through bedrock almost beneath the railway tunnels. But few residents returned to homes in Thistle. Subsequently the state built a new road at a higher level, from where this photo was taken in 2017. When the lake was briefly full to spillway level, it was just visible from this viewpoint, immediately left of the sunlit landslide dam and between the two shadowed slopes of the Spanish Fork valley. But by 2017 the lake was no more, and tree growth had started to return the site to a natural appearance. The landslide mass along the length of the side valley will soon become unrecognisable, but the main valley will always have this strangely terraced barrier across it without any lake on its upstream side. © *Photograph and text by Tony Waltham Geophotos*