

= Thistle , Utah =

Thistle is a ghost town in Utah County , Utah , United States , about 65 miles (105 km) southeast of Salt Lake City . During the era of steam locomotives , the town 's primary industry was servicing trains for the Denver and Rio Grande Western Railroad (often shortened to D & RG , D & RGW , or Rio Grande) . The fortunes of the town were closely linked with those of the railroad until the changeover to diesel locomotives , when the town started to decline .

In April 1983 , a massive landslide (specifically a complex earthflow) dammed the Spanish Fork River . The residents were evacuated as nearly 65 @,@ 000 acre feet (80 @,@ 000 @,@ 000 m3) of water backed up , flooding the town . Thistle was destroyed ; only a few structures were left partially standing . Federal and state government agencies have said this was the most costly landslide in United States history , the economic consequences of which affected the entire region . The landslide resulted in the first presidentially declared disaster area in Utah .

U.S. Route 6 (US @-@ 6) , US @-@ 89 and the railroad (now part of Union Pacific Railroad 's Central Corridor) were closed for several months , until they were rebuilt on a higher alignment overlooking the area . The remains of Thistle are visible from a rest area along US @-@ 6 or from the California Zephyr passenger train .

= = Geography = =

Thistle is about 65 miles (105 km) southeast of Salt Lake City , at the confluence of the two primary tributaries to the Spanish Fork River , Thistle Creek and Soldier Creek . This confluence , at an elevation of 5 @,@ 043 feet (1 @,@ 537 m) , is also the junction of two naturally formed routes across the mountains of central Utah . The primary route crosses the Wasatch Mountains , via the Wasatch Plateau and Soldier Summit . This route was carved by the tributaries of the Price River on the eastern side of the mountains and the Spanish Fork River on the west . In addition , Thistle Creek provides a route south from Thistle towards the communities of the Sanpete and Sevier Valleys . The Spanish Fork River flows northwest from Thistle , towards the city of Spanish Fork , before reaching Utah Lake .

These natural paths have provided the route of several transcontinental trails , highways and railroads since their discovery . The named transportation arteries passing through Thistle include : US @-@ 6 (originally numbered US @-@ 50) , US @-@ 89 , the Denver and Rio Grande Western Railroad 's Utah Division (now part of Union Pacific Railroad 's Central Corridor) and D & RGW 's Marysvale branch line (abandoned because of the landslide) .

= = History = =

The trade route on which Thistle lies was used by Native American tribes before the arrival of European settlers ; two Ute chiefs , Taby and Peteetneet , led seasonal migrations through the canyon each spring and fall . The first recorded journey by Europeans to modern Thistle was the Dominguez ? Escalante Expedition , which was escorted through the territory by Indian guides . A small group of Utes inhabiting the canyon frequently clashed with newcomers , and as a result were forcibly relocated in the 1870s .

Most of Thistle 's residents were railroad employees sent to live in the town , but there were some who had settled before the railroads arrived . The first Europeans were part of the Mormon migration to Utah , and the first of these was the Pace family , who migrated from Nauvoo , Illinois , reaching Thistle in 1848 . Fifth @-@ generation descendants of the Pace settlers continued to operate a family @-@ owned cattle ranch until the town was evacuated . Other settlers included Mormons who originally settled elsewhere in Utah but subsequently arrived to homestead fertile ground on Billies Mountain , on the north wall of the canyon . Among them was the mountain 's presumed namesake , William Johnson . Homesteading was practiced in Thistle until the early 1900s . Until the arrival of the railroads , the town 's economy was based mainly on farming and ranching , although there was also some mining activity in the region , including a vein of asphaltum that was mined

between 1892 and 1914 .

= = = Railroads = = =

The first railroad track laid through Thistle was a narrow @-@ gauge spur line servicing coal mines near today 's Scofield Reservoir , built in 1878 by the Utah and Pleasant Valley Railway . By 1890 , the Denver and Rio Grande Western , which acquired the line in a foreclosure sale in 1882 , had rebuilt the line to standard gauge . The D & RGW connected this line with one they had built west from Colorado , completing a link from Salt Lake City to Denver .

The railroad built several facilities in Thistle to service and prepare trains for the change in grade and curvature of the line . The railroad placed helper engines on eastbound trains at Thistle for the ascent to Soldier Summit . The town provided a meal service for the trains until the use of on @-@ board dining cars eliminated the need for meal stops .

Thistle saw more rail traffic with the construction of the Marysvale branch line . This line branched from the main at Thistle , following modern US @-@ 89 towards mines near Marysvale . Another line through Thistle , paralleling the D & RGW main , was built by the Utah Railway . The two lines were later combined into a dual @-@ track main line , as part of a trackage rights agreement between the two companies .

Rail traffic through Thistle continued to increase as the Rio Grande cooperated with connecting railroads , making the rail line through Thistle a bridge line for transcontinental rail traffic . The growth of Thistle was closely tied to the success of the Denver and Rio Grande Railroad throughout the era of steam locomotives .

At its peak , around 1917 , Thistle had about 600 residents . The town 's railroad infrastructure included a five @-@ stall roundhouse , depot , machine shop , and structures to restock passing trains with sand , coal and water . Non @-@ railroad infrastructure included general stores , a post office , barber shop , saloon , pool hall , bakeries and restaurants . The largest building was a two @-@ story schoolhouse , built in 1911 .

In the 1950s , the Denver & Rio Grande Western began to phase out steam locomotives in favor of diesel locomotives , which require less maintenance . With the change in technology , Thistle faded in importance . Gradually the town shrank in population ; the passenger depot was torn down in 1972 and the post office closed in 1974 . By 1983 , only a few families remained in Thistle .

= = = Landslide = = =

Rio Grande maintenance personnel began noticing unstable ground downstream from Thistle years before the landslide occurred . Maintenance crews repaired the track on several occasions , but they did not fully investigate the problem . Beginning with the remnants of Hurricane Olivia , the autumn and winter of 1982 ? 83 featured record @-@ breaking snow and rainfall . As the spring thaw melted the winter snow , the mountains in the area became saturated with water .

By April 1983 , track deformation was a serious issue . On April 13 , the division trackmaster flew to Denver to explain the situation at a specially @-@ called staff meeting . On the same day , a Utah Highway Patrol officer struck a newly created buckle in the highway that threw him against the roof of his vehicle . By the end of the day , a full maintenance crew was struggling to keep US @-@ 6 open . All trains were limited to speeds less than 10 miles per hour (16 km / h) , and were accompanied by maintenance personnel who had to continually work to keep the tracks in line . The last train to pass through downtown Thistle was the westbound Rio Grande Zephyr , on April 14 , 1983 at about 8 : 30 p.m. That night , both US @-@ 6 and the rail line were closed . One westbound freight train that had already left Denver was turned back . All through trains between Denver and Salt Lake City were rerouted to Union Pacific Railroad 's Overland Route through Wyoming . By April 16 , the tracks were completely buried and a voluntary evacuation order was issued for the town .

On April 17 , a final attempt to keep the landslide from blocking the flow of the river failed . That day , the Utah Department of Transportation and the Rio Grande announced plans to abandon the

existing transportation arteries and build new corridors . Both the highway and railroad would be re-routed by blasting a path scaling the north wall of Spanish Fork Canyon . The new arteries would pass the slide by dynamiting through Billies Mountain , also along the north canyon wall . Engineers estimated the dam created by the toe of the landslide would eventually reach between 200 feet (60 m) and 300 feet (90 m) tall . The evacuation order was changed from voluntary to mandatory . Volunteers transported as many people and belongings as possible to the small town of Birdseye , about 5 miles (8 km) south . Most residents were able to recover only a fraction of their belongings ; some had less than two hours ' notice before the water reached their house . Thistle 's oldest resident celebrated her 90th birthday at the evacuation center in Birdseye . By the 18th , the waterline had reached the rooftops of the 22 previously occupied houses . By the 19th , an entire mountain was moving at about 2 feet (0.6 m) per hour and US Route 6 was buried by 50 feet (15 m) of soil .

Governor Scott Matheson requested federal aid to deal with the situation . After a visit to the area by the director of the Federal Emergency Management Agency , U.S. president Ronald Reagan issued the first presidential disaster area declaration for the state of Utah . The landslide eventually formed a dam that created a lake 3 miles (5 km) long and over 200 feet (60 m) deep . Concerned the dam could fail , the state of Utah decided to build a tunnel to re-route the flow of the Spanish Fork River . The residents of downstream Spanish Fork were told to be prepared to evacuate . Engineers estimated that if the dam failed , they would have 30 to 45 minutes notice before the water reached the city .

=== Aftermath ===

Thistle was almost completely destroyed . Most wooden buildings were carried away in the floodwaters . The state installed a temporary pumping station to prevent the lake from overflowing the dam ; patrol boats skimmed up the floating remains of the town to prevent the debris from blocking the pumps . Most remains were either naturally deposited or placed on the eastern shore of the lake .

By autumn , the tunnels to restore the flow of the river and drain the lake were operational . Shortly after , debates between former residents , neighboring residents , and government agencies began on what to do with the dam created by the landslide ; some wanted to make the lake permanent . The state engineer commissioned a study to determine if the landslide dam could be used to retain water ; it recommended building a new dam upstream from the landslide , rather than attempting engineering work on the landslide dam .

In the years following , the former residents of Thistle filed various lawsuits to recover their losses . In one , they claimed that their property was taken to rebuild the road and railroad without just compensation . Another lawsuit claimed negligence on the part of the D & RGW . The residents argued that the railroad 's maintenance workers knew the ground was unstable ; however , they only repaired the track . The residents contended the slide could have been prevented by using a water drainage system to relieve pressure at the head of the unstable area . They further contended that such a system could have been put in place had the railroad thoroughly investigated the problem upon first noticing it . The engineering firm employed by the Rio Grande said that their studies indicated the crown of the landslide was about 300 feet (90 m) above the level of the tracks , and that the Rio Grande did not know the true size of the unstable area until the slide was in motion . A jury absolved the D & RGW of responsibility . The plaintiffs appealed the decision , and a second trial in 1993 resulted in a \$ 1 million award for the landowners (equivalent to \$ 2 million in 2016) . The D & RGW filed suit against the Utah Railway over sharing the costs from the landslide . The Utah Railway had an ownership interest in the line , based on a track-sharing agreement .

=== Economic effects ===

The landslide closed the main railroad for three months , and U.S. Route 6 and U.S. Route 89 for

eight months , during which time the communities of eastern and southeastern Utah were cut off from the rest of the state . Security for the isolated part of Utah County was temporarily assigned to the Utah Highway Patrol .

The economic effects of the closure of these transportation arteries were felt throughout the western United States ; the closure devastated rural Utah . The operations of coal mines , uranium mines , turkey farms , animal feed companies , gypsum mines , and cement and clay factories were severely impacted . At least two trucking firms and one oil @-@ producing firm suspended or ceased operations . Southeastern Utah 's tourism industry suffered without access for visitors from the north and west . Some people who lived and worked on opposite sides of the landslide area suddenly had commutes exceeding 100 miles (160 km) . The highway patrol temporarily closed a weigh station at Peerless (a location along the US @-@ 6 corridor near Helper) and built a temporary weigh station near Salina (along I @-@ 70 about 90 miles (140 km) south of Thistle) , which saw a sudden increase in truck traffic . The highway patrol estimated the temporary facilities inspected 57 @,@ 000 trucks and made 80 arrests .

The direct cost of the landslide was estimated at \$ 200 million (equivalent to \$ 475 million in 2016) . However , some estimates of the total cost reached as high as \$ 400 million (equivalent to \$ 950 million in 2016) . The D & RGW estimated the slide cost them \$ 80 million in lost revenue (equivalent to \$ 190 million in 2016) , averaging \$ 1 million for each day that the tracks were out @-@ of @-@ service . This figure included \$ 19 million in payments to the Union Pacific for the use of their lines . The United States Geological Survey and the state of Utah have called the Thistle landslide the most costly ever in the United States .

===== Railroad =====

To expedite construction , the railroad had crews in Utah focused on grading the new path and boring a 3 @,@ 000 @-@ foot (910 m) tunnel , while crews in Colorado built track segments that were transported to site . On July 4 , 1983 , at 3 : 05 p.m. , safety inspectors declared the line ready for operation . At 3 : 12 p.m. , the centralized traffic control signals gave a green light to the first train to pass through the Thistle area since the slide began , an eastbound freight train coming from the Southern Pacific Railroad at Ogden , destined for Herington , Kansas . Although the line 's re @-@ opening on Independence Day was coincidental , the first train became part of the local holiday celebrations . The first passenger train to use the new alignment was the California Zephyr , on July 16 .

Debates ensued over the fate of the Marysvale branch line . The mines at the end of the line had long closed ; the last train to traverse the entire length of the line passed through in 1970 . Still , farmers and industry in the Sevier and Sanpete Valleys generated enough traffic that the line broke even most years . However , this line was severely damaged , with several washed @-@ out bridges and railroad tracks draping over the sides of newly created cliffs . The railroad determined that at best it would take years to recover the cost of rebuilding the line .

The residents of Richfield pressured the Rio Grande to use the portion of the line that was still intact and build a connection to an existing Union Pacific line near Nephi , roughly parallel to State Route 28 . However , the railroad determined that including land acquisition , the cost would be comparable to rebuilding the old route . In addition , the Rio Grande would have to pay trackage rights to the Union Pacific for the connection from Nephi , which would further erode profits on a line that was barely profitable . In the end , the Rio Grande sold the line to a scrap dealer who dismantled it . A 2002 study placed the cost of rebuilding the modified routing of the Marysvale branch line at \$ 80 million (equivalent to \$ 105 million in 2016) .

===== Highways =====

The new alignment of US @-@ 6 was opened on December 30 , 1983 . The dedication was planned for the next day , but lines of cars formed at the barricades as soon as news broke that the highway was complete . Some were residents anxious to see the area or visit relatives they had not

seen since the slide ; others were truck drivers frustrated by long detours . The Highway Patrol requested the ceremony be canceled and the highway opened early , as they were unable to disperse the crowds .

When the first traffic flowed , crews had not finished some final tasks , such as painting stripes . Motorists saw a relocation with several mountain cuts built high up the canyon wall , with a view of the slide and former lake . The roadbed was not expected to last , as weather conditions had been unfavorable when the asphalt was laid . Two mountain cuts were unstable , requiring several months of work before they could be left unattended . During this time , the state stationed two full @-@ time watches at the cuts , who would close the road while falling rocks were cleared . The cut through Billies Mountain was described by the construction crews as a new , man @-@ made mountain pass .

The pending completion of the again @-@ rebuilt US @-@ 6 , with properly laid asphalt and stable rock cuts , was announced in November 1984 , 18 months after the closure of the original alignment . Starting in 1993 , the Utah Department of Transportation began discussions with former Thistle residents to build a memorial to the town . The department maintains a view area overlooking the townsite along US @-@ 6 .

= = Geology and climate = =

The landslide area near Thistle is a paleovalley formed in a depression in an area of bedrock known as the Charleston ? Nebo thrust plate . The rock in this plate dates from the Permian and Pennsylvanian to the Jurassic periods , but the plate appears to have formed elsewhere and moved to the modern Thistle area during the Late Cretaceous epoch . The layers of sedimentary rock above the thrust plate are younger , dating to the Cretaceous and Tertiary periods . The rock debris in the landslide itself comes from the North Horn and Ankareh formations .

The area around Thistle has always been prone to landslides . Pre @-@ historic landslides created the more gentle slopes that made the area usable as a transportation corridor across the Wasatch Mountains . Minor landslides have been frequently observed , and continue to occur . The largest recorded landslides are the 1983 slide which destroyed the town , and a smaller one in 1998 .

The climate at downstream Spanish Fork is classified as arid with four distinct seasons . Temperatures range from an average high of 92 ° F (33 ° C) in July and an average low of 20 ° F (? 7 ° C) in January . Except for the spring months , precipitation averages less than 2 inches (5 @. @ 1 cm) per month .