

1. SMELTER SITE RUINS & BUILDINGS

The SMELTER SITE was the location of a smelter complex designed for 600 tons of ore per day to produce "blister" copper using two huge blast furnaces and a 120 ft. stack. It was built in 1901-02 and had trouble from the start due to lack of metallurgical knowledge and the need to augment processing with ore shipped from afar. By 1908 it was shut down, although it served as a concentrator until the 1940's. The Shay engine house, machine shop, an 8-hole outhouse and early masonry remain.

2. AERIAL TRAMWAY TOWERS

The TRAMWAY consisted of a 1-1/4" dia. fixed cable in a loop more than 6 miles long, affixed to each side of the towers. The ore buckets dangled on their rollers from this cable, pulled or restrained by a 3/4" traveling cable. The TRAMWAY operated on gravity power; the loaded ore buckets going down pulled the empty, or often loaded, ore buckets back up. Most of the 36 TRAMWAY towers have been dismantled or fallen down leaving only remnants of what was erected in 1917. The significance of the anchor and tension tower is explained at the site.

3. COSSACK TUNNEL AND COMPRESSOR BUILDING

The COMPRESSOR BUILDING is located at the COSSACK or 1600 foot level, along with smaller metal clad buildings and remnants of a wooden cabin. This air compressor station was constructed in 1917-1918. Two 227 HP tubular boilers were in the COMPRESSOR BUILDING to supply the steam for the air compressors. The air was sent throughout the mine by pipes and hoses to miners' drills and jack hammers. In the 1940s, the COMPRESSOR BUILDING was converted to an electricity plant, but major mining ended shortly thereafter. **CAUTION: THE TUNNEL IS DANGEROUS AND PRONE TO ROCK FALLS. STAY CLEAR.**

4. ANDERSON CABIN

The ANDERSON home site in Horseshoe or Morrow's Gulch dates to 1916 when the Anderson family was working in the mines. Charly Anderson arrived in the area in 1903, and his family worked the mines for at least 80 years. The oldest cabin was built by Arthur C. and Carl Alex "Sander" Anderson for their parents Charly E. and Anna Marie (Sjoberg) Anderson. A second cabin was built in 1921 by Arthur C. Anderson for his wife Hettie Lucile (Thacker) Anderson. The cabin standing today was built in 1948 with timbers from the original structures. The original cabins and some other structures are gone, but the original locations are still visible. Some of Charly Anderson's descendants still live in Mackay. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

5. HORSESHOE MINE AND TAYLOR SAWMILL

The HORSESHOE MINE SITE was first developed in 1903, with first recorded production in 1916, mostly ore with a high content of lead. The site had two major tunnels 875 and 1225 feet long, but never had a concentrating plant, so all ore was shipped out for processing. The last recorded production was in 1978. Output totals since 1903 include 3,896,442 lbs. of Lead, 1,113,821 lbs. of Zinc, 257,945 lbs. of Copper, 129,686 oz. of Silver, and 110 oz. of Gold. The SAWMILL SITE (adjacent to the mine) was established about 1908 on a claim filed by Haniel S. Taylor, who raised a large family at this site. The sawmill operated from 1912 to about 1927, providing lumber for the area's mines. The sawmill is long gone, but a blacksmith shop, office building, bunkhouse, and the family cook shack remain. All are built of sawn lumber from the sawmill. Family members occupied the site until 1943; some still live in Mackay. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

6. WHITE KNOB TOWNSITE

WHITE KNOB came into being with Mackay after the Oregon Shortline Railroad extended its tracks from Blackfoot in 1901. From 1901-05 some of the 100-400 men working the mines lived in Mackay and commuted to the mines, but most stayed on the Mine Hill, some with families, and WHITE KNOB came into being. By 1917, it had a boarding house, post office, movie house, general store, pool hall, barbershop, restaurant, amusement hall, and telephone service. WHITE KNOB, at its peak, may have boasted a population of nearly 1000. By the mid-1930's, the town had been abandoned. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

7. NORTH BULLION TUNNEL

Just below the hairpin curve of the road is the closed entrance to the Bullion mine tunnel. Located at the 800 ft. level at the upper end of

Bullion Gulch, it saw extensive early mining activity. Evidenced by the piles of rubble and tailings, ore production from this portal was great enough to warrant the construction of ore bins here, serviced by a spur of the mining railroad. The hillside above the south side of the road shows reddish brown oxides and green carbonate of copper as well as more recent adits into the mountain. **CAUTION: THE TUNNELS ARE DANGEROUS AND PRONE TO ROCK FALLS. STAY CLEAR. THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

8. AERIAL TRAMWAY HEADHOUSE

This structure, located at the 700 ft. level, was the upper terminal and loading station for the gravity powered aerial tramway system that connected the mines with the smelter below. Placed in operation in 1918, the system replaced the Shay mining railroad, in operation since 1905. This aerial tramway consisted of ore buckets traveling on a six-mile-long loop of 1 1/4" steel cable supported on 36 wooden towers. Ore was delivered to the top of the HEADHOUSE structure from a nearby tunnel. Today what remains of the HEADHOUSE loading station is still a formidable sight. Look closely to see examples of expert timber joinery and craftsmanship done almost a century ago. **CAUTION: THE HEADHOUSE STRUCTURE IS UNSTABLE AND DANGEROUS. PLEASE DO NOT ENTER. THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

9. ALBERTA LEVEL AND TUNNEL SITE

At the 700 ft level, the Alberta tunnel was the center of the Empire Copper Co.'s mining activity. The tunnel, started about 1900, goes in over 4000 ft. and ties to miles of cross-cut tunnels, shafts, and raises. This site was also the unloading point of a long surface tramway providing ore transport from tunnels far above. This site was the top dumping spot for the huge trackside ore bins on the Shay roadbed hundreds of feet below. This site had a blacksmith shop, warehouse, dwellings and bunkhouses, and a large plant with two boilers that generated steam to drive generators and air compressors. Today, only the shells of the blacksmith and warehouse structures remain along with the concrete foundation remnants of the steam and compressor plant. **CAUTION: THE TUNNEL IS DANGEROUS AND PRONE TO ROCK FALLS. STAY CLEAR. THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.** Just above this site is a large tanker marked "ACID". The acid from this tank was piped directly into the rock in an attempt to leach copper without mining, with planned recovery of the solution at a lower level. The effort failed.

10. OPEN PIT MINE SITE AND DARLINGTON SHAFT

This was the site of some of the earliest mining by the White Knob Copper Co. The electric mining railroad in 1901 terminated here. Surface ore was loaded directly into ore cars with a steam shovel. The sealed entrance to the Darlington shaft is still visible above here. This area became known as the "Glory Hole". With the advent of the Shay Railroad, ore was moved down to the Alberta level by the surface tramway. About 1963, surface mining was undertaken here using a leach type process. Ore was piled in the concrete leach ponds that remain today, over which an acid solution was sprayed. The copper, gold, and silver were leached from the rock and reclaimed. Production from 1902 to 1975 was 921,077 tons of ore that yielded 41,431 oz. of Gold, 1,294,531 oz. of Silver, 61,689,291 lbs of Copper, 24,110 lbs of Lead, and 908,078 lbs of Zinc. The large steel balls seen here and elsewhere are naval buoys left over from scrap iron collection for the leaching process. These were intended to be fuel tanks but were never used. **CAUTION: THE STRUCTURES HERE ARE UNSTABLE AND DANGEROUS. PLEASE DO NOT ENTER. THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

11. AUSICH CABIN SITE

The original log cabin, a 12 X 18 ft. building with a connected rock cellar, was erected about 1889 by miners working the nearby mines and smelter at Cliff Creek. The smaller cabin and outhouse came later. This area, known as the "Saddle", was the site of many homes. The earliest known residents of the cabin were Louis Ausich and family who moved here about 1920 and built additions to the cabin about 1923. The cabins were not continuously occupied, the family later moving around the mountain to the town of White Knob. The dwelling was often used for recreational outings by White Knob residents, and Joe and Dolly Ausich used the cabin for their summer-long honeymoon in 1937. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

12. WHITE KNOB PEAK

White Knob Peak, so prominent on Mackay's western skyline, provided the title to the range in which it resides. This 10,529 ft formation of white and blue-gray limestone, intermixed with metamorphic, ore-bearing rock, is devoid of vegetation, and looms as the highest among the other peaks of the range. On its flanks are numerous old mining sites and the peak can be easily accessed if you know the proper route. The peak is three sided: The side facing the "Saddle" drains into Cliff Creek, the north slope drains into Navarro Creek, while the western slope drains into Mammoth Creek. Access to the peak is easiest from Mammoth Canyon, but it can be reached from all sides.

This is the end of the 'GREEN ROUTE'. Low clearance vehicles need to follow the green arrows back on the same road to town.

13. CLIFF CITY TOWN SITE

Established about 1884, Cliff City was one of several early mining camps in the area. Following promising ore discoveries, investors had a smelter built about 4 miles up the canyon from Houston below the site of their mining operations. Never large, the city had a store, twenty houses, and two or three saloons. Cliff City slowly died as mining on the other side of the mountains blossomed, with miners moving to Mackay and White Knob. Miners lived in Cliff into the 1920's only because they could find nothing better. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

14. CLIFF CITY CABIN

This Cliff City cabin is the only dwelling remaining. It was the first home for Charly and Anna Anderson, built around 1903. The house served as a home for the Andersons and a bunkhouse for single miners. The Anderson family lived in this cabin and an adjacent cabin whose foundation is still visible, with children Ollie, Sander, Oscar, and Art for about a year. They then moved to another cabin (that no longer exists) near the headhouse. Subsequent use of this cabin is not known. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

15. CLIFF CITY SMELTER

Following an early flurry of mining, a two-stack smelter was built at Cliff City that started in November 1884, ran for a week and was shutdown. It operated again briefly in 1885-86 and 1890-91. Upon founding of the Empire Mining Company, Wayne Darlington used the 50-ton smelter to produce 200,000 lbs of copper by direct smelting with no preliminary milling. The larger smelter at Mackay ended the life of this smelter about 1901. Only walls of stone masonry and some boiler and machine remnants are still visible today. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT. BELOW THIS AREA YOU MAY ENCOUNTER GATES: IF OPEN, LEAVE OPEN; IF CLOSED, RECLOSE AFTER PASSAGE.**

16. CLIFF CITY LIMESTONE KILNS

The smelter at Cliff City used charcoal and slaked lime to process copper ore, both produced near the smelter. Charcoal was made in pits in the creek bed above the townsite that are no longer visible, while the lime was slaked in several kilns well below the townsite. Three kilns, two in the creek bed just above the Alder Creek Road and the other at the junction of the Cliff Creek and Alder Creek Roads remain. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

From the kilns at the mouth of Cliff Creek, the 'BLUE ROUTE' continues up Alder Creek Road to the left.

17. SHAY RAILROAD BED

When the White Knob Copper Co. expanded its mining operations in 1901, an electric ore hauling mining railroad was built on a 12-mile roadbed of 6% grade that ran from the Mackay smelter site at the river's edge to the Bullion Tunnel and back to the top of the mountain and surface mining operations there (the Glory Hole). A pair of electric motor engines pulled ore cars, moving ore down and supplies up the mountain. In 1905 they were replaced by two coal burning Shay locomotives. Soon after the aerial tramway took over ore transport in 1918, the mining railroad was abandoned. Much of the old railroad grade makes up the present day road system of today's "Mine Hill", reaching from the switchback below the Cliff Creek crest to the main Mine Hill Road and up to the aerial tramway headhouse.

This is the end of the 'BLUE ROUTE'. Large width vehicles need to follow the green arrows down the hill back to town.

The SHAY RAILROAD TRESTLE and following EMPIRE MINE ORE BINS are on the 'RED ROUTE' and are limited to vehicles less than 50 inches wide, motorcycles, bicycles, horses, and hikers. Physical barriers prevent passage of wider vehicles.

18. SHAY RAILROAD TRESTLE

The TRESTLE was built by the White Knob Mining Company about 1901 as part of the electric railroad system used to shuttle ore and supplies between the mines and the smelter. It spans 105 feet, and is 25 feet tall. Initially the trestle was required to support only the load of electric motor engines and ore cars, but in 1905 the heavier, more powerful coal-fired 140-ton Shay trains were put into service. The entire rail system gave way to the gravity-powered aerial tramway in 1918. The trestle continued to be a popular tourist crossing until it was condemned in 1998. Completely rebuilt in 2002, reconstruction was faithful to the 100 year old original trestle except for cable side-railings for safety, and traffic restrictions to vehicles over 50 inches in width. (A great photo opportunity spot.)

19. EMPIRE MINE ORE BIN LOCATION

A pile of rubble and a stone wall are all that remain of the ore bins built about 1905. The huge structure was about 40 ft. high, 10-12 ft. deep, and perhaps 80 ft. across, to provide for loading the Shay's ore cars. Three long wooden chutes, supported by a timber trestlework, ran from the top of the bin structure up to the dumping platform at the 700 ft. Alberta level. Ore was dumped into the chutes and down into the ore-bins, which were divided into ten interior loading chutes that opened trackside for loading the Shay's ore cars. Use of the system ended in 1918 with installation of the aerial tramway. The bins collapsed from deterioration in the early 1990s. **THIS IS PRIVATE PROPERTY; PLEASE RESPECT IT.**

From the BINS, a return to the bottom of the hill can be made either by going up a side road to the HEADHOUSE and backtracking to the main road, or by taking another steep, rough road that drops down from the BINS to the main road. See the map.

20. LOWER SHAY RAILROAD BED

The road from the trestle turnoff to the main Mine Hill road is the electric and Shay railroad bed. The original old roadbed continued down the mountain south of the present main road. It is visible as a line of somewhat brighter sagebrush. This roadbed can be traced all the way down to the smelter. Some day it may be cleared to complete this trail system.

SHAY TRESTLE ROUTE

The SHAY TRESTLE ROUTE begins at the junction of the Main Road with the Alder Creek Road, which is the old Shay railroad bed that starts just below Rio Grande Canyon. The route travels two miles south up to the Shay Switchback where it joins the road to the trestle. The trestle is 1.1 miles up the Shay road from the switchback. This upper road is not recommended for large vehicles due to the narrow road and the lack of pullouts and turn around areas. Return from the trestle follows the same roads.

See the description of the trestle in item 18, above. The deterioration of the trestle over nearly a century included loss of footings due to downward sliding of the crib wall below the footings, and splitting of the beams and boards. Surprisingly few areas of the beams showed rot. The trestle was completely disassembled, the crib wall and footings reconstructed, and the bents and platform rebuilt. Portions of the original trestle retained in the renovation are much darker and weathered more than the newer wood. Physical barriers now prevent vehicles greater than 50 inches from crossing the trestle, although it is probably capable of supporting the Shay Train if it were here!

Mackay's Mine Hill Tour is sponsored by the White Knob Historical Preservation Committee with members representing the South Custer County Historical Society, City of Mackay, Custer County, the US Bureau of Land Management, and the US Forest Service.

Prepared by Lowell Frauenholz and Earl Lockie, White Knob Historical Preservation Committee. Map by Carol Hearne, US BLM. 08/01/2003