Lucky Mine and Mill
Site 5ST1149

The Lucky ranked among the Breckenridge area's longest-lived producers and was of regional importance. Through the 1880s, several companies worked a group of claims on the north side of Mineral Hill. In 1892, an outfit drove the Lucky Tunnel from the floor of French Gulch to undercut the old workings at great depth and built a mill. The tunnel and mill remnant were recorded as a site but the upper workings on Mineral Hill were not.

The site lies on French Gulch's north side at around 10,200 feet elevation in the McKay Mining District. The setting is intact and is evocative of Rocky Mountain mining. The steep wall of the gulch ascends north and is vegetated with an aspen and second-growth lodgepole pine forest. The gently sloped gulch floor spreads out to the south and features an old- and second-growth lodgepole pine forest. The tunnel and mill remnant retain high degrees of archaeological integrity, and the site is contributing element of French Gulch's historic landscape.

Lucky Mine History

During the mid-1870s, prospectors examining the north rim of French Gulch discovered a collection of mineralized veins. Over the course of several years, prospectors realized that the seemingly disparate veins, which carried gold, silver, and industrial metals, were components of a complex system around one mile in length. By the late 1870s, the prospectors traced the system to the north side of Mineral Hill and tried to find the formation. In 1880, one group that may have included Frank Bacon finally made contact and staked the Lucky, Kentucky, and Paducah claims.[1]

Within the year, Bacon sought investors to finance formal development of the claims. In 1881, he interested Sherman Hall and A.G. Proctor of Chicago, and they organized the Cunard Mining Company. The outfit dispatched a crew of miners to develop the claims, and they struck rich galena ore at the bottom of a shallow shaft the following year. With the proof of ore, the company sank three shafts 60, 140, and 160 feet deep and installed a steam hoist over the deepest one. It should be noted that, during the early 1880s, a steam hoist constituted a substantial capital investment and facilitated production at depth.[2]

In parallel with the adjacent Cincinnati Mine, the Lucky became one of the region's most important producers by 1884. The Lucky, however, outlived the Cincinnati and remained active into 1886. At that time, miners passed the oxidation zone and encountered ore that resisted treatment. In response, the owners sold the Lucky to J.N. Cassidy of Council Bluffs, Iowa. Sure that smelting-quality ore existed at depth, Cassidy had a crew of seven miners sink the shaft down to 360 feet and drive drifts (horizontal workings) along the vein. Cassidy's hunch proved correct and he was able to keep the Lucky in production through 1889.[3]

In 1891, Thomas McKenna, manager of the Minnie Mine for the Blue Hill Mining Company, leased the Lucky on his own. McKenna made grand plans for the Lucky and used the Minnie as a model. Specifically, he planned to undercut the old Lucky workings with a deep haulage tunnel driven from French Gulch, and would build a mill at the tunnel to concentrate the complex ore. McKenna's workers pushed the tunnel to a length of 1,700 feet, sank the main shaft to a depth of 600 feet, and connected the two underground. By 1893, they had both the

[1] *Colorado Mining Directory*, 1883:771.

[2] *Colorado Mining Directory*, 1883:771; *Rocky Mountain News* 4/6/82, p.3 c.3.

[3] "Mining News" *Mining Industry* 4/20/88 p12; "Mining News" *Mining Industry* 8/24/88 p88.

tunnel and mill in production. On the brink of success, the economic depression caused by the Silver Crash of 1893 forced McKenna to suspend operations in 1894.[4]

McKenna was not the only individual associated with the Lucky who faced problems. With the mine now idle, Cassidy decided to sell the property, and S.B. Wright was the buyer. Wright then leased the Lucky to Grant Kirts, who operated the mine and mill during the late 1890s.[5]

In 1904, the Beaver Creek Gold Mining Company approached Wright with an offer for the Lucky. The company, which already operated several mines in Park County, wanted to consolidate the Lucky and Minnie and purchased both. The company struggled with the Minnie but enjoyed success with the Lucky. Under superintendent George E. Moon, miners rehabilitated the Lucky Tunnel then began production. The mill treated ore into 1907 when the investors were forced to reorganize their outfit as the Swastika Mining Company. Due in large part to trouble with the Minnie, the company collapsed and the Lucky went idle.[6]

It appears that Thomas Forsyth purchased the Lucky after the mine closed but did little with the property. In 1910, Wright renewed his relationship with the mine and signed a lease, sure that plenty of viable ore still remained. Wright put his miners to work extracting ore from a small chute and applied the income to explore for more pay rock. In 1911, the effort resulted in a major find that kept Wright in business for several years at the least. It remains unknown whether Wright operated the mill.[7]

In 1916, Forsyth decided to work the mine himself. He started with a crew of three, increased the workforce to five in 1917, and operated the mill. Forsyth was not as fortunate as Wright and exhausted the economical grades of ore by the summer. Unwilling to invest in costly exploration, Forsyth suspended the Lucky's last operation of note.[8]

When the Breckenridge area's mining industry declined during the early 1920s, the Royal Tiger Mines Company launched an acquisition campaign and began purchasing formally productive properties. The Minnie and Lucky were included, and Royal Tiger consummated a deal for the mines in 1921. Because the Lucky Mill was well-designed, Royal Tiger used it to treat ore from other mines, leaving the Lucky workings alone. In 1925, Frank and Horace Boyce leased the workings for a year, gleaned low-grade ore, and then permanently abandoned the property.[9]

Lucky Mine and Mill Site Description

The Lucky Mine and Mill site currently offers a relatively complete set of archaeological features representing both the Lucky Tunnel and mill. The tunnel was located on the mountainside immediately upslope from the mill so that miners could send ore directly to the mill through a chute.

Like most mines in the area, the Lucky Tunnel's portal (F1) collapsed, leaving a linear area of subsidence. The area is distinct and indicates that the tunnel extended almost due north. When miners drove the tunnel during the early 1890s, they dumped waste rock at the portal,

[4] Canfield, 1893:53; "General Mining News" *MIT* 2/5/91 p80; "General Mining News" *MIT* 5/26/92 p236; "Mining News" *EMJ* 5/20/93 p470.

[5] "Mining News" *MIR* 5/20/97 p224.

[6] "Mining News" *EMJ* 2/16/05, p358; "Mining News" *EMJ* 8/18/06, p324; "Mining News" *EMJ* 1/26/07 p209; "Mining News" *MSP* 2/11/05 p93; "Mining News" *MSP* 2/18/04 p109; "Mining News" *MSP* 1/26/07 p109; "Mining News" *MSP* 3/23/07 p357.

[7] "Current News" *Mining Science* 12/8/10 p558; "Current News" *Mining Science* 8/3/11 p118; "Current News" *Mining Science* 8/31/11 p212; "Mining News" *EMJ* 7/29/11 p229.

[8] Colorado Mine Inspectors' Reports: Lucky Mine.

[9] Colorado Mine Inspectors' Reports: Lucky Mine; "Mining News" *MSP* 4/23/21 p576; Weed, 1931:851.

forming a pad (F2) around 145 by 170 feet in area and 20 feet thick. Following convention, the miners used ore cars on a mine rail line to deposit the rock.

Workers erected a frame tunnel house that sheltered the mine's critical facilities. The building's east half featured a blacksmith shop and a ventilation blower, and the west half served as a workers' residence. The building is gone but a cut-and-fill platform (F3) currently remains. Workers cut the platform's northeast portion out of a scree slope and erected a dry-laid rock wall 3 feet high to retain the southwest fill portion. The platform's footprint is irregular and indicates that the building was approximately 20 by 50 feet in area. A collapsed wood box forge along the platform's east side reflects the location of the blacksmith shop. Structural debris and duff on the platform conceal artifacts, although shop refuse and domestic items extend downslope. Because the platform possesses little soil, buried deposits are unlikely.

Like most substantial mines, the Lucky Tunnel possessed a privy for the crew's personal use. A depression (F5) that appears to be a privy pit is visible in the waste rock dump's eastern portion. The depression is around 3 feet in diameter and 6 inches deep, blanketed with humus, and may possess meaningful buried deposits. No artifacts are obvious.

The tunnel complex offers a relatively complete artifact assemblage. Most of the dateable items reflect timeframes of the early 1890s and mid-1900s, which is in agreement with archival records. The dateable artifacts, however, do not clearly represent Wright's or Forsyth's 1910s operations. Hand-finished bottle fragments, numerous hole-in-cap cans assembled with lapped side seams, and a combination of cut- and-wire nails date to the early 1890s. Some of the bottle fragments and a base with a maker's mark remain from Beaver Creek's mid-1900s activities. Dynamite box panels and a carbide drum, which contained lamp fuel, are left from the 1910s. Because most of the domestic refuse dates to the early 1890s, it seems likely that afterward, the workers lived off site.

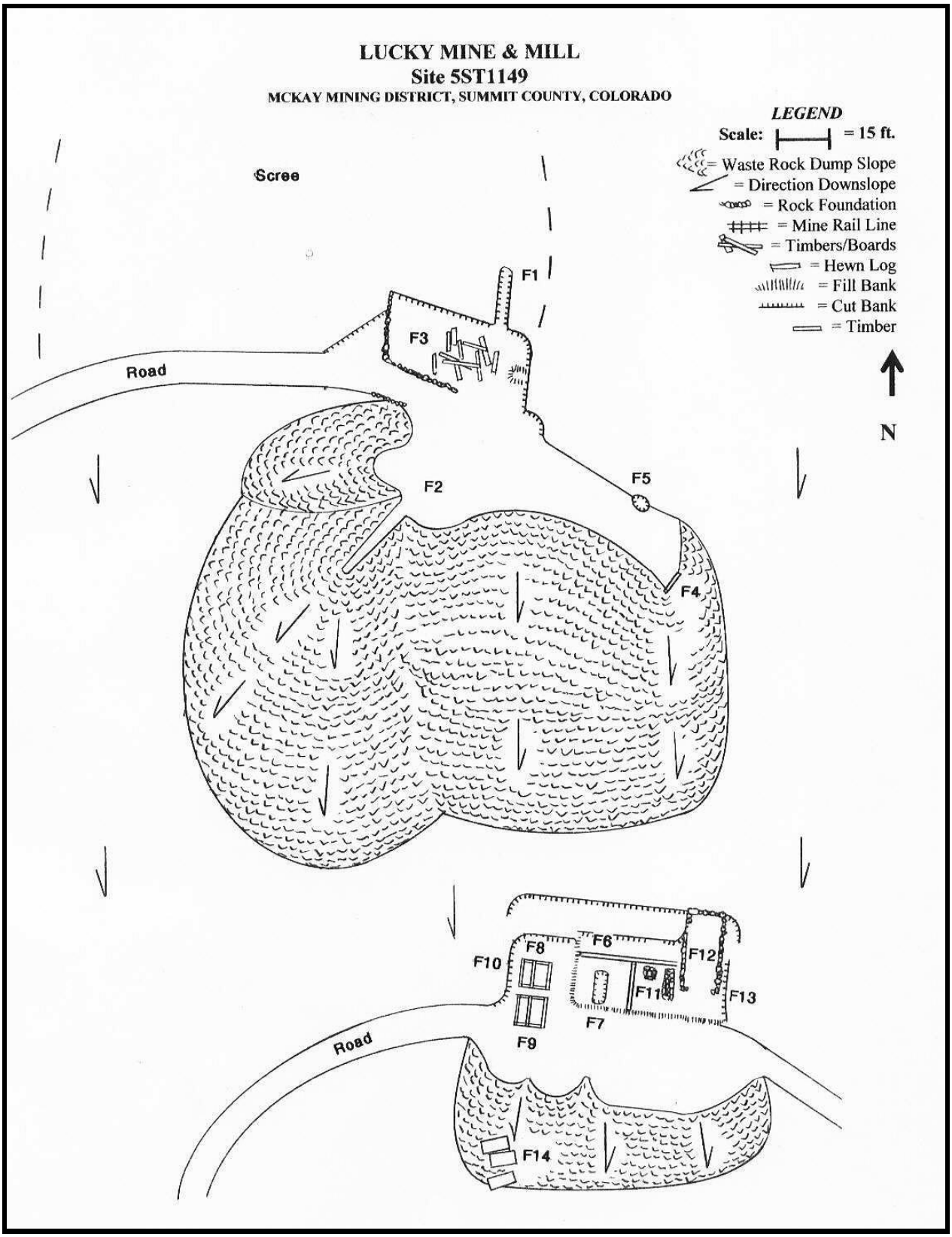

Figure 2.19: Plan view of the Luck Mine's haulage tunnel and mill ruin.

After the Royal Tiger Mines Company shut down the mill, someone dismantled nearly all the structural materials and equipment, leaving foundations and several pieces of machinery. Overall, the mill building was approximately 50 by 60 feet in area and featured a heavy timber frame on a foundation of timber footers. Most of the machinery was bolted to the frame, and little direct evidence currently remains because the frame was dismantled.

The northern, highest portion of the mill featured crushing machinery. According to archival information, a jaw crusher provided primary reduction, and apparatuses known as crushing rolls completed secondary and tertiary grinding. The machinery was located over a 10 by 20 foot area (F6) now blanketed with erosional deposits and finely crushed ore. After being pulverized, the ore passed on to a screening system immediately below. A raised platform 15 by 18 feet in area with a depression at center (F7) marks the system, and it features several deposits of screened ore. When the mill was dismantled, the screens (F14) were left downslope. The screens are conventional, factory-made trommel units that still possess most of their hardware.

Fine material that passed through the screens proceeded to the concentration platform (F10), where two jigs separated out the waste. The platform is 18 by 34 feet in area and around 1 foot lower than the rest of the mill platforms so gravity could deliver ore to the jigs. Both jigs (F8, F9) currently remain intact on the concentration platform. The jigs are factory-made units 8 feet wide, 9½ feet long, and 6 feet high. They stand on timber bolsters and feature two symmetrically opposed V troughs. The interior of each trough is divided into compartments that were filled with water. In the compartments, agitation plungers and screens classified crushed ore by specific gravity.

Figure 2.20: A pair of jigs stands in place on the Lucky Mill's concentration platform. Water currents agitated by plungers separated crushed ore particles by specific gravity. Jigs were common at one time, but few examples currently survive. For this reason, the units on-site are rare and important examples. Source: Author.

Archaeological features clearly represent the mill's power plant. The engine room occupied the mill building's eastern portion and now manifests as a platform (F13) 15 by 25 feet in area. A steam engine drove the mill's machinery, and it was anchored to a mortared rock masonry foundation (F11). The engine body was bolted to a pedestal 2½ feet wide and 8 feet long, and an outboard bearing for the engine's flywheel was bolted to a separate mount 3 by 4 feet in area. A return-tube boiler provided the engine with steam, and the collapsed rock masonry setting (F12) currently remains. The setting was 9 feet wide, 20 feet long, and around 7 feet high, which was a typical size for a return-tube boiler. Workers constructed the masonry with sand mortar and installed steel buck staves to both support the walls and suspend the boiler shell. The setting's rear features a portion of the mill's support frame.

According to archival sources, the mill operated intermittently from 1893 until 1924. Given such a protracted timeframe, the artifact assemblage is surprisingly light. Usually, the operation of a mill generated worn hardware, broken machine parts, screens, and mill tailings. Few such artifacts currently lie around the Lucky Mill complex, and the handful of dateable items falls within the documented timeframe.

Lucky Mine and Mill Site Interpretation

The site represents a moderately scaled mining and milling operation typical of the 1890s and 1900s. While Thomas McKenna invested a considerable sum of capital driving the tunnel and building the mill, material evidence indicates that he minimized expenses where possible. For example, the surface plant associated with the tunnel was relatively simple and compact. A ventilation blower was the only piece of machinery, and it was powered by a portable boiler. The blacksmith shop was limited in size and was probably equipped for only the most basic work.

The mill was well-designed; it minimized costs while effectively treating the Lucky's complex ore. The building's lack of formal masonry or concrete foundations, its small size, and simple ground preparation represent an effort to limit construction costs. The flow-path for the ore, the crushing machinery, and the concentration processes were conventional. The power plant was also standard for concentration mills. Whereas mills similar to the Lucky failed elsewhere in the Breckenridge area, McKenna apparently understood how to adapt and adjust the equipment to successfully treat the ore.

The site's archaeological features indicate that McKenna formally planned and organized the operation's overall facilities. McKenna followed tradition when he considered the vertical needs of the operation. Specifically, he sited the tunnel high enough so that gravity could draw crude down into the mill, and the mill's vertical relief allowed the ore to flow down through the various process stages. In terms of horizontal layout, the mill was built far enough from the tunnel so that miners had plenty of room to dump waste rock. McKenna also followed the convention of orienting the facilities according to the tunnel's master datum line. The tunnel house, the mill building, and the mill components shared the same orientation as the tunnel.

A few observations can be made regarding the miners who drove the tunnel. First, they were working-class men, evident by a lack of artifacts representing decorative, fine, and costly goods. Second, the workers consumed a diet based primarily on canned foods, which they supplemented with fresh beef roasts and stews. Third, the workers consumed limited quantities of alcohol when on site and enjoyed sound health.

Lucky Mine and Mill Site Significance

The Lucky Mine and Mill site can be divided into two complexes, both of which have been reduced to archaeological features. The first complex represents the surface plant associated with the mine's principal tunnel, which was driven in 1891 or 1892. The second complex manifests as a combination of archaeological features and equipment left from a concentration mill erected in 1892. Both complexes retain archaeological integrity, and the mill complex possesses important examples of concentration machinery. The site currently retains ambiance relative to mining during the early 1890s and lies in an intact natural setting. Because of the site's physical characteristics and its importance to the Breckenridge area, the site is recommended eligible for the NRHP and the SRHP under Criteria A and C.

In terms of Criterion A, the Lucky Mine and Mill are associated with events and trends important on statewide and local levels. As noted, the tunnel was driven and the mill built in 1892, and operations continued through 1893 when the Silver Crash wrecked Colorado's mining industry. The mine was brought back into production in 1904, the mill was started up again the following year, and operations continued through 1917. During this second period of activity, the property saw no significant changes. As a result, the site retains integrity relative to both the first and the second operating timeframes.

During these periods, the Breckenridge area enjoyed booms of its hardrock mining industry, and the Lucky was a direct participant both times. The Lucky was a significant employer and made economic contributions both through its production and through the acquisition of goods and services. The Lucky also contributed to the two hardrock mining booms in several ways. First, the operation proved that deep ore formations could yield profits through substantial investment and formal engineering. Second, the operation helped to inspire confidence among investors through its successful production. Last, the mill accepted low-grade ores from area mines that lacked their own facilities. This was important because low-grade ores required concentration, or enrichment, to render them economical to ship to distant smelters for final processing. By accepting custom ores, the Lucky and other mills allowed companies without their own facilities to produce low-grade ores, which increased the area's cumulative production.

Because of successful mines such as the Lucky, the Breckenridge area's hardrock mining industry became important on a statewide level during both the early 1890s and the 1900s. The gold, silver, lead, and zinc that the mines produced were direct contributions to Colorado's economy. In addition, by consuming high volumes of goods and services, the companies and employees directly supported Colorado's industrial, service, transportation, and food production sectors.

In terms of Criterion C, the Lucky Mine and Mill site is an excellent archaeological example of two important aspects of hardrock mining. The tunnel represents the type of deep hardrock mine common to the Breckenridge area during the early 1890s and the 1900s. The building platform and artifacts represent the exact nature of the surface plant, as well as aspects of the workers. The mill complex is a general archaeological approximation of the type of facility commonly built during the 1890s and 1900s to concentrate industrial metals ore. Because most of the machinery was bolted to the mill building's timber frame, which is gone, the specific process is only partially represented. The size, shape, and general layout of the mill are, however, clearly represented. Archaeological features also effectively depict the power system typically used to drive concentration mills.

Of great importance, the mill complex offers five relatively intact pieces of equipment, which lend some engineering integrity to the site. The equipment includes two jigs used to concentrate ore and three trommel screens that classified crushed ore by particle size. At one time, these pieces of machinery were universal throughout Colorado, and few examples currently survive.

The site is also a contributing element of French Gulch's historic landscape. The tunnel's waste rock dump can be seen from afar and belongs to a group of similar sites on the gulch's north side. Collectively, the sites form a landscape evocative of mining.

Lucky Mine and Mill Site Management Recommendations

Management recommendations suggest several actions. First, the Minnie Mine recreational trail begins immediately downslope from the site, and Summit County Trails and Open Space proposes developing the trail for heritage tourism. The complex provides an excellent opportunity to explain deep hardrock mining, the purpose and methods of ore concentration, and the mining industry as it was during the early 1890s and the 1900s. Management recommendations suggest grading spur trails up to both the tunnel complex and the mill, and the trails can follow the historic access roads. Signage or pamphlets can then be used to educate the public.

Second, the two jigs are vulnerable, perishable wooden appliances that are currently exposed to the elements. Management recommendations suggest constructing a shelter over the machines to keep them dry.