

Helen Tunnel ***Site 5ST1146***

The Helen Mine, prospected in 1864, was among the Breckenridge area's earliest hardrock operations. Prospectors staked a series of claims over a substantial ore vein bounded on the north by French Gulch and on the east by Australia Gulch. During the late 1870s, an outfit then attacked the vein from two directions. One was through several tunnels driven southwest into Australia Gulch, and the other was through several shafts sunk on the French Gulch side. In 1907, a company drove the Helen Tunnel south from the floor of French Gulch to undercut the group of claims at great depth. Today, the workings in Australia Gulch retain little integrity due to the construction of a power line and so were not recorded. The principal shaft and the tunnel on the French Gulch side, however, were recorded as separate sites.

The tunnel site includes the tunnel, its waste rock dumps, several building platforms, and a mill ruin. The steep, south wall of French Gulch, vegetated with a second- and old-growth lodgepole pine and fir forest, ascends to the south, and the gently sloped gulch floor sprawls out to the north. A ditch unrelated to the mining operation passes through the site, and it was in use when the tunnel was active. While the site retains archaeological integrity, it has a minimal visual impact and so contributes little to French Gulch's historic landscape.

Helen Mine History

During the mid-1860s, the Breckenridge area languished in the tail end of its first boom, which was based around rich deposits of placer gold. Prospectors still lingered in the area, but they focused on finding more placer deposits and were unaware that numerous hardrock ore veins crisscrossed the region. A few experienced prospectors, however, had enough knowledge to identify and evaluate such mineral bodies. In 1864, one experienced group examining rock outcrops on the west side of Australia Gulch discovered a gold and silver vein and recognized it for what it was. They determined that the vein trended northeast-southwest (like most veins in the area) and staked the Helen and Helen No.1 claims along the strike. The prospectors probably extracted small volumes of ore but did little more with the property because they had no effective means of winning gold from the parent rock.¹

When the Breckenridge area's first hardrock boom was under way in the mid-1870s, the Helen property finally drew the attention that it deserved. Someone purchased the two claims and began limited production, driving a total of 400 feet of workings by 1878. In the same year, the owners then staked the Helen's Baby and Hopeful claims to ensure title to the vein. With ample ground for mining and proof of ore, Calvin P. Clark of Lincoln purchased the Helen then included Denver mining investor John J. Riethman as part owner in exchange for capital. At that time, the Helen featured three short tunnels and five shallow shafts. Clark and Riethman systematically developed the vein through a lower tunnel that attained the length of 400 feet and enjoyed production. In 1884, the partners were forced to suspend work because miners exhausted the vein above the oxidation zone, leaving deep ore that resisted milling.²

The Helen remained idle for around two decades. During the early 1900s, a group of experienced and wealthy mining investors organized the Lincoln Gold Mining Company with the intent of acquiring and consolidating several collections of claims on the north and south sides of French Gulch. William Lennox and T.W. Giddings of Colorado Springs provided much of the capital; Mark G. Evans, celebrated Breckenridge mining engineer, provided expertise; and N.B.

¹ *Colorado Mining Directory*, 1883:799.

² *Colorado Mining Directory*, 1883:799.

Scott of West Virginia was a distant investor. In 1904, these capitalists purchased the Helen group along with other claims in the area and planned a development strategy. Instead of doing anything with the property, however, they leased the workings to George and Peter Engle and Thomas R. Griffith in 1906.³

Griffith and the Engles extracted ore from the old workings through the year. During 1907, they came to the conclusion that a shaft was necessary to develop the vein at depth, where profitable ore lay. Unable to allocate the capital necessary for a hoist and other equipment, the partners let the lease lapse and turned the property over to another outfit.⁴

The Penn Ores Company, based in Pennsylvania, realized that the lower reaches of the Helen Vein still offered ore that had been left in place by the past operators. The company took a lease on the property in the summer of 1907 then commissioned the Helen Tunnel. The primary purpose of the tunnel was to undercut the Helen Vein at depth, but the company began advertising that adjoining mining companies could use the tunnel to access their ore formations, as well. In so doing, Penn Ores hoped that the subscriptions of adjoining claim owners would offset the project's exorbitant costs.⁵

Penn Ores spent two years driving the Helen Tunnel and finally struck the vein in 1909. As a bonus, when the miners neared the ore formation, they blundered into a previously unknown vein. In preparation for production, the company decided to build a mill at the tunnel portal. Instead of designing a mill that concentrated the complex ore, Penn Ores built a simple facility that consisted of little more than a Huntington mill and screening system. A Huntington mill was an apparatus that ground and amalgamated gold ore in a single mechanical process. Rollers crushed crude ore in the bottom of a cast iron pan 6 feet in diameter, and mercury amalgamated the gold content as it became freed. By relying only on a Huntington mill, Penn Ores apparently made no provisions for recovering the ore's silver content. Perhaps this contributed to the failure of the operation by the end of 1909. Penn Ores abandoned the Helen Tunnel most likely because the ore proved insufficient in terms of both quantity and quality.⁶

In 1914, another lessee took advantage of the work completed by Penn Ores. With the tunnel finished, the vein partially developed, and a mill in place, the lessees found enough pay rock to sustain production through 1915. For a short period of time, the lessees felt so confident in the Helen that they proposed building a tramway down from the old workings. But by the end of 1915, they realized that the Helen was uneconomical and abandoned the property.⁷

³ "Mining News" *MSP* 4/30/04 p304; "Mining News" *MSP* 9/1/06 p253.

⁴ "Mining News" *MSP* 9/1/06 p253.

⁵ "Mining News" *MSP* 9/21/07 p353.

⁶ "Mining News" *MSP* 2/6/09 p204; Ransome, 1911:104.

⁷ *Mineral Resources*, 1915:473; "Mining News" *EMJ* 12/19/14 p1116.

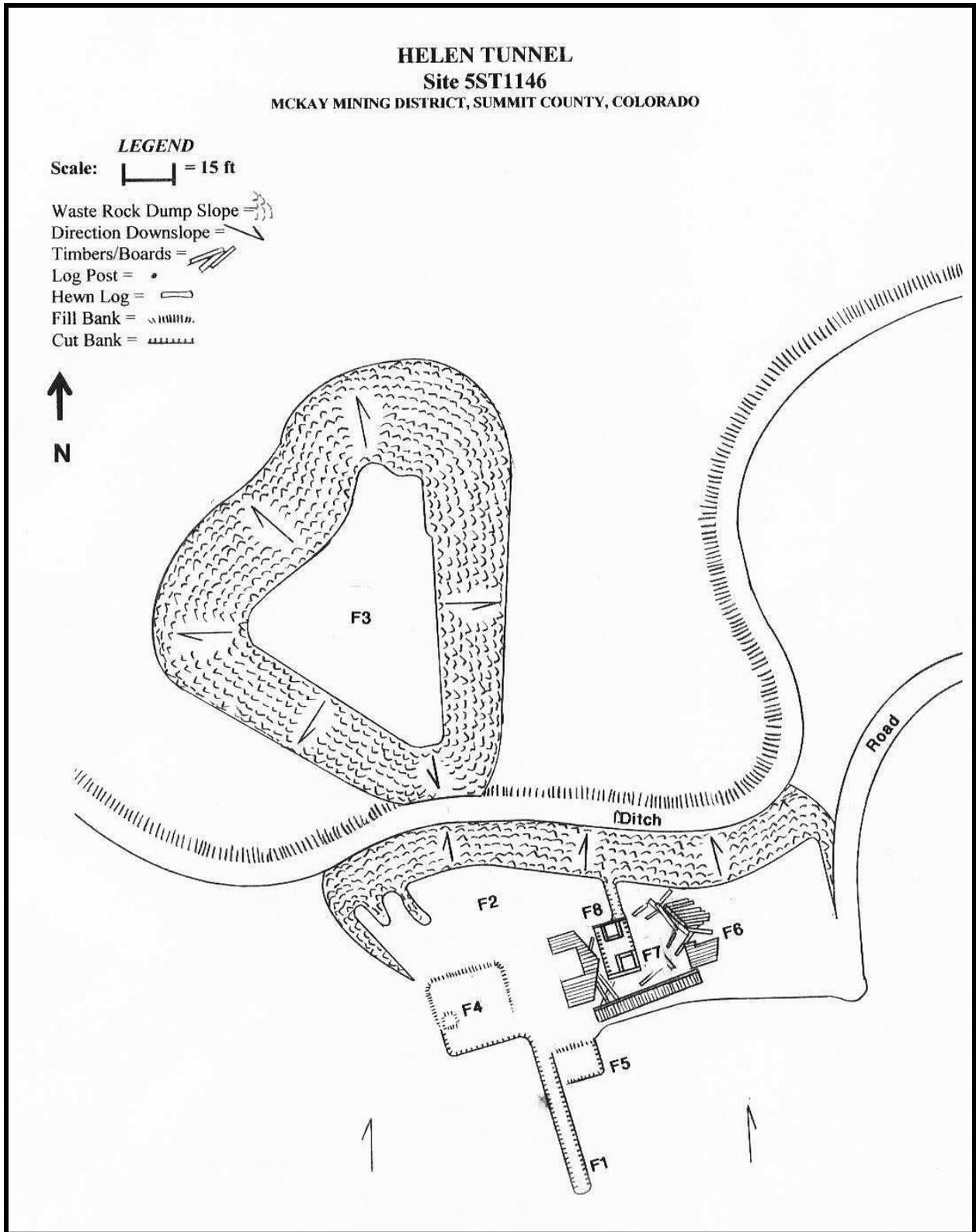


Figure 2.16: Plan view of the Helen Tunnel site.

Helen Tunnel Site Description

Currently, the Penn Ores Company operation is clearly represented by a complete set of archaeological features and artifacts. The least intact aspect is the tunnel portal (F1), which collapsed and now manifests as a linear area of subsidence. When miners drove the tunnel, they dumped waste rock at the portal, forming a bench (F2) 40 feet wide and 145 feet long. They had to extend the bench to the east to avoid blocking a water ditch immediately downslope. As the miners continued work underground, they were forced to build a trestle across the ditch and dump additional waste rock to the north. Over time, the dump (F3) became a triangular pad 108 by 112 feet in area and 12 feet thick.

Like most mines, the Helen Tunnel's surface plant was clustered around the tunnel portal. A frame blacksmith shop (F4) stood on the west side, and its cut-and-fill platform and collapsed walls currently remain. The building was 15 by 18 feet in area, based on a 4x4 post-and-girt frame, and sided with planks clad by tarpaper. The remnants of a wood box forge, 3½ by 4 feet in area, stand along the west side. The shop ruin features one of the site's most important artifact assemblages, discussed below. In general, industrial artifacts and shop refuse lie around the ruin, and they typify the materials associated with blacksmith shops. It seems likely that additional materials are buried underneath duff and in shallow deposits around the platform, and they are worthy of further investigation.

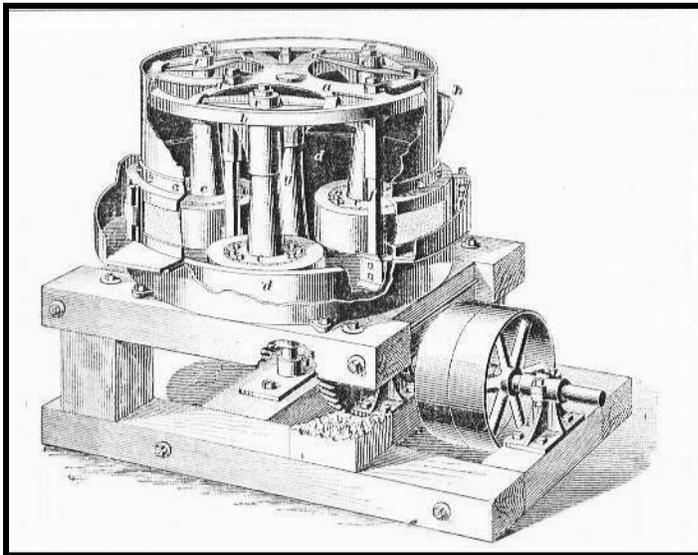


Figure 2.17: A Huntington mill was an apparatus designed to grind ore and amalgamate the gold content. The rollers in the cut-away view rotated around the bottom of the cast iron pan and ground ore to a slurry. Mercury in the bottom captured the gold.

A frame building stood on the tunnel portal's east side, and a cut-and-fill platform (F5) now represents the structure. The building, 10 by 12 feet in area, was probably a residence according to a high proportion of domestic refuse. Thick duff coverage conceals artifacts, and important items may lie in shallow, buried deposits.

The mill erected by Penn Ores in 1909 is in ruins on the east portion of the waste rock dump. The building was front-gabled, 19 by 30 feet in area, 7 feet high at the roof eaves, and 13 feet high overall. A 4x4 post-and-girt frame supported the walls, which consisted of board-and-batten siding. The floor was earthen and the foundation consisted of wall footers laid on gravel berms. A classifying screen and a Huntington mill were located in a depression 9 by 12 feet in

area and around 5 feet deep. Structural debris covering the ruin's interior probably conceals important features and artifacts.

Foundations clearly represent the screening system and Huntington mill. The screen foundation (F8), 3½ feet square and as high, appears to have been factory-made and consisted of 4x4s assembled with mortise-and-tenon joints and lag bolts. The Huntington mill foundation (F7) is a rectangular timber frame 4 by 5 feet in area and 2 feet high. The top timbers feature four anchor bolts and an arced groove for the drive axle. The foundation is factory-made with 6x12s, 6x8s, and 12x12 posts.

Helen Tunnel Site Interpretation

The Helen Tunnel features a rich artifact assemblage, and some of the items allow us to interpret several aspects of the operation and crew. Most of the dateable artifacts confirm a timeframe of the late 1900s. Nearly all the fragmented bottles were finished by hand, although one was machine-made. Almost half the food cans were hole-in-cap vessels, and the rest were vent-hole types. The 1900s saw the transition from hand-finished to machine-made bottles and from hole-in-cap cans to sanitary and vent-hole vessels. According to numerous electrical artifacts, the Helen Tunnel was equipped with an electrical system. A switch panel was located in the shop, the buildings had lighting, and electricity powered the mill and probably a ventilation blower that forced fresh air underground.

Evidence strongly suggests that the worker who lived in the residence was of British origin. First, the only two bottles associated with the platform were made in England and contained beer. Second, the individual practiced a crude tea ceremony, which was a distinctly British behavior. Fragments of a porcelain tea pot and matching saucer lay around the shop ruin and residence platform, and they contrasted against other tableware fragments, which were common white improved earthenware.

In general, the archaeological features and artifacts indicate that the Helen Tunnel was a substantial and formally engineered operation. The surface plant facilities were neatly arranged and oriented according to a datum line taken from the tunnel. The large waste rock dumps indicate that the tunnel was lengthy, confirming archival information. The operation relied on only the most basic mechanization, which was limited to the mill and a ventilation blower. Because the surface plant lacked an ore bin, it can be assumed that most of the pay rock was treated in the mill and little was shipped elsewhere. No mill tailings are obvious, indicating that the mill saw limited use.

Helen Tunnel Site Significance

The Helen Tunnel was a short-lived gold producer that operated between 1907 and 1909, and between 1914 and 1915. The site offers a complete assemblage of archaeological features and artifacts that retain integrity relative to the first operating timeframe. The site possesses ambiance relative to mining during the 1900s and lies in an undisturbed setting. During its operating timeframe, the Helen Tunnel was important to Breckenridge's mining industry, and today, the site is likely to yield important information. For these reasons, the site is recommended eligible for the NRHP under Criteria A, C, and D, and for the SRHP under Criteria A, C, and E.

In terms of Criterion A, the Helen Tunnel was important to Breckenridge during the late 1900s. At this time, the area's mining industry experienced a significant boom, and the Helen Tunnel was a direct participant. The operation provided employment, contributed to

Breckenridge's economy through its gold production, and helped to sustain the area's culture of mining. In addition, the Helen Tunnel and similar mines contributed to the region's boom. The operation proved that deep ore formations could yield profits through substantial investment and formal engineering, which helped to inspire confidence among investors.

In terms of Criterion C, the Helen Tunnel is an excellent archaeological example of the type of deep hardrock mine common to the Breckenridge area during the 1900s. The collapsed buildings, machine foundations, and artifacts represent a formally engineered, capitalized, deep tunnel mine. Further, the exact nature of the mill and surface plant can be easily reconstructed from the existing features.

In terms of NRHP Criterion D and SRHP Criterion E, testing and/or excavation of buried deposits are likely to yield important information. According to surface artifacts, it appears that one of the crew members who lived on site was of British origin. Little is currently known of the roles, behaviors, and presence of ethnicities on Colorado's mining frontier. Studies of buried deposits and artifacts may confirm that one of the Helen Tunnel's crew was British and provide information regarding behaviors, traditions, and demography.

Helen Tunnel Site Management Recommendations

Management recommendations suggest several actions. First, a recreational trail passes close to the site, and Summit County Trails and Open Space proposes developing the trail for heritage tourism. The site provides an excellent opportunity to explain deep hardrock mining and the industry as it was during the 1900s. This can be accomplished through signage or pamphlets.

Second, the mill ruin features a rectangular pit at center for a classifying screen and Huntington device, which ground and amalgamated gold ore. The pit's walls were originally retained with plank lagging, which has decayed and is now allowing earth to slowly slump in. Within a short time, the screen and Huntington mill foundations will be completely buried. Management recommendations suggest cleaning out the pit and shoring the walls with new planks.

Third, the Helen Tunnel provides an excellent opportunity to study the presence of ethnicities on Colorado's mining frontier. The buried deposits should be tested and/or excavated in terms of NRHP Criterion D above.